

bra: = $\langle s, \uparrow |, \langle s, \downarrow |$
 ket: = $|s, \uparrow \rangle, |s, \downarrow \rangle$

Table 1: (s,s) block.

No.	multipole	matrix
1	symmetry	1
	$Q_0^{(a)}(A_{1g})$	$\begin{bmatrix} \frac{\sqrt{2}}{2} & 0 \\ 0 & \frac{\sqrt{2}}{2} \end{bmatrix}$
2	symmetry	z
	$M_1^{(1,-1;a)}(A_{2g})$	$\begin{bmatrix} \frac{\sqrt{2}}{2} & 0 \\ 0 & -\frac{\sqrt{2}}{2} \end{bmatrix}$
3	symmetry	x
	$M_{1,1}^{(1,-1;a)}(E_g)$	$\begin{bmatrix} 0 & \frac{\sqrt{2}}{2} \\ \frac{\sqrt{2}}{2} & 0 \end{bmatrix}$
4	symmetry	y
	$M_{1,2}^{(1,-1;a)}(E_g)$	$\begin{bmatrix} 0 & -\frac{\sqrt{2}i}{2} \\ \frac{\sqrt{2}i}{2} & 0 \end{bmatrix}$

bra: = $\langle s, \uparrow |, \langle s, \downarrow |$
 ket: = $|p_x, \uparrow \rangle, |p_x, \downarrow \rangle, |p_y, \uparrow \rangle, |p_y, \downarrow \rangle, |p_z, \uparrow \rangle, |p_z, \downarrow \rangle$

Table 2: (s,p) block.

No.	multipole	matrix
5	symmetry	z
	$Q_1^{(a)}(A_{2u})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & \frac{1}{2} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{1}{2} \end{bmatrix}$
6	symmetry	x
	$Q_{1,1}^{(a)}(E_u)$	$\begin{bmatrix} \frac{1}{2} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{1}{2} & 0 & 0 & 0 & 0 \end{bmatrix}$

continued ...

Table 2

No.	multipole	matrix
7	symmetry	y
	$\mathbb{Q}_{1,2}^{(a)}(E_u)$	$\begin{bmatrix} 0 & 0 & \frac{1}{2} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{1}{2} & 0 & 0 \end{bmatrix}$
8	symmetry	z
	$\mathbb{Q}_1^{(1,0;a)}(A_{2u})$	$\begin{bmatrix} 0 & -\frac{\sqrt{2}}{4} & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 \\ \frac{\sqrt{2}}{4} & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 \end{bmatrix}$
9	symmetry	x
	$\mathbb{Q}_{1,1}^{(1,0;a)}(E_u)$	$\begin{bmatrix} 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & \frac{\sqrt{2}}{4} \\ 0 & 0 & 0 & \frac{\sqrt{2}i}{4} & -\frac{\sqrt{2}}{4} & 0 \end{bmatrix}$
10	symmetry	y
	$\mathbb{Q}_{1,2}^{(1,0;a)}(E_u)$	$\begin{bmatrix} \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} \\ 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 \end{bmatrix}$
11	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$
	$\mathbb{G}_2^{(1,-1;a)}(A_{1u})$	$\begin{bmatrix} 0 & -\frac{\sqrt{6}i}{12} & 0 & -\frac{\sqrt{6}}{12} & \frac{\sqrt{6}i}{6} & 0 \\ -\frac{\sqrt{6}i}{12} & 0 & \frac{\sqrt{6}}{12} & 0 & 0 & -\frac{\sqrt{6}i}{6} \end{bmatrix}$
12	symmetry	$\sqrt{3}yz$
	$\mathbb{G}_{2,1}^{(1,-1;a)}(E_u, 1)$	$\begin{bmatrix} 0 & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & \frac{\sqrt{2}}{4} \\ 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & -\frac{\sqrt{2}}{4} & 0 \end{bmatrix}$
13	symmetry	$-\sqrt{3}xz$
	$\mathbb{G}_{2,2}^{(1,-1;a)}(E_u, 1)$	$\begin{bmatrix} -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} \\ 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 \end{bmatrix}$
14	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$
	$\mathbb{G}_{2,1}^{(1,-1;a)}(E_u, 2)$	$\begin{bmatrix} 0 & \frac{\sqrt{2}i}{4} & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 \\ \frac{\sqrt{2}i}{4} & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 \end{bmatrix}$
15	symmetry	$-\sqrt{3}xy$
	$\mathbb{G}_{2,2}^{(1,-1;a)}(E_u, 2)$	$\begin{bmatrix} 0 & -\frac{\sqrt{2}}{4} & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 \\ \frac{\sqrt{2}}{4} & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 \end{bmatrix}$
16	symmetry	1

continued ...

Table 2

No.	multipole	matrix
	$\mathbb{G}_0^{(1,1;a)}(A_{1u})$	$\begin{bmatrix} 0 & \frac{\sqrt{3}i}{6} & 0 & \frac{\sqrt{3}}{6} & \frac{\sqrt{3}i}{6} & 0 \\ \frac{\sqrt{3}i}{6} & 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & -\frac{\sqrt{3}i}{6} \end{bmatrix}$
17	symmetry	z
	$\mathbb{T}_1^{(a)}(A_{2u})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & \frac{i}{2} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{i}{2} \end{bmatrix}$
18	symmetry	x
	$\mathbb{T}_{1,1}^{(a)}(E_u)$	$\begin{bmatrix} \frac{i}{2} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{i}{2} & 0 & 0 & 0 & 0 \end{bmatrix}$
19	symmetry	y
	$\mathbb{T}_{1,2}^{(a)}(E_u)$	$\begin{bmatrix} 0 & 0 & \frac{i}{2} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{i}{2} & 0 & 0 \end{bmatrix}$
20	symmetry	z
	$\mathbb{T}_1^{(1,0;a)}(A_{2u})$	$\begin{bmatrix} 0 & \frac{\sqrt{2}i}{4} & 0 & \frac{\sqrt{2}}{4} & 0 & 0 \\ -\frac{\sqrt{2}i}{4} & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 \end{bmatrix}$
21	symmetry	x
	$\mathbb{T}_{1,1}^{(1,0;a)}(E_u)$	$\begin{bmatrix} 0 & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & -\frac{\sqrt{2}i}{4} \\ 0 & 0 & 0 & \frac{\sqrt{2}}{4} & \frac{\sqrt{2}i}{4} & 0 \end{bmatrix}$
22	symmetry	y
	$\mathbb{T}_{1,2}^{(1,0;a)}(E_u)$	$\begin{bmatrix} \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} \\ 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 \end{bmatrix}$
23	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$
	$\mathbb{M}_2^{(1,-1;a)}(A_{1u})$	$\begin{bmatrix} 0 & -\frac{\sqrt{6}}{12} & 0 & \frac{\sqrt{6}i}{12} & \frac{\sqrt{6}}{6} & 0 \\ -\frac{\sqrt{6}}{12} & 0 & -\frac{\sqrt{6}i}{12} & 0 & 0 & -\frac{\sqrt{6}}{6} \end{bmatrix}$
24	symmetry	$\sqrt{3}yz$
	$\mathbb{M}_{2,1}^{(1,-1;a)}(E_u, 1)$	$\begin{bmatrix} 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & -\frac{\sqrt{2}i}{4} \\ 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & \frac{\sqrt{2}i}{4} & 0 \end{bmatrix}$
25	symmetry	$-\sqrt{3}xz$

continued ...

Table 2

No.	multipole	matrix
	$\mathbb{M}_{2,2}^{(1,-1;a)}(E_u, 1)$	$\begin{bmatrix} -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} \\ 0 & \frac{\sqrt{2}}{4} & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 \end{bmatrix}$
26	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$
	$\mathbb{M}_{2,1}^{(1,-1;a)}(E_u, 2)$	$\begin{bmatrix} 0 & \frac{\sqrt{2}}{4} & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 \\ \frac{\sqrt{2}}{4} & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 \end{bmatrix}$
27	symmetry	$-\sqrt{3}xy$
	$\mathbb{M}_{2,2}^{(1,-1;a)}(E_u, 2)$	$\begin{bmatrix} 0 & \frac{\sqrt{2}i}{4} & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 \\ -\frac{\sqrt{2}i}{4} & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 \end{bmatrix}$
28	symmetry	1
	$\mathbb{M}_0^{(1,1;a)}(A_{1u})$	$\begin{bmatrix} 0 & \frac{\sqrt{3}}{6} & 0 & -\frac{\sqrt{3}i}{6} & \frac{\sqrt{3}}{6} & 0 \\ \frac{\sqrt{3}}{6} & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 & -\frac{\sqrt{3}}{6} \end{bmatrix}$

bra: = $\langle s, \uparrow |, \langle s, \downarrow |$ ket: = $|d_v, \uparrow\rangle, |d_v, \downarrow\rangle, |d_{xy}, \uparrow\rangle, |d_{xy}, \downarrow\rangle, |d_{xz}, \uparrow\rangle, |d_{xz}, \downarrow\rangle, |d_{yz}, \uparrow\rangle, |d_{yz}, \downarrow\rangle, |d_u, \uparrow\rangle, |d_u, \downarrow\rangle$

Table 3: (s,d) block.

No.	multipole	matrix
29	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$
	$\mathbb{Q}_2^{(a)}(A_{1g})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{1}{2} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{1}{2} \end{bmatrix}$
30	symmetry	$\sqrt{3}yz$
	$\mathbb{Q}_{2,1}^{(a)}(E_g, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & \frac{1}{2} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{1}{2} & 0 & 0 \end{bmatrix}$
31	symmetry	$-\sqrt{3}xz$
	$\mathbb{Q}_{2,2}^{(a)}(E_g, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & -\frac{1}{2} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{1}{2} & 0 & 0 & 0 & 0 \end{bmatrix}$
32	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$

continued ...

Table 3

No.	multipole	matrix
	$\mathbb{Q}_{2,1}^{(a)}(E_g, 2)$	$\begin{bmatrix} \frac{1}{2} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{1}{2} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
33	symmetry	$-\sqrt{3}xy$
	$\mathbb{Q}_{2,2}^{(a)}(E_g, 2)$	$\begin{bmatrix} 0 & 0 & -\frac{1}{2} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{1}{2} & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
34	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$
	$\mathbb{Q}_2^{(1,0;a)}(A_{1g})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 \end{bmatrix}$
35	symmetry	$\sqrt{3}yz$
	$\mathbb{Q}_{2,1}^{(1,0;a)}(E_g, 1)$	$\begin{bmatrix} 0 & -\frac{\sqrt{6}i}{12} & 0 & -\frac{\sqrt{6}}{12} & \frac{\sqrt{6}i}{12} & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} \\ -\frac{\sqrt{6}i}{12} & 0 & \frac{\sqrt{6}}{12} & 0 & 0 & -\frac{\sqrt{6}i}{12} & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 \end{bmatrix}$
36	symmetry	$-\sqrt{3}xz$
	$\mathbb{Q}_{2,2}^{(1,0;a)}(E_g, 1)$	$\begin{bmatrix} 0 & \frac{\sqrt{6}}{12} & 0 & -\frac{\sqrt{6}i}{12} & 0 & 0 & \frac{\sqrt{6}i}{12} & 0 & 0 & -\frac{\sqrt{2}}{4} \\ -\frac{\sqrt{6}}{12} & 0 & -\frac{\sqrt{6}i}{12} & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{12} & \frac{\sqrt{2}}{4} & 0 \end{bmatrix}$
37	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$
	$\mathbb{Q}_{2,1}^{(1,0;a)}(E_g, 2)$	$\begin{bmatrix} 0 & 0 & -\frac{\sqrt{6}i}{6} & 0 & 0 & \frac{\sqrt{6}}{12} & 0 & \frac{\sqrt{6}i}{12} & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{6}i}{6} & -\frac{\sqrt{6}}{12} & 0 & \frac{\sqrt{6}i}{12} & 0 & 0 & 0 \end{bmatrix}$
38	symmetry	$-\sqrt{3}xy$
	$\mathbb{Q}_{2,2}^{(1,0;a)}(E_g, 2)$	$\begin{bmatrix} -\frac{\sqrt{6}i}{6} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{12} & 0 & -\frac{\sqrt{6}}{12} & 0 & 0 \\ 0 & \frac{\sqrt{6}i}{6} & 0 & 0 & \frac{\sqrt{6}i}{12} & 0 & \frac{\sqrt{6}}{12} & 0 & 0 & 0 \end{bmatrix}$
39	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$
	$\mathbb{G}_3^{(1,-1;a)}(A_{1g})$	$\begin{bmatrix} 0 & \frac{\sqrt{2}i}{4} & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{2}i}{4} & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
40	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$
	$\mathbb{G}_3^{(1,-1;a)}(A_{2g}, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{10} & 0 & -\frac{\sqrt{5}}{10} & \frac{\sqrt{15}i}{10} & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{10} & 0 & \frac{\sqrt{5}}{10} & 0 & 0 & -\frac{\sqrt{15}i}{10} \end{bmatrix}$
41	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$

continued ...

Table 3

No.	multipole	matrix
	$\mathbb{G}_3^{(1,-1;a)}(A_{2g}, 2)$	$\begin{bmatrix} 0 & \frac{\sqrt{2}}{4} & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{2}}{4} & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
42	symmetry	$-\frac{\sqrt{6x(x^2+y^2-4z^2)}}{4}$
	$\mathbb{G}_{3,1}^{(1,-1;a)}(E_g, 1)$	$\begin{bmatrix} 0 & -\frac{\sqrt{30}i}{60} & 0 & -\frac{\sqrt{30}}{60} & \frac{\sqrt{30}i}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{10} \\ -\frac{\sqrt{30}i}{60} & 0 & \frac{\sqrt{30}}{60} & 0 & 0 & -\frac{\sqrt{30}i}{15} & 0 & 0 & \frac{\sqrt{10}i}{10} & 0 \end{bmatrix}$
43	symmetry	$-\frac{\sqrt{6y(x^2+y^2-4z^2)}}{4}$
	$\mathbb{G}_{3,2}^{(1,-1;a)}(E_g, 1)$	$\begin{bmatrix} 0 & \frac{\sqrt{30}}{60} & 0 & -\frac{\sqrt{30}i}{60} & 0 & 0 & \frac{\sqrt{30}i}{15} & 0 & 0 & \frac{\sqrt{10}}{10} \\ -\frac{\sqrt{30}}{60} & 0 & -\frac{\sqrt{30}i}{60} & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}i}{15} & -\frac{\sqrt{10}}{10} & 0 \end{bmatrix}$
44	symmetry	$\sqrt{15}xyz$
	$\mathbb{G}_{3,1}^{(1,-1;a)}(E_g, 2)$	$\begin{bmatrix} 0 & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 & \frac{\sqrt{3}}{6} & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{3}i}{6} & -\frac{\sqrt{3}}{6} & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 & 0 \end{bmatrix}$
45	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$
	$\mathbb{G}_{3,2}^{(1,-1;a)}(E_g, 2)$	$\begin{bmatrix} \frac{\sqrt{3}i}{6} & 0 & 0 & 0 & 0 & \frac{\sqrt{3}i}{6} & 0 & -\frac{\sqrt{3}}{6} & 0 & 0 \\ 0 & -\frac{\sqrt{3}i}{6} & 0 & 0 & \frac{\sqrt{3}i}{6} & 0 & \frac{\sqrt{3}}{6} & 0 & 0 & 0 \end{bmatrix}$
46	symmetry	z
	$\mathbb{G}_1^{(1,1;a)}(A_{2g})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{20} & 0 & \frac{\sqrt{30}}{20} & \frac{\sqrt{10}i}{10} & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{20} & 0 & -\frac{\sqrt{30}}{20} & 0 & 0 & -\frac{\sqrt{10}i}{10} \end{bmatrix}$
47	symmetry	x
	$\mathbb{G}_{1,1}^{(1,1;a)}(E_g)$	$\begin{bmatrix} 0 & \frac{\sqrt{30}i}{20} & 0 & \frac{\sqrt{30}}{20} & \frac{\sqrt{30}i}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}i}{20} \\ \frac{\sqrt{30}i}{20} & 0 & -\frac{\sqrt{30}}{20} & 0 & 0 & -\frac{\sqrt{30}i}{20} & 0 & 0 & -\frac{\sqrt{10}i}{20} & 0 \end{bmatrix}$
48	symmetry	y
	$\mathbb{G}_{1,2}^{(1,1;a)}(E_g)$	$\begin{bmatrix} 0 & -\frac{\sqrt{30}}{20} & 0 & \frac{\sqrt{30}i}{20} & 0 & 0 & \frac{\sqrt{30}i}{20} & 0 & 0 & -\frac{\sqrt{10}}{20} \\ \frac{\sqrt{30}}{20} & 0 & \frac{\sqrt{30}i}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}i}{20} & \frac{\sqrt{10}}{20} & 0 \end{bmatrix}$
49	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$
	$\mathbb{T}_2^{(a)}(A_{1g})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{i}{2} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{i}{2} \end{bmatrix}$
50	symmetry	$\sqrt{3}yz$

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Table 3

No.	multipole	matrix
	$\mathbb{T}_{2,1}^{(a)}(E_g, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & \frac{i}{2} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{i}{2} & 0 & 0 \end{bmatrix}$
51	symmetry	$-\sqrt{3}xz$
	$\mathbb{T}_{2,2}^{(a)}(E_g, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & -\frac{i}{2} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{i}{2} & 0 & 0 & 0 & 0 \end{bmatrix}$
52	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$
	$\mathbb{T}_{2,1}^{(a)}(E_g, 2)$	$\begin{bmatrix} \frac{i}{2} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{i}{2} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
53	symmetry	$-\sqrt{3}xy$
	$\mathbb{T}_{2,2}^{(a)}(E_g, 2)$	$\begin{bmatrix} 0 & 0 & -\frac{i}{2} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{i}{2} & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
54	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$
	$\mathbb{T}_2^{(1,0;a)}(A_{1g})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} & 0 & \frac{\sqrt{2}}{4} & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 \end{bmatrix}$
55	symmetry	$\sqrt{3}yz$
	$\mathbb{T}_{2,1}^{(1,0;a)}(E_g, 1)$	$\begin{bmatrix} 0 & -\frac{\sqrt{6}}{12} & 0 & \frac{\sqrt{6}i}{12} & \frac{\sqrt{6}}{12} & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} \\ -\frac{\sqrt{6}}{12} & 0 & -\frac{\sqrt{6}i}{12} & 0 & 0 & -\frac{\sqrt{6}}{12} & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 \end{bmatrix}$
56	symmetry	$-\sqrt{3}xz$
	$\mathbb{T}_{2,2}^{(1,0;a)}(E_g, 1)$	$\begin{bmatrix} 0 & -\frac{\sqrt{6}i}{12} & 0 & -\frac{\sqrt{6}}{12} & 0 & 0 & \frac{\sqrt{6}}{12} & 0 & 0 & \frac{\sqrt{2}i}{4} \\ \frac{\sqrt{6}i}{12} & 0 & -\frac{\sqrt{6}}{12} & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{12} & -\frac{\sqrt{2}i}{4} & 0 \end{bmatrix}$
57	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$
	$\mathbb{T}_{2,1}^{(1,0;a)}(E_g, 2)$	$\begin{bmatrix} 0 & 0 & -\frac{\sqrt{6}}{6} & 0 & 0 & -\frac{\sqrt{6}i}{12} & 0 & \frac{\sqrt{6}}{12} & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{6}}{6} & \frac{\sqrt{6}i}{12} & 0 & \frac{\sqrt{6}}{12} & 0 & 0 & 0 \end{bmatrix}$
58	symmetry	$-\sqrt{3}xy$
	$\mathbb{T}_{2,2}^{(1,0;a)}(E_g, 2)$	$\begin{bmatrix} -\frac{\sqrt{6}}{6} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{12} & 0 & \frac{\sqrt{6}i}{12} & 0 & 0 \\ 0 & \frac{\sqrt{6}}{6} & 0 & 0 & \frac{\sqrt{6}}{12} & 0 & -\frac{\sqrt{6}i}{12} & 0 & 0 & 0 \end{bmatrix}$
59	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$

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Table 3

No.	multipole	matrix
	$M_3^{(1,-1;a)}(A_{1g})$	$\begin{bmatrix} 0 & \frac{\sqrt{2}}{4} & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{2}}{4} & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
60	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$
	$M_3^{(1,-1;a)}(A_{2g,1})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{10} & 0 & \frac{\sqrt{5}i}{10} & \frac{\sqrt{15}}{10} & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{10} & 0 & -\frac{\sqrt{5}i}{10} & 0 & 0 & -\frac{\sqrt{15}}{10} \end{bmatrix}$
61	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$
	$M_3^{(1,-1;a)}(A_{2g,2})$	$\begin{bmatrix} 0 & -\frac{\sqrt{2}i}{4} & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{2}i}{4} & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
62	symmetry	$-\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$
	$M_{3,1}^{(1,-1;a)}(E_g,1)$	$\begin{bmatrix} 0 & -\frac{\sqrt{30}}{60} & 0 & \frac{\sqrt{30}i}{60} & \frac{\sqrt{30}}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{10} \\ -\frac{\sqrt{30}}{60} & 0 & -\frac{\sqrt{30}i}{60} & 0 & 0 & -\frac{\sqrt{30}}{15} & 0 & 0 & \frac{\sqrt{10}}{10} & 0 \end{bmatrix}$
63	symmetry	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$
	$M_{3,2}^{(1,-1;a)}(E_g,1)$	$\begin{bmatrix} 0 & -\frac{\sqrt{30}i}{60} & 0 & -\frac{\sqrt{30}}{60} & 0 & 0 & \frac{\sqrt{30}}{15} & 0 & 0 & -\frac{\sqrt{10}i}{10} \\ \frac{\sqrt{30}i}{60} & 0 & -\frac{\sqrt{30}}{60} & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{15} & \frac{\sqrt{10}i}{10} & 0 \end{bmatrix}$
64	symmetry	$\sqrt{15}xyz$
	$M_{3,1}^{(1,-1;a)}(E_g,2)$	$\begin{bmatrix} 0 & 0 & \frac{\sqrt{3}}{6} & 0 & 0 & -\frac{\sqrt{3}i}{6} & 0 & \frac{\sqrt{3}}{6} & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{3}}{6} & \frac{\sqrt{3}i}{6} & 0 & \frac{\sqrt{3}}{6} & 0 & 0 & 0 \end{bmatrix}$
65	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$
	$M_{3,2}^{(1,-1;a)}(E_g,2)$	$\begin{bmatrix} \frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{6} & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 \\ 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & \frac{\sqrt{3}}{6} & 0 & -\frac{\sqrt{3}i}{6} & 0 & 0 & 0 \end{bmatrix}$
66	symmetry	z
	$M_1^{(1,1;a)}(A_{2g})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{20} & 0 & -\frac{\sqrt{30}i}{20} & \frac{\sqrt{10}}{10} & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{20} & 0 & \frac{\sqrt{30}i}{20} & 0 & 0 & -\frac{\sqrt{10}}{10} \end{bmatrix}$
67	symmetry	x
	$M_{1,1}^{(1,1;a)}(E_g)$	$\begin{bmatrix} 0 & \frac{\sqrt{30}}{20} & 0 & -\frac{\sqrt{30}i}{20} & \frac{\sqrt{30}}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}}{20} \\ \frac{\sqrt{30}}{20} & 0 & \frac{\sqrt{30}i}{20} & 0 & 0 & -\frac{\sqrt{30}}{20} & 0 & 0 & -\frac{\sqrt{10}}{20} & 0 \end{bmatrix}$
68	symmetry	y

continued ...

Table 3

No.	multipole	matrix									
	$M_{1,2}^{(1,1;a)}(E_g)$	0	$\frac{\sqrt{30}i}{20}$	0	$\frac{\sqrt{30}}{20}$	0	0	$\frac{\sqrt{30}}{20}$	0	0	$\frac{\sqrt{10}i}{20}$
		$-\frac{\sqrt{30}i}{20}$	0	$\frac{\sqrt{30}}{20}$	0	0	0	0	$-\frac{\sqrt{30}}{20}$	$-\frac{\sqrt{10}i}{20}$	0

bra: = $\langle s, \uparrow |, \langle s, \downarrow |$

ket: = $|f_2, \uparrow\rangle, |f_2, \downarrow\rangle, |f_1, \uparrow\rangle, |f_1, \downarrow\rangle, |f_{bz}, \uparrow\rangle, |f_{bz}, \downarrow\rangle, |f_3, \uparrow\rangle, |f_3, \downarrow\rangle, |f_{3x}, \uparrow\rangle, |f_{3x}, \downarrow\rangle, |f_{3y}, \uparrow\rangle, |f_{3y}, \downarrow\rangle, |f_{az}, \uparrow\rangle, |f_{az}, \downarrow\rangle$

Table 4: (s,f) block.

No.	multipole	matrix
69	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$
	$Q_3^{(a)}(A_{1u})$	$\begin{bmatrix} \frac{1}{2} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{1}{2} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
70	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$
	$Q_3^{(a)}(A_{2u}, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{1}{2} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{1}{2} \end{bmatrix}$
71	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$
	$Q_3^{(a)}(A_{2u}, 2)$	$\begin{bmatrix} 0 & 0 & \frac{1}{2} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{1}{2} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
72	symmetry	$-\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$
	$Q_{3,1}^{(a)}(E_u, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{1}{2} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{1}{2} & 0 & 0 & 0 & 0 \end{bmatrix}$
73	symmetry	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$
	$Q_{3,2}^{(a)}(E_u, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{1}{2} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{1}{2} & 0 & 0 \end{bmatrix}$
74	symmetry	$\sqrt{15}xyz$
	$Q_{3,1}^{(a)}(E_u, 2)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & \frac{1}{2} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{1}{2} & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
75	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$

continued ...

Table 4

No.	multipole	matrix
	$\mathbb{Q}_{3,2}^{(a)}(E_u, 2)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & \frac{1}{2} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{1}{2} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
76	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$
	$\mathbb{Q}_3^{(1,0;a)}(A_{1u})$	$\begin{bmatrix} 0 & 0 & -\frac{\sqrt{3}i}{4} & 0 & 0 & \frac{\sqrt{2}}{8} & 0 & \frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{3}i}{4} & -\frac{\sqrt{2}}{8} & 0 & \frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
77	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$
	$\mathbb{Q}_3^{(1,0;a)}(A_{2u}, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 \end{bmatrix}$
78	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$
	$\mathbb{Q}_3^{(1,0;a)}(A_{2u}, 2)$	$\begin{bmatrix} \frac{\sqrt{3}i}{4} & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{8} & 0 & \frac{\sqrt{2}}{8} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{3}i}{4} & 0 & 0 & -\frac{\sqrt{2}i}{8} & 0 & -\frac{\sqrt{2}}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
79	symmetry	$-\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$
	$\mathbb{Q}_{3,1}^{(1,0;a)}(E_u, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{24} & 0 & \frac{\sqrt{30}i}{24} & 0 & 0 & -\frac{\sqrt{3}i}{12} & 0 & 0 & \frac{\sqrt{2}}{4} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{24} & 0 & \frac{\sqrt{30}i}{24} & 0 & 0 & 0 & 0 & \frac{\sqrt{3}i}{12} & -\frac{\sqrt{2}}{4} & 0 \end{bmatrix}$
80	symmetry	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$
	$\mathbb{Q}_{3,2}^{(1,0;a)}(E_u, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}i}{24} & 0 & -\frac{\sqrt{30}}{24} & \frac{\sqrt{3}i}{12} & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{30}i}{24} & 0 & \frac{\sqrt{30}}{24} & 0 & 0 & -\frac{\sqrt{3}i}{12} & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 \end{bmatrix}$
81	symmetry	$\sqrt{15}xyz$
	$\mathbb{Q}_{3,1}^{(1,0;a)}(E_u, 2)$	$\begin{bmatrix} 0 & -\frac{\sqrt{2}i}{8} & 0 & -\frac{\sqrt{2}}{8} & \frac{\sqrt{3}i}{6} & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}i}{24} & 0 & \frac{\sqrt{30}}{24} & 0 & 0 \\ -\frac{\sqrt{2}i}{8} & 0 & \frac{\sqrt{2}}{8} & 0 & 0 & -\frac{\sqrt{3}i}{6} & 0 & 0 & -\frac{\sqrt{30}i}{24} & 0 & -\frac{\sqrt{30}}{24} & 0 & 0 & 0 \end{bmatrix}$
82	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$
	$\mathbb{Q}_{3,2}^{(1,0;a)}(E_u, 2)$	$\begin{bmatrix} 0 & -\frac{\sqrt{2}}{8} & 0 & \frac{\sqrt{2}i}{8} & 0 & 0 & -\frac{\sqrt{3}i}{6} & 0 & 0 & \frac{\sqrt{30}}{24} & 0 & \frac{\sqrt{30}i}{24} & 0 & 0 \\ \frac{\sqrt{2}}{8} & 0 & \frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & \frac{\sqrt{3}i}{6} & -\frac{\sqrt{30}}{24} & 0 & \frac{\sqrt{30}i}{24} & 0 & 0 & 0 \end{bmatrix}$
83	symmetry	$\frac{3x^4}{8} + \frac{3x^2y^2}{4} - 3x^2z^2 + \frac{3y^4}{8} - 3y^2z^2 + z^4$
	$\mathbb{G}_4^{(1,-1;a)}(A_{1u}, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}i}{28} & 0 & -\frac{\sqrt{42}}{28} & \frac{\sqrt{7}i}{7} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}i}{28} & 0 & \frac{\sqrt{42}}{28} & 0 & 0 & -\frac{\sqrt{7}i}{7} \end{bmatrix}$
84	symmetry	$\frac{\sqrt{70}yz(3x^2-y^2)}{4}$

continued ...

Table 4

No.	multipole	matrix
	$\mathbb{G}_4^{(1,-1;a)}(A_{1u}, 2)$	$\begin{bmatrix} 0 & 0 & \frac{i}{4} & 0 & 0 & \frac{\sqrt{6}}{8} & 0 & \frac{\sqrt{6}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{i}{4} & -\frac{\sqrt{6}}{8} & 0 & \frac{\sqrt{6}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
85	symmetry	$\frac{\sqrt{70}xz(x^2-3y^2)}{4}$
	$\mathbb{G}_4^{(1,-1;a)}(A_{2u})$	$\begin{bmatrix} \frac{i}{4} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{8} & 0 & -\frac{\sqrt{6}}{8} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{i}{4} & 0 & 0 & \frac{\sqrt{6}i}{8} & 0 & \frac{\sqrt{6}}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
86	symmetry	$-\frac{\sqrt{10}yz(3x^2+3y^2-4z^2)}{4}$
	$\mathbb{G}_{4,1}^{(1,-1;a)}(E_u, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}}{56} & 0 & -\frac{\sqrt{42}i}{56} & 0 & 0 & \frac{\sqrt{105}i}{28} & 0 & 0 & \frac{\sqrt{70}}{28} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{42}}{56} & 0 & -\frac{\sqrt{42}i}{56} & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}i}{28} & -\frac{\sqrt{70}}{28} & 0 \end{bmatrix}$
87	symmetry	$\frac{\sqrt{10}xz(3x^2+3y^2-4z^2)}{4}$
	$\mathbb{G}_{4,2}^{(1,-1;a)}(E_u, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}i}{56} & 0 & \frac{\sqrt{42}}{56} & -\frac{\sqrt{105}i}{28} & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}i}{28} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{42}i}{56} & 0 & -\frac{\sqrt{42}}{56} & 0 & 0 & \frac{\sqrt{105}i}{28} & 0 & 0 & -\frac{\sqrt{70}i}{28} & 0 \end{bmatrix}$
88	symmetry	$\frac{\sqrt{35}(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$
	$\mathbb{G}_{4,1}^{(1,-1;a)}(E_u, 2)$	$\begin{bmatrix} 0 & \frac{\sqrt{2}i}{4} & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{2}i}{4} & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
89	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$
	$\mathbb{G}_{4,2}^{(1,-1;a)}(E_u, 2)$	$\begin{bmatrix} 0 & \frac{\sqrt{2}}{4} & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{2}}{4} & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
90	symmetry	$-\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$
	$\mathbb{G}_{4,1}^{(1,-1;a)}(E_u, 3)$	$\begin{bmatrix} 0 & -\frac{\sqrt{14}i}{56} & 0 & -\frac{\sqrt{14}}{56} & \frac{\sqrt{21}i}{14} & 0 & 0 & 0 & 0 & \frac{\sqrt{210}i}{56} & 0 & -\frac{\sqrt{210}}{56} & 0 & 0 \\ -\frac{\sqrt{14}i}{56} & 0 & \frac{\sqrt{14}}{56} & 0 & 0 & -\frac{\sqrt{21}i}{14} & 0 & 0 & \frac{\sqrt{210}i}{56} & 0 & \frac{\sqrt{210}}{56} & 0 & 0 & 0 \end{bmatrix}$
91	symmetry	$\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$
	$\mathbb{G}_{4,2}^{(1,-1;a)}(E_u, 3)$	$\begin{bmatrix} 0 & -\frac{\sqrt{14}}{56} & 0 & \frac{\sqrt{14}i}{56} & 0 & 0 & -\frac{\sqrt{21}i}{14} & 0 & 0 & -\frac{\sqrt{210}}{56} & 0 & -\frac{\sqrt{210}i}{56} & 0 & 0 \\ \frac{\sqrt{14}}{56} & 0 & \frac{\sqrt{14}i}{56} & 0 & 0 & 0 & 0 & \frac{\sqrt{21}i}{14} & \frac{\sqrt{210}}{56} & 0 & -\frac{\sqrt{210}i}{56} & 0 & 0 & 0 \end{bmatrix}$
92	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$
	$\mathbb{G}_2^{(1,1;a)}(A_{1u})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}i}{14} & 0 & \frac{\sqrt{14}}{14} & \frac{\sqrt{21}i}{14} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}i}{14} & 0 & -\frac{\sqrt{14}}{14} & 0 & 0 & -\frac{\sqrt{21}i}{14} \end{bmatrix}$
93	symmetry	$\sqrt{3}yz$

continued ...

Table 4

No.	multipole	matrix
	$\mathbb{G}_{2,1}^{(1,1;a)}(E_u, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}}{42} & 0 & \frac{\sqrt{105}i}{42} & 0 & 0 & \frac{\sqrt{42}i}{21} & 0 & 0 & -\frac{\sqrt{7}}{14} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{105}}{42} & 0 & \frac{\sqrt{105}i}{42} & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}i}{21} & \frac{\sqrt{7}}{14} & 0 \end{bmatrix}$
94	symmetry	$-\sqrt{3}xz$
	$\mathbb{G}_{2,2}^{(1,1;a)}(E_u, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}i}{42} & 0 & -\frac{\sqrt{105}}{42} & -\frac{\sqrt{42}i}{21} & 0 & 0 & 0 & 0 & \frac{\sqrt{7}i}{14} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{105}i}{42} & 0 & \frac{\sqrt{105}}{42} & 0 & 0 & \frac{\sqrt{42}i}{21} & 0 & 0 & \frac{\sqrt{7}i}{14} & 0 \end{bmatrix}$
95	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$
	$\mathbb{G}_{2,1}^{(1,1;a)}(E_u, 2)$	$\begin{bmatrix} 0 & \frac{\sqrt{70}i}{28} & 0 & \frac{\sqrt{70}}{28} & \frac{\sqrt{105}i}{42} & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}i}{84} & 0 & \frac{\sqrt{42}}{84} & 0 & 0 \\ \frac{\sqrt{70}i}{28} & 0 & -\frac{\sqrt{70}}{28} & 0 & 0 & -\frac{\sqrt{105}i}{42} & 0 & 0 & -\frac{\sqrt{42}i}{84} & 0 & -\frac{\sqrt{42}}{84} & 0 & 0 & 0 \end{bmatrix}$
96	symmetry	$-\sqrt{3}xy$
	$\mathbb{G}_{2,2}^{(1,1;a)}(E_u, 2)$	$\begin{bmatrix} 0 & \frac{\sqrt{70}}{28} & 0 & -\frac{\sqrt{70}i}{28} & 0 & 0 & -\frac{\sqrt{105}i}{42} & 0 & 0 & \frac{\sqrt{42}}{84} & 0 & \frac{\sqrt{42}i}{84} & 0 & 0 \\ -\frac{\sqrt{70}}{28} & 0 & -\frac{\sqrt{70}i}{28} & 0 & 0 & 0 & 0 & \frac{\sqrt{105}i}{42} & -\frac{\sqrt{42}}{84} & 0 & \frac{\sqrt{42}i}{84} & 0 & 0 & 0 \end{bmatrix}$
97	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$
	$\mathbb{T}_3^{(a)}(A_{1u})$	$\begin{bmatrix} \frac{i}{2} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{i}{2} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
98	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$
	$\mathbb{T}_3^{(a)}(A_{2u}, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{i}{2} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{i}{2} \end{bmatrix}$
99	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$
	$\mathbb{T}_3^{(a)}(A_{2u}, 2)$	$\begin{bmatrix} 0 & 0 & \frac{i}{2} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{i}{2} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
100	symmetry	$-\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$
	$\mathbb{T}_{3,1}^{(a)}(E_u, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{i}{2} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{i}{2} & 0 & 0 & 0 & 0 \end{bmatrix}$
101	symmetry	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$
	$\mathbb{T}_{3,2}^{(a)}(E_u, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{i}{2} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{i}{2} & 0 & 0 \end{bmatrix}$
102	symmetry	$\sqrt{15}xyz$

continued ...

Table 4

No.	multipole	matrix
	$\mathbb{T}_{3,1}^{(a)}(E_u, 2)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & \frac{i}{2} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{i}{2} & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
103	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$
	$\mathbb{T}_{3,2}^{(a)}(E_u, 2)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & \frac{i}{2} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{i}{2} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
104	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$
	$\mathbb{T}_3^{(1,0;a)}(A_{1u})$	$\begin{bmatrix} 0 & 0 & -\frac{\sqrt{3}}{4} & 0 & 0 & -\frac{\sqrt{2}i}{8} & 0 & \frac{\sqrt{2}}{8} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{3}}{4} & \frac{\sqrt{2}i}{8} & 0 & \frac{\sqrt{2}}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
105	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$
	$\mathbb{T}_3^{(1,0;a)}(A_{2u}, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} & 0 & \frac{\sqrt{2}}{4} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 \end{bmatrix}$
106	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$
	$\mathbb{T}_3^{(1,0;a)}(A_{2u}, 2)$	$\begin{bmatrix} \frac{\sqrt{3}}{4} & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{8} & 0 & -\frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{3}}{4} & 0 & 0 & -\frac{\sqrt{2}}{8} & 0 & \frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
107	symmetry	$-\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$
	$\mathbb{T}_{3,1}^{(1,0;a)}(E_u, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{24} & 0 & \frac{\sqrt{30}}{24} & 0 & 0 & -\frac{\sqrt{3}}{12} & 0 & 0 & -\frac{\sqrt{2}i}{4} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{30}i}{24} & 0 & \frac{\sqrt{30}}{24} & 0 & 0 & 0 & \frac{\sqrt{3}}{12} & \frac{\sqrt{2}i}{4} & 0 & 0 \end{bmatrix}$
108	symmetry	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$
	$\mathbb{T}_{3,2}^{(1,0;a)}(E_u, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{24} & 0 & \frac{\sqrt{30}i}{24} & \frac{\sqrt{3}}{12} & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{24} & 0 & -\frac{\sqrt{30}i}{24} & 0 & 0 & -\frac{\sqrt{3}}{12} & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 \end{bmatrix}$
109	symmetry	$\sqrt{15}xyz$
	$\mathbb{T}_{3,1}^{(1,0;a)}(E_u, 2)$	$\begin{bmatrix} 0 & -\frac{\sqrt{2}}{8} & 0 & \frac{\sqrt{2}i}{8} & \frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{24} & 0 & -\frac{\sqrt{30}i}{24} & 0 & 0 \\ -\frac{\sqrt{2}}{8} & 0 & -\frac{\sqrt{2}i}{8} & 0 & 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & -\frac{\sqrt{30}}{24} & 0 & \frac{\sqrt{30}i}{24} & 0 & 0 & 0 \end{bmatrix}$
110	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$
	$\mathbb{T}_{3,2}^{(1,0;a)}(E_u, 2)$	$\begin{bmatrix} 0 & \frac{\sqrt{2}i}{8} & 0 & \frac{\sqrt{2}}{8} & 0 & 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & -\frac{\sqrt{30}i}{24} & 0 & \frac{\sqrt{30}}{24} & 0 & 0 \\ -\frac{\sqrt{2}i}{8} & 0 & \frac{\sqrt{2}}{8} & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{6} & \frac{\sqrt{30}i}{24} & 0 & \frac{\sqrt{30}}{24} & 0 & 0 & 0 \end{bmatrix}$
111	symmetry	$\frac{3x^4}{8} + \frac{3x^2y^2}{4} - 3x^2z^2 + \frac{3y^4}{8} - 3y^2z^2 + z^4$

continued ...

Table 4

No.	multipole	matrix
	$\mathbb{M}_4^{(1,-1;a)}(A_{1u}, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}}{28} & 0 & \frac{\sqrt{42i}}{28} & \frac{\sqrt{7}}{7} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}}{28} & 0 & -\frac{\sqrt{42i}}{28} & 0 & 0 & -\frac{\sqrt{7}}{7} \end{bmatrix}$
112	symmetry	$\frac{\sqrt{70}yz(3x^2-y^2)}{4}$
	$\mathbb{M}_4^{(1,-1;a)}(A_{1u}, 2)$	$\begin{bmatrix} 0 & 0 & \frac{1}{4} & 0 & 0 & -\frac{\sqrt{6}i}{8} & 0 & \frac{\sqrt{6}}{8} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{1}{4} & \frac{\sqrt{6}i}{8} & 0 & \frac{\sqrt{6}}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
113	symmetry	$\frac{\sqrt{70}xz(x^2-3y^2)}{4}$
	$\mathbb{M}_4^{(1,-1;a)}(A_{2u})$	$\begin{bmatrix} \frac{1}{4} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{8} & 0 & \frac{\sqrt{6}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{1}{4} & 0 & 0 & \frac{\sqrt{6}}{8} & 0 & -\frac{\sqrt{6}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
114	symmetry	$-\frac{\sqrt{10}yz(3x^2+3y^2-4z^2)}{4}$
	$\mathbb{M}_{4,1}^{(1,-1;a)}(E_u, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}i}{56} & 0 & -\frac{\sqrt{42}}{56} & 0 & 0 & \frac{\sqrt{105}}{28} & 0 & 0 & -\frac{\sqrt{70}i}{28} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{42}i}{56} & 0 & -\frac{\sqrt{42}}{56} & 0 & 0 & 0 & -\frac{\sqrt{105}}{28} & \frac{\sqrt{70}i}{28} & 0 & 0 \end{bmatrix}$
115	symmetry	$\frac{\sqrt{10}xz(3x^2+3y^2-4z^2)}{4}$
	$\mathbb{M}_{4,2}^{(1,-1;a)}(E_u, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}}{56} & 0 & -\frac{\sqrt{42}i}{56} & -\frac{\sqrt{105}}{28} & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}}{28} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{42}}{56} & 0 & \frac{\sqrt{42}i}{56} & 0 & 0 & \frac{\sqrt{105}}{28} & 0 & 0 & -\frac{\sqrt{70}}{28} & 0 \end{bmatrix}$
116	symmetry	$\frac{\sqrt{35}(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$
	$\mathbb{M}_{4,1}^{(1,-1;a)}(E_u, 2)$	$\begin{bmatrix} 0 & \frac{\sqrt{2}}{4} & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{2}}{4} & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
117	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$
	$\mathbb{M}_{4,2}^{(1,-1;a)}(E_u, 2)$	$\begin{bmatrix} 0 & -\frac{\sqrt{2}i}{4} & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{2}i}{4} & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
118	symmetry	$-\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$
	$\mathbb{M}_{4,1}^{(1,-1;a)}(E_u, 3)$	$\begin{bmatrix} 0 & -\frac{\sqrt{14}}{56} & 0 & \frac{\sqrt{14}i}{56} & \frac{\sqrt{21}}{14} & 0 & 0 & 0 & 0 & \frac{\sqrt{210}}{56} & 0 & \frac{\sqrt{210}i}{56} & 0 & 0 \\ -\frac{\sqrt{14}}{56} & 0 & -\frac{\sqrt{14}i}{56} & 0 & 0 & -\frac{\sqrt{21}}{14} & 0 & 0 & \frac{\sqrt{210}}{56} & 0 & -\frac{\sqrt{210}i}{56} & 0 & 0 & 0 \end{bmatrix}$
119	symmetry	$\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$
	$\mathbb{M}_{4,2}^{(1,-1;a)}(E_u, 3)$	$\begin{bmatrix} 0 & \frac{\sqrt{14}i}{56} & 0 & \frac{\sqrt{14}}{56} & 0 & 0 & -\frac{\sqrt{21}}{14} & 0 & 0 & \frac{\sqrt{210}i}{56} & 0 & -\frac{\sqrt{210}}{56} & 0 & 0 \\ -\frac{\sqrt{14}i}{56} & 0 & \frac{\sqrt{14}}{56} & 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{14} & -\frac{\sqrt{210}i}{56} & 0 & -\frac{\sqrt{210}}{56} & 0 & 0 & 0 \end{bmatrix}$
120	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$

continued ...

Table 4

No.	multipole	matrix
	$\mathbb{M}_2^{(1,1;a)}(A_{1u})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}}{14} & 0 & -\frac{\sqrt{14}i}{14} & \frac{\sqrt{21}}{14} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}}{14} & 0 & \frac{\sqrt{14}i}{14} & 0 & 0 & -\frac{\sqrt{21}}{14} \end{bmatrix}$
121	symmetry	$\sqrt{3}yz$
	$\mathbb{M}_{2,1}^{(1,1;a)}(E_u, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{105}i}{42} & 0 & \frac{\sqrt{105}}{42} & 0 & 0 & \frac{\sqrt{42}}{21} & 0 & 0 & \frac{\sqrt{7}i}{14} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{105}i}{42} & 0 & \frac{\sqrt{105}}{42} & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}}{21} & -\frac{\sqrt{7}i}{14} & 0 \end{bmatrix}$
122	symmetry	$-\sqrt{3}xz$
	$\mathbb{M}_{2,2}^{(1,1;a)}(E_u, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}}{42} & 0 & \frac{\sqrt{105}i}{42} & -\frac{\sqrt{42}}{21} & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{14} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{105}}{42} & 0 & -\frac{\sqrt{105}i}{42} & 0 & 0 & \frac{\sqrt{42}}{21} & 0 & 0 & \frac{\sqrt{7}}{14} & 0 \end{bmatrix}$
123	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$
	$\mathbb{M}_{2,1}^{(1,1;a)}(E_u, 2)$	$\begin{bmatrix} 0 & \frac{\sqrt{70}}{28} & 0 & -\frac{\sqrt{70}i}{28} & \frac{\sqrt{105}}{42} & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}}{84} & 0 & -\frac{\sqrt{42}i}{84} & 0 & 0 \\ \frac{\sqrt{70}}{28} & 0 & \frac{\sqrt{70}i}{28} & 0 & 0 & -\frac{\sqrt{105}}{42} & 0 & 0 & -\frac{\sqrt{42}}{84} & 0 & \frac{\sqrt{42}i}{84} & 0 & 0 & 0 \end{bmatrix}$
124	symmetry	$-\sqrt{3}xy$
	$\mathbb{M}_{2,2}^{(1,1;a)}(E_u, 2)$	$\begin{bmatrix} 0 & -\frac{\sqrt{70}i}{28} & 0 & -\frac{\sqrt{70}}{28} & 0 & 0 & -\frac{\sqrt{105}}{42} & 0 & 0 & -\frac{\sqrt{42}i}{84} & 0 & \frac{\sqrt{42}}{84} & 0 & 0 \\ \frac{\sqrt{70}i}{28} & 0 & -\frac{\sqrt{70}}{28} & 0 & 0 & 0 & 0 & \frac{\sqrt{105}}{42} & \frac{\sqrt{42}i}{84} & 0 & \frac{\sqrt{42}}{84} & 0 & 0 & 0 \end{bmatrix}$

bra: = $\langle p_x, \uparrow |, \langle p_x, \downarrow |, \langle p_y, \uparrow |, \langle p_y, \downarrow |, \langle p_z, \uparrow |, \langle p_z, \downarrow |$
ket: = $|p_x, \uparrow \rangle, |p_x, \downarrow \rangle, |p_y, \uparrow \rangle, |p_y, \downarrow \rangle, |p_z, \uparrow \rangle, |p_z, \downarrow \rangle$

Table 5: (p,p) block.

No.	multipole	matrix
125	symmetry	1
	$\mathbb{Q}_0^{(a)}(A_{1g})$	$\begin{bmatrix} \frac{\sqrt{6}}{6} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{6}}{6} & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{6}}{6} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{6}}{6} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{6} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{6} \end{bmatrix}$

continued ...

Table 5

No.	multipole	matrix
126	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$
	$\mathbb{Q}_2^{(a)}(A_{1g})$	$\begin{bmatrix} -\frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{3}}{6} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{3} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{3} \end{bmatrix}$
127	symmetry	$\sqrt{3}yz$
	$\mathbb{Q}_{2,1}^{(a)}(E_g, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{1}{2} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{1}{2} \\ 0 & 0 & \frac{1}{2} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{1}{2} & 0 & 0 \end{bmatrix}$
128	symmetry	$-\sqrt{3}xz$
	$\mathbb{Q}_{2,2}^{(a)}(E_g, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & -\frac{1}{2} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{1}{2} \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{1}{2} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{1}{2} & 0 & 0 & 0 & 0 \end{bmatrix}$
129	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$
	$\mathbb{Q}_{2,1}^{(a)}(E_g, 2)$	$\begin{bmatrix} \frac{1}{2} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{1}{2} & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{1}{2} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{1}{2} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
130	symmetry	$-\sqrt{3}xy$

continued ...

Table 5

No.	multipole	matrix
	$\mathbb{Q}_{2,2}^{(a)}(E_g, 2)$	$\begin{bmatrix} 0 & 0 & -\frac{1}{2} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{1}{2} & 0 & 0 \\ -\frac{1}{2} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{1}{2} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
131	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$
	$\mathbb{Q}_2^{(1,-1;a)}(A_{1g})$	$\begin{bmatrix} 0 & 0 & -\frac{\sqrt{6}i}{6} & 0 & 0 & -\frac{\sqrt{6}}{12} \\ 0 & 0 & 0 & \frac{\sqrt{6}i}{6} & \frac{\sqrt{6}}{12} & 0 \\ \frac{\sqrt{6}i}{6} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{12} \\ 0 & -\frac{\sqrt{6}i}{6} & 0 & 0 & \frac{\sqrt{6}i}{12} & 0 \\ 0 & \frac{\sqrt{6}}{12} & 0 & -\frac{\sqrt{6}i}{12} & 0 & 0 \\ -\frac{\sqrt{6}}{12} & 0 & -\frac{\sqrt{6}i}{12} & 0 & 0 & 0 \end{bmatrix}$
132	symmetry	$\sqrt{3}yz$
	$\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g, 1)$	$\begin{bmatrix} 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & \frac{\sqrt{2}i}{4} & 0 \\ 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & -\frac{\sqrt{2}i}{4} \\ 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 \end{bmatrix}$
133	symmetry	$-\sqrt{3}xz$
	$\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g, 1)$	$\begin{bmatrix} 0 & 0 & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 \\ 0 & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & \frac{\sqrt{2}i}{4} & 0 \\ -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} \\ 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 \end{bmatrix}$
134	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$

continued ...

Table 5

No.	multipole	matrix
	$\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g, 2)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 \\ 0 & \frac{\sqrt{2}}{4} & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 \\ -\frac{\sqrt{2}}{4} & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 \end{bmatrix}$
135	symmetry	$-\sqrt{3}xy$
	$\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g, 2)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 \\ 0 & \frac{\sqrt{2}i}{4} & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 \\ \frac{\sqrt{2}i}{4} & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 \end{bmatrix}$
136	symmetry	1
	$\mathbb{Q}_0^{(1,1;a)}(A_{1g})$	$\begin{bmatrix} 0 & 0 & -\frac{\sqrt{3}i}{6} & 0 & 0 & \frac{\sqrt{3}}{6} \\ 0 & 0 & 0 & \frac{\sqrt{3}i}{6} & -\frac{\sqrt{3}}{6} & 0 \\ \frac{\sqrt{3}i}{6} & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{6} \\ 0 & -\frac{\sqrt{3}i}{6} & 0 & 0 & -\frac{\sqrt{3}i}{6} & 0 \\ 0 & -\frac{\sqrt{3}}{6} & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 \\ \frac{\sqrt{3}}{6} & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 & 0 \end{bmatrix}$
137	symmetry	z
	$\mathbb{G}_1^{(1,0;a)}(A_{2g})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 \\ 0 & -\frac{\sqrt{2}i}{4} & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 \\ -\frac{\sqrt{2}i}{4} & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 \end{bmatrix}$
138	symmetry	x

continued ...

Table 5

No.	multipole	matrix
	$\mathbb{G}_{1,1}^{(1,0;a)}(E_g)$	$\begin{bmatrix} 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & -\frac{\sqrt{2}i}{4} & 0 \\ 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & \frac{\sqrt{2}i}{4} \\ 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 \end{bmatrix}$
139	symmetry	y $\mathbb{G}_{1,2}^{(1,0;a)}(E_g)$ $\begin{bmatrix} 0 & 0 & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 \\ 0 & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 \\ -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} \\ 0 & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 \end{bmatrix}$
140	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$ $\mathbb{T}_2^{(1,0;a)}(A_{1g})$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 \\ 0 & \frac{\sqrt{2}i}{4} & 0 & \frac{\sqrt{2}}{4} & 0 & 0 \\ -\frac{\sqrt{2}i}{4} & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 \end{bmatrix}$
141	symmetry	$\sqrt{3}yz$ $\mathbb{T}_{2,1}^{(1,0;a)}(E_g, 1)$ $\begin{bmatrix} 0 & 0 & 0 & \frac{\sqrt{6}i}{12} & \frac{\sqrt{6}}{12} & 0 \\ 0 & 0 & -\frac{\sqrt{6}i}{12} & 0 & 0 & -\frac{\sqrt{6}}{12} \\ 0 & \frac{\sqrt{6}i}{12} & 0 & \frac{\sqrt{6}}{6} & 0 & 0 \\ -\frac{\sqrt{6}i}{12} & 0 & \frac{\sqrt{6}}{6} & 0 & 0 & 0 \\ \frac{\sqrt{6}}{12} & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{6} \\ 0 & -\frac{\sqrt{6}}{12} & 0 & 0 & -\frac{\sqrt{6}}{6} & 0 \end{bmatrix}$
142	symmetry	$-\sqrt{3}xz$

continued ...

Table 5

No.	multipole	matrix
	$\mathbb{T}_{2,2}^{(1,0;a)}(E_g, 1)$	$\begin{bmatrix} 0 & -\frac{\sqrt{6}i}{6} & 0 & -\frac{\sqrt{6}}{12} & 0 & 0 \\ \frac{\sqrt{6}i}{6} & 0 & -\frac{\sqrt{6}}{12} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{6}}{12} & 0 & 0 & \frac{\sqrt{6}}{12} & 0 \\ -\frac{\sqrt{6}}{12} & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{12} \\ 0 & 0 & \frac{\sqrt{6}}{12} & 0 & 0 & \frac{\sqrt{6}i}{6} \\ 0 & 0 & 0 & -\frac{\sqrt{6}}{12} & -\frac{\sqrt{6}i}{6} & 0 \end{bmatrix}$
143	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$ $\begin{bmatrix} 0 & 0 & -\frac{\sqrt{6}}{6} & 0 & 0 & -\frac{\sqrt{6}i}{12} \\ 0 & 0 & 0 & \frac{\sqrt{6}}{6} & \frac{\sqrt{6}i}{12} & 0 \\ -\frac{\sqrt{6}}{6} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{12} \\ 0 & \frac{\sqrt{6}}{6} & 0 & 0 & \frac{\sqrt{6}}{12} & 0 \\ 0 & -\frac{\sqrt{6}i}{12} & 0 & \frac{\sqrt{6}}{12} & 0 & 0 \\ \frac{\sqrt{6}i}{12} & 0 & \frac{\sqrt{6}}{12} & 0 & 0 & 0 \end{bmatrix}$
144	symmetry	$-\sqrt{3}xy$ $\begin{bmatrix} -\frac{\sqrt{6}}{6} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{12} \\ 0 & \frac{\sqrt{6}}{6} & 0 & 0 & \frac{\sqrt{6}}{12} & 0 \\ 0 & 0 & \frac{\sqrt{6}}{6} & 0 & 0 & \frac{\sqrt{6}i}{12} \\ 0 & 0 & 0 & -\frac{\sqrt{6}}{6} & -\frac{\sqrt{6}i}{12} & 0 \\ 0 & \frac{\sqrt{6}}{12} & 0 & \frac{\sqrt{6}i}{12} & 0 & 0 \\ \frac{\sqrt{6}}{12} & 0 & -\frac{\sqrt{6}i}{12} & 0 & 0 & 0 \end{bmatrix}$
145	symmetry	z $\begin{bmatrix} 0 & 0 & -\frac{i}{2} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{i}{2} & 0 & 0 \\ \frac{i}{2} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{i}{2} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
146	symmetry	x

continued ...

Table 5

No.	multipole	matrix
	$M_{1,1}^{(a)}(E_g)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{i}{2} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{i}{2} \\ 0 & 0 & \frac{i}{2} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{i}{2} & 0 & 0 \end{bmatrix}$
147	symmetry	$\begin{matrix} y \\ \left[\begin{array}{cccccc} 0 & 0 & 0 & 0 & \frac{i}{2} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{i}{2} \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{i}{2} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{i}{2} & 0 & 0 & 0 & 0 \end{array} \right] \end{matrix}$
	$M_{1,2}^{(a)}(E_g)$	
148	symmetry	$\begin{matrix} z \\ \left[\begin{array}{cccccc} \frac{\sqrt{6}}{6} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{6}}{6} & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{6}}{6} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{6}}{6} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{6} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{6} \end{array} \right] \end{matrix}$
	$M_1^{(1,-1;a)}(A_{2g})$	
149	symmetry	$\begin{matrix} x \\ \left[\begin{array}{cccccc} 0 & \frac{\sqrt{6}}{6} & 0 & 0 & 0 & 0 \\ \frac{\sqrt{6}}{6} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{6}}{6} & 0 & 0 \\ 0 & 0 & \frac{\sqrt{6}}{6} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{6} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{6} & 0 \end{array} \right] \end{matrix}$
	$M_{1,1}^{(1,-1;a)}(E_g)$	
150	symmetry	y

continued ...

Table 5

No.	multipole	matrix
	$\mathbb{M}_{1,2}^{(1,-1;a)}(E_g)$	$\begin{bmatrix} 0 & -\frac{\sqrt{6}i}{6} & 0 & 0 & 0 & 0 \\ \frac{\sqrt{6}i}{6} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{6}i}{6} & 0 & 0 \\ 0 & 0 & \frac{\sqrt{6}i}{6} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{6} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{6} & 0 \end{bmatrix}$
151	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$
	$\mathbb{M}_3^{(1,-1;a)}(A_{1g})$	$\begin{bmatrix} 0 & \frac{\sqrt{2}}{4} & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 \\ \frac{\sqrt{2}}{4} & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{2}i}{4} & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 \\ -\frac{\sqrt{2}i}{4} & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
152	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$
	$\mathbb{M}_3^{(1,-1;a)}(A_{2g}, 1)$	$\begin{bmatrix} -\frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{10} \\ 0 & \frac{\sqrt{5}}{10} & 0 & 0 & -\frac{\sqrt{5}}{10} & 0 \\ 0 & 0 & -\frac{\sqrt{5}}{10} & 0 & 0 & \frac{\sqrt{5}i}{10} \\ 0 & 0 & 0 & \frac{\sqrt{5}}{10} & -\frac{\sqrt{5}i}{10} & 0 \\ 0 & -\frac{\sqrt{5}}{10} & 0 & \frac{\sqrt{5}i}{10} & \frac{\sqrt{5}}{5} & 0 \\ -\frac{\sqrt{5}}{10} & 0 & -\frac{\sqrt{5}i}{10} & 0 & 0 & -\frac{\sqrt{5}}{5} \end{bmatrix}$
153	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$
	$\mathbb{M}_3^{(1,-1;a)}(A_{2g}, 2)$	$\begin{bmatrix} 0 & -\frac{\sqrt{2}i}{4} & 0 & \frac{\sqrt{2}}{4} & 0 & 0 \\ \frac{\sqrt{2}i}{4} & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{2}}{4} & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 \\ \frac{\sqrt{2}}{4} & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
154	symmetry	$-\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$

continued ...

Table 5

No.	multipole	matrix
	$\mathbb{M}_{3,1}^{(1,-1;a)}(E_g, 1)$	$\begin{bmatrix} 0 & -\frac{\sqrt{30}}{20} & 0 & \frac{\sqrt{30}i}{60} & \frac{\sqrt{30}}{15} & 0 \\ -\frac{\sqrt{30}}{20} & 0 & -\frac{\sqrt{30}i}{60} & 0 & 0 & -\frac{\sqrt{30}}{15} \\ 0 & \frac{\sqrt{30}i}{60} & 0 & -\frac{\sqrt{30}}{60} & 0 & 0 \\ -\frac{\sqrt{30}i}{60} & 0 & -\frac{\sqrt{30}}{60} & 0 & 0 & 0 \\ \frac{\sqrt{30}}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{15} \\ 0 & -\frac{\sqrt{30}}{15} & 0 & 0 & \frac{\sqrt{30}}{15} & 0 \end{bmatrix}$
155	symmetry	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$
	$\mathbb{M}_{3,2}^{(1,-1;a)}(E_g, 1)$	$\begin{bmatrix} 0 & \frac{\sqrt{30}i}{60} & 0 & -\frac{\sqrt{30}}{60} & 0 & 0 \\ -\frac{\sqrt{30}i}{60} & 0 & -\frac{\sqrt{30}}{60} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{30}}{60} & 0 & \frac{\sqrt{30}i}{20} & \frac{\sqrt{30}}{15} & 0 \\ -\frac{\sqrt{30}}{60} & 0 & -\frac{\sqrt{30}i}{20} & 0 & 0 & -\frac{\sqrt{30}}{15} \\ 0 & 0 & \frac{\sqrt{30}}{15} & 0 & 0 & -\frac{\sqrt{30}i}{15} \\ 0 & 0 & 0 & -\frac{\sqrt{30}}{15} & \frac{\sqrt{30}i}{15} & 0 \end{bmatrix}$
156	symmetry	$\sqrt{15}xyz$
	$\mathbb{M}_{3,1}^{(1,-1;a)}(E_g, 2)$	$\begin{bmatrix} 0 & 0 & \frac{\sqrt{3}}{6} & 0 & 0 & -\frac{\sqrt{3}i}{6} \\ 0 & 0 & 0 & -\frac{\sqrt{3}}{6} & \frac{\sqrt{3}i}{6} & 0 \\ \frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{6} \\ 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & \frac{\sqrt{3}}{6} & 0 \\ 0 & -\frac{\sqrt{3}i}{6} & 0 & \frac{\sqrt{3}}{6} & 0 & 0 \\ \frac{\sqrt{3}i}{6} & 0 & \frac{\sqrt{3}}{6} & 0 & 0 & 0 \end{bmatrix}$
157	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$
	$\mathbb{M}_{3,2}^{(1,-1;a)}(E_g, 2)$	$\begin{bmatrix} \frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{6} \\ 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & \frac{\sqrt{3}}{6} & 0 \\ 0 & 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & \frac{\sqrt{3}i}{6} \\ 0 & 0 & 0 & \frac{\sqrt{3}}{6} & -\frac{\sqrt{3}i}{6} & 0 \\ 0 & \frac{\sqrt{3}}{6} & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 \\ \frac{\sqrt{3}}{6} & 0 & -\frac{\sqrt{3}i}{6} & 0 & 0 & 0 \end{bmatrix}$
158	symmetry	z

continued ...

Table 5

No.	multipole	matrix
	$\mathbb{M}_1^{(1,1;a)}(A_{2g})$	$\begin{bmatrix} -\frac{\sqrt{30}}{30} & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{20} \\ 0 & \frac{\sqrt{30}}{30} & 0 & 0 & \frac{\sqrt{30}}{20} & 0 \\ 0 & 0 & -\frac{\sqrt{30}}{30} & 0 & 0 & -\frac{\sqrt{30}i}{20} \\ 0 & 0 & 0 & \frac{\sqrt{30}}{30} & \frac{\sqrt{30}i}{20} & 0 \\ 0 & \frac{\sqrt{30}}{20} & 0 & -\frac{\sqrt{30}i}{20} & \frac{\sqrt{30}}{15} & 0 \\ \frac{\sqrt{30}}{20} & 0 & \frac{\sqrt{30}i}{20} & 0 & 0 & -\frac{\sqrt{30}}{15} \end{bmatrix}$
159	symmetry	x $\mathbb{M}_{1,1}^{(1,1;a)}(E_g)$ $\begin{bmatrix} 0 & \frac{\sqrt{30}}{15} & 0 & -\frac{\sqrt{30}i}{20} & \frac{\sqrt{30}}{20} & 0 \\ \frac{\sqrt{30}}{15} & 0 & \frac{\sqrt{30}i}{20} & 0 & 0 & -\frac{\sqrt{30}}{20} \\ 0 & -\frac{\sqrt{30}i}{20} & 0 & -\frac{\sqrt{30}}{30} & 0 & 0 \\ \frac{\sqrt{30}i}{20} & 0 & -\frac{\sqrt{30}}{30} & 0 & 0 & 0 \\ \frac{\sqrt{30}}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{30} \\ 0 & -\frac{\sqrt{30}}{20} & 0 & 0 & -\frac{\sqrt{30}}{30} & 0 \end{bmatrix}$
160	symmetry	y $\mathbb{M}_{1,2}^{(1,1;a)}(E_g)$ $\begin{bmatrix} 0 & \frac{\sqrt{30}i}{30} & 0 & \frac{\sqrt{30}}{20} & 0 & 0 \\ -\frac{\sqrt{30}i}{30} & 0 & \frac{\sqrt{30}}{20} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{30}}{20} & 0 & -\frac{\sqrt{30}i}{15} & \frac{\sqrt{30}}{20} & 0 \\ \frac{\sqrt{30}}{20} & 0 & \frac{\sqrt{30}i}{15} & 0 & 0 & -\frac{\sqrt{30}}{20} \\ 0 & 0 & \frac{\sqrt{30}}{20} & 0 & 0 & \frac{\sqrt{30}i}{30} \\ 0 & 0 & 0 & -\frac{\sqrt{30}}{20} & -\frac{\sqrt{30}i}{30} & 0 \end{bmatrix}$

bra: = $\langle p_x, \uparrow |, \langle p_x, \downarrow |, \langle p_y, \uparrow |, \langle p_y, \downarrow |, \langle p_z, \uparrow |, \langle p_z, \downarrow |$

ket: = $|d_v, \uparrow \rangle, |d_v, \downarrow \rangle, |d_{xy}, \uparrow \rangle, |d_{xy}, \downarrow \rangle, |d_{xz}, \uparrow \rangle, |d_{xz}, \downarrow \rangle, |d_{yz}, \uparrow \rangle, |d_{yz}, \downarrow \rangle, |d_u, \uparrow \rangle, |d_u, \downarrow \rangle$

Table 6: (p,d) block.

No.	multipole	matrix
161	symmetry	z

continued ...

Table 6

No.	multipole	matrix
	$Q_1^{(a)}(A_{2u})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{20} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{20} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{20} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{20} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{10} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{10} \end{bmatrix}$
162	symmetry	x $\begin{bmatrix} \frac{\sqrt{30}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}}{20} & 0 \\ 0 & \frac{\sqrt{30}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}}{20} \\ 0 & 0 & \frac{\sqrt{30}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{30}}{20} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{20} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{20} & 0 & 0 & 0 & 0 \end{bmatrix}$
	$Q_{1,1}^{(a)}(E_u)$	
163	symmetry	y $\begin{bmatrix} 0 & 0 & \frac{\sqrt{30}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{30}}{20} & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{30}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}}{20} & 0 \\ 0 & -\frac{\sqrt{30}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}}{20} \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{20} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{20} & 0 & 0 \end{bmatrix}$
	$Q_{1,2}^{(a)}(E_u)$	
164	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$ $\begin{bmatrix} \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
	$Q_3^{(a)}(A_{1u})$	
165	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$

continued ...

Table 6

No.	multipole	matrix
	$\mathbb{Q}_3^{(a)}(A_{2u}, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{10} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{10} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{10} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{10} \end{bmatrix}$
166	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$
	$\mathbb{Q}_3^{(a)}(A_{2u}, 2)$	$\begin{bmatrix} 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
167	symmetry	$-\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$
	$\mathbb{Q}_{3,1}^{(a)}(E_u, 1)$	$\begin{bmatrix} -\frac{\sqrt{30}}{60} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{10} & 0 \\ 0 & -\frac{\sqrt{30}}{60} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{10} \\ 0 & 0 & -\frac{\sqrt{30}}{60} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{30}}{60} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{15} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{15} & 0 & 0 & 0 & 0 \end{bmatrix}$
168	symmetry	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$
	$\mathbb{Q}_{3,2}^{(a)}(E_u, 1)$	$\begin{bmatrix} 0 & 0 & -\frac{\sqrt{30}}{60} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{30}}{60} & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{30}}{60} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{10} & 0 \\ 0 & \frac{\sqrt{30}}{60} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{10} \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{15} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{15} & 0 & 0 & 0 \end{bmatrix}$
169	symmetry	$\sqrt{15}xyz$

continued ...

Table 6

No.	multipole	matrix
	$\mathbb{Q}_{3,1}^{(a)}(E_u, 2)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{6} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{6} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
170	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$
	$\mathbb{Q}_{3,2}^{(a)}(E_u, 2)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{6} & 0 & 0 \\ \frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
171	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$
	$\mathbb{Q}_3^{(1,-1;a)}(A_{1u})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{12} & 0 & -\frac{\sqrt{3}i}{12} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{12} & 0 & -\frac{\sqrt{3}i}{12} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{12} & 0 & \frac{\sqrt{3}}{12} & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{12} & 0 & -\frac{\sqrt{3}}{12} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{3}}{6} & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{3}}{6} & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
172	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$
	$\mathbb{Q}_3^{(1,-1;a)}(A_{2u}, 1)$	$\begin{bmatrix} 0 & -\frac{\sqrt{30}}{60} & 0 & \frac{\sqrt{30}i}{60} & 0 & 0 & -\frac{\sqrt{30}i}{20} & 0 & 0 & -\frac{\sqrt{10}}{20} \\ \frac{\sqrt{30}}{60} & 0 & \frac{\sqrt{30}i}{60} & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{20} & \frac{\sqrt{10}}{20} & 0 \\ 0 & -\frac{\sqrt{30}i}{60} & 0 & -\frac{\sqrt{30}}{60} & \frac{\sqrt{30}i}{20} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{20} \\ -\frac{\sqrt{30}i}{60} & 0 & \frac{\sqrt{30}}{60} & 0 & 0 & -\frac{\sqrt{30}i}{20} & 0 & 0 & 0 & \frac{\sqrt{10}i}{20} \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{60} & 0 & -\frac{\sqrt{30}i}{60} & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{60} & 0 & -\frac{\sqrt{30}i}{60} & 0 & 0 & 0 \end{bmatrix}$
173	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$

continued ...

Table 6

No.	multipole	matrix
	$\mathbb{Q}_3^{(1,-1;a)}(A_{2u}, 2)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}i}{12} & 0 & -\frac{\sqrt{3}}{12} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{3}i}{12} & 0 & \frac{\sqrt{3}}{12} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{12} & 0 & -\frac{\sqrt{3}i}{12} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{12} & 0 & -\frac{\sqrt{3}i}{12} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{3}i}{6} & 0 & \frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{3}i}{6} & 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
174	symmetry	$-\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$
	$\mathbb{Q}_{3,1}^{(1,-1;a)}(E_u, 1)$	$\begin{bmatrix} 0 & 0 & -\frac{\sqrt{5}i}{15} & 0 & 0 & -\frac{\sqrt{5}}{60} & 0 & -\frac{\sqrt{5}i}{12} & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{5}i}{15} & \frac{\sqrt{5}}{60} & 0 & -\frac{\sqrt{5}i}{12} & 0 & 0 & 0 \\ \frac{\sqrt{5}i}{15} & 0 & 0 & 0 & 0 & \frac{7\sqrt{5}i}{60} & 0 & \frac{\sqrt{5}}{60} & -\frac{\sqrt{15}i}{15} & 0 \\ 0 & -\frac{\sqrt{5}i}{15} & 0 & 0 & \frac{7\sqrt{5}i}{60} & 0 & -\frac{\sqrt{5}}{60} & 0 & 0 & \frac{\sqrt{15}i}{15} \\ 0 & \frac{\sqrt{5}}{30} & 0 & -\frac{\sqrt{5}i}{30} & 0 & 0 & \frac{\sqrt{5}i}{15} & 0 & 0 & 0 \\ -\frac{\sqrt{5}}{30} & 0 & -\frac{\sqrt{5}i}{30} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{15} & 0 & 0 \end{bmatrix}$
175	symmetry	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$
	$\mathbb{Q}_{3,2}^{(1,-1;a)}(E_u, 1)$	$\begin{bmatrix} \frac{\sqrt{5}i}{15} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{60} & 0 & -\frac{7\sqrt{5}}{60} & \frac{\sqrt{15}i}{15} & 0 \\ 0 & -\frac{\sqrt{5}i}{15} & 0 & 0 & -\frac{\sqrt{5}i}{60} & 0 & \frac{7\sqrt{5}}{60} & 0 & 0 & -\frac{\sqrt{15}i}{15} \\ 0 & 0 & \frac{\sqrt{5}i}{15} & 0 & 0 & \frac{\sqrt{5}}{12} & 0 & \frac{\sqrt{5}i}{60} & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{5}i}{15} & -\frac{\sqrt{5}}{12} & 0 & \frac{\sqrt{5}i}{60} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{5}i}{30} & 0 & \frac{\sqrt{5}}{30} & -\frac{\sqrt{5}i}{15} & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{5}i}{30} & 0 & -\frac{\sqrt{5}}{30} & 0 & 0 & \frac{\sqrt{5}i}{15} & 0 & 0 & 0 & 0 \end{bmatrix}$
176	symmetry	$\sqrt{15}xyz$
	$\mathbb{Q}_{3,1}^{(1,-1;a)}(E_u, 2)$	$\begin{bmatrix} 0 & \frac{\sqrt{2}i}{12} & 0 & -\frac{\sqrt{2}}{12} & \frac{\sqrt{2}i}{12} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{12} \\ \frac{\sqrt{2}i}{12} & 0 & \frac{\sqrt{2}}{12} & 0 & 0 & -\frac{\sqrt{2}i}{12} & 0 & 0 & \frac{\sqrt{6}i}{12} & 0 \\ 0 & \frac{\sqrt{2}}{12} & 0 & \frac{\sqrt{2}i}{12} & 0 & 0 & -\frac{\sqrt{2}i}{12} & 0 & 0 & -\frac{\sqrt{6}}{12} \\ -\frac{\sqrt{2}}{12} & 0 & \frac{\sqrt{2}i}{12} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{12} & \frac{\sqrt{6}}{12} \\ -\frac{\sqrt{2}i}{6} & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{12} & 0 & \frac{\sqrt{2}}{12} & 0 & 0 \\ 0 & \frac{\sqrt{2}i}{6} & 0 & 0 & -\frac{\sqrt{2}i}{12} & 0 & -\frac{\sqrt{2}}{12} & 0 & 0 & 0 \end{bmatrix}$
177	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$

continued ...

Table 6

No.	multipole	matrix
	$\mathbb{Q}_{3,2}^{(1,-1;a)}(E_u, 2)$	$\begin{bmatrix} 0 & -\frac{\sqrt{2}}{12} & 0 & -\frac{\sqrt{2}i}{12} & 0 & 0 & -\frac{\sqrt{2}i}{12} & 0 & 0 & -\frac{\sqrt{6}}{12} \\ \frac{\sqrt{2}}{12} & 0 & -\frac{\sqrt{2}i}{12} & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{12} & \frac{\sqrt{6}}{12} & 0 \\ 0 & \frac{\sqrt{2}i}{12} & 0 & -\frac{\sqrt{2}}{12} & -\frac{\sqrt{2}i}{12} & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{12} \\ \frac{\sqrt{2}i}{12} & 0 & \frac{\sqrt{2}}{12} & 0 & 0 & \frac{\sqrt{2}i}{12} & 0 & 0 & -\frac{\sqrt{6}i}{12} & 0 \\ 0 & 0 & \frac{\sqrt{2}i}{6} & 0 & 0 & \frac{\sqrt{2}}{12} & 0 & \frac{\sqrt{2}i}{12} & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{2}i}{6} & -\frac{\sqrt{2}}{12} & 0 & \frac{\sqrt{2}i}{12} & 0 & 0 & 0 \end{bmatrix}$
178	symmetry	$\begin{matrix} z \\ \mathbb{Q}_1^{(1,0;a)}(A_{2u}) \end{matrix}$ $\begin{bmatrix} 0 & -\frac{\sqrt{15}}{20} & 0 & \frac{\sqrt{15}i}{20} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{5}}{20} \\ \frac{\sqrt{15}}{20} & 0 & \frac{\sqrt{15}i}{20} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{20} & 0 \\ 0 & -\frac{\sqrt{15}i}{20} & 0 & -\frac{\sqrt{15}}{20} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{20} \\ -\frac{\sqrt{15}i}{20} & 0 & \frac{\sqrt{15}}{20} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{20} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{20} & 0 & \frac{\sqrt{15}i}{20} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{20} & 0 & \frac{\sqrt{15}i}{20} & 0 & 0 & 0 \end{bmatrix}$
179	symmetry	$\begin{matrix} x \\ \mathbb{Q}_{1,1}^{(1,0;a)}(E_u) \end{matrix}$ $\begin{bmatrix} 0 & 0 & -\frac{\sqrt{15}i}{20} & 0 & 0 & \frac{\sqrt{15}}{20} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{15}i}{20} & -\frac{\sqrt{15}}{20} & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{15}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{20} & \frac{\sqrt{5}i}{20} & 0 \\ 0 & -\frac{\sqrt{15}i}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{20} & 0 & 0 & -\frac{\sqrt{5}i}{20} \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}i}{20} & 0 & 0 & \frac{\sqrt{5}}{10} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{20} & -\frac{\sqrt{5}}{10} & 0 \end{bmatrix}$
180	symmetry	$\begin{matrix} y \\ \mathbb{Q}_{1,2}^{(1,0;a)}(E_u) \end{matrix}$ $\begin{bmatrix} \frac{\sqrt{15}i}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}i}{20} & 0 & 0 & -\frac{\sqrt{5}i}{20} & 0 \\ 0 & -\frac{\sqrt{15}i}{20} & 0 & 0 & -\frac{\sqrt{15}i}{20} & 0 & 0 & 0 & 0 & \frac{\sqrt{5}i}{20} \\ 0 & 0 & \frac{\sqrt{15}i}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}i}{20} & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{15}i}{20} & 0 & 0 & -\frac{\sqrt{15}i}{20} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{10} \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}i}{20} & 0 & 0 & -\frac{\sqrt{5}i}{10} & 0 \end{bmatrix}$
181	symmetry	$\frac{\sqrt{10x(x^2-3y^2)}}{4}$

continued ...

Table 6

No.	multipole	matrix
	$\mathbb{Q}_3^{(1,0;a)}(A_{1u})$	$\begin{bmatrix} 0 & 0 & -\frac{\sqrt{6}i}{8} & 0 & 0 & \frac{\sqrt{6}}{24} & 0 & \frac{\sqrt{6}i}{24} & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{6}i}{8} & -\frac{\sqrt{6}}{24} & 0 & \frac{\sqrt{6}i}{24} & 0 & 0 & 0 \\ -\frac{\sqrt{6}i}{8} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{24} & 0 & -\frac{\sqrt{6}}{24} & 0 & 0 \\ 0 & \frac{\sqrt{6}i}{8} & 0 & 0 & \frac{\sqrt{6}i}{24} & 0 & \frac{\sqrt{6}}{24} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{6}}{24} & 0 & \frac{\sqrt{6}i}{24} & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{6}}{24} & 0 & \frac{\sqrt{6}i}{24} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
182	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$
	$\mathbb{Q}_3^{(1,0;a)}(A_{2u}, 1)$	$\begin{bmatrix} 0 & \frac{\sqrt{15}}{60} & 0 & -\frac{\sqrt{15}i}{60} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{10} \\ -\frac{\sqrt{15}}{60} & 0 & -\frac{\sqrt{15}i}{60} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{5}}{10} & 0 \\ 0 & \frac{\sqrt{15}i}{60} & 0 & \frac{\sqrt{15}}{60} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{5}i}{10} \\ \frac{\sqrt{15}i}{60} & 0 & -\frac{\sqrt{15}}{60} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{5}i}{10} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{15} & 0 & \frac{\sqrt{15}i}{15} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{15} & 0 & \frac{\sqrt{15}i}{15} & 0 & 0 & 0 \end{bmatrix}$
183	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$
	$\mathbb{Q}_3^{(1,0;a)}(A_{2u}, 2)$	$\begin{bmatrix} \frac{\sqrt{6}i}{8} & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{24} & 0 & \frac{\sqrt{6}}{24} & 0 & 0 \\ 0 & -\frac{\sqrt{6}i}{8} & 0 & 0 & -\frac{\sqrt{6}i}{24} & 0 & -\frac{\sqrt{6}}{24} & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{6}i}{8} & 0 & 0 & \frac{\sqrt{6}}{24} & 0 & \frac{\sqrt{6}i}{24} & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{6}i}{8} & -\frac{\sqrt{6}}{24} & 0 & \frac{\sqrt{6}i}{24} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{6}i}{24} & 0 & \frac{\sqrt{6}}{24} & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{6}i}{24} & 0 & -\frac{\sqrt{6}}{24} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
184	symmetry	$-\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$
	$\mathbb{Q}_{3,1}^{(1,0;a)}(E_u, 1)$	$\begin{bmatrix} 0 & 0 & \frac{\sqrt{10}i}{120} & 0 & 0 & -\frac{11\sqrt{10}}{120} & 0 & \frac{\sqrt{10}i}{24} & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{10}i}{120} & \frac{11\sqrt{10}}{120} & 0 & \frac{\sqrt{10}i}{24} & 0 & 0 & 0 \\ -\frac{\sqrt{10}i}{120} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{24} & 0 & -\frac{\sqrt{10}}{120} & -\frac{\sqrt{30}i}{60} & 0 \\ 0 & \frac{\sqrt{10}i}{120} & 0 & 0 & \frac{\sqrt{10}i}{24} & 0 & \frac{\sqrt{10}}{120} & 0 & 0 & \frac{\sqrt{30}i}{60} \\ 0 & -\frac{\sqrt{10}}{24} & 0 & \frac{\sqrt{10}i}{24} & 0 & 0 & -\frac{\sqrt{10}i}{30} & 0 & 0 & \frac{\sqrt{30}}{20} \\ \frac{\sqrt{10}}{24} & 0 & \frac{\sqrt{10}i}{24} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{30} & -\frac{\sqrt{30}}{20} & 0 \end{bmatrix}$
185	symmetry	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$

continued ...

Table 6

No.	multipole	matrix
	$\mathbb{Q}_{3,2}^{(1,0;a)}(E_u, 1)$	$\begin{bmatrix} -\frac{\sqrt{10}i}{120} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{120} & 0 & -\frac{\sqrt{10}}{24} & \frac{\sqrt{30}i}{60} & 0 \\ 0 & \frac{\sqrt{10}i}{120} & 0 & 0 & \frac{\sqrt{10}i}{120} & 0 & \frac{\sqrt{10}}{24} & 0 & 0 & -\frac{\sqrt{30}i}{60} \\ 0 & 0 & -\frac{\sqrt{10}i}{120} & 0 & 0 & -\frac{\sqrt{10}}{24} & 0 & \frac{11\sqrt{10}i}{120} & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{10}i}{120} & \frac{\sqrt{10}}{24} & 0 & \frac{11\sqrt{10}i}{120} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{10}i}{24} & 0 & -\frac{\sqrt{10}}{24} & \frac{\sqrt{10}i}{30} & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}i}{20} \\ -\frac{\sqrt{10}i}{24} & 0 & \frac{\sqrt{10}}{24} & 0 & 0 & -\frac{\sqrt{10}i}{30} & 0 & 0 & -\frac{\sqrt{30}i}{20} & 0 \end{bmatrix}$
186	symmetry	$\sqrt{15}xyz$ $\mathbb{Q}_{3,1}^{(1,0;a)}(E_u, 2) \begin{bmatrix} 0 & -\frac{i}{12} & 0 & -\frac{1}{6} & \frac{i}{6} & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{12} \\ -\frac{i}{12} & 0 & \frac{1}{6} & 0 & 0 & -\frac{i}{6} & 0 & 0 & -\frac{\sqrt{3}i}{12} & 0 \\ 0 & -\frac{1}{12} & 0 & \frac{i}{6} & 0 & 0 & -\frac{i}{6} & 0 & 0 & \frac{\sqrt{3}}{12} \\ \frac{1}{12} & 0 & \frac{i}{6} & 0 & 0 & 0 & 0 & \frac{i}{6} & -\frac{\sqrt{3}}{12} & 0 \\ \frac{i}{6} & 0 & 0 & 0 & 0 & -\frac{i}{6} & 0 & \frac{1}{6} & 0 & 0 \\ 0 & -\frac{i}{6} & 0 & 0 & -\frac{i}{6} & 0 & -\frac{1}{6} & 0 & 0 & 0 \end{bmatrix}$
187	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$ $\mathbb{Q}_{3,2}^{(1,0;a)}(E_u, 2) \begin{bmatrix} 0 & -\frac{1}{6} & 0 & \frac{i}{12} & 0 & 0 & -\frac{i}{6} & 0 & 0 & \frac{\sqrt{3}}{12} \\ \frac{1}{6} & 0 & \frac{i}{12} & 0 & 0 & 0 & 0 & \frac{i}{6} & -\frac{\sqrt{3}}{12} & 0 \\ 0 & \frac{i}{6} & 0 & \frac{1}{12} & -\frac{i}{6} & 0 & 0 & 0 & 0 & \frac{\sqrt{3}i}{12} \\ \frac{i}{6} & 0 & -\frac{1}{12} & 0 & 0 & \frac{i}{6} & 0 & 0 & \frac{\sqrt{3}i}{12} & 0 \\ 0 & 0 & -\frac{i}{6} & 0 & 0 & \frac{1}{6} & 0 & \frac{i}{6} & 0 & 0 \\ 0 & 0 & 0 & \frac{i}{6} & -\frac{1}{6} & 0 & \frac{i}{6} & 0 & 0 & 0 \end{bmatrix}$
188	symmetry	z $\mathbb{Q}_1^{(1,1;a)}(A_{2u}) \begin{bmatrix} 0 & \frac{\sqrt{5}}{20} & 0 & -\frac{\sqrt{5}i}{20} & 0 & 0 & -\frac{\sqrt{5}i}{10} & 0 & 0 & \frac{\sqrt{15}}{20} \\ -\frac{\sqrt{5}}{20} & 0 & -\frac{\sqrt{5}i}{20} & 0 & 0 & 0 & 0 & \frac{\sqrt{5}i}{10} & -\frac{\sqrt{15}}{20} & 0 \\ 0 & \frac{\sqrt{5}i}{20} & 0 & \frac{\sqrt{5}}{20} & \frac{\sqrt{5}i}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}i}{20} \\ \frac{\sqrt{5}i}{20} & 0 & -\frac{\sqrt{5}}{20} & 0 & 0 & -\frac{\sqrt{5}i}{10} & 0 & 0 & -\frac{\sqrt{15}i}{20} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{20} & 0 & \frac{\sqrt{5}i}{20} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{5}}{20} & 0 & \frac{\sqrt{5}i}{20} & 0 & 0 & 0 \end{bmatrix}$
189	symmetry	x

continued ...

Table 6

No.	multipole	matrix
	$\mathbb{Q}_{1,1}^{(1,1;a)}(E_u)$	$\begin{bmatrix} 0 & 0 & -\frac{\sqrt{5}i}{20} & 0 & 0 & \frac{\sqrt{5}}{20} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{5}i}{20} & -\frac{\sqrt{5}}{20} & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{5}i}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{10} & 0 & -\frac{\sqrt{5}}{20} & -\frac{\sqrt{15}i}{20} & 0 \\ 0 & -\frac{\sqrt{5}i}{20} & 0 & 0 & -\frac{\sqrt{5}i}{10} & 0 & \frac{\sqrt{5}}{20} & 0 & 0 & \frac{\sqrt{15}i}{20} \\ 0 & -\frac{\sqrt{5}}{10} & 0 & \frac{\sqrt{5}i}{10} & 0 & 0 & \frac{\sqrt{5}i}{20} & 0 & 0 & 0 \\ \frac{\sqrt{5}}{10} & 0 & \frac{\sqrt{5}i}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{20} & 0 & 0 \end{bmatrix}$
190	symmetry	y
	$\mathbb{Q}_{1,2}^{(1,1;a)}(E_u)$	$\begin{bmatrix} \frac{\sqrt{5}i}{20} & 0 & 0 & 0 & 0 & \frac{\sqrt{5}i}{20} & 0 & \frac{\sqrt{5}}{10} & \frac{\sqrt{15}i}{20} & 0 \\ 0 & -\frac{\sqrt{5}i}{20} & 0 & 0 & \frac{\sqrt{5}i}{20} & 0 & -\frac{\sqrt{5}}{10} & 0 & 0 & -\frac{\sqrt{15}i}{20} \\ 0 & 0 & \frac{\sqrt{5}i}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{20} & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{5}i}{20} & 0 & 0 & -\frac{\sqrt{5}i}{20} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{5}i}{10} & 0 & -\frac{\sqrt{5}}{10} & -\frac{\sqrt{5}i}{20} & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{5}i}{10} & 0 & \frac{\sqrt{5}}{10} & 0 & 0 & \frac{\sqrt{5}i}{20} & 0 & 0 & 0 & 0 \end{bmatrix}$
191	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$
	$\mathbb{G}_2^{(a)}(A_{1u})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
192	symmetry	$\sqrt{3}yz$
	$\mathbb{G}_{2,1}^{(a)}(E_u, 1)$	$\begin{bmatrix} -\frac{\sqrt{6}}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 \\ 0 & -\frac{\sqrt{6}}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} \\ 0 & 0 & -\frac{\sqrt{6}}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{6}}{12} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{12} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{12} & 0 & 0 & 0 & 0 \end{bmatrix}$
193	symmetry	$-\sqrt{3}xz$

continued ...

Table 6

No.	multipole	matrix
	$\mathbb{G}_{2,2}^{(a)}(E_u, 1)$	$\begin{bmatrix} 0 & 0 & -\frac{\sqrt{6}}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{6}}{12} & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{6}}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 \\ 0 & \frac{\sqrt{6}}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{12} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{12} & 0 & 0 \end{bmatrix}$
194	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$
	$\mathbb{G}_{2,1}^{(a)}(E_u, 2)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{12} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{12} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{12} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{12} & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{6}}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{6}}{6} & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
195	symmetry	$-\sqrt{3}xy$
	$\mathbb{G}_{2,2}^{(a)}(E_u, 2)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{12} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{12} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{12} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{12} & 0 & 0 \\ -\frac{\sqrt{6}}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{6}}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
196	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$
	$\mathbb{G}_2^{(1,-1;a)}(A_{1u})$	$\begin{bmatrix} 0 & -\frac{\sqrt{5}i}{20} & 0 & -\frac{\sqrt{5}}{20} & \frac{\sqrt{5}i}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{60} \\ -\frac{\sqrt{5}i}{20} & 0 & \frac{\sqrt{5}}{20} & 0 & 0 & -\frac{\sqrt{5}i}{10} & 0 & 0 & \frac{\sqrt{15}i}{60} & 0 \\ 0 & \frac{\sqrt{5}}{20} & 0 & -\frac{\sqrt{5}i}{20} & 0 & 0 & \frac{\sqrt{5}i}{10} & 0 & 0 & \frac{\sqrt{15}}{60} \\ -\frac{\sqrt{5}}{20} & 0 & -\frac{\sqrt{5}i}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{10} & -\frac{\sqrt{15}}{60} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{20} & 0 & -\frac{\sqrt{5}}{20} & \frac{\sqrt{15}i}{15} & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{20} & 0 & \frac{\sqrt{5}}{20} & 0 & 0 & -\frac{\sqrt{15}i}{15} \end{bmatrix}$
197	symmetry	$\sqrt{3}yz$

continued ...

Table 6

No.	multipole	matrix
	$\mathbb{G}_{2,1}^{(1,-1;a)}(E_u, 1)$	$\begin{bmatrix} 0 & 0 & \frac{\sqrt{15}i}{20} & 0 & 0 & \frac{\sqrt{15}}{20} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{15}i}{20} & -\frac{\sqrt{15}}{20} & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{15}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{20} & -\frac{\sqrt{5}i}{20} & 0 \\ 0 & \frac{\sqrt{15}i}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{20} & 0 & 0 & \frac{\sqrt{5}i}{20} \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{20} & 0 & 0 & \frac{\sqrt{5}}{10} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}i}{20} & -\frac{\sqrt{5}}{10} & 0 \end{bmatrix}$
198	symmetry	$-\sqrt{3}xz$
	$\mathbb{G}_{2,2}^{(1,-1;a)}(E_u, 1)$	$\begin{bmatrix} -\frac{\sqrt{15}i}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}i}{20} & 0 & 0 & \frac{\sqrt{5}i}{20} & 0 \\ 0 & \frac{\sqrt{15}i}{20} & 0 & 0 & -\frac{\sqrt{15}i}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{20} \\ 0 & 0 & -\frac{\sqrt{15}i}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}i}{20} & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{15}i}{20} & 0 & 0 & -\frac{\sqrt{15}i}{20} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{15}i}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{10} \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{20} & 0 & 0 & -\frac{\sqrt{5}i}{10} & 0 \end{bmatrix}$
199	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$
	$\mathbb{G}_{2,1}^{(1,-1;a)}(E_u, 2)$	$\begin{bmatrix} 0 & \frac{\sqrt{15}i}{20} & 0 & -\frac{\sqrt{15}}{20} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{20} \\ \frac{\sqrt{15}i}{20} & 0 & \frac{\sqrt{15}}{20} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{20} & 0 \\ 0 & \frac{\sqrt{15}}{20} & 0 & \frac{\sqrt{15}i}{20} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{5}}{20} \\ -\frac{\sqrt{15}}{20} & 0 & \frac{\sqrt{15}i}{20} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{20} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{20} & 0 & -\frac{\sqrt{15}}{20} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{20} & 0 & \frac{\sqrt{15}}{20} & 0 & 0 & 0 \end{bmatrix}$
200	symmetry	$-\sqrt{3}xy$
	$\mathbb{G}_{2,2}^{(1,-1;a)}(E_u, 2)$	$\begin{bmatrix} 0 & -\frac{\sqrt{15}}{20} & 0 & -\frac{\sqrt{15}i}{20} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{5}}{20} \\ \frac{\sqrt{15}}{20} & 0 & -\frac{\sqrt{15}i}{20} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{20} & 0 \\ 0 & \frac{\sqrt{15}i}{20} & 0 & -\frac{\sqrt{15}}{20} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{5}i}{20} \\ \frac{\sqrt{15}i}{20} & 0 & \frac{\sqrt{15}}{20} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{5}i}{20} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{20} & 0 & -\frac{\sqrt{15}i}{20} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{20} & 0 & -\frac{\sqrt{15}i}{20} & 0 & 0 & 0 \end{bmatrix}$
201	symmetry	$\frac{3x^4}{8} + \frac{3x^2y^2}{4} - 3x^2z^2 + \frac{3y^4}{8} - 3y^2z^2 + z^4$

continued ...

Table 6

No.	multipole	matrix
	$\mathbb{G}_4^{(1,-1;a)}(A_{1u}, 1)$	$\begin{bmatrix} 0 & \frac{\sqrt{35}i}{140} & 0 & \frac{\sqrt{35}}{140} & -\frac{\sqrt{35}i}{35} & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}i}{70} \\ \frac{\sqrt{35}i}{140} & 0 & -\frac{\sqrt{35}}{140} & 0 & 0 & \frac{\sqrt{35}i}{35} & 0 & 0 & -\frac{\sqrt{105}i}{70} & 0 \\ 0 & -\frac{\sqrt{35}}{140} & 0 & \frac{\sqrt{35}i}{140} & 0 & 0 & -\frac{\sqrt{35}i}{35} & 0 & 0 & -\frac{\sqrt{105}}{70} \\ \frac{\sqrt{35}}{140} & 0 & \frac{\sqrt{35}i}{140} & 0 & 0 & 0 & 0 & \frac{\sqrt{35}i}{35} & \frac{\sqrt{105}}{70} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{35}i}{35} & 0 & -\frac{\sqrt{35}}{35} & \frac{\sqrt{105}i}{35} & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{35}i}{35} & 0 & \frac{\sqrt{35}}{35} & 0 & 0 & -\frac{\sqrt{105}i}{35} \end{bmatrix}$
202	symmetry	$\frac{\sqrt{70}yz(3x^2-y^2)}{4}$
	$\mathbb{G}_4^{(1,-1;a)}(A_{1u}, 2)$	$\begin{bmatrix} 0 & 0 & \frac{\sqrt{2}i}{8} & 0 & 0 & \frac{\sqrt{2}}{8} & 0 & \frac{\sqrt{2}i}{8} & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{2}i}{8} & -\frac{\sqrt{2}}{8} & 0 & \frac{\sqrt{2}i}{8} & 0 & 0 & 0 \\ \frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{8} & 0 & -\frac{\sqrt{2}}{8} & 0 & 0 \\ 0 & -\frac{\sqrt{2}i}{8} & 0 & 0 & \frac{\sqrt{2}i}{8} & 0 & \frac{\sqrt{2}}{8} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{2}}{8} & 0 & \frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{2}}{8} & 0 & \frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
203	symmetry	$\frac{\sqrt{70}xz(x^2-3y^2)}{4}$
	$\mathbb{G}_4^{(1,-1;a)}(A_{2u})$	$\begin{bmatrix} \frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{8} & 0 & -\frac{\sqrt{2}}{8} & 0 & 0 \\ 0 & -\frac{\sqrt{2}i}{8} & 0 & 0 & \frac{\sqrt{2}i}{8} & 0 & \frac{\sqrt{2}}{8} & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{2}i}{8} & 0 & 0 & -\frac{\sqrt{2}}{8} & 0 & -\frac{\sqrt{2}i}{8} & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{2}i}{8} & \frac{\sqrt{2}}{8} & 0 & -\frac{\sqrt{2}i}{8} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{2}i}{8} & 0 & -\frac{\sqrt{2}}{8} & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{2}i}{8} & 0 & \frac{\sqrt{2}}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
204	symmetry	$\frac{\sqrt{10}yz(3x^2+3y^2-4z^2)}{4}$
	$\mathbb{G}_{4,1}^{(1,-1;a)}(E_u, 1)$	$\begin{bmatrix} 0 & 0 & -\frac{\sqrt{14}i}{56} & 0 & 0 & -\frac{\sqrt{14}}{56} & 0 & -\frac{\sqrt{14}i}{56} & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{14}i}{56} & \frac{\sqrt{14}}{56} & 0 & -\frac{\sqrt{14}i}{56} & 0 & 0 & 0 \\ \frac{\sqrt{14}i}{56} & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}i}{56} & 0 & -\frac{3\sqrt{14}}{56} & \frac{\sqrt{42}i}{28} & 0 \\ 0 & -\frac{\sqrt{14}i}{56} & 0 & 0 & -\frac{\sqrt{14}i}{56} & 0 & \frac{3\sqrt{14}}{56} & 0 & 0 & -\frac{\sqrt{42}i}{28} \\ 0 & \frac{\sqrt{14}}{56} & 0 & -\frac{\sqrt{14}i}{56} & 0 & 0 & \frac{\sqrt{14}i}{14} & 0 & 0 & \frac{\sqrt{42}}{28} \\ -\frac{\sqrt{14}}{56} & 0 & -\frac{\sqrt{14}i}{56} & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}i}{14} & -\frac{\sqrt{42}}{28} & 0 \end{bmatrix}$
205	symmetry	$\frac{\sqrt{10}xz(3x^2+3y^2-4z^2)}{4}$

continued ...

Table 6

No.	multipole	matrix
	$\mathbb{G}_{4,2}^{(1,-1;a)}(E_u, 1)$	$\begin{bmatrix} \frac{\sqrt{14}i}{56} & 0 & 0 & 0 & 0 & \frac{3\sqrt{14}i}{56} & 0 & \frac{\sqrt{14}}{56} & -\frac{\sqrt{42}i}{28} & 0 \\ 0 & -\frac{\sqrt{14}i}{56} & 0 & 0 & \frac{3\sqrt{14}i}{56} & 0 & -\frac{\sqrt{14}}{56} & 0 & 0 & \frac{\sqrt{42}i}{28} \\ 0 & 0 & \frac{\sqrt{14}i}{56} & 0 & 0 & \frac{\sqrt{14}}{56} & 0 & \frac{\sqrt{14}i}{56} & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{14}i}{56} & -\frac{\sqrt{14}}{56} & 0 & \frac{\sqrt{14}i}{56} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{14}i}{56} & 0 & \frac{\sqrt{14}}{56} & -\frac{\sqrt{14}i}{14} & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}i}{28} \\ \frac{\sqrt{14}i}{56} & 0 & -\frac{\sqrt{14}}{56} & 0 & 0 & \frac{\sqrt{14}i}{14} & 0 & 0 & -\frac{\sqrt{42}i}{28} & 0 \end{bmatrix}$
206	symmetry	$\frac{\sqrt{35}(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$ $\begin{bmatrix} 0 & \frac{i}{4} & 0 & -\frac{1}{4} & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{i}{4} & 0 & \frac{1}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{1}{4} & 0 & -\frac{i}{4} & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{1}{4} & 0 & -\frac{i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
	$\mathbb{G}_{4,1}^{(1,-1;a)}(E_u, 2)$	
207	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$ $\begin{bmatrix} 0 & \frac{1}{4} & 0 & \frac{i}{4} & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{1}{4} & 0 & \frac{i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{i}{4} & 0 & -\frac{1}{4} & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{i}{4} & 0 & \frac{1}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
	$\mathbb{G}_{4,2}^{(1,-1;a)}(E_u, 2)$	
208	symmetry	$-\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$ $\begin{bmatrix} 0 & -\frac{\sqrt{7}i}{28} & 0 & 0 & \frac{\sqrt{7}i}{14} & 0 & 0 & 0 & 0 & \frac{\sqrt{21}i}{28} \\ -\frac{\sqrt{7}i}{28} & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}i}{14} & 0 & 0 & \frac{\sqrt{21}i}{28} & 0 \\ 0 & -\frac{\sqrt{7}}{28} & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}i}{14} & 0 & 0 & -\frac{\sqrt{21}}{28} \\ \frac{\sqrt{7}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}i}{14} & \frac{\sqrt{21}}{28} & 0 \\ \frac{\sqrt{7}i}{14} & 0 & 0 & 0 & 0 & \frac{\sqrt{7}i}{14} & 0 & -\frac{\sqrt{7}}{14} & 0 & 0 \\ 0 & -\frac{\sqrt{7}i}{14} & 0 & 0 & \frac{\sqrt{7}i}{14} & 0 & \frac{\sqrt{7}}{14} & 0 & 0 & 0 \end{bmatrix}$
	$\mathbb{G}_{4,1}^{(1,-1;a)}(E_u, 3)$	
209	symmetry	$\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$

continued ...

Table 6

No.	multipole	matrix
	$\mathbb{G}_{4,2}^{(1,-1;a)}(E_u, 3)$	$\begin{bmatrix} 0 & 0 & 0 & \frac{\sqrt{7}i}{28} & 0 & 0 & -\frac{\sqrt{7}i}{14} & 0 & 0 & -\frac{\sqrt{21}}{28} \\ 0 & 0 & \frac{\sqrt{7}i}{28} & 0 & 0 & 0 & 0 & \frac{\sqrt{7}i}{14} & \frac{\sqrt{21}}{28} & 0 \\ 0 & 0 & 0 & \frac{\sqrt{7}}{28} & -\frac{\sqrt{7}i}{14} & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}i}{28} \\ 0 & 0 & -\frac{\sqrt{7}}{28} & 0 & 0 & \frac{\sqrt{7}i}{14} & 0 & 0 & -\frac{\sqrt{21}i}{28} & 0 \\ 0 & 0 & -\frac{\sqrt{7}i}{14} & 0 & 0 & -\frac{\sqrt{7}}{14} & 0 & -\frac{\sqrt{7}i}{14} & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{7}i}{14} & \frac{\sqrt{7}}{14} & 0 & -\frac{\sqrt{7}i}{14} & 0 & 0 & 0 \end{bmatrix}$
210	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$
	$\mathbb{G}_2^{(1,0;a)}(A_{1u})$	$\begin{bmatrix} 0 & \frac{\sqrt{3}i}{12} & 0 & \frac{\sqrt{3}}{12} & 0 & 0 & 0 & 0 & 0 & \frac{i}{4} \\ \frac{\sqrt{3}i}{12} & 0 & -\frac{\sqrt{3}}{12} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{i}{4} \\ 0 & -\frac{\sqrt{3}}{12} & 0 & \frac{\sqrt{3}i}{12} & 0 & 0 & 0 & 0 & 0 & \frac{1}{4} \\ \frac{\sqrt{3}}{12} & 0 & \frac{\sqrt{3}i}{12} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{1}{4} \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{12} & 0 & -\frac{\sqrt{3}}{12} & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{12} & 0 & \frac{\sqrt{3}}{12} & 0 & 0 & 0 \end{bmatrix}$
211	symmetry	$\sqrt{3}yz$
	$\mathbb{G}_{2,1}^{(1,0;a)}(E_u, 1)$	$\begin{bmatrix} 0 & 0 & -\frac{i}{12} & 0 & 0 & -\frac{1}{12} & 0 & \frac{i}{3} & 0 & 0 \\ 0 & 0 & 0 & \frac{i}{12} & \frac{1}{12} & 0 & \frac{i}{3} & 0 & 0 & 0 \\ \frac{i}{12} & 0 & 0 & 0 & 0 & -\frac{i}{6} & 0 & \frac{1}{12} & -\frac{\sqrt{3}i}{12} & 0 \\ 0 & -\frac{i}{12} & 0 & 0 & -\frac{i}{6} & 0 & -\frac{1}{12} & 0 & 0 & \frac{\sqrt{3}i}{12} \\ 0 & \frac{1}{6} & 0 & -\frac{i}{6} & 0 & 0 & \frac{i}{12} & 0 & 0 & 0 \\ -\frac{1}{6} & 0 & -\frac{i}{6} & 0 & 0 & 0 & 0 & -\frac{i}{12} & 0 & 0 \end{bmatrix}$
212	symmetry	$-\sqrt{3}xz$
	$\mathbb{G}_{2,2}^{(1,0;a)}(E_u, 1)$	$\begin{bmatrix} \frac{i}{12} & 0 & 0 & 0 & 0 & -\frac{i}{12} & 0 & \frac{1}{6} & \frac{\sqrt{3}i}{12} & 0 \\ 0 & -\frac{i}{12} & 0 & 0 & -\frac{i}{12} & 0 & -\frac{1}{6} & 0 & 0 & -\frac{\sqrt{3}i}{12} \\ 0 & 0 & \frac{i}{12} & 0 & 0 & -\frac{1}{3} & 0 & \frac{i}{12} & 0 & 0 \\ 0 & 0 & 0 & -\frac{i}{12} & \frac{1}{3} & 0 & \frac{i}{12} & 0 & 0 & 0 \\ 0 & \frac{i}{6} & 0 & \frac{1}{6} & -\frac{i}{12} & 0 & 0 & 0 & 0 & 0 \\ \frac{i}{6} & 0 & -\frac{1}{6} & 0 & 0 & \frac{i}{12} & 0 & 0 & 0 & 0 \end{bmatrix}$
213	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$

continued ...

Table 6

No.	multipole	matrix
	$\mathbb{G}_{2,1}^{(1,0;a)}(E_u, 2)$	$\begin{bmatrix} 0 & \frac{i}{12} & 0 & -\frac{1}{12} & -\frac{i}{6} & 0 & 0 & 0 & 0 & \frac{\sqrt{3}i}{12} \\ \frac{i}{12} & 0 & \frac{1}{12} & 0 & 0 & \frac{i}{6} & 0 & 0 & \frac{\sqrt{3}i}{12} & 0 \\ 0 & \frac{1}{12} & 0 & \frac{i}{12} & 0 & 0 & \frac{i}{6} & 0 & 0 & -\frac{\sqrt{3}}{12} \\ -\frac{1}{12} & 0 & \frac{i}{12} & 0 & 0 & 0 & 0 & -\frac{i}{6} & \frac{\sqrt{3}}{12} & 0 \\ \frac{i}{3} & 0 & 0 & 0 & 0 & -\frac{i}{12} & 0 & \frac{1}{12} & 0 & 0 \\ 0 & -\frac{i}{3} & 0 & 0 & -\frac{i}{12} & 0 & -\frac{1}{12} & 0 & 0 & 0 \end{bmatrix}$
214	symmetry	$-\sqrt{3}xy$
	$\mathbb{G}_{2,2}^{(1,0;a)}(E_u, 2)$	$\begin{bmatrix} 0 & -\frac{1}{12} & 0 & -\frac{i}{12} & 0 & 0 & \frac{i}{6} & 0 & 0 & -\frac{\sqrt{3}}{12} \\ \frac{1}{12} & 0 & -\frac{i}{12} & 0 & 0 & 0 & 0 & -\frac{i}{6} & \frac{\sqrt{3}}{12} & 0 \\ 0 & \frac{i}{12} & 0 & -\frac{1}{12} & \frac{i}{6} & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{12} \\ \frac{i}{12} & 0 & \frac{1}{12} & 0 & 0 & -\frac{i}{6} & 0 & 0 & -\frac{\sqrt{3}i}{12} & 0 \\ 0 & 0 & -\frac{i}{3} & 0 & 0 & \frac{1}{12} & 0 & \frac{i}{12} & 0 & 0 \\ 0 & 0 & 0 & \frac{i}{3} & -\frac{1}{12} & 0 & \frac{i}{12} & 0 & 0 & 0 \end{bmatrix}$
215	symmetry	1
	$\mathbb{G}_0^{(1,1;a)}(A_{1u})$	$\begin{bmatrix} 0 & \frac{\sqrt{10}i}{20} & 0 & \frac{\sqrt{10}}{20} & \frac{\sqrt{10}i}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}i}{60} \\ \frac{\sqrt{10}i}{20} & 0 & -\frac{\sqrt{10}}{20} & 0 & 0 & -\frac{\sqrt{10}i}{20} & 0 & 0 & -\frac{\sqrt{30}i}{60} & 0 \\ 0 & -\frac{\sqrt{10}}{20} & 0 & \frac{\sqrt{10}i}{20} & 0 & 0 & \frac{\sqrt{10}i}{20} & 0 & 0 & -\frac{\sqrt{30}}{60} \\ \frac{\sqrt{10}}{20} & 0 & \frac{\sqrt{10}i}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}i}{20} & \frac{\sqrt{30}}{60} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{20} & 0 & \frac{\sqrt{10}}{20} & \frac{\sqrt{30}i}{30} & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{20} & 0 & -\frac{\sqrt{10}}{20} & 0 & 0 & -\frac{\sqrt{30}i}{30} \end{bmatrix}$
216	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$
	$\mathbb{G}_2^{(1,1;a)}(A_{1u})$	$\begin{bmatrix} 0 & -\frac{\sqrt{105}i}{210} & 0 & -\frac{\sqrt{105}}{210} & -\frac{\sqrt{105}i}{70} & 0 & 0 & 0 & 0 & \frac{\sqrt{35}i}{35} \\ -\frac{\sqrt{105}i}{210} & 0 & \frac{\sqrt{105}}{210} & 0 & 0 & \frac{\sqrt{105}i}{70} & 0 & 0 & \frac{\sqrt{35}i}{35} & 0 \\ 0 & \frac{\sqrt{105}}{210} & 0 & -\frac{\sqrt{105}i}{210} & 0 & 0 & -\frac{\sqrt{105}i}{70} & 0 & 0 & \frac{\sqrt{35}}{35} \\ -\frac{\sqrt{105}}{210} & 0 & -\frac{\sqrt{105}i}{210} & 0 & 0 & 0 & 0 & \frac{\sqrt{105}i}{70} & -\frac{\sqrt{35}}{35} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{2\sqrt{105}i}{105} & 0 & \frac{2\sqrt{105}}{105} & \frac{3\sqrt{35}i}{70} & 0 \\ 0 & 0 & 0 & 0 & \frac{2\sqrt{105}i}{105} & 0 & -\frac{2\sqrt{105}}{105} & 0 & 0 & -\frac{3\sqrt{35}i}{70} \end{bmatrix}$
217	symmetry	$\sqrt{3}yz$

continued ...

Table 6

No.	multipole	matrix
	$\mathbb{G}_{2,1}^{(1,1;a)}(E_u, 1)$	$\begin{bmatrix} 0 & 0 & -\frac{\sqrt{35}i}{105} & 0 & 0 & -\frac{\sqrt{35}}{105} & 0 & \frac{\sqrt{35}i}{42} & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{35}i}{105} & \frac{\sqrt{35}}{105} & 0 & \frac{\sqrt{35}i}{42} & 0 & 0 & 0 \\ \frac{\sqrt{35}i}{105} & 0 & 0 & 0 & 0 & \frac{\sqrt{35}i}{42} & 0 & \frac{4\sqrt{35}}{105} & \frac{2\sqrt{105}i}{105} & 0 \\ 0 & -\frac{\sqrt{35}i}{105} & 0 & 0 & \frac{\sqrt{35}i}{42} & 0 & -\frac{4\sqrt{35}}{105} & 0 & 0 & -\frac{2\sqrt{105}i}{105} \\ 0 & -\frac{\sqrt{35}}{42} & 0 & \frac{\sqrt{35}i}{42} & 0 & 0 & \frac{4\sqrt{35}i}{105} & 0 & 0 & -\frac{\sqrt{105}}{70} \\ \frac{\sqrt{35}}{42} & 0 & \frac{\sqrt{35}i}{42} & 0 & 0 & 0 & 0 & -\frac{4\sqrt{35}i}{105} & \frac{\sqrt{105}}{70} & 0 \end{bmatrix}$
218	symmetry	$-\sqrt{3}xz$
	$\mathbb{G}_{2,2}^{(1,1;a)}(E_u, 1)$	$\begin{bmatrix} \frac{\sqrt{35}i}{105} & 0 & 0 & 0 & 0 & -\frac{4\sqrt{35}i}{105} & 0 & -\frac{\sqrt{35}}{42} & -\frac{2\sqrt{105}i}{105} & 0 \\ 0 & -\frac{\sqrt{35}i}{105} & 0 & 0 & -\frac{4\sqrt{35}i}{105} & 0 & \frac{\sqrt{35}}{42} & 0 & 0 & \frac{2\sqrt{105}i}{105} \\ 0 & 0 & \frac{\sqrt{35}i}{105} & 0 & 0 & -\frac{\sqrt{35}}{42} & 0 & \frac{\sqrt{35}i}{105} & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{35}i}{105} & \frac{\sqrt{35}}{42} & 0 & \frac{\sqrt{35}i}{105} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{35}i}{42} & 0 & -\frac{\sqrt{35}}{42} & -\frac{4\sqrt{35}i}{105} & 0 & 0 & 0 & 0 & \frac{\sqrt{105}i}{70} \\ -\frac{\sqrt{35}i}{42} & 0 & \frac{\sqrt{35}}{42} & 0 & 0 & \frac{4\sqrt{35}i}{105} & 0 & 0 & \frac{\sqrt{105}i}{70} & 0 \end{bmatrix}$
219	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$
	$\mathbb{G}_{2,1}^{(1,1;a)}(E_u, 2)$	$\begin{bmatrix} 0 & \frac{4\sqrt{35}i}{105} & 0 & \frac{\sqrt{35}}{30} & \frac{\sqrt{35}i}{42} & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}i}{210} \\ \frac{4\sqrt{35}i}{105} & 0 & -\frac{\sqrt{35}}{30} & 0 & 0 & -\frac{\sqrt{35}i}{42} & 0 & 0 & -\frac{\sqrt{105}i}{210} & 0 \\ 0 & \frac{4\sqrt{35}}{105} & 0 & -\frac{\sqrt{35}i}{30} & 0 & 0 & -\frac{\sqrt{35}i}{42} & 0 & 0 & \frac{\sqrt{105}}{210} \\ -\frac{4\sqrt{35}}{105} & 0 & -\frac{\sqrt{35}i}{30} & 0 & 0 & 0 & 0 & \frac{\sqrt{35}i}{42} & -\frac{\sqrt{105}}{210} & 0 \\ \frac{\sqrt{35}i}{42} & 0 & 0 & 0 & 0 & -\frac{\sqrt{35}i}{105} & 0 & \frac{\sqrt{35}}{105} & 0 & 0 \\ 0 & -\frac{\sqrt{35}i}{42} & 0 & 0 & -\frac{\sqrt{35}i}{105} & 0 & -\frac{\sqrt{35}}{105} & 0 & 0 & 0 \end{bmatrix}$
220	symmetry	$-\sqrt{3}xy$
	$\mathbb{G}_{2,2}^{(1,1;a)}(E_u, 2)$	$\begin{bmatrix} 0 & \frac{\sqrt{35}}{30} & 0 & -\frac{4\sqrt{35}i}{105} & 0 & 0 & -\frac{\sqrt{35}i}{42} & 0 & 0 & \frac{\sqrt{105}}{210} \\ -\frac{\sqrt{35}}{30} & 0 & -\frac{4\sqrt{35}i}{105} & 0 & 0 & 0 & 0 & \frac{\sqrt{35}i}{42} & -\frac{\sqrt{105}}{210} & 0 \\ 0 & -\frac{\sqrt{35}i}{30} & 0 & -\frac{4\sqrt{35}}{105} & -\frac{\sqrt{35}i}{42} & 0 & 0 & 0 & 0 & \frac{\sqrt{105}i}{210} \\ -\frac{\sqrt{35}i}{30} & 0 & \frac{4\sqrt{35}}{105} & 0 & 0 & \frac{\sqrt{35}i}{42} & 0 & 0 & \frac{\sqrt{105}i}{210} & 0 \\ 0 & 0 & -\frac{\sqrt{35}i}{42} & 0 & 0 & \frac{\sqrt{35}}{105} & 0 & \frac{\sqrt{35}i}{105} & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{35}i}{42} & -\frac{\sqrt{35}}{105} & 0 & \frac{\sqrt{35}i}{105} & 0 & 0 & 0 \end{bmatrix}$
221	symmetry	z

continued ...

Table 6

No.	multipole	matrix
	$\mathbb{T}_1^{(a)}(A_{2u})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & \frac{\sqrt{30i}}{20} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30i}}{20} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30i}}{20} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30i}}{20} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10i}}{10} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10i}}{10} \end{bmatrix}$
222	symmetry	x
	$\mathbb{T}_{1,1}^{(a)}(E_u)$	$\begin{bmatrix} \frac{\sqrt{30i}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{10i}}{20} & 0 \\ 0 & \frac{\sqrt{30i}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{10i}}{20} \\ 0 & 0 & \frac{\sqrt{30i}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{30i}}{20} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{30i}}{20} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30i}}{20} & 0 & 0 & 0 & 0 \end{bmatrix}$
223	symmetry	y
	$\mathbb{T}_{1,2}^{(a)}(E_u)$	$\begin{bmatrix} 0 & 0 & \frac{\sqrt{30i}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{30i}}{20} & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{30i}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{10i}}{20} & 0 \\ 0 & -\frac{\sqrt{30i}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{10i}}{20} \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30i}}{20} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30i}}{20} & 0 & 0 \end{bmatrix}$
224	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$
	$\mathbb{T}_3^{(a)}(A_{1u})$	$\begin{bmatrix} \frac{\sqrt{2i}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{2i}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{2i}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{2i}}{4} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
225	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$

continued ...

Table 6

No.	multipole	matrix
	$\mathbb{T}_3^{(a)}(A_{2u}, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{10} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{10} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{10} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{10} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{10} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{10} \end{bmatrix}$
226	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$
	$\mathbb{T}_3^{(a)}(A_{2u}, 2)$	$\begin{bmatrix} 0 & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
227	symmetry	$-\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$
	$\mathbb{T}_{3,1}^{(a)}(E_u, 1)$	$\begin{bmatrix} -\frac{\sqrt{30}i}{60} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{10} & 0 \\ 0 & -\frac{\sqrt{30}i}{60} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{10} \\ 0 & 0 & -\frac{\sqrt{30}i}{60} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{30}i}{60} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{15} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{15} & 0 & 0 & 0 & 0 \end{bmatrix}$
228	symmetry	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$
	$\mathbb{T}_{3,2}^{(a)}(E_u, 1)$	$\begin{bmatrix} 0 & 0 & -\frac{\sqrt{30}i}{60} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{30}i}{60} & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{30}i}{60} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{10} & 0 \\ 0 & \frac{\sqrt{30}i}{60} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{10} \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{15} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{15} & 0 & 0 \end{bmatrix}$
229	symmetry	$\sqrt{15}xyz$

continued ...

Table 6

No.	multipole	matrix
	$\mathbb{T}_{3,1}^{(a)}(E_u, 2)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
230	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$
	$\mathbb{T}_{3,2}^{(a)}(E_u, 2)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{6} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{6} & 0 & 0 \\ \frac{\sqrt{3}i}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{3}i}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
231	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$
	$\mathbb{T}_3^{(1,-1;a)}(A_{1u})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{12} & 0 & \frac{\sqrt{3}}{12} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{3}i}{12} & 0 & \frac{\sqrt{3}}{12} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{12} & 0 & \frac{\sqrt{3}i}{12} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{12} & 0 & -\frac{\sqrt{3}i}{12} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{3}i}{6} & 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{3}i}{6} & 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
232	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$
	$\mathbb{T}_3^{(1,-1;a)}(A_{2u}, 1)$	$\begin{bmatrix} 0 & -\frac{\sqrt{30}i}{60} & 0 & -\frac{\sqrt{30}}{60} & 0 & 0 & \frac{\sqrt{30}}{20} & 0 & 0 & -\frac{\sqrt{10}i}{20} \\ \frac{\sqrt{30}i}{60} & 0 & -\frac{\sqrt{30}}{60} & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{20} & \frac{\sqrt{10}i}{20} & 0 \\ 0 & \frac{\sqrt{30}}{60} & 0 & -\frac{\sqrt{30}i}{60} & -\frac{\sqrt{30}}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}}{20} \\ \frac{\sqrt{30}}{60} & 0 & \frac{\sqrt{30}i}{60} & 0 & 0 & \frac{\sqrt{30}}{20} & 0 & 0 & -\frac{\sqrt{10}}{20} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{60} & 0 & \frac{\sqrt{30}}{60} & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{30}i}{60} & 0 & \frac{\sqrt{30}}{60} & 0 & 0 & 0 \end{bmatrix}$
233	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$

continued ...

Table 6

No.	multipole	matrix
	$\mathbb{T}_3^{(1,-1;a)}(A_{2u}, 2)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{12} & 0 & -\frac{\sqrt{3}i}{12} & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{12} & 0 & \frac{\sqrt{3}i}{12} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{12} & 0 & \frac{\sqrt{3}}{12} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{3}i}{12} & 0 & \frac{\sqrt{3}}{12} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{3}}{6} & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{3}}{6} & 0 & -\frac{\sqrt{3}i}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
234	symmetry	$-\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$
	$\mathbb{T}_{3,1}^{(1,-1;a)}(E_u, 1)$	$\begin{bmatrix} 0 & 0 & \frac{\sqrt{5}}{15} & 0 & 0 & -\frac{\sqrt{5}i}{60} & 0 & \frac{\sqrt{5}}{12} & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{5}}{15} & \frac{\sqrt{5}i}{60} & 0 & \frac{\sqrt{5}}{12} & 0 & 0 & 0 \\ -\frac{\sqrt{5}}{15} & 0 & 0 & 0 & 0 & -\frac{7\sqrt{5}}{60} & 0 & \frac{\sqrt{5}i}{60} & \frac{\sqrt{15}}{15} & 0 \\ 0 & \frac{\sqrt{5}}{15} & 0 & 0 & -\frac{7\sqrt{5}}{60} & 0 & -\frac{\sqrt{5}i}{60} & 0 & 0 & -\frac{\sqrt{15}}{15} \\ 0 & \frac{\sqrt{5}i}{30} & 0 & \frac{\sqrt{5}}{30} & 0 & 0 & -\frac{\sqrt{5}}{15} & 0 & 0 & 0 \\ -\frac{\sqrt{5}i}{30} & 0 & \frac{\sqrt{5}}{30} & 0 & 0 & 0 & 0 & \frac{\sqrt{5}}{15} & 0 & 0 \end{bmatrix}$
235	symmetry	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$
	$\mathbb{T}_{3,2}^{(1,-1;a)}(E_u, 1)$	$\begin{bmatrix} -\frac{\sqrt{5}}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{5}}{60} & 0 & -\frac{7\sqrt{5}i}{60} & -\frac{\sqrt{15}}{15} & 0 \\ 0 & \frac{\sqrt{5}}{15} & 0 & 0 & \frac{\sqrt{5}}{60} & 0 & \frac{7\sqrt{5}i}{60} & 0 & 0 & \frac{\sqrt{15}}{15} \\ 0 & 0 & -\frac{\sqrt{5}}{15} & 0 & 0 & \frac{\sqrt{5}i}{12} & 0 & -\frac{\sqrt{5}}{60} & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{5}}{15} & -\frac{\sqrt{5}i}{12} & 0 & -\frac{\sqrt{5}}{60} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{5}}{30} & 0 & \frac{\sqrt{5}i}{30} & \frac{\sqrt{5}}{15} & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{5}}{30} & 0 & -\frac{\sqrt{5}i}{30} & 0 & 0 & -\frac{\sqrt{5}}{15} & 0 & 0 & 0 & 0 \end{bmatrix}$
236	symmetry	$\sqrt{15}xyz$
	$\mathbb{T}_{3,1}^{(1,-1;a)}(E_u, 2)$	$\begin{bmatrix} 0 & -\frac{\sqrt{2}}{12} & 0 & -\frac{\sqrt{2}i}{12} & -\frac{\sqrt{2}}{12} & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{12} \\ -\frac{\sqrt{2}}{12} & 0 & \frac{\sqrt{2}i}{12} & 0 & 0 & \frac{\sqrt{2}}{12} & 0 & 0 & -\frac{\sqrt{6}}{12} & 0 \\ 0 & \frac{\sqrt{2}i}{12} & 0 & -\frac{\sqrt{2}}{12} & 0 & 0 & \frac{\sqrt{2}}{12} & 0 & 0 & -\frac{\sqrt{6}i}{12} \\ -\frac{\sqrt{2}i}{12} & 0 & -\frac{\sqrt{2}}{12} & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{12} & \frac{\sqrt{6}i}{12} & 0 \\ \frac{\sqrt{2}}{6} & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{12} & 0 & \frac{\sqrt{2}i}{12} & 0 & 0 \\ 0 & -\frac{\sqrt{2}}{6} & 0 & 0 & \frac{\sqrt{2}}{12} & 0 & -\frac{\sqrt{2}i}{12} & 0 & 0 & 0 \end{bmatrix}$
237	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$

continued ...

Table 6

No.	multipole	matrix
	$\mathbb{T}_{3,2}^{(1,-1;a)}(E_u, 2)$	$\begin{bmatrix} 0 & -\frac{\sqrt{2}i}{12} & 0 & \frac{\sqrt{2}}{12} & 0 & 0 & \frac{\sqrt{2}}{12} & 0 & 0 & -\frac{\sqrt{6}i}{12} \\ \frac{\sqrt{2}i}{12} & 0 & \frac{\sqrt{2}}{12} & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{12} & \frac{\sqrt{6}i}{12} & 0 \\ 0 & -\frac{\sqrt{2}}{12} & 0 & -\frac{\sqrt{2}i}{12} & \frac{\sqrt{2}}{12} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{12} \\ -\frac{\sqrt{2}}{12} & 0 & \frac{\sqrt{2}i}{12} & 0 & 0 & -\frac{\sqrt{2}}{12} & 0 & 0 & \frac{\sqrt{6}}{12} & 0 \\ 0 & 0 & -\frac{\sqrt{2}}{6} & 0 & 0 & \frac{\sqrt{2}i}{12} & 0 & -\frac{\sqrt{2}}{12} & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{2}}{6} & -\frac{\sqrt{2}i}{12} & 0 & -\frac{\sqrt{2}}{12} & 0 & 0 & 0 \end{bmatrix}$
238	symmetry	z
	$\mathbb{T}_1^{(1,0;a)}(A_{2u})$	$\begin{bmatrix} 0 & \frac{\sqrt{15}i}{20} & 0 & \frac{\sqrt{15}}{20} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{20} \\ -\frac{\sqrt{15}i}{20} & 0 & \frac{\sqrt{15}}{20} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{5}i}{20} & 0 \\ 0 & -\frac{\sqrt{15}}{20} & 0 & \frac{\sqrt{15}i}{20} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{20} \\ -\frac{\sqrt{15}}{20} & 0 & -\frac{\sqrt{15}i}{20} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{20} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{20} & 0 & \frac{\sqrt{15}}{20} & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{15}i}{20} & 0 & \frac{\sqrt{15}}{20} & 0 & 0 & 0 \end{bmatrix}$
239	symmetry	x
	$\mathbb{T}_{1,1}^{(1,0;a)}(E_u)$	$\begin{bmatrix} 0 & 0 & -\frac{\sqrt{15}}{20} & 0 & 0 & -\frac{\sqrt{15}i}{20} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{15}}{20} & \frac{\sqrt{15}i}{20} & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{15}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}i}{20} & \frac{\sqrt{5}}{20} & 0 \\ 0 & -\frac{\sqrt{15}}{20} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{20} & 0 & 0 & -\frac{\sqrt{5}}{20} \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{20} & 0 & 0 & -\frac{\sqrt{5}i}{10} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{20} & \frac{\sqrt{5}i}{10} & 0 \end{bmatrix}$
240	symmetry	y
	$\mathbb{T}_{1,2}^{(1,0;a)}(E_u)$	$\begin{bmatrix} \frac{\sqrt{15}}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{20} & 0 & 0 & -\frac{\sqrt{5}}{20} & 0 \\ 0 & -\frac{\sqrt{15}}{20} & 0 & 0 & -\frac{\sqrt{15}}{20} & 0 & 0 & 0 & 0 & \frac{\sqrt{5}}{20} \\ 0 & 0 & \frac{\sqrt{15}}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{20} & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{15}}{20} & 0 & 0 & -\frac{\sqrt{15}}{20} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{10} \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{20} & 0 & 0 & -\frac{\sqrt{5}}{10} & 0 \end{bmatrix}$
241	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$

continued ...

Table 6

No.	multipole	matrix
	$\mathbb{T}_3^{(1,0;a)}(A_{1u})$	$\begin{bmatrix} 0 & 0 & -\frac{\sqrt{6}}{8} & 0 & 0 & -\frac{\sqrt{6}i}{24} & 0 & \frac{\sqrt{6}}{24} & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{6}}{8} & \frac{\sqrt{6}i}{24} & 0 & \frac{\sqrt{6}}{24} & 0 & 0 & 0 \\ -\frac{\sqrt{6}}{8} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{24} & 0 & \frac{\sqrt{6}i}{24} & 0 & 0 \\ 0 & \frac{\sqrt{6}}{8} & 0 & 0 & \frac{\sqrt{6}}{24} & 0 & -\frac{\sqrt{6}i}{24} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{6}i}{24} & 0 & \frac{\sqrt{6}}{24} & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{6}i}{24} & 0 & \frac{\sqrt{6}}{24} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
242	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$
	$\mathbb{T}_3^{(1,0;a)}(A_{2u}, 1)$	$\begin{bmatrix} 0 & -\frac{\sqrt{15}i}{60} & 0 & -\frac{\sqrt{15}}{60} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{5}i}{10} \\ \frac{\sqrt{15}i}{60} & 0 & -\frac{\sqrt{15}}{60} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{10} & 0 \\ 0 & \frac{\sqrt{15}}{60} & 0 & -\frac{\sqrt{15}i}{60} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{5}}{10} \\ \frac{\sqrt{15}}{60} & 0 & \frac{\sqrt{15}i}{60} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{5}}{10} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{15} & 0 & \frac{\sqrt{15}}{15} & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{15}i}{15} & 0 & \frac{\sqrt{15}}{15} & 0 & 0 & 0 \end{bmatrix}$
243	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$
	$\mathbb{T}_3^{(1,0;a)}(A_{2u}, 2)$	$\begin{bmatrix} \frac{\sqrt{6}}{8} & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{24} & 0 & -\frac{\sqrt{6}i}{24} & 0 & 0 \\ 0 & -\frac{\sqrt{6}}{8} & 0 & 0 & -\frac{\sqrt{6}}{24} & 0 & \frac{\sqrt{6}i}{24} & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{6}}{8} & 0 & 0 & -\frac{\sqrt{6}i}{24} & 0 & \frac{\sqrt{6}}{24} & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{6}}{8} & \frac{\sqrt{6}i}{24} & 0 & \frac{\sqrt{6}}{24} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{6}}{24} & 0 & -\frac{\sqrt{6}i}{24} & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{6}}{24} & 0 & \frac{\sqrt{6}i}{24} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
244	symmetry	$-\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$
	$\mathbb{T}_{3,1}^{(1,0;a)}(E_u, 1)$	$\begin{bmatrix} 0 & 0 & \frac{\sqrt{10}}{120} & 0 & 0 & \frac{11\sqrt{10}i}{120} & 0 & \frac{\sqrt{10}}{24} & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{10}}{120} & -\frac{11\sqrt{10}i}{120} & 0 & \frac{\sqrt{10}}{24} & 0 & 0 & 0 \\ -\frac{\sqrt{10}}{120} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{24} & 0 & \frac{\sqrt{10}i}{120} & -\frac{\sqrt{30}}{60} & 0 \\ 0 & \frac{\sqrt{10}}{120} & 0 & 0 & \frac{\sqrt{10}}{24} & 0 & -\frac{\sqrt{10}i}{120} & 0 & 0 & \frac{\sqrt{30}}{60} \\ 0 & \frac{\sqrt{10}i}{24} & 0 & \frac{\sqrt{10}}{24} & 0 & 0 & -\frac{\sqrt{10}}{30} & 0 & 0 & -\frac{\sqrt{30}i}{20} \\ -\frac{\sqrt{10}i}{24} & 0 & \frac{\sqrt{10}}{24} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{30} & \frac{\sqrt{30}i}{20} & 0 \end{bmatrix}$
245	symmetry	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$

continued ...

Table 6

No.	multipole	matrix
	$\mathbb{T}_{3,2}^{(1,0;a)}(E_u, 1)$	$\begin{bmatrix} -\frac{\sqrt{10}}{120} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{120} & 0 & \frac{\sqrt{10}i}{24} & \frac{\sqrt{30}}{60} & 0 \\ 0 & \frac{\sqrt{10}}{120} & 0 & 0 & \frac{\sqrt{10}}{120} & 0 & -\frac{\sqrt{10}i}{24} & 0 & 0 & -\frac{\sqrt{30}}{60} \\ 0 & 0 & -\frac{\sqrt{10}}{120} & 0 & 0 & \frac{\sqrt{10}i}{24} & 0 & \frac{11\sqrt{10}}{120} & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{10}}{120} & -\frac{\sqrt{10}i}{24} & 0 & \frac{11\sqrt{10}}{120} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{10}}{24} & 0 & \frac{\sqrt{10}i}{24} & \frac{\sqrt{10}}{30} & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{20} \\ -\frac{\sqrt{10}}{24} & 0 & -\frac{\sqrt{10}i}{24} & 0 & 0 & -\frac{\sqrt{10}}{30} & 0 & 0 & -\frac{\sqrt{30}}{20} & 0 \end{bmatrix}$
246	symmetry	$\sqrt{15}xyz$
	$\mathbb{T}_{3,1}^{(1,0;a)}(E_u, 2)$	$\begin{bmatrix} 0 & -\frac{1}{12} & 0 & \frac{i}{6} & \frac{1}{6} & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{12} \\ -\frac{1}{12} & 0 & -\frac{i}{6} & 0 & 0 & -\frac{1}{6} & 0 & 0 & -\frac{\sqrt{3}}{12} & 0 \\ 0 & \frac{i}{12} & 0 & \frac{1}{6} & 0 & 0 & -\frac{1}{6} & 0 & 0 & -\frac{\sqrt{3}i}{12} \\ -\frac{i}{12} & 0 & \frac{1}{6} & 0 & 0 & 0 & 0 & \frac{1}{6} & \frac{\sqrt{3}i}{12} & 0 \\ \frac{1}{6} & 0 & 0 & 0 & 0 & -\frac{1}{6} & 0 & -\frac{i}{6} & 0 & 0 \\ 0 & -\frac{1}{6} & 0 & 0 & -\frac{1}{6} & 0 & \frac{i}{6} & 0 & 0 & 0 \end{bmatrix}$
247	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$
	$\mathbb{T}_{3,2}^{(1,0;a)}(E_u, 2)$	$\begin{bmatrix} 0 & \frac{i}{6} & 0 & \frac{1}{12} & 0 & 0 & -\frac{1}{6} & 0 & 0 & -\frac{\sqrt{3}i}{12} \\ -\frac{i}{6} & 0 & \frac{1}{12} & 0 & 0 & 0 & 0 & \frac{1}{6} & \frac{\sqrt{3}i}{12} & 0 \\ 0 & \frac{1}{6} & 0 & -\frac{i}{12} & -\frac{1}{6} & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{12} \\ \frac{1}{6} & 0 & \frac{i}{12} & 0 & 0 & \frac{1}{6} & 0 & 0 & \frac{\sqrt{3}}{12} & 0 \\ 0 & 0 & -\frac{1}{6} & 0 & 0 & -\frac{i}{6} & 0 & \frac{1}{6} & 0 & 0 \\ 0 & 0 & 0 & \frac{1}{6} & \frac{i}{6} & 0 & \frac{1}{6} & 0 & 0 & 0 \end{bmatrix}$
248	symmetry	z
	$\mathbb{T}_1^{(1,1;a)}(A_{2u})$	$\begin{bmatrix} 0 & \frac{\sqrt{5}i}{20} & 0 & \frac{\sqrt{5}}{20} & 0 & 0 & \frac{\sqrt{5}}{10} & 0 & 0 & \frac{\sqrt{15}i}{20} \\ -\frac{\sqrt{5}i}{20} & 0 & \frac{\sqrt{5}}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{10} & -\frac{\sqrt{15}i}{20} & 0 \\ 0 & -\frac{\sqrt{5}}{20} & 0 & \frac{\sqrt{5}i}{20} & -\frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{20} \\ -\frac{\sqrt{5}}{20} & 0 & -\frac{\sqrt{5}i}{20} & 0 & 0 & \frac{\sqrt{5}}{10} & 0 & 0 & 0 & \frac{\sqrt{15}}{20} \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{20} & 0 & -\frac{\sqrt{5}}{20} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{5}i}{20} & 0 & -\frac{\sqrt{5}}{20} & 0 & 0 & 0 \end{bmatrix}$
249	symmetry	x

continued ...

Table 6

No.	multipole	matrix
	$\mathbb{T}_{1,1}^{(1,1;a)}(E_u)$	$\begin{bmatrix} 0 & 0 & \frac{\sqrt{5}}{20} & 0 & 0 & \frac{\sqrt{5}i}{20} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{5}}{20} & -\frac{\sqrt{5}i}{20} & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{5}}{20} & 0 & 0 & 0 & 0 & \frac{\sqrt{5}}{10} & 0 & -\frac{\sqrt{5}i}{20} & \frac{\sqrt{15}}{20} & 0 \\ 0 & \frac{\sqrt{5}}{20} & 0 & 0 & \frac{\sqrt{5}}{10} & 0 & \frac{\sqrt{5}i}{20} & 0 & 0 & -\frac{\sqrt{15}}{20} \\ 0 & -\frac{\sqrt{5}i}{10} & 0 & -\frac{\sqrt{5}}{10} & 0 & 0 & -\frac{\sqrt{5}}{20} & 0 & 0 & 0 \\ \frac{\sqrt{5}i}{10} & 0 & -\frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{5}}{20} & 0 & 0 \end{bmatrix}$
250	symmetry	y
	$\mathbb{T}_{1,2}^{(1,1;a)}(E_u)$	$\begin{bmatrix} -\frac{\sqrt{5}}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{20} & 0 & \frac{\sqrt{5}i}{10} & -\frac{\sqrt{15}}{20} & 0 \\ 0 & \frac{\sqrt{5}}{20} & 0 & 0 & -\frac{\sqrt{5}}{20} & 0 & -\frac{\sqrt{5}i}{10} & 0 & 0 & \frac{\sqrt{15}}{20} \\ 0 & 0 & -\frac{\sqrt{5}}{20} & 0 & 0 & 0 & 0 & \frac{\sqrt{5}}{20} & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{5}}{20} & 0 & 0 & \frac{\sqrt{5}}{20} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{5}}{10} & 0 & -\frac{\sqrt{5}i}{10} & \frac{\sqrt{5}}{20} & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{5}}{10} & 0 & \frac{\sqrt{5}i}{10} & 0 & 0 & -\frac{\sqrt{5}}{20} & 0 & 0 & 0 & 0 \end{bmatrix}$
251	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$
	$\mathbb{M}_2^{(a)}(A_{1u})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
252	symmetry	$\sqrt{3}yz$
	$\mathbb{M}_{2,1}^{(a)}(E_u, 1)$	$\begin{bmatrix} \frac{\sqrt{6}i}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} & 0 \\ 0 & \frac{\sqrt{6}i}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} \\ 0 & 0 & \frac{\sqrt{6}i}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{6}i}{12} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{12} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{12} & 0 & 0 & 0 & 0 \end{bmatrix}$
253	symmetry	$-\sqrt{3}xz$

continued ...

Table 6

No.	multipole	matrix
	$M_{2,2}^{(a)}(E_u, 1)$	$\begin{bmatrix} 0 & 0 & \frac{\sqrt{6}i}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{6}i}{12} & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{6}i}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} & 0 \\ 0 & -\frac{\sqrt{6}i}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{12} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{12} & 0 & 0 \end{bmatrix}$
254	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$
	$M_{2,1}^{(a)}(E_u, 2)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{12} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{12} & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{12} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{12} & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{6}i}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{6}i}{6} & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
255	symmetry	$-\sqrt{3}xy$
	$M_{2,2}^{(a)}(E_u, 2)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{12} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{12} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{12} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{12} & 0 & 0 \\ \frac{\sqrt{6}i}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{6}i}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
256	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$
	$M_2^{(1,-1;a)}(A_{1u})$	$\begin{bmatrix} 0 & -\frac{\sqrt{5}}{20} & 0 & \frac{\sqrt{5}i}{20} & \frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{60} \\ -\frac{\sqrt{5}}{20} & 0 & -\frac{\sqrt{5}i}{20} & 0 & 0 & -\frac{\sqrt{5}}{10} & 0 & 0 & \frac{\sqrt{15}}{60} & 0 \\ 0 & -\frac{\sqrt{5}i}{20} & 0 & -\frac{\sqrt{5}}{20} & 0 & 0 & \frac{\sqrt{5}}{10} & 0 & 0 & -\frac{\sqrt{15}i}{60} \\ \frac{\sqrt{5}i}{20} & 0 & -\frac{\sqrt{5}}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{10} & \frac{\sqrt{15}i}{60} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{20} & 0 & \frac{\sqrt{5}i}{20} & \frac{\sqrt{15}}{15} & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{20} & 0 & -\frac{\sqrt{5}i}{20} & 0 & 0 & -\frac{\sqrt{15}i}{15} \end{bmatrix}$
257	symmetry	$\sqrt{3}yz$

continued ...

Table 6

No.	multipole	matrix
	$\mathbb{M}_{2,1}^{(1,-1;a)}(E_u, 1)$	$\begin{bmatrix} 0 & 0 & \frac{\sqrt{15}}{20} & 0 & 0 & -\frac{\sqrt{15}i}{20} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{15}}{20} & \frac{\sqrt{15}i}{20} & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{15}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}i}{20} & -\frac{\sqrt{5}}{20} & 0 \\ 0 & \frac{\sqrt{15}}{20} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{20} & 0 & 0 & \frac{\sqrt{5}}{20} \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{20} & 0 & 0 & -\frac{\sqrt{5}i}{10} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{20} & \frac{\sqrt{5}i}{10} & 0 \end{bmatrix}$
258	symmetry	$-\sqrt{3}xz$
	$\mathbb{M}_{2,2}^{(1,-1;a)}(E_u, 1)$	$\begin{bmatrix} -\frac{\sqrt{15}}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{20} & 0 & 0 & \frac{\sqrt{5}}{20} & 0 \\ 0 & \frac{\sqrt{15}}{20} & 0 & 0 & -\frac{\sqrt{15}}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{20} \\ 0 & 0 & -\frac{\sqrt{15}}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{20} & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{15}}{20} & 0 & 0 & -\frac{\sqrt{15}}{20} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{10} \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{20} & 0 & 0 & -\frac{\sqrt{5}}{10} & 0 \end{bmatrix}$
259	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$
	$\mathbb{M}_{2,1}^{(1,-1;a)}(E_u, 2)$	$\begin{bmatrix} 0 & \frac{\sqrt{15}}{20} & 0 & \frac{\sqrt{15}i}{20} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{20} \\ \frac{\sqrt{15}}{20} & 0 & -\frac{\sqrt{15}i}{20} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{20} & 0 \\ 0 & -\frac{\sqrt{15}i}{20} & 0 & \frac{\sqrt{15}}{20} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{20} \\ \frac{\sqrt{15}i}{20} & 0 & \frac{\sqrt{15}}{20} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{5}i}{20} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{20} & 0 & \frac{\sqrt{15}i}{20} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{20} & 0 & -\frac{\sqrt{15}i}{20} & 0 & 0 & 0 \end{bmatrix}$
260	symmetry	$-\sqrt{3}xy$
	$\mathbb{M}_{2,2}^{(1,-1;a)}(E_u, 2)$	$\begin{bmatrix} 0 & \frac{\sqrt{15}i}{20} & 0 & -\frac{\sqrt{15}}{20} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{20} \\ -\frac{\sqrt{15}i}{20} & 0 & -\frac{\sqrt{15}}{20} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{5}i}{20} & 0 \\ 0 & \frac{\sqrt{15}}{20} & 0 & \frac{\sqrt{15}i}{20} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{5}}{20} \\ \frac{\sqrt{15}}{20} & 0 & -\frac{\sqrt{15}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{5}}{20} \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{20} & 0 & -\frac{\sqrt{15}}{20} & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{15}i}{20} & 0 & -\frac{\sqrt{15}}{20} & 0 & 0 & 0 \end{bmatrix}$
261	symmetry	$\frac{3x^4}{8} + \frac{3x^2y^2}{4} - 3x^2z^2 + \frac{3y^4}{8} - 3y^2z^2 + z^4$

continued ...

Table 6

No.	multipole	matrix
	$\mathbb{M}_4^{(1,-1;a)}(A_{1u}, 1)$	$\begin{bmatrix} 0 & \frac{\sqrt{35}}{140} & 0 & -\frac{\sqrt{35}i}{140} & -\frac{\sqrt{35}}{35} & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}}{70} \\ \frac{\sqrt{35}}{140} & 0 & \frac{\sqrt{35}i}{140} & 0 & 0 & \frac{\sqrt{35}}{35} & 0 & 0 & -\frac{\sqrt{105}}{70} & 0 \\ 0 & \frac{\sqrt{35}i}{140} & 0 & \frac{\sqrt{35}}{140} & 0 & 0 & -\frac{\sqrt{35}}{35} & 0 & 0 & \frac{\sqrt{105}i}{70} \\ -\frac{\sqrt{35}i}{140} & 0 & \frac{\sqrt{35}}{140} & 0 & 0 & 0 & 0 & \frac{\sqrt{35}}{35} & -\frac{\sqrt{105}i}{70} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{35}}{35} & 0 & \frac{\sqrt{35}i}{35} & \frac{\sqrt{105}}{35} & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{35}}{35} & 0 & -\frac{\sqrt{35}i}{35} & 0 & 0 & -\frac{\sqrt{105}}{35} \end{bmatrix}$
262	symmetry	$\frac{\sqrt{70}yz(3x^2-y^2)}{4}$
	$\mathbb{M}_4^{(1,-1;a)}(A_{1u}, 2)$	$\begin{bmatrix} 0 & 0 & \frac{\sqrt{2}}{8} & 0 & 0 & -\frac{\sqrt{2}i}{8} & 0 & \frac{\sqrt{2}}{8} & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{2}}{8} & \frac{\sqrt{2}i}{8} & 0 & \frac{\sqrt{2}}{8} & 0 & 0 & 0 \\ \frac{\sqrt{2}}{8} & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{8} & 0 & \frac{\sqrt{2}i}{8} & 0 & 0 \\ 0 & -\frac{\sqrt{2}}{8} & 0 & 0 & \frac{\sqrt{2}}{8} & 0 & -\frac{\sqrt{2}i}{8} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{2}i}{8} & 0 & \frac{\sqrt{2}}{8} & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{2}i}{8} & 0 & \frac{\sqrt{2}}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
263	symmetry	$\frac{\sqrt{70}xz(x^2-3y^2)}{4}$
	$\mathbb{M}_4^{(1,-1;a)}(A_{2u})$	$\begin{bmatrix} \frac{\sqrt{2}}{8} & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{8} & 0 & \frac{\sqrt{2}i}{8} & 0 & 0 \\ 0 & -\frac{\sqrt{2}}{8} & 0 & 0 & \frac{\sqrt{2}}{8} & 0 & -\frac{\sqrt{2}i}{8} & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{2}}{8} & 0 & 0 & \frac{\sqrt{2}i}{8} & 0 & -\frac{\sqrt{2}}{8} & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{2}}{8} & -\frac{\sqrt{2}i}{8} & 0 & -\frac{\sqrt{2}}{8} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{2}}{8} & 0 & \frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{2}}{8} & 0 & -\frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
264	symmetry	$-\frac{\sqrt{10}yz(3x^2+3y^2-4z^2)}{4}$
	$\mathbb{M}_{4,1}^{(1,-1;a)}(E_u, 1)$	$\begin{bmatrix} 0 & 0 & -\frac{\sqrt{14}}{56} & 0 & 0 & \frac{\sqrt{14}i}{56} & 0 & -\frac{\sqrt{14}}{56} & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{14}}{56} & -\frac{\sqrt{14}i}{56} & 0 & -\frac{\sqrt{14}}{56} & 0 & 0 & 0 \\ \frac{\sqrt{14}}{56} & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}}{56} & 0 & \frac{3\sqrt{14}i}{56} & \frac{\sqrt{42}}{28} & 0 \\ 0 & -\frac{\sqrt{14}}{56} & 0 & 0 & -\frac{\sqrt{14}}{56} & 0 & -\frac{3\sqrt{14}i}{56} & 0 & 0 & -\frac{\sqrt{42}}{28} \\ 0 & -\frac{\sqrt{14}i}{56} & 0 & -\frac{\sqrt{14}}{56} & 0 & 0 & \frac{\sqrt{14}}{14} & 0 & 0 & -\frac{\sqrt{42}i}{28} \\ \frac{\sqrt{14}i}{56} & 0 & -\frac{\sqrt{14}}{56} & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}}{14} & \frac{\sqrt{42}i}{28} & 0 \end{bmatrix}$
265	symmetry	$\frac{\sqrt{10}xz(3x^2+3y^2-4z^2)}{4}$

continued ...

Table 6

No.	multipole	matrix
	$\mathbb{M}_{4,2}^{(1,-1;a)}(E_u, 1)$	$\begin{bmatrix} \frac{\sqrt{14}}{56} & 0 & 0 & 0 & 0 & \frac{3\sqrt{14}}{56} & 0 & -\frac{\sqrt{14}i}{56} & -\frac{\sqrt{42}}{28} & 0 \\ 0 & -\frac{\sqrt{14}}{56} & 0 & 0 & \frac{3\sqrt{14}}{56} & 0 & \frac{\sqrt{14}i}{56} & 0 & 0 & \frac{\sqrt{42}}{28} \\ 0 & 0 & \frac{\sqrt{14}}{56} & 0 & 0 & -\frac{\sqrt{14}i}{56} & 0 & \frac{\sqrt{14}}{56} & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{14}}{56} & \frac{\sqrt{14}i}{56} & 0 & \frac{\sqrt{14}}{56} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{14}}{56} & 0 & -\frac{\sqrt{14}i}{56} & -\frac{\sqrt{14}}{14} & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}}{28} \\ \frac{\sqrt{14}}{56} & 0 & \frac{\sqrt{14}i}{56} & 0 & 0 & \frac{\sqrt{14}}{14} & 0 & 0 & -\frac{\sqrt{42}}{28} & 0 \end{bmatrix}$
266	symmetry	$\frac{\sqrt{35}(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$ $\begin{bmatrix} 0 & \frac{1}{4} & 0 & \frac{i}{4} & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{1}{4} & 0 & -\frac{i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{i}{4} & 0 & -\frac{1}{4} & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{i}{4} & 0 & -\frac{1}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
	$\mathbb{M}_{4,1}^{(1,-1;a)}(E_u, 2)$	
267	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$ $\begin{bmatrix} 0 & -\frac{i}{4} & 0 & \frac{1}{4} & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{i}{4} & 0 & \frac{1}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{1}{4} & 0 & \frac{i}{4} & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{1}{4} & 0 & -\frac{i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
	$\mathbb{M}_{4,2}^{(1,-1;a)}(E_u, 2)$	
268	symmetry	$-\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$ $\begin{bmatrix} 0 & -\frac{\sqrt{7}}{28} & 0 & 0 & \frac{\sqrt{7}}{14} & 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{28} \\ -\frac{\sqrt{7}}{28} & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}}{14} & 0 & 0 & \frac{\sqrt{21}}{28} & 0 \\ 0 & \frac{\sqrt{7}i}{28} & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}}{14} & 0 & 0 & \frac{\sqrt{21}i}{28} \\ -\frac{\sqrt{7}i}{28} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{14} & -\frac{\sqrt{21}i}{28} & 0 \\ \frac{\sqrt{7}}{14} & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{14} & 0 & \frac{\sqrt{7}i}{14} & 0 & 0 \\ 0 & -\frac{\sqrt{7}}{14} & 0 & 0 & \frac{\sqrt{7}}{14} & 0 & -\frac{\sqrt{7}i}{14} & 0 & 0 & 0 \end{bmatrix}$
	$\mathbb{M}_{4,1}^{(1,-1;a)}(E_u, 3)$	
269	symmetry	$\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$

continued ...

Table 6

No.	multipole	matrix
	$\mathbb{M}_{4,2}^{(1,-1;a)}(E_u, 3)$	$\begin{bmatrix} 0 & 0 & 0 & \frac{\sqrt{7}}{28} & 0 & 0 & -\frac{\sqrt{7}}{14} & 0 & 0 & \frac{\sqrt{21}i}{28} \\ 0 & 0 & \frac{\sqrt{7}}{28} & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{14} & -\frac{\sqrt{21}i}{28} & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{7}i}{28} & -\frac{\sqrt{7}}{14} & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}}{28} \\ 0 & 0 & \frac{\sqrt{7}i}{28} & 0 & 0 & \frac{\sqrt{7}}{14} & 0 & 0 & -\frac{\sqrt{21}}{28} & 0 \\ 0 & 0 & -\frac{\sqrt{7}}{14} & 0 & 0 & \frac{\sqrt{7}i}{14} & 0 & -\frac{\sqrt{7}}{14} & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{7}}{14} & -\frac{\sqrt{7}i}{14} & 0 & -\frac{\sqrt{7}}{14} & 0 & 0 & 0 \end{bmatrix}$
270	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$
	$\mathbb{M}_2^{(1,0;a)}(A_{1u})$	$\begin{bmatrix} 0 & -\frac{\sqrt{3}}{12} & 0 & \frac{\sqrt{3}i}{12} & 0 & 0 & 0 & 0 & 0 & -\frac{1}{4} \\ -\frac{\sqrt{3}}{12} & 0 & -\frac{\sqrt{3}i}{12} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{1}{4} \\ 0 & -\frac{\sqrt{3}i}{12} & 0 & -\frac{\sqrt{3}}{12} & 0 & 0 & 0 & 0 & 0 & \frac{i}{4} \\ \frac{\sqrt{3}i}{12} & 0 & -\frac{\sqrt{3}}{12} & 0 & 0 & 0 & 0 & 0 & -\frac{i}{4} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{12} & 0 & -\frac{\sqrt{3}i}{12} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{12} & 0 & \frac{\sqrt{3}i}{12} & 0 & 0 & 0 \end{bmatrix}$
271	symmetry	$\sqrt{3}yz$
	$\mathbb{M}_{2,1}^{(1,0;a)}(E_u, 1)$	$\begin{bmatrix} 0 & 0 & \frac{1}{12} & 0 & 0 & -\frac{i}{12} & 0 & -\frac{1}{3} & 0 & 0 \\ 0 & 0 & 0 & -\frac{1}{12} & \frac{i}{12} & 0 & -\frac{1}{3} & 0 & 0 & 0 \\ -\frac{1}{12} & 0 & 0 & 0 & 0 & \frac{1}{6} & 0 & \frac{i}{12} & \frac{\sqrt{3}}{12} & 0 \\ 0 & \frac{1}{12} & 0 & 0 & \frac{1}{6} & 0 & -\frac{i}{12} & 0 & 0 & -\frac{\sqrt{3}}{12} \\ 0 & \frac{i}{6} & 0 & \frac{1}{6} & 0 & 0 & -\frac{1}{12} & 0 & 0 & 0 \\ -\frac{i}{6} & 0 & \frac{1}{6} & 0 & 0 & 0 & 0 & \frac{1}{12} & 0 & 0 \end{bmatrix}$
272	symmetry	$-\sqrt{3}xz$
	$\mathbb{M}_{2,2}^{(1,0;a)}(E_u, 1)$	$\begin{bmatrix} -\frac{1}{12} & 0 & 0 & 0 & 0 & \frac{1}{12} & 0 & \frac{i}{6} & -\frac{\sqrt{3}}{12} & 0 \\ 0 & \frac{1}{12} & 0 & 0 & \frac{1}{12} & 0 & -\frac{i}{6} & 0 & 0 & \frac{\sqrt{3}}{12} \\ 0 & 0 & -\frac{1}{12} & 0 & 0 & -\frac{i}{3} & 0 & -\frac{1}{12} & 0 & 0 \\ 0 & 0 & 0 & \frac{1}{12} & \frac{i}{3} & 0 & -\frac{1}{12} & 0 & 0 & 0 \\ 0 & -\frac{1}{6} & 0 & \frac{i}{6} & \frac{1}{12} & 0 & 0 & 0 & 0 & 0 \\ -\frac{1}{6} & 0 & -\frac{i}{6} & 0 & 0 & -\frac{1}{12} & 0 & 0 & 0 & 0 \end{bmatrix}$
273	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$

continued ...

Table 6

No.	multipole	matrix
	$M_{2,1}^{(1,0;a)}(E_u, 2)$	$\begin{bmatrix} 0 & -\frac{1}{12} & 0 & -\frac{i}{12} & \frac{1}{6} & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{12} \\ -\frac{1}{12} & 0 & \frac{i}{12} & 0 & 0 & -\frac{1}{6} & 0 & 0 & -\frac{\sqrt{3}}{12} & 0 \\ 0 & \frac{i}{12} & 0 & -\frac{1}{12} & 0 & 0 & -\frac{1}{6} & 0 & 0 & -\frac{\sqrt{3}i}{12} \\ -\frac{i}{12} & 0 & -\frac{1}{12} & 0 & 0 & 0 & 0 & \frac{1}{6} & \frac{\sqrt{3}i}{12} & 0 \\ -\frac{1}{3} & 0 & 0 & 0 & 0 & \frac{1}{12} & 0 & \frac{i}{12} & 0 & 0 \\ 0 & \frac{1}{3} & 0 & 0 & \frac{1}{12} & 0 & -\frac{i}{12} & 0 & 0 & 0 \end{bmatrix}$
274	symmetry	$-\sqrt{3}xy$
	$M_{2,2}^{(1,0;a)}(E_u, 2)$	$\begin{bmatrix} 0 & -\frac{i}{12} & 0 & \frac{1}{12} & 0 & 0 & -\frac{1}{6} & 0 & 0 & -\frac{\sqrt{3}i}{12} \\ \frac{i}{12} & 0 & \frac{1}{12} & 0 & 0 & 0 & 0 & \frac{1}{6} & \frac{\sqrt{3}i}{12} & 0 \\ 0 & -\frac{1}{12} & 0 & -\frac{i}{12} & -\frac{1}{6} & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{12} \\ -\frac{1}{12} & 0 & \frac{i}{12} & 0 & 0 & \frac{1}{6} & 0 & 0 & \frac{\sqrt{3}}{12} & 0 \\ 0 & 0 & \frac{1}{3} & 0 & 0 & \frac{i}{12} & 0 & -\frac{1}{12} & 0 & 0 \\ 0 & 0 & 0 & -\frac{1}{3} & -\frac{i}{12} & 0 & -\frac{1}{12} & 0 & 0 & 0 \end{bmatrix}$
275	symmetry	1
	$M_0^{(1,1;a)}(A_{1u})$	$\begin{bmatrix} 0 & \frac{\sqrt{10}}{20} & 0 & -\frac{\sqrt{10}i}{20} & \frac{\sqrt{10}}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{60} \\ \frac{\sqrt{10}}{20} & 0 & \frac{\sqrt{10}i}{20} & 0 & 0 & -\frac{\sqrt{10}}{20} & 0 & 0 & -\frac{\sqrt{30}}{60} & 0 \\ 0 & \frac{\sqrt{10}i}{20} & 0 & \frac{\sqrt{10}}{20} & 0 & 0 & \frac{\sqrt{10}}{20} & 0 & 0 & \frac{\sqrt{30}i}{60} \\ -\frac{\sqrt{10}i}{20} & 0 & \frac{\sqrt{10}}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}}{20} & -\frac{\sqrt{30}i}{60} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{20} & 0 & -\frac{\sqrt{10}i}{20} & \frac{\sqrt{30}}{30} & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{20} & 0 & \frac{\sqrt{10}i}{20} & 0 & 0 & -\frac{\sqrt{30}}{30} \end{bmatrix}$
276	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$
	$M_2^{(1,1;a)}(A_{1u})$	$\begin{bmatrix} 0 & -\frac{\sqrt{105}}{210} & 0 & \frac{\sqrt{105}i}{210} & -\frac{\sqrt{105}}{70} & 0 & 0 & 0 & 0 & \frac{\sqrt{35}}{35} \\ -\frac{\sqrt{105}}{210} & 0 & -\frac{\sqrt{105}i}{210} & 0 & 0 & \frac{\sqrt{105}}{70} & 0 & 0 & \frac{\sqrt{35}}{35} & 0 \\ 0 & -\frac{\sqrt{105}i}{210} & 0 & -\frac{\sqrt{105}}{210} & 0 & 0 & -\frac{\sqrt{105}}{70} & 0 & 0 & -\frac{\sqrt{35}i}{35} \\ \frac{\sqrt{105}i}{210} & 0 & -\frac{\sqrt{105}}{210} & 0 & 0 & 0 & 0 & \frac{\sqrt{105}}{70} & \frac{\sqrt{35}i}{35} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{2\sqrt{105}}{105} & 0 & -\frac{2\sqrt{105}i}{105} & \frac{3\sqrt{35}}{70} & 0 \\ 0 & 0 & 0 & 0 & \frac{2\sqrt{105}}{105} & 0 & \frac{2\sqrt{105}i}{105} & 0 & 0 & -\frac{3\sqrt{35}}{70} \end{bmatrix}$
277	symmetry	$\sqrt{3}yz$

continued ...

Table 6

No.	multipole	matrix
	$M_{2,1}^{(1,1;a)}(E_u, 1)$	$\begin{bmatrix} 0 & 0 & -\frac{\sqrt{35}}{105} & 0 & 0 & \frac{\sqrt{35i}}{105} & 0 & \frac{\sqrt{35}}{42} & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{35}}{105} & -\frac{\sqrt{35i}}{105} & 0 & \frac{\sqrt{35}}{42} & 0 & 0 & 0 \\ \frac{\sqrt{35}}{105} & 0 & 0 & 0 & 0 & \frac{\sqrt{35}}{42} & 0 & -\frac{4\sqrt{35i}}{105} & \frac{2\sqrt{105}}{105} & 0 \\ 0 & -\frac{\sqrt{35}}{105} & 0 & 0 & \frac{\sqrt{35}}{42} & 0 & \frac{4\sqrt{35i}}{105} & 0 & 0 & -\frac{2\sqrt{105}}{105} \\ 0 & \frac{\sqrt{35i}}{42} & 0 & \frac{\sqrt{35}}{42} & 0 & 0 & \frac{4\sqrt{35}}{105} & 0 & 0 & \frac{\sqrt{105i}}{70} \\ -\frac{\sqrt{35i}}{42} & 0 & \frac{\sqrt{35}}{42} & 0 & 0 & 0 & 0 & -\frac{4\sqrt{35}}{105} & -\frac{\sqrt{105i}}{70} & 0 \end{bmatrix}$
278	symmetry	$-\sqrt{3}xz$
	$M_{2,2}^{(1,1;a)}(E_u, 1)$	$\begin{bmatrix} \frac{\sqrt{35}}{105} & 0 & 0 & 0 & 0 & -\frac{4\sqrt{35}}{105} & 0 & \frac{\sqrt{35i}}{42} & -\frac{2\sqrt{105}}{105} & 0 \\ 0 & -\frac{\sqrt{35}}{105} & 0 & 0 & -\frac{4\sqrt{35}}{105} & 0 & -\frac{\sqrt{35i}}{42} & 0 & 0 & \frac{2\sqrt{105}}{105} \\ 0 & 0 & \frac{\sqrt{35}}{105} & 0 & 0 & \frac{\sqrt{35i}}{42} & 0 & \frac{\sqrt{35}}{105} & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{35}}{105} & -\frac{\sqrt{35i}}{42} & 0 & \frac{\sqrt{35}}{105} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{35}}{42} & 0 & \frac{\sqrt{35i}}{42} & -\frac{4\sqrt{35}}{105} & 0 & 0 & 0 & 0 & \frac{\sqrt{105}}{70} \\ -\frac{\sqrt{35}}{42} & 0 & -\frac{\sqrt{35i}}{42} & 0 & 0 & \frac{4\sqrt{35}}{105} & 0 & 0 & \frac{\sqrt{105}}{70} & 0 \end{bmatrix}$
279	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$
	$M_{2,1}^{(1,1;a)}(E_u, 2)$	$\begin{bmatrix} 0 & \frac{4\sqrt{35}}{105} & 0 & -\frac{\sqrt{35i}}{30} & \frac{\sqrt{35}}{42} & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}}{210} \\ \frac{4\sqrt{35}}{105} & 0 & \frac{\sqrt{35i}}{30} & 0 & 0 & -\frac{\sqrt{35}}{42} & 0 & 0 & -\frac{\sqrt{105}}{210} & 0 \\ 0 & -\frac{4\sqrt{35i}}{105} & 0 & -\frac{\sqrt{35}}{30} & 0 & 0 & -\frac{\sqrt{35}}{42} & 0 & 0 & -\frac{\sqrt{105i}}{210} \\ \frac{4\sqrt{35i}}{105} & 0 & -\frac{\sqrt{35}}{30} & 0 & 0 & 0 & 0 & \frac{\sqrt{35}}{42} & \frac{\sqrt{105i}}{210} & 0 \\ \frac{\sqrt{35}}{42} & 0 & 0 & 0 & 0 & -\frac{\sqrt{35}}{105} & 0 & -\frac{\sqrt{35i}}{105} & 0 & 0 \\ 0 & -\frac{\sqrt{35}}{42} & 0 & 0 & -\frac{\sqrt{35}}{105} & 0 & \frac{\sqrt{35i}}{105} & 0 & 0 & 0 \end{bmatrix}$
280	symmetry	$-\sqrt{3}xy$
	$M_{2,2}^{(1,1;a)}(E_u, 2)$	$\begin{bmatrix} 0 & -\frac{\sqrt{35i}}{30} & 0 & -\frac{4\sqrt{35}}{105} & 0 & 0 & -\frac{\sqrt{35}}{42} & 0 & 0 & -\frac{\sqrt{105i}}{210} \\ \frac{\sqrt{35i}}{30} & 0 & -\frac{4\sqrt{35}}{105} & 0 & 0 & 0 & 0 & \frac{\sqrt{35}}{42} & \frac{\sqrt{105i}}{210} & 0 \\ 0 & -\frac{\sqrt{35}}{30} & 0 & \frac{4\sqrt{35i}}{105} & -\frac{\sqrt{35}}{42} & 0 & 0 & 0 & 0 & \frac{\sqrt{105}}{210} \\ -\frac{\sqrt{35}}{30} & 0 & -\frac{4\sqrt{35i}}{105} & 0 & 0 & \frac{\sqrt{35}}{42} & 0 & 0 & \frac{\sqrt{105}}{210} & 0 \\ 0 & 0 & -\frac{\sqrt{35}}{42} & 0 & 0 & -\frac{\sqrt{35i}}{105} & 0 & \frac{\sqrt{35}}{105} & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{35}}{42} & \frac{\sqrt{35i}}{105} & 0 & \frac{\sqrt{35}}{105} & 0 & 0 & 0 \end{bmatrix}$

bra: = $\langle p_x, \uparrow |, \langle p_x, \downarrow |, \langle p_y, \uparrow |, \langle p_y, \downarrow |, \langle p_z, \uparrow |, \langle p_z, \downarrow |$

ket: = $|f_2, \uparrow \rangle, |f_2, \downarrow \rangle, |f_1, \uparrow \rangle, |f_1, \downarrow \rangle, |f_{bz}, \uparrow \rangle, |f_{bz}, \downarrow \rangle, |f_3, \uparrow \rangle, |f_3, \downarrow \rangle, |f_{3x}, \uparrow \rangle, |f_{3x}, \downarrow \rangle, |f_{3y}, \uparrow \rangle, |f_{3y}, \downarrow \rangle, |f_{az}, \uparrow \rangle, |f_{az}, \downarrow \rangle$

Table 7: (p,f) block.

No.	multipole	matrix
281	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$
	$\mathbb{Q}_2^{(a)}(A_{1g})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}}{14} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}}{14} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}}{14} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}}{14} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{14} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{14} \end{bmatrix}$
282	symmetry	$\sqrt{3}yz$
	$\mathbb{Q}_{2,1}^{(a)}(E_g, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{105}}{42} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{105}}{42} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{105}}{42} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}}{14} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}}{42} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}}{14} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}}{21} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}}{21} & 0 & 0 \end{bmatrix}$
283	symmetry	$-\sqrt{3}xz$
	$\mathbb{Q}_{2,2}^{(a)}(E_g, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & -\frac{\sqrt{105}}{42} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{14} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}}{42} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{14} \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}}{42} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}}{42} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}}{21} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}}{21} & 0 & 0 & 0 & 0 \end{bmatrix}$
284	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$

continued ...

Table 7

No.	multipole	matrix
	$\mathbb{Q}_{2,1}^{(a)}(E_g, 2)$	$\begin{bmatrix} \frac{\sqrt{70}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}}{84} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{70}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}}{84} & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{70}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}}{84} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{70}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}}{84} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{105}}{42} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{105}}{42} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
285	symmetry	$-\sqrt{3}xy$
	$\mathbb{Q}_{2,2}^{(a)}(E_g, 2)$	$\begin{bmatrix} 0 & 0 & -\frac{\sqrt{70}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}}{84} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{70}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}}{84} & 0 & 0 \\ \frac{\sqrt{70}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}}{84} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{70}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}}{84} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}}{42} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}}{42} & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
286	symmetry	$\frac{3x^4}{8} + \frac{3x^2y^2}{4} - 3x^2z^2 + \frac{3y^4}{8} - 3y^2z^2 + z^4$
	$\mathbb{Q}_4^{(a)}(A_{1g}, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}}{28} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}}{28} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}}{28} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}}{28} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{7} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{7} \end{bmatrix}$
287	symmetry	$\frac{\sqrt{70}yz(x^2-y^2)}{4}$
	$\mathbb{Q}_4^{(a)}(A_{1g}, 2)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{8} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{1}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{1}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
288	symmetry	$\frac{\sqrt{70}xz(x^2-3y^2)}{4}$

continued ...

Table 7

No.	multipole	matrix
	$\mathbb{Q}_4^{(a)}(A_{2g})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{8} & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{1}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{1}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
289	symmetry	$-\frac{\sqrt{10yz}(3x^2+3y^2-4z^2)}{4}$
	$\mathbb{Q}_{4,1}^{(a)}(E_g, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}}{56} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}}{56} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{42}}{56} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{70}}{28} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}}{56} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{70}}{28} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{105}}{28} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{105}}{28} & 0 & 0 & 0 \end{bmatrix}$
290	symmetry	$\frac{\sqrt{10xz}(3x^2+3y^2-4z^2)}{4}$
	$\mathbb{Q}_{4,2}^{(a)}(E_g, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & \frac{\sqrt{42}}{56} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}}{28} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}}{56} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}}{28} \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}}{56} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}}{56} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}}{28} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}}{28} & 0 & 0 & 0 & 0 \end{bmatrix}$
291	symmetry	$\frac{\sqrt{35}(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$
	$\mathbb{Q}_{4,1}^{(a)}(E_g, 2)$	$\begin{bmatrix} \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
292	symmetry	$\frac{\sqrt{35xy}(x-y)(x+y)}{2}$

continued ...

Table 7

No.	multipole	matrix
	$\mathbb{Q}_{4,2}^{(a)}(E_g, 2)$	$\begin{bmatrix} 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
293	symmetry	$-\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$
	$\mathbb{Q}_{4,1}^{(a)}(E_g, 3)$	$\begin{bmatrix} -\frac{\sqrt{14}}{56} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{210}}{56} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{14}}{56} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{210}}{56} & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{14}}{56} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{210}}{56} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{14}}{56} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{210}}{56} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{14} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{14} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
294	symmetry	$\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$
	$\mathbb{Q}_{4,2}^{(a)}(E_g, 3)$	$\begin{bmatrix} 0 & 0 & \frac{\sqrt{14}}{56} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{210}}{56} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{14}}{56} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{210}}{56} & 0 & 0 \\ -\frac{\sqrt{14}}{56} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{210}}{56} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{14}}{56} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{210}}{56} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}}{14} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}}{14} & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
295	symmetry	$\frac{3x^4}{8} + \frac{3x^2y^2}{4} - 3x^2z^2 + \frac{3y^4}{8} - 3y^2z^2 + z^4$
	$\mathbb{Q}_4^{(1,-1;a)}(A_{1g}, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{35}}{56} & 0 & \frac{\sqrt{35}i}{56} & 0 & 0 & -\frac{\sqrt{14}i}{14} & 0 & 0 & -\frac{\sqrt{21}}{28} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{35}}{56} & 0 & \frac{\sqrt{35}i}{56} & 0 & 0 & 0 & 0 & \frac{\sqrt{14}i}{14} & \frac{\sqrt{21}}{28} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{35}i}{56} & 0 & -\frac{\sqrt{35}}{56} & \frac{\sqrt{14}i}{14} & 0 & 0 & 0 & 0 & \frac{\sqrt{21}i}{28} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{35}i}{56} & 0 & \frac{\sqrt{35}}{56} & 0 & 0 & -\frac{\sqrt{14}i}{14} & 0 & 0 & \frac{\sqrt{21}i}{28} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}}{56} & 0 & -\frac{\sqrt{14}i}{56} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}}{56} & 0 & -\frac{\sqrt{14}i}{56} & 0 & 0 & 0 \end{bmatrix}$
296	symmetry	$\frac{\sqrt{70}yz(3x^2-y^2)}{4}$

continued ...

Table 7

No.	multipole	matrix
	$\mathbb{Q}_4^{(1,-1;a)}(A_{1g}, 2)$	$\begin{bmatrix} 0 & \frac{\sqrt{3}i}{16} & 0 & -\frac{\sqrt{3}}{16} & \frac{\sqrt{2}i}{16} & 0 & 0 & 0 & 0 & \frac{\sqrt{5}i}{16} & 0 & -\frac{\sqrt{5}}{16} & 0 & 0 \\ \frac{\sqrt{3}i}{16} & 0 & \frac{\sqrt{3}}{16} & 0 & 0 & -\frac{\sqrt{2}i}{16} & 0 & 0 & \frac{\sqrt{5}i}{16} & 0 & \frac{\sqrt{5}}{16} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{3}}{16} & 0 & \frac{\sqrt{3}i}{16} & 0 & 0 & -\frac{\sqrt{2}i}{16} & 0 & 0 & -\frac{\sqrt{5}}{16} & 0 & -\frac{\sqrt{5}i}{16} & 0 & 0 \\ -\frac{\sqrt{3}}{16} & 0 & \frac{\sqrt{3}i}{16} & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{16} & \frac{\sqrt{5}}{16} & 0 & -\frac{\sqrt{5}i}{16} & 0 & 0 & 0 \\ -\frac{\sqrt{3}i}{8} & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{8} & 0 & \frac{\sqrt{2}}{8} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{3}i}{8} & 0 & 0 & -\frac{\sqrt{2}i}{8} & 0 & -\frac{\sqrt{2}}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
297	symmetry	$\frac{\sqrt{70}xz(x^2-3y^2)}{4}$
	$\mathbb{Q}_4^{(1,-1;a)}(A_{2g})$	$\begin{bmatrix} 0 & -\frac{\sqrt{3}}{16} & 0 & -\frac{\sqrt{3}i}{16} & 0 & 0 & -\frac{\sqrt{2}i}{16} & 0 & 0 & -\frac{\sqrt{5}}{16} & 0 & -\frac{\sqrt{5}i}{16} & 0 & 0 \\ \frac{\sqrt{3}}{16} & 0 & -\frac{\sqrt{3}i}{16} & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{16} & \frac{\sqrt{5}}{16} & 0 & -\frac{\sqrt{5}i}{16} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{3}i}{16} & 0 & -\frac{\sqrt{3}}{16} & -\frac{\sqrt{2}i}{16} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{16} & 0 & \frac{\sqrt{5}}{16} & 0 & 0 \\ \frac{\sqrt{3}i}{16} & 0 & \frac{\sqrt{3}}{16} & 0 & 0 & \frac{\sqrt{2}i}{16} & 0 & 0 & -\frac{\sqrt{5}i}{16} & 0 & -\frac{\sqrt{5}}{16} & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{3}i}{8} & 0 & 0 & \frac{\sqrt{2}}{8} & 0 & \frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{3}i}{8} & -\frac{\sqrt{2}}{8} & 0 & \frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
298	symmetry	$-\frac{\sqrt{10}yz(3x^2+3y^2-4z^2)}{4}$
	$\mathbb{Q}_{4,1}^{(1,-1;a)}(E_g, 1)$	$\begin{bmatrix} 0 & -\frac{\sqrt{21}i}{112} & 0 & -\frac{\sqrt{21}}{112} & \frac{5\sqrt{14}i}{112} & 0 & 0 & 0 & 0 & -\frac{\sqrt{35}i}{112} & 0 & -\frac{5\sqrt{35}}{112} & \frac{\sqrt{210}i}{56} & 0 \\ -\frac{\sqrt{21}i}{112} & 0 & \frac{\sqrt{21}}{112} & 0 & 0 & -\frac{5\sqrt{14}i}{112} & 0 & 0 & -\frac{\sqrt{35}i}{112} & 0 & \frac{5\sqrt{35}}{112} & 0 & 0 & -\frac{\sqrt{210}i}{56} \\ 0 & \frac{\sqrt{21}}{112} & 0 & -\frac{\sqrt{21}i}{112} & 0 & 0 & \frac{5\sqrt{14}i}{112} & 0 & 0 & \frac{3\sqrt{35}}{112} & 0 & \frac{\sqrt{35}i}{112} & 0 & 0 \\ -\frac{\sqrt{21}}{112} & 0 & -\frac{\sqrt{21}i}{112} & 0 & 0 & 0 & 0 & -\frac{5\sqrt{14}i}{112} & -\frac{3\sqrt{35}}{112} & 0 & \frac{\sqrt{35}i}{112} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}i}{56} & 0 & \frac{\sqrt{14}}{56} & -\frac{\sqrt{35}i}{56} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{14}i}{56} & 0 & -\frac{\sqrt{14}}{56} & 0 & 0 & \frac{\sqrt{35}i}{56} & 0 & 0 & 0 & 0 \end{bmatrix}$
299	symmetry	$\frac{\sqrt{10}xz(3x^2+3y^2-4z^2)}{4}$
	$\mathbb{Q}_{4,2}^{(1,-1;a)}(E_g, 1)$	$\begin{bmatrix} 0 & \frac{\sqrt{21}}{112} & 0 & -\frac{\sqrt{21}i}{112} & 0 & 0 & \frac{5\sqrt{14}i}{112} & 0 & 0 & \frac{\sqrt{35}}{112} & 0 & \frac{3\sqrt{35}i}{112} & 0 & 0 \\ -\frac{\sqrt{21}}{112} & 0 & -\frac{\sqrt{21}i}{112} & 0 & 0 & 0 & 0 & -\frac{5\sqrt{14}i}{112} & -\frac{\sqrt{35}}{112} & 0 & \frac{3\sqrt{35}i}{112} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{21}i}{112} & 0 & \frac{\sqrt{21}}{112} & -\frac{5\sqrt{14}i}{112} & 0 & 0 & 0 & 0 & -\frac{5\sqrt{35}i}{112} & 0 & -\frac{\sqrt{35}}{112} & \frac{\sqrt{210}i}{56} & 0 \\ \frac{\sqrt{21}i}{112} & 0 & -\frac{\sqrt{21}}{112} & 0 & 0 & \frac{5\sqrt{14}i}{112} & 0 & 0 & -\frac{5\sqrt{35}i}{112} & 0 & \frac{\sqrt{35}}{112} & 0 & 0 & -\frac{\sqrt{210}i}{56} \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}}{56} & 0 & \frac{\sqrt{14}i}{56} & 0 & 0 & -\frac{\sqrt{35}i}{56} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{14}}{56} & 0 & \frac{\sqrt{14}i}{56} & 0 & 0 & 0 & 0 & \frac{\sqrt{35}i}{56} & 0 & 0 \end{bmatrix}$
300	symmetry	$\frac{\sqrt{35}(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$

continued ...

Table 7

No.	multipole	matrix
	$\mathbb{Q}_{4,1}^{(1,-1;a)}(E_g, 2)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{1}{8} & 0 & -\frac{i}{8} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{1}{8} & 0 & -\frac{i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{i}{8} & 0 & \frac{1}{8} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{i}{8} & 0 & -\frac{1}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{6}}{8} & 0 & \frac{\sqrt{6}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{6}}{8} & 0 & \frac{\sqrt{6}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
301	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$
	$\mathbb{Q}_{4,2}^{(1,-1;a)}(E_g, 2)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{i}{8} & 0 & -\frac{1}{8} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{i}{8} & 0 & \frac{1}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{1}{8} & 0 & -\frac{i}{8} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{1}{8} & 0 & -\frac{i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{6}i}{8} & 0 & \frac{\sqrt{6}}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{6}i}{8} & 0 & -\frac{\sqrt{6}}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
302	symmetry	$-\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$
	$\mathbb{Q}_{4,1}^{(1,-1;a)}(E_g, 3)$	$\begin{bmatrix} 0 & 0 & -\frac{\sqrt{42}i}{56} & 0 & 0 & -\frac{3\sqrt{7}}{56} & 0 & -\frac{\sqrt{7}i}{28} & 0 & 0 & -\frac{\sqrt{70}i}{56} & 0 & 0 & -\frac{\sqrt{105}}{56} \\ 0 & 0 & 0 & \frac{\sqrt{42}i}{56} & \frac{3\sqrt{7}}{56} & 0 & -\frac{\sqrt{7}i}{28} & 0 & 0 & 0 & \frac{\sqrt{70}i}{56} & \frac{\sqrt{105}}{56} & 0 & 0 \\ \frac{\sqrt{42}i}{56} & 0 & 0 & 0 & 0 & \frac{3\sqrt{7}i}{56} & 0 & -\frac{\sqrt{7}}{28} & -\frac{\sqrt{70}i}{56} & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}i}{56} \\ 0 & -\frac{\sqrt{42}i}{56} & 0 & 0 & \frac{3\sqrt{7}i}{56} & 0 & \frac{\sqrt{7}}{28} & 0 & 0 & \frac{\sqrt{70}i}{56} & 0 & 0 & -\frac{\sqrt{105}i}{56} & 0 \\ 0 & \frac{\sqrt{42}}{112} & 0 & -\frac{\sqrt{42}i}{112} & 0 & 0 & \frac{\sqrt{7}i}{14} & 0 & 0 & \frac{\sqrt{70}}{112} & 0 & \frac{\sqrt{70}i}{112} & 0 & 0 \\ -\frac{\sqrt{42}}{112} & 0 & -\frac{\sqrt{42}i}{112} & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}i}{14} & -\frac{\sqrt{70}}{112} & 0 & \frac{\sqrt{70}i}{112} & 0 & 0 & 0 \end{bmatrix}$
303	symmetry	$\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$
	$\mathbb{Q}_{4,2}^{(1,-1;a)}(E_g, 3)$	$\begin{bmatrix} -\frac{\sqrt{42}i}{56} & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}i}{28} & 0 & \frac{3\sqrt{7}}{56} & -\frac{\sqrt{70}i}{56} & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}i}{56} \\ 0 & \frac{\sqrt{42}i}{56} & 0 & 0 & -\frac{\sqrt{7}i}{28} & 0 & -\frac{3\sqrt{7}}{56} & 0 & 0 & \frac{\sqrt{70}i}{56} & 0 & 0 & -\frac{\sqrt{105}i}{56} & 0 \\ 0 & 0 & -\frac{\sqrt{42}i}{56} & 0 & 0 & -\frac{\sqrt{7}}{28} & 0 & -\frac{3\sqrt{7}i}{56} & 0 & 0 & \frac{\sqrt{70}i}{56} & 0 & 0 & \frac{\sqrt{105}}{56} \\ 0 & 0 & 0 & \frac{\sqrt{42}i}{56} & \frac{\sqrt{7}}{28} & 0 & -\frac{3\sqrt{7}i}{56} & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}i}{56} & -\frac{\sqrt{105}}{56} & 0 \\ 0 & -\frac{\sqrt{42}i}{112} & 0 & -\frac{\sqrt{42}}{112} & \frac{\sqrt{7}i}{14} & 0 & 0 & 0 & 0 & \frac{\sqrt{70}i}{112} & 0 & -\frac{\sqrt{70}}{112} & 0 & 0 \\ -\frac{\sqrt{42}i}{112} & 0 & \frac{\sqrt{42}}{112} & 0 & 0 & -\frac{\sqrt{7}i}{14} & 0 & 0 & \frac{\sqrt{70}i}{112} & 0 & \frac{\sqrt{70}}{112} & 0 & 0 & 0 \end{bmatrix}$
304	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$

continued ...

Table 7

No.	multipole	matrix
	$\mathbb{Q}_2^{(1,0;a)}(A_{1g})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{210}}{84} & 0 & \frac{\sqrt{210}i}{84} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}}{28} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{210}}{84} & 0 & \frac{\sqrt{210}i}{84} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}}{28} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{210}i}{84} & 0 & -\frac{\sqrt{210}}{84} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}i}{28} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{210}i}{84} & 0 & \frac{\sqrt{210}}{84} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}i}{28} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}}{21} & 0 & \frac{\sqrt{21}i}{21} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{21} & 0 & \frac{\sqrt{21}i}{21} & 0 & 0 \end{bmatrix}$
305	symmetry	$\sqrt{3}yz$
	$\mathbb{Q}_{2,1}^{(1,0;a)}(E_g, 1)$	$\begin{bmatrix} 0 & -\frac{\sqrt{105}i}{84} & 0 & -\frac{\sqrt{105}}{84} & \frac{\sqrt{70}i}{84} & 0 & 0 & 0 & 0 & -\frac{5\sqrt{7}i}{84} & 0 & \frac{\sqrt{7}}{84} & -\frac{\sqrt{42}i}{84} & 0 \\ -\frac{\sqrt{105}i}{84} & 0 & \frac{\sqrt{105}}{84} & 0 & 0 & -\frac{\sqrt{70}i}{84} & 0 & 0 & -\frac{5\sqrt{7}i}{84} & 0 & -\frac{\sqrt{7}}{84} & 0 & 0 & \frac{\sqrt{42}i}{84} \\ 0 & \frac{\sqrt{105}}{84} & 0 & -\frac{\sqrt{105}i}{84} & 0 & 0 & \frac{\sqrt{70}i}{84} & 0 & 0 & \frac{\sqrt{7}}{84} & 0 & -\frac{\sqrt{7}i}{12} & 0 & 0 \\ -\frac{\sqrt{105}}{84} & 0 & -\frac{\sqrt{105}i}{84} & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}i}{84} & -\frac{\sqrt{7}}{84} & 0 & -\frac{\sqrt{7}i}{12} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}i}{84} & 0 & -\frac{\sqrt{70}}{84} & \frac{\sqrt{7}i}{21} & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}i}{28} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{70}i}{84} & 0 & \frac{\sqrt{70}}{84} & 0 & 0 & -\frac{\sqrt{7}i}{21} & 0 & 0 & -\frac{\sqrt{42}i}{28} & 0 \end{bmatrix}$
306	symmetry	$-\sqrt{3}xz$
	$\mathbb{Q}_{2,2}^{(1,0;a)}(E_g, 1)$	$\begin{bmatrix} 0 & \frac{\sqrt{105}}{84} & 0 & -\frac{\sqrt{105}i}{84} & 0 & 0 & \frac{\sqrt{70}i}{84} & 0 & 0 & -\frac{\sqrt{7}}{12} & 0 & \frac{\sqrt{7}i}{84} & 0 & 0 \\ -\frac{\sqrt{105}}{84} & 0 & -\frac{\sqrt{105}i}{84} & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}i}{84} & \frac{\sqrt{7}}{12} & 0 & \frac{\sqrt{7}i}{84} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{105}i}{84} & 0 & \frac{\sqrt{105}}{84} & -\frac{\sqrt{70}i}{84} & 0 & 0 & 0 & 0 & \frac{\sqrt{7}i}{84} & 0 & -\frac{5\sqrt{7}}{84} & -\frac{\sqrt{42}i}{84} & 0 \\ \frac{\sqrt{105}i}{84} & 0 & -\frac{\sqrt{105}}{84} & 0 & 0 & \frac{\sqrt{70}i}{84} & 0 & 0 & \frac{\sqrt{7}i}{84} & 0 & \frac{5\sqrt{7}}{84} & 0 & 0 & \frac{\sqrt{42}i}{84} \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{70}}{84} & 0 & -\frac{\sqrt{70}i}{84} & 0 & 0 & \frac{\sqrt{7}i}{21} & 0 & 0 & -\frac{\sqrt{42}}{28} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{70}}{84} & 0 & -\frac{\sqrt{70}i}{84} & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}i}{21} & \frac{\sqrt{42}}{28} & 0 \end{bmatrix}$
307	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$
	$\mathbb{Q}_{2,1}^{(1,0;a)}(E_g, 2)$	$\begin{bmatrix} 0 & 0 & -\frac{\sqrt{105}i}{42} & 0 & 0 & \frac{\sqrt{70}}{84} & 0 & \frac{\sqrt{70}i}{84} & 0 & 0 & \frac{\sqrt{7}i}{42} & 0 & 0 & -\frac{\sqrt{42}}{84} \\ 0 & 0 & 0 & \frac{\sqrt{105}i}{42} & -\frac{\sqrt{70}}{84} & 0 & \frac{\sqrt{70}i}{84} & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}i}{42} & \frac{\sqrt{42}}{84} & 0 \\ \frac{\sqrt{105}i}{42} & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}i}{84} & 0 & \frac{\sqrt{70}}{84} & \frac{\sqrt{7}i}{42} & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}i}{84} \\ 0 & -\frac{\sqrt{105}i}{42} & 0 & 0 & -\frac{\sqrt{70}i}{84} & 0 & -\frac{\sqrt{70}}{84} & 0 & 0 & -\frac{\sqrt{7}i}{42} & 0 & 0 & -\frac{\sqrt{42}i}{84} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}i}{42} & 0 & 0 & \frac{\sqrt{7}}{21} & 0 & \frac{\sqrt{7}i}{21} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{70}i}{42} & -\frac{\sqrt{7}}{21} & 0 & \frac{\sqrt{7}i}{21} & 0 & 0 & 0 \end{bmatrix}$
308	symmetry	$-\sqrt{3}xy$

continued ...

Table 7

No.	multipole	matrix
	$\mathbb{Q}_{2,2}^{(1,0;a)}(E_g, 2)$	$\begin{bmatrix} -\frac{\sqrt{105i}}{42} & 0 & 0 & 0 & 0 & \frac{\sqrt{70i}}{84} & 0 & -\frac{\sqrt{70}}{84} & \frac{\sqrt{7i}}{42} & 0 & 0 & 0 & 0 & -\frac{\sqrt{42i}}{84} \\ 0 & \frac{\sqrt{105i}}{42} & 0 & 0 & \frac{\sqrt{70i}}{84} & 0 & \frac{\sqrt{70}}{84} & 0 & 0 & -\frac{\sqrt{7i}}{42} & 0 & 0 & -\frac{\sqrt{42i}}{84} & 0 \\ 0 & 0 & -\frac{\sqrt{105i}}{42} & 0 & 0 & \frac{\sqrt{70i}}{84} & 0 & \frac{\sqrt{70}}{84} & 0 & 0 & -\frac{\sqrt{7i}}{42} & 0 & 0 & \frac{\sqrt{42}}{84} \\ 0 & 0 & 0 & \frac{\sqrt{105i}}{42} & -\frac{\sqrt{70}}{84} & 0 & \frac{\sqrt{70i}}{84} & 0 & 0 & 0 & \frac{\sqrt{7i}}{42} & -\frac{\sqrt{42}}{84} & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{70i}}{42} & 0 & 0 & 0 & 0 & \frac{\sqrt{7i}}{21} & 0 & -\frac{\sqrt{7}}{21} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{70i}}{42} & 0 & 0 & \frac{\sqrt{7i}}{21} & 0 & \frac{\sqrt{7}}{21} & 0 & 0 & 0 \end{bmatrix}$
309	symmetry	$\frac{3x^4}{8} + \frac{3x^2y^2}{4} - 3x^2z^2 + \frac{3y^4}{8} - 3y^2z^2 + z^4$
	$\mathbb{Q}_4^{(1,0;a)}(A_{1g}, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{56} & 0 & -\frac{\sqrt{21i}}{56} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{35}}{28} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{21}}{56} & 0 & -\frac{\sqrt{21i}}{56} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{35}}{28} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21i}}{56} & 0 & \frac{\sqrt{21}}{56} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{35i}}{28} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{21i}}{56} & 0 & -\frac{\sqrt{21}}{56} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{35i}}{28} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{210}}{56} & 0 & \frac{\sqrt{210i}}{56} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{210}}{56} & 0 & \frac{\sqrt{210i}}{56} & 0 & 0 \end{bmatrix}$
310	symmetry	$\frac{\sqrt{70}yz(3x^2 - y^2)}{4}$
	$\mathbb{Q}_4^{(1,0;a)}(A_{1g}, 2)$	$\begin{bmatrix} 0 & -\frac{3\sqrt{5i}}{80} & 0 & -\frac{\sqrt{5}}{16} & \frac{3\sqrt{30i}}{80} & 0 & 0 & 0 & 0 & -\frac{\sqrt{3i}}{16} & 0 & \frac{\sqrt{3}}{16} & 0 & 0 \\ -\frac{3\sqrt{5i}}{80} & 0 & \frac{\sqrt{5}}{16} & 0 & 0 & -\frac{3\sqrt{30i}}{80} & 0 & 0 & -\frac{\sqrt{3i}}{16} & 0 & -\frac{\sqrt{3}}{16} & 0 & 0 & 0 \\ 0 & -\frac{3\sqrt{5}}{80} & 0 & \frac{\sqrt{5i}}{16} & 0 & 0 & -\frac{3\sqrt{30i}}{80} & 0 & 0 & \frac{\sqrt{3}}{16} & 0 & \frac{\sqrt{3i}}{16} & 0 & 0 \\ \frac{3\sqrt{5}}{80} & 0 & \frac{\sqrt{5i}}{16} & 0 & 0 & 0 & 0 & \frac{3\sqrt{30i}}{80} & -\frac{\sqrt{3}}{16} & 0 & \frac{\sqrt{3i}}{16} & 0 & 0 & 0 \\ \frac{3\sqrt{5i}}{40} & 0 & 0 & 0 & 0 & -\frac{\sqrt{30i}}{40} & 0 & \frac{\sqrt{30}}{40} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{3\sqrt{5i}}{40} & 0 & 0 & -\frac{\sqrt{30i}}{40} & 0 & -\frac{\sqrt{30}}{40} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
311	symmetry	$\frac{\sqrt{70}xz(x^2 - 3y^2)}{4}$
	$\mathbb{Q}_4^{(1,0;a)}(A_{2g})$	$\begin{bmatrix} 0 & -\frac{\sqrt{5}}{16} & 0 & \frac{3\sqrt{5i}}{80} & 0 & 0 & -\frac{3\sqrt{30i}}{80} & 0 & 0 & \frac{\sqrt{3}}{16} & 0 & \frac{\sqrt{3i}}{16} & 0 & 0 \\ \frac{\sqrt{5}}{16} & 0 & \frac{3\sqrt{5i}}{80} & 0 & 0 & 0 & 0 & \frac{3\sqrt{30i}}{80} & -\frac{\sqrt{3}}{16} & 0 & \frac{\sqrt{3i}}{16} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{5i}}{16} & 0 & \frac{3\sqrt{5}}{80} & -\frac{3\sqrt{30i}}{80} & 0 & 0 & 0 & 0 & \frac{\sqrt{3i}}{16} & 0 & -\frac{\sqrt{3}}{16} & 0 & 0 \\ \frac{\sqrt{5i}}{16} & 0 & -\frac{3\sqrt{5}}{80} & 0 & 0 & \frac{3\sqrt{30i}}{80} & 0 & 0 & 0 & \frac{\sqrt{3i}}{16} & 0 & \frac{\sqrt{3}}{16} & 0 & 0 \\ 0 & 0 & -\frac{3\sqrt{5i}}{40} & 0 & 0 & \frac{\sqrt{30}}{40} & 0 & \frac{\sqrt{30i}}{40} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{3\sqrt{5i}}{40} & -\frac{\sqrt{30}}{40} & 0 & \frac{\sqrt{30i}}{40} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
312	symmetry	$-\frac{\sqrt{10}yz(3x^2 + 3y^2 - 4z^2)}{4}$

continued ...

Table 7

No.	multipole	matrix
	$\mathbb{Q}_{4,1}^{(1,0;a)}(E_g, 1)$	$\begin{bmatrix} 0 & \frac{3\sqrt{35}i}{560} & 0 & \frac{3\sqrt{35}}{560} & -\frac{\sqrt{210}i}{560} & 0 & 0 & 0 & 0 & \frac{\sqrt{21}i}{112} & 0 & -\frac{3\sqrt{21}}{112} & \frac{\sqrt{14}i}{56} & 0 \\ \frac{3\sqrt{35}i}{560} & 0 & -\frac{3\sqrt{35}}{560} & 0 & 0 & \frac{\sqrt{210}i}{560} & 0 & 0 & \frac{\sqrt{21}i}{112} & 0 & \frac{3\sqrt{21}}{112} & 0 & 0 & -\frac{\sqrt{14}i}{56} \\ 0 & -\frac{3\sqrt{35}}{560} & 0 & \frac{3\sqrt{35}i}{560} & 0 & 0 & -\frac{\sqrt{210}i}{560} & 0 & 0 & -\frac{3\sqrt{21}}{112} & 0 & \frac{\sqrt{21}i}{16} & 0 & 0 \\ \frac{3\sqrt{35}}{560} & 0 & \frac{3\sqrt{35}i}{560} & 0 & 0 & 0 & 0 & \frac{\sqrt{210}i}{560} & \frac{3\sqrt{21}}{112} & 0 & \frac{\sqrt{21}i}{16} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{3\sqrt{210}i}{280} & 0 & -\frac{3\sqrt{210}}{280} & \frac{\sqrt{21}i}{56} & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}i}{14} \\ 0 & 0 & 0 & 0 & -\frac{3\sqrt{210}i}{280} & 0 & \frac{3\sqrt{210}}{280} & 0 & 0 & -\frac{\sqrt{21}i}{56} & 0 & 0 & -\frac{\sqrt{14}i}{14} & 0 \end{bmatrix}$
313	symmetry	$\frac{\sqrt{10}xz(3x^2+3y^2-4z^2)}{4}$
	$\mathbb{Q}_{4,2}^{(1,0;a)}(E_g, 1)$	$\begin{bmatrix} 0 & -\frac{3\sqrt{35}}{560} & 0 & \frac{3\sqrt{35}i}{560} & 0 & 0 & -\frac{\sqrt{210}i}{560} & 0 & 0 & \frac{\sqrt{21}}{16} & 0 & -\frac{3\sqrt{21}i}{112} & 0 & 0 \\ \frac{3\sqrt{35}}{560} & 0 & \frac{3\sqrt{35}i}{560} & 0 & 0 & 0 & 0 & \frac{\sqrt{210}i}{560} & -\frac{\sqrt{21}}{16} & 0 & -\frac{3\sqrt{21}i}{112} & 0 & 0 & 0 \\ 0 & -\frac{3\sqrt{35}i}{560} & 0 & -\frac{3\sqrt{35}}{560} & \frac{\sqrt{210}i}{560} & 0 & 0 & 0 & 0 & -\frac{3\sqrt{21}}{112} & 0 & \frac{\sqrt{21}}{112} & \frac{\sqrt{14}i}{56} & 0 \\ -\frac{3\sqrt{35}i}{560} & 0 & \frac{3\sqrt{35}}{560} & 0 & 0 & -\frac{\sqrt{210}i}{560} & 0 & 0 & -\frac{3\sqrt{21}i}{112} & 0 & -\frac{\sqrt{21}}{112} & 0 & 0 & -\frac{\sqrt{14}i}{56} \\ 0 & 0 & 0 & 0 & 0 & \frac{3\sqrt{210}}{280} & 0 & -\frac{3\sqrt{210}i}{280} & 0 & 0 & \frac{\sqrt{21}i}{56} & 0 & 0 & -\frac{\sqrt{14}}{14} \\ 0 & 0 & 0 & 0 & -\frac{3\sqrt{210}}{280} & 0 & \frac{3\sqrt{210}i}{280} & 0 & 0 & 0 & -\frac{\sqrt{21}i}{56} & \frac{\sqrt{14}}{14} & 0 & 0 \end{bmatrix}$
314	symmetry	$\frac{\sqrt{35}(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$
	$\mathbb{Q}_{4,1}^{(1,0;a)}(E_g, 2)$	$\begin{bmatrix} 0 & 0 & -\frac{\sqrt{10}i}{10} & 0 & 0 & \frac{\sqrt{15}}{40} & 0 & \frac{\sqrt{15}i}{40} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{10}i}{10} & -\frac{\sqrt{15}}{40} & 0 & \frac{\sqrt{15}i}{40} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{10}i}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{40} & 0 & -\frac{\sqrt{15}}{40} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{10}i}{10} & 0 & 0 & \frac{\sqrt{15}i}{40} & 0 & \frac{\sqrt{15}}{40} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{10}}{40} & 0 & \frac{\sqrt{10}i}{40} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{10}}{40} & 0 & \frac{\sqrt{10}i}{40} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
315	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$
	$\mathbb{Q}_{4,2}^{(1,0;a)}(E_g, 2)$	$\begin{bmatrix} \frac{\sqrt{10}i}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}i}{40} & 0 & \frac{\sqrt{15}}{40} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{10}i}{10} & 0 & 0 & -\frac{\sqrt{15}i}{40} & 0 & -\frac{\sqrt{15}}{40} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{10}i}{10} & 0 & 0 & \frac{\sqrt{15}}{40} & 0 & \frac{\sqrt{15}i}{40} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{10}i}{10} & -\frac{\sqrt{15}}{40} & 0 & \frac{\sqrt{15}i}{40} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{10}i}{40} & 0 & \frac{\sqrt{10}}{40} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{10}i}{40} & 0 & -\frac{\sqrt{10}}{40} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
316	symmetry	$-\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$

continued ...

Table 7

No.	multipole	matrix													
	$\mathbb{Q}_{4,1}^{(1,0;a)}(E_g, 3)$	0	0	$\frac{\sqrt{70}i}{280}$	0	0	$-\frac{\sqrt{105}}{56}$	0	$\frac{\sqrt{105}i}{140}$	0	0	$-\frac{\sqrt{42}i}{56}$	0	0	$\frac{3\sqrt{7}}{56}$
		0	0	0	$-\frac{\sqrt{70}i}{280}$	$\frac{\sqrt{105}}{56}$	0	$\frac{\sqrt{105}i}{140}$	0	0	0	0	$\frac{\sqrt{42}i}{56}$	$-\frac{3\sqrt{7}}{56}$	0
		$-\frac{\sqrt{70}i}{280}$	0	0	0	0	$\frac{\sqrt{105}i}{56}$	0	$\frac{\sqrt{105}}{140}$	$-\frac{\sqrt{42}i}{56}$	0	0	0	0	$\frac{3\sqrt{7}i}{56}$
		0	$\frac{\sqrt{70}i}{280}$	0	0	$\frac{\sqrt{105}i}{56}$	0	$-\frac{\sqrt{105}}{140}$	0	0	$\frac{\sqrt{42}i}{56}$	0	0	$\frac{3\sqrt{7}i}{56}$	0
		0	$-\frac{\sqrt{70}}{80}$	0	$\frac{\sqrt{70}i}{80}$	0	0	$-\frac{\sqrt{105}i}{70}$	0	0	$\frac{3\sqrt{42}}{112}$	0	$\frac{3\sqrt{42}i}{112}$	0	0
		$\frac{\sqrt{70}}{80}$	0	$\frac{\sqrt{70}i}{80}$	0	0	0	0	$\frac{\sqrt{105}i}{70}$	$-\frac{3\sqrt{42}}{112}$	0	$\frac{3\sqrt{42}i}{112}$	0	0	0
317	symmetry	$\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$													
	$\mathbb{Q}_{4,2}^{(1,0;a)}(E_g, 3)$	$\frac{\sqrt{70}i}{280}$	0	0	0	0	$\frac{\sqrt{105}i}{140}$	0	$\frac{\sqrt{105}}{56}$	$-\frac{\sqrt{42}i}{56}$	0	0	0	0	$\frac{3\sqrt{7}i}{56}$
		0	$-\frac{\sqrt{70}i}{280}$	0	0	$\frac{\sqrt{105}i}{140}$	0	$-\frac{\sqrt{105}}{56}$	0	0	$\frac{\sqrt{42}i}{56}$	0	0	$\frac{3\sqrt{7}i}{56}$	0
		0	0	$\frac{\sqrt{70}i}{280}$	0	0	$\frac{\sqrt{105}}{140}$	0	$-\frac{\sqrt{105}i}{56}$	0	0	$\frac{\sqrt{42}i}{56}$	0	0	$-\frac{3\sqrt{7}}{56}$
		0	0	0	$-\frac{\sqrt{70}i}{280}$	$-\frac{\sqrt{105}}{140}$	0	$-\frac{\sqrt{105}i}{56}$	0	0	0	0	$-\frac{\sqrt{42}i}{56}$	$\frac{3\sqrt{7}}{56}$	0
		0	$\frac{\sqrt{70}i}{80}$	0	$\frac{\sqrt{70}}{80}$	$-\frac{\sqrt{105}i}{70}$	0	0	0	0	$\frac{3\sqrt{42}i}{112}$	0	$-\frac{3\sqrt{42}}{112}$	0	0
		$\frac{\sqrt{70}i}{80}$	0	$-\frac{\sqrt{70}}{80}$	0	0	$\frac{\sqrt{105}i}{70}$	0	0	$\frac{3\sqrt{42}i}{112}$	0	$\frac{3\sqrt{42}}{112}$	0	0	0
318	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$													
	$\mathbb{Q}_2^{(1,1;a)}(A_{1g})$	0	0	0	0	0	$\frac{\sqrt{105}}{84}$	0	$-\frac{\sqrt{105}i}{84}$	0	0	$-\frac{\sqrt{42}i}{28}$	0	0	$\frac{\sqrt{7}}{14}$
		0	0	0	0	$-\frac{\sqrt{105}}{84}$	0	$-\frac{\sqrt{105}i}{84}$	0	0	0	0	$\frac{\sqrt{42}i}{28}$	$-\frac{\sqrt{7}}{14}$	0
		0	0	0	0	0	$\frac{\sqrt{105}i}{84}$	0	$\frac{\sqrt{105}}{84}$	$\frac{\sqrt{42}i}{28}$	0	0	0	0	$-\frac{\sqrt{7}i}{14}$
		0	0	0	0	$\frac{\sqrt{105}i}{84}$	0	$-\frac{\sqrt{105}}{84}$	0	0	$-\frac{\sqrt{42}i}{28}$	0	0	$-\frac{\sqrt{7}i}{14}$	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{42}}{84}$	0	$\frac{\sqrt{42}i}{84}$	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{42}}{84}$	0	$\frac{\sqrt{42}i}{84}$	0	0	0
319	symmetry	$\sqrt{3}yz$													
	$\mathbb{Q}_{2,1}^{(1,1;a)}(E_g, 1)$	0	$\frac{\sqrt{210}i}{168}$	0	$\frac{\sqrt{210}}{168}$	$\frac{\sqrt{35}i}{42}$	0	0	0	0	$\frac{5\sqrt{14}i}{168}$	0	$\frac{11\sqrt{14}}{168}$	$\frac{\sqrt{21}i}{21}$	0
		$\frac{\sqrt{210}i}{168}$	0	$-\frac{\sqrt{210}}{168}$	0	0	$-\frac{\sqrt{35}i}{42}$	0	0	$\frac{5\sqrt{14}i}{168}$	0	$-\frac{11\sqrt{14}}{168}$	0	0	$-\frac{\sqrt{21}i}{21}$
		0	$-\frac{\sqrt{210}}{168}$	0	$\frac{\sqrt{210}i}{168}$	0	0	$\frac{\sqrt{35}i}{42}$	0	0	$-\frac{\sqrt{14}}{168}$	0	$-\frac{5\sqrt{14}i}{168}$	0	0
		$\frac{\sqrt{210}}{168}$	0	$\frac{\sqrt{210}i}{168}$	0	0	0	0	$-\frac{\sqrt{35}i}{42}$	$\frac{\sqrt{14}}{168}$	0	$-\frac{5\sqrt{14}i}{168}$	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{35}i}{42}$	0	$-\frac{\sqrt{35}}{42}$	$-\frac{\sqrt{14}i}{42}$	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{35}i}{42}$	0	$\frac{\sqrt{35}}{42}$	0	0	$\frac{\sqrt{14}i}{42}$	0	0	0	0
320	symmetry	$-\sqrt{3}xz$													

continued ...

Table 7

No.	multipole	matrix													
	$\mathbb{Q}_{2,2}^{(1,1;a)}(E_g, 1)$	0	$-\frac{\sqrt{210}}{168}$	0	$\frac{\sqrt{210}i}{168}$	0	0	$\frac{\sqrt{35}i}{42}$	0	0	$-\frac{5\sqrt{14}}{168}$	0	$-\frac{\sqrt{14}i}{168}$	0	0
		$\frac{\sqrt{210}}{168}$	0	$\frac{\sqrt{210}i}{168}$	0	0	0	0	$-\frac{\sqrt{35}i}{42}$	$\frac{5\sqrt{14}}{168}$	0	$-\frac{\sqrt{14}i}{168}$	0	0	0
		0	$-\frac{\sqrt{210}i}{168}$	0	$-\frac{\sqrt{210}}{168}$	$-\frac{\sqrt{35}i}{42}$	0	0	0	0	$\frac{11\sqrt{14}i}{168}$	0	$\frac{5\sqrt{14}}{168}$	$\frac{\sqrt{21}i}{21}$	0
		$-\frac{\sqrt{210}i}{168}$	0	$\frac{\sqrt{210}}{168}$	0	0	$\frac{\sqrt{35}i}{42}$	0	0	$\frac{11\sqrt{14}i}{168}$	0	$-\frac{5\sqrt{14}}{168}$	0	0	$-\frac{\sqrt{21}i}{21}$
		0	0	0	0	0	$\frac{\sqrt{35}}{42}$	0	$-\frac{\sqrt{35}i}{42}$	0	0	$-\frac{\sqrt{14}i}{42}$	0	0	0
		0	0	0	0	$-\frac{\sqrt{35}}{42}$	0	$-\frac{\sqrt{35}i}{42}$	0	0	0	0	$\frac{\sqrt{14}i}{42}$	0	0
321	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$													
	$\mathbb{Q}_{2,1}^{(1,1;a)}(E_g, 2)$	0	0	$-\frac{\sqrt{210}i}{168}$	0	0	$\frac{\sqrt{35}}{42}$	0	$-\frac{\sqrt{35}i}{84}$	0	0	$-\frac{5\sqrt{14}i}{168}$	0	0	$\frac{\sqrt{21}}{84}$
		0	0	0	$\frac{\sqrt{210}i}{168}$	$-\frac{\sqrt{35}}{42}$	0	$-\frac{\sqrt{35}i}{84}$	0	0	0	0	$\frac{5\sqrt{14}i}{168}$	$-\frac{\sqrt{21}}{84}$	0
		$\frac{\sqrt{210}i}{168}$	0	0	0	0	$-\frac{\sqrt{35}i}{42}$	0	$-\frac{\sqrt{35}}{84}$	$-\frac{5\sqrt{14}i}{168}$	0	0	0	0	$\frac{\sqrt{21}i}{84}$
		0	$-\frac{\sqrt{210}i}{168}$	0	0	$-\frac{\sqrt{35}i}{42}$	0	$\frac{\sqrt{35}}{84}$	0	0	$\frac{5\sqrt{14}i}{168}$	0	0	$\frac{\sqrt{21}i}{84}$	0
		0	$-\frac{\sqrt{210}}{56}$	0	$\frac{\sqrt{210}i}{56}$	0	0	$\frac{\sqrt{35}i}{42}$	0	0	$-\frac{\sqrt{14}}{168}$	0	$-\frac{\sqrt{14}i}{168}$	0	0
		$\frac{\sqrt{210}}{56}$	0	$\frac{\sqrt{210}i}{56}$	0	0	0	0	$-\frac{\sqrt{35}i}{42}$	$\frac{\sqrt{14}}{168}$	0	$-\frac{\sqrt{14}i}{168}$	0	0	0
322	symmetry	$-\sqrt{3}xy$													
	$\mathbb{Q}_{2,2}^{(1,1;a)}(E_g, 2)$	$-\frac{\sqrt{210}i}{168}$	0	0	0	0	$-\frac{\sqrt{35}i}{84}$	0	$-\frac{\sqrt{35}}{42}$	$-\frac{5\sqrt{14}i}{168}$	0	0	0	0	$\frac{\sqrt{21}i}{84}$
		0	$\frac{\sqrt{210}i}{168}$	0	0	$-\frac{\sqrt{35}i}{84}$	0	$\frac{\sqrt{35}}{42}$	0	0	$\frac{5\sqrt{14}i}{168}$	0	0	$\frac{\sqrt{21}i}{84}$	0
		0	0	$-\frac{\sqrt{210}i}{168}$	0	0	$-\frac{\sqrt{35}}{84}$	0	$\frac{\sqrt{35}i}{42}$	0	0	$\frac{5\sqrt{14}i}{168}$	0	0	$-\frac{\sqrt{21}}{84}$
		0	0	0	$\frac{\sqrt{210}i}{168}$	$\frac{\sqrt{35}}{84}$	0	$\frac{\sqrt{35}i}{42}$	0	0	0	0	$-\frac{5\sqrt{14}i}{168}$	$\frac{\sqrt{21}}{84}$	0
		0	$\frac{\sqrt{210}i}{56}$	0	$\frac{\sqrt{210}}{56}$	$\frac{\sqrt{35}i}{42}$	0	0	0	0	$-\frac{\sqrt{14}i}{168}$	0	$\frac{\sqrt{14}}{168}$	0	0
		$\frac{\sqrt{210}i}{56}$	0	$-\frac{\sqrt{210}}{56}$	0	0	$-\frac{\sqrt{35}i}{42}$	0	0	$-\frac{\sqrt{14}i}{168}$	0	$-\frac{\sqrt{14}}{168}$	0	0	0
323	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$													
	$\mathbb{G}_3^{(a)}(A_{1g})$	0	0	0	0	0	0	$\frac{\sqrt{2}}{8}$	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{2}}{8}$	0	0	0	0	0
		0	0	0	0	$\frac{\sqrt{2}}{8}$	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	$\frac{\sqrt{2}}{8}$	0	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{3}}{4}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{3}}{4}$	0	0	0	0	0	0	0	0	0	0
324	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$													

continued ...

Table 7

No.	multipole	matrix
	$\mathbb{G}_3^{(a)}(A_{2g}, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
325	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$
	$\mathbb{G}_3^{(a)}(A_{2g}, 2)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{3}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{3}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
326	symmetry	$-\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$
	$\mathbb{G}_{3,1}^{(a)}(E_g, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{24} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{24} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{24} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{24} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{12} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{12} & 0 & 0 & 0 \end{bmatrix}$
327	symmetry	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$
	$\mathbb{G}_{3,2}^{(a)}(E_g, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{24} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{24} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{24} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{24} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{12} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{12} & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
328	symmetry	$\sqrt{15}xyz$

continued ...

Table 7

No.	multipole	matrix
	$\mathbb{G}_{3,1}^{(a)}(E_g, 2)$	$\begin{bmatrix} -\frac{\sqrt{2}}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{24} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{2}}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{24} & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{2}}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{24} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{2}}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{24} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
329	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$
	$\mathbb{G}_{3,2}^{(a)}(E_g, 2)$	$\begin{bmatrix} 0 & 0 & \frac{\sqrt{2}}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{24} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{2}}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{24} & 0 & 0 & 0 \\ -\frac{\sqrt{2}}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{24} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{2}}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{24} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
330	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$
	$\mathbb{G}_3^{(1,-1;a)}(A_{1g})$	$\begin{bmatrix} 0 & \frac{\sqrt{35}i}{28} & 0 & -\frac{\sqrt{35}}{28} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}i}{84} & 0 & \frac{\sqrt{21}}{84} & 0 & 0 & 0 \\ \frac{\sqrt{35}i}{28} & 0 & \frac{\sqrt{35}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}i}{84} & 0 & -\frac{\sqrt{21}}{84} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{35}}{28} & 0 & \frac{\sqrt{35}i}{28} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{84} & 0 & \frac{\sqrt{21}i}{84} & 0 & 0 \\ -\frac{\sqrt{35}}{28} & 0 & \frac{\sqrt{35}i}{28} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}}{84} & 0 & \frac{\sqrt{21}i}{84} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{210}i}{84} & 0 & -\frac{\sqrt{210}}{84} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{210}i}{84} & 0 & \frac{\sqrt{210}}{84} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
331	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$
	$\mathbb{G}_3^{(1,-1;a)}(A_{2g}, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}i}{42} & 0 & -\frac{\sqrt{21}}{42} & \frac{\sqrt{210}i}{70} & 0 & 0 & 0 & 0 & \frac{\sqrt{35}i}{70} & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{21}i}{42} & 0 & \frac{\sqrt{21}}{42} & 0 & 0 & -\frac{\sqrt{210}i}{70} & 0 & 0 & \frac{\sqrt{35}i}{70} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{42} & 0 & -\frac{\sqrt{21}i}{42} & 0 & 0 & \frac{\sqrt{210}i}{70} & 0 & 0 & \frac{\sqrt{35}}{70} & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{21}}{42} & 0 & -\frac{\sqrt{21}i}{42} & 0 & 0 & 0 & 0 & -\frac{\sqrt{210}i}{70} & -\frac{\sqrt{35}}{70} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{210}i}{105} & 0 & -\frac{\sqrt{210}}{105} & \frac{3\sqrt{35}i}{70} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{210}i}{105} & 0 & \frac{\sqrt{210}}{105} & 0 & 0 & -\frac{3\sqrt{35}i}{70} & 0 \end{bmatrix}$
332	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$

continued ...

Table 7

No.	multipole	matrix													
	$\mathbb{G}_3^{(1,-1;a)}(A_{2g}, 2)$	0	$\frac{\sqrt{35}}{28}$	0	$\frac{\sqrt{35}i}{28}$	0	0	0	0	0	$-\frac{\sqrt{21}}{84}$	0	$-\frac{\sqrt{21}i}{84}$	0	0
		$-\frac{\sqrt{35}}{28}$	0	$\frac{\sqrt{35}i}{28}$	0	0	0	0	0	$\frac{\sqrt{21}}{84}$	0	$-\frac{\sqrt{21}i}{84}$	0	0	0
		0	$-\frac{\sqrt{35}i}{28}$	0	$\frac{\sqrt{35}}{28}$	0	0	0	0	0	$-\frac{\sqrt{21}i}{84}$	0	$\frac{\sqrt{21}}{84}$	0	0
		$-\frac{\sqrt{35}i}{28}$	0	$-\frac{\sqrt{35}}{28}$	0	0	0	0	0	$-\frac{\sqrt{21}i}{84}$	0	$-\frac{\sqrt{21}}{84}$	0	0	0
		0	0	0	0	0	$\frac{\sqrt{210}}{84}$	0	$\frac{\sqrt{210}i}{84}$	0	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{210}}{84}$	0	$\frac{\sqrt{210}i}{84}$	0	0	0	0	0	0	0
333	symmetry	$-\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$													
	$\mathbb{G}_{3,1}^{(1,-1;a)}(E_g, 1)$	0	$-\frac{\sqrt{21}i}{84}$	0	$-\frac{\sqrt{21}}{84}$	$\frac{\sqrt{14}i}{21}$	0	0	0	$\frac{13\sqrt{35}i}{420}$	0	$\frac{\sqrt{35}}{420}$	$-\frac{\sqrt{210}i}{105}$	0	0
		$-\frac{\sqrt{21}i}{84}$	0	$\frac{\sqrt{21}}{84}$	0	0	$-\frac{\sqrt{14}i}{21}$	0	0	$\frac{13\sqrt{35}i}{420}$	0	$-\frac{\sqrt{35}}{420}$	0	0	$\frac{\sqrt{210}i}{105}$
		0	$\frac{\sqrt{21}}{84}$	0	$-\frac{\sqrt{21}i}{84}$	0	0	$\frac{\sqrt{14}i}{21}$	0	0	$\frac{\sqrt{35}}{420}$	0	$\frac{11\sqrt{35}i}{420}$	0	0
		$-\frac{\sqrt{21}}{84}$	0	$-\frac{\sqrt{21}i}{84}$	0	0	0	$-\frac{\sqrt{14}i}{21}$	$-\frac{\sqrt{35}}{420}$	0	$\frac{11\sqrt{35}i}{420}$	0	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{14}i}{84}$	0	$-\frac{\sqrt{14}}{84}$	$\frac{4\sqrt{35}i}{105}$	0	0	0	0	$\frac{\sqrt{210}i}{70}$
		0	0	0	0	$-\frac{\sqrt{14}i}{84}$	0	$\frac{\sqrt{14}}{84}$	0	0	$-\frac{4\sqrt{35}i}{105}$	0	0	$\frac{\sqrt{210}i}{70}$	0
334	symmetry	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$													
	$\mathbb{G}_{3,2}^{(1,-1;a)}(E_g, 1)$	0	$\frac{\sqrt{21}}{84}$	0	$-\frac{\sqrt{21}i}{84}$	0	0	$\frac{\sqrt{14}i}{21}$	0	0	$\frac{11\sqrt{35}}{420}$	0	$\frac{\sqrt{35}i}{420}$	0	0
		$-\frac{\sqrt{21}}{84}$	0	$-\frac{\sqrt{21}i}{84}$	0	0	0	$-\frac{\sqrt{14}i}{21}$	$-\frac{11\sqrt{35}}{420}$	0	$\frac{\sqrt{35}i}{420}$	0	0	0	0
		0	$\frac{\sqrt{21}i}{84}$	0	$\frac{\sqrt{21}}{84}$	$-\frac{\sqrt{14}i}{21}$	0	0	0	0	$\frac{\sqrt{35}i}{420}$	0	$\frac{13\sqrt{35}}{420}$	$-\frac{\sqrt{210}i}{105}$	0
		$\frac{\sqrt{21}i}{84}$	0	$-\frac{\sqrt{21}}{84}$	0	0	$\frac{\sqrt{14}i}{21}$	0	0	$\frac{\sqrt{35}i}{420}$	0	$-\frac{13\sqrt{35}}{420}$	0	0	$\frac{\sqrt{210}i}{105}$
		0	0	0	0	0	$\frac{\sqrt{14}}{84}$	0	$-\frac{\sqrt{14}i}{84}$	0	0	$\frac{4\sqrt{35}i}{105}$	0	0	$\frac{\sqrt{210}}{70}$
		0	0	0	0	$-\frac{\sqrt{14}}{84}$	0	$-\frac{\sqrt{14}i}{84}$	0	0	0	$-\frac{4\sqrt{35}i}{105}$	$-\frac{\sqrt{210}}{70}$	0	0
335	symmetry	$\sqrt{15}xyz$													
	$\mathbb{G}_{3,1}^{(1,-1;a)}(E_g, 2)$	0	0	$\frac{\sqrt{210}i}{84}$	0	0	$\frac{\sqrt{35}}{42}$	0	$\frac{\sqrt{35}i}{42}$	0	0	$-\frac{\sqrt{14}i}{84}$	0	0	$-\frac{\sqrt{21}}{42}$
		0	0	0	$-\frac{\sqrt{210}i}{84}$	$-\frac{\sqrt{35}}{42}$	0	$\frac{\sqrt{35}i}{42}$	0	0	0	$\frac{\sqrt{14}i}{84}$	$\frac{\sqrt{21}}{42}$	0	0
		$-\frac{\sqrt{210}i}{84}$	0	0	0	0	$-\frac{\sqrt{35}i}{42}$	0	$\frac{\sqrt{35}}{42}$	$-\frac{\sqrt{14}i}{84}$	0	0	0	0	$-\frac{\sqrt{21}i}{42}$
		0	$\frac{\sqrt{210}i}{84}$	0	0	$-\frac{\sqrt{35}i}{42}$	0	$-\frac{\sqrt{35}}{42}$	0	0	$\frac{\sqrt{14}i}{84}$	0	0	$-\frac{\sqrt{21}i}{42}$	0
		0	0	0	0	0	0	$\frac{\sqrt{35}i}{42}$	0	0	$\frac{\sqrt{14}}{21}$	0	$\frac{\sqrt{14}i}{21}$	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{35}i}{42}$	$-\frac{\sqrt{14}}{21}$	0	$\frac{\sqrt{14}i}{21}$	0	0	0
336	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$													

continued ...

Table 7

No.	multipole	matrix
	$\mathbb{G}_{3,2}^{(1,-1;a)}(E_g, 2)$	$\begin{array}{ccccccccccccccc} \frac{\sqrt{210i}}{84} & 0 & 0 & 0 & 0 & \frac{\sqrt{35i}}{42} & 0 & -\frac{\sqrt{35}}{42} & -\frac{\sqrt{14i}}{84} & 0 & 0 & 0 & 0 & -\frac{\sqrt{21i}}{42} \\ 0 & -\frac{\sqrt{210i}}{84} & 0 & 0 & \frac{\sqrt{35i}}{42} & 0 & \frac{\sqrt{35}}{42} & 0 & 0 & \frac{\sqrt{14i}}{84} & 0 & 0 & -\frac{\sqrt{21i}}{42} & 0 \\ 0 & 0 & \frac{\sqrt{210i}}{84} & 0 & 0 & \frac{\sqrt{35}}{42} & 0 & \frac{\sqrt{35i}}{42} & 0 & 0 & \frac{\sqrt{14i}}{84} & 0 & 0 & \frac{\sqrt{21}}{42} \\ 0 & 0 & 0 & -\frac{\sqrt{210i}}{84} & -\frac{\sqrt{35}}{42} & 0 & \frac{\sqrt{35i}}{42} & 0 & 0 & 0 & -\frac{\sqrt{14i}}{84} & -\frac{\sqrt{21}}{42} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{35i}}{42} & 0 & 0 & 0 & 0 & \frac{\sqrt{14i}}{21} & 0 & -\frac{\sqrt{14}}{21} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{35i}}{42} & 0 & 0 & \frac{\sqrt{14i}}{21} & 0 & \frac{\sqrt{14}}{21} & 0 & 0 & 0 \end{array}$
337	symmetry	$-\frac{\sqrt{70x(x^2-3y^2)}(x^2+y^2-8z^2)}{16}$
	$\mathbb{G}_5^{(1,-1;a)}(A_{1g})$	$\begin{array}{ccccccccccccccc} 0 & -\frac{\sqrt{5i}}{30} & 0 & 0 & \frac{\sqrt{30i}}{30} & 0 & 0 & 0 & 0 & \frac{\sqrt{3i}}{12} & 0 & -\frac{\sqrt{3}}{12} & 0 & 0 \\ -\frac{\sqrt{5i}}{30} & 0 & 0 & 0 & 0 & -\frac{\sqrt{30i}}{30} & 0 & 0 & \frac{\sqrt{3i}}{12} & 0 & \frac{\sqrt{3}}{12} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{5}}{30} & 0 & 0 & 0 & 0 & -\frac{\sqrt{30i}}{30} & 0 & 0 & -\frac{\sqrt{3}}{12} & 0 & -\frac{\sqrt{3i}}{12} & 0 & 0 \\ \frac{\sqrt{5}}{30} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30i}}{30} & \frac{\sqrt{3}}{12} & 0 & -\frac{\sqrt{3i}}{12} & 0 & 0 & 0 \\ \frac{\sqrt{5i}}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{30i}}{30} & 0 & -\frac{\sqrt{30}}{30} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{5i}}{15} & 0 & 0 & \frac{\sqrt{30i}}{30} & 0 & \frac{\sqrt{30}}{30} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{array}$
338	symmetry	$\frac{z(15x^4+30x^2y^2-40x^2z^2+15y^4-40y^2z^2+8z^4)}{8}$
	$\mathbb{G}_5^{(1,-1;a)}(A_{2g}, 1)$	$\begin{array}{ccccccccccccccc} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21i}}{84} & 0 & \frac{\sqrt{21}}{84} & -\frac{\sqrt{210i}}{84} & 0 & 0 & 0 & 0 & -\frac{\sqrt{35i}}{42} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{21i}}{84} & 0 & -\frac{\sqrt{21}}{84} & 0 & 0 & \frac{\sqrt{210i}}{84} & 0 & 0 & -\frac{\sqrt{35i}}{42} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}}{84} & 0 & \frac{\sqrt{21i}}{84} & 0 & 0 & -\frac{\sqrt{210i}}{84} & 0 & 0 & -\frac{\sqrt{35}}{42} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{84} & 0 & \frac{\sqrt{21i}}{84} & 0 & 0 & 0 & 0 & \frac{\sqrt{210i}}{84} & \frac{\sqrt{35}}{42} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{210i}}{84} & 0 & -\frac{\sqrt{210}}{84} & \frac{\sqrt{35i}}{21} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{210i}}{84} & 0 & \frac{\sqrt{210}}{84} & 0 & 0 & -\frac{\sqrt{35i}}{21} \end{array}$
339	symmetry	$-\frac{\sqrt{70y}(3x^2-y^2)}{16}(x^2+y^2-8z^2)$
	$\mathbb{G}_5^{(1,-1;a)}(A_{2g}, 2)$	$\begin{array}{ccccccccccccccc} 0 & 0 & 0 & -\frac{\sqrt{5i}}{30} & 0 & 0 & \frac{\sqrt{30i}}{30} & 0 & 0 & \frac{\sqrt{3}}{12} & 0 & \frac{\sqrt{3i}}{12} & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{5i}}{30} & 0 & 0 & 0 & 0 & -\frac{\sqrt{30i}}{30} & -\frac{\sqrt{3}}{12} & 0 & \frac{\sqrt{3i}}{12} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{5}}{30} & \frac{\sqrt{30i}}{30} & 0 & 0 & 0 & 0 & \frac{\sqrt{3i}}{12} & 0 & -\frac{\sqrt{3}}{12} & 0 & 0 \\ 0 & 0 & \frac{\sqrt{5}}{30} & 0 & 0 & -\frac{\sqrt{30i}}{30} & 0 & 0 & \frac{\sqrt{3i}}{12} & 0 & \frac{\sqrt{3}}{12} & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{5i}}{15} & 0 & 0 & \frac{\sqrt{30}}{30} & 0 & \frac{\sqrt{30i}}{30} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{5i}}{15} & -\frac{\sqrt{30}}{30} & 0 & \frac{\sqrt{30i}}{30} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{array}$
340	symmetry	$\frac{3\sqrt{14x}(x^4-10x^2y^2+5y^4)}{16}$

continued ...

Table 7

No.	multipole	matrix
	$\mathbb{G}_{5,1}^{(1,-1;a)}(E_g, 1)$	$\begin{bmatrix} 0 & \frac{i}{4} & 0 & -\frac{1}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{i}{4} & 0 & \frac{1}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{1}{4} & 0 & -\frac{i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{1}{4} & 0 & -\frac{i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
341	symmetry	$-\frac{3\sqrt{14}y(5x^4-10x^2y^2+y^4)}{16}$
	$\mathbb{G}_{5,2}^{(1,-1;a)}(E_g, 1)$	$\begin{bmatrix} 0 & -\frac{1}{4} & 0 & -\frac{i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{1}{4} & 0 & -\frac{i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{i}{4} & 0 & \frac{1}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{i}{4} & 0 & -\frac{1}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
342	symmetry	$\frac{\sqrt{15}x(x^4+2x^2y^2-12x^2z^2+y^4-12y^2z^2+8z^4)}{8}$
	$\mathbb{G}_{5,1}^{(1,-1;a)}(E_g, 2)$	$\begin{bmatrix} 0 & \frac{\sqrt{210}i}{840} & 0 & \frac{\sqrt{210}}{840} & -\frac{\sqrt{35}i}{70} & 0 & 0 & 0 & 0 & -\frac{3\sqrt{14}i}{56} & 0 & -\frac{\sqrt{14}}{56} & \frac{\sqrt{21}i}{21} & 0 \\ \frac{\sqrt{210}i}{840} & 0 & -\frac{\sqrt{210}}{840} & 0 & 0 & \frac{\sqrt{35}i}{70} & 0 & 0 & -\frac{3\sqrt{14}i}{56} & 0 & \frac{\sqrt{14}}{56} & 0 & 0 & -\frac{\sqrt{21}i}{21} \\ 0 & -\frac{\sqrt{210}}{840} & 0 & \frac{\sqrt{210}i}{840} & 0 & 0 & -\frac{\sqrt{35}i}{70} & 0 & 0 & -\frac{\sqrt{14}}{56} & 0 & -\frac{\sqrt{14}i}{56} & 0 & 0 \\ \frac{\sqrt{210}}{840} & 0 & \frac{\sqrt{210}i}{840} & 0 & 0 & 0 & 0 & \frac{\sqrt{35}i}{70} & \frac{\sqrt{14}}{56} & 0 & -\frac{\sqrt{14}i}{56} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{35}i}{70} & 0 & -\frac{\sqrt{35}}{70} & \frac{\sqrt{14}i}{14} & 0 & 0 & 0 & 0 & \frac{\sqrt{21}i}{21} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{35}i}{70} & 0 & \frac{\sqrt{35}}{70} & 0 & 0 & -\frac{\sqrt{14}i}{14} & 0 & 0 & \frac{\sqrt{21}i}{21} & 0 \end{bmatrix}$
343	symmetry	$\frac{\sqrt{15}y(x^4+2x^2y^2-12x^2z^2+y^4-12y^2z^2+8z^4)}{8}$
	$\mathbb{G}_{5,2}^{(1,-1;a)}(E_g, 2)$	$\begin{bmatrix} 0 & -\frac{\sqrt{210}}{840} & 0 & \frac{\sqrt{210}i}{840} & 0 & 0 & -\frac{\sqrt{35}i}{70} & 0 & 0 & -\frac{\sqrt{14}}{56} & 0 & -\frac{\sqrt{14}i}{56} & 0 & 0 \\ \frac{\sqrt{210}}{840} & 0 & \frac{\sqrt{210}i}{840} & 0 & 0 & 0 & 0 & \frac{\sqrt{35}i}{70} & \frac{\sqrt{14}}{56} & 0 & -\frac{\sqrt{14}i}{56} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{210}i}{840} & 0 & -\frac{\sqrt{210}}{840} & \frac{\sqrt{35}i}{70} & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}i}{56} & 0 & -\frac{3\sqrt{14}}{56} & \frac{\sqrt{21}i}{21} & 0 \\ -\frac{\sqrt{210}i}{840} & 0 & \frac{\sqrt{210}}{840} & 0 & 0 & -\frac{\sqrt{35}i}{70} & 0 & 0 & -\frac{\sqrt{14}i}{56} & 0 & \frac{3\sqrt{14}}{56} & 0 & 0 & -\frac{\sqrt{21}i}{21} \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{35}}{70} & 0 & -\frac{\sqrt{35}i}{70} & 0 & 0 & \frac{\sqrt{14}i}{14} & 0 & 0 & \frac{\sqrt{21}}{21} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{35}}{70} & 0 & -\frac{\sqrt{35}i}{70} & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}i}{14} & -\frac{\sqrt{21}}{21} & 0 \end{bmatrix}$
344	symmetry	$-\frac{3\sqrt{35}xyz(x-y)(x+y)}{2}$

continued ...

Table 7

No.	multipole	matrix
	$\mathbb{G}_{5,1}^{(1,-1;a)}(E_g, 3)$	$\begin{bmatrix} 0 & 0 & -\frac{\sqrt{10}i}{20} & 0 & 0 & -\frac{\sqrt{15}}{20} & 0 & -\frac{\sqrt{15}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{10}i}{20} & \frac{\sqrt{15}}{20} & 0 & -\frac{\sqrt{15}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{10}i}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}i}{20} & 0 & \frac{\sqrt{15}}{20} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{10}i}{20} & 0 & 0 & -\frac{\sqrt{15}i}{20} & 0 & -\frac{\sqrt{15}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{10}}{20} & 0 & -\frac{\sqrt{10}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{10}}{20} & 0 & -\frac{\sqrt{10}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
345	symmetry	$\frac{3\sqrt{35}z(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$
	$\mathbb{G}_{5,2}^{(1,-1;a)}(E_g, 3)$	$\begin{bmatrix} \frac{\sqrt{10}i}{20} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{20} & 0 & -\frac{\sqrt{15}}{20} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{10}i}{20} & 0 & 0 & \frac{\sqrt{15}i}{20} & 0 & \frac{\sqrt{15}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{10}i}{20} & 0 & 0 & -\frac{\sqrt{15}}{20} & 0 & -\frac{\sqrt{15}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{10}i}{20} & \frac{\sqrt{15}}{20} & 0 & -\frac{\sqrt{15}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{10}i}{20} & 0 & -\frac{\sqrt{10}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{10}i}{20} & 0 & \frac{\sqrt{10}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
346	symmetry	$-\frac{\sqrt{105}xyz(x^2+y^2-2z^2)}{2}$
	$\mathbb{G}_{5,1}^{(1,-1;a)}(E_g, 4)$	$\begin{bmatrix} 0 & 0 & -\frac{\sqrt{30}i}{120} & 0 & 0 & 0 & -\frac{\sqrt{5}i}{20} & 0 & 0 & \frac{\sqrt{2}i}{8} & 0 & 0 & \frac{\sqrt{3}}{12} \\ 0 & 0 & 0 & \frac{\sqrt{30}i}{120} & 0 & 0 & -\frac{\sqrt{5}i}{20} & 0 & 0 & 0 & -\frac{\sqrt{2}i}{8} & -\frac{\sqrt{3}}{12} & 0 \\ \frac{\sqrt{30}i}{120} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{20} & \frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & \frac{\sqrt{3}i}{12} \\ 0 & -\frac{\sqrt{30}i}{120} & 0 & 0 & 0 & 0 & \frac{\sqrt{5}}{20} & 0 & 0 & -\frac{\sqrt{2}i}{8} & 0 & 0 & \frac{\sqrt{3}i}{12} \\ 0 & \frac{\sqrt{30}}{120} & 0 & -\frac{\sqrt{30}i}{120} & 0 & 0 & \frac{\sqrt{5}i}{10} & 0 & 0 & \frac{\sqrt{2}}{8} & 0 & \frac{\sqrt{2}i}{8} & 0 \\ -\frac{\sqrt{30}}{120} & 0 & -\frac{\sqrt{30}i}{120} & 0 & 0 & 0 & -\frac{\sqrt{5}i}{10} & -\frac{\sqrt{2}}{8} & 0 & \frac{\sqrt{2}i}{8} & 0 & 0 & 0 \end{bmatrix}$
347	symmetry	$-\frac{\sqrt{105}z(x-y)(x+y)(x^2+y^2-2z^2)}{4}$
	$\mathbb{G}_{5,2}^{(1,-1;a)}(E_g, 4)$	$\begin{bmatrix} -\frac{\sqrt{30}i}{120} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{20} & 0 & 0 & \frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & \frac{\sqrt{3}i}{12} \\ 0 & \frac{\sqrt{30}i}{120} & 0 & 0 & -\frac{\sqrt{5}i}{20} & 0 & 0 & 0 & -\frac{\sqrt{2}i}{8} & 0 & 0 & \frac{\sqrt{3}i}{12} & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{30}i}{120} & 0 & 0 & -\frac{\sqrt{5}}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{8} & 0 & 0 & -\frac{\sqrt{3}}{12} \\ 0 & 0 & 0 & \frac{\sqrt{30}i}{120} & \frac{\sqrt{5}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{8} & \frac{\sqrt{3}}{12} & 0 \\ 0 & -\frac{\sqrt{30}i}{120} & 0 & -\frac{\sqrt{30}}{120} & \frac{\sqrt{5}i}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{8} & 0 & -\frac{\sqrt{2}}{8} & 0 & 0 \\ -\frac{\sqrt{30}i}{120} & 0 & \frac{\sqrt{30}}{120} & 0 & 0 & -\frac{\sqrt{5}i}{10} & 0 & 0 & \frac{\sqrt{2}i}{8} & 0 & \frac{\sqrt{2}}{8} & 0 & 0 & 0 \end{bmatrix}$
348	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$

continued ...

Table 7

No.	multipole	matrix
	$\mathbb{G}_3^{(1,0;a)}(A_{1g})$	$\begin{bmatrix} 0 & \frac{i}{16} & 0 & -\frac{1}{16} & -\frac{\sqrt{6}i}{16} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{48} & 0 & -\frac{\sqrt{15}}{48} & 0 & 0 \\ \frac{i}{16} & 0 & \frac{1}{16} & 0 & 0 & \frac{\sqrt{6}i}{16} & 0 & 0 & \frac{\sqrt{15}i}{48} & 0 & \frac{\sqrt{15}}{48} & 0 & 0 & 0 \\ 0 & \frac{1}{16} & 0 & \frac{i}{16} & 0 & 0 & \frac{\sqrt{6}i}{16} & 0 & 0 & -\frac{\sqrt{15}}{48} & 0 & -\frac{\sqrt{15}i}{48} & 0 & 0 \\ -\frac{1}{16} & 0 & \frac{i}{16} & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{16} & \frac{\sqrt{15}}{48} & 0 & -\frac{\sqrt{15}i}{48} & 0 & 0 & 0 \\ \frac{3i}{8} & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{24} & 0 & \frac{\sqrt{6}}{24} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{3i}{8} & 0 & 0 & -\frac{\sqrt{6}i}{24} & 0 & -\frac{\sqrt{6}}{24} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
349	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$
	$\mathbb{G}_3^{(1,0;a)}(A_{2g}, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{24} & 0 & \frac{\sqrt{15}}{24} & 0 & 0 & 0 & 0 & 0 & \frac{i}{4} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{24} & 0 & -\frac{\sqrt{15}}{24} & 0 & 0 & 0 & 0 & 0 & \frac{i}{4} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{24} & 0 & \frac{\sqrt{15}i}{24} & 0 & 0 & 0 & 0 & 0 & \frac{1}{4} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{24} & 0 & \frac{\sqrt{15}i}{24} & 0 & 0 & 0 & 0 & 0 & -\frac{1}{4} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{24} & 0 & -\frac{\sqrt{6}}{24} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{24} & 0 & \frac{\sqrt{6}}{24} & 0 & 0 & 0 \end{bmatrix}$
350	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$
	$\mathbb{G}_3^{(1,0;a)}(A_{2g}, 2)$	$\begin{bmatrix} 0 & \frac{1}{16} & 0 & \frac{i}{16} & 0 & 0 & -\frac{\sqrt{6}i}{16} & 0 & 0 & \frac{\sqrt{15}}{48} & 0 & \frac{\sqrt{15}i}{48} & 0 & 0 \\ -\frac{1}{16} & 0 & \frac{i}{16} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{16} & -\frac{\sqrt{15}}{48} & 0 & \frac{\sqrt{15}i}{48} & 0 & 0 & 0 \\ 0 & -\frac{i}{16} & 0 & \frac{1}{16} & -\frac{\sqrt{6}i}{16} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{48} & 0 & -\frac{\sqrt{15}}{48} & 0 & 0 \\ -\frac{i}{16} & 0 & -\frac{1}{16} & 0 & 0 & \frac{\sqrt{6}i}{16} & 0 & 0 & \frac{\sqrt{15}i}{48} & 0 & \frac{\sqrt{15}}{48} & 0 & 0 & 0 \\ 0 & 0 & \frac{3i}{8} & 0 & 0 & -\frac{\sqrt{6}}{24} & 0 & -\frac{\sqrt{6}i}{24} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{3i}{8} & \frac{\sqrt{6}}{24} & 0 & -\frac{\sqrt{6}i}{24} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
351	symmetry	$-\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$
	$\mathbb{G}_{3,1}^{(1,0;a)}(E_g, 1)$	$\begin{bmatrix} 0 & \frac{\sqrt{15}i}{48} & 0 & \frac{\sqrt{15}}{48} & -\frac{\sqrt{10}i}{48} & 0 & 0 & 0 & 0 & \frac{5i}{48} & 0 & -\frac{7}{48} & -\frac{\sqrt{6}i}{24} & 0 \\ \frac{\sqrt{15}i}{48} & 0 & -\frac{\sqrt{15}}{48} & 0 & 0 & \frac{\sqrt{10}i}{48} & 0 & 0 & \frac{5i}{48} & 0 & \frac{7}{48} & 0 & 0 & \frac{\sqrt{6}i}{24} \\ 0 & -\frac{\sqrt{15}}{48} & 0 & \frac{\sqrt{15}i}{48} & 0 & 0 & -\frac{\sqrt{10}i}{48} & 0 & 0 & \frac{17}{48} & 0 & -\frac{5i}{48} & 0 & 0 \\ \frac{\sqrt{15}}{48} & 0 & \frac{\sqrt{15}i}{48} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{48} & -\frac{17}{48} & 0 & -\frac{5i}{48} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}i}{24} & 0 & -\frac{\sqrt{10}}{24} & \frac{i}{24} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{10}i}{24} & 0 & \frac{\sqrt{10}}{24} & 0 & 0 & -\frac{i}{24} & 0 & 0 & 0 & 0 \end{bmatrix}$
352	symmetry	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$

continued ...

Table 7

No.	multipole	matrix
	$\mathbb{G}_{1,1}^{(1,1;a)}(E_g)$	$\begin{bmatrix} 0 & \frac{\sqrt{21}i}{28} & 0 & \frac{\sqrt{21}}{28} & \frac{\sqrt{14}i}{28} & 0 & 0 & 0 & 0 & -\frac{3\sqrt{35}i}{140} & 0 & -\frac{\sqrt{35}}{140} & -\frac{\sqrt{210}i}{140} & 0 \\ \frac{\sqrt{21}i}{28} & 0 & -\frac{\sqrt{21}}{28} & 0 & 0 & -\frac{\sqrt{14}i}{28} & 0 & 0 & -\frac{3\sqrt{35}i}{140} & 0 & \frac{\sqrt{35}}{140} & 0 & 0 & \frac{\sqrt{210}i}{140} \\ 0 & -\frac{\sqrt{21}}{28} & 0 & \frac{\sqrt{21}i}{28} & 0 & 0 & \frac{\sqrt{14}i}{28} & 0 & 0 & -\frac{\sqrt{35}}{140} & 0 & -\frac{\sqrt{35}i}{140} & 0 & 0 \\ \frac{\sqrt{21}}{28} & 0 & \frac{\sqrt{21}i}{28} & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}i}{28} & \frac{\sqrt{35}}{140} & 0 & -\frac{\sqrt{35}i}{140} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}i}{28} & 0 & \frac{\sqrt{14}}{28} & \frac{\sqrt{35}i}{35} & 0 & 0 & 0 & 0 & -\frac{\sqrt{210}i}{140} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{14}i}{28} & 0 & -\frac{\sqrt{14}}{28} & 0 & 0 & -\frac{\sqrt{35}i}{35} & 0 & 0 & -\frac{\sqrt{210}i}{140} & 0 \end{bmatrix}$
357	symmetry	y $\mathbb{G}_{1,2}^{(1,1;a)}(E_g)$ $\begin{bmatrix} 0 & -\frac{\sqrt{21}}{28} & 0 & \frac{\sqrt{21}i}{28} & 0 & 0 & \frac{\sqrt{14}i}{28} & 0 & 0 & -\frac{\sqrt{35}}{140} & 0 & -\frac{\sqrt{35}i}{140} & 0 & 0 \\ \frac{\sqrt{21}}{28} & 0 & \frac{\sqrt{21}i}{28} & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}i}{28} & \frac{\sqrt{35}}{140} & 0 & -\frac{\sqrt{35}i}{140} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{21}i}{28} & 0 & -\frac{\sqrt{21}}{28} & -\frac{\sqrt{14}i}{28} & 0 & 0 & 0 & 0 & -\frac{\sqrt{35}i}{140} & 0 & -\frac{3\sqrt{35}}{140} & -\frac{\sqrt{210}i}{140} & 0 \\ -\frac{\sqrt{21}i}{28} & 0 & \frac{\sqrt{21}}{28} & 0 & 0 & \frac{\sqrt{14}i}{28} & 0 & 0 & -\frac{\sqrt{35}i}{140} & 0 & \frac{3\sqrt{35}}{140} & 0 & 0 & \frac{\sqrt{210}i}{140} \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}}{28} & 0 & \frac{\sqrt{14}i}{28} & 0 & 0 & \frac{\sqrt{35}i}{35} & 0 & 0 & -\frac{\sqrt{210}}{140} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{14}}{28} & 0 & \frac{\sqrt{14}i}{28} & 0 & 0 & 0 & 0 & -\frac{\sqrt{35}i}{35} & \frac{\sqrt{210}}{140} & 0 \end{bmatrix}$
358	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$ $\mathbb{G}_3^{(1,1;a)}(A_{1g})$ $\begin{bmatrix} 0 & \frac{29\sqrt{7}i}{336} & 0 & \frac{9\sqrt{7}}{112} & \frac{\sqrt{42}i}{48} & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}i}{336} & 0 & \frac{\sqrt{105}}{336} & 0 & 0 \\ \frac{29\sqrt{7}i}{336} & 0 & -\frac{9\sqrt{7}}{112} & 0 & 0 & -\frac{\sqrt{42}i}{48} & 0 & 0 & -\frac{\sqrt{105}i}{336} & 0 & -\frac{\sqrt{105}}{336} & 0 & 0 & 0 \\ 0 & \frac{29\sqrt{7}}{336} & 0 & -\frac{9\sqrt{7}i}{112} & 0 & 0 & -\frac{\sqrt{42}i}{48} & 0 & 0 & \frac{\sqrt{105}}{336} & 0 & \frac{\sqrt{105}i}{336} & 0 & 0 \\ -\frac{29\sqrt{7}}{336} & 0 & -\frac{9\sqrt{7}i}{112} & 0 & 0 & 0 & 0 & \frac{\sqrt{42}i}{48} & -\frac{\sqrt{105}}{336} & 0 & \frac{\sqrt{105}i}{336} & 0 & 0 & 0 \\ \frac{\sqrt{7}i}{24} & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}i}{168} & 0 & \frac{\sqrt{42}}{168} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{7}i}{24} & 0 & 0 & -\frac{\sqrt{42}i}{168} & 0 & -\frac{\sqrt{42}}{168} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
359	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$ $\mathbb{G}_3^{(1,1;a)}(A_{2g,1})$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}i}{168} & 0 & -\frac{\sqrt{105}}{168} & -\frac{\sqrt{42}i}{42} & 0 & 0 & 0 & 0 & \frac{5\sqrt{7}i}{84} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{105}i}{168} & 0 & \frac{\sqrt{105}}{168} & 0 & 0 & \frac{\sqrt{42}i}{42} & 0 & 0 & \frac{5\sqrt{7}i}{84} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{105}}{168} & 0 & -\frac{\sqrt{105}i}{168} & 0 & 0 & -\frac{\sqrt{42}i}{42} & 0 & 0 & \frac{5\sqrt{7}}{84} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{105}}{168} & 0 & -\frac{\sqrt{105}i}{168} & 0 & 0 & 0 & 0 & \frac{\sqrt{42}i}{42} & -\frac{5\sqrt{7}}{84} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{5\sqrt{42}i}{168} & 0 & \frac{5\sqrt{42}}{168} & \frac{2\sqrt{7}i}{21} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{5\sqrt{42}i}{168} & 0 & -\frac{5\sqrt{42}}{168} & 0 & 0 & -\frac{2\sqrt{7}i}{21} \end{bmatrix}$
360	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$

continued ...

Table 7

No.	multipole	matrix
	$\mathbb{G}_3^{(1,1;a)}(A_{2g}, 2)$	$\begin{bmatrix} 0 & -\frac{9\sqrt{7}}{112} & 0 & \frac{29\sqrt{7}i}{336} & 0 & 0 & \frac{\sqrt{42}i}{48} & 0 & 0 & -\frac{\sqrt{105}}{336} & 0 & -\frac{\sqrt{105}i}{336} & 0 & 0 \\ \frac{9\sqrt{7}}{112} & 0 & \frac{29\sqrt{7}i}{336} & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}i}{48} & \frac{\sqrt{105}}{336} & 0 & -\frac{\sqrt{105}i}{336} & 0 & 0 & 0 \\ 0 & \frac{9\sqrt{7}i}{112} & 0 & \frac{29\sqrt{7}}{336} & \frac{\sqrt{42}i}{48} & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}i}{336} & 0 & \frac{\sqrt{105}}{336} & 0 & 0 \\ \frac{9\sqrt{7}i}{112} & 0 & -\frac{29\sqrt{7}}{336} & 0 & 0 & -\frac{\sqrt{42}i}{48} & 0 & 0 & -\frac{\sqrt{105}i}{336} & 0 & -\frac{\sqrt{105}}{336} & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{7}i}{24} & 0 & 0 & -\frac{\sqrt{42}}{168} & 0 & -\frac{\sqrt{42}i}{168} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{7}i}{24} & \frac{\sqrt{42}}{168} & 0 & -\frac{\sqrt{42}i}{168} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
361	symmetry	$-\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$
	$\mathbb{G}_{3,1}^{(1,1;a)}(E_g, 1)$	$\begin{bmatrix} 0 & -\frac{\sqrt{105}i}{336} & 0 & -\frac{\sqrt{105}}{336} & -\frac{\sqrt{70}i}{112} & 0 & 0 & 0 & 0 & \frac{9\sqrt{7}i}{112} & 0 & \frac{5\sqrt{7}}{112} & \frac{5\sqrt{42}i}{168} & 0 \\ -\frac{\sqrt{105}i}{336} & 0 & \frac{\sqrt{105}}{336} & 0 & 0 & \frac{\sqrt{70}i}{112} & 0 & 0 & \frac{9\sqrt{7}i}{112} & 0 & -\frac{5\sqrt{7}}{112} & 0 & 0 & -\frac{5\sqrt{42}i}{168} \\ 0 & \frac{\sqrt{105}}{336} & 0 & -\frac{\sqrt{105}i}{336} & 0 & 0 & -\frac{\sqrt{70}i}{112} & 0 & 0 & \frac{5\sqrt{7}}{112} & 0 & -\frac{\sqrt{7}i}{112} & 0 & 0 \\ -\frac{\sqrt{105}}{336} & 0 & -\frac{\sqrt{105}i}{336} & 0 & 0 & 0 & 0 & \frac{\sqrt{70}i}{112} & -\frac{5\sqrt{7}}{112} & 0 & -\frac{\sqrt{7}i}{112} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{70}i}{56} & 0 & \frac{\sqrt{70}}{56} & \frac{5\sqrt{7}i}{56} & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}i}{42} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{70}i}{56} & 0 & -\frac{\sqrt{70}}{56} & 0 & 0 & -\frac{5\sqrt{7}i}{56} & 0 & 0 & -\frac{\sqrt{42}i}{42} & 0 \end{bmatrix}$
362	symmetry	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$
	$\mathbb{G}_{3,2}^{(1,1;a)}(E_g, 1)$	$\begin{bmatrix} 0 & \frac{\sqrt{105}}{336} & 0 & -\frac{\sqrt{105}i}{336} & 0 & 0 & -\frac{\sqrt{70}i}{112} & 0 & 0 & -\frac{\sqrt{7}}{112} & 0 & \frac{5\sqrt{7}i}{112} & 0 & 0 \\ -\frac{\sqrt{105}}{336} & 0 & -\frac{\sqrt{105}i}{336} & 0 & 0 & 0 & 0 & \frac{\sqrt{70}i}{112} & \frac{\sqrt{7}}{112} & 0 & \frac{5\sqrt{7}i}{112} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{105}i}{336} & 0 & \frac{\sqrt{105}}{336} & \frac{\sqrt{70}i}{112} & 0 & 0 & 0 & 0 & \frac{5\sqrt{7}i}{112} & 0 & \frac{9\sqrt{7}}{112} & \frac{5\sqrt{42}i}{168} & 0 \\ \frac{\sqrt{105}i}{336} & 0 & -\frac{\sqrt{105}}{336} & 0 & 0 & -\frac{\sqrt{70}i}{112} & 0 & 0 & \frac{5\sqrt{7}i}{112} & 0 & -\frac{9\sqrt{7}}{112} & 0 & 0 & -\frac{5\sqrt{42}i}{168} \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}}{56} & 0 & \frac{\sqrt{70}i}{56} & 0 & 0 & \frac{5\sqrt{7}i}{56} & 0 & 0 & -\frac{\sqrt{42}}{42} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{70}}{56} & 0 & \frac{\sqrt{70}i}{56} & 0 & 0 & 0 & 0 & -\frac{5\sqrt{7}i}{56} & \frac{\sqrt{42}}{42} & 0 \end{bmatrix}$
363	symmetry	$\sqrt{15}xyz$
	$\mathbb{G}_{3,1}^{(1,1;a)}(E_g, 2)$	$\begin{bmatrix} 0 & 0 & -\frac{\sqrt{42}i}{168} & 0 & 0 & -\frac{3\sqrt{7}}{56} & 0 & \frac{\sqrt{7}i}{14} & 0 & 0 & \frac{\sqrt{70}i}{56} & 0 & 0 & -\frac{\sqrt{105}}{168} \\ 0 & 0 & 0 & \frac{\sqrt{42}i}{168} & \frac{3\sqrt{7}}{56} & 0 & \frac{\sqrt{7}i}{14} & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}i}{56} & \frac{\sqrt{105}}{168} & 0 \\ \frac{\sqrt{42}i}{168} & 0 & 0 & 0 & 0 & \frac{3\sqrt{7}i}{56} & 0 & \frac{\sqrt{7}}{14} & \frac{\sqrt{70}i}{56} & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}i}{168} \\ 0 & -\frac{\sqrt{42}i}{168} & 0 & 0 & \frac{3\sqrt{7}i}{56} & 0 & -\frac{\sqrt{7}}{14} & 0 & 0 & -\frac{\sqrt{70}i}{56} & 0 & 0 & -\frac{\sqrt{105}i}{168} & 0 \\ 0 & -\frac{\sqrt{42}}{48} & 0 & \frac{\sqrt{42}i}{48} & 0 & 0 & \frac{\sqrt{7}i}{14} & 0 & 0 & -\frac{\sqrt{70}}{112} & 0 & -\frac{\sqrt{70}i}{112} & 0 & 0 \\ \frac{\sqrt{42}}{48} & 0 & \frac{\sqrt{42}i}{48} & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}i}{14} & \frac{\sqrt{70}}{112} & 0 & -\frac{\sqrt{70}i}{112} & 0 & 0 & 0 \end{bmatrix}$
364	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$

continued ...

Table 7

No.	multipole	matrix
	$\mathbb{G}_{3,2}^{(1,1;a)}(E_g, 2)$	$\begin{array}{cccccccccccccccc} -\frac{\sqrt{42}i}{168} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}i}{14} & 0 & \frac{3\sqrt{7}}{56} & \frac{\sqrt{70}i}{56} & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}i}{168} \\ 0 & \frac{\sqrt{42}i}{168} & 0 & 0 & \frac{\sqrt{7}i}{14} & 0 & -\frac{3\sqrt{7}}{56} & 0 & 0 & 0 & -\frac{\sqrt{70}i}{56} & 0 & 0 & -\frac{\sqrt{105}i}{168} & 0 \\ 0 & 0 & -\frac{\sqrt{42}i}{168} & 0 & 0 & \frac{\sqrt{7}}{14} & 0 & -\frac{3\sqrt{7}i}{56} & 0 & 0 & 0 & -\frac{\sqrt{70}i}{56} & 0 & 0 & \frac{\sqrt{105}}{168} \\ 0 & 0 & 0 & \frac{\sqrt{42}i}{168} & -\frac{\sqrt{7}}{14} & 0 & -\frac{3\sqrt{7}i}{56} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{70}i}{56} & -\frac{\sqrt{105}}{168} & 0 \\ 0 & \frac{\sqrt{42}i}{48} & 0 & \frac{\sqrt{42}}{48} & \frac{\sqrt{7}i}{14} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}i}{112} & 0 & \frac{\sqrt{70}}{112} & 0 & 0 \\ \frac{\sqrt{42}i}{48} & 0 & -\frac{\sqrt{42}}{48} & 0 & 0 & -\frac{\sqrt{7}i}{14} & 0 & 0 & 0 & -\frac{\sqrt{70}i}{112} & 0 & -\frac{\sqrt{70}}{112} & 0 & 0 & 0 \end{array}$
365	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$
	$\mathbb{T}_2^{(a)}(A_{1g})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}i}{14} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}i}{14} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}i}{14} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}i}{14} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}i}{14} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}i}{14} \end{bmatrix}$
366	symmetry	$\sqrt{3}yz$
	$\mathbb{T}_{2,1}^{(a)}(E_g, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{105}i}{42} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{105}i}{42} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{105}i}{42} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}i}{14} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}i}{42} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}i}{14} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}i}{21} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}i}{21} & 0 & 0 \end{bmatrix}$
367	symmetry	$-\sqrt{3}xz$
	$\mathbb{T}_{2,2}^{(a)}(E_g, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & -\frac{\sqrt{105}i}{42} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}i}{14} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}i}{42} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}i}{14} \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}i}{42} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}i}{42} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}i}{21} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}i}{21} & 0 & 0 & 0 & 0 \end{bmatrix}$
368	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$

continued ...

Table 7

No.	multipole	matrix
	$\mathbb{T}_{2,1}^{(a)}(E_g, 2)$	$\begin{bmatrix} \frac{\sqrt{70}i}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}i}{84} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{70}i}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}i}{84} & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{70}i}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}i}{84} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{70}i}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}i}{84} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{105}i}{42} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{105}i}{42} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
369	symmetry	$-\sqrt{3}xy$
	$\mathbb{T}_{2,2}^{(a)}(E_g, 2)$	$\begin{bmatrix} 0 & 0 & -\frac{\sqrt{70}i}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}i}{84} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{70}i}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}i}{84} & 0 & 0 \\ \frac{\sqrt{70}i}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}i}{84} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{70}i}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}i}{84} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}i}{42} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}i}{42} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
370	symmetry	$\frac{3x^4}{8} + \frac{3x^2y^2}{4} - 3x^2z^2 + \frac{3y^4}{8} - 3y^2z^2 + z^4$
	$\mathbb{T}_4^{(a)}(A_{1g}, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}i}{28} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}i}{28} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}i}{28} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}i}{28} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}i}{7} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}i}{7} \end{bmatrix}$
371	symmetry	$\frac{\sqrt{70}yz(3x^2-y^2)}{4}$
	$\mathbb{T}_4^{(a)}(A_{1g}, 2)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
372	symmetry	$\frac{\sqrt{70}xz(x^2-3y^2)}{4}$

continued ...

Table 7

No.	multipole	matrix
	$\mathbb{T}_4^{(a)}(A_{2g})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
373	symmetry	$-\frac{\sqrt{10}yz(3x^2+3y^2-4z^2)}{4}$
	$\mathbb{T}_{4,1}^{(a)}(E_g, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}i}{56} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}i}{56} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{42}i}{56} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{70}i}{28} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}i}{56} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{70}i}{28} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{105}i}{28} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{105}i}{28} & 0 & 0 & 0 \end{bmatrix}$
374	symmetry	$\frac{\sqrt{10}xz(3x^2+3y^2-4z^2)}{4}$
	$\mathbb{T}_{4,2}^{(a)}(E_g, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & \frac{\sqrt{42}i}{56} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}i}{28} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}i}{56} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}i}{28} \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}i}{56} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}i}{56} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}i}{28} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}i}{28} & 0 & 0 & 0 & 0 \end{bmatrix}$
375	symmetry	$\frac{\sqrt{35}(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$
	$\mathbb{T}_{4,1}^{(a)}(E_g, 2)$	$\begin{bmatrix} \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
376	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$

continued ...

Table 7

No.	multipole	matrix
	$\mathbb{T}_{4,2}^{(a)}(E_g, 2)$	$\begin{bmatrix} 0 & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
377	symmetry	$-\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$
	$\mathbb{T}_{4,1}^{(a)}(E_g, 3)$	$\begin{bmatrix} -\frac{\sqrt{14}i}{56} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{210}i}{56} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{14}i}{56} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{210}i}{56} & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{14}i}{56} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{210}i}{56} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{14}i}{56} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{210}i}{56} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{21}i}{14} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}i}{14} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
378	symmetry	$\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$
	$\mathbb{T}_{4,2}^{(a)}(E_g, 3)$	$\begin{bmatrix} 0 & 0 & \frac{\sqrt{14}i}{56} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{210}i}{56} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{14}i}{56} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{210}i}{56} & 0 & 0 \\ -\frac{\sqrt{14}i}{56} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{210}i}{56} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{14}i}{56} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{210}i}{56} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}i}{14} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}i}{14} & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
379	symmetry	$\frac{3x^4}{8} + \frac{3x^2y^2}{4} - 3x^2z^2 + \frac{3y^4}{8} - 3y^2z^2 + z^4$
	$\mathbb{T}_4^{(1,-1;a)}(A_{1g}, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{35}i}{56} & 0 & -\frac{\sqrt{35}i}{56} & 0 & 0 & \frac{\sqrt{14}i}{14} & 0 & 0 & -\frac{\sqrt{21}i}{28} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{35}i}{56} & 0 & -\frac{\sqrt{35}i}{56} & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}i}{14} & \frac{\sqrt{21}i}{28} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{35}i}{56} & 0 & -\frac{\sqrt{35}i}{56} & -\frac{\sqrt{14}i}{14} & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}i}{28} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{35}i}{56} & 0 & \frac{\sqrt{35}i}{56} & 0 & 0 & \frac{\sqrt{14}i}{14} & 0 & 0 & -\frac{\sqrt{21}i}{28} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}i}{56} & 0 & \frac{\sqrt{14}i}{56} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}i}{56} & 0 & \frac{\sqrt{14}i}{56} & 0 & 0 & 0 \end{bmatrix}$
380	symmetry	$\frac{\sqrt{70}yz(3x^2-y^2)}{4}$

continued ...

Table 7

No.	multipole	matrix
	$\mathbb{T}_4^{(1,-1;a)}(A_{1g}, 2)$	$\begin{bmatrix} 0 & -\frac{\sqrt{3}}{16} & 0 & -\frac{\sqrt{3}i}{16} & -\frac{\sqrt{2}}{16} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{16} & 0 & -\frac{\sqrt{5}i}{16} & 0 & 0 \\ -\frac{\sqrt{3}}{16} & 0 & \frac{\sqrt{3}i}{16} & 0 & 0 & \frac{\sqrt{2}}{16} & 0 & 0 & -\frac{\sqrt{5}}{16} & 0 & \frac{\sqrt{5}i}{16} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{3}i}{16} & 0 & -\frac{\sqrt{3}}{16} & 0 & 0 & \frac{\sqrt{2}}{16} & 0 & 0 & -\frac{\sqrt{5}i}{16} & 0 & \frac{\sqrt{5}}{16} & 0 & 0 \\ -\frac{\sqrt{3}i}{16} & 0 & -\frac{\sqrt{3}}{16} & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{16} & \frac{\sqrt{5}i}{16} & 0 & \frac{\sqrt{5}}{16} & 0 & 0 & 0 \\ \frac{\sqrt{3}}{8} & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{8} & 0 & \frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{3}}{8} & 0 & 0 & \frac{\sqrt{2}}{8} & 0 & -\frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
381	symmetry	$\frac{\sqrt{70}xz(x^2-3y^2)}{4}$
	$\mathbb{T}_4^{(1,-1;a)}(A_{2g})$	$\begin{bmatrix} 0 & -\frac{\sqrt{3}i}{16} & 0 & \frac{\sqrt{3}}{16} & 0 & 0 & \frac{\sqrt{2}}{16} & 0 & 0 & -\frac{\sqrt{5}i}{16} & 0 & \frac{\sqrt{5}}{16} & 0 & 0 \\ \frac{\sqrt{3}i}{16} & 0 & \frac{\sqrt{3}}{16} & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{16} & \frac{\sqrt{5}i}{16} & 0 & \frac{\sqrt{5}}{16} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{3}}{16} & 0 & -\frac{\sqrt{3}i}{16} & \frac{\sqrt{2}}{16} & 0 & 0 & 0 & 0 & \frac{\sqrt{5}}{16} & 0 & \frac{\sqrt{5}i}{16} & 0 & 0 \\ -\frac{\sqrt{3}}{16} & 0 & \frac{\sqrt{3}i}{16} & 0 & 0 & -\frac{\sqrt{2}}{16} & 0 & 0 & \frac{\sqrt{5}}{16} & 0 & -\frac{\sqrt{5}i}{16} & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{3}}{8} & 0 & 0 & \frac{\sqrt{2}i}{8} & 0 & -\frac{\sqrt{2}}{8} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{3}}{8} & -\frac{\sqrt{2}i}{8} & 0 & -\frac{\sqrt{2}}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
382	symmetry	$-\frac{\sqrt{10}yz(3x^2+3y^2-4z^2)}{4}$
	$\mathbb{T}_{4,1}^{(1,-1;a)}(E_g, 1)$	$\begin{bmatrix} 0 & \frac{\sqrt{21}}{112} & 0 & -\frac{\sqrt{21}i}{112} & -\frac{5\sqrt{14}}{112} & 0 & 0 & 0 & 0 & \frac{\sqrt{35}}{112} & 0 & -\frac{5\sqrt{35}i}{112} & -\frac{\sqrt{210}}{56} & 0 \\ \frac{\sqrt{21}}{112} & 0 & \frac{\sqrt{21}i}{112} & 0 & 0 & \frac{5\sqrt{14}}{112} & 0 & 0 & \frac{\sqrt{35}}{112} & 0 & \frac{5\sqrt{35}i}{112} & 0 & 0 & \frac{\sqrt{210}}{56} \\ 0 & \frac{\sqrt{21}i}{112} & 0 & \frac{\sqrt{21}}{112} & 0 & 0 & -\frac{5\sqrt{14}}{112} & 0 & 0 & \frac{3\sqrt{35}i}{112} & 0 & -\frac{\sqrt{35}}{112} & 0 & 0 \\ -\frac{\sqrt{21}i}{112} & 0 & \frac{\sqrt{21}}{112} & 0 & 0 & 0 & 0 & \frac{5\sqrt{14}}{112} & -\frac{3\sqrt{35}i}{112} & 0 & -\frac{\sqrt{35}}{112} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}}{56} & 0 & \frac{\sqrt{14}i}{56} & \frac{\sqrt{35}}{56} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{14}}{56} & 0 & -\frac{\sqrt{14}i}{56} & 0 & 0 & -\frac{\sqrt{35}}{56} & 0 & 0 & 0 & 0 \end{bmatrix}$
383	symmetry	$\frac{\sqrt{10}xz(3x^2+3y^2-4z^2)}{4}$
	$\mathbb{T}_{4,2}^{(1,-1;a)}(E_g, 1)$	$\begin{bmatrix} 0 & \frac{\sqrt{21}i}{112} & 0 & \frac{\sqrt{21}}{112} & 0 & 0 & -\frac{5\sqrt{14}}{112} & 0 & 0 & \frac{\sqrt{35}i}{112} & 0 & -\frac{3\sqrt{35}}{112} & 0 & 0 \\ -\frac{\sqrt{21}i}{112} & 0 & \frac{\sqrt{21}}{112} & 0 & 0 & 0 & 0 & \frac{5\sqrt{14}}{112} & -\frac{\sqrt{35}i}{112} & 0 & -\frac{3\sqrt{35}}{112} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{21}}{112} & 0 & \frac{\sqrt{21}i}{112} & \frac{5\sqrt{14}}{112} & 0 & 0 & 0 & 0 & \frac{5\sqrt{35}}{112} & 0 & -\frac{\sqrt{35}i}{112} & -\frac{\sqrt{210}}{56} & 0 \\ -\frac{\sqrt{21}}{112} & 0 & -\frac{\sqrt{21}i}{112} & 0 & 0 & -\frac{5\sqrt{14}}{112} & 0 & 0 & \frac{5\sqrt{35}}{112} & 0 & \frac{\sqrt{35}i}{112} & 0 & 0 & \frac{\sqrt{210}}{56} \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}i}{56} & 0 & -\frac{\sqrt{14}}{56} & 0 & 0 & \frac{\sqrt{35}}{56} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{14}i}{56} & 0 & -\frac{\sqrt{14}}{56} & 0 & 0 & 0 & 0 & -\frac{\sqrt{35}}{56} & 0 & 0 \end{bmatrix}$
384	symmetry	$\frac{\sqrt{35}(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$

continued ...

Table 7

No.	multipole	matrix
	$\mathbb{T}_{4,1}^{(1,-1;a)}(E_g, 2)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{i}{8} & 0 & \frac{1}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{i}{8} & 0 & \frac{1}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{1}{8} & 0 & \frac{i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{1}{8} & 0 & -\frac{i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{6}i}{8} & 0 & -\frac{\sqrt{6}}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{6}i}{8} & 0 & -\frac{\sqrt{6}}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
385	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$
	$\mathbb{T}_{4,2}^{(1,-1;a)}(E_g, 2)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{1}{8} & 0 & -\frac{i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{1}{8} & 0 & \frac{i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{i}{8} & 0 & \frac{1}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{i}{8} & 0 & \frac{1}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{6}}{8} & 0 & \frac{\sqrt{6}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{6}}{8} & 0 & -\frac{\sqrt{6}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
386	symmetry	$-\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$
	$\mathbb{T}_{4,1}^{(1,-1;a)}(E_g, 3)$	$\begin{bmatrix} 0 & 0 & \frac{\sqrt{42}}{56} & 0 & 0 & -\frac{3\sqrt{7}i}{56} & 0 & \frac{\sqrt{7}}{28} & 0 & 0 & \frac{\sqrt{70}}{56} & 0 & 0 & -\frac{\sqrt{105}i}{56} \\ 0 & 0 & 0 & -\frac{\sqrt{42}}{56} & \frac{3\sqrt{7}i}{56} & 0 & \frac{\sqrt{7}}{28} & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}}{56} & \frac{\sqrt{105}i}{56} & 0 \\ -\frac{\sqrt{42}}{56} & 0 & 0 & 0 & 0 & -\frac{3\sqrt{7}}{56} & 0 & -\frac{\sqrt{7}i}{28} & \frac{\sqrt{70}}{56} & 0 & 0 & 0 & 0 & \frac{\sqrt{105}}{56} \\ 0 & \frac{\sqrt{42}}{56} & 0 & 0 & -\frac{3\sqrt{7}}{56} & 0 & \frac{\sqrt{7}i}{28} & 0 & 0 & -\frac{\sqrt{70}}{56} & 0 & 0 & \frac{\sqrt{105}}{56} & 0 \\ 0 & \frac{\sqrt{42}i}{112} & 0 & \frac{\sqrt{42}}{112} & 0 & 0 & -\frac{\sqrt{7}}{14} & 0 & 0 & \frac{\sqrt{70}i}{112} & 0 & -\frac{\sqrt{70}}{112} & 0 & 0 \\ -\frac{\sqrt{42}i}{112} & 0 & \frac{\sqrt{42}}{112} & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{14} & -\frac{\sqrt{70}i}{112} & 0 & -\frac{\sqrt{70}}{112} & 0 & 0 & 0 \end{bmatrix}$
387	symmetry	$\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$
	$\mathbb{T}_{4,2}^{(1,-1;a)}(E_g, 3)$	$\begin{bmatrix} \frac{\sqrt{42}}{56} & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{28} & 0 & \frac{3\sqrt{7}i}{56} & \frac{\sqrt{70}}{56} & 0 & 0 & 0 & 0 & \frac{\sqrt{105}}{56} \\ 0 & -\frac{\sqrt{42}}{56} & 0 & 0 & \frac{\sqrt{7}}{28} & 0 & -\frac{3\sqrt{7}i}{56} & 0 & 0 & -\frac{\sqrt{70}}{56} & 0 & 0 & \frac{\sqrt{105}}{56} & 0 \\ 0 & 0 & \frac{\sqrt{42}}{56} & 0 & 0 & -\frac{\sqrt{7}i}{28} & 0 & \frac{3\sqrt{7}}{56} & 0 & 0 & -\frac{\sqrt{70}}{56} & 0 & 0 & \frac{\sqrt{105}i}{56} \\ 0 & 0 & 0 & -\frac{\sqrt{42}}{56} & \frac{\sqrt{7}i}{28} & 0 & \frac{3\sqrt{7}}{56} & 0 & 0 & 0 & 0 & \frac{\sqrt{70}}{56} & -\frac{\sqrt{105}i}{56} & 0 \\ 0 & \frac{\sqrt{42}}{112} & 0 & -\frac{\sqrt{42}i}{112} & -\frac{\sqrt{7}}{14} & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}}{112} & 0 & -\frac{\sqrt{70}i}{112} & 0 & 0 \\ \frac{\sqrt{42}}{112} & 0 & \frac{\sqrt{42}i}{112} & 0 & 0 & \frac{\sqrt{7}}{14} & 0 & 0 & -\frac{\sqrt{70}}{112} & 0 & \frac{\sqrt{70}i}{112} & 0 & 0 & 0 \end{bmatrix}$
388	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$

continued ...

Table 7

No.	multipole	matrix
	$\mathbb{T}_2^{(1,0;a)}(A_{1g})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{210}i}{84} & 0 & \frac{\sqrt{210}}{84} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}i}{28} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{210}i}{84} & 0 & \frac{\sqrt{210}}{84} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}i}{28} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{210}}{84} & 0 & \frac{\sqrt{210}i}{84} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}}{28} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{210}}{84} & 0 & -\frac{\sqrt{210}i}{84} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}}{28} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}i}{21} & 0 & \frac{\sqrt{21}}{21} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}i}{21} & 0 & \frac{\sqrt{21}}{21} & 0 & 0 & 0 \end{bmatrix}$
389	symmetry	$\sqrt{3}yz$
	$\mathbb{T}_{2,1}^{(1,0;a)}(E_g, 1)$	$\begin{bmatrix} 0 & -\frac{\sqrt{105}}{84} & 0 & \frac{\sqrt{105}i}{84} & \frac{\sqrt{70}}{84} & 0 & 0 & 0 & 0 & -\frac{5\sqrt{7}}{84} & 0 & -\frac{\sqrt{7}i}{84} & -\frac{\sqrt{42}}{84} & 0 \\ -\frac{\sqrt{105}}{84} & 0 & -\frac{\sqrt{105}i}{84} & 0 & 0 & -\frac{\sqrt{70}}{84} & 0 & 0 & -\frac{5\sqrt{7}}{84} & 0 & \frac{\sqrt{7}i}{84} & 0 & 0 & \frac{\sqrt{42}}{84} \\ 0 & -\frac{\sqrt{105}i}{84} & 0 & -\frac{\sqrt{105}}{84} & 0 & 0 & \frac{\sqrt{70}}{84} & 0 & 0 & -\frac{\sqrt{7}i}{84} & 0 & -\frac{\sqrt{7}}{12} & 0 & 0 \\ \frac{\sqrt{105}i}{84} & 0 & -\frac{\sqrt{105}}{84} & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}}{84} & \frac{\sqrt{7}i}{84} & 0 & -\frac{\sqrt{7}}{12} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}}{84} & 0 & \frac{\sqrt{70}i}{84} & \frac{\sqrt{7}}{21} & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}}{28} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{70}}{84} & 0 & -\frac{\sqrt{70}i}{84} & 0 & 0 & -\frac{\sqrt{7}}{21} & 0 & 0 & -\frac{\sqrt{42}}{28} & 0 \end{bmatrix}$
390	symmetry	$-\sqrt{3}xz$
	$\mathbb{T}_{2,2}^{(1,0;a)}(E_g, 1)$	$\begin{bmatrix} 0 & -\frac{\sqrt{105}i}{84} & 0 & -\frac{\sqrt{105}}{84} & 0 & 0 & \frac{\sqrt{70}}{84} & 0 & 0 & \frac{\sqrt{7}i}{12} & 0 & \frac{\sqrt{7}}{84} & 0 & 0 \\ \frac{\sqrt{105}i}{84} & 0 & -\frac{\sqrt{105}}{84} & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}}{84} & -\frac{\sqrt{7}i}{12} & 0 & \frac{\sqrt{7}}{84} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{105}}{84} & 0 & -\frac{\sqrt{105}i}{84} & -\frac{\sqrt{70}}{84} & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{84} & 0 & \frac{5\sqrt{7}i}{84} & -\frac{\sqrt{42}}{84} & 0 \\ \frac{\sqrt{105}}{84} & 0 & \frac{\sqrt{105}i}{84} & 0 & 0 & \frac{\sqrt{70}}{84} & 0 & 0 & \frac{\sqrt{7}}{84} & 0 & -\frac{5\sqrt{7}i}{84} & 0 & 0 & \frac{\sqrt{42}}{84} \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}i}{84} & 0 & -\frac{\sqrt{70}}{84} & 0 & 0 & \frac{\sqrt{7}}{21} & 0 & 0 & \frac{\sqrt{42}i}{28} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{70}i}{84} & 0 & -\frac{\sqrt{70}}{84} & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}}{21} & -\frac{\sqrt{42}i}{28} & 0 \end{bmatrix}$
391	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$
	$\mathbb{T}_{2,1}^{(1,0;a)}(E_g, 2)$	$\begin{bmatrix} 0 & 0 & -\frac{\sqrt{105}}{42} & 0 & 0 & -\frac{\sqrt{70}i}{84} & 0 & \frac{\sqrt{70}}{84} & 0 & 0 & \frac{\sqrt{7}}{42} & 0 & 0 & \frac{\sqrt{42}i}{84} \\ 0 & 0 & 0 & \frac{\sqrt{105}}{42} & \frac{\sqrt{70}i}{84} & 0 & \frac{\sqrt{70}}{84} & 0 & 0 & 0 & -\frac{\sqrt{7}}{42} & -\frac{\sqrt{42}i}{84} & 0 & 0 \\ \frac{\sqrt{105}}{42} & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}}{84} & 0 & -\frac{\sqrt{70}i}{84} & \frac{\sqrt{7}}{42} & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}}{84} \\ 0 & -\frac{\sqrt{105}}{42} & 0 & 0 & -\frac{\sqrt{70}}{84} & 0 & \frac{\sqrt{70}i}{84} & 0 & 0 & -\frac{\sqrt{7}}{42} & 0 & 0 & -\frac{\sqrt{42}}{84} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}}{42} & 0 & 0 & -\frac{\sqrt{7}i}{21} & 0 & \frac{\sqrt{7}}{21} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{70}}{42} & \frac{\sqrt{7}i}{21} & 0 & \frac{\sqrt{7}}{21} & 0 & 0 & 0 \end{bmatrix}$
392	symmetry	$-\sqrt{3}xy$

continued ...

Table 7

No.	multipole	matrix
	$\mathbb{T}_{2,2}^{(1,0;a)}(E_g, 2)$	$\begin{bmatrix} -\frac{\sqrt{105}}{42} & 0 & 0 & 0 & 0 & \frac{\sqrt{70}}{84} & 0 & \frac{\sqrt{70}i}{84} & \frac{\sqrt{7}}{42} & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}}{84} \\ 0 & \frac{\sqrt{105}}{42} & 0 & 0 & \frac{\sqrt{70}}{84} & 0 & -\frac{\sqrt{70}i}{84} & 0 & 0 & -\frac{\sqrt{7}}{42} & 0 & 0 & -\frac{\sqrt{42}}{84} & 0 \\ 0 & 0 & -\frac{\sqrt{105}}{42} & 0 & 0 & -\frac{\sqrt{70}i}{84} & 0 & \frac{\sqrt{70}}{84} & 0 & 0 & -\frac{\sqrt{7}}{42} & 0 & 0 & -\frac{\sqrt{42}i}{84} \\ 0 & 0 & 0 & \frac{\sqrt{105}}{42} & \frac{\sqrt{70}i}{84} & 0 & \frac{\sqrt{70}}{84} & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{42} & \frac{\sqrt{42}i}{84} & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{70}}{42} & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{21} & 0 & \frac{\sqrt{7}i}{21} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{70}}{42} & 0 & 0 & \frac{\sqrt{7}}{21} & 0 & -\frac{\sqrt{7}i}{21} & 0 & 0 & 0 \end{bmatrix}$
393	symmetry	$\frac{3x^4}{8} + \frac{3x^2y^2}{4} - 3x^2z^2 + \frac{3y^4}{8} - 3y^2z^2 + z^4$
	$\mathbb{T}_4^{(1,0;a)}(A_{1g}, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}i}{56} & 0 & -\frac{\sqrt{21}}{56} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{35}i}{28} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{21}i}{56} & 0 & -\frac{\sqrt{21}}{56} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{35}i}{28} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{56} & 0 & -\frac{\sqrt{21}i}{56} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{35}}{28} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{56} & 0 & \frac{\sqrt{21}i}{56} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{35}}{28} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{210}i}{56} & 0 & \frac{\sqrt{210}}{56} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{210}i}{56} & 0 & \frac{\sqrt{210}}{56} & 0 & 0 & 0 \end{bmatrix}$
394	symmetry	$\frac{\sqrt{70}yz(3x^2 - y^2)}{4}$
	$\mathbb{T}_4^{(1,0;a)}(A_{1g}, 2)$	$\begin{bmatrix} 0 & -\frac{3\sqrt{5}}{80} & 0 & \frac{\sqrt{5}i}{16} & \frac{3\sqrt{30}}{80} & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{16} & 0 & -\frac{\sqrt{3}i}{16} & 0 & 0 \\ -\frac{3\sqrt{5}}{80} & 0 & -\frac{\sqrt{5}i}{16} & 0 & 0 & -\frac{3\sqrt{30}}{80} & 0 & 0 & -\frac{\sqrt{3}}{16} & 0 & \frac{\sqrt{3}i}{16} & 0 & 0 & 0 \\ 0 & \frac{3\sqrt{5}i}{80} & 0 & \frac{\sqrt{5}}{16} & 0 & 0 & -\frac{3\sqrt{30}}{80} & 0 & 0 & -\frac{\sqrt{3}i}{16} & 0 & \frac{\sqrt{3}}{16} & 0 & 0 \\ -\frac{3\sqrt{5}i}{80} & 0 & \frac{\sqrt{5}}{16} & 0 & 0 & 0 & 0 & \frac{3\sqrt{30}}{80} & \frac{\sqrt{3}i}{16} & 0 & \frac{\sqrt{3}}{16} & 0 & 0 & 0 \\ \frac{3\sqrt{5}}{40} & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{40} & 0 & -\frac{\sqrt{30}i}{40} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{3\sqrt{5}}{40} & 0 & 0 & -\frac{\sqrt{30}}{40} & 0 & \frac{\sqrt{30}i}{40} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
395	symmetry	$\frac{\sqrt{70}xz(x^2 - 3y^2)}{4}$
	$\mathbb{T}_4^{(1,0;a)}(A_{2g})$	$\begin{bmatrix} 0 & \frac{\sqrt{5}i}{16} & 0 & \frac{3\sqrt{5}}{80} & 0 & 0 & -\frac{3\sqrt{30}}{80} & 0 & 0 & -\frac{\sqrt{3}i}{16} & 0 & \frac{\sqrt{3}}{16} & 0 & 0 \\ -\frac{\sqrt{5}i}{16} & 0 & \frac{3\sqrt{5}}{80} & 0 & 0 & 0 & 0 & \frac{3\sqrt{30}}{80} & \frac{\sqrt{3}i}{16} & 0 & \frac{\sqrt{3}}{16} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{5}}{16} & 0 & -\frac{3\sqrt{5}i}{80} & -\frac{3\sqrt{30}}{80} & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{16} & 0 & \frac{\sqrt{3}i}{16} & 0 & 0 \\ \frac{\sqrt{5}}{16} & 0 & \frac{3\sqrt{5}i}{80} & 0 & 0 & \frac{3\sqrt{30}}{80} & 0 & 0 & \frac{\sqrt{3}}{16} & 0 & -\frac{\sqrt{3}i}{16} & 0 & 0 & 0 \\ 0 & 0 & -\frac{3\sqrt{5}}{40} & 0 & 0 & -\frac{\sqrt{30}i}{40} & 0 & \frac{\sqrt{30}}{40} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{3\sqrt{5}}{40} & \frac{\sqrt{30}i}{40} & 0 & \frac{\sqrt{30}}{40} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
396	symmetry	$-\frac{\sqrt{10}yz(3x^2 + 3y^2 - 4z^2)}{4}$

continued ...

Table 7

No.	multipole	matrix
	$\mathbb{T}_{4,1}^{(1,0;a)}(E_g, 1)$	$\begin{bmatrix} 0 & \frac{3\sqrt{35}}{560} & 0 & -\frac{3\sqrt{35}i}{560} & -\frac{\sqrt{210}}{560} & 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{112} & 0 & \frac{3\sqrt{21}i}{112} & \frac{\sqrt{14}}{56} & 0 \\ \frac{3\sqrt{35}}{560} & 0 & \frac{3\sqrt{35}i}{560} & 0 & 0 & \frac{\sqrt{210}}{560} & 0 & 0 & \frac{\sqrt{21}}{112} & 0 & -\frac{3\sqrt{21}i}{112} & 0 & 0 & -\frac{\sqrt{14}}{56} \\ 0 & \frac{3\sqrt{35}i}{560} & 0 & \frac{3\sqrt{35}}{560} & 0 & 0 & -\frac{\sqrt{210}}{560} & 0 & 0 & \frac{3\sqrt{21}i}{112} & 0 & \frac{\sqrt{21}}{16} & 0 & 0 \\ -\frac{3\sqrt{35}i}{560} & 0 & \frac{3\sqrt{35}}{560} & 0 & 0 & 0 & 0 & \frac{\sqrt{210}}{560} & -\frac{3\sqrt{21}i}{112} & 0 & \frac{\sqrt{21}}{16} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{3\sqrt{210}}{280} & 0 & \frac{3\sqrt{210}i}{280} & \frac{\sqrt{21}}{56} & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}}{14} \\ 0 & 0 & 0 & 0 & -\frac{3\sqrt{210}}{280} & 0 & -\frac{3\sqrt{210}i}{280} & 0 & 0 & -\frac{\sqrt{21}}{56} & 0 & 0 & -\frac{\sqrt{14}}{14} & 0 \end{bmatrix}$
397	symmetry	$\frac{\sqrt{10}xz(3x^2+3y^2-4z^2)}{4}$
	$\mathbb{T}_{4,2}^{(1,0;a)}(E_g, 1)$	$\begin{bmatrix} 0 & \frac{3\sqrt{35}i}{560} & 0 & \frac{3\sqrt{35}}{560} & 0 & 0 & -\frac{\sqrt{210}}{560} & 0 & 0 & -\frac{\sqrt{21}i}{16} & 0 & -\frac{3\sqrt{21}}{112} & 0 & 0 \\ -\frac{3\sqrt{35}i}{560} & 0 & \frac{3\sqrt{35}}{560} & 0 & 0 & 0 & 0 & \frac{\sqrt{210}}{560} & \frac{\sqrt{21}i}{16} & 0 & -\frac{3\sqrt{21}}{112} & 0 & 0 & 0 \\ 0 & -\frac{3\sqrt{35}}{560} & 0 & \frac{3\sqrt{35}i}{560} & \frac{\sqrt{210}}{560} & 0 & 0 & 0 & 0 & -\frac{3\sqrt{21}}{112} & 0 & -\frac{\sqrt{21}i}{112} & \frac{\sqrt{14}}{56} & 0 \\ -\frac{3\sqrt{35}}{560} & 0 & -\frac{3\sqrt{35}i}{560} & 0 & 0 & -\frac{\sqrt{210}}{560} & 0 & 0 & -\frac{3\sqrt{21}}{112} & 0 & \frac{\sqrt{21}i}{112} & 0 & 0 & -\frac{\sqrt{14}}{56} \\ 0 & 0 & 0 & 0 & 0 & -\frac{3\sqrt{210}i}{280} & 0 & -\frac{3\sqrt{210}}{280} & 0 & 0 & \frac{\sqrt{21}}{56} & 0 & 0 & \frac{\sqrt{14}i}{14} \\ 0 & 0 & 0 & 0 & \frac{3\sqrt{210}i}{280} & 0 & -\frac{3\sqrt{210}}{280} & 0 & 0 & 0 & -\frac{\sqrt{21}}{56} & -\frac{\sqrt{14}i}{14} & 0 & 0 \end{bmatrix}$
398	symmetry	$\frac{\sqrt{35}(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$
	$\mathbb{T}_{4,1}^{(1,0;a)}(E_g, 2)$	$\begin{bmatrix} 0 & 0 & -\frac{\sqrt{10}}{10} & 0 & 0 & -\frac{\sqrt{15}i}{40} & 0 & \frac{\sqrt{15}}{40} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{10}}{10} & \frac{\sqrt{15}i}{40} & 0 & \frac{\sqrt{15}}{40} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{10}}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{40} & 0 & \frac{\sqrt{15}i}{40} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{10}}{10} & 0 & 0 & \frac{\sqrt{15}}{40} & 0 & -\frac{\sqrt{15}i}{40} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{10}i}{40} & 0 & \frac{\sqrt{10}}{40} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{10}i}{40} & 0 & \frac{\sqrt{10}}{40} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
399	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$
	$\mathbb{T}_{4,2}^{(1,0;a)}(E_g, 2)$	$\begin{bmatrix} \frac{\sqrt{10}}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{40} & 0 & -\frac{\sqrt{15}i}{40} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{10}}{10} & 0 & 0 & -\frac{\sqrt{15}}{40} & 0 & \frac{\sqrt{15}i}{40} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{10}}{10} & 0 & 0 & -\frac{\sqrt{15}i}{40} & 0 & \frac{\sqrt{15}}{40} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{10}}{10} & \frac{\sqrt{15}i}{40} & 0 & \frac{\sqrt{15}}{40} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{10}}{40} & 0 & -\frac{\sqrt{10}i}{40} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{10}}{40} & 0 & \frac{\sqrt{10}i}{40} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
400	symmetry	$-\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$

continued ...

Table 7

No.	multipole	matrix												
	$\mathbb{T}_{4,1}^{(1,0;a)}(E_g, 3)$	0	0	$\frac{\sqrt{70}}{280}$	0	0	$\frac{\sqrt{105i}}{56}$	0	$\frac{\sqrt{105}}{140}$	0	0	$-\frac{\sqrt{42}}{56}$	0	$-\frac{3\sqrt{7}i}{56}$
		0	0	0	$-\frac{\sqrt{70}}{280}$	$-\frac{\sqrt{105i}}{56}$	0	$\frac{\sqrt{105}}{140}$	0	0	0	$\frac{\sqrt{42}}{56}$	$\frac{3\sqrt{7}i}{56}$	0
		$-\frac{\sqrt{70}}{280}$	0	0	0	0	$\frac{\sqrt{105}}{56}$	0	$-\frac{\sqrt{105i}}{140}$	$-\frac{\sqrt{42}}{56}$	0	0	0	$\frac{3\sqrt{7}}{56}$
		0	$\frac{\sqrt{70}}{280}$	0	0	$\frac{\sqrt{105}}{56}$	0	$\frac{\sqrt{105i}}{140}$	0	0	$\frac{\sqrt{42}}{56}$	0	0	$\frac{3\sqrt{7}}{56}$
		0	$\frac{\sqrt{70i}}{80}$	0	$\frac{\sqrt{70}}{80}$	0	0	$-\frac{\sqrt{105}}{70}$	0	0	$-\frac{3\sqrt{42}i}{112}$	0	$\frac{3\sqrt{42}}{112}$	0
		$-\frac{\sqrt{70i}}{80}$	0	$\frac{\sqrt{70}}{80}$	0	0	0	$\frac{\sqrt{105}}{70}$	$\frac{3\sqrt{42}i}{112}$	0	$\frac{3\sqrt{42}}{112}$	0	0	0
401	symmetry	$\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$												
	$\mathbb{T}_{4,2}^{(1,0;a)}(E_g, 3)$	$\frac{\sqrt{70}}{280}$	0	0	0	0	$\frac{\sqrt{105}}{140}$	0	$-\frac{\sqrt{105i}}{56}$	$-\frac{\sqrt{42}}{56}$	0	0	0	$\frac{3\sqrt{7}}{56}$
		0	$-\frac{\sqrt{70}}{280}$	0	0	$\frac{\sqrt{105}}{140}$	0	$\frac{\sqrt{105i}}{56}$	0	0	$\frac{\sqrt{42}}{56}$	0	0	$\frac{3\sqrt{7}}{56}$
		0	0	$\frac{\sqrt{70}}{280}$	0	0	$-\frac{\sqrt{105i}}{140}$	0	$-\frac{\sqrt{105}}{56}$	0	0	$\frac{\sqrt{42}}{56}$	0	$\frac{3\sqrt{7}i}{56}$
		0	0	0	$-\frac{\sqrt{70}}{280}$	$\frac{\sqrt{105i}}{140}$	0	$-\frac{\sqrt{105}}{56}$	0	0	0	$-\frac{\sqrt{42}}{56}$	$-\frac{3\sqrt{7}i}{56}$	0
		0	$\frac{\sqrt{70}}{80}$	0	$-\frac{\sqrt{70i}}{80}$	$-\frac{\sqrt{105}}{70}$	0	0	0	0	$\frac{3\sqrt{42}}{112}$	0	$\frac{3\sqrt{42}i}{112}$	0
		$\frac{\sqrt{70}}{80}$	0	$\frac{\sqrt{70i}}{80}$	0	0	$\frac{\sqrt{105}}{70}$	0	0	$\frac{3\sqrt{42}}{112}$	0	$-\frac{3\sqrt{42}i}{112}$	0	0
402	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$												
	$\mathbb{T}_2^{(1,1;a)}(A_{1g})$	0	0	0	0	0	$\frac{\sqrt{105i}}{84}$	0	$\frac{\sqrt{105}}{84}$	0	0	$\frac{\sqrt{42}}{28}$	0	$\frac{\sqrt{7}i}{14}$
		0	0	0	0	$-\frac{\sqrt{105i}}{84}$	0	$\frac{\sqrt{105}}{84}$	0	0	0	0	$-\frac{\sqrt{42}}{28}$	$-\frac{\sqrt{7}i}{14}$
		0	0	0	0	0	$-\frac{\sqrt{105}}{84}$	0	$\frac{\sqrt{105i}}{84}$	$-\frac{\sqrt{42}}{28}$	0	0	0	$\frac{\sqrt{7}}{14}$
		0	0	0	0	$-\frac{\sqrt{105}}{84}$	0	$-\frac{\sqrt{105i}}{84}$	0	0	$\frac{\sqrt{42}}{28}$	0	0	$\frac{\sqrt{7}}{14}$
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{42}i}{84}$	0	$-\frac{\sqrt{42}}{84}$	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{42}i}{84}$	0	$-\frac{\sqrt{42}}{84}$	0	0
403	symmetry	$\sqrt{3}yz$												
	$\mathbb{T}_{2,1}^{(1,1;a)}(E_g, 1)$	0	$-\frac{\sqrt{210}}{168}$	0	$\frac{\sqrt{210i}}{168}$	$-\frac{\sqrt{35}}{42}$	0	0	0	0	$-\frac{5\sqrt{14}}{168}$	0	$\frac{11\sqrt{14}i}{168}$	$-\frac{\sqrt{21}}{21}$
		$-\frac{\sqrt{210}}{168}$	0	$-\frac{\sqrt{210i}}{168}$	0	0	$\frac{\sqrt{35}}{42}$	0	0	$-\frac{5\sqrt{14}}{168}$	0	$-\frac{11\sqrt{14}i}{168}$	0	$\frac{\sqrt{21}}{21}$
		0	$-\frac{\sqrt{210i}}{168}$	0	$-\frac{\sqrt{210}}{168}$	0	0	$-\frac{\sqrt{35}}{42}$	0	0	$-\frac{\sqrt{14}i}{168}$	0	$\frac{5\sqrt{14}}{168}$	0
		$\frac{\sqrt{210i}}{168}$	0	$-\frac{\sqrt{210}}{168}$	0	0	0	0	$\frac{\sqrt{35}}{42}$	$\frac{\sqrt{14}i}{168}$	0	$\frac{5\sqrt{14}}{168}$	0	0
		0	0	0	0	0	$\frac{\sqrt{35}}{42}$	0	$-\frac{\sqrt{35i}}{42}$	$\frac{\sqrt{14}}{42}$	0	0	0	0
		0	0	0	0	$\frac{\sqrt{35}}{42}$	0	$\frac{\sqrt{35i}}{42}$	0	0	$-\frac{\sqrt{14}}{42}$	0	0	0
404	symmetry	$-\sqrt{3}xz$												

continued ...

Table 7

No.	multipole	matrix
	$\mathbb{T}_{2,2}^{(1,1;a)}(E_g, 1)$	$\begin{bmatrix} 0 & -\frac{\sqrt{210}i}{168} & 0 & -\frac{\sqrt{210}}{168} & 0 & 0 & -\frac{\sqrt{35}}{42} & 0 & 0 & -\frac{5\sqrt{14}i}{168} & 0 & \frac{\sqrt{14}}{168} & 0 & 0 \\ \frac{\sqrt{210}i}{168} & 0 & -\frac{\sqrt{210}}{168} & 0 & 0 & 0 & 0 & \frac{\sqrt{35}}{42} & \frac{5\sqrt{14}i}{168} & 0 & \frac{\sqrt{14}}{168} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{210}}{168} & 0 & -\frac{\sqrt{210}i}{168} & \frac{\sqrt{35}}{42} & 0 & 0 & 0 & 0 & -\frac{11\sqrt{14}}{168} & 0 & \frac{5\sqrt{14}i}{168} & -\frac{\sqrt{21}}{21} & 0 \\ \frac{\sqrt{210}}{168} & 0 & \frac{\sqrt{210}i}{168} & 0 & 0 & -\frac{\sqrt{35}}{42} & 0 & 0 & -\frac{11\sqrt{14}}{168} & 0 & -\frac{5\sqrt{14}i}{168} & 0 & 0 & \frac{\sqrt{21}}{21} \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{35}i}{42} & 0 & \frac{\sqrt{35}}{42} & 0 & 0 & \frac{\sqrt{14}}{42} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{35}i}{42} & 0 & \frac{\sqrt{35}}{42} & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}}{42} & 0 & 0 \end{bmatrix}$
405	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$
	$\mathbb{T}_{2,1}^{(1,1;a)}(E_g, 2)$	$\begin{bmatrix} 0 & 0 & \frac{\sqrt{210}}{168} & 0 & 0 & \frac{\sqrt{35}i}{42} & 0 & \frac{\sqrt{35}}{84} & 0 & 0 & \frac{5\sqrt{14}}{168} & 0 & 0 & \frac{\sqrt{21}i}{84} \\ 0 & 0 & 0 & -\frac{\sqrt{210}}{168} & -\frac{\sqrt{35}i}{42} & 0 & \frac{\sqrt{35}}{84} & 0 & 0 & 0 & 0 & -\frac{5\sqrt{14}}{168} & -\frac{\sqrt{21}i}{84} & 0 \\ -\frac{\sqrt{210}}{168} & 0 & 0 & 0 & 0 & \frac{\sqrt{35}}{42} & 0 & -\frac{\sqrt{35}i}{84} & \frac{5\sqrt{14}}{168} & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}}{84} \\ 0 & \frac{\sqrt{210}}{168} & 0 & 0 & \frac{\sqrt{35}}{42} & 0 & \frac{\sqrt{35}i}{84} & 0 & 0 & -\frac{5\sqrt{14}}{168} & 0 & 0 & -\frac{\sqrt{21}}{84} & 0 \\ 0 & -\frac{\sqrt{210}i}{56} & 0 & -\frac{\sqrt{210}}{56} & 0 & 0 & -\frac{\sqrt{35}}{42} & 0 & 0 & -\frac{\sqrt{14}i}{168} & 0 & \frac{\sqrt{14}}{168} & 0 & 0 \\ \frac{\sqrt{210}i}{56} & 0 & -\frac{\sqrt{210}}{56} & 0 & 0 & 0 & 0 & \frac{\sqrt{35}}{42} & \frac{\sqrt{14}i}{168} & 0 & \frac{\sqrt{14}}{168} & 0 & 0 & 0 \end{bmatrix}$
406	symmetry	$-\sqrt{3}xy$
	$\mathbb{T}_{2,2}^{(1,1;a)}(E_g, 2)$	$\begin{bmatrix} \frac{\sqrt{210}}{168} & 0 & 0 & 0 & 0 & \frac{\sqrt{35}}{84} & 0 & -\frac{\sqrt{35}i}{42} & \frac{5\sqrt{14}}{168} & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}}{84} \\ 0 & -\frac{\sqrt{210}}{168} & 0 & 0 & \frac{\sqrt{35}}{84} & 0 & \frac{\sqrt{35}i}{42} & 0 & 0 & -\frac{5\sqrt{14}}{168} & 0 & 0 & -\frac{\sqrt{21}}{84} & 0 \\ 0 & 0 & \frac{\sqrt{210}}{168} & 0 & 0 & -\frac{\sqrt{35}i}{84} & 0 & -\frac{\sqrt{35}}{42} & 0 & 0 & -\frac{5\sqrt{14}}{168} & 0 & 0 & -\frac{\sqrt{21}i}{84} \\ 0 & 0 & 0 & -\frac{\sqrt{210}}{168} & \frac{\sqrt{35}i}{84} & 0 & -\frac{\sqrt{35}}{42} & 0 & 0 & 0 & 0 & \frac{5\sqrt{14}}{168} & \frac{\sqrt{21}i}{84} & 0 \\ 0 & -\frac{\sqrt{210}}{56} & 0 & \frac{\sqrt{210}i}{56} & -\frac{\sqrt{35}}{42} & 0 & 0 & 0 & 0 & \frac{\sqrt{14}}{168} & 0 & \frac{\sqrt{14}i}{168} & 0 & 0 \\ -\frac{\sqrt{210}}{56} & 0 & -\frac{\sqrt{210}i}{56} & 0 & 0 & \frac{\sqrt{35}}{42} & 0 & 0 & \frac{\sqrt{14}}{168} & 0 & -\frac{\sqrt{14}i}{168} & 0 & 0 & 0 \end{bmatrix}$
407	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$
	$\mathbb{M}_3^{(a)}(A_{1g})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{3}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{3}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
408	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$

continued ...

Table 7

No.	multipole	matrix
	$\mathbb{M}_3^{(a)}(A_{2g}, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
409	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$
	$\mathbb{M}_3^{(a)}(A_{2g}, 2)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{3}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{3}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
410	symmetry	$-\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$
	$\mathbb{M}_{3,1}^{(a)}(E_g, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}i}{24} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}i}{24} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{24} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{24} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}i}{12} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}i}{12} & 0 & 0 & 0 \end{bmatrix}$
411	symmetry	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$
	$\mathbb{M}_{3,2}^{(a)}(E_g, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{24} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{24} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{24} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{24} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{12} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{12} & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
412	symmetry	$\sqrt{15}xyz$

continued ...

Table 7

No.	multipole	matrix
	$\mathbb{M}_{3,1}^{(a)}(E_g, 2)$	$\begin{bmatrix} \frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{24} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{24} & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}i}{24} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}i}{24} & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
413	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$
	$\mathbb{M}_{3,2}^{(a)}(E_g, 2)$	$\begin{bmatrix} 0 & 0 & -\frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}i}{24} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}i}{24} & 0 & 0 \\ \frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}i}{24} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}i}{24} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
414	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$
	$\mathbb{M}_3^{(1,-1;a)}(A_{1g})$	$\begin{bmatrix} 0 & \frac{\sqrt{35}}{28} & 0 & \frac{\sqrt{35}i}{28} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}}{84} & 0 & -\frac{\sqrt{21}i}{84} & 0 & 0 \\ \frac{\sqrt{35}}{28} & 0 & -\frac{\sqrt{35}i}{28} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}}{84} & 0 & \frac{\sqrt{21}i}{84} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{35}i}{28} & 0 & \frac{\sqrt{35}}{28} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}}{84} & 0 & \frac{\sqrt{21}i}{84} & 0 & 0 \\ \frac{\sqrt{35}i}{28} & 0 & \frac{\sqrt{35}}{28} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}i}{84} & 0 & \frac{\sqrt{21}}{84} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{210}}{84} & 0 & \frac{\sqrt{210}i}{84} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{210}}{84} & 0 & -\frac{\sqrt{210}i}{84} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
415	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$
	$\mathbb{M}_3^{(1,-1;a)}(A_{2g}, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}}{42} & 0 & \frac{\sqrt{21}i}{42} & \frac{\sqrt{210}}{70} & 0 & 0 & 0 & 0 & \frac{\sqrt{35}}{70} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{21}}{42} & 0 & -\frac{\sqrt{21}i}{42} & 0 & 0 & -\frac{\sqrt{210}}{70} & 0 & 0 & \frac{\sqrt{35}}{70} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}i}{42} & 0 & -\frac{\sqrt{21}}{42} & 0 & 0 & \frac{\sqrt{210}}{70} & 0 & 0 & -\frac{\sqrt{35}i}{70} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{21}i}{42} & 0 & -\frac{\sqrt{21}}{42} & 0 & 0 & 0 & 0 & -\frac{\sqrt{210}}{70} & \frac{\sqrt{35}i}{70} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{210}}{105} & 0 & \frac{\sqrt{210}i}{105} & \frac{3\sqrt{35}}{70} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{210}}{105} & 0 & -\frac{\sqrt{210}i}{105} & 0 & 0 & -\frac{3\sqrt{35}}{70} \end{bmatrix}$
416	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$

continued ...

Table 7

No.	multipole	matrix
	$M_3^{(1,-1;a)}(A_{2g}, 2)$	$\begin{bmatrix} 0 & -\frac{\sqrt{35}i}{28} & 0 & \frac{\sqrt{35}}{28} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}i}{84} & 0 & -\frac{\sqrt{21}}{84} & 0 & 0 \\ \frac{\sqrt{35}i}{28} & 0 & \frac{\sqrt{35}}{28} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}i}{84} & 0 & -\frac{\sqrt{21}}{84} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{35}}{28} & 0 & -\frac{\sqrt{35}i}{28} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}}{84} & 0 & -\frac{\sqrt{21}i}{84} & 0 & 0 \\ -\frac{\sqrt{35}}{28} & 0 & \frac{\sqrt{35}i}{28} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}}{84} & 0 & \frac{\sqrt{21}i}{84} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{210}i}{84} & 0 & \frac{\sqrt{210}}{84} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{210}i}{84} & 0 & \frac{\sqrt{210}}{84} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
417	symmetry	$\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$ $M_{3,1}^{(1,-1;a)}(E_g, 1) \begin{bmatrix} 0 & -\frac{\sqrt{21}}{84} & 0 & \frac{\sqrt{21}i}{84} & \frac{\sqrt{14}}{21} & 0 & 0 & 0 & 0 & \frac{13\sqrt{35}}{420} & 0 & -\frac{\sqrt{35}i}{420} & -\frac{\sqrt{210}}{105} & 0 \\ -\frac{\sqrt{21}}{84} & 0 & -\frac{\sqrt{21}i}{84} & 0 & 0 & -\frac{\sqrt{14}}{21} & 0 & 0 & \frac{13\sqrt{35}}{420} & 0 & \frac{\sqrt{35}i}{420} & 0 & 0 & \frac{\sqrt{210}}{105} \\ 0 & -\frac{\sqrt{21}i}{84} & 0 & -\frac{\sqrt{21}}{84} & 0 & 0 & \frac{\sqrt{14}}{21} & 0 & 0 & -\frac{\sqrt{35}i}{420} & 0 & \frac{11\sqrt{35}}{420} & 0 & 0 \\ \frac{\sqrt{21}i}{84} & 0 & -\frac{\sqrt{21}}{84} & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}}{21} & \frac{\sqrt{35}i}{420} & 0 & \frac{11\sqrt{35}}{420} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}}{84} & 0 & \frac{\sqrt{14}i}{84} & \frac{4\sqrt{35}}{105} & 0 & 0 & 0 & 0 & \frac{\sqrt{210}}{70} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{14}}{84} & 0 & -\frac{\sqrt{14}i}{84} & 0 & 0 & -\frac{4\sqrt{35}}{105} & 0 & 0 & \frac{\sqrt{210}}{70} & 0 \end{bmatrix}$
418	symmetry	$\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$ $M_{3,2}^{(1,-1;a)}(E_g, 1) \begin{bmatrix} 0 & -\frac{\sqrt{21}i}{84} & 0 & -\frac{\sqrt{21}}{84} & 0 & 0 & \frac{\sqrt{14}}{21} & 0 & 0 & -\frac{11\sqrt{35}i}{420} & 0 & \frac{\sqrt{35}}{420} & 0 & 0 \\ \frac{\sqrt{21}i}{84} & 0 & -\frac{\sqrt{21}}{84} & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}}{21} & \frac{11\sqrt{35}i}{420} & 0 & \frac{\sqrt{35}}{420} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{21}}{84} & 0 & -\frac{\sqrt{21}i}{84} & -\frac{\sqrt{14}}{21} & 0 & 0 & 0 & 0 & \frac{\sqrt{35}}{420} & 0 & -\frac{13\sqrt{35}i}{420} & -\frac{\sqrt{210}}{105} & 0 \\ \frac{\sqrt{21}}{84} & 0 & \frac{\sqrt{21}i}{84} & 0 & 0 & \frac{\sqrt{14}}{21} & 0 & 0 & \frac{\sqrt{35}}{420} & 0 & \frac{13\sqrt{35}i}{420} & 0 & 0 & \frac{\sqrt{210}}{105} \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}i}{84} & 0 & -\frac{\sqrt{14}}{84} & 0 & 0 & \frac{4\sqrt{35}}{105} & 0 & 0 & -\frac{\sqrt{210}i}{70} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{14}i}{84} & 0 & -\frac{\sqrt{14}}{84} & 0 & 0 & 0 & 0 & -\frac{4\sqrt{35}}{105} & \frac{\sqrt{210}i}{70} & 0 \end{bmatrix}$
419	symmetry	$\sqrt{15}xyz$ $M_{3,1}^{(1,-1;a)}(E_g, 2) \begin{bmatrix} 0 & 0 & \frac{\sqrt{210}}{84} & 0 & 0 & -\frac{\sqrt{35}i}{42} & 0 & \frac{\sqrt{35}}{42} & 0 & 0 & -\frac{\sqrt{14}}{84} & 0 & 0 & \frac{\sqrt{21}i}{42} \\ 0 & 0 & 0 & -\frac{\sqrt{210}}{84} & \frac{\sqrt{35}i}{42} & 0 & \frac{\sqrt{35}}{42} & 0 & 0 & 0 & 0 & \frac{\sqrt{14}}{84} & -\frac{\sqrt{21}i}{42} & 0 \\ -\frac{\sqrt{210}}{84} & 0 & 0 & 0 & 0 & -\frac{\sqrt{35}}{42} & 0 & -\frac{\sqrt{35}i}{42} & -\frac{\sqrt{14}}{84} & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}}{42} \\ 0 & \frac{\sqrt{210}}{84} & 0 & 0 & -\frac{\sqrt{35}}{42} & 0 & \frac{\sqrt{35}i}{42} & 0 & 0 & \frac{\sqrt{14}}{84} & 0 & 0 & -\frac{\sqrt{21}}{42} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{35}}{42} & 0 & 0 & -\frac{\sqrt{14}i}{21} & 0 & \frac{\sqrt{14}}{21} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{35}}{42} & \frac{\sqrt{14}i}{21} & 0 & \frac{\sqrt{14}}{21} & 0 & 0 & 0 \end{bmatrix}$
420	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$

continued ...

Table 7

No.	multipole	matrix
	$M_{3,2}^{(1,-1;a)}(E_g, 2)$	$\begin{bmatrix} \frac{\sqrt{210}}{84} & 0 & 0 & 0 & 0 & \frac{\sqrt{35}}{42} & 0 & \frac{\sqrt{35}i}{42} & -\frac{\sqrt{14}}{84} & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}}{42} \\ 0 & -\frac{\sqrt{210}}{84} & 0 & 0 & \frac{\sqrt{35}}{42} & 0 & -\frac{\sqrt{35}i}{42} & 0 & 0 & \frac{\sqrt{14}}{84} & 0 & 0 & -\frac{\sqrt{21}}{42} & 0 \\ 0 & 0 & \frac{\sqrt{210}}{84} & 0 & 0 & -\frac{\sqrt{35}i}{42} & 0 & \frac{\sqrt{35}}{42} & 0 & 0 & \frac{\sqrt{14}}{84} & 0 & 0 & -\frac{\sqrt{21}i}{42} \\ 0 & 0 & 0 & -\frac{\sqrt{210}}{84} & \frac{\sqrt{35}i}{42} & 0 & \frac{\sqrt{35}}{42} & 0 & 0 & 0 & -\frac{\sqrt{14}}{84} & \frac{\sqrt{21}i}{42} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{35}}{42} & 0 & 0 & 0 & 0 & \frac{\sqrt{14}}{21} & 0 & \frac{\sqrt{14}i}{21} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{35}}{42} & 0 & 0 & \frac{\sqrt{14}}{21} & 0 & -\frac{\sqrt{14}i}{21} & 0 & 0 & 0 \end{bmatrix}$
421	symmetry	$-\frac{\sqrt{70}x(x^2-3y^2)(x^2+y^2-8z^2)}{16}$
	$M_5^{(1,-1;a)}(A_{1g})$	$\begin{bmatrix} 0 & -\frac{\sqrt{5}}{30} & 0 & 0 & \frac{\sqrt{30}}{30} & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{12} & 0 & \frac{\sqrt{3}i}{12} & 0 & 0 \\ -\frac{\sqrt{5}}{30} & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{30} & 0 & 0 & \frac{\sqrt{3}}{12} & 0 & -\frac{\sqrt{3}i}{12} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{5}i}{30} & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{30} & 0 & 0 & \frac{\sqrt{3}i}{12} & 0 & -\frac{\sqrt{3}}{12} & 0 & 0 \\ -\frac{\sqrt{5}i}{30} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{30} & -\frac{\sqrt{3}i}{12} & 0 & -\frac{\sqrt{3}}{12} & 0 & 0 & 0 \\ \frac{\sqrt{5}}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{30} & 0 & \frac{\sqrt{30}i}{30} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{5}}{15} & 0 & 0 & \frac{\sqrt{30}}{30} & 0 & -\frac{\sqrt{30}i}{30} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
422	symmetry	$\frac{z(15x^4+30x^2y^2-40x^2z^2+15y^4-40y^2z^2+8z^4)}{8}$
	$M_5^{(1,-1;a)}(A_{2g}, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{84} & 0 & -\frac{\sqrt{21}i}{84} & -\frac{\sqrt{210}}{84} & 0 & 0 & 0 & 0 & -\frac{\sqrt{35}}{42} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{84} & 0 & \frac{\sqrt{21}i}{84} & 0 & 0 & \frac{\sqrt{210}}{84} & 0 & 0 & -\frac{\sqrt{35}}{42} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}i}{84} & 0 & \frac{\sqrt{21}}{84} & 0 & 0 & -\frac{\sqrt{210}}{84} & 0 & 0 & \frac{\sqrt{35}i}{42} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{21}i}{84} & 0 & \frac{\sqrt{21}}{84} & 0 & 0 & 0 & 0 & \frac{\sqrt{210}}{84} & -\frac{\sqrt{35}i}{42} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{210}}{84} & 0 & \frac{\sqrt{210}i}{84} & \frac{\sqrt{35}}{21} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{210}}{84} & 0 & -\frac{\sqrt{210}i}{84} & 0 & 0 & -\frac{\sqrt{35}}{21} \end{bmatrix}$
423	symmetry	$-\frac{\sqrt{70}y(3x^2-y^2)(x^2+y^2-8z^2)}{16}$
	$M_5^{(1,-1;a)}(A_{2g}, 2)$	$\begin{bmatrix} 0 & 0 & 0 & -\frac{\sqrt{5}}{30} & 0 & 0 & \frac{\sqrt{30}}{30} & 0 & 0 & -\frac{\sqrt{3}i}{12} & 0 & \frac{\sqrt{3}}{12} & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{5}}{30} & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{30} & \frac{\sqrt{3}i}{12} & 0 & \frac{\sqrt{3}}{12} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{5}i}{30} & \frac{\sqrt{30}}{30} & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{12} & 0 & \frac{\sqrt{3}i}{12} & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{5}i}{30} & 0 & 0 & -\frac{\sqrt{30}}{30} & 0 & 0 & \frac{\sqrt{3}}{12} & 0 & -\frac{\sqrt{3}i}{12} & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{5}}{15} & 0 & 0 & -\frac{\sqrt{30}i}{30} & 0 & \frac{\sqrt{30}}{30} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{5}}{15} & \frac{\sqrt{30}i}{30} & 0 & \frac{\sqrt{30}}{30} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
424	symmetry	$\frac{3\sqrt{14}x(x^4-10x^2y^2+5y^4)}{16}$

continued ...

Table 7

No.	multipole	matrix
	$\mathbb{M}_{5,1}^{(1,-1;\alpha)}(E_g, 1)$	$\begin{bmatrix} 0 & \frac{1}{4} & 0 & \frac{i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{1}{4} & 0 & -\frac{i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{i}{4} & 0 & -\frac{1}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{i}{4} & 0 & -\frac{1}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
425	symmetry	$-\frac{3\sqrt{14}y(5x^4-10x^2y^2+y^4)}{16}$
	$\mathbb{M}_{5,2}^{(1,-1;\alpha)}(E_g, 1)$	$\begin{bmatrix} 0 & \frac{i}{4} & 0 & -\frac{1}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{i}{4} & 0 & -\frac{1}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{1}{4} & 0 & -\frac{i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{1}{4} & 0 & \frac{i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
426	symmetry	$\frac{\sqrt{15}x(x^4+2x^2y^2-12x^2z^2+y^4-12y^2z^2+8z^4)}{8}$
	$\mathbb{M}_{5,1}^{(1,-1;\alpha)}(E_g, 2)$	$\begin{bmatrix} 0 & \frac{\sqrt{210}}{840} & 0 & -\frac{\sqrt{210}i}{840} & -\frac{\sqrt{35}}{70} & 0 & 0 & 0 & 0 & -\frac{3\sqrt{14}}{56} & 0 & \frac{\sqrt{14}i}{56} & \frac{\sqrt{21}}{21} & 0 \\ \frac{\sqrt{210}}{840} & 0 & \frac{\sqrt{210}i}{840} & 0 & 0 & \frac{\sqrt{35}}{70} & 0 & 0 & -\frac{3\sqrt{14}}{56} & 0 & -\frac{\sqrt{14}i}{56} & 0 & 0 & -\frac{\sqrt{21}}{21} \\ 0 & \frac{\sqrt{210}i}{840} & 0 & \frac{\sqrt{210}}{840} & 0 & 0 & -\frac{\sqrt{35}}{70} & 0 & 0 & \frac{\sqrt{14}i}{56} & 0 & -\frac{\sqrt{14}}{56} & 0 & 0 \\ -\frac{\sqrt{210}i}{840} & 0 & \frac{\sqrt{210}}{840} & 0 & 0 & 0 & 0 & \frac{\sqrt{35}}{70} & -\frac{\sqrt{14}i}{56} & 0 & -\frac{\sqrt{14}}{56} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{35}}{70} & 0 & \frac{\sqrt{35}i}{70} & \frac{\sqrt{14}}{14} & 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{21} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{35}}{70} & 0 & -\frac{\sqrt{35}i}{70} & 0 & 0 & -\frac{\sqrt{14}}{14} & 0 & 0 & \frac{\sqrt{21}}{21} & 0 \end{bmatrix}$
427	symmetry	$\frac{\sqrt{15}y(x^4+2x^2y^2-12x^2z^2+y^4-12y^2z^2+8z^4)}{8}$
	$\mathbb{M}_{5,2}^{(1,-1;\alpha)}(E_g, 2)$	$\begin{bmatrix} 0 & \frac{\sqrt{210}i}{840} & 0 & \frac{\sqrt{210}}{840} & 0 & 0 & -\frac{\sqrt{35}}{70} & 0 & 0 & \frac{\sqrt{14}i}{56} & 0 & -\frac{\sqrt{14}}{56} & 0 & 0 \\ -\frac{\sqrt{210}i}{840} & 0 & \frac{\sqrt{210}}{840} & 0 & 0 & 0 & 0 & \frac{\sqrt{35}}{70} & -\frac{\sqrt{14}i}{56} & 0 & -\frac{\sqrt{14}}{56} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{210}}{840} & 0 & \frac{\sqrt{210}i}{840} & \frac{\sqrt{35}}{70} & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}}{56} & 0 & \frac{3\sqrt{14}i}{56} & \frac{\sqrt{21}}{21} & 0 \\ -\frac{\sqrt{210}}{840} & 0 & -\frac{\sqrt{210}i}{840} & 0 & 0 & -\frac{\sqrt{35}}{70} & 0 & 0 & -\frac{\sqrt{14}}{56} & 0 & -\frac{3\sqrt{14}i}{56} & 0 & 0 & -\frac{\sqrt{21}}{21} \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{35}i}{70} & 0 & -\frac{\sqrt{35}}{70} & 0 & 0 & \frac{\sqrt{14}}{14} & 0 & 0 & -\frac{\sqrt{21}i}{21} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{35}i}{70} & 0 & -\frac{\sqrt{35}}{70} & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}}{14} & \frac{\sqrt{21}i}{21} & 0 \end{bmatrix}$
428	symmetry	$-\frac{3\sqrt{35}xyz(x-y)(x+y)}{2}$

continued ...

Table 7

No.	multipole	matrix
	$\mathbb{M}_{5,1}^{(1,-1;a)}(E_g, 3)$	$\begin{bmatrix} 0 & 0 & -\frac{\sqrt{10}}{20} & 0 & 0 & \frac{\sqrt{15}i}{20} & 0 & -\frac{\sqrt{15}}{20} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{10}}{20} & -\frac{\sqrt{15}i}{20} & 0 & -\frac{\sqrt{15}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{10}}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{20} & 0 & -\frac{\sqrt{15}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{10}}{20} & 0 & 0 & -\frac{\sqrt{15}}{20} & 0 & \frac{\sqrt{15}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{10}i}{20} & 0 & -\frac{\sqrt{10}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{10}i}{20} & 0 & -\frac{\sqrt{10}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
429	symmetry	$\frac{3\sqrt{35}z(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$
	$\mathbb{M}_{5,2}^{(1,-1;a)}(E_g, 3)$	$\begin{bmatrix} \frac{\sqrt{10}}{20} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{20} & 0 & \frac{\sqrt{15}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{10}}{20} & 0 & 0 & \frac{\sqrt{15}}{20} & 0 & -\frac{\sqrt{15}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{10}}{20} & 0 & 0 & \frac{\sqrt{15}i}{20} & 0 & -\frac{\sqrt{15}}{20} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{10}}{20} & -\frac{\sqrt{15}i}{20} & 0 & -\frac{\sqrt{15}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{10}}{20} & 0 & \frac{\sqrt{10}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{10}}{20} & 0 & -\frac{\sqrt{10}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
430	symmetry	$-\frac{\sqrt{105}xyz(x^2+y^2-2z^2)}{2}$
	$\mathbb{M}_{5,1}^{(1,-1;a)}(E_g, 4)$	$\begin{bmatrix} 0 & 0 & -\frac{\sqrt{30}}{120} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{20} & 0 & 0 & \frac{\sqrt{2}}{8} & 0 & 0 & -\frac{\sqrt{3}i}{12} \\ 0 & 0 & 0 & \frac{\sqrt{30}}{120} & 0 & 0 & -\frac{\sqrt{5}}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{8} & \frac{\sqrt{3}i}{12} & 0 \\ \frac{\sqrt{30}}{120} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{5}i}{20} & \frac{\sqrt{2}}{8} & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{12} \\ 0 & -\frac{\sqrt{30}}{120} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{20} & 0 & 0 & -\frac{\sqrt{2}}{8} & 0 & 0 & \frac{\sqrt{3}}{12} & 0 \\ 0 & -\frac{\sqrt{30}i}{120} & 0 & -\frac{\sqrt{30}}{120} & 0 & 0 & \frac{\sqrt{5}}{10} & 0 & 0 & -\frac{\sqrt{2}i}{8} & 0 & \frac{\sqrt{2}}{8} & 0 & 0 \\ \frac{\sqrt{30}i}{120} & 0 & -\frac{\sqrt{30}}{120} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{10} & \frac{\sqrt{2}i}{8} & 0 & \frac{\sqrt{2}}{8} & 0 & 0 & 0 \end{bmatrix}$
431	symmetry	$-\frac{\sqrt{105}z(x-y)(x+y)(x^2+y^2-2z^2)}{4}$
	$\mathbb{M}_{5,2}^{(1,-1;a)}(E_g, 4)$	$\begin{bmatrix} -\frac{\sqrt{30}}{120} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{20} & 0 & 0 & \frac{\sqrt{2}}{8} & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{12} \\ 0 & \frac{\sqrt{30}}{120} & 0 & 0 & -\frac{\sqrt{5}}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{8} & 0 & 0 & \frac{\sqrt{3}}{12} & 0 \\ 0 & 0 & -\frac{\sqrt{30}}{120} & 0 & 0 & \frac{\sqrt{5}i}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{8} & 0 & 0 & \frac{\sqrt{3}i}{12} \\ 0 & 0 & 0 & \frac{\sqrt{30}}{120} & -\frac{\sqrt{5}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{8} & -\frac{\sqrt{3}i}{12} & 0 \\ 0 & -\frac{\sqrt{30}}{120} & 0 & \frac{\sqrt{30}i}{120} & \frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{8} & 0 & \frac{\sqrt{2}i}{8} & 0 & 0 \\ -\frac{\sqrt{30}}{120} & 0 & -\frac{\sqrt{30}i}{120} & 0 & 0 & -\frac{\sqrt{5}}{10} & 0 & 0 & \frac{\sqrt{2}}{8} & 0 & -\frac{\sqrt{2}i}{8} & 0 & 0 & 0 \end{bmatrix}$
432	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$

continued ...

Table 7

No.	multipole	matrix
	$M_3^{(1,0;a)}(A_{1g})$	$\begin{bmatrix} 0 & -\frac{1}{16} & 0 & -\frac{i}{16} & \frac{\sqrt{6}}{16} & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{48} & 0 & -\frac{\sqrt{15}i}{48} & 0 & 0 \\ -\frac{1}{16} & 0 & \frac{i}{16} & 0 & 0 & -\frac{\sqrt{6}}{16} & 0 & 0 & -\frac{\sqrt{15}}{48} & 0 & \frac{\sqrt{15}i}{48} & 0 & 0 & 0 \\ 0 & \frac{i}{16} & 0 & -\frac{1}{16} & 0 & 0 & -\frac{\sqrt{6}}{16} & 0 & 0 & -\frac{\sqrt{15}i}{48} & 0 & \frac{\sqrt{15}}{48} & 0 & 0 \\ -\frac{i}{16} & 0 & -\frac{1}{16} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{16} & \frac{\sqrt{15}i}{48} & 0 & \frac{\sqrt{15}}{48} & 0 & 0 & 0 \\ -\frac{3}{8} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{24} & 0 & \frac{\sqrt{6}i}{24} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{3}{8} & 0 & 0 & \frac{\sqrt{6}}{24} & 0 & -\frac{\sqrt{6}i}{24} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
433	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$
	$M_3^{(1,0;a)}(A_{2g}, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{24} & 0 & \frac{\sqrt{15}i}{24} & 0 & 0 & 0 & 0 & 0 & -\frac{1}{4} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{24} & 0 & -\frac{\sqrt{15}i}{24} & 0 & 0 & 0 & 0 & 0 & -\frac{1}{4} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}i}{24} & 0 & -\frac{\sqrt{15}}{24} & 0 & 0 & 0 & 0 & 0 & \frac{i}{4} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{24} & 0 & -\frac{\sqrt{15}}{24} & 0 & 0 & 0 & 0 & 0 & -\frac{i}{4} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{24} & 0 & -\frac{\sqrt{6}i}{24} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{24} & 0 & \frac{\sqrt{6}i}{24} & 0 & 0 & 0 \end{bmatrix}$
434	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$
	$M_3^{(1,0;a)}(A_{2g}, 2)$	$\begin{bmatrix} 0 & \frac{i}{16} & 0 & -\frac{1}{16} & 0 & 0 & \frac{\sqrt{6}}{16} & 0 & 0 & \frac{\sqrt{15}i}{48} & 0 & -\frac{\sqrt{15}}{48} & 0 & 0 \\ -\frac{i}{16} & 0 & -\frac{1}{16} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{16} & -\frac{\sqrt{15}i}{48} & 0 & -\frac{\sqrt{15}}{48} & 0 & 0 \\ 0 & \frac{1}{16} & 0 & \frac{i}{16} & \frac{\sqrt{6}}{16} & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{48} & 0 & -\frac{\sqrt{15}i}{48} & 0 & 0 \\ \frac{1}{16} & 0 & -\frac{i}{16} & 0 & 0 & -\frac{\sqrt{6}}{16} & 0 & 0 & -\frac{\sqrt{15}}{48} & 0 & \frac{\sqrt{15}i}{48} & 0 & 0 & 0 \\ 0 & 0 & -\frac{3}{8} & 0 & 0 & -\frac{\sqrt{6}i}{24} & 0 & \frac{\sqrt{6}}{24} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{3}{8} & \frac{\sqrt{6}i}{24} & 0 & \frac{\sqrt{6}}{24} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
435	symmetry	$-\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$
	$M_{3,1}^{(1,0;a)}(E_g, 1)$	$\begin{bmatrix} 0 & -\frac{\sqrt{15}}{48} & 0 & \frac{\sqrt{15}i}{48} & \frac{\sqrt{10}}{48} & 0 & 0 & 0 & 0 & -\frac{5}{48} & 0 & -\frac{7i}{48} & \frac{\sqrt{6}}{24} & 0 \\ -\frac{\sqrt{15}}{48} & 0 & -\frac{\sqrt{15}i}{48} & 0 & 0 & -\frac{\sqrt{10}}{48} & 0 & 0 & -\frac{5}{48} & 0 & \frac{7i}{48} & 0 & 0 & -\frac{\sqrt{6}}{24} \\ 0 & -\frac{\sqrt{15}i}{48} & 0 & -\frac{\sqrt{15}}{48} & 0 & 0 & \frac{\sqrt{10}}{48} & 0 & 0 & \frac{17i}{48} & 0 & \frac{5}{48} & 0 & 0 \\ \frac{\sqrt{15}i}{48} & 0 & -\frac{\sqrt{15}}{48} & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}}{48} & -\frac{17i}{48} & 0 & \frac{5}{48} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{24} & 0 & -\frac{\sqrt{10}i}{24} & -\frac{1}{24} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{24} & 0 & \frac{\sqrt{10}i}{24} & 0 & 0 & \frac{1}{24} & 0 & 0 & 0 & 0 \end{bmatrix}$
436	symmetry	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$

continued ...

Table 7

No.	multipole	matrix
	$M_{3,2}^{(1,0;a)}(E_g, 1)$	$\begin{bmatrix} 0 & -\frac{\sqrt{15}i}{48} & 0 & -\frac{\sqrt{15}}{48} & 0 & 0 & \frac{\sqrt{10}}{48} & 0 & 0 & -\frac{5i}{48} & 0 & -\frac{17}{48} & 0 & 0 \\ \frac{\sqrt{15}i}{48} & 0 & -\frac{\sqrt{15}}{48} & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}}{48} & \frac{5i}{48} & 0 & -\frac{17}{48} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{15}}{48} & 0 & -\frac{\sqrt{15}i}{48} & -\frac{\sqrt{10}}{48} & 0 & 0 & 0 & 0 & \frac{7}{48} & 0 & \frac{5i}{48} & \frac{\sqrt{6}}{24} & 0 \\ \frac{\sqrt{15}}{48} & 0 & \frac{\sqrt{15}i}{48} & 0 & 0 & \frac{\sqrt{10}}{48} & 0 & 0 & \frac{7}{48} & 0 & -\frac{5i}{48} & 0 & 0 & -\frac{\sqrt{6}}{24} \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{24} & 0 & \frac{\sqrt{10}}{24} & 0 & 0 & -\frac{1}{24} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{10}i}{24} & 0 & \frac{\sqrt{10}}{24} & 0 & 0 & 0 & 0 & \frac{1}{24} & 0 & 0 \end{bmatrix}$
437	symmetry	$\sqrt{15}xyz$
	$M_{3,1}^{(1,0;a)}(E_g, 2)$	$\begin{bmatrix} 0 & 0 & \frac{\sqrt{6}}{24} & 0 & 0 & \frac{i}{24} & 0 & -\frac{1}{6} & 0 & 0 & \frac{\sqrt{10}}{24} & 0 & 0 & \frac{\sqrt{15}i}{24} \\ 0 & 0 & 0 & -\frac{\sqrt{6}}{24} & -\frac{i}{24} & 0 & -\frac{1}{6} & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}}{24} & -\frac{\sqrt{15}i}{24} & 0 \\ -\frac{\sqrt{6}}{24} & 0 & 0 & 0 & 0 & \frac{1}{24} & 0 & \frac{i}{6} & \frac{\sqrt{10}}{24} & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{24} \\ 0 & \frac{\sqrt{6}}{24} & 0 & 0 & \frac{1}{24} & 0 & -\frac{i}{6} & 0 & 0 & -\frac{\sqrt{10}}{24} & 0 & 0 & -\frac{\sqrt{15}}{24} & 0 \\ 0 & \frac{\sqrt{6}i}{16} & 0 & \frac{\sqrt{6}}{16} & 0 & 0 & -\frac{1}{6} & 0 & 0 & -\frac{\sqrt{10}i}{48} & 0 & \frac{\sqrt{10}}{48} & 0 & 0 \\ -\frac{\sqrt{6}i}{16} & 0 & \frac{\sqrt{6}}{16} & 0 & 0 & 0 & 0 & \frac{1}{6} & \frac{\sqrt{10}i}{48} & 0 & \frac{\sqrt{10}}{48} & 0 & 0 & 0 \end{bmatrix}$
438	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$
	$M_{3,2}^{(1,0;a)}(E_g, 2)$	$\begin{bmatrix} \frac{\sqrt{6}}{24} & 0 & 0 & 0 & 0 & -\frac{1}{6} & 0 & -\frac{i}{24} & \frac{\sqrt{10}}{24} & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{24} \\ 0 & -\frac{\sqrt{6}}{24} & 0 & 0 & -\frac{1}{6} & 0 & \frac{i}{24} & 0 & 0 & -\frac{\sqrt{10}}{24} & 0 & 0 & -\frac{\sqrt{15}}{24} & 0 \\ 0 & 0 & \frac{\sqrt{6}}{24} & 0 & 0 & \frac{i}{6} & 0 & -\frac{1}{24} & 0 & 0 & -\frac{\sqrt{10}}{24} & 0 & 0 & -\frac{\sqrt{15}i}{24} \\ 0 & 0 & 0 & -\frac{\sqrt{6}}{24} & -\frac{i}{6} & 0 & -\frac{1}{24} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{24} & \frac{\sqrt{15}i}{24} & 0 \\ 0 & \frac{\sqrt{6}}{16} & 0 & -\frac{\sqrt{6}i}{16} & -\frac{1}{6} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{48} & 0 & \frac{\sqrt{10}i}{48} & 0 & 0 \\ \frac{\sqrt{6}}{16} & 0 & \frac{\sqrt{6}i}{16} & 0 & 0 & \frac{1}{6} & 0 & 0 & \frac{\sqrt{10}}{48} & 0 & -\frac{\sqrt{10}i}{48} & 0 & 0 & 0 \end{bmatrix}$
439	symmetry	z
	$M_1^{(1,1;a)}(A_{2g})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}}{28} & 0 & -\frac{\sqrt{14}i}{28} & \frac{\sqrt{35}}{35} & 0 & 0 & 0 & 0 & -\frac{\sqrt{210}}{140} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{14}}{28} & 0 & \frac{\sqrt{14}i}{28} & 0 & 0 & -\frac{\sqrt{35}}{35} & 0 & 0 & -\frac{\sqrt{210}}{140} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}i}{28} & 0 & \frac{\sqrt{14}}{28} & 0 & 0 & \frac{\sqrt{35}}{35} & 0 & 0 & \frac{\sqrt{210}i}{140} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{14}i}{28} & 0 & \frac{\sqrt{14}}{28} & 0 & 0 & 0 & 0 & -\frac{\sqrt{35}}{35} & -\frac{\sqrt{210}i}{140} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{35}}{35} & 0 & -\frac{\sqrt{35}i}{35} & \frac{\sqrt{210}}{70} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{35}}{35} & 0 & \frac{\sqrt{35}i}{35} & 0 & 0 & -\frac{\sqrt{210}}{70} \end{bmatrix}$
440	symmetry	x

continued ...

Table 7

No.	multipole	matrix
	$M_{1,1}^{(1,1;a)}(E_g)$	$\begin{bmatrix} 0 & \frac{\sqrt{21}}{28} & 0 & -\frac{\sqrt{21}i}{28} & \frac{\sqrt{14}}{28} & 0 & 0 & 0 & 0 & 0 & -\frac{3\sqrt{35}}{140} & 0 & \frac{\sqrt{35}i}{140} & -\frac{\sqrt{210}}{140} & 0 \\ \frac{\sqrt{21}}{28} & 0 & \frac{\sqrt{21}i}{28} & 0 & 0 & -\frac{\sqrt{14}}{28} & 0 & 0 & -\frac{3\sqrt{35}}{140} & 0 & -\frac{\sqrt{35}i}{140} & 0 & 0 & 0 & \frac{\sqrt{210}}{140} \\ 0 & \frac{\sqrt{21}i}{28} & 0 & \frac{\sqrt{21}}{28} & 0 & 0 & \frac{\sqrt{14}}{28} & 0 & 0 & \frac{\sqrt{35}i}{140} & 0 & -\frac{\sqrt{35}}{140} & 0 & 0 & 0 \\ -\frac{\sqrt{21}i}{28} & 0 & \frac{\sqrt{21}}{28} & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}}{28} & -\frac{\sqrt{35}i}{140} & 0 & -\frac{\sqrt{35}}{140} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}}{28} & 0 & -\frac{\sqrt{14}i}{28} & \frac{\sqrt{35}}{35} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{210}}{140} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{14}}{28} & 0 & \frac{\sqrt{14}i}{28} & 0 & 0 & -\frac{\sqrt{35}}{35} & 0 & 0 & 0 & -\frac{\sqrt{210}}{140} & 0 \end{bmatrix}$
441	symmetry	y
	$M_{1,2}^{(1,1;a)}(E_g)$	$\begin{bmatrix} 0 & \frac{\sqrt{21}i}{28} & 0 & \frac{\sqrt{21}}{28} & 0 & 0 & \frac{\sqrt{14}}{28} & 0 & 0 & \frac{\sqrt{35}i}{140} & 0 & -\frac{\sqrt{35}}{140} & 0 & 0 & 0 \\ -\frac{\sqrt{21}i}{28} & 0 & \frac{\sqrt{21}}{28} & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}}{28} & -\frac{\sqrt{35}i}{140} & 0 & -\frac{\sqrt{35}}{140} & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{21}}{28} & 0 & \frac{\sqrt{21}i}{28} & -\frac{\sqrt{14}}{28} & 0 & 0 & 0 & 0 & -\frac{\sqrt{35}}{140} & 0 & \frac{3\sqrt{35}i}{140} & -\frac{\sqrt{210}}{140} & 0 & 0 \\ -\frac{\sqrt{21}}{28} & 0 & -\frac{\sqrt{21}i}{28} & 0 & 0 & \frac{\sqrt{14}}{28} & 0 & 0 & -\frac{\sqrt{35}}{140} & 0 & -\frac{3\sqrt{35}i}{140} & 0 & 0 & 0 & \frac{\sqrt{210}}{140} \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}i}{28} & 0 & \frac{\sqrt{14}}{28} & 0 & 0 & \frac{\sqrt{35}}{35} & 0 & 0 & 0 & \frac{\sqrt{210}i}{140} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{14}i}{28} & 0 & \frac{\sqrt{14}}{28} & 0 & 0 & 0 & 0 & -\frac{\sqrt{35}}{35} & -\frac{\sqrt{210}i}{140} & 0 & 0 \end{bmatrix}$
442	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$
	$M_3^{(1,1;a)}(A_{1g})$	$\begin{bmatrix} 0 & \frac{29\sqrt{7}}{336} & 0 & -\frac{9\sqrt{7}i}{112} & \frac{\sqrt{42}}{48} & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}}{336} & 0 & -\frac{\sqrt{105}i}{336} & 0 & 0 & 0 \\ \frac{29\sqrt{7}}{336} & 0 & \frac{9\sqrt{7}i}{112} & 0 & 0 & -\frac{\sqrt{42}}{48} & 0 & 0 & -\frac{\sqrt{105}}{336} & 0 & \frac{\sqrt{105}i}{336} & 0 & 0 & 0 & 0 \\ 0 & -\frac{29\sqrt{7}i}{336} & 0 & -\frac{9\sqrt{7}}{112} & 0 & 0 & -\frac{\sqrt{42}}{48} & 0 & 0 & -\frac{\sqrt{105}i}{336} & 0 & \frac{\sqrt{105}}{336} & 0 & 0 & 0 \\ \frac{29\sqrt{7}i}{336} & 0 & -\frac{9\sqrt{7}}{112} & 0 & 0 & 0 & 0 & \frac{\sqrt{42}}{48} & \frac{\sqrt{105}i}{336} & 0 & \frac{\sqrt{105}}{336} & 0 & 0 & 0 & 0 \\ \frac{\sqrt{7}}{24} & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}}{168} & 0 & -\frac{\sqrt{42}i}{168} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{7}}{24} & 0 & 0 & -\frac{\sqrt{42}}{168} & 0 & \frac{\sqrt{42}i}{168} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
443	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$
	$M_3^{(1,1;a)}(A_{2g}, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}}{168} & 0 & \frac{\sqrt{105}i}{168} & -\frac{\sqrt{42}}{42} & 0 & 0 & 0 & 0 & 0 & \frac{5\sqrt{7}}{84} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{105}}{168} & 0 & -\frac{\sqrt{105}i}{168} & 0 & 0 & \frac{\sqrt{42}}{42} & 0 & 0 & 0 & \frac{5\sqrt{7}}{84} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}i}{168} & 0 & -\frac{\sqrt{105}}{168} & 0 & 0 & -\frac{\sqrt{42}}{42} & 0 & 0 & -\frac{5\sqrt{7}i}{84} & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{105}i}{168} & 0 & -\frac{\sqrt{105}}{168} & 0 & 0 & 0 & 0 & \frac{\sqrt{42}}{42} & \frac{5\sqrt{7}i}{84} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{5\sqrt{42}}{168} & 0 & -\frac{5\sqrt{42}i}{168} & \frac{2\sqrt{7}}{21} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{5\sqrt{42}}{168} & 0 & \frac{5\sqrt{42}i}{168} & 0 & 0 & -\frac{2\sqrt{7}}{21} \end{bmatrix}$
444	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$

continued ...

Table 7

No.	multipole	matrix
	$\mathbb{M}_3^{(1,1;a)}(A_{2g}, 2)$	$\begin{bmatrix} 0 & \frac{9\sqrt{7}i}{112} & 0 & \frac{29\sqrt{7}}{336} & 0 & 0 & \frac{\sqrt{42}}{48} & 0 & 0 & \frac{\sqrt{105}i}{336} & 0 & -\frac{\sqrt{105}}{336} & 0 & 0 \\ -\frac{9\sqrt{7}i}{112} & 0 & \frac{29\sqrt{7}}{336} & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}}{48} & -\frac{\sqrt{105}i}{336} & 0 & -\frac{\sqrt{105}}{336} & 0 & 0 & 0 \\ 0 & \frac{9\sqrt{7}}{112} & 0 & -\frac{29\sqrt{7}i}{336} & \frac{\sqrt{42}}{48} & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}}{336} & 0 & -\frac{\sqrt{105}i}{336} & 0 & 0 \\ \frac{9\sqrt{7}}{112} & 0 & \frac{29\sqrt{7}i}{336} & 0 & 0 & -\frac{\sqrt{42}}{48} & 0 & 0 & -\frac{\sqrt{105}}{336} & 0 & \frac{\sqrt{105}i}{336} & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{7}}{24} & 0 & 0 & \frac{\sqrt{42}i}{168} & 0 & -\frac{\sqrt{42}}{168} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{7}}{24} & -\frac{\sqrt{42}i}{168} & 0 & -\frac{\sqrt{42}}{168} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
445	symmetry	$-\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$
	$\mathbb{M}_{3,1}^{(1,1;a)}(E_g, 1)$	$\begin{bmatrix} 0 & -\frac{\sqrt{105}}{336} & 0 & \frac{\sqrt{105}i}{336} & -\frac{\sqrt{70}}{112} & 0 & 0 & 0 & 0 & \frac{9\sqrt{7}}{112} & 0 & -\frac{5\sqrt{7}i}{112} & \frac{5\sqrt{42}}{168} & 0 \\ -\frac{\sqrt{105}}{336} & 0 & -\frac{\sqrt{105}i}{336} & 0 & 0 & \frac{\sqrt{70}}{112} & 0 & 0 & \frac{9\sqrt{7}}{112} & 0 & \frac{5\sqrt{7}i}{112} & 0 & 0 & -\frac{5\sqrt{42}}{168} \\ 0 & -\frac{\sqrt{105}i}{336} & 0 & -\frac{\sqrt{105}}{336} & 0 & 0 & -\frac{\sqrt{70}}{112} & 0 & 0 & -\frac{5\sqrt{7}i}{112} & 0 & -\frac{\sqrt{7}}{112} & 0 & 0 \\ \frac{\sqrt{105}i}{336} & 0 & -\frac{\sqrt{105}}{336} & 0 & 0 & 0 & \frac{\sqrt{70}}{112} & \frac{5\sqrt{7}i}{112} & 0 & -\frac{\sqrt{7}}{112} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{70}}{56} & 0 & -\frac{\sqrt{70}i}{56} & \frac{5\sqrt{7}}{56} & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}}{42} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{70}}{56} & 0 & \frac{\sqrt{70}i}{56} & 0 & 0 & -\frac{5\sqrt{7}}{56} & 0 & 0 & -\frac{\sqrt{42}}{42} & 0 \end{bmatrix}$
446	symmetry	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$
	$\mathbb{M}_{3,2}^{(1,1;a)}(E_g, 1)$	$\begin{bmatrix} 0 & -\frac{\sqrt{105}i}{336} & 0 & -\frac{\sqrt{105}}{336} & 0 & 0 & -\frac{\sqrt{70}}{112} & 0 & 0 & \frac{\sqrt{7}i}{112} & 0 & \frac{5\sqrt{7}}{112} & 0 & 0 \\ \frac{\sqrt{105}i}{336} & 0 & -\frac{\sqrt{105}}{336} & 0 & 0 & 0 & \frac{\sqrt{70}}{112} & -\frac{\sqrt{7}i}{112} & 0 & \frac{5\sqrt{7}}{112} & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{105}}{336} & 0 & -\frac{\sqrt{105}i}{336} & \frac{\sqrt{70}}{112} & 0 & 0 & 0 & 0 & \frac{5\sqrt{7}}{112} & 0 & -\frac{9\sqrt{7}i}{112} & \frac{5\sqrt{42}}{168} & 0 \\ \frac{\sqrt{105}}{336} & 0 & \frac{\sqrt{105}i}{336} & 0 & 0 & -\frac{\sqrt{70}}{112} & 0 & 0 & \frac{5\sqrt{7}}{112} & 0 & \frac{9\sqrt{7}i}{112} & 0 & 0 & -\frac{5\sqrt{42}}{168} \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{70}i}{56} & 0 & \frac{\sqrt{70}}{56} & 0 & 0 & \frac{5\sqrt{7}}{56} & 0 & 0 & \frac{\sqrt{42}i}{42} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{70}i}{56} & 0 & \frac{\sqrt{70}}{56} & 0 & 0 & 0 & 0 & -\frac{5\sqrt{7}}{56} & -\frac{\sqrt{42}i}{42} & 0 \end{bmatrix}$
447	symmetry	$\sqrt{15}xyz$
	$\mathbb{M}_{3,1}^{(1,1;a)}(E_g, 2)$	$\begin{bmatrix} 0 & 0 & -\frac{\sqrt{42}}{168} & 0 & 0 & \frac{3\sqrt{7}i}{56} & 0 & \frac{\sqrt{7}}{14} & 0 & 0 & \frac{\sqrt{70}}{56} & 0 & 0 & \frac{\sqrt{105}i}{168} \\ 0 & 0 & 0 & \frac{\sqrt{42}}{168} & -\frac{3\sqrt{7}i}{56} & 0 & \frac{\sqrt{7}}{14} & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}}{56} & -\frac{\sqrt{105}i}{168} & 0 \\ \frac{\sqrt{42}}{168} & 0 & 0 & 0 & 0 & \frac{3\sqrt{7}}{56} & 0 & -\frac{\sqrt{7}i}{14} & \frac{\sqrt{70}}{56} & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}}{168} \\ 0 & -\frac{\sqrt{42}}{168} & 0 & 0 & \frac{3\sqrt{7}}{56} & 0 & \frac{\sqrt{7}i}{14} & 0 & 0 & -\frac{\sqrt{70}}{56} & 0 & 0 & -\frac{\sqrt{105}}{168} & 0 \\ 0 & \frac{\sqrt{42}i}{48} & 0 & \frac{\sqrt{42}}{48} & 0 & 0 & \frac{\sqrt{7}}{14} & 0 & 0 & \frac{\sqrt{70}i}{112} & 0 & -\frac{\sqrt{70}}{112} & 0 & 0 \\ -\frac{\sqrt{42}i}{48} & 0 & \frac{\sqrt{42}}{48} & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}}{14} & -\frac{\sqrt{70}i}{112} & 0 & -\frac{\sqrt{70}}{112} & 0 & 0 & 0 \end{bmatrix}$
448	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$

continued ...

Table 7

No.	multipole	matrix													
	$\mathbb{M}_{3,2}^{(1,1;a)}(E_g, 2)$	$-\frac{\sqrt{42}}{168}$	0	0	0	0	$\frac{\sqrt{7}}{14}$	0	$-\frac{3\sqrt{7}i}{56}$	$\frac{\sqrt{70}}{56}$	0	0	0	0	$-\frac{\sqrt{105}}{168}$
		0	$\frac{\sqrt{42}}{168}$	0	0	$\frac{\sqrt{7}}{14}$	0	$\frac{3\sqrt{7}i}{56}$	0	0	$-\frac{\sqrt{70}}{56}$	0	0	$-\frac{\sqrt{105}}{168}$	0
		0	0	$-\frac{\sqrt{42}}{168}$	0	0	$-\frac{\sqrt{7}i}{14}$	0	$-\frac{3\sqrt{7}}{56}$	0	0	$-\frac{\sqrt{70}}{56}$	0	0	$-\frac{\sqrt{105}i}{168}$
		0	0	0	$\frac{\sqrt{42}}{168}$	$\frac{\sqrt{7}i}{14}$	0	$-\frac{3\sqrt{7}}{56}$	0	0	0	0	$\frac{\sqrt{70}}{56}$	$\frac{\sqrt{105}i}{168}$	0
		0	$\frac{\sqrt{42}}{48}$	0	$-\frac{\sqrt{42}i}{48}$	$\frac{\sqrt{7}}{14}$	0	0	0	0	$-\frac{\sqrt{70}}{112}$	0	$-\frac{\sqrt{70}i}{112}$	0	0
		$\frac{\sqrt{42}}{48}$	0	$\frac{\sqrt{42}i}{48}$	0	0	$-\frac{\sqrt{7}}{14}$	0	0	$-\frac{\sqrt{70}}{112}$	0	$\frac{\sqrt{70}i}{112}$	0	0	0

bra: = $\langle d_v, \uparrow |, \langle d_v, \downarrow |, \langle d_{xy}, \uparrow |, \langle d_{xy}, \downarrow |, \langle d_{xz}, \uparrow |, \langle d_{xz}, \downarrow |, \langle d_{yz}, \uparrow |, \langle d_{yz}, \downarrow |, \langle d_u, \uparrow |, \langle d_u, \downarrow |$
ket: = $|d_v, \uparrow \rangle, |d_v, \downarrow \rangle, |d_{xy}, \uparrow \rangle, |d_{xy}, \downarrow \rangle, |d_{xz}, \uparrow \rangle, |d_{xz}, \downarrow \rangle, |d_{yz}, \uparrow \rangle, |d_{yz}, \downarrow \rangle, |d_u, \uparrow \rangle, |d_u, \downarrow \rangle$

Table 8: (d,d) block.

No.	multipole	matrix									
449	symmetry	1									
	$\mathbb{Q}_0^{(a)}(A_{1g})$	$\frac{\sqrt{10}}{10}$	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{10}}{10}$	0	0	0	0	0	0	0	0
		0	0	$\frac{\sqrt{10}}{10}$	0	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{10}}{10}$	0	0	0	0	0	0
		0	0	0	0	$\frac{\sqrt{10}}{10}$	0	0	0	0	0
		0	0	0	0	0	$\frac{\sqrt{10}}{10}$	0	0	0	0
		0	0	0	0	0	0	$\frac{\sqrt{10}}{10}$	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{10}}{10}$	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{10}}{10}$	0
450	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$									

continued ...

Table 8

No.	multipole	matrix
	$\mathbb{Q}_2^{(a)}(A_{1g})$	$\begin{bmatrix} -\frac{\sqrt{7}}{7} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{7}}{7} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{7}}{7} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{7}}{7} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{14} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{14} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{14} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{14} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{7} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{7} \end{bmatrix}$
451	symmetry	$\begin{matrix} \sqrt{3}yz \\ \left[\begin{array}{ccccccccccc} 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}}{14} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}}{14} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{14} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{14} & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{21}}{14} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{21}}{14} & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{21}}{14} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{14} & 0 \\ 0 & -\frac{\sqrt{21}}{14} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{14} \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{14} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{14} & 0 & 0 \end{array} \right] \end{matrix}$
452	symmetry	$-\sqrt{3}xz$

continued ...

Table 8

No.	multipole	matrix
	$\mathbb{Q}_{2,2}^{(a)}(E_g, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & -\frac{\sqrt{21}}{14} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}}{14} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}}{14} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}}{14} & 0 & 0 \\ -\frac{\sqrt{21}}{14} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}}{14} & 0 \\ 0 & -\frac{\sqrt{21}}{14} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}}{14} \\ 0 & 0 & -\frac{\sqrt{21}}{14} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{21}}{14} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{7}}{14} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}}{14} & 0 & 0 & 0 & 0 \end{bmatrix}$
453	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}}{7} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}}{7} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{14} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{14} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}}{14} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}}{14} & 0 \\ -\frac{\sqrt{7}}{7} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{7}}{7} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
454	symmetry	$-\sqrt{3}xy$

continued ...

Table 8

No.	multipole	matrix
	$\mathbb{Q}_{2,2}^{(a)}(E_g, 2)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{7} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{7} \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}}{14} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}}{14} & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{21}}{14} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}}{14} & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{7}}{7} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{7}}{7} & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
455	symmetry	$\frac{3x^4}{8} + \frac{3x^2y^2}{4} - 3x^2z^2 + \frac{3y^4}{8} - 3y^2z^2 + z^4$ $\begin{bmatrix} \frac{\sqrt{35}}{70} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{35}}{70} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{35}}{70} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{35}}{70} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{2\sqrt{35}}{35} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{2\sqrt{35}}{35} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{2\sqrt{35}}{35} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{2\sqrt{35}}{35} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{3\sqrt{35}}{35} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{3\sqrt{35}}{35} \end{bmatrix}$
456	symmetry	$\frac{\sqrt{70}yz(3x^2 - y^2)}{4}$

continued ...

Table 8

No.	multipole	matrix
	$\mathbb{Q}_4^{(a)}(A_{1g}, 2)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
457	symmetry	$\frac{\sqrt{70}xz(x^2-3y^2)}{4}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 \\ \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
458	symmetry	$-\frac{\sqrt{10}yz(3x^2+3y^2-4z^2)}{4}$

continued ...

Table 8

No.	multipole	matrix
	$Q_{4,1}^{(a)}(E_g, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}}{28} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}}{28} & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{14}}{28} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}}{28} & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{14}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{14}}{28} & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{14}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}}{14} & 0 \\ 0 & \frac{\sqrt{14}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}}{14} \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}}{14} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}}{14} & 0 & 0 \end{bmatrix}$
459	symmetry	$\frac{\sqrt{10xz(3x^2+3y^2-4z^2)}}{4}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & \frac{\sqrt{14}}{28} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}}{28} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}}{28} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}}{28} & 0 & 0 \\ \frac{\sqrt{14}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}}{14} & 0 \\ 0 & \frac{\sqrt{14}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}}{14} \\ 0 & 0 & \frac{\sqrt{14}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{14}}{28} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{42}}{14} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}}{14} & 0 & 0 & 0 & 0 \end{bmatrix}$
460	symmetry	$\frac{\sqrt{35}(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$

continued ...

Table 8

No.	multipole	matrix
	$\mathbb{Q}_{4,1}^{(a)}(E_g, 2)$	$\begin{bmatrix} \frac{1}{2} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{1}{2} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{1}{2} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{1}{2} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
461	symmetry	$\frac{\sqrt{35xy(x-y)(x+y)}}{2}$ $\begin{bmatrix} 0 & 0 & \frac{1}{2} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{1}{2} & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{1}{2} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{1}{2} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
462	symmetry	$-\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$

continued ...

Table 8

No.	multipole	matrix
	$\mathbb{Q}_{4,1}^{(a)}(E_g, 3)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{14} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{14} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{7} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{7} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}}{7} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}}{7} & 0 & 0 \\ \frac{\sqrt{21}}{14} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{21}}{14} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
463	symmetry	$\frac{\sqrt{5xy(x^2+y^2-6z^2)}}{2}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}}{14} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}}{14} \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}}{7} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}}{7} & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{7}}{7} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}}{7} & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{21}}{14} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{21}}{14} & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
464	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$

continued ...

Table 8

No.	multipole	matrix									
	$\mathbb{Q}_2^{(1,-1;a)}(A_{1g})$	0	0	$-\frac{\sqrt{30i}}{15}$	0	0	$-\frac{\sqrt{30}}{60}$	0	$-\frac{\sqrt{30i}}{60}$	0	0
		0	0	0	$\frac{\sqrt{30i}}{15}$	$\frac{\sqrt{30}}{60}$	0	$-\frac{\sqrt{30i}}{60}$	0	0	0
		$\frac{\sqrt{30i}}{15}$	0	0	0	0	$\frac{\sqrt{30i}}{60}$	0	$-\frac{\sqrt{30}}{60}$	0	0
		0	$-\frac{\sqrt{30i}}{15}$	0	0	$\frac{\sqrt{30i}}{60}$	0	$\frac{\sqrt{30}}{60}$	0	0	0
		0	$\frac{\sqrt{30}}{60}$	0	$-\frac{\sqrt{30i}}{60}$	0	0	$-\frac{\sqrt{30i}}{30}$	0	0	$-\frac{\sqrt{10}}{20}$
		$-\frac{\sqrt{30}}{60}$	0	$-\frac{\sqrt{30i}}{60}$	0	0	0	0	$\frac{\sqrt{30i}}{30}$	$\frac{\sqrt{10}}{20}$	0
		0	$\frac{\sqrt{30i}}{60}$	0	$\frac{\sqrt{30}}{60}$	$\frac{\sqrt{30i}}{30}$	0	0	0	0	$\frac{\sqrt{10i}}{20}$
		$\frac{\sqrt{30i}}{60}$	0	$-\frac{\sqrt{30}}{60}$	0	0	$-\frac{\sqrt{30i}}{30}$	0	0	$\frac{\sqrt{10i}}{20}$	0
		0	0	0	0	0	$\frac{\sqrt{10}}{20}$	0	$-\frac{\sqrt{10i}}{20}$	0	0
		0	0	0	0	$-\frac{\sqrt{10}}{20}$	0	$-\frac{\sqrt{10i}}{20}$	0	0	0
465	symmetry	$\sqrt{3}yz$									
	$\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g, 1)$	0	0	0	$-\frac{\sqrt{10}}{10}$	$\frac{\sqrt{10i}}{20}$	0	0	0	0	0
		0	0	$\frac{\sqrt{10}}{10}$	0	0	$-\frac{\sqrt{10i}}{20}$	0	0	0	0
		0	$\frac{\sqrt{10}}{10}$	0	0	0	0	$\frac{\sqrt{10i}}{20}$	0	0	0
		$-\frac{\sqrt{10}}{10}$	0	0	0	0	0	0	$-\frac{\sqrt{10i}}{20}$	0	0
		$-\frac{\sqrt{10i}}{20}$	0	0	0	0	0	0	$-\frac{\sqrt{10}}{20}$	$\frac{\sqrt{30i}}{20}$	0
		0	$\frac{\sqrt{10i}}{20}$	0	0	0	0	$\frac{\sqrt{10}}{20}$	0	0	$-\frac{\sqrt{30i}}{20}$
		0	0	$-\frac{\sqrt{10i}}{20}$	0	0	$\frac{\sqrt{10}}{20}$	0	0	0	0
		0	0	0	$\frac{\sqrt{10i}}{20}$	$-\frac{\sqrt{10}}{20}$	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{30i}}{20}$	0	0	0	0	0
		0	0	0	0	0	$\frac{\sqrt{30i}}{20}$	0	0	0	0
466	symmetry	$-\sqrt{3}xz$									

continued ...

Table 8

No.	multipole	matrix									
	$\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g, 1)$	0	0	0	$\frac{\sqrt{10}i}{10}$	0	0	$-\frac{\sqrt{10}i}{20}$	0	0	0
		0	0	$\frac{\sqrt{10}i}{10}$	0	0	0	0	$\frac{\sqrt{10}i}{20}$	0	0
		0	$-\frac{\sqrt{10}i}{10}$	0	0	$\frac{\sqrt{10}i}{20}$	0	0	0	0	0
		$-\frac{\sqrt{10}i}{10}$	0	0	0	0	$-\frac{\sqrt{10}i}{20}$	0	0	0	0
		0	0	$-\frac{\sqrt{10}i}{20}$	0	0	0	0	$\frac{\sqrt{10}i}{20}$	0	0
		0	0	0	$\frac{\sqrt{10}i}{20}$	0	0	$\frac{\sqrt{10}i}{20}$	0	0	0
		$\frac{\sqrt{10}i}{20}$	0	0	0	0	$-\frac{\sqrt{10}i}{20}$	0	0	$\frac{\sqrt{30}i}{20}$	0
		0	$-\frac{\sqrt{10}i}{20}$	0	0	$-\frac{\sqrt{10}i}{20}$	0	0	0	0	$-\frac{\sqrt{30}i}{20}$
		0	0	0	0	0	0	$-\frac{\sqrt{30}i}{20}$	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{30}i}{20}$	0	0
467	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$									
	$\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g, 2)$	0	0	0	0	0	$-\frac{\sqrt{10}}{20}$	0	$\frac{\sqrt{10}i}{20}$	0	0
		0	0	0	0	$\frac{\sqrt{10}}{20}$	0	$\frac{\sqrt{10}i}{20}$	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{10}i}{20}$	0	$-\frac{\sqrt{10}}{20}$	0	0
		0	0	0	0	$-\frac{\sqrt{10}i}{20}$	0	$\frac{\sqrt{10}}{20}$	0	0	0
		0	$\frac{\sqrt{10}}{20}$	0	$\frac{\sqrt{10}i}{20}$	0	0	0	0	0	$-\frac{\sqrt{30}}{20}$
		$-\frac{\sqrt{10}}{20}$	0	$\frac{\sqrt{10}i}{20}$	0	0	0	0	0	$\frac{\sqrt{30}}{20}$	0
		0	$-\frac{\sqrt{10}i}{20}$	0	$\frac{\sqrt{10}}{20}$	0	0	0	0	0	$-\frac{\sqrt{30}i}{20}$
		$-\frac{\sqrt{10}i}{20}$	0	$-\frac{\sqrt{10}}{20}$	0	0	0	0	0	$-\frac{\sqrt{30}i}{20}$	0
		0	0	0	0	0	$\frac{\sqrt{30}}{20}$	0	$\frac{\sqrt{30}i}{20}$	0	0
		0	0	0	0	$-\frac{\sqrt{30}}{20}$	0	$\frac{\sqrt{30}i}{20}$	0	0	0
468	symmetry	$-\sqrt{3}xy$									

continued ...

Table 8

No.	multipole	matrix									
	$\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g, 2)$	0	0	0	0	0	$-\frac{\sqrt{10}i}{20}$	0	$-\frac{\sqrt{10}}{20}$	0	0
		0	0	0	0	$-\frac{\sqrt{10}i}{20}$	0	$\frac{\sqrt{10}}{20}$	0	0	0
		0	0	0	0	0	$\frac{\sqrt{10}}{20}$	0	$-\frac{\sqrt{10}i}{20}$	0	0
		0	0	0	0	$-\frac{\sqrt{10}}{20}$	0	$-\frac{\sqrt{10}i}{20}$	0	0	0
		0	$\frac{\sqrt{10}i}{20}$	0	$-\frac{\sqrt{10}}{20}$	0	0	0	0	0	$-\frac{\sqrt{30}i}{20}$
		$\frac{\sqrt{10}i}{20}$	0	$\frac{\sqrt{10}}{20}$	0	0	0	0	0	$-\frac{\sqrt{30}i}{20}$	0
		0	$\frac{\sqrt{10}}{20}$	0	$\frac{\sqrt{10}i}{20}$	0	0	0	0	0	$\frac{\sqrt{30}}{20}$
		$-\frac{\sqrt{10}}{20}$	0	$\frac{\sqrt{10}i}{20}$	0	0	0	0	0	$-\frac{\sqrt{30}}{20}$	0
		0	0	0	0	0	$\frac{\sqrt{30}i}{20}$	0	$-\frac{\sqrt{30}}{20}$	0	0
		0	0	0	0	$\frac{\sqrt{30}i}{20}$	0	$\frac{\sqrt{30}}{20}$	0	0	0
469	symmetry	$\frac{3x^4}{8} + \frac{3x^2y^2}{4} - 3x^2z^2 + \frac{3y^4}{8} - 3y^2z^2 + z^4$									
	$\mathbb{Q}_4^{(1,-1;a)}(A_{1g}, 1)$	0	0	$\frac{\sqrt{35}i}{35}$	0	0	$\frac{3\sqrt{35}}{140}$	0	$\frac{3\sqrt{35}i}{140}$	0	0
		0	0	0	$-\frac{\sqrt{35}i}{35}$	$-\frac{3\sqrt{35}}{140}$	0	$\frac{3\sqrt{35}i}{140}$	0	0	0
		$-\frac{\sqrt{35}i}{35}$	0	0	0	0	$-\frac{3\sqrt{35}i}{140}$	0	$\frac{3\sqrt{35}}{140}$	0	0
		0	$\frac{\sqrt{35}i}{35}$	0	0	$-\frac{3\sqrt{35}i}{140}$	0	$-\frac{3\sqrt{35}}{140}$	0	0	0
		0	$-\frac{3\sqrt{35}}{140}$	0	$\frac{3\sqrt{35}i}{140}$	0	0	$-\frac{2\sqrt{35}i}{35}$	0	0	$-\frac{\sqrt{105}}{70}$
		$\frac{3\sqrt{35}}{140}$	0	$\frac{3\sqrt{35}i}{140}$	0	0	0	0	$\frac{2\sqrt{35}i}{35}$	$\frac{\sqrt{105}}{70}$	0
		0	$-\frac{3\sqrt{35}i}{140}$	0	$-\frac{3\sqrt{35}}{140}$	$\frac{2\sqrt{35}i}{35}$	0	0	0	0	$\frac{\sqrt{105}i}{70}$
		$-\frac{3\sqrt{35}i}{140}$	0	$\frac{3\sqrt{35}}{140}$	0	0	$-\frac{2\sqrt{35}i}{35}$	0	0	$\frac{\sqrt{105}i}{70}$	0
		0	0	0	0	0	$\frac{\sqrt{105}}{70}$	0	$-\frac{\sqrt{105}i}{70}$	0	0
		0	0	0	0	$-\frac{\sqrt{105}}{70}$	0	$-\frac{\sqrt{105}i}{70}$	0	0	0
470	symmetry	$\frac{\sqrt{70}yz(3x^2-y^2)}{4}$									

continued ...

Table 8

No.	multipole	matrix
	$\mathbb{Q}_4^{(1,-1;a)}(A_{1g}, 2)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{8} \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{8} & 0 & 0 & \frac{\sqrt{6}i}{8} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{8} & 0 & 0 & -\frac{\sqrt{6}i}{8} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{8} & \frac{\sqrt{6}i}{8} & 0 \\ -\frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{6}i}{8} & 0 & \frac{\sqrt{6}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{6}i}{8} & 0 & -\frac{\sqrt{6}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
471	symmetry	$\frac{\sqrt{70}xz(x^2-3y^2)}{4}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{8} & 0 & 0 & -\frac{\sqrt{6}i}{8} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{8} & \frac{\sqrt{6}i}{8} & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{8} \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{8} & 0 & 0 & -\frac{\sqrt{6}i}{8} & 0 \\ 0 & 0 & \frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{6}i}{8} & 0 & \frac{\sqrt{6}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{6}i}{8} & 0 & \frac{\sqrt{6}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
472	symmetry	$-\frac{\sqrt{10}yz(3x^2+3y^2-4z^2)}{4}$

continued ...

Table 8

No.	multipole	matrix									
	$\mathbb{Q}_{4,1}^{(1,-1;a)}(E_g, 1)$	0	0	0	$\frac{\sqrt{14}}{28}$	$-\frac{3\sqrt{14}i}{56}$	0	0	0	0	$-\frac{\sqrt{42}i}{56}$
		0	0	$-\frac{\sqrt{14}}{28}$	0	0	$\frac{3\sqrt{14}i}{56}$	0	0	$-\frac{\sqrt{42}i}{56}$	0
		0	$-\frac{\sqrt{14}}{28}$	0	0	0	0	$-\frac{3\sqrt{14}i}{56}$	0	0	$-\frac{\sqrt{42}i}{56}$
		$\frac{\sqrt{14}}{28}$	0	0	0	0	0	0	$\frac{3\sqrt{14}i}{56}$	$\frac{\sqrt{42}}{56}$	0
		$\frac{3\sqrt{14}i}{56}$	0	0	0	0	0	0	$-\frac{\sqrt{14}}{14}$	$\frac{\sqrt{42}i}{28}$	0
		0	$-\frac{3\sqrt{14}i}{56}$	0	0	0	0	$\frac{\sqrt{14}}{14}$	0	0	$-\frac{\sqrt{42}i}{28}$
		0	0	$\frac{3\sqrt{14}i}{56}$	0	0	$\frac{\sqrt{14}}{14}$	0	0	0	0
		0	0	0	$-\frac{3\sqrt{14}i}{56}$	$-\frac{\sqrt{14}}{14}$	0	0	0	0	0
		0	$\frac{\sqrt{42}i}{56}$	0	$\frac{\sqrt{42}}{56}$	$-\frac{\sqrt{42}i}{28}$	0	0	0	0	0
		$\frac{\sqrt{42}i}{56}$	0	$-\frac{\sqrt{42}}{56}$	0	0	$\frac{\sqrt{42}i}{28}$	0	0	0	0
473	symmetry	$\frac{\sqrt{10xz(3x^2+3y^2-4z^2)}}{4}$									
	$\mathbb{Q}_{4,2}^{(1,-1;a)}(E_g, 1)$	0	0	0	$-\frac{\sqrt{14}i}{28}$	0	0	$\frac{3\sqrt{14}i}{56}$	0	0	$\frac{\sqrt{42}}{56}$
		0	0	$-\frac{\sqrt{14}i}{28}$	0	0	0	0	$-\frac{3\sqrt{14}i}{56}$	$-\frac{\sqrt{42}}{56}$	0
		0	$\frac{\sqrt{14}i}{28}$	0	0	$-\frac{3\sqrt{14}i}{56}$	0	0	0	0	$-\frac{\sqrt{42}i}{56}$
		$\frac{\sqrt{14}i}{28}$	0	0	0	0	$\frac{3\sqrt{14}i}{56}$	0	0	$-\frac{\sqrt{42}i}{56}$	0
		0	0	$\frac{3\sqrt{14}i}{56}$	0	0	0	0	$\frac{\sqrt{14}i}{14}$	0	0
		0	0	0	$-\frac{3\sqrt{14}i}{56}$	0	0	$\frac{\sqrt{14}i}{14}$	0	0	0
		$-\frac{3\sqrt{14}i}{56}$	0	0	0	0	$-\frac{\sqrt{14}i}{14}$	0	0	$\frac{\sqrt{42}i}{28}$	0
		0	$\frac{3\sqrt{14}i}{56}$	0	0	$-\frac{\sqrt{14}i}{14}$	0	0	0	0	$-\frac{\sqrt{42}i}{28}$
		0	$-\frac{\sqrt{42}}{56}$	0	$\frac{\sqrt{42}i}{56}$	0	0	$-\frac{\sqrt{42}i}{28}$	0	0	0
		$\frac{\sqrt{42}}{56}$	0	$\frac{\sqrt{42}i}{56}$	0	0	0	0	$\frac{\sqrt{42}i}{28}$	0	0
474	symmetry	$\frac{\sqrt{35}(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$									

continued ...

Table 8

No.	multipole	matrix
	$\mathbb{Q}_{4,1}^{(1,-1;a)}(E_g, 2)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{1}{4} & 0 & -\frac{i}{4} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{1}{4} & 0 & -\frac{i}{4} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{i}{4} & 0 & \frac{1}{4} & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{i}{4} & 0 & -\frac{1}{4} & 0 & 0 & 0 \\ 0 & \frac{1}{4} & 0 & \frac{i}{4} & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{1}{4} & 0 & \frac{i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{i}{4} & 0 & -\frac{1}{4} & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{i}{4} & 0 & \frac{1}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
475	symmetry	$\frac{\sqrt{35xy(x-y)(x+y)}}{2}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{i}{4} & 0 & -\frac{1}{4} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{i}{4} & 0 & \frac{1}{4} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{1}{4} & 0 & -\frac{i}{4} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{1}{4} & 0 & -\frac{i}{4} & 0 & 0 & 0 \\ 0 & -\frac{i}{4} & 0 & \frac{1}{4} & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{i}{4} & 0 & -\frac{1}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{1}{4} & 0 & \frac{i}{4} & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{1}{4} & 0 & \frac{i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
476	symmetry	$-\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$

continued ...

Table 8

No.	multipole	matrix									
	$\mathbb{Q}_{4,1}^{(1,-1;a)}(E_g, 3)$	0	0	0	0	0	$\frac{\sqrt{7}}{28}$	0	$-\frac{\sqrt{7}i}{28}$	0	0
		0	0	0	0	$-\frac{\sqrt{7}}{28}$	0	$-\frac{\sqrt{7}i}{28}$	0	0	0
		0	0	0	0	0	$\frac{\sqrt{7}i}{14}$	0	$\frac{\sqrt{7}}{14}$	$-\frac{\sqrt{21}i}{14}$	0
		0	0	0	0	$\frac{\sqrt{7}i}{14}$	0	$-\frac{\sqrt{7}}{14}$	0	0	$\frac{\sqrt{21}i}{14}$
		0	$-\frac{\sqrt{7}}{28}$	0	$-\frac{\sqrt{7}i}{14}$	0	0	0	0	0	$-\frac{\sqrt{21}}{28}$
		$\frac{\sqrt{7}}{28}$	0	$-\frac{\sqrt{7}i}{14}$	0	0	0	0	0	$\frac{\sqrt{21}}{28}$	0
		0	$\frac{\sqrt{7}i}{28}$	0	$-\frac{\sqrt{7}}{14}$	0	0	0	0	0	$-\frac{\sqrt{21}i}{28}$
		$\frac{\sqrt{7}i}{28}$	0	$\frac{\sqrt{7}}{14}$	0	0	0	0	0	$-\frac{\sqrt{21}i}{28}$	0
		0	0	$\frac{\sqrt{21}i}{14}$	0	0	$\frac{\sqrt{21}}{28}$	0	$\frac{\sqrt{21}i}{28}$	0	0
		0	0	0	$-\frac{\sqrt{21}i}{14}$	$-\frac{\sqrt{21}}{28}$	0	$\frac{\sqrt{21}i}{28}$	0	0	0
477	symmetry	$\frac{\sqrt{5xy(x^2+y^2-6z^2)}}{2}$									
	$\mathbb{Q}_{4,2}^{(1,-1;a)}(E_g, 3)$	0	0	0	0	0	$\frac{\sqrt{7}i}{14}$	0	$\frac{\sqrt{7}}{14}$	$-\frac{\sqrt{21}i}{14}$	0
		0	0	0	0	$\frac{\sqrt{7}i}{14}$	0	$-\frac{\sqrt{7}}{14}$	0	0	$\frac{\sqrt{21}i}{14}$
		0	0	0	0	0	$-\frac{\sqrt{7}}{28}$	0	$\frac{\sqrt{7}i}{28}$	0	0
		0	0	0	0	$\frac{\sqrt{7}}{28}$	0	$\frac{\sqrt{7}i}{28}$	0	0	0
		0	$-\frac{\sqrt{7}i}{14}$	0	$\frac{\sqrt{7}}{28}$	0	0	0	0	0	$-\frac{\sqrt{21}i}{28}$
		$-\frac{\sqrt{7}i}{14}$	0	$-\frac{\sqrt{7}}{28}$	0	0	0	0	0	$-\frac{\sqrt{21}i}{28}$	0
		0	$-\frac{\sqrt{7}}{14}$	0	$-\frac{\sqrt{7}i}{28}$	0	0	0	0	0	$\frac{\sqrt{21}}{28}$
		$\frac{\sqrt{7}}{14}$	0	$-\frac{\sqrt{7}i}{28}$	0	0	0	0	0	$-\frac{\sqrt{21}}{28}$	0
		$\frac{\sqrt{21}i}{14}$	0	0	0	0	$\frac{\sqrt{21}i}{28}$	0	$-\frac{\sqrt{21}}{28}$	0	0
		0	$-\frac{\sqrt{21}i}{14}$	0	0	$\frac{\sqrt{21}i}{28}$	0	$\frac{\sqrt{21}}{28}$	0	0	0
478	symmetry	1									

continued ...

Table 8

No.	multipole	matrix									
	$\mathbb{Q}_0^{(1,1;a)}(A_{1g})$	0	0	$-\frac{\sqrt{15}i}{15}$	0	0	$\frac{\sqrt{15}}{30}$	0	$\frac{\sqrt{15}i}{30}$	0	0
		0	0	0	$\frac{\sqrt{15}i}{15}$	$-\frac{\sqrt{15}}{30}$	0	$\frac{\sqrt{15}i}{30}$	0	0	0
		$\frac{\sqrt{15}i}{15}$	0	0	0	0	$-\frac{\sqrt{15}i}{30}$	0	$\frac{\sqrt{15}}{30}$	0	0
		0	$-\frac{\sqrt{15}i}{15}$	0	0	$-\frac{\sqrt{15}}{30}$	0	$-\frac{\sqrt{15}}{30}$	0	0	0
		0	$-\frac{\sqrt{15}}{30}$	0	$\frac{\sqrt{15}i}{30}$	0	0	$-\frac{\sqrt{15}i}{30}$	0	0	$\frac{\sqrt{5}}{10}$
		$\frac{\sqrt{15}}{30}$	0	$\frac{\sqrt{15}i}{30}$	0	0	0	0	$\frac{\sqrt{15}i}{30}$	$-\frac{\sqrt{5}}{10}$	0
		0	$-\frac{\sqrt{15}i}{30}$	0	$-\frac{\sqrt{15}}{30}$	$\frac{\sqrt{15}i}{30}$	0	0	0	0	$-\frac{\sqrt{5}i}{10}$
		$-\frac{\sqrt{15}i}{30}$	0	$\frac{\sqrt{15}}{30}$	0	0	$-\frac{\sqrt{15}i}{30}$	0	0	$-\frac{\sqrt{5}i}{10}$	0
		0	0	0	0	0	$-\frac{\sqrt{5}}{10}$	0	$\frac{\sqrt{5}i}{10}$	0	0
		0	0	0	0	$\frac{\sqrt{5}}{10}$	0	$\frac{\sqrt{5}i}{10}$	0	0	0
479	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$									
	$\mathbb{Q}_2^{(1,1;a)}(A_{1g})$	0	0	$\frac{\sqrt{105}i}{70}$	0	0	$-\frac{\sqrt{105}}{70}$	0	$-\frac{\sqrt{105}i}{70}$	0	0
		0	0	0	$-\frac{\sqrt{105}i}{70}$	$\frac{\sqrt{105}}{70}$	0	$-\frac{\sqrt{105}i}{70}$	0	0	0
		$-\frac{\sqrt{105}i}{70}$	0	0	0	0	$\frac{\sqrt{105}i}{70}$	0	$-\frac{\sqrt{105}}{70}$	0	0
		0	$\frac{\sqrt{105}i}{70}$	0	0	$\frac{\sqrt{105}i}{70}$	0	$\frac{\sqrt{105}}{70}$	0	0	0
		0	$\frac{\sqrt{105}}{70}$	0	$-\frac{\sqrt{105}i}{70}$	0	0	$-\frac{\sqrt{105}i}{35}$	0	0	$\frac{\sqrt{35}}{35}$
		$-\frac{\sqrt{105}}{70}$	0	$-\frac{\sqrt{105}i}{70}$	0	0	0	0	$\frac{\sqrt{105}i}{35}$	$-\frac{\sqrt{35}}{35}$	0
		0	$\frac{\sqrt{105}i}{70}$	0	$\frac{\sqrt{105}}{70}$	$\frac{\sqrt{105}i}{35}$	0	0	0	0	$-\frac{\sqrt{35}i}{35}$
		$\frac{\sqrt{105}i}{70}$	0	$-\frac{\sqrt{105}}{70}$	0	0	$-\frac{\sqrt{105}i}{35}$	0	0	$-\frac{\sqrt{35}i}{35}$	0
		0	0	0	0	0	$-\frac{\sqrt{35}}{35}$	0	$\frac{\sqrt{35}i}{35}$	0	0
		0	0	0	0	$\frac{\sqrt{35}}{35}$	0	$\frac{\sqrt{35}i}{35}$	0	0	0
480	symmetry	$\sqrt{3}yz$									

continued ...

Table 8

No.	multipole	matrix									
	$\mathbb{Q}_{2,1}^{(1,1;a)}(E_g, 1)$	0	0	0	$-\frac{\sqrt{35}}{70}$	$-\frac{\sqrt{35i}}{35}$	0	0	0	0	$\frac{\sqrt{105i}}{42}$
		0	0	$\frac{\sqrt{35}}{70}$	0	0	$\frac{\sqrt{35i}}{35}$	0	0	$\frac{\sqrt{105i}}{42}$	0
		0	$\frac{\sqrt{35}}{70}$	0	0	0	0	$-\frac{\sqrt{35i}}{35}$	0	0	$\frac{\sqrt{105}}{42}$
		$-\frac{\sqrt{35}}{70}$	0	0	0	0	0	0	$\frac{\sqrt{35i}}{35}$	$-\frac{\sqrt{105}}{42}$	0
		$\frac{\sqrt{35i}}{35}$	0	0	0	0	0	0	$\frac{\sqrt{35}}{35}$	$\frac{2\sqrt{105i}}{105}$	0
		0	$-\frac{\sqrt{35i}}{35}$	0	0	0	0	$-\frac{\sqrt{35}}{35}$	0	0	$-\frac{2\sqrt{105i}}{105}$
		0	0	$\frac{\sqrt{35i}}{35}$	0	0	$-\frac{\sqrt{35}}{35}$	0	0	0	0
		0	0	0	$-\frac{\sqrt{35i}}{35}$	$\frac{\sqrt{35}}{35}$	0	0	0	0	0
		0	$-\frac{\sqrt{105i}}{42}$	0	$-\frac{\sqrt{105}}{42}$	$-\frac{2\sqrt{105i}}{105}$	0	0	0	0	0
		$-\frac{\sqrt{105i}}{42}$	0	$\frac{\sqrt{105}}{42}$	0	0	$\frac{2\sqrt{105i}}{105}$	0	0	0	0
481	symmetry	$-\sqrt{3}xz$									
	$\mathbb{Q}_{2,2}^{(1,1;a)}(E_g, 1)$	0	0	0	$\frac{\sqrt{35i}}{70}$	0	0	$\frac{\sqrt{35i}}{35}$	0	0	$-\frac{\sqrt{105}}{42}$
		0	0	$\frac{\sqrt{35i}}{70}$	0	0	0	0	$-\frac{\sqrt{35i}}{35}$	$\frac{\sqrt{105}}{42}$	0
		0	$-\frac{\sqrt{35i}}{70}$	0	0	$-\frac{\sqrt{35i}}{35}$	0	0	0	0	$\frac{\sqrt{105i}}{42}$
		$-\frac{\sqrt{35i}}{70}$	0	0	0	0	$\frac{\sqrt{35i}}{35}$	0	0	$\frac{\sqrt{105i}}{42}$	0
		0	0	$\frac{\sqrt{35i}}{35}$	0	0	0	0	$-\frac{\sqrt{35i}}{35}$	0	0
		0	0	0	$-\frac{\sqrt{35i}}{35}$	0	0	$-\frac{\sqrt{35i}}{35}$	0	0	0
		$-\frac{\sqrt{35i}}{35}$	0	0	0	0	$\frac{\sqrt{35i}}{35}$	0	0	$\frac{2\sqrt{105i}}{105}$	0
		0	$\frac{\sqrt{35i}}{35}$	0	0	$\frac{\sqrt{35i}}{35}$	0	0	0	0	$-\frac{2\sqrt{105i}}{105}$
		0	$\frac{\sqrt{105}}{42}$	0	$-\frac{\sqrt{105i}}{42}$	0	0	$-\frac{2\sqrt{105i}}{105}$	0	0	0
		$-\frac{\sqrt{105}}{42}$	0	$-\frac{\sqrt{105i}}{42}$	0	0	0	0	$\frac{2\sqrt{105i}}{105}$	0	0
482	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$									

continued ...

Table 8

No.	multipole	matrix									
	$\mathbb{Q}_{2,1}^{(1,1;a)}(E_g, 2)$	0	0	0	0	0	$\frac{\sqrt{35}}{35}$	0	$-\frac{\sqrt{35i}}{35}$	0	0
		0	0	0	0	$-\frac{\sqrt{35}}{35}$	0	$-\frac{\sqrt{35i}}{35}$	0	0	0
		0	0	0	0	0	$-\frac{3\sqrt{35i}}{70}$	0	$-\frac{3\sqrt{35}}{70}$	$-\frac{\sqrt{105i}}{42}$	0
		0	0	0	0	$-\frac{3\sqrt{35i}}{70}$	0	$\frac{3\sqrt{35}}{70}$	0	0	$\frac{\sqrt{105i}}{42}$
		0	$-\frac{\sqrt{35}}{35}$	0	$\frac{3\sqrt{35i}}{70}$	0	0	0	0	0	$\frac{\sqrt{105}}{210}$
		$\frac{\sqrt{35}}{35}$	0	$\frac{3\sqrt{35i}}{70}$	0	0	0	0	0	$-\frac{\sqrt{105}}{210}$	0
		0	$\frac{\sqrt{35i}}{35}$	0	$\frac{3\sqrt{35}}{70}$	0	0	0	0	0	$\frac{\sqrt{105i}}{210}$
		$\frac{\sqrt{35i}}{35}$	0	$-\frac{3\sqrt{35}}{70}$	0	0	0	0	0	$\frac{\sqrt{105i}}{210}$	0
		0	0	$\frac{\sqrt{105i}}{42}$	0	0	$-\frac{\sqrt{105}}{210}$	0	$-\frac{\sqrt{105i}}{210}$	0	0
		0	0	0	$-\frac{\sqrt{105i}}{42}$	$\frac{\sqrt{105}}{210}$	0	$-\frac{\sqrt{105i}}{210}$	0	0	0
483	symmetry	$-\sqrt{3}xy$									
	$\mathbb{Q}_{2,2}^{(1,1;a)}(E_g, 2)$	0	0	0	0	0	$-\frac{3\sqrt{35i}}{70}$	0	$-\frac{3\sqrt{35}}{70}$	$-\frac{\sqrt{105i}}{42}$	0
		0	0	0	0	$-\frac{3\sqrt{35i}}{70}$	0	$\frac{3\sqrt{35}}{70}$	0	0	$\frac{\sqrt{105i}}{42}$
		0	0	0	0	0	$-\frac{\sqrt{35}}{35}$	0	$\frac{\sqrt{35i}}{35}$	0	0
		0	0	0	0	$\frac{\sqrt{35}}{35}$	0	$\frac{\sqrt{35i}}{35}$	0	0	0
		0	$\frac{3\sqrt{35i}}{70}$	0	$\frac{\sqrt{35}}{35}$	0	0	0	0	0	$\frac{\sqrt{105i}}{210}$
		$\frac{3\sqrt{35i}}{70}$	0	$-\frac{\sqrt{35}}{35}$	0	0	0	0	0	$\frac{\sqrt{105i}}{210}$	0
		0	$\frac{3\sqrt{35}}{70}$	0	$-\frac{\sqrt{35i}}{35}$	0	0	0	0	0	$-\frac{\sqrt{105}}{210}$
		$-\frac{3\sqrt{35}}{70}$	0	$-\frac{\sqrt{35i}}{35}$	0	0	0	0	0	$\frac{\sqrt{105}}{210}$	0
		$\frac{\sqrt{105i}}{42}$	0	0	0	0	$-\frac{\sqrt{105i}}{210}$	0	$\frac{\sqrt{105}}{210}$	0	0
		0	$-\frac{\sqrt{105i}}{42}$	0	0	$-\frac{\sqrt{105i}}{210}$	0	$-\frac{\sqrt{105}}{210}$	0	0	0
484	symmetry	z									

continued ...

Table 8

No.	multipole	matrix									
	$\mathbb{G}_1^{(1,0;a)}(A_{2g})$	0	0	0	0	0	$\frac{\sqrt{10}i}{20}$	0	$-\frac{\sqrt{10}}{20}$	0	0
		0	0	0	0	$\frac{\sqrt{10}i}{20}$	0	$\frac{\sqrt{10}}{20}$	0	0	0
		0	0	0	0	0	$\frac{\sqrt{10}}{20}$	0	$\frac{\sqrt{10}i}{20}$	0	0
		0	0	0	0	$-\frac{\sqrt{10}}{20}$	0	$\frac{\sqrt{10}i}{20}$	0	0	0
		0	$-\frac{\sqrt{10}i}{20}$	0	$-\frac{\sqrt{10}}{20}$	0	0	0	0	0	$\frac{\sqrt{30}i}{20}$
		$-\frac{\sqrt{10}i}{20}$	0	$\frac{\sqrt{10}}{20}$	0	0	0	0	0	$\frac{\sqrt{30}i}{20}$	0
		0	$\frac{\sqrt{10}}{20}$	0	$-\frac{\sqrt{10}i}{20}$	0	0	0	0	0	$\frac{\sqrt{30}}{20}$
		$-\frac{\sqrt{10}}{20}$	0	$-\frac{\sqrt{10}i}{20}$	0	0	0	0	0	$-\frac{\sqrt{30}}{20}$	0
		0	0	0	0	0	$-\frac{\sqrt{30}i}{20}$	0	$-\frac{\sqrt{30}}{20}$	0	0
		0	0	0	0	$-\frac{\sqrt{30}i}{20}$	0	$\frac{\sqrt{30}}{20}$	0	0	0
485	symmetry	x									
	$\mathbb{G}_{1,1}^{(1,0;a)}(E_g)$	0	0	0	$-\frac{\sqrt{10}}{10}$	$-\frac{\sqrt{10}i}{20}$	0	0	0	0	0
		0	0	$\frac{\sqrt{10}}{10}$	0	0	$\frac{\sqrt{10}i}{20}$	0	0	0	0
		0	$\frac{\sqrt{10}}{10}$	0	0	0	0	$-\frac{\sqrt{10}i}{20}$	0	0	0
		$-\frac{\sqrt{10}}{10}$	0	0	0	0	0	0	$\frac{\sqrt{10}i}{20}$	0	0
		$\frac{\sqrt{10}i}{20}$	0	0	0	0	0	0	$-\frac{\sqrt{10}}{20}$	$-\frac{\sqrt{30}i}{20}$	0
		0	$-\frac{\sqrt{10}i}{20}$	0	0	0	0	$\frac{\sqrt{10}}{20}$	0	0	$\frac{\sqrt{30}i}{20}$
		0	0	$\frac{\sqrt{10}i}{20}$	0	0	$\frac{\sqrt{10}}{20}$	0	0	0	0
		0	0	0	$-\frac{\sqrt{10}i}{20}$	$-\frac{\sqrt{10}}{20}$	0	0	0	0	0
		0	0	0	0	$\frac{\sqrt{30}i}{20}$	0	0	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{30}i}{20}$	0	0	0	0
486	symmetry	y									

continued ...

Table 8

No.	multipole	matrix
	$\mathbb{G}_{1,2}^{(1,0;a)}(E_g)$	$ \begin{bmatrix} 0 & 0 & 0 & \frac{\sqrt{10}i}{10} & 0 & 0 & \frac{\sqrt{10}i}{20} & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{10}i}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}i}{20} & 0 & 0 \\ 0 & -\frac{\sqrt{10}i}{10} & 0 & 0 & -\frac{\sqrt{10}i}{20} & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{10}i}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{20} & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{10}i}{20} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{20} & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{10}i}{20} & 0 & 0 & \frac{\sqrt{10}i}{20} & 0 & 0 & 0 \\ -\frac{\sqrt{10}i}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}i}{20} & 0 & 0 & -\frac{\sqrt{30}i}{20} & 0 \\ 0 & \frac{\sqrt{10}i}{20} & 0 & 0 & -\frac{\sqrt{10}i}{20} & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{20} \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{20} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}i}{20} & 0 & 0 \end{bmatrix} $
487	symmetry	$ \frac{\sqrt{10x(x^2-3y^2)}}{4} $ $ \begin{bmatrix} 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{8} & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{8} \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{8} & 0 & 0 & \frac{\sqrt{2}i}{8} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{8} & 0 & 0 & -\frac{\sqrt{2}i}{8} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{8} & \frac{\sqrt{2}i}{8} & 0 \\ \frac{\sqrt{6}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{6}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{6}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{6}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{2}i}{8} & 0 & \frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{2}i}{8} & 0 & -\frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} $
488	symmetry	$ -\frac{z(3x^2+3y^2-2z^2)}{2} $

continued ...

Table 8

No.	multipole	matrix
	$\mathbb{G}_3^{(1,0;a)}(A_{2g}, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}i}{20} & 0 & \frac{\sqrt{15}}{20} & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{15}i}{20} & 0 & -\frac{\sqrt{15}}{20} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{20} & 0 & -\frac{\sqrt{15}i}{20} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{20} & 0 & -\frac{\sqrt{15}i}{20} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{15}i}{20} & 0 & \frac{\sqrt{15}}{20} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{5}i}{10} \\ \frac{\sqrt{15}i}{20} & 0 & -\frac{\sqrt{15}}{20} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{5}i}{10} & 0 \\ 0 & -\frac{\sqrt{15}}{20} & 0 & \frac{\sqrt{15}i}{20} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{5}}{10} \\ \frac{\sqrt{15}}{20} & 0 & \frac{\sqrt{15}i}{20} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{10} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{10} & 0 & -\frac{\sqrt{5}}{10} & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{10} & 0 & \frac{\sqrt{5}}{10} & 0 & 0 & 0 \end{bmatrix}$
489	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{8} & 0 & 0 & \frac{\sqrt{2}}{8} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{8} & -\frac{\sqrt{2}}{8} & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{8} & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{8} \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{8} & 0 & 0 & \frac{\sqrt{2}i}{8} & 0 \\ 0 & 0 & \frac{\sqrt{6}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{6}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{6}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{6}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{2}}{8} & 0 & -\frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{2}}{8} & 0 & -\frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
490	symmetry	$-\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$

continued ...

Table 8

No.	multipole	matrix									
	$\mathbb{G}_{3,1}^{(1,0;a)}(E_g, 1)$	0	0	0	$\frac{\sqrt{10}}{20}$	$\frac{\sqrt{10}i}{40}$	0	0	0	0	$\frac{\sqrt{30}i}{24}$
		0	0	$-\frac{\sqrt{10}}{20}$	0	0	$-\frac{\sqrt{10}i}{40}$	0	0	$\frac{\sqrt{30}i}{24}$	0
		0	$-\frac{\sqrt{10}}{20}$	0	0	0	0	$\frac{\sqrt{10}i}{40}$	0	0	$\frac{\sqrt{30}i}{24}$
		$\frac{\sqrt{10}}{20}$	0	0	0	0	0	0	$-\frac{\sqrt{10}i}{40}$	$-\frac{\sqrt{30}i}{24}$	0
		$-\frac{\sqrt{10}i}{40}$	0	0	0	0	0	0	$-\frac{\sqrt{10}}{10}$	$-\frac{\sqrt{30}i}{60}$	0
		0	$\frac{\sqrt{10}i}{40}$	0	0	0	0	$\frac{\sqrt{10}}{10}$	0	0	$\frac{\sqrt{30}i}{60}$
		0	0	$-\frac{\sqrt{10}i}{40}$	0	0	$\frac{\sqrt{10}}{10}$	0	0	0	0
		0	0	0	$\frac{\sqrt{10}i}{40}$	$-\frac{\sqrt{10}}{10}$	0	0	0	0	0
		0	$-\frac{\sqrt{30}i}{24}$	0	$-\frac{\sqrt{30}}{24}$	$\frac{\sqrt{30}i}{60}$	0	0	0	0	0
		$-\frac{\sqrt{30}i}{24}$	0	$\frac{\sqrt{30}}{24}$	0	0	$-\frac{\sqrt{30}i}{60}$	0	0	0	0
491	symmetry	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$									
	$\mathbb{G}_{3,2}^{(1,0;a)}(E_g, 1)$	0	0	0	$-\frac{\sqrt{10}i}{20}$	0	0	$-\frac{\sqrt{10}i}{40}$	0	0	$-\frac{\sqrt{30}i}{24}$
		0	0	$-\frac{\sqrt{10}i}{20}$	0	0	0	0	$\frac{\sqrt{10}i}{40}$	$\frac{\sqrt{30}i}{24}$	0
		0	$\frac{\sqrt{10}i}{20}$	0	0	$\frac{\sqrt{10}i}{40}$	0	0	0	0	$\frac{\sqrt{30}i}{24}$
		$\frac{\sqrt{10}i}{20}$	0	0	0	0	$-\frac{\sqrt{10}i}{40}$	0	0	$\frac{\sqrt{30}i}{24}$	0
		0	0	$-\frac{\sqrt{10}i}{40}$	0	0	0	0	$\frac{\sqrt{10}i}{10}$	0	0
		0	0	0	$\frac{\sqrt{10}i}{40}$	0	0	$\frac{\sqrt{10}i}{10}$	0	0	0
		$\frac{\sqrt{10}i}{40}$	0	0	0	0	$-\frac{\sqrt{10}i}{10}$	0	0	$-\frac{\sqrt{30}i}{60}$	0
		0	$-\frac{\sqrt{10}i}{40}$	0	0	$-\frac{\sqrt{10}i}{10}$	0	0	0	0	$\frac{\sqrt{30}i}{60}$
		0	$\frac{\sqrt{30}}{24}$	0	$-\frac{\sqrt{30}i}{24}$	0	0	$\frac{\sqrt{30}i}{60}$	0	0	0
		$-\frac{\sqrt{30}}{24}$	0	$-\frac{\sqrt{30}i}{24}$	0	0	0	0	$-\frac{\sqrt{30}i}{60}$	0	0
492	symmetry	$\sqrt{15}xyz$									

continued ...

Table 8

No.	multipole	matrix
	$\mathbb{G}_{3,1}^{(1,0;a)}(E_g, 2)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{1}{4} & 0 & \frac{i}{4} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{1}{4} & 0 & \frac{i}{4} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{6} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}i}{6} \\ 0 & \frac{1}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{12} \\ -\frac{1}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{12} & 0 \\ 0 & -\frac{i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}i}{12} \\ -\frac{i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}i}{12} & 0 \\ 0 & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 & -\frac{\sqrt{3}}{12} & 0 & -\frac{\sqrt{3}i}{12} & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{3}i}{6} & \frac{\sqrt{3}}{12} & 0 & -\frac{\sqrt{3}i}{12} & 0 & 0 & 0 \end{bmatrix}$
493	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{6} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}i}{6} \\ 0 & 0 & 0 & 0 & 0 & \frac{1}{4} & 0 & -\frac{i}{4} & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{1}{4} & 0 & -\frac{i}{4} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{1}{4} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}i}{12} \\ 0 & 0 & \frac{1}{4} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}i}{12} & 0 \\ 0 & 0 & 0 & \frac{i}{4} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{12} \\ 0 & 0 & \frac{i}{4} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{12} & 0 \\ \frac{\sqrt{3}i}{6} & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{12} & 0 & \frac{\sqrt{3}}{12} & 0 & 0 \\ 0 & -\frac{\sqrt{3}i}{6} & 0 & 0 & -\frac{\sqrt{3}i}{12} & 0 & -\frac{\sqrt{3}}{12} & 0 & 0 & 0 \end{bmatrix}$
494	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$

continued ...

Table 8

No.	multipole	matrix
	$\mathbb{T}_2^{(1,0;a)}(A_{1g})$	$ \begin{array}{ccccccccccc} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}i}{28} & 0 & -\frac{\sqrt{42}}{28} & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{42}i}{28} & 0 & -\frac{\sqrt{42}}{28} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}}{28} & 0 & \frac{\sqrt{42}i}{28} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{42}}{28} & 0 & -\frac{\sqrt{42}i}{28} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{42}i}{28} & 0 & \frac{\sqrt{42}}{28} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}i}{28} \\ -\frac{\sqrt{42}i}{28} & 0 & \frac{\sqrt{42}}{28} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}i}{28} & 0 \\ 0 & -\frac{\sqrt{42}}{28} & 0 & \frac{\sqrt{42}i}{28} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}}{28} \\ -\frac{\sqrt{42}}{28} & 0 & -\frac{\sqrt{42}i}{28} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}}{28} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}i}{28} & 0 & \frac{\sqrt{14}}{28} & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{14}i}{28} & 0 & \frac{\sqrt{14}}{28} & 0 & 0 & 0 \end{array} $
495	symmetry	$ \begin{array}{c} \sqrt{3}yz \\ \left[\begin{array}{cccccccccc} 0 & \frac{\sqrt{14}}{14} & 0 & 0 & \frac{\sqrt{14}}{28} & 0 & 0 & 0 & 0 & \frac{\sqrt{42}}{42} \\ \frac{\sqrt{14}}{14} & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}}{28} & 0 & 0 & \frac{\sqrt{42}}{42} & 0 \\ 0 & 0 & 0 & \frac{\sqrt{14}}{14} & 0 & 0 & \frac{\sqrt{14}}{28} & 0 & 0 & -\frac{\sqrt{42}i}{42} \\ 0 & 0 & \frac{\sqrt{14}}{14} & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}}{28} & \frac{\sqrt{42}i}{42} & 0 \\ \frac{\sqrt{14}}{28} & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}}{14} & 0 & \frac{\sqrt{14}i}{28} & \frac{\sqrt{42}}{84} & 0 \\ 0 & -\frac{\sqrt{14}}{28} & 0 & 0 & -\frac{\sqrt{14}}{14} & 0 & -\frac{\sqrt{14}i}{28} & 0 & 0 & -\frac{\sqrt{42}}{84} \\ 0 & 0 & \frac{\sqrt{14}}{28} & 0 & 0 & \frac{\sqrt{14}i}{28} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{14}}{28} & -\frac{\sqrt{14}i}{28} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{42}}{42} & 0 & -\frac{\sqrt{42}i}{42} & \frac{\sqrt{42}}{84} & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}}{14} \\ \frac{\sqrt{42}}{42} & 0 & \frac{\sqrt{42}i}{42} & 0 & 0 & -\frac{\sqrt{42}}{84} & 0 & 0 & -\frac{\sqrt{14}}{14} & 0 \end{array} \right] \end{array} $
496	symmetry	$-\sqrt{3}xz$

continued ...

Table 8

No.	multipole	matrix									
	$\mathbb{T}_{2,2}^{(1,0;a)}(E_g, 1)$	0	$-\frac{\sqrt{14}i}{14}$	0	0	0	0	$-\frac{\sqrt{14}}{28}$	0	0	$\frac{\sqrt{42}i}{42}$
		$\frac{\sqrt{14}i}{14}$	0	0	0	0	0	0	$\frac{\sqrt{14}}{28}$	$-\frac{\sqrt{42}i}{42}$	0
		0	0	0	$-\frac{\sqrt{14}i}{14}$	$\frac{\sqrt{14}}{28}$	0	0	0	0	$\frac{\sqrt{42}}{42}$
		0	0	$\frac{\sqrt{14}i}{14}$	0	0	$-\frac{\sqrt{14}}{28}$	0	0	$\frac{\sqrt{42}}{42}$	0
		0	0	$\frac{\sqrt{14}}{28}$	0	0	0	0	$-\frac{\sqrt{14}}{28}$	0	0
		0	0	0	$-\frac{\sqrt{14}}{28}$	0	0	$-\frac{\sqrt{14}}{28}$	0	0	0
		$-\frac{\sqrt{14}}{28}$	0	0	0	0	$-\frac{\sqrt{14}}{28}$	0	$\frac{\sqrt{14}i}{14}$	$\frac{\sqrt{42}}{84}$	0
		0	$\frac{\sqrt{14}}{28}$	0	0	$-\frac{\sqrt{14}}{28}$	0	$-\frac{\sqrt{14}i}{14}$	0	0	$-\frac{\sqrt{42}}{84}$
		0	$\frac{\sqrt{42}i}{42}$	0	$\frac{\sqrt{42}}{42}$	0	0	$\frac{\sqrt{42}}{84}$	0	0	$\frac{\sqrt{14}i}{14}$
		$-\frac{\sqrt{42}i}{42}$	0	$\frac{\sqrt{42}}{42}$	0	0	0	0	$-\frac{\sqrt{42}}{84}$	$-\frac{\sqrt{14}i}{14}$	0
497	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$									
	$\mathbb{T}_{2,1}^{(1,0;a)}(E_g, 2)$	0	0	0	0	0	$-\frac{\sqrt{14}i}{28}$	0	$-\frac{\sqrt{14}}{28}$	0	0
		0	0	0	0	$\frac{\sqrt{14}i}{28}$	0	$-\frac{\sqrt{14}}{28}$	0	0	0
		0	0	0	0	0	$\frac{\sqrt{14}}{28}$	0	$-\frac{\sqrt{14}i}{28}$	$\frac{\sqrt{42}}{21}$	0
		0	0	0	0	$\frac{\sqrt{14}}{28}$	0	$\frac{\sqrt{14}i}{28}$	0	0	$-\frac{\sqrt{42}}{21}$
		0	$-\frac{\sqrt{14}i}{28}$	0	$\frac{\sqrt{14}}{28}$	0	0	$-\frac{\sqrt{14}}{14}$	0	0	$-\frac{\sqrt{42}i}{84}$
		$\frac{\sqrt{14}i}{28}$	0	$\frac{\sqrt{14}}{28}$	0	0	0	0	$\frac{\sqrt{14}}{14}$	$\frac{\sqrt{42}i}{84}$	0
		0	$-\frac{\sqrt{14}}{28}$	0	$-\frac{\sqrt{14}i}{28}$	$-\frac{\sqrt{14}}{14}$	0	0	0	0	$\frac{\sqrt{42}}{84}$
		$-\frac{\sqrt{14}}{28}$	0	$\frac{\sqrt{14}i}{28}$	0	0	$\frac{\sqrt{14}}{14}$	0	0	$\frac{\sqrt{42}}{84}$	0
		0	0	$\frac{\sqrt{42}}{21}$	0	0	$-\frac{\sqrt{42}i}{84}$	0	$\frac{\sqrt{42}}{84}$	0	0
		0	0	0	$-\frac{\sqrt{42}}{21}$	$\frac{\sqrt{42}i}{84}$	0	$\frac{\sqrt{42}}{84}$	0	0	0
498	symmetry	$-\sqrt{3}xy$									

continued ...

Table 8

No.	multipole	matrix
	$\mathbb{T}_{2,2}^{(1,0;a)}(E_g, 2)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}}{28} & 0 & -\frac{\sqrt{14}i}{28} & \frac{\sqrt{42}}{21} & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{14}}{28} & 0 & \frac{\sqrt{14}i}{28} & 0 & 0 & -\frac{\sqrt{42}}{21} \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}i}{28} & 0 & \frac{\sqrt{14}}{28} & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{14}i}{28} & 0 & \frac{\sqrt{14}}{28} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{14}}{28} & 0 & \frac{\sqrt{14}i}{28} & -\frac{\sqrt{14}}{14} & 0 & 0 & 0 & 0 & \frac{\sqrt{42}}{84} \\ \frac{\sqrt{14}}{28} & 0 & -\frac{\sqrt{14}i}{28} & 0 & 0 & \frac{\sqrt{14}}{14} & 0 & 0 & \frac{\sqrt{42}}{84} & 0 \\ 0 & -\frac{\sqrt{14}i}{28} & 0 & \frac{\sqrt{14}}{28} & 0 & 0 & \frac{\sqrt{14}}{14} & 0 & 0 & \frac{\sqrt{42}i}{84} \\ \frac{\sqrt{14}i}{28} & 0 & \frac{\sqrt{14}}{28} & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}}{14} & -\frac{\sqrt{42}i}{84} & 0 \\ \frac{\sqrt{42}}{21} & 0 & 0 & 0 & 0 & \frac{\sqrt{42}}{84} & 0 & \frac{\sqrt{42}i}{84} & 0 & 0 \\ 0 & -\frac{\sqrt{42}}{21} & 0 & 0 & \frac{\sqrt{42}}{84} & 0 & -\frac{\sqrt{42}i}{84} & 0 & 0 & 0 \end{bmatrix}$
499	symmetry	$\frac{3x^4}{8} + \frac{3x^2y^2}{4} - 3x^2z^2 + \frac{3y^4}{8} - 3y^2z^2 + z^4$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}i}{28} & 0 & \frac{\sqrt{7}}{28} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{7}i}{28} & 0 & \frac{\sqrt{7}}{28} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}}{28} & 0 & -\frac{\sqrt{7}i}{28} & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{7}}{28} & 0 & \frac{\sqrt{7}i}{28} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{7}i}{28} & 0 & -\frac{\sqrt{7}}{28} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}i}{14} \\ \frac{\sqrt{7}i}{28} & 0 & -\frac{\sqrt{7}}{28} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}i}{14} & 0 \\ 0 & \frac{\sqrt{7}}{28} & 0 & -\frac{\sqrt{7}i}{28} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{14} \\ \frac{\sqrt{7}}{28} & 0 & \frac{\sqrt{7}i}{28} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{14} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}i}{14} & 0 & \frac{\sqrt{21}}{14} & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{21}i}{14} & 0 & \frac{\sqrt{21}}{14} & 0 & 0 & 0 \end{bmatrix}$
500	symmetry	$\frac{\sqrt{70}yz(3x^2 - y^2)}{4}$

continued ...

Table 8

No.	multipole	matrix									
	$\mathbb{T}_4^{(1,0;a)}(A_{1g}, 2)$	0	$-\frac{\sqrt{10}}{20}$	0	$\frac{\sqrt{10}i}{20}$	$\frac{3\sqrt{10}}{40}$	0	0	0	0	$-\frac{\sqrt{30}}{40}$
		$-\frac{\sqrt{10}}{20}$	0	$-\frac{\sqrt{10}i}{20}$	0	0	$-\frac{3\sqrt{10}}{40}$	0	0	$-\frac{\sqrt{30}}{40}$	0
		0	$\frac{\sqrt{10}i}{20}$	0	$\frac{\sqrt{10}}{20}$	0	0	$-\frac{3\sqrt{10}}{40}$	0	0	$-\frac{\sqrt{30}i}{40}$
		$-\frac{\sqrt{10}i}{20}$	0	$\frac{\sqrt{10}}{20}$	0	0	0	0	$\frac{3\sqrt{10}}{40}$	$\frac{\sqrt{30}i}{40}$	0
		$\frac{3\sqrt{10}}{40}$	0	0	0	0	$-\frac{\sqrt{10}}{20}$	0	$-\frac{\sqrt{10}i}{20}$	0	0
		0	$-\frac{3\sqrt{10}}{40}$	0	0	$-\frac{\sqrt{10}}{20}$	0	$\frac{\sqrt{10}i}{20}$	0	0	0
		0	0	$-\frac{3\sqrt{10}}{40}$	0	0	$-\frac{\sqrt{10}i}{20}$	0	$\frac{\sqrt{10}}{20}$	0	0
		0	0	0	$\frac{3\sqrt{10}}{40}$	$\frac{\sqrt{10}i}{20}$	0	$\frac{\sqrt{10}}{20}$	0	0	0
		0	$-\frac{\sqrt{30}}{40}$	0	$-\frac{\sqrt{30}i}{40}$	0	0	0	0	0	0
		$-\frac{\sqrt{30}}{40}$	0	$\frac{\sqrt{30}i}{40}$	0	0	0	0	0	0	0
501	symmetry	$\frac{\sqrt{70}xz(x^2-3y^2)}{4}$									
	$\mathbb{T}_4^{(1,0;a)}(A_{2g})$	0	$\frac{\sqrt{10}i}{20}$	0	$\frac{\sqrt{10}}{20}$	0	0	$-\frac{3\sqrt{10}}{40}$	0	0	$-\frac{\sqrt{30}i}{40}$
		$-\frac{\sqrt{10}i}{20}$	0	$\frac{\sqrt{10}}{20}$	0	0	0	0	$\frac{3\sqrt{10}}{40}$	$\frac{\sqrt{30}i}{40}$	0
		0	$\frac{\sqrt{10}}{20}$	0	$-\frac{\sqrt{10}i}{20}$	$-\frac{3\sqrt{10}}{40}$	0	0	0	0	$\frac{\sqrt{30}}{40}$
		$\frac{\sqrt{10}}{20}$	0	$\frac{\sqrt{10}i}{20}$	0	0	$\frac{3\sqrt{10}}{40}$	0	0	$\frac{\sqrt{30}}{40}$	0
		0	0	$-\frac{3\sqrt{10}}{40}$	0	0	$-\frac{\sqrt{10}i}{20}$	0	$\frac{\sqrt{10}}{20}$	0	0
		0	0	0	$\frac{3\sqrt{10}}{40}$	$\frac{\sqrt{10}i}{20}$	0	$\frac{\sqrt{10}}{20}$	0	0	0
		$-\frac{3\sqrt{10}}{40}$	0	0	0	0	$\frac{\sqrt{10}}{20}$	0	$\frac{\sqrt{10}i}{20}$	0	0
		0	$\frac{3\sqrt{10}}{40}$	0	0	$\frac{\sqrt{10}}{20}$	0	$-\frac{\sqrt{10}i}{20}$	0	0	0
		0	$-\frac{\sqrt{30}i}{40}$	0	$\frac{\sqrt{30}}{40}$	0	0	0	0	0	0
		$\frac{\sqrt{30}i}{40}$	0	$\frac{\sqrt{30}}{40}$	0	0	0	0	0	0	0
502	symmetry	$-\frac{\sqrt{10}yz(3x^2+3y^2-4z^2)}{4}$									

continued ...

Table 8

No.	multipole	matrix																		
	$\mathbb{T}_{4,1}^{(1,0;a)}(E_g, 1)$	0	$-\frac{\sqrt{70}}{140}$	0	0	$-\frac{\sqrt{70}}{280}$	0	0	0	$-\frac{3\sqrt{210}}{280}$	$-\frac{\sqrt{70}}{140}$	0	0	0	0	$-\frac{3\sqrt{210}}{280}$	0	0	0	$\frac{3\sqrt{210}i}{280}$
		$-\frac{\sqrt{70}}{140}$	0	0	0	0	$\frac{\sqrt{70}}{280}$	0	0	$-\frac{3\sqrt{210}}{280}$	0	$\frac{\sqrt{70}}{140}$	0	$-\frac{3\sqrt{70}i}{140}$	0	0	0	$\frac{\sqrt{70}}{20}$	0	0
		0	0	0	$-\frac{\sqrt{70}}{140}$	0	0	$-\frac{\sqrt{70}}{280}$	0	0	$-\frac{3\sqrt{210}i}{280}$	0	0	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{70}}{140}$	0	0	0	0	$\frac{\sqrt{70}}{280}$	$-\frac{3\sqrt{210}i}{280}$	0	0	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{70}}{280}$	0	0	0	0	$\frac{\sqrt{70}}{140}$	0	$\frac{3\sqrt{70}i}{140}$	$\frac{\sqrt{210}}{140}$	0	$-\frac{\sqrt{210}}{140}$	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{70}}{280}$	0	0	$\frac{\sqrt{70}}{140}$	0	$-\frac{3\sqrt{70}i}{140}$	0	0	$-\frac{\sqrt{210}}{140}$	0	0	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{70}}{280}$	0	0	$\frac{3\sqrt{70}i}{140}$	0	$\frac{\sqrt{70}}{20}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{70}}{280}$	$-\frac{3\sqrt{70}i}{140}$	0	$\frac{\sqrt{70}}{20}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	$-\frac{3\sqrt{210}}{280}$	0	$\frac{3\sqrt{210}i}{280}$	$\frac{\sqrt{210}}{140}$	0	0	0	0	$-\frac{3\sqrt{70}}{70}$	0	0	0	0	0	0	0	0	0
		$-\frac{3\sqrt{210}}{280}$	0	$-\frac{3\sqrt{210}i}{280}$	0	0	$-\frac{\sqrt{210}}{140}$	0	0	$-\frac{3\sqrt{70}}{70}$	0	0	0	0	0	0	0	0	0	0
503	symmetry	$\frac{\sqrt{10}xz(3x^2+3y^2-4z^2)}{4}$																		
	$\mathbb{T}_{4,2}^{(1,0;a)}(E_g, 1)$	0	$\frac{\sqrt{70}i}{140}$	0	0	0	0	$\frac{\sqrt{70}}{280}$	0	0	$-\frac{3\sqrt{210}i}{280}$	0	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{70}i}{140}$	0	0	0	0	0	0	$-\frac{\sqrt{70}}{280}$	$\frac{3\sqrt{210}i}{280}$	0	0	0	0	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{70}i}{140}$	$-\frac{\sqrt{70}}{280}$	0	0	0	0	$-\frac{3\sqrt{210}}{280}$	0	0	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{70}i}{140}$	0	0	$\frac{\sqrt{70}}{280}$	0	0	$-\frac{3\sqrt{210}}{280}$	0	0	0	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{70}}{280}$	0	0	$-\frac{\sqrt{70}i}{20}$	0	$-\frac{3\sqrt{70}}{140}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{70}}{280}$	$\frac{\sqrt{70}i}{20}$	0	$-\frac{3\sqrt{70}}{140}$	0	0	0	0	0	0	0	0	0	0	0	0
		$\frac{\sqrt{70}}{280}$	0	0	0	0	$-\frac{3\sqrt{70}}{140}$	0	$-\frac{\sqrt{70}i}{140}$	$\frac{\sqrt{210}}{140}$	0	0	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{70}}{280}$	0	0	$-\frac{3\sqrt{70}}{140}$	0	$\frac{\sqrt{70}i}{140}$	0	0	$-\frac{\sqrt{210}}{140}$	0	0	0	0	0	0	0	0	0
		0	$-\frac{3\sqrt{210}i}{280}$	0	$-\frac{3\sqrt{210}}{280}$	0	0	$\frac{\sqrt{210}}{140}$	0	0	$\frac{3\sqrt{70}i}{70}$	0	0	0	0	0	0	0	0	0
		$\frac{3\sqrt{210}i}{280}$	0	$-\frac{3\sqrt{210}}{280}$	0	0	0	0	$-\frac{\sqrt{210}}{140}$	$-\frac{3\sqrt{70}i}{70}$	0	0	0	0	0	0	0	0	0	0
504	symmetry	$\frac{\sqrt{35}(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$																		

continued ...

Table 8

No.	multipole	matrix
	$\mathbb{T}_{4,1}^{(1,0;a)}(E_g, 2)$	$\begin{bmatrix} 0 & 0 & -\frac{\sqrt{5}}{5} & 0 & 0 & -\frac{\sqrt{5}i}{20} & 0 & \frac{\sqrt{5}}{20} & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{5}}{5} & \frac{\sqrt{5}i}{20} & 0 & \frac{\sqrt{5}}{20} & 0 & 0 & 0 \\ -\frac{\sqrt{5}}{5} & 0 & 0 & 0 & 0 & \frac{\sqrt{5}}{20} & 0 & \frac{\sqrt{5}i}{20} & 0 & 0 \\ 0 & \frac{\sqrt{5}}{5} & 0 & 0 & \frac{\sqrt{5}}{20} & 0 & -\frac{\sqrt{5}i}{20} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{5}i}{20} & 0 & \frac{\sqrt{5}}{20} & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{5}i}{20} & 0 & \frac{\sqrt{5}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{5}}{20} & 0 & \frac{\sqrt{5}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{5}}{20} & 0 & -\frac{\sqrt{5}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
505	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$ $\begin{bmatrix} \frac{\sqrt{5}}{5} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{20} & 0 & -\frac{\sqrt{5}i}{20} & 0 & 0 \\ 0 & -\frac{\sqrt{5}}{5} & 0 & 0 & -\frac{\sqrt{5}}{20} & 0 & \frac{\sqrt{5}i}{20} & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{5}}{5} & 0 & 0 & -\frac{\sqrt{5}i}{20} & 0 & \frac{\sqrt{5}}{20} & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{5}}{5} & \frac{\sqrt{5}i}{20} & 0 & \frac{\sqrt{5}}{20} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{5}}{20} & 0 & -\frac{\sqrt{5}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{5}}{20} & 0 & \frac{\sqrt{5}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{5}i}{20} & 0 & \frac{\sqrt{5}}{20} & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{5}i}{20} & 0 & \frac{\sqrt{5}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
506	symmetry	$-\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$

continued ...

Table 8

No.	multipole	matrix									
	$\mathbb{T}_{4,1}^{(1,0;a)}(E_g, 3)$	0	0	0	0	0	$\frac{\sqrt{35i}}{28}$	0	$\frac{\sqrt{35}}{28}$	0	0
		0	0	0	0	$-\frac{\sqrt{35i}}{28}$	0	$\frac{\sqrt{35}}{28}$	0	0	0
		0	0	0	0	0	$\frac{\sqrt{35}}{70}$	0	$-\frac{\sqrt{35i}}{70}$	$-\frac{\sqrt{105}}{70}$	0
		0	0	0	0	$\frac{\sqrt{35}}{70}$	0	$\frac{\sqrt{35i}}{70}$	0	0	$\frac{\sqrt{105}}{70}$
		0	$\frac{\sqrt{35i}}{28}$	0	$\frac{\sqrt{35}}{70}$	0	0	$-\frac{\sqrt{35}}{35}$	0	0	$-\frac{3\sqrt{105i}}{140}$
		$-\frac{\sqrt{35i}}{28}$	0	$\frac{\sqrt{35}}{70}$	0	0	0	0	$\frac{\sqrt{35}}{35}$	$\frac{3\sqrt{105i}}{140}$	0
		0	$\frac{\sqrt{35}}{28}$	0	$-\frac{\sqrt{35i}}{70}$	$-\frac{\sqrt{35}}{35}$	0	0	0	0	$\frac{3\sqrt{105}}{140}$
		$\frac{\sqrt{35}}{28}$	0	$\frac{\sqrt{35i}}{70}$	0	0	$\frac{\sqrt{35}}{35}$	0	0	$\frac{3\sqrt{105}}{140}$	0
		0	0	$-\frac{\sqrt{105}}{70}$	0	0	$-\frac{3\sqrt{105i}}{140}$	0	$\frac{3\sqrt{105}}{140}$	0	0
		0	0	0	$\frac{\sqrt{105}}{70}$	$\frac{3\sqrt{105i}}{140}$	0	$\frac{3\sqrt{105}}{140}$	0	0	0
507	symmetry	$\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$									
	$\mathbb{T}_{4,2}^{(1,0;a)}(E_g, 3)$	0	0	0	0	0	$\frac{\sqrt{35}}{70}$	0	$-\frac{\sqrt{35i}}{70}$	$-\frac{\sqrt{105}}{70}$	0
		0	0	0	0	$\frac{\sqrt{35}}{70}$	0	$\frac{\sqrt{35i}}{70}$	0	0	$\frac{\sqrt{105}}{70}$
		0	0	0	0	0	$-\frac{\sqrt{35i}}{28}$	0	$-\frac{\sqrt{35}}{28}$	0	0
		0	0	0	0	$\frac{\sqrt{35i}}{28}$	0	$-\frac{\sqrt{35}}{28}$	0	0	0
		0	$\frac{\sqrt{35}}{70}$	0	$-\frac{\sqrt{35i}}{28}$	$-\frac{\sqrt{35}}{35}$	0	0	0	0	$\frac{3\sqrt{105}}{140}$
		$\frac{\sqrt{35}}{70}$	0	$\frac{\sqrt{35i}}{28}$	0	0	$\frac{\sqrt{35}}{35}$	0	0	$\frac{3\sqrt{105}}{140}$	0
		0	$-\frac{\sqrt{35i}}{70}$	0	$-\frac{\sqrt{35}}{28}$	0	0	$\frac{\sqrt{35}}{35}$	0	0	$\frac{3\sqrt{105i}}{140}$
		$\frac{\sqrt{35i}}{70}$	0	$-\frac{\sqrt{35}}{28}$	0	0	0	0	$-\frac{\sqrt{35}}{35}$	$-\frac{3\sqrt{105i}}{140}$	0
		$-\frac{\sqrt{105}}{70}$	0	0	0	0	$\frac{3\sqrt{105}}{140}$	0	$\frac{3\sqrt{105i}}{140}$	0	0
		0	$\frac{\sqrt{105}}{70}$	0	0	$\frac{3\sqrt{105}}{140}$	0	$-\frac{3\sqrt{105i}}{140}$	0	0	0
508	symmetry	z									

continued ...

Table 8

No.	multipole	matrix
	$M_1^{(a)}(A_{2g})$	$\begin{bmatrix} 0 & 0 & -\frac{\sqrt{5}i}{5} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{5}i}{5} & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{5}i}{5} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{5}i}{5} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{10} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{10} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{5}i}{10} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{5}i}{10} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
509	symmetry	$\begin{matrix} x \\ \left[\begin{array}{cccccccccc} 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{5}i}{10} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{5}i}{10} & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{10} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{10} & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{5}i}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{5}i}{10} & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{5}i}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}i}{10} & 0 \\ 0 & -\frac{\sqrt{5}i}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}i}{10} \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{10} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{10} & 0 & 0 \end{array} \right] \end{matrix}$
510	symmetry	y

continued ...

Table 8

No.	multipole	matrix
	$M_{1,2}^{(a)}(E_g)$	$ \begin{array}{cccccccccc} 0 & 0 & 0 & 0 & \frac{\sqrt{5}i}{10} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{5}i}{10} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{5}i}{10} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{5}i}{10} & 0 & 0 \\ -\frac{\sqrt{5}i}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{10} & 0 \\ 0 & -\frac{\sqrt{5}i}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{10} \\ 0 & 0 & -\frac{\sqrt{5}i}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{5}i}{10} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{15}i}{10} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}i}{10} & 0 & 0 & 0 & 0 \end{array} $
511	symmetry	$ \frac{\sqrt{10x(x^2-3y^2)}}{4} $
	$M_3^{(a)}(A_{1g})$	$ \begin{array}{cccccccccc} 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{array} $
512	symmetry	$ -\frac{z(3x^2+3y^2-2z^2)}{2} $

continued ...

Table 8

No.	multipole	matrix
	$M_3^{(a)}(A_{2g}, 1)$	$\begin{bmatrix} 0 & 0 & \frac{\sqrt{5}i}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{5}i}{10} & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{5}i}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{5}i}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{5} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{5} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{5}i}{5} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{5}i}{5} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
513	symmetry	$\frac{\sqrt{10}y(3x^2 - y^2)}{4}$
	$M_3^{(a)}(A_{2g}, 2)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 \\ -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
514	symmetry	$-\frac{\sqrt{6}x(x^2 + y^2 - 4z^2)}{4}$

continued ...

Table 8

No.	multipole	matrix									
	$M_{3,1}^{(a)}(E_g, 1)$	0	0	0	0	0	0	$-\frac{\sqrt{30}i}{20}$	0	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{30}i}{20}$	0	0
		0	0	0	0	$\frac{\sqrt{30}i}{20}$	0	0	0	0	0
		0	0	0	0	0	$\frac{\sqrt{30}i}{20}$	0	0	0	0
		0	0	$-\frac{\sqrt{30}i}{20}$	0	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{30}i}{20}$	0	0	0	0	0	0
		$\frac{\sqrt{30}i}{20}$	0	0	0	0	0	0	0	$-\frac{\sqrt{10}i}{10}$	0
		0	$\frac{\sqrt{30}i}{20}$	0	0	0	0	0	0	0	$-\frac{\sqrt{10}i}{10}$
		0	0	0	0	0	0	$\frac{\sqrt{10}i}{10}$	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{10}i}{10}$	0	0
515	symmetry	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$									
	$M_{3,2}^{(a)}(E_g, 1)$	0	0	0	0	$-\frac{\sqrt{30}i}{20}$	0	0	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{30}i}{20}$	0	0	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{30}i}{20}$	0	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{30}i}{20}$	0	0
		$\frac{\sqrt{30}i}{20}$	0	0	0	0	0	0	0	$\frac{\sqrt{10}i}{10}$	0
		0	$\frac{\sqrt{30}i}{20}$	0	0	0	0	0	0	0	$\frac{\sqrt{10}i}{10}$
		0	0	$\frac{\sqrt{30}i}{20}$	0	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{30}i}{20}$	0	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{10}i}{10}$	0	0	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{10}i}{10}$	0	0	0	0
516	symmetry	$\sqrt{15}xyz$									

continued ...

Table 8

No.	multipole	matrix
	$M_{3,1}^{(a)}(E_g, 2)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{i}{2} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{i}{2} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{i}{2} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{i}{2} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
517	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{i}{2} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{i}{2} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{i}{2} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{i}{2} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
518	symmetry	z

continued ...

Table 8

No.	multipole	matrix									
	$M_1^{(1,-1;a)}(A_{2g})$	$\frac{\sqrt{10}}{10}$	0	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{10}}{10}$	0	0	0	0	0	0	0	0
		0	0	$\frac{\sqrt{10}}{10}$	0	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{10}}{10}$	0	0	0	0	0	0
		0	0	0	0	$\frac{\sqrt{10}}{10}$	0	0	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{10}}{10}$	0	0	0	0
		0	0	0	0	0	0	$\frac{\sqrt{10}}{10}$	0	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{10}}{10}$	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{10}}{10}$	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{10}}{10}$
519	symmetry	x									
	$M_{1,1}^{(1,-1;a)}(E_g)$	0	$\frac{\sqrt{10}}{10}$	0	0	0	0	0	0	0	0
		$\frac{\sqrt{10}}{10}$	0	0	0	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{10}}{10}$	0	0	0	0	0	0
		0	0	$\frac{\sqrt{10}}{10}$	0	0	0	0	0	0	0
		0	0	0	0	0	$\frac{\sqrt{10}}{10}$	0	0	0	0
		0	0	0	0	$\frac{\sqrt{10}}{10}$	0	0	0	0	0
		0	0	0	0	0	0	$\frac{\sqrt{10}}{10}$	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{10}}{10}$	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{10}}{10}$	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{10}}{10}$
520	symmetry	y									

continued ...

Table 8

No.	multipole	matrix
	$M_{1,2}^{(1,-1;a)}(E_g)$	$\begin{bmatrix} 0 & -\frac{\sqrt{10}i}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{10}i}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{10}i}{10} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{10}i}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}i}{10} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{10} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}i}{10} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{10} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}i}{10} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{10} & 0 \end{bmatrix}$
521	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$
	$M_3^{(1,-1;a)}(A_{1g})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}}{14} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}}{14} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}i}{14} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}i}{14} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}}{28} & 0 & \frac{\sqrt{42}i}{28} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{42}}{28} & 0 & -\frac{\sqrt{42}i}{28} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}i}{28} & 0 & -\frac{\sqrt{42}}{28} & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{42}i}{28} & 0 & -\frac{\sqrt{42}}{28} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{14}}{14} & 0 & -\frac{\sqrt{14}i}{14} & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{14}}{14} & 0 & \frac{\sqrt{14}i}{14} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
522	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$

continued ...

Table 8

No.	multipole	matrix									
	$M_3^{(1,-1;a)}(A_{2g}, 1)$	$-\frac{\sqrt{105}}{35}$	0	0	0	0	$-\frac{\sqrt{105}}{70}$	0	$-\frac{\sqrt{105i}}{70}$	0	0
		0	$\frac{\sqrt{105}}{35}$	0	0	$-\frac{\sqrt{105}}{70}$	0	$\frac{\sqrt{105i}}{70}$	0	0	0
		0	0	$-\frac{\sqrt{105}}{35}$	0	0	$\frac{\sqrt{105i}}{70}$	0	$-\frac{\sqrt{105}}{70}$	0	0
		0	0	0	$\frac{\sqrt{105}}{35}$	$-\frac{\sqrt{105i}}{70}$	0	$-\frac{\sqrt{105}}{70}$	0	0	0
		0	$-\frac{\sqrt{105}}{70}$	0	$\frac{\sqrt{105i}}{70}$	$\frac{\sqrt{105}}{70}$	0	0	0	0	$-\frac{\sqrt{35}}{70}$
		$-\frac{\sqrt{105}}{70}$	0	$-\frac{\sqrt{105i}}{70}$	0	0	$-\frac{\sqrt{105}}{70}$	0	0	$-\frac{\sqrt{35}}{70}$	0
		0	$-\frac{\sqrt{105i}}{70}$	0	$-\frac{\sqrt{105}}{70}$	0	0	$\frac{\sqrt{105}}{70}$	0	0	$\frac{\sqrt{35i}}{70}$
		$\frac{\sqrt{105i}}{70}$	0	$-\frac{\sqrt{105}}{70}$	0	0	0	0	$-\frac{\sqrt{105}}{70}$	$-\frac{\sqrt{35i}}{70}$	0
		0	0	0	0	0	$-\frac{\sqrt{35}}{70}$	0	$\frac{\sqrt{35i}}{70}$	$\frac{\sqrt{105}}{35}$	0
		0	0	0	0	$-\frac{\sqrt{35}}{70}$	0	$-\frac{\sqrt{35i}}{70}$	0	0	$-\frac{\sqrt{105}}{35}$
523	symmetry	$\frac{\sqrt{10y(3x^2-y^2)}}{4}$									
	$M_3^{(1,-1;a)}(A_{2g}, 2)$	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{14i}}{14}$
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{14i}}{14}$	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{14}}{14}$
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{14}}{14}$	0
		0	0	0	0	0	$-\frac{\sqrt{42i}}{28}$	0	$\frac{\sqrt{42}}{28}$	0	0
		0	0	0	0	$\frac{\sqrt{42i}}{28}$	0	$\frac{\sqrt{42}}{28}$	0	0	0
		0	0	0	0	0	$\frac{\sqrt{42}}{28}$	0	$\frac{\sqrt{42i}}{28}$	0	0
		0	0	0	0	$\frac{\sqrt{42}}{28}$	0	$-\frac{\sqrt{42i}}{28}$	0	0	0
		0	$\frac{\sqrt{14i}}{14}$	0	$-\frac{\sqrt{14}}{14}$	0	0	0	0	0	0
		$-\frac{\sqrt{14i}}{14}$	0	$-\frac{\sqrt{14}}{14}$	0	0	0	0	0	0	0
524	symmetry	$-\frac{\sqrt{6x(x^2+y^2-4z^2)}}{4}$									

continued ...

Table 8

No.	multipole	matrix									
	$M_{3,1}^{(1,-1;a)}(E_g, 1)$	0	$-\frac{\sqrt{70}}{35}$	0	0	$\frac{\sqrt{70}}{35}$	0	0	0	0	$\frac{\sqrt{210}}{210}$
		$-\frac{\sqrt{70}}{35}$	0	0	0	0	$-\frac{\sqrt{70}}{35}$	0	0	$\frac{\sqrt{210}}{210}$	0
		0	0	0	$-\frac{\sqrt{70}}{35}$	0	0	$\frac{\sqrt{70}}{35}$	0	0	$-\frac{\sqrt{210}i}{210}$
		0	0	$-\frac{\sqrt{70}}{35}$	0	0	0	0	$-\frac{\sqrt{70}}{35}$	$\frac{\sqrt{210}i}{210}$	0
		$\frac{\sqrt{70}}{35}$	0	0	0	0	$\frac{\sqrt{70}}{140}$	0	$\frac{\sqrt{70}i}{140}$	$\frac{\sqrt{210}}{105}$	0
		0	$-\frac{\sqrt{70}}{35}$	0	0	$\frac{\sqrt{70}}{140}$	0	$-\frac{\sqrt{70}i}{140}$	0	0	$-\frac{\sqrt{210}}{105}$
		0	0	$\frac{\sqrt{70}}{35}$	0	0	$\frac{\sqrt{70}i}{140}$	0	$\frac{3\sqrt{70}}{140}$	0	0
		0	0	0	$-\frac{\sqrt{70}}{35}$	$-\frac{\sqrt{70}i}{140}$	0	$\frac{3\sqrt{70}}{140}$	0	0	0
		0	$\frac{\sqrt{210}}{210}$	0	$-\frac{\sqrt{210}i}{210}$	$\frac{\sqrt{210}}{105}$	0	0	0	0	$\frac{\sqrt{70}}{35}$
		$\frac{\sqrt{210}}{210}$	0	$\frac{\sqrt{210}i}{210}$	0	0	$-\frac{\sqrt{210}}{105}$	0	0	$\frac{\sqrt{70}}{35}$	0
525	symmetry	$-\frac{\sqrt{6y(x^2+y^2-4z^2)}}{4}$									
	$M_{3,2}^{(1,-1;a)}(E_g, 1)$	0	$\frac{\sqrt{70}i}{35}$	0	0	0	0	$-\frac{\sqrt{70}}{35}$	0	0	$\frac{\sqrt{210}i}{210}$
		$-\frac{\sqrt{70}i}{35}$	0	0	0	0	0	0	$\frac{\sqrt{70}}{35}$	$-\frac{\sqrt{210}i}{210}$	0
		0	0	0	$\frac{\sqrt{70}i}{35}$	$\frac{\sqrt{70}}{35}$	0	0	0	0	$\frac{\sqrt{210}}{210}$
		0	0	$-\frac{\sqrt{70}i}{35}$	0	0	$-\frac{\sqrt{70}}{35}$	0	0	$\frac{\sqrt{210}}{210}$	0
		0	0	$\frac{\sqrt{70}}{35}$	0	0	$-\frac{3\sqrt{70}i}{140}$	0	$-\frac{\sqrt{70}}{140}$	0	0
		0	0	0	$-\frac{\sqrt{70}}{35}$	$\frac{3\sqrt{70}i}{140}$	0	$-\frac{\sqrt{70}}{140}$	0	0	0
		$-\frac{\sqrt{70}}{35}$	0	0	0	0	$-\frac{\sqrt{70}}{140}$	0	$-\frac{\sqrt{70}i}{140}$	$\frac{\sqrt{210}}{105}$	0
		0	$\frac{\sqrt{70}}{35}$	0	0	$-\frac{\sqrt{70}}{140}$	0	$\frac{\sqrt{70}i}{140}$	0	0	$-\frac{\sqrt{210}}{105}$
		0	$\frac{\sqrt{210}i}{210}$	0	$\frac{\sqrt{210}}{210}$	0	0	$\frac{\sqrt{210}}{105}$	0	0	$-\frac{\sqrt{70}i}{35}$
		$-\frac{\sqrt{210}i}{210}$	0	$\frac{\sqrt{210}}{210}$	0	0	0	0	$-\frac{\sqrt{210}}{105}$	$\frac{\sqrt{70}i}{35}$	0
526	symmetry	$\sqrt{15xyz}$									

continued ...

Table 8

No.	multipole	matrix									
	$M_{3,1}^{(1,-1;a)}(E_g, 2)$	0	0	0	0	0	$-\frac{\sqrt{7}i}{14}$	0	$-\frac{\sqrt{7}}{14}$	0	0
		0	0	0	0	$\frac{\sqrt{7}i}{14}$	0	$-\frac{\sqrt{7}}{14}$	0	0	0
		0	0	0	0	0	$\frac{\sqrt{7}}{14}$	0	$-\frac{\sqrt{7}i}{14}$	$-\frac{\sqrt{21}}{21}$	0
		0	0	0	0	$\frac{\sqrt{7}}{14}$	0	$\frac{\sqrt{7}i}{14}$	0	0	$\frac{\sqrt{21}}{21}$
		0	$-\frac{\sqrt{7}i}{14}$	0	$\frac{\sqrt{7}}{14}$	0	0	$\frac{\sqrt{7}}{14}$	0	0	$-\frac{\sqrt{21}i}{42}$
		$\frac{\sqrt{7}i}{14}$	0	$\frac{\sqrt{7}}{14}$	0	0	0	0	$-\frac{\sqrt{7}}{14}$	$\frac{\sqrt{21}i}{42}$	0
		0	$-\frac{\sqrt{7}}{14}$	0	$-\frac{\sqrt{7}i}{14}$	$\frac{\sqrt{7}}{14}$	0	0	0	0	$\frac{\sqrt{21}}{42}$
		$-\frac{\sqrt{7}}{14}$	0	$\frac{\sqrt{7}i}{14}$	0	0	$-\frac{\sqrt{7}}{14}$	0	0	$\frac{\sqrt{21}}{42}$	0
		0	0	$-\frac{\sqrt{21}}{21}$	0	0	$-\frac{\sqrt{21}i}{42}$	0	$\frac{\sqrt{21}}{42}$	0	0
		0	0	0	$\frac{\sqrt{21}}{21}$	$\frac{\sqrt{21}i}{42}$	0	$\frac{\sqrt{21}}{42}$	0	0	0
527	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$									
	$M_{3,2}^{(1,-1;a)}(E_g, 2)$	0	0	0	0	0	$\frac{\sqrt{7}}{14}$	0	$-\frac{\sqrt{7}i}{14}$	$-\frac{\sqrt{21}}{21}$	0
		0	0	0	0	$\frac{\sqrt{7}}{14}$	0	$\frac{\sqrt{7}i}{14}$	0	0	$\frac{\sqrt{21}}{21}$
		0	0	0	0	0	$\frac{\sqrt{7}i}{14}$	0	$\frac{\sqrt{7}}{14}$	0	0
		0	0	0	0	$-\frac{\sqrt{7}i}{14}$	0	$\frac{\sqrt{7}}{14}$	0	0	0
		0	$\frac{\sqrt{7}}{14}$	0	$\frac{\sqrt{7}i}{14}$	$\frac{\sqrt{7}}{14}$	0	0	0	0	$\frac{\sqrt{21}}{42}$
		$\frac{\sqrt{7}}{14}$	0	$-\frac{\sqrt{7}i}{14}$	0	0	$-\frac{\sqrt{7}}{14}$	0	0	$\frac{\sqrt{21}}{42}$	0
		0	$-\frac{\sqrt{7}i}{14}$	0	$\frac{\sqrt{7}}{14}$	0	0	$-\frac{\sqrt{7}}{14}$	0	0	$\frac{\sqrt{21}i}{42}$
		$\frac{\sqrt{7}i}{14}$	0	$\frac{\sqrt{7}}{14}$	0	0	0	0	$\frac{\sqrt{7}}{14}$	$-\frac{\sqrt{21}i}{42}$	0
		$-\frac{\sqrt{21}}{21}$	0	0	0	0	$\frac{\sqrt{21}}{42}$	0	$\frac{\sqrt{21}i}{42}$	0	0
		0	$\frac{\sqrt{21}}{21}$	0	0	$\frac{\sqrt{21}}{42}$	0	$-\frac{\sqrt{21}i}{42}$	0	0	0
528	symmetry	$-\frac{\sqrt{70}x(x^2-3y^2)(x^2+y^2-8z^2)}{16}$									

continued ...

Table 8

No.	multipole	matrix
	$M_5^{(1,-1;a)}(A_{1g})$	$\begin{bmatrix} 0 & -\frac{\sqrt{10}}{60} & 0 & \frac{\sqrt{10}i}{60} & \frac{\sqrt{10}}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{30} \\ -\frac{\sqrt{10}}{60} & 0 & -\frac{\sqrt{10}i}{60} & 0 & 0 & -\frac{\sqrt{10}}{15} & 0 & 0 & \frac{\sqrt{30}}{30} & 0 \\ 0 & \frac{\sqrt{10}i}{60} & 0 & \frac{\sqrt{10}}{60} & 0 & 0 & -\frac{\sqrt{10}}{15} & 0 & 0 & \frac{\sqrt{30}i}{30} \\ -\frac{\sqrt{10}i}{60} & 0 & \frac{\sqrt{10}}{60} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{15} & -\frac{\sqrt{30}i}{30} & 0 \\ \frac{\sqrt{10}}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{15} & 0 & \frac{\sqrt{10}i}{15} & 0 & 0 \\ 0 & -\frac{\sqrt{10}}{15} & 0 & 0 & \frac{\sqrt{10}}{15} & 0 & -\frac{\sqrt{10}i}{15} & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{10}}{15} & 0 & 0 & \frac{\sqrt{10}i}{15} & 0 & -\frac{\sqrt{10}}{15} & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{10}}{15} & -\frac{\sqrt{10}i}{15} & 0 & -\frac{\sqrt{10}}{15} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{30}}{30} & 0 & \frac{\sqrt{30}i}{30} & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{30}}{30} & 0 & -\frac{\sqrt{30}i}{30} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
529	symmetry	$\frac{z(15x^4+30x^2y^2-40x^2z^2+15y^4-40y^2z^2+8z^4)}{8}$ $\begin{bmatrix} \frac{\sqrt{7}}{42} & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{42} & 0 & \frac{\sqrt{7}i}{42} & 0 & 0 \\ 0 & -\frac{\sqrt{7}}{42} & 0 & 0 & \frac{\sqrt{7}}{42} & 0 & -\frac{\sqrt{7}i}{42} & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{7}}{42} & 0 & 0 & -\frac{\sqrt{7}i}{42} & 0 & \frac{\sqrt{7}}{42} & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{7}}{42} & \frac{\sqrt{7}i}{42} & 0 & \frac{\sqrt{7}}{42} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{7}}{42} & 0 & -\frac{\sqrt{7}i}{42} & -\frac{2\sqrt{7}}{21} & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}}{21} \\ \frac{\sqrt{7}}{42} & 0 & \frac{\sqrt{7}i}{42} & 0 & 0 & \frac{2\sqrt{7}}{21} & 0 & 0 & -\frac{\sqrt{21}}{21} & 0 \\ 0 & \frac{\sqrt{7}i}{42} & 0 & \frac{\sqrt{7}}{42} & 0 & 0 & -\frac{2\sqrt{7}}{21} & 0 & 0 & \frac{\sqrt{21}i}{21} \\ -\frac{\sqrt{7}i}{42} & 0 & \frac{\sqrt{7}}{42} & 0 & 0 & 0 & 0 & \frac{2\sqrt{7}}{21} & -\frac{\sqrt{21}i}{21} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}}{21} & 0 & \frac{\sqrt{21}i}{21} & \frac{\sqrt{7}}{7} & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{21}}{21} & 0 & -\frac{\sqrt{21}i}{21} & 0 & 0 & -\frac{\sqrt{7}}{7} \end{bmatrix}$
530	symmetry	$-\frac{\sqrt{70}y(3x^2-y^2)(x^2+y^2-8z^2)}{16}$

continued ...

Table 8

No.	multipole	matrix
	$M_5^{(1,-1;a)}(A_{2g}, 2)$	$ \begin{bmatrix} 0 & -\frac{\sqrt{10}i}{60} & 0 & -\frac{\sqrt{10}}{60} & 0 & 0 & \frac{\sqrt{10}}{15} & 0 & 0 & -\frac{\sqrt{30}i}{30} \\ \frac{\sqrt{10}i}{60} & 0 & -\frac{\sqrt{10}}{60} & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}}{15} & \frac{\sqrt{30}i}{30} & 0 \\ 0 & -\frac{\sqrt{10}}{60} & 0 & \frac{\sqrt{10}i}{60} & \frac{\sqrt{10}}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{30} \\ -\frac{\sqrt{10}}{60} & 0 & -\frac{\sqrt{10}i}{60} & 0 & 0 & -\frac{\sqrt{10}}{15} & 0 & 0 & \frac{\sqrt{30}}{30} & 0 \\ 0 & 0 & \frac{\sqrt{10}}{15} & 0 & 0 & -\frac{\sqrt{10}i}{15} & 0 & \frac{\sqrt{10}}{15} & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{10}}{15} & \frac{\sqrt{10}i}{15} & 0 & \frac{\sqrt{10}}{15} & 0 & 0 & 0 \\ \frac{\sqrt{10}}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{15} & 0 & \frac{\sqrt{10}i}{15} & 0 & 0 \\ 0 & -\frac{\sqrt{10}}{15} & 0 & 0 & \frac{\sqrt{10}}{15} & 0 & -\frac{\sqrt{10}i}{15} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{30}i}{30} & 0 & \frac{\sqrt{30}}{30} & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{30}i}{30} & 0 & \frac{\sqrt{30}}{30} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} $
531	symmetry	$ \frac{3\sqrt{14}x(x^4-10x^2y^2+5y^4)}{16} $ $ \begin{bmatrix} 0 & \frac{\sqrt{2}}{4} & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{2}}{4} & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{2}i}{4} & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{2}i}{4} & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} $
532	symmetry	$ -\frac{3\sqrt{14}y(5x^4-10x^2y^2+y^4)}{16} $

continued ...

Table 8

No.	multipole	matrix
	$M_{5,2}^{(1,-1;a)}(E_g, 1)$	$\begin{bmatrix} 0 & \frac{\sqrt{2}i}{4} & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{2}i}{4} & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{2}}{4} & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{2}}{4} & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
533	symmetry	$\frac{\sqrt{15x(x^4+2x^2y^2-12x^2z^2+y^4-12y^2z^2+8z^4)}}{8}$ $\begin{bmatrix} 0 & \frac{\sqrt{105}}{210} & 0 & 0 & -\frac{\sqrt{105}}{105} & 0 & 0 & 0 & 0 & -\frac{\sqrt{35}}{70} \\ \frac{\sqrt{105}}{210} & 0 & 0 & 0 & 0 & \frac{\sqrt{105}}{105} & 0 & 0 & -\frac{\sqrt{35}}{70} & 0 \\ 0 & 0 & 0 & \frac{\sqrt{105}}{210} & 0 & 0 & -\frac{\sqrt{105}}{105} & 0 & 0 & \frac{\sqrt{35}i}{70} \\ 0 & 0 & \frac{\sqrt{105}}{210} & 0 & 0 & 0 & 0 & \frac{\sqrt{105}}{105} & -\frac{\sqrt{35}i}{70} & 0 \\ -\frac{\sqrt{105}}{105} & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}}{35} & 0 & \frac{\sqrt{105}i}{105} & \frac{2\sqrt{35}}{35} & 0 \\ 0 & \frac{\sqrt{105}}{105} & 0 & 0 & -\frac{\sqrt{105}}{35} & 0 & -\frac{\sqrt{105}i}{105} & 0 & 0 & -\frac{2\sqrt{35}}{35} \\ 0 & 0 & -\frac{\sqrt{105}}{105} & 0 & 0 & \frac{\sqrt{105}i}{105} & 0 & -\frac{\sqrt{105}}{105} & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{105}}{105} & -\frac{\sqrt{105}i}{105} & 0 & -\frac{\sqrt{105}}{105} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{35}}{70} & 0 & \frac{\sqrt{35}i}{70} & \frac{2\sqrt{35}}{35} & 0 & 0 & 0 & 0 & \frac{\sqrt{105}}{35} \\ -\frac{\sqrt{35}}{70} & 0 & -\frac{\sqrt{35}i}{70} & 0 & 0 & -\frac{2\sqrt{35}}{35} & 0 & 0 & \frac{\sqrt{105}}{35} & 0 \end{bmatrix}$
534	symmetry	$\frac{\sqrt{15y(x^4+2x^2y^2-12x^2z^2+y^4-12y^2z^2+8z^4)}}{8}$

continued ...

Table 8

No.	multipole	matrix									
	$M_{5,2}^{(1,-1;a)}(E_g, 2)$	0	$-\frac{\sqrt{105}i}{210}$	0	0	0	0	$\frac{\sqrt{105}}{105}$	0	0	$-\frac{\sqrt{35}i}{70}$
		$\frac{\sqrt{105}i}{210}$	0	0	0	0	0	0	$-\frac{\sqrt{105}}{105}$	$\frac{\sqrt{35}i}{70}$	0
		0	0	0	$-\frac{\sqrt{105}i}{210}$	$-\frac{\sqrt{105}}{105}$	0	0	0	0	$-\frac{\sqrt{35}}{70}$
		0	0	$\frac{\sqrt{105}i}{210}$	0	0	$\frac{\sqrt{105}}{105}$	0	0	$-\frac{\sqrt{35}}{70}$	0
		0	0	$-\frac{\sqrt{105}}{105}$	0	0	$\frac{\sqrt{105}i}{105}$	0	$-\frac{\sqrt{105}}{105}$	0	0
		0	0	0	$\frac{\sqrt{105}}{105}$	$-\frac{\sqrt{105}i}{105}$	0	$-\frac{\sqrt{105}}{105}$	0	0	0
		$\frac{\sqrt{105}}{105}$	0	0	0	0	$-\frac{\sqrt{105}}{105}$	0	$\frac{\sqrt{105}i}{35}$	$\frac{2\sqrt{35}}{35}$	0
		0	$-\frac{\sqrt{105}}{105}$	0	0	$-\frac{\sqrt{105}}{105}$	0	$-\frac{\sqrt{105}i}{35}$	0	0	$-\frac{2\sqrt{35}}{35}$
		0	$-\frac{\sqrt{35}i}{70}$	0	$-\frac{\sqrt{35}}{70}$	0	0	$\frac{2\sqrt{35}}{35}$	0	0	$-\frac{\sqrt{105}i}{35}$
		$\frac{\sqrt{35}i}{70}$	0	$-\frac{\sqrt{35}}{70}$	0	0	0	0	$-\frac{2\sqrt{35}}{35}$	$\frac{\sqrt{105}i}{35}$	0
535	symmetry	$-\frac{3\sqrt{35}xyz(x-y)(x+y)}{2}$									
	$M_{5,1}^{(1,-1;a)}(E_g, 3)$	0	0	$-\frac{\sqrt{5}}{10}$	0	0	$\frac{\sqrt{5}i}{10}$	0	$-\frac{\sqrt{5}}{10}$	0	0
		0	0	0	$\frac{\sqrt{5}}{10}$	$-\frac{\sqrt{5}i}{10}$	0	$-\frac{\sqrt{5}}{10}$	0	0	0
		$-\frac{\sqrt{5}}{10}$	0	0	0	0	$-\frac{\sqrt{5}}{10}$	0	$-\frac{\sqrt{5}i}{10}$	0	0
		0	$\frac{\sqrt{5}}{10}$	0	0	$-\frac{\sqrt{5}}{10}$	0	$\frac{\sqrt{5}i}{10}$	0	0	0
		0	$\frac{\sqrt{5}i}{10}$	0	$-\frac{\sqrt{5}}{10}$	0	0	0	0	0	0
		$-\frac{\sqrt{5}i}{10}$	0	$-\frac{\sqrt{5}}{10}$	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{5}}{10}$	0	$-\frac{\sqrt{5}i}{10}$	0	0	0	0	0	0
		$-\frac{\sqrt{5}}{10}$	0	$\frac{\sqrt{5}i}{10}$	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0
536	symmetry	$\frac{3\sqrt{35}z(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$									

continued ...

Table 8

No.	multipole	matrix
	$M_{5,2}^{(1,-1;a)}(E_g, 3)$	$\begin{bmatrix} \frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{5}}{10} & 0 & \frac{\sqrt{5}i}{10} & 0 & 0 \\ 0 & -\frac{\sqrt{5}}{10} & 0 & 0 & \frac{\sqrt{5}}{10} & 0 & -\frac{\sqrt{5}i}{10} & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{5}}{10} & 0 & 0 & \frac{\sqrt{5}i}{10} & 0 & -\frac{\sqrt{5}}{10} & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{5}}{10} & -\frac{\sqrt{5}i}{10} & 0 & -\frac{\sqrt{5}}{10} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{5}}{10} & 0 & \frac{\sqrt{5}i}{10} & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{5}}{10} & 0 & -\frac{\sqrt{5}i}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{5}i}{10} & 0 & -\frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{5}i}{10} & 0 & -\frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
537	symmetry	$-\frac{\sqrt{105}xyz(x^2+y^2-2z^2)}{2}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{30} & 0 & \frac{\sqrt{15}i}{30} & \frac{\sqrt{5}}{10} & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{30} & 0 & -\frac{\sqrt{15}i}{30} & 0 & 0 & -\frac{\sqrt{5}}{10} \\ 0 & 0 & 0 & -\frac{\sqrt{15}}{30} & 0 & 0 & \frac{\sqrt{15}}{15} & 0 & 0 & -\frac{\sqrt{5}i}{10} \\ 0 & 0 & -\frac{\sqrt{15}}{30} & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{15} & \frac{\sqrt{5}i}{10} & 0 \\ 0 & 0 & 0 & \frac{\sqrt{15}i}{30} & \frac{\sqrt{15}}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{5}}{10} \\ 0 & 0 & -\frac{\sqrt{15}i}{30} & 0 & 0 & -\frac{\sqrt{15}}{15} & 0 & 0 & \frac{\sqrt{5}}{10} & 0 \\ 0 & 0 & \frac{\sqrt{5}}{10} & 0 & 0 & -\frac{\sqrt{5}i}{10} & 0 & \frac{\sqrt{5}}{10} & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{5}}{10} & \frac{\sqrt{5}i}{10} & 0 & \frac{\sqrt{5}}{10} & 0 & 0 & 0 \end{bmatrix}$
538	symmetry	$-\frac{\sqrt{105}z(x-y)(x+y)(x^2+y^2-2z^2)}{4}$

continued ...

Table 8

No.	multipole	matrix									
	$M_{5,2}^{(1,-1;a)}(E_g, 4)$	0	0	0	0	0	$-\frac{\sqrt{15}}{30}$	0	$\frac{\sqrt{15}i}{30}$	$\frac{\sqrt{5}}{10}$	0
		0	0	0	0	$-\frac{\sqrt{15}}{30}$	0	$-\frac{\sqrt{15}i}{30}$	0	0	$-\frac{\sqrt{5}}{10}$
		0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{15}}{30}$	0	0	$\frac{\sqrt{15}}{15}$	0	0	0	0	$\frac{\sqrt{5}}{10}$
		$-\frac{\sqrt{15}}{30}$	0	0	0	0	$-\frac{\sqrt{15}}{15}$	0	0	$\frac{\sqrt{5}}{10}$	0
		0	$\frac{\sqrt{15}i}{30}$	0	0	0	0	$-\frac{\sqrt{15}}{15}$	0	0	$\frac{\sqrt{5}i}{10}$
		$-\frac{\sqrt{15}i}{30}$	0	0	0	0	0	0	$\frac{\sqrt{15}}{15}$	$-\frac{\sqrt{5}i}{10}$	0
		$\frac{\sqrt{5}}{10}$	0	0	0	0	$\frac{\sqrt{5}}{10}$	0	$\frac{\sqrt{5}i}{10}$	0	0
		0	$-\frac{\sqrt{5}}{10}$	0	0	$\frac{\sqrt{5}}{10}$	0	$-\frac{\sqrt{5}i}{10}$	0	0	0
539	symmetry	z									
	$M_1^{(1,1;a)}(A_{2g})$	$-\frac{\sqrt{70}}{35}$	0	0	0	0	$\frac{3\sqrt{70}}{140}$	0	$\frac{3\sqrt{70}i}{140}$	0	0
		0	$\frac{\sqrt{70}}{35}$	0	0	$\frac{3\sqrt{70}}{140}$	0	$-\frac{3\sqrt{70}i}{140}$	0	0	0
		0	0	$-\frac{\sqrt{70}}{35}$	0	0	$-\frac{3\sqrt{70}i}{140}$	0	$\frac{3\sqrt{70}}{140}$	0	0
		0	0	0	$\frac{\sqrt{70}}{35}$	$\frac{3\sqrt{70}i}{140}$	0	$\frac{3\sqrt{70}}{140}$	0	0	0
		0	$\frac{3\sqrt{70}}{140}$	0	$-\frac{3\sqrt{70}i}{140}$	$\frac{\sqrt{70}}{70}$	0	0	0	0	$\frac{\sqrt{210}}{140}$
		$\frac{3\sqrt{70}}{140}$	0	$\frac{3\sqrt{70}i}{140}$	0	0	$-\frac{\sqrt{70}}{70}$	0	0	$\frac{\sqrt{210}}{140}$	0
		0	$\frac{3\sqrt{70}i}{140}$	0	$\frac{3\sqrt{70}}{140}$	0	0	$\frac{\sqrt{70}}{70}$	0	0	$-\frac{\sqrt{210}i}{140}$
		$-\frac{3\sqrt{70}i}{140}$	0	$\frac{3\sqrt{70}}{140}$	0	0	0	0	$-\frac{\sqrt{70}}{70}$	$\frac{\sqrt{210}i}{140}$	0
		0	0	0	0	0	$\frac{\sqrt{210}}{140}$	0	$-\frac{\sqrt{210}i}{140}$	$\frac{\sqrt{70}}{35}$	0
		0	0	0	0	$\frac{\sqrt{210}}{140}$	0	$\frac{\sqrt{210}i}{140}$	0	0	$-\frac{\sqrt{70}}{35}$
540	symmetry	x									

continued ...

Table 8

No.	multipole	matrix									
	$M_{1,1}^{(1,1;a)}(E_g)$	0	$\frac{\sqrt{70}}{70}$	0	0	$\frac{3\sqrt{70}}{140}$	0	0	0	0	$-\frac{\sqrt{210}}{70}$
		$\frac{\sqrt{70}}{70}$	0	0	0	0	$-\frac{3\sqrt{70}}{140}$	0	0	$-\frac{\sqrt{210}}{70}$	0
		0	0	0	$\frac{\sqrt{70}}{70}$	0	0	$\frac{3\sqrt{70}}{140}$	0	0	$\frac{\sqrt{210}i}{70}$
		0	0	$\frac{\sqrt{70}}{70}$	0	0	0	0	$-\frac{3\sqrt{70}}{140}$	$-\frac{\sqrt{210}i}{70}$	0
		$\frac{3\sqrt{70}}{140}$	0	0	0	0	$\frac{\sqrt{70}}{70}$	0	$-\frac{3\sqrt{70}i}{140}$	$\frac{\sqrt{210}}{140}$	0
		0	$-\frac{3\sqrt{70}}{140}$	0	0	$\frac{\sqrt{70}}{70}$	0	$\frac{3\sqrt{70}i}{140}$	0	0	$-\frac{\sqrt{210}}{140}$
		0	0	$\frac{3\sqrt{70}}{140}$	0	0	$-\frac{3\sqrt{70}i}{140}$	0	$-\frac{\sqrt{70}}{35}$	0	0
		0	0	0	$-\frac{3\sqrt{70}}{140}$	$\frac{3\sqrt{70}i}{140}$	0	$-\frac{\sqrt{70}}{35}$	0	0	0
		0	$-\frac{\sqrt{210}}{70}$	0	$\frac{\sqrt{210}i}{70}$	$\frac{\sqrt{210}}{140}$	0	0	0	0	$-\frac{\sqrt{70}}{70}$
		$-\frac{\sqrt{210}}{70}$	0	$-\frac{\sqrt{210}i}{70}$	0	0	$-\frac{\sqrt{210}}{140}$	0	0	$-\frac{\sqrt{70}}{70}$	0
541	symmetry	y									
	$M_{1,2}^{(1,1;a)}(E_g)$	0	$-\frac{\sqrt{70}i}{70}$	0	0	0	0	$-\frac{3\sqrt{70}}{140}$	0	0	$-\frac{\sqrt{210}i}{70}$
		$\frac{\sqrt{70}i}{70}$	0	0	0	0	0	0	$\frac{3\sqrt{70}}{140}$	$\frac{\sqrt{210}i}{70}$	0
		0	0	0	$-\frac{\sqrt{70}i}{70}$	$\frac{3\sqrt{70}}{140}$	0	0	0	0	$-\frac{\sqrt{210}}{70}$
		0	0	$\frac{\sqrt{70}i}{70}$	0	0	$-\frac{3\sqrt{70}}{140}$	0	0	$-\frac{\sqrt{210}}{70}$	0
		0	0	$\frac{3\sqrt{70}}{140}$	0	0	$\frac{\sqrt{70}i}{35}$	0	$\frac{3\sqrt{70}}{140}$	0	0
		0	0	0	$-\frac{3\sqrt{70}}{140}$	$-\frac{\sqrt{70}i}{35}$	0	$\frac{3\sqrt{70}}{140}$	0	0	0
		$-\frac{3\sqrt{70}}{140}$	0	0	0	0	$\frac{3\sqrt{70}}{140}$	0	$-\frac{\sqrt{70}i}{70}$	$\frac{\sqrt{210}}{140}$	0
		0	$\frac{3\sqrt{70}}{140}$	0	0	$\frac{3\sqrt{70}}{140}$	0	$\frac{\sqrt{70}i}{70}$	0	0	$-\frac{\sqrt{210}}{140}$
		0	$-\frac{\sqrt{210}i}{70}$	0	$-\frac{\sqrt{210}}{70}$	0	0	$\frac{\sqrt{210}}{140}$	0	0	$\frac{\sqrt{70}i}{70}$
		$\frac{\sqrt{210}i}{70}$	0	$-\frac{\sqrt{210}}{70}$	0	0	0	0	$-\frac{\sqrt{210}}{140}$	$-\frac{\sqrt{70}i}{70}$	0
542	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$									

continued ...

Table 8

No.	multipole	matrix									
	$\mathbb{M}_3^{(1,1;a)}(A_{1g})$	0	$\frac{\sqrt{14}}{12}$	0	$-\frac{\sqrt{14}i}{12}$	$\frac{\sqrt{14}}{24}$	0	0	0	0	$-\frac{\sqrt{42}}{168}$
		$\frac{\sqrt{14}}{12}$	0	$\frac{\sqrt{14}i}{12}$	0	0	$-\frac{\sqrt{14}}{24}$	0	0	$-\frac{\sqrt{42}}{168}$	0
		0	$-\frac{\sqrt{14}i}{12}$	0	$-\frac{\sqrt{14}}{12}$	0	0	$-\frac{\sqrt{14}}{24}$	0	0	$-\frac{\sqrt{42}i}{168}$
		$\frac{\sqrt{14}i}{12}$	0	$-\frac{\sqrt{14}}{12}$	0	0	0	0	$\frac{\sqrt{14}}{24}$	$\frac{\sqrt{42}i}{168}$	0
		$\frac{\sqrt{14}}{24}$	0	0	0	0	$-\frac{\sqrt{14}}{84}$	0	$-\frac{\sqrt{14}i}{84}$	0	0
		0	$-\frac{\sqrt{14}}{24}$	0	0	$-\frac{\sqrt{14}}{84}$	0	$\frac{\sqrt{14}i}{84}$	0	0	0
		0	0	$-\frac{\sqrt{14}}{24}$	0	0	$-\frac{\sqrt{14}i}{84}$	0	$\frac{\sqrt{14}}{84}$	0	0
		0	0	0	$\frac{\sqrt{14}}{24}$	$\frac{\sqrt{14}i}{84}$	0	$\frac{\sqrt{14}}{84}$	0	0	0
		0	$-\frac{\sqrt{42}}{168}$	0	$-\frac{\sqrt{42}i}{168}$	0	0	0	0	0	0
		$-\frac{\sqrt{42}}{168}$	0	$\frac{\sqrt{42}i}{168}$	0	0	0	0	0	0	0
543	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$									
	$\mathbb{M}_3^{(1,1;a)}(A_{2g}, 1)$	$\frac{\sqrt{35}}{105}$	0	0	0	0	$-\frac{\sqrt{35}}{84}$	0	$-\frac{\sqrt{35}i}{84}$	0	0
		0	$-\frac{\sqrt{35}}{105}$	0	0	$-\frac{\sqrt{35}}{84}$	0	$\frac{\sqrt{35}i}{84}$	0	0	0
		0	0	$\frac{\sqrt{35}}{105}$	0	0	$\frac{\sqrt{35}i}{84}$	0	$-\frac{\sqrt{35}}{84}$	0	0
		0	0	0	$-\frac{\sqrt{35}}{105}$	$-\frac{\sqrt{35}i}{84}$	0	$-\frac{\sqrt{35}}{84}$	0	0	0
		0	$-\frac{\sqrt{35}}{84}$	0	$\frac{\sqrt{35}i}{84}$	$-\frac{4\sqrt{35}}{105}$	0	0	0	0	$\frac{\sqrt{105}}{42}$
		$-\frac{\sqrt{35}}{84}$	0	$-\frac{\sqrt{35}i}{84}$	0	0	$\frac{4\sqrt{35}}{105}$	0	0	$\frac{\sqrt{105}}{42}$	0
		0	$-\frac{\sqrt{35}i}{84}$	0	$-\frac{\sqrt{35}}{84}$	0	0	$-\frac{4\sqrt{35}}{105}$	0	0	$-\frac{\sqrt{105}i}{42}$
		$\frac{\sqrt{35}i}{84}$	0	$-\frac{\sqrt{35}}{84}$	0	0	0	0	$\frac{4\sqrt{35}}{105}$	$\frac{\sqrt{105}i}{42}$	0
		0	0	0	0	0	$\frac{\sqrt{105}}{42}$	0	$-\frac{\sqrt{105}i}{42}$	$\frac{2\sqrt{35}}{35}$	0
		0	0	0	0	$\frac{\sqrt{105}}{42}$	0	$\frac{\sqrt{105}i}{42}$	0	0	$-\frac{2\sqrt{35}}{35}$
544	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$									

continued ...

Table 8

No.	multipole	matrix									
	$M_3^{(1,1;a)}(A_{2g}, 2)$	0	$\frac{\sqrt{14}i}{12}$	0	$\frac{\sqrt{14}}{12}$	0	0	$\frac{\sqrt{14}}{24}$	0	0	$\frac{\sqrt{42}i}{168}$
		$-\frac{\sqrt{14}i}{12}$	0	$\frac{\sqrt{14}}{12}$	0	0	0	0	$-\frac{\sqrt{14}}{24}$	$-\frac{\sqrt{42}i}{168}$	0
		0	$\frac{\sqrt{14}}{12}$	0	$-\frac{\sqrt{14}i}{12}$	$\frac{\sqrt{14}}{24}$	0	0	0	0	$-\frac{\sqrt{42}}{168}$
		$\frac{\sqrt{14}}{12}$	0	$\frac{\sqrt{14}i}{12}$	0	0	$-\frac{\sqrt{14}}{24}$	0	0	$-\frac{\sqrt{42}}{168}$	0
		0	0	$\frac{\sqrt{14}}{24}$	0	0	$\frac{\sqrt{14}i}{84}$	0	$-\frac{\sqrt{14}}{84}$	0	0
		0	0	0	$-\frac{\sqrt{14}}{24}$	$-\frac{\sqrt{14}i}{84}$	0	$-\frac{\sqrt{14}}{84}$	0	0	0
		$\frac{\sqrt{14}}{24}$	0	0	0	0	$-\frac{\sqrt{14}}{84}$	0	$-\frac{\sqrt{14}i}{84}$	0	0
		0	$-\frac{\sqrt{14}}{24}$	0	0	$-\frac{\sqrt{14}}{84}$	0	$\frac{\sqrt{14}i}{84}$	0	0	0
		0	$\frac{\sqrt{42}i}{168}$	0	$-\frac{\sqrt{42}}{168}$	0	0	0	0	0	0
		$-\frac{\sqrt{42}i}{168}$	0	$-\frac{\sqrt{42}}{168}$	0	0	0	0	0	0	0
545	symmetry	$-\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$									
	$M_{3,1}^{(1,1;a)}(E_g, 1)$	0	$-\frac{\sqrt{210}}{420}$	0	0	$-\frac{\sqrt{210}}{168}$	0	0	0	0	$\frac{\sqrt{70}}{56}$
		$-\frac{\sqrt{210}}{420}$	0	0	0	0	$\frac{\sqrt{210}}{168}$	0	0	$\frac{\sqrt{70}}{56}$	0
		0	0	0	$-\frac{\sqrt{210}}{420}$	0	0	$-\frac{\sqrt{210}}{168}$	0	0	$-\frac{\sqrt{70}i}{56}$
		0	0	$-\frac{\sqrt{210}}{420}$	0	0	0	0	$\frac{\sqrt{210}}{168}$	$\frac{\sqrt{70}i}{56}$	0
		$-\frac{\sqrt{210}}{168}$	0	0	0	0	$\frac{3\sqrt{210}}{140}$	0	$-\frac{\sqrt{210}i}{84}$	$\frac{\sqrt{70}}{28}$	0
		0	$\frac{\sqrt{210}}{168}$	0	0	$\frac{3\sqrt{210}}{140}$	0	$\frac{\sqrt{210}i}{84}$	0	0	$-\frac{\sqrt{70}}{28}$
		0	0	$-\frac{\sqrt{210}}{168}$	0	0	$-\frac{\sqrt{210}i}{84}$	0	$-\frac{\sqrt{210}}{420}$	0	0
		0	0	0	$\frac{\sqrt{210}}{168}$	$\frac{\sqrt{210}i}{84}$	0	$-\frac{\sqrt{210}}{420}$	0	0	0
		0	$\frac{\sqrt{70}}{56}$	0	$-\frac{\sqrt{70}i}{56}$	$\frac{\sqrt{70}}{28}$	0	0	0	0	$-\frac{\sqrt{210}}{70}$
		$\frac{\sqrt{70}}{56}$	0	$\frac{\sqrt{70}i}{56}$	0	0	$-\frac{\sqrt{70}}{28}$	0	0	$-\frac{\sqrt{210}}{70}$	0
546	symmetry	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$									

continued ...

Table 8

No.	multipole	matrix									
	$M_{3,2}^{(1,1;a)}(E_g, 1)$	0	$\frac{\sqrt{210}i}{420}$	0	0	0	0	$\frac{\sqrt{210}}{168}$	0	0	$\frac{\sqrt{70}i}{56}$
		$-\frac{\sqrt{210}i}{420}$	0	0	0	0	0	0	$-\frac{\sqrt{210}}{168}$	$-\frac{\sqrt{70}i}{56}$	0
		0	0	0	$\frac{\sqrt{210}i}{420}$	$-\frac{\sqrt{210}}{168}$	0	0	0	0	$\frac{\sqrt{70}}{56}$
		0	0	$-\frac{\sqrt{210}i}{420}$	0	0	$\frac{\sqrt{210}}{168}$	0	0	$\frac{\sqrt{70}}{56}$	0
		0	0	$-\frac{\sqrt{210}}{168}$	0	0	$\frac{\sqrt{210}i}{420}$	0	$\frac{\sqrt{210}}{84}$	0	0
		0	0	0	$\frac{\sqrt{210}}{168}$	$-\frac{\sqrt{210}i}{420}$	0	$\frac{\sqrt{210}}{84}$	0	0	0
		$\frac{\sqrt{210}}{168}$	0	0	0	0	$\frac{\sqrt{210}}{84}$	0	$-\frac{3\sqrt{210}i}{140}$	$\frac{\sqrt{70}}{28}$	0
		0	$-\frac{\sqrt{210}}{168}$	0	0	$\frac{\sqrt{210}}{84}$	0	$\frac{3\sqrt{210}i}{140}$	0	0	$-\frac{\sqrt{70}}{28}$
		0	$\frac{\sqrt{70}i}{56}$	0	$\frac{\sqrt{70}}{56}$	0	0	$\frac{\sqrt{70}}{28}$	0	0	$\frac{\sqrt{210}i}{70}$
		$-\frac{\sqrt{70}i}{56}$	0	$\frac{\sqrt{70}}{56}$	0	0	0	0	$-\frac{\sqrt{70}}{28}$	$-\frac{\sqrt{210}i}{70}$	0
547	symmetry	$\sqrt{15}xyz$									
	$M_{3,1}^{(1,1;a)}(E_g, 2)$	0	0	0	0	0	$\frac{\sqrt{21}i}{28}$	0	$\frac{\sqrt{21}}{28}$	0	0
		0	0	0	0	$-\frac{\sqrt{21}i}{28}$	0	$\frac{\sqrt{21}}{28}$	0	0	0
		0	0	0	0	0	$\frac{\sqrt{21}}{21}$	0	$-\frac{\sqrt{21}i}{21}$	$\frac{\sqrt{7}}{14}$	0
		0	0	0	0	$\frac{\sqrt{21}}{21}$	0	$\frac{\sqrt{21}i}{21}$	0	0	$-\frac{\sqrt{7}}{14}$
		0	$\frac{\sqrt{21}i}{28}$	0	$\frac{\sqrt{21}}{21}$	0	0	$\frac{\sqrt{21}}{21}$	0	0	$\frac{\sqrt{7}i}{28}$
		$-\frac{\sqrt{21}i}{28}$	0	$\frac{\sqrt{21}}{21}$	0	0	0	0	$-\frac{\sqrt{21}}{21}$	$-\frac{\sqrt{7}i}{28}$	0
		0	$\frac{\sqrt{21}}{28}$	0	$-\frac{\sqrt{21}i}{21}$	$\frac{\sqrt{21}}{21}$	0	0	0	0	$-\frac{\sqrt{7}}{28}$
		$\frac{\sqrt{21}}{28}$	0	$\frac{\sqrt{21}i}{21}$	0	0	$-\frac{\sqrt{21}}{21}$	0	0	$-\frac{\sqrt{7}}{28}$	0
		0	0	$\frac{\sqrt{7}}{14}$	0	0	$\frac{\sqrt{7}i}{28}$	0	$-\frac{\sqrt{7}}{28}$	0	0
		0	0	0	$-\frac{\sqrt{7}}{14}$	$-\frac{\sqrt{7}i}{28}$	0	$-\frac{\sqrt{7}}{28}$	0	0	0
548	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$									

continued ...

Table 9

No.	multipole	matrix
550	symmetry	x $\begin{bmatrix} \frac{\sqrt{42}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}}{140} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{42}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}}{140} & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{42}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}}{140} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{42}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}}{140} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{14} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}}{70} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{14} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}}{70} \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{14} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{14} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{210}}{70} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{210}}{70} & 0 & 0 & 0 & 0 \end{bmatrix}$
551	symmetry	y $\begin{bmatrix} 0 & 0 & \frac{\sqrt{42}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{70}}{140} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{42}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{70}}{140} & 0 & 0 \\ -\frac{\sqrt{42}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}}{140} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{42}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}}{140} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{14} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{14} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{7}}{14} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}}{70} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}}{14} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}}{70} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{210}}{70} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{210}}{70} & 0 & 0 \end{bmatrix}$
552	symmetry	$\frac{\sqrt{10x(x^2-3y^2)}}{4}$

continued ...

Table 9

No.	multipole	matrix
	$Q_3^{(a)}(A_{1u})$	$ \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{12} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{12} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{12} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{12} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{24} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{24} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{24} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{24} & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{15}}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{15}}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} $
553	symmetry	$ -\frac{z(3x^2+3y^2-2z^2)}{2} $ $ \begin{bmatrix} 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{60} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{60} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{60} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{60} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{15} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{15} \end{bmatrix} $
554	symmetry	$ \frac{\sqrt{10}y(3x^2-y^2)}{4} $

continued ...

Table 9

No.	multipole	matrix
	$\mathbb{Q}_3^{(a)}(A_{2u}, 2)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{12} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{12} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{12} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{12} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{24} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{24} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{24} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{24} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{15}}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{15}}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
555	symmetry	$-\frac{\sqrt{6x(x^2+y^2-4z^2)}}{4}$ $\begin{bmatrix} -\frac{\sqrt{3}}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{3}}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{3}}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{5}}{10} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{3}}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{5}}{10} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{60} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{60} \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{8} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{20} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{20} & 0 & 0 & 0 & 0 \end{bmatrix}$
556	symmetry	$-\frac{\sqrt{6y(x^2+y^2-4z^2)}}{4}$

continued ...

Table 9

No.	multipole	matrix
	$\mathbb{Q}_{3,2}^{(a)}(E_u, 1)$	$ \begin{bmatrix} 0 & 0 & -\frac{\sqrt{3}}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{10} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{3}}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{10} & 0 & 0 \\ \frac{\sqrt{3}}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{3}}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{8} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{60} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{60} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{20} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{20} & 0 & 0 \end{bmatrix} $
557	symmetry	$ \begin{array}{c} \sqrt{15}xyz \\ \left[\begin{array}{cccccccccccccccc} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{6} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{6} \\ 0 & 0 & \frac{\sqrt{30}}{24} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{8} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{30}}{24} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{8} & 0 & 0 \\ -\frac{\sqrt{30}}{24} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{8} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{30}}{24} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{8} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{array} \right] \end{array} $
558	symmetry	$ \frac{\sqrt{15}z(x-y)(x+y)}{2} $

continued ...

Table 9

No.	multipole	matrix
	$\mathbb{Q}_{3,2}^{(a)}(E_u, 2)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{6} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{6} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{30}}{24} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{8} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{30}}{24} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{8} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{30}}{24} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{8} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{30}}{24} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{8} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
559	symmetry	$-\frac{\sqrt{70x(x^2-3y^2)}(x^2+y^2-8z^2)}{16}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{12} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{12} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{12} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{12} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{15} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{15} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{15} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{15} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{30}}{30} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{30}}{30} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
560	symmetry	$\frac{z(15x^4+30x^2y^2-40x^2z^2+15y^4-40y^2z^2+8z^4)}{8}$

continued ...

Table 9

No.	multipole	matrix
	$\mathbb{Q}_5^{(a)}(A_{2u}, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & \frac{\sqrt{42}}{84} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}}{84} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}}{84} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}}{84} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}}{42} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}}{42} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}}{42} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}}{42} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{210}}{42} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{210}}{42} \end{bmatrix}$
561	symmetry	$-\frac{\sqrt{70y(3x^2-y^2)(x^2+y^2-8z^2)}}{16}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{12} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{12} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{12} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{12} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{15} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{15} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{15} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{15} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{30}}{30} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{30}}{30} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
562	symmetry	$\frac{3\sqrt{14x(x^4-10x^2y^2+5y^4)}}{16}$

continued ...

Table 9

No.	multipole	matrix
	$\mathbb{Q}_{5,1}^{(a)}(E_u, 1)$	$\begin{bmatrix} \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
563	symmetry	$-\frac{3\sqrt{14}y(5x^4-10x^2y^2+y^4)}{16}$ $\begin{bmatrix} 0 & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
564	symmetry	$\frac{\sqrt{15}x(x^4+2x^2y^2-12x^2z^2+y^4-12y^2z^2+8z^4)}{8}$

continued ...

Table 9

No.	multipole	matrix
	$\mathbb{Q}_{5,1}^{(a)}(E_u, 2)$	$\begin{bmatrix} \frac{\sqrt{105}}{420} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}}{28} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{105}}{420} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}}{28} & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{105}}{420} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}}{28} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{105}}{420} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}}{28} & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{70}}{70} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}}{21} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}}{70} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}}{21} \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}}{70} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}}{70} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{14} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{14} & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
565	symmetry	$\frac{\sqrt{15y(x^4+2x^2y^2-12x^2z^2+y^4-12y^2z^2+8z^4)}}{8}$ $\begin{bmatrix} 0 & 0 & \frac{\sqrt{105}}{420} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{28} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{105}}{420} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{28} & 0 & 0 \\ -\frac{\sqrt{105}}{420} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}}{28} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{105}}{420} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}}{28} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}}{70} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}}{70} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{70}}{70} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}}{21} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{70}}{70} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}}{21} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{14} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{14} & 0 & 0 \end{bmatrix}$
566	symmetry	$-\frac{3\sqrt{35}xyz(x-y)(x+y)}{2}$

continued ...

Table 9

No.	multipole	matrix
	$\mathbb{Q}_{5,1}^{(a)}(E_u, 3)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{20} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
567	symmetry	$\frac{3\sqrt{35}z(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{20} & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
568	symmetry	$-\frac{\sqrt{105}xyz(x^2+y^2-2z^2)}{2}$

continued ...

Table 9

No.	multipole	matrix
	$\mathbb{Q}_{5,1}^{(a)}(E_u, 4)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{12} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{12} & 0 \\ 0 & 0 & -\frac{\sqrt{15}}{60} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{1}{4} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{15}}{60} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{1}{4} & 0 & 0 & 0 \\ \frac{\sqrt{15}}{60} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{1}{4} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{15}}{60} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{1}{4} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{20} & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
569	symmetry	$-\frac{\sqrt{105}z(x-y)(x+y)(x^2+y^2-2z^2)}{4}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{12} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{12} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{15}}{60} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{1}{4} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{15}}{60} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{1}{4} & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{15}}{60} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{1}{4} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{15}}{60} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{1}{4} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
570	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{Q}_3^{(1,-1;a)}(A_{1u})$	0	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{7}}{28}$
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{7}}{28}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{7}i}{28}$
		0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{7}i}{28}$	0
		0	$\frac{\sqrt{70}}{56}$	0	$\frac{\sqrt{70}i}{56}$	0	0	0	0	0	$-\frac{\sqrt{42}}{56}$	0	$-\frac{\sqrt{42}i}{56}$	0	0
		$-\frac{\sqrt{70}}{56}$	0	$\frac{\sqrt{70}i}{56}$	0	0	0	0	0	$\frac{\sqrt{42}}{56}$	0	$-\frac{\sqrt{42}i}{56}$	0	0	0
		0	$-\frac{\sqrt{70}i}{56}$	0	$\frac{\sqrt{70}}{56}$	0	0	0	0	0	$-\frac{\sqrt{42}i}{56}$	0	$\frac{\sqrt{42}}{56}$	0	0
		$-\frac{\sqrt{70}i}{56}$	0	$-\frac{\sqrt{70}}{56}$	0	0	0	0	0	$-\frac{\sqrt{42}i}{56}$	0	$-\frac{\sqrt{42}}{56}$	0	0	0
		0	0	0	0	0	$\frac{\sqrt{35}}{28}$	0	$\frac{\sqrt{35}i}{28}$	0	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{35}}{28}$	0	$\frac{\sqrt{35}i}{28}$	0	0	0	0	0	0	0
571	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$													
	$\mathbb{Q}_3^{(1,-1;a)}(A_{2u}, 1)$	0	$-\frac{\sqrt{7}}{28}$	0	$\frac{\sqrt{7}i}{28}$	0	0	$-\frac{\sqrt{42}i}{28}$	0	0	$-\frac{\sqrt{105}}{140}$	0	$-\frac{\sqrt{105}i}{140}$	0	0
		$\frac{\sqrt{7}}{28}$	0	$\frac{\sqrt{7}i}{28}$	0	0	0	0	$\frac{\sqrt{42}i}{28}$	$\frac{\sqrt{105}}{140}$	0	$-\frac{\sqrt{105}i}{140}$	0	0	0
		0	$-\frac{\sqrt{7}i}{28}$	0	$-\frac{\sqrt{7}}{28}$	$\frac{\sqrt{42}i}{28}$	0	0	0	0	$\frac{\sqrt{105}i}{140}$	0	$-\frac{\sqrt{105}}{140}$	0	0
		$-\frac{\sqrt{7}i}{28}$	0	$\frac{\sqrt{7}}{28}$	0	0	$-\frac{\sqrt{42}i}{28}$	0	0	$\frac{\sqrt{105}i}{140}$	0	$\frac{\sqrt{105}}{140}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{105}i}{70}$	0	0	$-\frac{\sqrt{70}}{70}$
		0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{105}i}{70}$	$\frac{\sqrt{70}}{70}$	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{105}i}{70}$	0	0	0	0	$\frac{\sqrt{70}i}{70}$
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{105}i}{70}$	0	0	$\frac{\sqrt{70}i}{70}$	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{35}}{70}$	0	$-\frac{\sqrt{35}i}{70}$	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{35}}{70}$	0	$-\frac{\sqrt{35}i}{70}$	0	0	0
572	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$													

continued ...

Table 9

No.	multipole	matrix													
	$Q_3^{(1,-1;a)}(A_{2u}, 2)$	0	0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{7}i}{28}$
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{7}i}{28}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{7}}{28}$
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{7}}{28}$	0
		0	$-\frac{\sqrt{70}i}{56}$	0	$\frac{\sqrt{70}}{56}$	0	0	0	0	0	$\frac{\sqrt{42}i}{56}$	0	$-\frac{\sqrt{42}}{56}$	0	0
		$-\frac{\sqrt{70}i}{56}$	0	$-\frac{\sqrt{70}}{56}$	0	0	0	0	0	$\frac{\sqrt{42}i}{56}$	0	$\frac{\sqrt{42}}{56}$	0	0	0
		0	$-\frac{\sqrt{70}}{56}$	0	$-\frac{\sqrt{70}i}{56}$	0	0	0	0	0	$-\frac{\sqrt{42}}{56}$	0	$-\frac{\sqrt{42}i}{56}$	0	0
		$\frac{\sqrt{70}}{56}$	0	$-\frac{\sqrt{70}i}{56}$	0	0	0	0	0	$\frac{\sqrt{42}}{56}$	0	$-\frac{\sqrt{42}i}{56}$	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{35}i}{28}$	0	$\frac{\sqrt{35}}{28}$	0	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{35}i}{28}$	0	$-\frac{\sqrt{35}}{28}$	0	0	0	0	0	0	0
573	symmetry	$-\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$													
	$Q_{3,1}^{(1,-1;a)}(E_u, 1)$	0	0	$-\frac{\sqrt{42}i}{42}$	0	0	0	0	$-\frac{\sqrt{7}i}{14}$	0	0	$\frac{\sqrt{70}i}{70}$	0	0	$\frac{\sqrt{105}}{420}$
		0	0	0	$\frac{\sqrt{42}i}{42}$	0	0	$-\frac{\sqrt{7}i}{14}$	0	0	0	0	$-\frac{\sqrt{70}i}{70}$	$-\frac{\sqrt{105}}{420}$	0
		$\frac{\sqrt{42}i}{42}$	0	0	0	0	$\frac{\sqrt{7}i}{14}$	0	0	$-\frac{\sqrt{70}i}{70}$	0	0	0	0	$-\frac{\sqrt{105}i}{420}$
		0	$-\frac{\sqrt{42}i}{42}$	0	0	$\frac{\sqrt{7}i}{14}$	0	0	0	0	$\frac{\sqrt{70}i}{70}$	0	0	$-\frac{\sqrt{105}i}{420}$	0
		0	$\frac{\sqrt{42}}{168}$	0	$-\frac{\sqrt{42}i}{168}$	0	0	0	0	0	$-\frac{\sqrt{70}}{280}$	0	$-\frac{3\sqrt{70}i}{280}$	0	0
		$-\frac{\sqrt{42}}{168}$	0	$-\frac{\sqrt{42}i}{168}$	0	0	0	0	0	$\frac{\sqrt{70}}{280}$	0	$-\frac{3\sqrt{70}i}{280}$	0	0	0
		0	$\frac{\sqrt{42}i}{168}$	0	$\frac{\sqrt{42}}{168}$	0	0	0	0	0	$\frac{\sqrt{70}i}{56}$	0	$\frac{\sqrt{70}}{280}$	$-\frac{2\sqrt{105}i}{105}$	0
		$\frac{\sqrt{42}i}{168}$	0	$-\frac{\sqrt{42}}{168}$	0	0	0	0	0	$\frac{\sqrt{70}i}{56}$	0	$-\frac{\sqrt{70}}{280}$	0	0	$\frac{2\sqrt{105}i}{105}$
		0	0	0	0	0	$\frac{\sqrt{21}}{84}$	0	$-\frac{\sqrt{21}i}{84}$	0	0	$\frac{\sqrt{210}i}{105}$	0	0	0
		0	0	0	0	$-\frac{\sqrt{21}}{84}$	0	$-\frac{\sqrt{21}i}{84}$	0	0	0	0	$-\frac{\sqrt{210}i}{105}$	0	0
574	symmetry	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{Q}_{3,2}^{(1,-1;a)}(E_u, 1)$	$\frac{\sqrt{42}i}{42}$	0	0	0	0	0	0	$-\frac{\sqrt{7}}{14}$	$\frac{\sqrt{70}i}{70}$	0	0	0	0	$\frac{\sqrt{105}i}{420}$
		0	$-\frac{\sqrt{42}i}{42}$	0	0	0	0	$\frac{\sqrt{7}}{14}$	0	0	$-\frac{\sqrt{70}i}{70}$	0	0	$\frac{\sqrt{105}i}{420}$	0
		0	0	$\frac{\sqrt{42}i}{42}$	0	0	$\frac{\sqrt{7}}{14}$	0	0	0	0	$\frac{\sqrt{70}i}{70}$	0	0	$\frac{\sqrt{105}i}{420}$
		0	0	0	$-\frac{\sqrt{42}i}{42}$	$-\frac{\sqrt{7}}{14}$	0	0	0	0	0	0	$-\frac{\sqrt{70}i}{70}$	$-\frac{\sqrt{105}i}{420}$	0
		0	$\frac{\sqrt{42}i}{168}$	0	$\frac{\sqrt{42}i}{168}$	0	0	0	0	0	$-\frac{\sqrt{70}i}{280}$	0	$-\frac{\sqrt{70}i}{56}$	$\frac{2\sqrt{105}i}{105}$	0
		$\frac{\sqrt{42}i}{168}$	0	$-\frac{\sqrt{42}i}{168}$	0	0	0	0	0	$-\frac{\sqrt{70}i}{280}$	0	$\frac{\sqrt{70}i}{56}$	0	0	$-\frac{2\sqrt{105}i}{105}$
		0	$-\frac{\sqrt{42}i}{168}$	0	$\frac{\sqrt{42}i}{168}$	0	0	0	0	0	$\frac{3\sqrt{70}i}{280}$	0	$\frac{\sqrt{70}i}{280}$	0	0
		$\frac{\sqrt{42}i}{168}$	0	$\frac{\sqrt{42}i}{168}$	0	0	0	0	0	$-\frac{3\sqrt{70}i}{280}$	0	$\frac{\sqrt{70}i}{280}$	0	0	0
		0	0	0	0	0	$\frac{\sqrt{21}i}{84}$	0	$\frac{\sqrt{21}i}{84}$	$-\frac{\sqrt{210}i}{105}$	0	0	0	0	0
		0	0	0	0	$\frac{\sqrt{21}i}{84}$	0	$-\frac{\sqrt{21}i}{84}$	0	0	$\frac{\sqrt{210}i}{105}$	0	0	0	0
575	symmetry	$\sqrt{15}xyz$													
	$\mathbb{Q}_{3,1}^{(1,-1;a)}(E_u, 2)$	0	$\frac{\sqrt{105}i}{84}$	0	$-\frac{\sqrt{105}i}{84}$	0	0	0	0	0	$\frac{\sqrt{7}i}{28}$	0	$\frac{\sqrt{7}i}{28}$	$-\frac{\sqrt{42}i}{84}$	0
		$\frac{\sqrt{105}i}{84}$	0	$\frac{\sqrt{105}i}{84}$	0	0	0	0	$\frac{\sqrt{7}i}{28}$	0	$-\frac{\sqrt{7}i}{28}$	0	0	0	$\frac{\sqrt{42}i}{84}$
		0	$\frac{\sqrt{105}i}{84}$	0	$\frac{\sqrt{105}i}{84}$	0	0	0	0	$-\frac{\sqrt{7}i}{28}$	0	$\frac{\sqrt{7}i}{28}$	0	0	0
		$-\frac{\sqrt{105}i}{84}$	0	$\frac{\sqrt{105}i}{84}$	0	0	0	0	$\frac{\sqrt{7}i}{28}$	0	$\frac{\sqrt{7}i}{28}$	0	0	0	0
		$-\frac{\sqrt{105}i}{84}$	0	0	0	0	0	0	$\frac{\sqrt{7}i}{28}$	0	0	0	0	0	$\frac{\sqrt{42}i}{42}$
		0	$\frac{\sqrt{105}i}{84}$	0	0	0	0	0	0	$-\frac{\sqrt{7}i}{28}$	0	0	0	$\frac{\sqrt{42}i}{42}$	0
		0	0	$-\frac{\sqrt{105}i}{84}$	0	0	0	0	0	0	$-\frac{\sqrt{7}i}{28}$	0	0	0	$-\frac{\sqrt{42}i}{42}$
		0	0	0	$\frac{\sqrt{105}i}{84}$	0	0	0	0	0	0	0	$\frac{\sqrt{7}i}{28}$	$\frac{\sqrt{42}i}{42}$	0
		0	0	0	0	$-\frac{\sqrt{210}i}{84}$	0	0	0	0	$-\frac{\sqrt{21}i}{42}$	0	$\frac{\sqrt{21}i}{42}$	0	0
		0	0	0	0	0	$\frac{\sqrt{210}i}{84}$	0	0	$-\frac{\sqrt{21}i}{42}$	0	$-\frac{\sqrt{21}i}{42}$	0	0	0
576	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{Q}_{3,2}^{(1,-1;a)}(E_u, 2)$	0	$-\frac{\sqrt{105}}{84}$	0	$-\frac{\sqrt{105i}}{84}$	0	0	0	0	0	$-\frac{\sqrt{7}}{28}$	0	$\frac{\sqrt{7i}}{28}$	0	0
		$\frac{\sqrt{105}}{84}$	0	$-\frac{\sqrt{105i}}{84}$	0	0	0	0	0	$\frac{\sqrt{7}}{28}$	0	$\frac{\sqrt{7i}}{28}$	0	0	0
		0	$\frac{\sqrt{105i}}{84}$	0	$-\frac{\sqrt{105}}{84}$	0	0	0	0	0	$-\frac{\sqrt{7i}}{28}$	0	$-\frac{\sqrt{7}}{28}$	$\frac{\sqrt{42i}}{84}$	0
		$\frac{\sqrt{105i}}{84}$	0	$\frac{\sqrt{105}}{84}$	0	0	0	0	0	$-\frac{\sqrt{7i}}{28}$	0	$\frac{\sqrt{7}}{28}$	0	0	$-\frac{\sqrt{42i}}{84}$
		0	0	$\frac{\sqrt{105i}}{84}$	0	0	0	0	0	0	0	$-\frac{\sqrt{7i}}{28}$	0	0	$-\frac{\sqrt{42}}{42}$
		0	0	0	$-\frac{\sqrt{105i}}{84}$	0	0	0	0	0	0	0	$\frac{\sqrt{7i}}{28}$	$\frac{\sqrt{42}}{42}$	0
		$-\frac{\sqrt{105i}}{84}$	0	0	0	0	0	0	0	$-\frac{\sqrt{7i}}{28}$	0	0	0	0	$-\frac{\sqrt{42i}}{42}$
		0	$\frac{\sqrt{105i}}{84}$	0	0	0	0	0	0	0	$\frac{\sqrt{7i}}{28}$	0	0	$-\frac{\sqrt{42i}}{42}$	0
		0	0	0	0	0	0	$\frac{\sqrt{210i}}{84}$	0	0	$\frac{\sqrt{21}}{42}$	0	$\frac{\sqrt{21i}}{42}$	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{210i}}{84}$	$-\frac{\sqrt{21}}{42}$	0	$\frac{\sqrt{21i}}{42}$	0	0	0	0
577	symmetry	$-\frac{\sqrt{70x(x^2-3y^2)(x^2+y^2-8z^2)}}{16}$													
	$\mathbb{Q}_5^{(1,-1;a)}(A_{1u})$	0	0	0	0	0	$-\frac{\sqrt{2}}{60}$	0	$\frac{\sqrt{2i}}{60}$	0	0	$-\frac{\sqrt{5i}}{15}$	0	0	$-\frac{\sqrt{30}}{30}$
		0	0	0	0	$\frac{\sqrt{2}}{60}$	0	$\frac{\sqrt{2i}}{60}$	0	0	0	0	$\frac{\sqrt{5i}}{15}$	$\frac{\sqrt{30}}{30}$	0
		0	0	0	0	0	$\frac{\sqrt{2i}}{60}$	0	$\frac{\sqrt{2}}{60}$	$-\frac{\sqrt{5i}}{15}$	0	0	0	0	$-\frac{\sqrt{30i}}{30}$
		0	0	0	0	$\frac{\sqrt{2i}}{60}$	0	$-\frac{\sqrt{2}}{60}$	0	0	$\frac{\sqrt{5i}}{15}$	0	0	$-\frac{\sqrt{30i}}{30}$	0
		0	$-\frac{\sqrt{3}}{30}$	0	$-\frac{\sqrt{3i}}{15}$	0	0	$\frac{\sqrt{2i}}{30}$	0	0	$-\frac{\sqrt{5}}{60}$	0	$-\frac{\sqrt{5i}}{60}$	0	0
		$\frac{\sqrt{3}}{30}$	0	$-\frac{\sqrt{3i}}{15}$	0	0	0	$-\frac{\sqrt{2i}}{30}$	$\frac{\sqrt{5}}{60}$	0	$-\frac{\sqrt{5i}}{60}$	0	0	0	0
		0	$\frac{\sqrt{3i}}{30}$	0	$-\frac{\sqrt{3}}{15}$	$\frac{\sqrt{2i}}{30}$	0	0	0	0	$-\frac{\sqrt{5i}}{60}$	0	$\frac{\sqrt{5}}{60}$	0	0
		$\frac{\sqrt{3i}}{30}$	0	$\frac{\sqrt{3}}{15}$	0	0	$-\frac{\sqrt{2i}}{30}$	0	0	$-\frac{\sqrt{5i}}{60}$	0	$-\frac{\sqrt{5}}{60}$	0	0	0
		0	0	$\frac{i}{5}$	0	0	$\frac{\sqrt{6}}{15}$	0	$\frac{\sqrt{6i}}{15}$	0	0	0	0	0	0
		0	0	0	$-\frac{i}{5}$	$-\frac{\sqrt{6}}{15}$	0	$\frac{\sqrt{6i}}{15}$	0	0	0	0	0	0	0
578	symmetry	$\frac{z(15x^4+30x^2y^2-40x^2z^2+15y^4-40y^2z^2+8z^4)}{8}$													

continued ...

Table 9

No.	multipole	matrix													
	$Q_5^{(1,-1;a)}(A_{2u}, 1)$	0	$\frac{\sqrt{210}}{420}$	0	$-\frac{\sqrt{210}i}{420}$	0	0	$\frac{\sqrt{35}i}{42}$	0	0	$\frac{\sqrt{14}}{42}$	0	$\frac{\sqrt{14}i}{42}$	0	0
		$-\frac{\sqrt{210}}{420}$	0	$-\frac{\sqrt{210}i}{420}$	0	0	0	0	$-\frac{\sqrt{35}i}{42}$	$-\frac{\sqrt{14}}{42}$	0	$\frac{\sqrt{14}i}{42}$	0	0	0
		0	$\frac{\sqrt{210}i}{420}$	0	$\frac{\sqrt{210}}{420}$	$-\frac{\sqrt{35}i}{42}$	0	0	0	0	$-\frac{\sqrt{14}i}{42}$	0	$\frac{\sqrt{14}}{42}$	0	0
		$\frac{\sqrt{210}i}{420}$	0	$-\frac{\sqrt{210}}{420}$	0	0	$\frac{\sqrt{35}i}{42}$	0	0	$-\frac{\sqrt{14}}{42}$	0	$-\frac{\sqrt{14}i}{42}$	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{35}}{60}$	0	$\frac{\sqrt{35}i}{60}$	0	0	$-\frac{5\sqrt{14}i}{84}$	0	0	$-\frac{\sqrt{21}}{42}$
		0	0	0	0	$\frac{\sqrt{35}}{60}$	0	$\frac{\sqrt{35}i}{60}$	0	0	0	0	$\frac{5\sqrt{14}i}{84}$	$\frac{\sqrt{21}}{42}$	0
		0	0	0	0	0	$-\frac{\sqrt{35}i}{60}$	0	$-\frac{\sqrt{35}}{60}$	$\frac{5\sqrt{14}i}{84}$	0	0	0	0	$\frac{\sqrt{21}i}{42}$
		0	0	0	0	$-\frac{\sqrt{35}i}{60}$	0	$\frac{\sqrt{35}}{60}$	0	0	$-\frac{5\sqrt{14}i}{84}$	0	0	$\frac{\sqrt{21}i}{42}$	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{42}}{84}$	0	$-\frac{\sqrt{42}i}{84}$	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{42}}{84}$	0	$-\frac{\sqrt{42}i}{84}$	0	0	0
579	symmetry	$-\frac{\sqrt{70}y(3x^2-y^2)(x^2+y^2-8z^2)}{16}$													
	$Q_5^{(1,-1;a)}(A_{2u}, 2)$	0	0	0	0	0	$-\frac{\sqrt{2}i}{60}$	0	$-\frac{\sqrt{2}}{60}$	$\frac{\sqrt{5}i}{15}$	0	0	0	0	$\frac{\sqrt{30}i}{30}$
		0	0	0	0	$-\frac{\sqrt{2}i}{60}$	0	$\frac{\sqrt{2}}{60}$	0	0	$-\frac{\sqrt{5}i}{15}$	0	0	$\frac{\sqrt{30}i}{30}$	0
		0	0	0	0	0	$-\frac{\sqrt{2}}{60}$	0	$\frac{\sqrt{2}i}{60}$	0	0	$-\frac{\sqrt{5}i}{15}$	0	0	$-\frac{\sqrt{30}}{30}$
		0	0	0	0	$\frac{\sqrt{2}}{60}$	0	$\frac{\sqrt{2}i}{60}$	0	0	0	0	$\frac{\sqrt{5}i}{15}$	$\frac{\sqrt{30}}{30}$	0
		0	$\frac{\sqrt{3}i}{15}$	0	$-\frac{\sqrt{3}}{30}$	$-\frac{\sqrt{2}i}{30}$	0	0	0	0	$\frac{\sqrt{5}i}{60}$	0	$-\frac{\sqrt{5}}{60}$	0	0
		$\frac{\sqrt{3}i}{15}$	0	$\frac{\sqrt{3}}{30}$	0	0	$\frac{\sqrt{2}i}{30}$	0	0	$\frac{\sqrt{5}i}{60}$	0	$\frac{\sqrt{5}}{60}$	0	0	0
		0	$\frac{\sqrt{3}}{15}$	0	$\frac{\sqrt{3}i}{30}$	0	0	$\frac{\sqrt{2}i}{30}$	0	0	$-\frac{\sqrt{5}}{60}$	0	$-\frac{\sqrt{5}i}{60}$	0	0
		$-\frac{\sqrt{3}}{15}$	0	$\frac{\sqrt{3}i}{30}$	0	0	0	$-\frac{\sqrt{2}i}{30}$	$\frac{\sqrt{5}}{60}$	0	$-\frac{\sqrt{5}i}{60}$	0	0	0	0
		$-\frac{i}{5}$	0	0	0	0	$-\frac{\sqrt{6}i}{15}$	0	$\frac{\sqrt{6}}{15}$	0	0	0	0	0	0
		0	$\frac{i}{5}$	0	0	$-\frac{\sqrt{6}i}{15}$	0	$-\frac{\sqrt{6}}{15}$	0	0	0	0	0	0	0
580	symmetry	$\frac{3\sqrt{14}x(x^4-10x^2y^2+5y^4)}{16}$													

continued ...

Table 9

No.	multipole	matrix
	$\mathbb{Q}_{5,1}^{(1,-1;a)}(E_u, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}}{20} & 0 & -\frac{\sqrt{10}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{20} & 0 & -\frac{\sqrt{10}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}i}{20} & 0 & \frac{\sqrt{10}}{20} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{10}i}{20} & 0 & -\frac{\sqrt{10}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{15}}{20} & 0 & \frac{\sqrt{15}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{15}}{20} & 0 & \frac{\sqrt{15}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{15}i}{20} & 0 & -\frac{\sqrt{15}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{15}i}{20} & 0 & \frac{\sqrt{15}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
581	symmetry	$-\frac{3\sqrt{14}y(5x^4-10x^2y^2+y^4)}{16}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}i}{20} & 0 & \frac{\sqrt{10}}{20} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{10}i}{20} & 0 & -\frac{\sqrt{10}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{20} & 0 & \frac{\sqrt{10}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{10}}{20} & 0 & \frac{\sqrt{10}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{15}i}{20} & 0 & -\frac{\sqrt{15}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{15}i}{20} & 0 & \frac{\sqrt{15}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{15}}{20} & 0 & -\frac{\sqrt{15}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{15}}{20} & 0 & -\frac{\sqrt{15}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
582	symmetry	$\frac{\sqrt{15}x(x^4+2x^2y^2-12x^2z^2+y^4-12y^2z^2+8z^4)}{8}$

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{Q}_{5,1}^{(1,-1;a)}(E_u, 2)$	0	0	$\frac{\sqrt{14}i}{70}$	0	0	0	0	$\frac{\sqrt{21}i}{42}$	0	0	$-\frac{\sqrt{210}i}{105}$	0	0	$-\frac{\sqrt{35}i}{70}$
		0	0	0	$-\frac{\sqrt{14}i}{70}$	0	0	$\frac{\sqrt{21}i}{42}$	0	0	0	0	$\frac{\sqrt{210}i}{105}$	$\frac{\sqrt{35}i}{70}$	0
		$-\frac{\sqrt{14}i}{70}$	0	0	0	0	$-\frac{\sqrt{21}i}{42}$	0	0	$\frac{\sqrt{210}i}{105}$	0	0	0	0	$\frac{\sqrt{35}i}{70}$
		0	$\frac{\sqrt{14}i}{70}$	0	0	$-\frac{\sqrt{21}i}{42}$	0	0	0	0	$-\frac{\sqrt{210}i}{105}$	0	0	$\frac{\sqrt{35}i}{70}$	0
		0	$-\frac{3\sqrt{14}i}{280}$	0	$\frac{3\sqrt{14}i}{280}$	0	0	$-\frac{\sqrt{21}i}{30}$	0	0	$-\frac{\sqrt{210}i}{840}$	0	$-\frac{3\sqrt{210}i}{280}$	0	0
		$\frac{3\sqrt{14}i}{280}$	0	$\frac{3\sqrt{14}i}{280}$	0	0	0	0	$\frac{\sqrt{21}i}{30}$	$\frac{\sqrt{210}i}{840}$	0	$-\frac{3\sqrt{210}i}{280}$	0	0	0
		0	$-\frac{3\sqrt{14}i}{280}$	0	$-\frac{3\sqrt{14}i}{280}$	$\frac{\sqrt{21}i}{30}$	0	0	0	0	$\frac{11\sqrt{210}i}{840}$	0	$\frac{\sqrt{210}i}{840}$	$-\frac{\sqrt{35}i}{35}$	0
		$-\frac{3\sqrt{14}i}{280}$	0	$\frac{3\sqrt{14}i}{280}$	0	0	$-\frac{\sqrt{21}i}{30}$	0	0	$\frac{11\sqrt{210}i}{840}$	0	$-\frac{\sqrt{210}i}{840}$	0	0	$\frac{\sqrt{35}i}{35}$
		0	0	0	0	0	$\frac{\sqrt{7}i}{35}$	0	$-\frac{\sqrt{7}i}{35}$	0	0	$\frac{\sqrt{70}i}{70}$	0	0	0
		0	0	0	0	$-\frac{\sqrt{7}i}{35}$	0	$-\frac{\sqrt{7}i}{35}$	0	0	0	0	$-\frac{\sqrt{70}i}{70}$	0	0
583	symmetry	$\frac{\sqrt{15}y(x^4+2x^2y^2-12x^2z^2+y^4-12y^2z^2+8z^4)}{8}$													
	$\mathbb{Q}_{5,2}^{(1,-1;a)}(E_u, 2)$	$-\frac{\sqrt{14}i}{70}$	0	0	0	0	0	0	$\frac{\sqrt{21}i}{42}$	$-\frac{\sqrt{210}i}{105}$	0	0	0	0	$-\frac{\sqrt{35}i}{70}$
		0	$\frac{\sqrt{14}i}{70}$	0	0	0	0	$-\frac{\sqrt{21}i}{42}$	0	0	$\frac{\sqrt{210}i}{105}$	0	0	$-\frac{\sqrt{35}i}{70}$	0
		0	0	$-\frac{\sqrt{14}i}{70}$	0	0	$-\frac{\sqrt{21}i}{42}$	0	0	0	0	$-\frac{\sqrt{210}i}{105}$	0	0	$-\frac{\sqrt{35}i}{70}$
		0	0	0	$\frac{\sqrt{14}i}{70}$	$\frac{\sqrt{21}i}{42}$	0	0	0	0	0	0	$\frac{\sqrt{210}i}{105}$	$\frac{\sqrt{35}i}{70}$	0
		0	$-\frac{3\sqrt{14}i}{280}$	0	$-\frac{3\sqrt{14}i}{280}$	$\frac{\sqrt{21}i}{30}$	0	0	0	0	$-\frac{\sqrt{210}i}{840}$	0	$-\frac{11\sqrt{210}i}{840}$	$\frac{\sqrt{35}i}{35}$	0
		$-\frac{3\sqrt{14}i}{280}$	0	$\frac{3\sqrt{14}i}{280}$	0	0	$-\frac{\sqrt{21}i}{30}$	0	0	$-\frac{\sqrt{210}i}{840}$	0	$\frac{11\sqrt{210}i}{840}$	0	0	$-\frac{\sqrt{35}i}{35}$
		0	$\frac{3\sqrt{14}i}{280}$	0	$-\frac{3\sqrt{14}i}{280}$	0	0	$\frac{\sqrt{21}i}{30}$	0	0	$\frac{3\sqrt{210}i}{280}$	0	$\frac{\sqrt{210}i}{840}$	0	0
		$-\frac{3\sqrt{14}i}{280}$	0	$-\frac{3\sqrt{14}i}{280}$	0	0	0	0	$-\frac{\sqrt{21}i}{30}$	$-\frac{3\sqrt{210}i}{280}$	0	$\frac{\sqrt{210}i}{840}$	0	0	0
		0	0	0	0	0	$\frac{\sqrt{7}i}{35}$	0	$\frac{\sqrt{7}i}{35}$	$-\frac{\sqrt{70}i}{70}$	0	0	0	0	0
		0	0	0	0	$\frac{\sqrt{7}i}{35}$	0	$-\frac{\sqrt{7}i}{35}$	0	0	$\frac{\sqrt{70}i}{70}$	0	0	0	0
584	symmetry	$-\frac{3\sqrt{35}xyz(x-y)(x+y)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{Q}_{5,1}^{(1,-1;a)}(E_u, 3)$	0	0	0	0	$-\frac{i}{10}$	0	0	0	0	$-\frac{\sqrt{10}i}{20}$	0	$\frac{\sqrt{10}}{20}$	0	0
		0	0	0	0	0	$\frac{i}{10}$	0	0	$-\frac{\sqrt{10}i}{20}$	0	$-\frac{\sqrt{10}}{20}$	0	0	0
		0	0	0	0	0	0	$\frac{i}{10}$	0	0	$\frac{\sqrt{10}}{20}$	0	$\frac{\sqrt{10}i}{20}$	0	0
		0	0	0	0	0	0	0	$-\frac{i}{10}$	$-\frac{\sqrt{10}}{20}$	0	$\frac{\sqrt{10}i}{20}$	0	0	0
		$\frac{\sqrt{6}i}{20}$	0	0	0	0	$\frac{i}{20}$	0	$-\frac{1}{20}$	0	0	0	0	0	0
		0	$-\frac{\sqrt{6}i}{20}$	0	0	$\frac{i}{20}$	0	$\frac{1}{20}$	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{6}i}{20}$	0	0	$-\frac{1}{20}$	0	$-\frac{i}{20}$	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{6}i}{20}$	$\frac{1}{20}$	0	$-\frac{i}{20}$	0	0	0	0	0	0	0
		0	$\frac{3\sqrt{2}i}{20}$	0	$-\frac{3\sqrt{2}}{20}$	0	0	0	0	0	0	0	0	0	0
		$\frac{3\sqrt{2}i}{20}$	0	$\frac{3\sqrt{2}}{20}$	0	0	0	0	0	0	0	0	0	0	0
585	symmetry	$\frac{3\sqrt{35}z(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$													
	$\mathbb{Q}_{5,2}^{(1,-1;a)}(E_u, 3)$	0	0	0	0	0	0	$-\frac{i}{10}$	0	0	$-\frac{\sqrt{10}}{20}$	0	$-\frac{\sqrt{10}i}{20}$	0	0
		0	0	0	0	0	0	0	$\frac{i}{10}$	$\frac{\sqrt{10}}{20}$	0	$-\frac{\sqrt{10}i}{20}$	0	0	0
		0	0	0	0	$-\frac{i}{10}$	0	0	0	0	$-\frac{\sqrt{10}i}{20}$	0	$\frac{\sqrt{10}}{20}$	0	0
		0	0	0	0	0	$\frac{i}{10}$	0	0	$-\frac{\sqrt{10}i}{20}$	0	$-\frac{\sqrt{10}}{20}$	0	0	0
		0	0	$\frac{\sqrt{6}i}{20}$	0	0	$\frac{1}{20}$	0	$\frac{i}{20}$	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{6}i}{20}$	$-\frac{1}{20}$	0	$\frac{i}{20}$	0	0	0	0	0	0	0
		$\frac{\sqrt{6}i}{20}$	0	0	0	0	$\frac{i}{20}$	0	$-\frac{1}{20}$	0	0	0	0	0	0
		0	$-\frac{\sqrt{6}i}{20}$	0	0	$\frac{i}{20}$	0	$\frac{1}{20}$	0	0	0	0	0	0	0
		0	$\frac{3\sqrt{2}}{20}$	0	$\frac{3\sqrt{2}i}{20}$	0	0	0	0	0	0	0	0	0	0
		$-\frac{3\sqrt{2}}{20}$	0	$\frac{3\sqrt{2}i}{20}$	0	0	0	0	0	0	0	0	0	0	0
586	symmetry	$-\frac{\sqrt{105}xyz(x^2+y^2-2z^2)}{2}$													

continued ...

Table 9

No.	multipole	matrix
	$\mathbb{Q}_{5,1}^{(1,-1;a)}(E_u, 4)$	$\begin{pmatrix} 0 & -\frac{\sqrt{2}i}{40} & 0 & \frac{\sqrt{2}}{40} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}i}{40} & 0 & -\frac{\sqrt{30}}{40} & \frac{\sqrt{5}i}{10} & 0 \\ -\frac{\sqrt{2}i}{40} & 0 & -\frac{\sqrt{2}}{40} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}i}{40} & 0 & \frac{\sqrt{30}}{40} & 0 & 0 & -\frac{\sqrt{5}i}{10} \\ 0 & -\frac{\sqrt{2}}{40} & 0 & -\frac{\sqrt{2}i}{40} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{120} & 0 & -\frac{\sqrt{30}i}{120} & 0 & 0 \\ \frac{\sqrt{2}}{40} & 0 & -\frac{\sqrt{2}i}{40} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{120} & 0 & -\frac{\sqrt{30}i}{120} & 0 & 0 & 0 \\ \frac{3\sqrt{2}i}{40} & 0 & 0 & 0 & 0 & \frac{\sqrt{3}i}{15} & 0 & -\frac{\sqrt{3}}{20} & \frac{\sqrt{30}i}{120} & 0 & 0 & 0 & 0 & \frac{\sqrt{5}i}{20} \\ 0 & -\frac{3\sqrt{2}i}{40} & 0 & 0 & \frac{\sqrt{3}i}{15} & 0 & \frac{\sqrt{3}}{20} & 0 & 0 & -\frac{\sqrt{30}i}{120} & 0 & 0 & \frac{\sqrt{5}i}{20} & 0 \\ 0 & 0 & \frac{3\sqrt{2}i}{40} & 0 & 0 & \frac{\sqrt{3}}{15} & 0 & \frac{\sqrt{3}i}{20} & 0 & 0 & -\frac{\sqrt{30}i}{120} & 0 & 0 & -\frac{\sqrt{5}}{20} \\ 0 & 0 & 0 & -\frac{3\sqrt{2}i}{40} & -\frac{\sqrt{3}}{15} & 0 & \frac{\sqrt{3}i}{20} & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{120} & \frac{\sqrt{5}}{20} & 0 \\ 0 & \frac{\sqrt{6}i}{40} & 0 & \frac{\sqrt{6}}{40} & -\frac{i}{5} & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}i}{40} & 0 & \frac{\sqrt{10}}{40} & 0 & 0 \\ \frac{\sqrt{6}i}{40} & 0 & -\frac{\sqrt{6}}{40} & 0 & 0 & \frac{i}{5} & 0 & 0 & -\frac{\sqrt{10}i}{40} & 0 & -\frac{\sqrt{10}}{40} & 0 & 0 & 0 \end{pmatrix}$
587	symmetry	$-\frac{\sqrt{105}z(x-y)(x+y)(x^2+y^2-2z^2)}{4}$ $\begin{pmatrix} 0 & \frac{\sqrt{2}}{40} & 0 & \frac{\sqrt{2}i}{40} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{120} & 0 & -\frac{\sqrt{30}i}{120} & 0 & 0 \\ -\frac{\sqrt{2}}{40} & 0 & \frac{\sqrt{2}i}{40} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{120} & 0 & -\frac{\sqrt{30}i}{120} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{2}i}{40} & 0 & \frac{\sqrt{2}}{40} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{40} & 0 & \frac{\sqrt{30}}{40} & -\frac{\sqrt{5}i}{10} & 0 \\ -\frac{\sqrt{2}i}{40} & 0 & -\frac{\sqrt{2}}{40} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{40} & 0 & -\frac{\sqrt{30}}{40} & 0 & 0 & \frac{\sqrt{5}i}{10} \\ 0 & 0 & -\frac{3\sqrt{2}i}{40} & 0 & 0 & -\frac{\sqrt{3}}{20} & 0 & -\frac{\sqrt{3}i}{15} & 0 & 0 & -\frac{\sqrt{30}i}{120} & 0 & 0 & -\frac{\sqrt{5}}{20} \\ 0 & 0 & 0 & \frac{3\sqrt{2}i}{40} & \frac{\sqrt{3}}{20} & 0 & -\frac{\sqrt{3}i}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{120} & \frac{\sqrt{5}}{20} & 0 \\ \frac{3\sqrt{2}i}{40} & 0 & 0 & 0 & 0 & \frac{\sqrt{3}i}{20} & 0 & -\frac{\sqrt{3}}{15} & -\frac{\sqrt{30}i}{120} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{20} \\ 0 & -\frac{3\sqrt{2}i}{40} & 0 & 0 & \frac{\sqrt{3}i}{20} & 0 & \frac{\sqrt{3}}{15} & 0 & 0 & \frac{\sqrt{30}i}{120} & 0 & 0 & -\frac{\sqrt{5}i}{20} & 0 \\ 0 & \frac{\sqrt{6}}{40} & 0 & -\frac{\sqrt{6}i}{40} & 0 & 0 & \frac{i}{5} & 0 & 0 & \frac{\sqrt{10}}{40} & 0 & \frac{\sqrt{10}i}{40} & 0 & 0 \\ -\frac{\sqrt{6}}{40} & 0 & -\frac{\sqrt{6}i}{40} & 0 & 0 & 0 & 0 & -\frac{i}{5} & -\frac{\sqrt{10}i}{40} & 0 & \frac{\sqrt{10}i}{40} & 0 & 0 & 0 \end{pmatrix}$
588	symmetry	z

continued ...

Table 9

No.	multipole	matrix													
	$Q_1^{(1,0;a)}(A_{2u})$	0	$-\frac{\sqrt{21}}{28}$	0	$\frac{\sqrt{21}i}{28}$	0	0	0	0	0	$\frac{\sqrt{35}}{140}$	0	$\frac{\sqrt{35}i}{140}$	0	0
		$\frac{\sqrt{21}}{28}$	0	$\frac{\sqrt{21}i}{28}$	0	0	0	0	0	$-\frac{\sqrt{35}}{140}$	0	$\frac{\sqrt{35}i}{140}$	0	0	0
		0	$-\frac{\sqrt{21}i}{28}$	0	$-\frac{\sqrt{21}}{28}$	0	0	0	0	$-\frac{\sqrt{35}i}{140}$	0	$\frac{\sqrt{35}}{140}$	0	0	0
		$-\frac{\sqrt{21}i}{28}$	0	$\frac{\sqrt{21}}{28}$	0	0	0	0	0	$-\frac{\sqrt{35}i}{140}$	0	$-\frac{\sqrt{35}}{140}$	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{14}}{28}$	0	$\frac{\sqrt{14}i}{28}$	0	0	0	0	0	$\frac{\sqrt{210}}{140}$
		0	0	0	0	$\frac{\sqrt{14}}{28}$	0	$\frac{\sqrt{14}i}{28}$	0	0	0	0	0	$-\frac{\sqrt{210}}{140}$	0
		0	0	0	0	0	$-\frac{\sqrt{14}i}{28}$	0	$-\frac{\sqrt{14}}{28}$	0	0	0	0	0	$-\frac{\sqrt{210}i}{140}$
		0	0	0	0	$-\frac{\sqrt{14}i}{28}$	0	$\frac{\sqrt{14}}{28}$	0	0	0	0	0	$-\frac{\sqrt{210}i}{140}$	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{105}}{70}$	0	$\frac{\sqrt{105}i}{70}$	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{105}}{70}$	0	$\frac{\sqrt{105}i}{70}$	0	0	0
589	symmetry	x													
	$Q_{1,1}^{(1,0;a)}(E_u)$	0	0	$-\frac{\sqrt{21}i}{28}$	0	0	$\frac{\sqrt{14}}{28}$	0	0	0	0	$-\frac{\sqrt{35}i}{140}$	0	0	0
		0	0	0	$\frac{\sqrt{21}i}{28}$	$-\frac{\sqrt{14}}{28}$	0	0	0	0	0	0	$\frac{\sqrt{35}i}{140}$	0	0
		$\frac{\sqrt{21}i}{28}$	0	0	0	0	0	0	$\frac{\sqrt{14}}{28}$	$\frac{\sqrt{35}i}{140}$	0	0	0	0	0
		0	$-\frac{\sqrt{21}i}{28}$	0	0	0	0	$-\frac{\sqrt{14}}{28}$	0	0	$-\frac{\sqrt{35}i}{140}$	0	0	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{14}i}{28}$	0	0	$\frac{\sqrt{35}}{35}$	0	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{14}i}{28}$	$-\frac{\sqrt{35}}{35}$	0	0	0	0	0
		0	0	0	0	$\frac{\sqrt{14}i}{28}$	0	0	0	0	0	0	$\frac{\sqrt{35}}{35}$	$\frac{\sqrt{210}i}{140}$	0
		0	0	0	0	0	$-\frac{\sqrt{14}i}{28}$	0	0	0	0	$-\frac{\sqrt{35}}{35}$	0	0	$-\frac{\sqrt{210}i}{140}$
		0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{105}i}{70}$	0	0	$\frac{3\sqrt{70}}{140}$
		0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{105}i}{70}$	$-\frac{3\sqrt{70}}{140}$	0
590	symmetry	y													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{Q}_{1,2}^{(1,0;a)}(E_u)$	$\frac{\sqrt{21}i}{28}$	0	0	0	0	$-\frac{\sqrt{14}i}{28}$	0	0	$-\frac{\sqrt{35}i}{140}$	0	0	0	0	0
		0	$-\frac{\sqrt{21}i}{28}$	0	0	$-\frac{\sqrt{14}i}{28}$	0	0	0	0	$\frac{\sqrt{35}i}{140}$	0	0	0	0
		0	0	$\frac{\sqrt{21}i}{28}$	0	0	0	0	$-\frac{\sqrt{14}i}{28}$	0	0	$-\frac{\sqrt{35}i}{140}$	0	0	0
		0	0	0	$-\frac{\sqrt{21}i}{28}$	0	0	$-\frac{\sqrt{14}i}{28}$	0	0	0	0	$\frac{\sqrt{35}i}{140}$	0	0
		0	0	0	0	$\frac{\sqrt{14}i}{28}$	0	0	0	0	$-\frac{\sqrt{35}i}{35}$	0	0	$-\frac{\sqrt{210}i}{140}$	0
		0	0	0	0	0	$-\frac{\sqrt{14}i}{28}$	0	0	$-\frac{\sqrt{35}i}{35}$	0	0	0	0	$\frac{\sqrt{210}i}{140}$
		0	0	0	0	0	0	$\frac{\sqrt{14}i}{28}$	0	0	0	0	$-\frac{\sqrt{35}i}{35}$	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{14}i}{28}$	0	0	$-\frac{\sqrt{35}i}{35}$	0	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{105}i}{70}$	0	0	0	0	$-\frac{3\sqrt{70}i}{140}$
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{105}i}{70}$	0	0	$-\frac{3\sqrt{70}i}{140}$	0
591	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$													
	$\mathbb{Q}_3^{(1,0;a)}(A_{1u})$	0	0	0	0	0	0	0	0	0	0	$\frac{i}{8}$	0	0	$-\frac{\sqrt{6}}{24}$
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{i}{8}$	$\frac{\sqrt{6}}{24}$	0
		0	0	0	0	0	0	0	0	$\frac{i}{8}$	0	0	0	0	$-\frac{\sqrt{6}i}{24}$
		0	0	0	0	0	0	0	0	$-\frac{i}{8}$	0	0	$-\frac{\sqrt{6}i}{24}$	0	0
		0	$\frac{\sqrt{15}}{48}$	0	$\frac{\sqrt{15}i}{48}$	0	0	$-\frac{\sqrt{10}i}{16}$	0	0	$\frac{1}{16}$	0	$\frac{i}{16}$	0	0
		$-\frac{\sqrt{15}}{48}$	0	$\frac{\sqrt{15}i}{48}$	0	0	0	0	$\frac{\sqrt{10}i}{16}$	$-\frac{1}{16}$	0	$\frac{i}{16}$	0	0	0
		0	$-\frac{\sqrt{15}i}{48}$	0	$\frac{\sqrt{15}}{48}$	$-\frac{\sqrt{10}i}{16}$	0	0	0	0	$\frac{i}{16}$	0	$-\frac{1}{16}$	0	0
		$-\frac{\sqrt{15}i}{48}$	0	$-\frac{\sqrt{15}}{48}$	0	0	$\frac{\sqrt{10}i}{16}$	0	0	0	$\frac{i}{16}$	0	$\frac{1}{16}$	0	0
		0	0	$\frac{\sqrt{5}i}{8}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{5}i}{8}$	0	0	0	0	0	0	0	0	0	0
592	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$													

continued ...

Table 9

No.	multipole	matrix
	$\mathbb{Q}_3^{(1,0;a)}(A_{2u}, 1)$	$\begin{bmatrix} 0 & \frac{\sqrt{6}}{24} & 0 & -\frac{\sqrt{6}i}{24} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}}{20} & 0 & -\frac{\sqrt{10}i}{20} & 0 & 0 \\ -\frac{\sqrt{6}}{24} & 0 & -\frac{\sqrt{6}i}{24} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{20} & 0 & -\frac{\sqrt{10}i}{20} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{6}i}{24} & 0 & \frac{\sqrt{6}}{24} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{20} & 0 & -\frac{\sqrt{10}}{20} & 0 & 0 \\ \frac{\sqrt{6}i}{24} & 0 & -\frac{\sqrt{6}}{24} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{20} & 0 & \frac{\sqrt{10}i}{20} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{1}{8} & 0 & \frac{i}{8} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{60} \\ 0 & 0 & 0 & 0 & \frac{1}{8} & 0 & \frac{i}{8} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{60} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{i}{8} & 0 & -\frac{1}{8} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{60} \\ 0 & 0 & 0 & 0 & -\frac{i}{8} & 0 & \frac{1}{8} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{60} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{40} & 0 & \frac{\sqrt{30}i}{40} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{40} & 0 & \frac{\sqrt{30}i}{40} & 0 & 0 & 0 \end{bmatrix}$
593	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{i}{8} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{24} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{i}{8} & 0 & 0 & \frac{\sqrt{6}i}{24} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{i}{8} & 0 & 0 & -\frac{\sqrt{6}}{24} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{i}{8} & \frac{\sqrt{6}}{24} & 0 \\ 0 & -\frac{\sqrt{15}i}{48} & 0 & \frac{\sqrt{15}}{48} & \frac{\sqrt{10}i}{16} & 0 & 0 & 0 & 0 & -\frac{i}{16} & 0 & \frac{1}{16} & 0 & 0 \\ -\frac{\sqrt{15}i}{48} & 0 & -\frac{\sqrt{15}}{48} & 0 & 0 & -\frac{\sqrt{10}i}{16} & 0 & 0 & -\frac{i}{16} & 0 & -\frac{1}{16} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{15}}{48} & 0 & -\frac{\sqrt{15}i}{48} & 0 & 0 & -\frac{\sqrt{10}i}{16} & 0 & 0 & \frac{1}{16} & 0 & \frac{i}{16} & 0 & 0 \\ \frac{\sqrt{15}}{48} & 0 & -\frac{\sqrt{15}i}{48} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{16} & -\frac{1}{16} & 0 & \frac{i}{16} & 0 & 0 & 0 \\ -\frac{\sqrt{5}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{5}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
594	symmetry	$-\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{Q}_{3,1}^{(1,0;a)}(E_u, 1)$	0	0	$\frac{i}{24}$	0	0	$-\frac{\sqrt{6}}{12}$	0	0	0	0	$\frac{\sqrt{15}i}{60}$	0	0	$\frac{\sqrt{10}}{24}$
		0	0	0	$-\frac{i}{24}$	$\frac{\sqrt{6}}{12}$	0	0	0	0	0	0	$-\frac{\sqrt{15}i}{60}$	$-\frac{\sqrt{10}}{24}$	0
		$-\frac{i}{24}$	0	0	0	0	0	0	$-\frac{\sqrt{6}}{12}$	$-\frac{\sqrt{15}i}{60}$	0	0	0	0	$-\frac{\sqrt{10}i}{24}$
		0	$\frac{i}{24}$	0	0	0	0	$\frac{\sqrt{6}}{12}$	0	0	$\frac{\sqrt{15}i}{60}$	0	0	$-\frac{\sqrt{10}i}{24}$	0
		0	$-\frac{5}{48}$	0	$\frac{5i}{48}$	0	0	$-\frac{\sqrt{6}i}{48}$	0	0	$-\frac{\sqrt{15}}{240}$	0	$\frac{\sqrt{15}i}{48}$	0	0
		$\frac{5}{48}$	0	$\frac{5i}{48}$	0	0	0	0	$\frac{\sqrt{6}i}{48}$	$\frac{\sqrt{15}}{240}$	0	$\frac{\sqrt{15}i}{48}$	0	0	0
		0	$-\frac{5i}{48}$	0	$-\frac{5}{48}$	$\frac{\sqrt{6}i}{48}$	0	0	0	0	$\frac{\sqrt{15}i}{48}$	0	$\frac{3\sqrt{15}}{80}$	$-\frac{\sqrt{10}i}{120}$	0
		$-\frac{5i}{48}$	0	$\frac{5}{48}$	0	0	$-\frac{\sqrt{6}i}{48}$	0	0	$\frac{\sqrt{15}i}{48}$	0	$-\frac{3\sqrt{15}}{80}$	0	0	$\frac{\sqrt{10}i}{120}$
		0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{5}i}{40}$	0	0	$\frac{\sqrt{30}}{30}$
		0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{5}i}{40}$	$-\frac{\sqrt{30}}{30}$	0
595	symmetry	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$													
	$\mathbb{Q}_{3,2}^{(1,0;a)}(E_u, 1)$	$-\frac{i}{24}$	0	0	0	0	$\frac{\sqrt{6}i}{12}$	0	0	$\frac{\sqrt{15}i}{60}$	0	0	0	0	$\frac{\sqrt{10}i}{24}$
		0	$\frac{i}{24}$	0	0	$\frac{\sqrt{6}i}{12}$	0	0	0	0	$-\frac{\sqrt{15}i}{60}$	0	0	$\frac{\sqrt{10}i}{24}$	0
		0	0	$-\frac{i}{24}$	0	0	0	0	$\frac{\sqrt{6}i}{12}$	0	0	$\frac{\sqrt{15}i}{60}$	0	0	$\frac{\sqrt{10}}{24}$
		0	0	0	$\frac{i}{24}$	0	0	$\frac{\sqrt{6}i}{12}$	0	0	0	0	$-\frac{\sqrt{15}i}{60}$	$-\frac{\sqrt{10}}{24}$	0
		0	$-\frac{5i}{48}$	0	$-\frac{5}{48}$	$\frac{\sqrt{6}i}{48}$	0	0	0	0	$-\frac{3\sqrt{15}i}{80}$	0	$-\frac{\sqrt{15}}{48}$	$\frac{\sqrt{10}i}{120}$	0
		$-\frac{5i}{48}$	0	$\frac{5}{48}$	0	0	$-\frac{\sqrt{6}i}{48}$	0	0	$-\frac{3\sqrt{15}i}{80}$	0	$\frac{\sqrt{15}}{48}$	0	0	$-\frac{\sqrt{10}i}{120}$
		0	$\frac{5}{48}$	0	$-\frac{5i}{48}$	0	0	$\frac{\sqrt{6}i}{48}$	0	0	$-\frac{\sqrt{15}}{48}$	0	$\frac{\sqrt{15}i}{240}$	0	0
		$-\frac{5}{48}$	0	$-\frac{5i}{48}$	0	0	0	0	$-\frac{\sqrt{6}i}{48}$	$\frac{\sqrt{15}}{48}$	0	$\frac{\sqrt{15}i}{240}$	0	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{5}i}{40}$	0	0	0	0	$-\frac{\sqrt{30}i}{30}$
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{5}i}{40}$	0	0	$-\frac{\sqrt{30}i}{30}$	0
596	symmetry	$\sqrt{15}xyz$													

continued ...

Table 9

No.	multipole	matrix
	$\mathbb{Q}_{3,1}^{(1,0;a)}(E_u, 2)$	$ \begin{array}{ccccccccccccccc} 0 & \frac{\sqrt{10}i}{48} & 0 & -\frac{\sqrt{10}}{48} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{48} & 0 & -\frac{\sqrt{6}}{48} & -\frac{i}{6} & 0 \\ \frac{\sqrt{10}i}{48} & 0 & \frac{\sqrt{10}}{48} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{48} & 0 & \frac{\sqrt{6}}{48} & 0 & 0 & \frac{i}{6} \\ 0 & \frac{\sqrt{10}}{48} & 0 & \frac{\sqrt{10}i}{48} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{16} & 0 & -\frac{\sqrt{6}i}{16} & 0 & 0 \\ -\frac{\sqrt{10}}{48} & 0 & \frac{\sqrt{10}i}{48} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{16} & 0 & -\frac{\sqrt{6}i}{16} & 0 & 0 & 0 \\ \frac{\sqrt{10}i}{24} & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}i}{24} & 0 & 0 & \frac{\sqrt{6}i}{24} & 0 & 0 & 0 & 0 & -\frac{i}{24} \\ 0 & -\frac{\sqrt{10}i}{24} & 0 & 0 & -\frac{\sqrt{15}i}{24} & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{24} & 0 & 0 & 0 & -\frac{i}{24} \\ 0 & 0 & \frac{\sqrt{10}i}{24} & 0 & 0 & -\frac{\sqrt{15}}{24} & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{24} & 0 & 0 & \frac{1}{24} \\ 0 & 0 & 0 & -\frac{\sqrt{10}i}{24} & \frac{\sqrt{15}}{24} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{24} & -\frac{1}{24} & 0 \\ 0 & \frac{\sqrt{30}i}{48} & 0 & \frac{\sqrt{30}}{48} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{16} & 0 & \frac{\sqrt{2}}{16} & 0 & 0 \\ \frac{\sqrt{30}i}{48} & 0 & -\frac{\sqrt{30}}{48} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{16} & 0 & -\frac{\sqrt{2}}{16} & 0 & 0 & 0 \end{array} $
597	symmetry	$ \begin{array}{c} \frac{\sqrt{15}z(x-y)(x+y)}{2} \\ \left[\begin{array}{ccccccccccccccc} 0 & -\frac{\sqrt{10}}{48} & 0 & -\frac{\sqrt{10}i}{48} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{16} & 0 & -\frac{\sqrt{6}i}{16} & 0 & 0 \\ \frac{\sqrt{10}}{48} & 0 & -\frac{\sqrt{10}i}{48} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{16} & 0 & -\frac{\sqrt{6}i}{16} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{10}i}{48} & 0 & -\frac{\sqrt{10}}{48} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{48} & 0 & \frac{\sqrt{6}}{48} & \frac{i}{6} & 0 \\ \frac{\sqrt{10}i}{48} & 0 & \frac{\sqrt{10}}{48} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{48} & 0 & -\frac{\sqrt{6}}{48} & 0 & 0 & -\frac{i}{6} \\ 0 & 0 & -\frac{\sqrt{10}i}{24} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{24} & 0 & 0 & -\frac{\sqrt{6}i}{24} & 0 & 0 & \frac{1}{24} \\ 0 & 0 & 0 & \frac{\sqrt{10}i}{24} & 0 & 0 & \frac{\sqrt{15}i}{24} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{24} & -\frac{1}{24} & 0 \\ \frac{\sqrt{10}i}{24} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{24} & -\frac{\sqrt{6}i}{24} & 0 & 0 & 0 & 0 & \frac{i}{24} \\ 0 & -\frac{\sqrt{10}i}{24} & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{24} & 0 & 0 & \frac{\sqrt{6}i}{24} & 0 & 0 & 0 & \frac{i}{24} \\ 0 & \frac{\sqrt{30}}{48} & 0 & -\frac{\sqrt{30}i}{48} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{16} & 0 & \frac{\sqrt{2}i}{16} & 0 & 0 \\ -\frac{\sqrt{30}}{48} & 0 & -\frac{\sqrt{30}i}{48} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{16} & 0 & \frac{\sqrt{2}i}{16} & 0 & 0 & 0 \end{array} \right] \end{array} $
598	symmetry	$-\frac{\sqrt{70}x(x^2-3y^2)(x^2+y^2-8z^2)}{16}$

continued ...

Table 9

No.	multipole	matrix
	$\mathbb{Q}_5^{(1,0;a)}(A_{1u})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{3\sqrt{2}}{40} & 0 & \frac{3\sqrt{2}i}{40} & 0 & 0 & -\frac{\sqrt{5}i}{20} & 0 & 0 & \frac{\sqrt{30}}{60} \\ 0 & 0 & 0 & 0 & \frac{3\sqrt{2}}{40} & 0 & \frac{3\sqrt{2}i}{40} & 0 & 0 & 0 & 0 & \frac{\sqrt{5}i}{20} & -\frac{\sqrt{30}}{60} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{3\sqrt{2}i}{40} & 0 & \frac{3\sqrt{2}}{40} & -\frac{\sqrt{5}i}{20} & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{60} \\ 0 & 0 & 0 & 0 & \frac{3\sqrt{2}i}{40} & 0 & -\frac{3\sqrt{2}}{40} & 0 & 0 & \frac{\sqrt{5}i}{20} & 0 & 0 & \frac{\sqrt{30}i}{60} & 0 \\ 0 & -\frac{\sqrt{3}}{15} & 0 & \frac{\sqrt{3}i}{30} & 0 & 0 & -\frac{\sqrt{2}i}{10} & 0 & 0 & \frac{\sqrt{5}}{20} & 0 & \frac{\sqrt{5}i}{20} & 0 & 0 \\ \frac{\sqrt{3}}{15} & 0 & \frac{\sqrt{3}i}{30} & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{10} & -\frac{\sqrt{5}}{20} & 0 & \frac{\sqrt{5}i}{20} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{3}i}{15} & 0 & \frac{\sqrt{3}}{30} & -\frac{\sqrt{2}i}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{5}i}{20} & 0 & -\frac{\sqrt{5}}{20} & 0 & 0 \\ \frac{\sqrt{3}i}{15} & 0 & -\frac{\sqrt{3}}{30} & 0 & 0 & \frac{\sqrt{2}i}{10} & 0 & 0 & \frac{\sqrt{5}i}{20} & 0 & \frac{\sqrt{5}}{20} & 0 & 0 & 0 \\ 0 & 0 & -\frac{i}{10} & 0 & 0 & \frac{\sqrt{6}}{20} & 0 & \frac{\sqrt{6}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{i}{10} & -\frac{\sqrt{6}}{20} & 0 & \frac{\sqrt{6}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
599	symmetry	$\frac{z(15x^4+30x^2y^2-40x^2z^2+15y^4-40y^2z^2+8z^4)}{8}$ $\begin{bmatrix} 0 & -\frac{\sqrt{210}}{840} & 0 & \frac{\sqrt{210}i}{840} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}}{56} & 0 & \frac{\sqrt{14}i}{56} & 0 & 0 \\ \frac{\sqrt{210}}{840} & 0 & \frac{\sqrt{210}i}{840} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}}{56} & 0 & \frac{\sqrt{14}i}{56} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{210}i}{840} & 0 & -\frac{\sqrt{210}}{840} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}i}{56} & 0 & \frac{\sqrt{14}}{56} & 0 & 0 \\ -\frac{\sqrt{210}i}{840} & 0 & \frac{\sqrt{210}}{840} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}i}{56} & 0 & -\frac{\sqrt{14}}{56} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{35}}{70} & 0 & -\frac{\sqrt{35}i}{70} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}}{21} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{35}}{70} & 0 & -\frac{\sqrt{35}i}{70} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{21} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{35}i}{70} & 0 & \frac{\sqrt{35}}{70} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}i}{21} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{35}i}{70} & 0 & -\frac{\sqrt{35}}{70} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}i}{21} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}}{28} & 0 & \frac{\sqrt{42}i}{28} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}}{28} & 0 & \frac{\sqrt{42}i}{28} & 0 & 0 \end{bmatrix}$
600	symmetry	$-\frac{\sqrt{70}y(3x^2-y^2)(x^2+y^2-8z^2)}{16}$

continued ...

Table 9

No.	multipole	matrix
	$\mathbb{Q}_5^{(1,0;a)}(A_{2u}, 2)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{3\sqrt{2}i}{40} & 0 & -\frac{3\sqrt{2}}{40} & \frac{\sqrt{5}i}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}i}{60} \\ 0 & 0 & 0 & 0 & -\frac{3\sqrt{2}i}{40} & 0 & \frac{3\sqrt{2}}{40} & 0 & 0 & -\frac{\sqrt{5}i}{20} & 0 & 0 & -\frac{\sqrt{30}i}{60} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{3\sqrt{2}}{40} & 0 & \frac{3\sqrt{2}i}{40} & 0 & 0 & -\frac{\sqrt{5}i}{20} & 0 & 0 & \frac{\sqrt{30}}{60} \\ 0 & 0 & 0 & 0 & \frac{3\sqrt{2}}{40} & 0 & \frac{3\sqrt{2}i}{40} & 0 & 0 & 0 & 0 & \frac{\sqrt{5}i}{20} & -\frac{\sqrt{30}}{60} & 0 \\ 0 & -\frac{\sqrt{3}i}{30} & 0 & -\frac{\sqrt{3}}{15} & \frac{\sqrt{2}i}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{20} & 0 & \frac{\sqrt{5}}{20} & 0 & 0 \\ -\frac{\sqrt{3}i}{30} & 0 & \frac{\sqrt{3}}{15} & 0 & 0 & -\frac{\sqrt{2}i}{10} & 0 & 0 & -\frac{\sqrt{5}i}{20} & 0 & -\frac{\sqrt{5}}{20} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{3}}{30} & 0 & \frac{\sqrt{3}i}{15} & 0 & 0 & -\frac{\sqrt{2}i}{10} & 0 & 0 & \frac{\sqrt{5}}{20} & 0 & \frac{\sqrt{5}i}{20} & 0 & 0 \\ \frac{\sqrt{3}}{30} & 0 & \frac{\sqrt{3}i}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{10} & -\frac{\sqrt{5}}{20} & 0 & \frac{\sqrt{5}i}{20} & 0 & 0 & 0 \\ \frac{i}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{20} & 0 & \frac{\sqrt{6}}{20} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{i}{10} & 0 & 0 & -\frac{\sqrt{6}i}{20} & 0 & -\frac{\sqrt{6}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
601	symmetry	$\frac{3\sqrt{14}x(x^4-10x^2y^2+5y^4)}{16}$ $\begin{bmatrix} 0 & 0 & -\frac{\sqrt{15}i}{12} & 0 & 0 & \frac{\sqrt{10}}{40} & 0 & \frac{\sqrt{10}i}{40} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{15}i}{12} & -\frac{\sqrt{10}}{40} & 0 & \frac{\sqrt{10}i}{40} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{15}i}{12} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{40} & 0 & -\frac{\sqrt{10}}{40} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{15}i}{12} & 0 & 0 & \frac{\sqrt{10}i}{40} & 0 & \frac{\sqrt{10}}{40} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{15}}{60} & 0 & \frac{\sqrt{15}i}{60} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{15}}{60} & 0 & \frac{\sqrt{15}i}{60} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{15}i}{60} & 0 & -\frac{\sqrt{15}}{60} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{15}i}{60} & 0 & \frac{\sqrt{15}}{60} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
602	symmetry	$-\frac{3\sqrt{14}y(5x^4-10x^2y^2+y^4)}{16}$

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{Q}_{5,2}^{(1,0;a)}(E_u, 2)$	$\frac{\sqrt{14}i}{840}$	0	0	0	0	$-\frac{\sqrt{21}i}{84}$	0	0	$-\frac{\sqrt{210}i}{840}$	0	0	0	$-\frac{\sqrt{35}i}{60}$	
		0	$-\frac{\sqrt{14}i}{840}$	0	0	$-\frac{\sqrt{21}i}{84}$	0	0	0	$\frac{\sqrt{210}i}{840}$	0	0	$-\frac{\sqrt{35}i}{60}$	0	
		0	0	$\frac{\sqrt{14}i}{840}$	0	0	0	$-\frac{\sqrt{21}i}{84}$	0	0	$-\frac{\sqrt{210}i}{840}$	0	0	$-\frac{\sqrt{35}i}{60}$	
		0	0	0	$-\frac{\sqrt{14}i}{840}$	0	0	$-\frac{\sqrt{21}i}{84}$	0	0	0	$\frac{\sqrt{210}i}{840}$	$\frac{\sqrt{35}i}{60}$	0	
		0	$\frac{\sqrt{14}i}{120}$	0	$\frac{\sqrt{14}i}{120}$	$-\frac{\sqrt{21}i}{210}$	0	0	0	$\frac{\sqrt{210}i}{280}$	0	$-\frac{\sqrt{210}i}{120}$	$\frac{\sqrt{35}i}{105}$	0	
		$\frac{\sqrt{14}i}{120}$	0	$-\frac{\sqrt{14}i}{120}$	0	0	$\frac{\sqrt{21}i}{210}$	0	0	$\frac{\sqrt{210}i}{280}$	0	$\frac{\sqrt{210}i}{120}$	0	$-\frac{\sqrt{35}i}{105}$	
		0	$-\frac{\sqrt{14}i}{120}$	0	$\frac{\sqrt{14}i}{120}$	0	0	$-\frac{\sqrt{21}i}{210}$	0	0	$-\frac{\sqrt{210}i}{120}$	0	$\frac{17\sqrt{210}i}{840}$	0	
		$\frac{\sqrt{14}i}{120}$	0	$\frac{\sqrt{14}i}{120}$	0	0	0	$\frac{\sqrt{21}i}{210}$	$\frac{\sqrt{210}i}{120}$	0	$\frac{17\sqrt{210}i}{840}$	0	0	0	
		0	0	0	0	0	$-\frac{\sqrt{7}i}{20}$	0	$-\frac{\sqrt{7}i}{20}$	$\frac{\sqrt{70}i}{140}$	0	0	0	$-\frac{\sqrt{105}i}{42}$	
		0	0	0	0	$-\frac{\sqrt{7}i}{20}$	0	$\frac{\sqrt{7}i}{20}$	0	0	$-\frac{\sqrt{70}i}{140}$	0	0	$-\frac{\sqrt{105}i}{42}$	
605	symmetry	$-\frac{3\sqrt{35}xyz(x-y)(x+y)}{2}$													
	$\mathbb{Q}_{5,1}^{(1,0;a)}(E_u, 3)$	0	$\frac{\sqrt{6}i}{24}$	0	$\frac{\sqrt{6}i}{24}$	$-\frac{i}{5}$	0	0	0	0	$\frac{\sqrt{10}i}{40}$	0	$-\frac{\sqrt{10}i}{40}$	0	
		$\frac{\sqrt{6}i}{24}$	0	$-\frac{\sqrt{6}i}{24}$	0	0	$\frac{i}{5}$	0	0	$\frac{\sqrt{10}i}{40}$	0	$\frac{\sqrt{10}i}{40}$	0	0	
		0	$\frac{\sqrt{6}i}{24}$	0	$-\frac{\sqrt{6}i}{24}$	0	0	$\frac{i}{5}$	0	0	$-\frac{\sqrt{10}i}{40}$	0	$-\frac{\sqrt{10}i}{40}$	0	
		$-\frac{\sqrt{6}i}{24}$	0	$-\frac{\sqrt{6}i}{24}$	0	0	0	0	$-\frac{i}{5}$	$\frac{\sqrt{10}i}{40}$	0	$-\frac{\sqrt{10}i}{40}$	0	0	
		$-\frac{\sqrt{6}i}{15}$	0	0	0	0	$\frac{i}{10}$	0	$-\frac{1}{10}$	0	0	0	0	0	
		0	$\frac{\sqrt{6}i}{15}$	0	0	$\frac{i}{10}$	0	$\frac{1}{10}$	0	0	0	0	0	0	
		0	0	$\frac{\sqrt{6}i}{15}$	0	0	$-\frac{1}{10}$	0	$-\frac{i}{10}$	0	0	0	0	0	
		0	0	0	$-\frac{\sqrt{6}i}{15}$	$\frac{1}{10}$	0	$-\frac{i}{10}$	0	0	0	0	0	0	
		0	$\frac{\sqrt{2}i}{20}$	0	$-\frac{\sqrt{2}i}{20}$	0	0	0	0	0	0	0	0	0	
		$\frac{\sqrt{2}i}{20}$	0	$\frac{\sqrt{2}i}{20}$	0	0	0	0	0	0	0	0	0	0	
606	symmetry	$\frac{3\sqrt{35}z(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$													

continued ...

Table 9

No.	multipole	matrix
	$\mathbb{Q}_{5,2}^{(1,0;a)}(E_u, 3)$	$\begin{bmatrix} 0 & -\frac{\sqrt{6}}{24} & 0 & \frac{\sqrt{6}i}{24} & 0 & 0 & -\frac{i}{5} & 0 & 0 & \frac{\sqrt{10}}{40} & 0 & \frac{\sqrt{10}i}{40} & 0 & 0 \\ \frac{\sqrt{6}}{24} & 0 & \frac{\sqrt{6}i}{24} & 0 & 0 & 0 & 0 & \frac{i}{5} & -\frac{\sqrt{10}}{40} & 0 & \frac{\sqrt{10}i}{40} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{6}i}{24} & 0 & \frac{\sqrt{6}}{24} & -\frac{i}{5} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{40} & 0 & -\frac{\sqrt{10}}{40} & 0 & 0 \\ \frac{\sqrt{6}i}{24} & 0 & -\frac{\sqrt{6}}{24} & 0 & 0 & \frac{i}{5} & 0 & 0 & \frac{\sqrt{10}}{40} & 0 & \frac{\sqrt{10}i}{40} & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{6}i}{15} & 0 & 0 & \frac{1}{10} & 0 & \frac{i}{10} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{6}i}{15} & -\frac{1}{10} & 0 & \frac{i}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{6}i}{15} & 0 & 0 & 0 & 0 & \frac{i}{10} & 0 & -\frac{1}{10} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{6}i}{15} & 0 & 0 & \frac{i}{10} & 0 & \frac{1}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{2}}{20} & 0 & \frac{\sqrt{2}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{2}}{20} & 0 & \frac{\sqrt{2}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
607	symmetry	$-\frac{\sqrt{105xyz(x^2+y^2-2z^2)}}{2}$ $\begin{bmatrix} 0 & -\frac{\sqrt{2}i}{120} & 0 & \frac{\sqrt{2}}{120} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}i}{120} & 0 & -\frac{\sqrt{30}}{120} & \frac{\sqrt{5}i}{30} & 0 \\ -\frac{\sqrt{2}i}{120} & 0 & -\frac{\sqrt{2}}{120} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}i}{120} & 0 & \frac{\sqrt{30}}{120} & 0 & 0 & -\frac{\sqrt{5}i}{30} \\ 0 & -\frac{\sqrt{2}}{120} & 0 & -\frac{\sqrt{2}i}{120} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{40} & 0 & \frac{\sqrt{30}i}{40} & 0 & 0 \\ \frac{\sqrt{2}}{120} & 0 & -\frac{\sqrt{2}i}{120} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{40} & 0 & \frac{\sqrt{30}i}{40} & 0 & 0 & 0 \\ -\frac{\sqrt{2}i}{60} & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{30} & 0 & -\frac{\sqrt{3}}{10} & \frac{\sqrt{30}i}{60} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{15} \\ 0 & \frac{\sqrt{2}i}{60} & 0 & 0 & -\frac{\sqrt{3}i}{30} & 0 & \frac{\sqrt{3}}{10} & 0 & 0 & -\frac{\sqrt{30}i}{60} & 0 & 0 & -\frac{\sqrt{5}i}{15} & 0 \\ 0 & 0 & -\frac{\sqrt{2}i}{60} & 0 & 0 & -\frac{\sqrt{3}}{30} & 0 & \frac{\sqrt{3}i}{10} & 0 & 0 & -\frac{\sqrt{30}i}{60} & 0 & 0 & \frac{\sqrt{5}}{15} \\ 0 & 0 & 0 & \frac{\sqrt{2}i}{60} & \frac{\sqrt{3}}{30} & 0 & \frac{\sqrt{3}i}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{60} & -\frac{\sqrt{5}}{15} & 0 \\ 0 & -\frac{\sqrt{6}i}{30} & 0 & -\frac{\sqrt{6}}{30} & \frac{i}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}i}{20} & 0 & \frac{\sqrt{10}}{20} & 0 & 0 \\ -\frac{\sqrt{6}i}{30} & 0 & \frac{\sqrt{6}}{30} & 0 & 0 & -\frac{i}{10} & 0 & 0 & -\frac{\sqrt{10}i}{20} & 0 & -\frac{\sqrt{10}}{20} & 0 & 0 & 0 \end{bmatrix}$
608	symmetry	$-\frac{\sqrt{105z(x-y)(x+y)(x^2+y^2-2z^2)}}{4}$

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{Q}_{5,2}^{(1,0;a)}(E_u, 4)$	0	$\frac{\sqrt{2}}{120}$	0	$\frac{\sqrt{2}i}{120}$	0	0	0	0	0	$-\frac{\sqrt{30}}{40}$	0	$\frac{\sqrt{30}i}{40}$	0	0
		$-\frac{\sqrt{2}}{120}$	0	$\frac{\sqrt{2}i}{120}$	0	0	0	0	0	$\frac{\sqrt{30}}{40}$	0	$\frac{\sqrt{30}i}{40}$	0	0	0
		0	$-\frac{\sqrt{2}i}{120}$	0	$\frac{\sqrt{2}}{120}$	0	0	0	0	0	$\frac{\sqrt{30}i}{120}$	0	$\frac{\sqrt{30}}{120}$	$-\frac{\sqrt{5}i}{30}$	0
		$-\frac{\sqrt{2}i}{120}$	0	$-\frac{\sqrt{2}}{120}$	0	0	0	0	0	$\frac{\sqrt{30}i}{120}$	0	$-\frac{\sqrt{30}}{120}$	0	0	$\frac{\sqrt{5}i}{30}$
		0	0	$\frac{\sqrt{2}i}{60}$	0	0	$-\frac{\sqrt{3}}{10}$	0	$\frac{\sqrt{3}i}{30}$	0	0	$-\frac{\sqrt{30}i}{60}$	0	0	$\frac{\sqrt{5}}{15}$
		0	0	0	$-\frac{\sqrt{2}i}{60}$	$\frac{\sqrt{3}}{10}$	0	$\frac{\sqrt{3}i}{30}$	0	0	0	0	$\frac{\sqrt{30}i}{60}$	$-\frac{\sqrt{5}}{15}$	0
		$-\frac{\sqrt{2}i}{60}$	0	0	0	0	$\frac{\sqrt{3}i}{10}$	0	$\frac{\sqrt{3}}{30}$	$-\frac{\sqrt{30}i}{60}$	0	0	0	0	$\frac{\sqrt{5}i}{15}$
		0	$\frac{\sqrt{2}i}{60}$	0	0	$\frac{\sqrt{3}i}{10}$	0	$-\frac{\sqrt{3}}{30}$	0	0	$\frac{\sqrt{30}i}{60}$	0	0	$\frac{\sqrt{5}i}{15}$	0
		0	$-\frac{\sqrt{6}}{30}$	0	$\frac{\sqrt{6}i}{30}$	0	0	$-\frac{i}{10}$	0	0	$\frac{\sqrt{10}}{20}$	0	$\frac{\sqrt{10}i}{20}$	0	0
		$\frac{\sqrt{6}}{30}$	0	$\frac{\sqrt{6}i}{30}$	0	0	0	0	$\frac{i}{10}$	$-\frac{\sqrt{10}}{20}$	0	$\frac{\sqrt{10}i}{20}$	0	0	0
609	symmetry	z													
	$\mathbb{Q}_1^{(1,1;a)}(A_{2u})$	0	$\frac{\sqrt{42}}{56}$	0	$-\frac{\sqrt{42}i}{56}$	0	0	$-\frac{\sqrt{7}i}{14}$	0	0	$\frac{3\sqrt{70}}{280}$	0	$\frac{3\sqrt{70}i}{280}$	0	0
		$-\frac{\sqrt{42}}{56}$	0	$-\frac{\sqrt{42}i}{56}$	0	0	0	0	$\frac{\sqrt{7}i}{14}$	$-\frac{3\sqrt{70}}{280}$	0	$\frac{3\sqrt{70}i}{280}$	0	0	0
		0	$\frac{\sqrt{42}i}{56}$	0	$\frac{\sqrt{42}}{56}$	$\frac{\sqrt{7}i}{14}$	0	0	0	0	$-\frac{3\sqrt{70}i}{280}$	0	$\frac{3\sqrt{70}}{280}$	0	0
		$\frac{\sqrt{42}i}{56}$	0	$-\frac{\sqrt{42}}{56}$	0	0	$-\frac{\sqrt{7}i}{14}$	0	0	$-\frac{3\sqrt{70}i}{280}$	0	$-\frac{3\sqrt{70}}{280}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{70}i}{70}$	0	0	$\frac{\sqrt{105}}{70}$
		0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{70}i}{70}$	$-\frac{\sqrt{105}}{70}$	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{70}i}{70}$	0	0	0	0	$-\frac{\sqrt{105}i}{70}$
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{70}i}{70}$	0	0	$-\frac{\sqrt{105}i}{70}$	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{210}}{140}$	0	$\frac{\sqrt{210}i}{140}$	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{210}}{140}$	0	$\frac{\sqrt{210}i}{140}$	0	0	0
610	symmetry	x													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{Q}_{1,1}^{(1,1;a)}(E_u)$	0	0	$-\frac{\sqrt{42i}}{56}$	0	0	0	0	$\frac{\sqrt{7i}}{28}$	0	0	$\frac{3\sqrt{70i}}{280}$	0	0	$-\frac{\sqrt{105}}{140}$
		0	0	0	$\frac{\sqrt{42i}}{56}$	0	0	$\frac{\sqrt{7i}}{28}$	0	0	0	0	$-\frac{3\sqrt{70i}}{280}$	$\frac{\sqrt{105}}{140}$	0
		$\frac{\sqrt{42i}}{56}$	0	0	0	0	$-\frac{\sqrt{7i}}{28}$	0	0	$-\frac{3\sqrt{70i}}{280}$	0	0	0	0	$\frac{\sqrt{105i}}{140}$
		0	$-\frac{\sqrt{42i}}{56}$	0	0	$-\frac{\sqrt{7i}}{28}$	0	0	0	0	$\frac{3\sqrt{70i}}{280}$	0	0	$\frac{\sqrt{105i}}{140}$	0
		0	$-\frac{\sqrt{42i}}{56}$	0	$\frac{\sqrt{42i}}{56}$	0	0	0	0	0	$\frac{3\sqrt{70i}}{280}$	0	$-\frac{\sqrt{70i}}{280}$	0	0
		$\frac{\sqrt{42i}}{56}$	0	$\frac{\sqrt{42i}}{56}$	0	0	0	0	0	$-\frac{3\sqrt{70i}}{280}$	0	$-\frac{\sqrt{70i}}{280}$	0	0	0
		0	$-\frac{\sqrt{42i}}{56}$	0	$-\frac{\sqrt{42i}}{56}$	0	0	0	0	0	$-\frac{\sqrt{70i}}{56}$	0	$-\frac{3\sqrt{70i}}{280}$	$-\frac{\sqrt{105i}}{70}$	0
		$-\frac{\sqrt{42i}}{56}$	0	$\frac{\sqrt{42i}}{56}$	0	0	0	0	0	$-\frac{\sqrt{70i}}{56}$	0	$\frac{3\sqrt{70i}}{280}$	0	0	$\frac{\sqrt{105i}}{70}$
		0	0	0	0	0	$-\frac{\sqrt{21i}}{28}$	0	$\frac{\sqrt{21i}}{28}$	0	0	$\frac{\sqrt{210i}}{140}$	0	0	0
		0	0	0	0	$\frac{\sqrt{21i}}{28}$	0	$\frac{\sqrt{21i}}{28}$	0	0	0	0	$-\frac{\sqrt{210i}}{140}$	0	0
611	symmetry	y													
	$\mathbb{Q}_{1,2}^{(1,1;a)}(E_u)$	$\frac{\sqrt{42i}}{56}$	0	0	0	0	0	0	$\frac{\sqrt{7}}{28}$	$\frac{3\sqrt{70i}}{280}$	0	0	0	0	$-\frac{\sqrt{105i}}{140}$
		0	$-\frac{\sqrt{42i}}{56}$	0	0	0	0	$-\frac{\sqrt{7}}{28}$	0	0	$-\frac{3\sqrt{70i}}{280}$	0	0	$-\frac{\sqrt{105i}}{140}$	0
		0	0	$\frac{\sqrt{42i}}{56}$	0	0	$-\frac{\sqrt{7}}{28}$	0	0	0	0	$\frac{3\sqrt{70i}}{280}$	0	0	$-\frac{\sqrt{105}}{140}$
		0	0	0	$-\frac{\sqrt{42i}}{56}$	$\frac{\sqrt{7}}{28}$	0	0	0	0	0	0	$-\frac{3\sqrt{70i}}{280}$	$\frac{\sqrt{105}}{140}$	0
		0	$-\frac{\sqrt{42i}}{56}$	0	$-\frac{\sqrt{42i}}{56}$	0	0	0	0	0	$\frac{3\sqrt{70i}}{280}$	0	$\frac{\sqrt{70}}{56}$	$\frac{\sqrt{105i}}{70}$	0
		$-\frac{\sqrt{42i}}{56}$	0	$\frac{\sqrt{42i}}{56}$	0	0	0	0	0	$\frac{3\sqrt{70i}}{280}$	0	$-\frac{\sqrt{70}}{56}$	0	0	$-\frac{\sqrt{105i}}{70}$
		0	$\frac{\sqrt{42i}}{56}$	0	$-\frac{\sqrt{42i}}{56}$	0	0	0	0	0	$\frac{\sqrt{70}}{280}$	0	$-\frac{3\sqrt{70i}}{280}$	0	0
		$-\frac{\sqrt{42i}}{56}$	0	$-\frac{\sqrt{42i}}{56}$	0	0	0	0	0	$-\frac{\sqrt{70}}{280}$	0	$-\frac{3\sqrt{70i}}{280}$	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{21i}}{28}$	0	$-\frac{\sqrt{21i}}{28}$	$-\frac{\sqrt{210i}}{140}$	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{21i}}{28}$	0	$\frac{\sqrt{21i}}{28}$	0	0	$\frac{\sqrt{210i}}{140}$	0	0	0	0
612	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{Q}_3^{(1,1;a)}(A_{1u})$	0	0	0	0	0	$\frac{\sqrt{70}}{60}$	0	$-\frac{\sqrt{70}i}{60}$	0	0	$-\frac{\sqrt{7}i}{24}$	0	0	$\frac{\sqrt{42}}{168}$
		0	0	0	0	$-\frac{\sqrt{70}}{60}$	0	$-\frac{\sqrt{70}i}{60}$	0	0	0	0	$\frac{\sqrt{7}i}{24}$	$-\frac{\sqrt{42}}{168}$	0
		0	0	0	0	0	$-\frac{\sqrt{70}i}{60}$	0	$-\frac{\sqrt{70}}{60}$	$-\frac{\sqrt{7}i}{24}$	0	0	0	0	$\frac{\sqrt{42}i}{168}$
		0	0	0	0	$-\frac{\sqrt{70}i}{60}$	0	$\frac{\sqrt{70}}{60}$	0	0	$\frac{\sqrt{7}i}{24}$	0	0	$\frac{\sqrt{42}i}{168}$	0
		0	$-\frac{5\sqrt{105}}{336}$	0	$\frac{31\sqrt{105}i}{1680}$	0	0	$\frac{\sqrt{70}i}{240}$	0	0	$\frac{\sqrt{7}}{336}$	0	$\frac{\sqrt{7}i}{336}$	0	0
		$\frac{5\sqrt{105}}{336}$	0	$\frac{31\sqrt{105}i}{1680}$	0	0	0	0	$-\frac{\sqrt{70}i}{240}$	$-\frac{\sqrt{7}}{336}$	0	$\frac{\sqrt{7}i}{336}$	0	0	0
		0	$\frac{5\sqrt{105}i}{336}$	0	$\frac{31\sqrt{105}}{1680}$	$\frac{\sqrt{70}i}{240}$	0	0	0	0	$\frac{\sqrt{7}i}{336}$	0	$-\frac{\sqrt{7}}{336}$	0	0
		$\frac{5\sqrt{105}i}{336}$	0	$-\frac{31\sqrt{105}}{1680}$	0	0	$-\frac{\sqrt{70}i}{240}$	0	0	$\frac{\sqrt{7}i}{336}$	0	$\frac{\sqrt{7}}{336}$	0	0	0
		0	0	$\frac{\sqrt{35}i}{40}$	0	0	$-\frac{\sqrt{210}}{420}$	0	$-\frac{\sqrt{210}i}{420}$	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{35}i}{40}$	$\frac{\sqrt{210}}{420}$	0	$-\frac{\sqrt{210}i}{420}$	0	0	0	0	0	0	0
613	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$													
	$\mathbb{Q}_3^{(1,1;a)}(A_{2u}, 1)$	0	$-\frac{\sqrt{42}}{168}$	0	$\frac{\sqrt{42}i}{168}$	0	0	$\frac{\sqrt{7}i}{21}$	0	0	$-\frac{\sqrt{70}}{84}$	0	$-\frac{\sqrt{70}i}{84}$	0	0
		$\frac{\sqrt{42}}{168}$	0	$\frac{\sqrt{42}i}{168}$	0	0	0	0	$-\frac{\sqrt{7}i}{21}$	$\frac{\sqrt{70}}{84}$	0	$-\frac{\sqrt{70}i}{84}$	0	0	0
		0	$-\frac{\sqrt{42}i}{168}$	0	$-\frac{\sqrt{42}}{168}$	$-\frac{\sqrt{7}i}{21}$	0	0	0	0	$\frac{\sqrt{70}i}{84}$	0	$-\frac{\sqrt{70}}{84}$	0	0
		$-\frac{\sqrt{42}i}{168}$	0	$\frac{\sqrt{42}}{168}$	0	0	$\frac{\sqrt{7}i}{21}$	0	0	$\frac{\sqrt{70}i}{84}$	0	$\frac{\sqrt{70}}{84}$	0	0	0
		0	0	0	0	0	$\frac{\sqrt{7}}{24}$	0	$-\frac{\sqrt{7}i}{24}$	0	0	$-\frac{\sqrt{70}i}{42}$	0	0	$\frac{\sqrt{105}}{84}$
		0	0	0	0	$-\frac{\sqrt{7}}{24}$	0	$-\frac{\sqrt{7}i}{24}$	0	0	0	0	$\frac{\sqrt{70}i}{42}$	$-\frac{\sqrt{105}}{84}$	0
		0	0	0	0	0	$\frac{\sqrt{7}i}{24}$	0	$\frac{\sqrt{7}}{24}$	$\frac{\sqrt{70}i}{42}$	0	0	0	0	$-\frac{\sqrt{105}i}{84}$
		0	0	0	0	$\frac{\sqrt{7}i}{24}$	0	$-\frac{\sqrt{7}}{24}$	0	0	$-\frac{\sqrt{70}i}{42}$	0	0	$-\frac{\sqrt{105}i}{84}$	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{210}}{168}$	0	$\frac{\sqrt{210}i}{168}$	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{210}}{168}$	0	$\frac{\sqrt{210}i}{168}$	0	0	0
614	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{Q}_3^{(1,1;a)}(A_{2u}, 2)$	0	0	0	0	0	$\frac{\sqrt{70}i}{60}$	0	$\frac{\sqrt{70}}{60}$	$\frac{\sqrt{7}i}{24}$	0	0	0	0	$-\frac{\sqrt{42}i}{168}$
		0	0	0	0	$\frac{\sqrt{70}i}{60}$	0	$-\frac{\sqrt{70}}{60}$	0	0	$-\frac{\sqrt{7}i}{24}$	0	0	$-\frac{\sqrt{42}i}{168}$	0
		0	0	0	0	0	$\frac{\sqrt{70}}{60}$	0	$-\frac{\sqrt{70}i}{60}$	0	0	$-\frac{\sqrt{7}i}{24}$	0	0	$\frac{\sqrt{42}}{168}$
		0	0	0	0	$-\frac{\sqrt{70}}{60}$	0	$-\frac{\sqrt{70}i}{60}$	0	0	0	0	$\frac{\sqrt{7}i}{24}$	$-\frac{\sqrt{42}}{168}$	0
		0	$-\frac{31\sqrt{105}i}{1680}$	0	$-\frac{5\sqrt{105}}{336}$	$-\frac{\sqrt{70}i}{240}$	0	0	0	0	$-\frac{\sqrt{7}i}{336}$	0	$\frac{\sqrt{7}}{336}$	0	0
		$-\frac{31\sqrt{105}i}{1680}$	0	$\frac{5\sqrt{105}}{336}$	0	0	$\frac{\sqrt{70}i}{240}$	0	0	$-\frac{\sqrt{7}i}{336}$	0	$-\frac{\sqrt{7}}{336}$	0	0	0
		0	$-\frac{31\sqrt{105}}{1680}$	0	$\frac{5\sqrt{105}i}{336}$	0	0	$\frac{\sqrt{70}i}{240}$	0	0	$\frac{\sqrt{7}}{336}$	0	$\frac{\sqrt{7}i}{336}$	0	0
		$\frac{31\sqrt{105}}{1680}$	0	$\frac{5\sqrt{105}i}{336}$	0	0	0	$-\frac{\sqrt{70}i}{240}$	$-\frac{\sqrt{7}}{336}$	0	$\frac{\sqrt{7}i}{336}$	0	0	0	0
		$-\frac{\sqrt{35}i}{40}$	0	0	0	0	$\frac{\sqrt{210}i}{420}$	0	$-\frac{\sqrt{210}}{420}$	0	0	0	0	0	0
		0	$\frac{\sqrt{35}i}{40}$	0	0	$\frac{\sqrt{210}i}{420}$	0	$\frac{\sqrt{210}}{420}$	0	0	0	0	0	0	0
615	symmetry	$-\frac{\sqrt{6x(x^2+y^2-4z^2)}}{4}$													
	$\mathbb{Q}_{3,1}^{(1,1;a)}(E_u, 1)$	0	0	$\frac{\sqrt{7}i}{56}$	0	0	0	0	$-\frac{\sqrt{42}i}{84}$	0	0	$-\frac{\sqrt{105}i}{84}$	0	0	$\frac{\sqrt{70}}{56}$
		0	0	0	$-\frac{\sqrt{7}i}{56}$	0	0	$-\frac{\sqrt{42}i}{84}$	0	0	0	0	$\frac{\sqrt{105}i}{84}$	$-\frac{\sqrt{70}}{56}$	0
		$-\frac{\sqrt{7}i}{56}$	0	0	0	0	$\frac{\sqrt{42}i}{84}$	0	0	$\frac{\sqrt{105}i}{84}$	0	0	0	0	$-\frac{\sqrt{70}i}{56}$
		0	$\frac{\sqrt{7}i}{56}$	0	0	$\frac{\sqrt{42}i}{84}$	0	0	0	0	$-\frac{\sqrt{105}i}{84}$	0	0	$-\frac{\sqrt{70}i}{56}$	0
		0	$\frac{3\sqrt{7}}{112}$	0	$-\frac{3\sqrt{7}i}{112}$	0	0	$-\frac{\sqrt{42}i}{48}$	0	0	$\frac{\sqrt{105}}{336}$	0	$\frac{\sqrt{105}i}{112}$	0	0
		$-\frac{3\sqrt{7}}{112}$	0	$-\frac{3\sqrt{7}i}{112}$	0	0	0	$\frac{\sqrt{42}i}{48}$	$-\frac{\sqrt{105}}{336}$	0	$\frac{\sqrt{105}i}{112}$	0	0	0	0
		0	$\frac{3\sqrt{7}i}{112}$	0	$\frac{3\sqrt{7}}{112}$	$\frac{\sqrt{42}i}{48}$	0	0	0	0	$-\frac{5\sqrt{105}i}{336}$	0	$-\frac{\sqrt{105}}{336}$	$-\frac{\sqrt{70}i}{56}$	0
		$\frac{3\sqrt{7}i}{112}$	0	$-\frac{3\sqrt{7}}{112}$	0	0	$-\frac{\sqrt{42}i}{48}$	0	0	$-\frac{5\sqrt{105}i}{336}$	0	$\frac{\sqrt{105}}{336}$	0	0	$\frac{\sqrt{70}i}{56}$
		0	0	0	0	0	$-\frac{\sqrt{14}}{28}$	0	$\frac{\sqrt{14}i}{28}$	0	0	$\frac{\sqrt{35}i}{56}$	0	0	0
		0	0	0	0	$\frac{\sqrt{14}}{28}$	0	$\frac{\sqrt{14}i}{28}$	0	0	0	0	$-\frac{\sqrt{35}i}{56}$	0	0
616	symmetry	$-\frac{\sqrt{6y(x^2+y^2-4z^2)}}{4}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{Q}_{3,2}^{(1,1;a)}(E_u, 1)$	$-\frac{\sqrt{7}i}{56}$	0	0	0	0	0	0	$-\frac{\sqrt{42}}{84}$	$-\frac{\sqrt{105}i}{84}$	0	0	0	0	$\frac{\sqrt{70}i}{56}$
		0	$\frac{\sqrt{7}i}{56}$	0	0	0	0	$\frac{\sqrt{42}}{84}$	0	0	$\frac{\sqrt{105}i}{84}$	0	0	$\frac{\sqrt{70}i}{56}$	0
		0	0	$-\frac{\sqrt{7}i}{56}$	0	0	$\frac{\sqrt{42}}{84}$	0	0	0	0	$-\frac{\sqrt{105}i}{84}$	0	0	$\frac{\sqrt{70}i}{56}$
		0	0	0	$\frac{\sqrt{7}i}{56}$	$-\frac{\sqrt{42}}{84}$	0	0	0	0	0	0	$\frac{\sqrt{105}i}{84}$	$-\frac{\sqrt{70}i}{56}$	0
		0	$\frac{3\sqrt{7}i}{112}$	0	$\frac{3\sqrt{7}}{112}$	$\frac{\sqrt{42}i}{48}$	0	0	0	0	$\frac{\sqrt{105}i}{336}$	0	$\frac{5\sqrt{105}}{336}$	$\frac{\sqrt{70}i}{56}$	0
		$\frac{3\sqrt{7}i}{112}$	0	$-\frac{3\sqrt{7}}{112}$	0	0	$-\frac{\sqrt{42}i}{48}$	0	0	$\frac{\sqrt{105}i}{336}$	0	$-\frac{5\sqrt{105}}{336}$	0	0	$-\frac{\sqrt{70}i}{56}$
		0	$-\frac{3\sqrt{7}}{112}$	0	$\frac{3\sqrt{7}i}{112}$	0	0	$\frac{\sqrt{42}i}{48}$	0	0	$-\frac{\sqrt{105}}{112}$	0	$-\frac{\sqrt{105}i}{336}$	0	0
		$\frac{3\sqrt{7}}{112}$	0	$\frac{3\sqrt{7}i}{112}$	0	0	0	$-\frac{\sqrt{42}i}{48}$	$\frac{\sqrt{105}}{112}$	0	$-\frac{\sqrt{105}i}{336}$	0	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{14}i}{28}$	0	$-\frac{\sqrt{14}}{28}$	$-\frac{\sqrt{35}i}{56}$	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{14}i}{28}$	0	$\frac{\sqrt{14}}{28}$	0	0	$\frac{\sqrt{35}i}{56}$	0	0	0	0
617	symmetry	$\sqrt{15}xyz$													
	$\mathbb{Q}_{3,1}^{(1,1;a)}(E_u, 2)$	0	$\frac{\sqrt{70}i}{560}$	0	$-\frac{\sqrt{70}}{560}$	0	0	0	0	$\frac{3\sqrt{42}i}{112}$	0	$\frac{3\sqrt{42}}{112}$	$\frac{\sqrt{7}i}{14}$	0	0
		$\frac{\sqrt{70}i}{560}$	0	$\frac{\sqrt{70}}{560}$	0	0	0	0	0	$\frac{3\sqrt{42}i}{112}$	0	$-\frac{3\sqrt{42}}{112}$	0	0	$-\frac{\sqrt{7}i}{14}$
		0	$\frac{\sqrt{70}}{560}$	0	$\frac{\sqrt{70}i}{560}$	0	0	0	0	$\frac{5\sqrt{42}}{336}$	0	$-\frac{5\sqrt{42}i}{336}$	0	0	0
		$-\frac{\sqrt{70}}{560}$	0	$\frac{\sqrt{70}i}{560}$	0	0	0	0	0	$-\frac{5\sqrt{42}}{336}$	0	$-\frac{5\sqrt{42}i}{336}$	0	0	0
		$\frac{3\sqrt{70}i}{280}$	0	0	0	0	$-\frac{\sqrt{105}i}{120}$	0	0	$\frac{\sqrt{42}i}{168}$	0	0	0	0	$-\frac{\sqrt{7}i}{56}$
		0	$-\frac{3\sqrt{70}i}{280}$	0	0	$-\frac{\sqrt{105}i}{120}$	0	0	0	$-\frac{\sqrt{42}i}{168}$	0	0	0	$-\frac{\sqrt{7}i}{56}$	0
		0	0	$\frac{3\sqrt{70}i}{280}$	0	0	$-\frac{\sqrt{105}}{120}$	0	0	0	0	$-\frac{\sqrt{42}i}{168}$	0	0	$\frac{\sqrt{7}}{56}$
		0	0	0	$-\frac{3\sqrt{70}i}{280}$	$\frac{\sqrt{105}}{120}$	0	0	0	0	0	0	$\frac{\sqrt{42}i}{168}$	$-\frac{\sqrt{7}}{56}$	0
		0	$-\frac{\sqrt{210}i}{80}$	0	$-\frac{\sqrt{210}}{80}$	$-\frac{\sqrt{35}i}{35}$	0	0	0	$\frac{\sqrt{14}i}{112}$	0	$-\frac{\sqrt{14}}{112}$	0	0	0
		$-\frac{\sqrt{210}i}{80}$	0	$\frac{\sqrt{210}}{80}$	0	0	$\frac{\sqrt{35}i}{35}$	0	0	$\frac{\sqrt{14}i}{112}$	0	$\frac{\sqrt{14}}{112}$	0	0	0
618	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$													

continued ...

Table 9

No.	multipole	matrix
	$\mathbb{Q}_{3,2}^{(1,1;a)}(E_u, 2)$	$ \begin{bmatrix} 0 & -\frac{\sqrt{70}}{560} & 0 & -\frac{\sqrt{70}i}{560} & 0 & 0 & 0 & 0 & 0 & \frac{5\sqrt{42}}{336} & 0 & -\frac{5\sqrt{42}i}{336} & 0 & 0 \\ \frac{\sqrt{70}}{560} & 0 & -\frac{\sqrt{70}i}{560} & 0 & 0 & 0 & 0 & 0 & -\frac{5\sqrt{42}}{336} & 0 & -\frac{5\sqrt{42}i}{336} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{70}i}{560} & 0 & -\frac{\sqrt{70}}{560} & 0 & 0 & 0 & 0 & 0 & -\frac{3\sqrt{42}i}{112} & 0 & -\frac{3\sqrt{42}}{112} & -\frac{\sqrt{7}i}{14} & 0 \\ \frac{\sqrt{70}i}{560} & 0 & \frac{\sqrt{70}}{560} & 0 & 0 & 0 & 0 & 0 & -\frac{3\sqrt{42}i}{112} & 0 & \frac{3\sqrt{42}}{112} & 0 & 0 & \frac{\sqrt{7}i}{14} \\ 0 & 0 & -\frac{3\sqrt{70}i}{280} & 0 & 0 & 0 & 0 & \frac{\sqrt{105}i}{120} & 0 & 0 & -\frac{\sqrt{42}i}{168} & 0 & 0 & \frac{\sqrt{7}i}{56} \\ 0 & 0 & 0 & \frac{3\sqrt{70}i}{280} & 0 & 0 & \frac{\sqrt{105}i}{120} & 0 & 0 & 0 & 0 & \frac{\sqrt{42}i}{168} & -\frac{\sqrt{7}i}{56} & 0 \\ \frac{3\sqrt{70}i}{280} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{105}}{120} & -\frac{\sqrt{42}i}{168} & 0 & 0 & 0 & 0 & \frac{\sqrt{7}i}{56} \\ 0 & -\frac{3\sqrt{70}i}{280} & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}}{120} & 0 & 0 & \frac{\sqrt{42}i}{168} & 0 & 0 & \frac{\sqrt{7}i}{56} & 0 \\ 0 & -\frac{\sqrt{210}}{80} & 0 & \frac{\sqrt{210}i}{80} & 0 & 0 & \frac{\sqrt{35}i}{35} & 0 & 0 & -\frac{\sqrt{14}}{112} & 0 & -\frac{\sqrt{14}i}{112} & 0 & 0 \\ \frac{\sqrt{210}}{80} & 0 & \frac{\sqrt{210}i}{80} & 0 & 0 & 0 & 0 & -\frac{\sqrt{35}i}{35} & \frac{\sqrt{14}}{112} & 0 & -\frac{\sqrt{14}i}{112} & 0 & 0 & 0 \end{bmatrix} $
619	symmetry	$ -\frac{x^2}{2} - \frac{y^2}{2} + z^2 $ $ \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{70}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{70}}{28} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{70}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{14} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{14} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}}{14} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}}{14} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} $
620	symmetry	$\sqrt{3}yz$

continued ...

Table 9

No.	multipole	matrix
	$\mathbb{G}_{2,1}^{(a)}(E_u, 1)$	$ \begin{array}{cccccccccccccccc} -\frac{\sqrt{35}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}}{28} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{35}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}}{28} & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{35}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}}{28} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{35}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}}{28} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}}{14} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}}{14} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{14} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{14} & 0 & 0 & 0 & 0 \end{array} $
621	symmetry	$ \begin{array}{c} -\sqrt{3}xz \\ \left[\begin{array}{cccccccccccccccc} 0 & 0 & -\frac{\sqrt{35}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{28} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{35}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{28} & 0 & 0 \\ \frac{\sqrt{35}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}}{28} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{35}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}}{28} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}}{14} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}}{14} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{14} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{14} & 0 & 0 \end{array} \right] \end{array} $
622	symmetry	$ \frac{\sqrt{3}(x-y)(x+y)}{2} $

continued ...

Table 9

No.	multipole	matrix
	$\mathbb{G}_{2,1}^{(a)}(E_u, 2)$	$ \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}}{28} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}}{28} \\ 0 & 0 & -\frac{\sqrt{35}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{28} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{35}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{28} & 0 & 0 \\ \frac{\sqrt{35}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{28} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{35}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{28} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}}{28} & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} $
623	symmetry	$ \begin{matrix} -\sqrt{3xy} \\ \left[\begin{array}{cccccccccccccccc} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}}{28} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}}{28} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{35}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{28} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{35}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{28} & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{35}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}}{28} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{35}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}}{28} & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{70}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{array} \right] \end{matrix} $
624	symmetry	$ \frac{3x^4}{8} + \frac{3x^2y^2}{4} - 3x^2z^2 + \frac{3y^4}{8} - 3y^2z^2 + z^4 $

continued ...

Table 9

No.	multipole	matrix
	$\mathbb{G}_4^{(a)}(A_{1u}, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}}{14} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}}{14} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{14} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{14} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{70}}{28} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{70}}{28} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}}{28} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}}{28} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
625	symmetry	$\frac{\sqrt{70}yz(3x^2-y^2)}{4}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{1}{4} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{1}{4} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{1}{4} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{1}{4} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{40} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{40} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}}{40} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}}{40} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{3\sqrt{5}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{3\sqrt{5}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
626	symmetry	$\frac{\sqrt{70}xz(x^2-3y^2)}{4}$

continued ...

Table 9

No.	multipole	matrix
	$\mathbb{G}_4^{(a)}(A_{2u})$	$ \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{1}{4} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{1}{4} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{1}{4} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{1}{4} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}}{40} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}}{40} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{10}}{40} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}}{40} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{3\sqrt{5}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{3\sqrt{5}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} $
627	symmetry	$ \begin{array}{c} -\frac{\sqrt{10yz}(3x^2+3y^2-4z^2)}{4} \\ \left[\begin{array}{cccccccccccccccc} \frac{\sqrt{105}}{140} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{14} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{105}}{140} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{14} & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{105}}{140} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{14} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{105}}{140} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{14} & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{70}}{40} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}}{28} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}}{40} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}}{28} \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}}{40} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}}{40} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{28} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{28} & 0 & 0 & 0 & 0 \end{array} \right] \end{array} $
628	symmetry	$ \begin{array}{c} -\frac{\sqrt{10xz}(3x^2+3y^2-4z^2)}{4} \\ \end{array} $

continued ...

Table 9

No.	multipole	matrix
	$\mathbb{G}_{4,2}^{(a)}(E_u, 1)$	$ \begin{array}{cccccccccccccccc} 0 & 0 & \frac{\sqrt{105}}{140} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}}{14} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{105}}{140} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}}{14} & 0 & 0 \\ -\frac{\sqrt{105}}{140} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{14} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{105}}{140} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{14} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}}{40} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}}{40} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{70}}{40} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}}{28} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{70}}{40} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}}{28} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{28} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{28} & 0 & 0 \end{array} $
629	symmetry	$ \frac{\sqrt{35}(x^2-2xy-y^2)(x^2+2xy-y^2)}{8} $
	$\mathbb{G}_{4,1}^{(a)}(E_u, 2)$	$ \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{30}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{30}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{30}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{30}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} $
630	symmetry	$ \frac{\sqrt{35}xy(x-y)(x+y)}{2} $

continued ...

Table 9

No.	multipole	matrix
	$\mathbb{G}_{4,2}^{(a)}(E_u, 2)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{30}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{30}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{30}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{30}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
631	symmetry	$-\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{14} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{14} & 0 \\ 0 & 0 & \frac{3\sqrt{210}}{280} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}}{56} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{3\sqrt{210}}{280} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}}{56} & 0 & 0 & 0 \\ -\frac{3\sqrt{210}}{280} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}}{56} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{3\sqrt{210}}{280} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}}{56} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}}{35} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}}{35} & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
632	symmetry	$\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{G}_{4,2}^{(a)}(E_u, 3)$	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{21}}{14}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{21}}{14}$
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		$\frac{3\sqrt{210}}{280}$	0	0	0	0	0	0	0	$\frac{\sqrt{14}}{56}$	0	0	0	0	0
		0	$\frac{3\sqrt{210}}{280}$	0	0	0	0	0	0	0	$\frac{\sqrt{14}}{56}$	0	0	0	0
		0	0	$\frac{3\sqrt{210}}{280}$	0	0	0	0	0	0	0	$-\frac{\sqrt{14}}{56}$	0	0	0
		0	0	0	$\frac{3\sqrt{210}}{280}$	0	0	0	0	0	0	0	$-\frac{\sqrt{14}}{56}$	0	0
		0	0	0	0	$-\frac{\sqrt{105}}{35}$	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{105}}{35}$	0	0	0	0	0	0	0	0
633	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$													
	$\mathbb{G}_2^{(1,-1;a)}(A_{1u})$	0	$-\frac{\sqrt{7}i}{28}$	0	$-\frac{\sqrt{7}}{28}$	$\frac{\sqrt{42}i}{42}$	0	0	0	$\frac{\sqrt{105}i}{420}$	0	$-\frac{\sqrt{105}}{420}$	0	0	
		$-\frac{\sqrt{7}i}{28}$	0	$\frac{\sqrt{7}}{28}$	0	0	$-\frac{\sqrt{42}i}{42}$	0	0	$\frac{\sqrt{105}i}{420}$	0	$\frac{\sqrt{105}}{420}$	0	0	
		0	$\frac{\sqrt{7}}{28}$	0	$-\frac{\sqrt{7}i}{28}$	0	0	$\frac{\sqrt{42}i}{42}$	0	0	$\frac{\sqrt{105}}{420}$	0	$\frac{\sqrt{105}i}{420}$	0	0
		$-\frac{\sqrt{7}}{28}$	0	$-\frac{\sqrt{7}i}{28}$	0	0	0	$-\frac{\sqrt{42}i}{42}$	$-\frac{\sqrt{105}}{420}$	0	$\frac{\sqrt{105}i}{420}$	0	0	0	
		0	0	0	0	0	$-\frac{\sqrt{42}i}{84}$	0	$-\frac{\sqrt{42}}{84}$	$\frac{2\sqrt{105}i}{105}$	0	0	0	$\frac{\sqrt{70}i}{140}$	
		0	0	0	0	$-\frac{\sqrt{42}i}{84}$	0	$\frac{\sqrt{42}}{84}$	0	0	$-\frac{2\sqrt{105}i}{105}$	0	0	$\frac{\sqrt{70}i}{140}$	
		0	0	0	0	0	$\frac{\sqrt{42}}{84}$	0	$-\frac{\sqrt{42}i}{84}$	0	0	$\frac{2\sqrt{105}i}{105}$	0	$\frac{\sqrt{70}}{140}$	
		0	0	0	0	$-\frac{\sqrt{42}}{84}$	0	$-\frac{\sqrt{42}i}{84}$	0	0	0	$-\frac{2\sqrt{105}i}{105}$	$-\frac{\sqrt{70}}{140}$	0	
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{35}i}{70}$	0	$-\frac{\sqrt{35}}{70}$	$\frac{\sqrt{210}i}{70}$	
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{35}i}{70}$	0	$\frac{\sqrt{35}}{70}$	0	$-\frac{\sqrt{210}i}{70}$	
634	symmetry	$\sqrt{3}yz$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{G}_{2,1}^{(1,-1;a)}(E_u, 1)$	0	0	$\frac{\sqrt{21}i}{28}$	0	0	$\frac{\sqrt{14}}{28}$	0	0	0	0	$\frac{\sqrt{35}i}{140}$	0	0	0
		0	0	0	$-\frac{\sqrt{21}i}{28}$	$-\frac{\sqrt{14}}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{35}i}{140}$	0	0
		$-\frac{\sqrt{21}i}{28}$	0	0	0	0	0	0	$\frac{\sqrt{14}}{28}$	$-\frac{\sqrt{35}i}{140}$	0	0	0	0	0
		0	$\frac{\sqrt{21}i}{28}$	0	0	0	0	$-\frac{\sqrt{14}}{28}$	0	0	$\frac{\sqrt{35}i}{140}$	0	0	0	0
		0	0	0	0	0	0	$\frac{\sqrt{14}i}{28}$	0	0	$\frac{\sqrt{35}}{35}$	0	0	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{14}i}{28}$	$-\frac{\sqrt{35}}{35}$	0	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{14}i}{28}$	0	0	0	0	0	$\frac{\sqrt{35}}{35}$	$-\frac{\sqrt{210}i}{140}$	0	0
		0	0	0	0	0	$\frac{\sqrt{14}i}{28}$	0	0	0	0	$-\frac{\sqrt{35}}{35}$	0	0	$\frac{\sqrt{210}i}{140}$
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{105}i}{70}$	0	0	0	$\frac{3\sqrt{70}}{140}$
		0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{105}i}{70}$	$-\frac{3\sqrt{70}}{140}$	0	0
635	symmetry	$-\sqrt{3}xz$													
	$\mathbb{G}_{2,2}^{(1,-1;a)}(E_u, 1)$	$-\frac{\sqrt{21}i}{28}$	0	0	0	0	$-\frac{\sqrt{14}i}{28}$	0	0	$\frac{\sqrt{35}i}{140}$	0	0	0	0	0
		0	$\frac{\sqrt{21}i}{28}$	0	0	$-\frac{\sqrt{14}i}{28}$	0	0	0	0	$-\frac{\sqrt{35}i}{140}$	0	0	0	0
		0	0	$-\frac{\sqrt{21}i}{28}$	0	0	0	0	$-\frac{\sqrt{14}i}{28}$	0	0	$\frac{\sqrt{35}i}{140}$	0	0	0
		0	0	0	$\frac{\sqrt{21}i}{28}$	0	0	$-\frac{\sqrt{14}i}{28}$	0	0	0	0	$-\frac{\sqrt{35}i}{140}$	0	0
		0	0	0	0	$-\frac{\sqrt{14}i}{28}$	0	0	0	$-\frac{\sqrt{35}i}{35}$	0	0	0	$\frac{\sqrt{210}i}{140}$	0
		0	0	0	0	0	$\frac{\sqrt{14}i}{28}$	0	0	$-\frac{\sqrt{35}i}{35}$	0	0	0	0	$-\frac{\sqrt{210}i}{140}$
		0	0	0	0	0	0	$-\frac{\sqrt{14}i}{28}$	0	0	0	0	$-\frac{\sqrt{35}i}{35}$	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{14}i}{28}$	0	0	$-\frac{\sqrt{35}i}{35}$	0	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{105}i}{70}$	0	0	0	0	$-\frac{3\sqrt{70}i}{140}$
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{105}i}{70}$	0	0	$-\frac{3\sqrt{70}i}{140}$	0
636	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{G}_{2,1}^{(1,-1;a)}(E_u, 2)$	0	$\frac{\sqrt{21}i}{28}$	0	$-\frac{\sqrt{21}}{28}$	0	0	0	0	0	$-\frac{\sqrt{35}i}{140}$	0	$-\frac{\sqrt{35}}{140}$	0	0
		$\frac{\sqrt{21}i}{28}$	0	$\frac{\sqrt{21}}{28}$	0	0	0	0	0	$-\frac{\sqrt{35}i}{140}$	0	$\frac{\sqrt{35}}{140}$	0	0	0
		0	$\frac{\sqrt{21}}{28}$	0	$\frac{\sqrt{21}i}{28}$	0	0	0	0	0	$\frac{\sqrt{35}}{140}$	0	$-\frac{\sqrt{35}i}{140}$	0	0
		$-\frac{\sqrt{21}}{28}$	0	$\frac{\sqrt{21}i}{28}$	0	0	0	0	0	$-\frac{\sqrt{35}}{140}$	0	$-\frac{\sqrt{35}i}{140}$	0	0	0
		0	0	0	0	0	$\frac{\sqrt{14}i}{28}$	0	$-\frac{\sqrt{14}}{28}$	0	0	0	0	0	$-\frac{\sqrt{210}i}{140}$
		0	0	0	0	$\frac{\sqrt{14}i}{28}$	0	$\frac{\sqrt{14}}{28}$	0	0	0	0	0	$-\frac{\sqrt{210}i}{140}$	0
		0	0	0	0	0	$\frac{\sqrt{14}}{28}$	0	$\frac{\sqrt{14}i}{28}$	0	0	0	0	0	$\frac{\sqrt{210}}{140}$
		0	0	0	0	$-\frac{\sqrt{14}}{28}$	0	$\frac{\sqrt{14}i}{28}$	0	0	0	0	0	$-\frac{\sqrt{210}}{140}$	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{105}i}{70}$	0	$-\frac{\sqrt{105}}{70}$	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{105}i}{70}$	0	$\frac{\sqrt{105}}{70}$	0	0	0
637	symmetry	$-\sqrt{3}xy$													
	$\mathbb{G}_{2,2}^{(1,-1;a)}(E_u, 2)$	0	$-\frac{\sqrt{21}}{28}$	0	$-\frac{\sqrt{21}i}{28}$	0	0	0	0	0	$\frac{\sqrt{35}}{140}$	0	$-\frac{\sqrt{35}i}{140}$	0	0
		$\frac{\sqrt{21}}{28}$	0	$-\frac{\sqrt{21}i}{28}$	0	0	0	0	0	$-\frac{\sqrt{35}}{140}$	0	$-\frac{\sqrt{35}i}{140}$	0	0	0
		0	$\frac{\sqrt{21}i}{28}$	0	$-\frac{\sqrt{21}}{28}$	0	0	0	0	0	$\frac{\sqrt{35}i}{140}$	0	$\frac{\sqrt{35}}{140}$	0	0
		$\frac{\sqrt{21}i}{28}$	0	$\frac{\sqrt{21}}{28}$	0	0	0	0	0	$\frac{\sqrt{35}i}{140}$	0	$-\frac{\sqrt{35}}{140}$	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{14}}{28}$	0	$-\frac{\sqrt{14}i}{28}$	0	0	0	0	0	$\frac{\sqrt{210}}{140}$
		0	0	0	0	$\frac{\sqrt{14}}{28}$	0	$-\frac{\sqrt{14}i}{28}$	0	0	0	0	0	$-\frac{\sqrt{210}}{140}$	0
		0	0	0	0	0	$\frac{\sqrt{14}i}{28}$	0	$-\frac{\sqrt{14}}{28}$	0	0	0	0	0	$\frac{\sqrt{210}i}{140}$
		0	0	0	0	$\frac{\sqrt{14}i}{28}$	0	$\frac{\sqrt{14}}{28}$	0	0	0	0	0	$\frac{\sqrt{210}i}{140}$	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{105}}{70}$	0	$-\frac{\sqrt{105}i}{70}$	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{105}}{70}$	0	$-\frac{\sqrt{105}i}{70}$	0	0	0
638	symmetry	$\frac{3x^4}{8} + \frac{3x^2y^2}{4} - 3x^2z^2 + \frac{3y^4}{8} - 3y^2z^2 + z^4$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{G}_4^{(1,-1;a)}(A_{1u}, 1)$	0	$\frac{\sqrt{14}i}{56}$	0	$\frac{\sqrt{14}}{56}$	$-\frac{\sqrt{21}i}{21}$	0	0	0	0	$-\frac{\sqrt{210}i}{140}$	0	$\frac{\sqrt{210}}{140}$	0	0
		$\frac{\sqrt{14}i}{56}$	0	$-\frac{\sqrt{14}}{56}$	0	0	$\frac{\sqrt{21}i}{21}$	0	0	$-\frac{\sqrt{210}i}{140}$	0	$-\frac{\sqrt{210}}{140}$	0	0	0
		0	$-\frac{\sqrt{14}}{56}$	0	$\frac{\sqrt{14}i}{56}$	0	0	$-\frac{\sqrt{21}i}{21}$	0	0	$-\frac{\sqrt{210}}{140}$	0	$-\frac{\sqrt{210}i}{140}$	0	0
		$\frac{\sqrt{14}}{56}$	0	$\frac{\sqrt{14}i}{56}$	0	0	0	0	$\frac{\sqrt{21}i}{21}$	$\frac{\sqrt{210}}{140}$	0	$-\frac{\sqrt{210}i}{140}$	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{21}i}{56}$	0	$-\frac{\sqrt{21}}{56}$	$\frac{\sqrt{210}i}{210}$	0	0	0	0	$-\frac{\sqrt{35}i}{140}$
		0	0	0	0	$-\frac{\sqrt{21}i}{56}$	0	$\frac{\sqrt{21}}{56}$	0	0	$-\frac{\sqrt{210}i}{210}$	0	0	$-\frac{\sqrt{35}i}{140}$	0
		0	0	0	0	0	$\frac{\sqrt{21}}{56}$	0	$-\frac{\sqrt{21}i}{56}$	0	0	$\frac{\sqrt{210}i}{210}$	0	0	$-\frac{\sqrt{35}}{140}$
		0	0	0	0	$-\frac{\sqrt{21}}{56}$	0	$-\frac{\sqrt{21}i}{56}$	0	0	0	0	$-\frac{\sqrt{210}i}{210}$	$\frac{\sqrt{35}}{140}$	0
		0	0	0	0	0	0	0	0	0	$-\frac{3\sqrt{70}i}{280}$	0	$-\frac{3\sqrt{70}}{280}$	$\frac{2\sqrt{105}i}{105}$	0
		0	0	0	0	0	0	0	0	$-\frac{3\sqrt{70}i}{280}$	0	$\frac{3\sqrt{70}}{280}$	0	0	$-\frac{2\sqrt{105}i}{105}$
639	symmetry	$\frac{\sqrt{70}yz(3x^2-y^2)}{4}$													
	$\mathbb{G}_4^{(1,-1;a)}(A_{1u}, 2)$	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{3}i}{24}$	0	0	$-\frac{\sqrt{2}}{8}$
		0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{3}i}{24}$	$\frac{\sqrt{2}}{8}$	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{3}i}{24}$	0	0	0	0	$-\frac{\sqrt{2}i}{8}$
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{3}i}{24}$	0	0	$-\frac{\sqrt{2}i}{8}$	0
		0	$\frac{\sqrt{5}}{16}$	0	$\frac{\sqrt{5}i}{16}$	0	0	$\frac{\sqrt{30}i}{48}$	0	0	$\frac{\sqrt{3}}{16}$	0	$\frac{\sqrt{3}i}{16}$	0	0
		$-\frac{\sqrt{5}}{16}$	0	$\frac{\sqrt{5}i}{16}$	0	0	0	$-\frac{\sqrt{30}i}{48}$	$-\frac{\sqrt{3}}{16}$	0	$\frac{\sqrt{3}i}{16}$	0	0	0	0
		0	$-\frac{\sqrt{5}i}{16}$	0	$\frac{\sqrt{5}}{16}$	$\frac{\sqrt{30}i}{48}$	0	0	0	0	$\frac{\sqrt{3}i}{16}$	0	$-\frac{\sqrt{3}}{16}$	0	0
		$-\frac{\sqrt{5}i}{16}$	0	$-\frac{\sqrt{5}}{16}$	0	0	$-\frac{\sqrt{30}i}{48}$	0	0	$\frac{\sqrt{3}i}{16}$	0	$\frac{\sqrt{3}}{16}$	0	0	0
		0	0	$-\frac{\sqrt{15}i}{24}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{15}i}{24}$	0	0	0	0	0	0	0	0	0	0
640	symmetry	$\frac{\sqrt{70}xz(x^2-3y^2)}{4}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{G}_4^{(1,-1;a)}(A_{2u})$	0	0	0	0	0	0	0	0	$-\frac{\sqrt{3}i}{24}$	0	0	0	0	$-\frac{\sqrt{2}i}{8}$
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{3}i}{24}$	0	0	$-\frac{\sqrt{2}i}{8}$	0
		0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{3}i}{24}$	0	0	$\frac{\sqrt{2}}{8}$
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{3}i}{24}$	$-\frac{\sqrt{2}}{8}$	0
		0	$\frac{\sqrt{5}i}{16}$	0	$-\frac{\sqrt{5}}{16}$	$\frac{\sqrt{30}i}{48}$	0	0	0	0	$\frac{\sqrt{3}i}{16}$	0	$-\frac{\sqrt{3}}{16}$	0	0
		$\frac{\sqrt{5}i}{16}$	0	$\frac{\sqrt{5}}{16}$	0	0	$-\frac{\sqrt{30}i}{48}$	0	0	$\frac{\sqrt{3}i}{16}$	0	$\frac{\sqrt{3}}{16}$	0	0	0
		0	$\frac{\sqrt{5}}{16}$	0	$\frac{\sqrt{5}i}{16}$	0	0	$-\frac{\sqrt{30}i}{48}$	0	0	$-\frac{\sqrt{3}}{16}$	0	$-\frac{\sqrt{3}i}{16}$	0	0
		$-\frac{\sqrt{5}}{16}$	0	$\frac{\sqrt{5}i}{16}$	0	0	0	$\frac{\sqrt{30}i}{48}$	$\frac{\sqrt{3}}{16}$	0	$-\frac{\sqrt{3}i}{16}$	0	0	0	0
		$-\frac{\sqrt{15}i}{24}$	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{15}i}{24}$	0	0	0	0	0	0	0	0	0	0	0	0
641	symmetry	$-\frac{\sqrt{10}yz(3x^2+3y^2-4z^2)}{4}$													
	$\mathbb{G}_{4,1}^{(1,-1;a)}(E_u, 1)$	0	0	$-\frac{\sqrt{35}i}{56}$	0	0	$-\frac{\sqrt{210}}{84}$	0	0	0	0	$-\frac{\sqrt{21}i}{28}$	0	0	$-\frac{\sqrt{14}}{56}$
		0	0	0	$\frac{\sqrt{35}i}{56}$	$\frac{\sqrt{210}}{84}$	0	0	0	0	0	0	$\frac{\sqrt{21}i}{28}$	$\frac{\sqrt{14}}{56}$	0
		$\frac{\sqrt{35}i}{56}$	0	0	0	0	0	$-\frac{\sqrt{210}}{84}$	$\frac{\sqrt{21}i}{28}$	0	0	0	0	0	$\frac{\sqrt{14}i}{56}$
		0	$-\frac{\sqrt{35}i}{56}$	0	0	0	0	$\frac{\sqrt{210}}{84}$	0	0	$-\frac{\sqrt{21}i}{28}$	0	0	$\frac{\sqrt{14}i}{56}$	0
		0	$\frac{\sqrt{35}}{112}$	0	$-\frac{\sqrt{35}i}{112}$	0	0	$\frac{\sqrt{210}i}{112}$	0	0	$\frac{\sqrt{21}}{48}$	0	$-\frac{\sqrt{21}i}{112}$	0	0
		$-\frac{\sqrt{35}}{112}$	0	$-\frac{\sqrt{35}i}{112}$	0	0	0	$-\frac{\sqrt{210}i}{112}$	$-\frac{\sqrt{21}}{48}$	0	$-\frac{\sqrt{21}i}{112}$	0	0	0	0
		0	$\frac{\sqrt{35}i}{112}$	0	$\frac{\sqrt{35}}{112}$	$-\frac{\sqrt{210}i}{112}$	0	0	0	0	$-\frac{\sqrt{21}i}{112}$	0	$\frac{\sqrt{21}}{336}$	$\frac{\sqrt{14}i}{56}$	0
		$\frac{\sqrt{35}i}{112}$	0	$-\frac{\sqrt{35}}{112}$	0	0	$\frac{\sqrt{210}i}{112}$	0	0	$-\frac{\sqrt{21}i}{112}$	0	$-\frac{\sqrt{21}}{336}$	0	0	$-\frac{\sqrt{14}i}{56}$
		0	0	0	0	0	0	0	0	0	0	$\frac{3\sqrt{7}i}{56}$	0	0	$\frac{\sqrt{42}}{42}$
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{3\sqrt{7}i}{56}$	$-\frac{\sqrt{42}}{42}$	0
642	symmetry	$\frac{\sqrt{10}xz(3x^2+3y^2-4z^2)}{4}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{G}_{4,2}^{(1,-1;a)}(E_u, 1)$	$\frac{\sqrt{35}i}{56}$	0	0	0	0	$\frac{\sqrt{210}i}{84}$	0	0	$-\frac{\sqrt{21}i}{28}$	0	0	0	$-\frac{\sqrt{14}i}{56}$	
		0	$-\frac{\sqrt{35}i}{56}$	0	0	$\frac{\sqrt{210}i}{84}$	0	0	0	$\frac{\sqrt{21}i}{28}$	0	0	$-\frac{\sqrt{14}i}{56}$	0	
		0	0	$\frac{\sqrt{35}i}{56}$	0	0	0	$\frac{\sqrt{210}i}{84}$	0	0	$-\frac{\sqrt{21}i}{28}$	0	0	$-\frac{\sqrt{14}i}{56}$	
		0	0	0	$-\frac{\sqrt{35}i}{56}$	0	0	$\frac{\sqrt{210}i}{84}$	0	0	0	$\frac{\sqrt{21}i}{28}$	$\frac{\sqrt{14}i}{56}$	0	
		0	$\frac{\sqrt{35}i}{112}$	0	$\frac{\sqrt{35}i}{112}$	$-\frac{\sqrt{210}i}{112}$	0	0	0	$-\frac{\sqrt{21}i}{336}$	0	$\frac{\sqrt{21}i}{112}$	$-\frac{\sqrt{14}i}{56}$	0	
		$\frac{\sqrt{35}i}{112}$	0	$-\frac{\sqrt{35}i}{112}$	0	0	$\frac{\sqrt{210}i}{112}$	0	0	$-\frac{\sqrt{21}i}{336}$	0	$-\frac{\sqrt{21}i}{112}$	0	$\frac{\sqrt{14}i}{56}$	
		0	$-\frac{\sqrt{35}i}{112}$	0	$\frac{\sqrt{35}i}{112}$	0	0	$-\frac{\sqrt{210}i}{112}$	0	$\frac{\sqrt{21}i}{112}$	0	$-\frac{\sqrt{21}i}{48}$	0	0	
		$\frac{\sqrt{35}i}{112}$	0	$\frac{\sqrt{35}i}{112}$	0	0	0	$\frac{\sqrt{210}i}{112}$	$-\frac{\sqrt{21}i}{112}$	0	$-\frac{\sqrt{21}i}{48}$	0	0	0	
		0	0	0	0	0	0	0	$-\frac{3\sqrt{7}i}{56}$	0	0	0	0	$-\frac{\sqrt{42}i}{42}$	
		0	0	0	0	0	0	0	0	$\frac{3\sqrt{7}i}{56}$	0	0	$-\frac{\sqrt{42}i}{42}$	0	
643	symmetry	$\frac{\sqrt{35}(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$													
	$\mathbb{G}_{4,1}^{(1,-1;a)}(E_u, 2)$	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{6}i}{24}$	0	$\frac{\sqrt{6}i}{24}$	0	
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{6}i}{24}$	0	$-\frac{\sqrt{6}i}{24}$	0	0	
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{6}i}{24}$	0	$\frac{\sqrt{6}i}{24}$	0	
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{6}i}{24}$	0	$\frac{\sqrt{6}i}{24}$	0	0	
		0	0	0	0	0	$\frac{\sqrt{15}i}{24}$	0	$-\frac{\sqrt{15}i}{24}$	0	0	0	0	0	
		0	0	0	0	$\frac{\sqrt{15}i}{24}$	0	$\frac{\sqrt{15}i}{24}$	0	0	0	0	0	0	
		0	0	0	0	0	$-\frac{\sqrt{15}i}{24}$	0	$-\frac{\sqrt{15}i}{24}$	0	0	0	0	0	
		0	0	0	0	$\frac{\sqrt{15}i}{24}$	0	$-\frac{\sqrt{15}i}{24}$	0	0	0	0	0	0	
		0	$-\frac{\sqrt{30}i}{24}$	0	$\frac{\sqrt{30}i}{24}$	0	0	0	0	0	0	0	0	0	
		$-\frac{\sqrt{30}i}{24}$	0	$-\frac{\sqrt{30}i}{24}$	0	0	0	0	0	0	0	0	0	0	
644	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{G}_{4,2}^{(1,-1;a)}(E_u, 2)$	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{6}}{24}$	0	$-\frac{\sqrt{6i}}{24}$	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{6}}{24}$	0	$-\frac{\sqrt{6i}}{24}$	0	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{6i}}{24}$	0	$\frac{\sqrt{6}}{24}$	0	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{6i}}{24}$	0	$-\frac{\sqrt{6}}{24}$	0	0	0	0
		0	0	0	0	0	$\frac{\sqrt{15}}{24}$	0	$\frac{\sqrt{15i}}{24}$	0	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{15}}{24}$	0	$\frac{\sqrt{15i}}{24}$	0	0	0	0	0	0	0
		0	0	0	0	0	$\frac{\sqrt{15i}}{24}$	0	$-\frac{\sqrt{15}}{24}$	0	0	0	0	0	0
		0	0	0	0	$\frac{\sqrt{15i}}{24}$	0	$\frac{\sqrt{15}}{24}$	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{30}}{24}$	0	$-\frac{\sqrt{30i}}{24}$	0	0	0	0	0	0	0	0	0	0
		$\frac{\sqrt{30}}{24}$	0	$-\frac{\sqrt{30i}}{24}$	0	0	0	0	0	0	0	0	0	0	0
645	symmetry	$-\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$													
	$\mathbb{G}_{4,1}^{(1,-1;a)}(E_u, 3)$	0	$-\frac{\sqrt{70i}}{112}$	0	$\frac{\sqrt{70}}{112}$	0	0	0	0	0	$\frac{\sqrt{42i}}{48}$	0	$\frac{\sqrt{42}}{48}$	$-\frac{\sqrt{7i}}{14}$	0
		$-\frac{\sqrt{70i}}{112}$	0	$-\frac{\sqrt{70}}{112}$	0	0	0	0	0	$\frac{\sqrt{42i}}{48}$	0	$-\frac{\sqrt{42}}{48}$	0	0	$\frac{\sqrt{7i}}{14}$
		0	$-\frac{\sqrt{70}}{112}$	0	$-\frac{\sqrt{70i}}{112}$	0	0	0	0	0	$-\frac{5\sqrt{42}}{336}$	0	$\frac{5\sqrt{42i}}{336}$	0	0
		$\frac{\sqrt{70}}{112}$	0	$-\frac{\sqrt{70i}}{112}$	0	0	0	0	0	$\frac{5\sqrt{42}}{336}$	0	$\frac{5\sqrt{42i}}{336}$	0	0	0
		$\frac{\sqrt{70i}}{56}$	0	0	0	0	$\frac{\sqrt{105i}}{168}$	0	$-\frac{\sqrt{105}}{84}$	$\frac{\sqrt{42i}}{56}$	0	0	0	0	$\frac{\sqrt{7i}}{56}$
		0	$-\frac{\sqrt{70i}}{56}$	0	0	$\frac{\sqrt{105i}}{168}$	0	$\frac{\sqrt{105}}{84}$	0	0	$-\frac{\sqrt{42i}}{56}$	0	0	$\frac{\sqrt{7i}}{56}$	0
		0	0	$\frac{\sqrt{70i}}{56}$	0	0	$\frac{\sqrt{105}}{168}$	0	$\frac{\sqrt{105i}}{84}$	0	0	$-\frac{\sqrt{42i}}{56}$	0	0	$-\frac{\sqrt{7}}{56}$
		0	0	0	$-\frac{\sqrt{70i}}{56}$	$-\frac{\sqrt{105}}{168}$	0	$\frac{\sqrt{105i}}{84}$	0	0	0	0	$\frac{\sqrt{42i}}{56}$	$\frac{\sqrt{7}}{56}$	0
		0	$\frac{\sqrt{210i}}{336}$	0	$\frac{\sqrt{210}}{336}$	0	0	0	0	0	$\frac{3\sqrt{14i}}{112}$	0	$-\frac{3\sqrt{14}}{112}$	0	0
		$\frac{\sqrt{210i}}{336}$	0	$-\frac{\sqrt{210}}{336}$	0	0	0	0	0	0	$\frac{3\sqrt{14i}}{112}$	0	$\frac{3\sqrt{14}}{112}$	0	0
646	symmetry	$\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{G}_{4,2}^{(1,-1;a)}(E_u, 3)$	0	$\frac{\sqrt{70}}{112}$	0	$\frac{\sqrt{70i}}{112}$	0	0	0	0	0	$-\frac{5\sqrt{42}}{336}$	0	$\frac{5\sqrt{42i}}{336}$	0	0
		$-\frac{\sqrt{70}}{112}$	0	$\frac{\sqrt{70i}}{112}$	0	0	0	0	0	$\frac{5\sqrt{42}}{336}$	0	$\frac{5\sqrt{42i}}{336}$	0	0	0
		0	$-\frac{\sqrt{70i}}{112}$	0	$\frac{\sqrt{70}}{112}$	0	0	0	0	0	$-\frac{\sqrt{42i}}{48}$	0	$-\frac{\sqrt{42}}{48}$	$\frac{\sqrt{7i}}{14}$	0
		$-\frac{\sqrt{70i}}{112}$	0	$-\frac{\sqrt{70}}{112}$	0	0	0	0	0	$-\frac{\sqrt{42i}}{48}$	0	$\frac{\sqrt{42}}{48}$	0	0	$-\frac{\sqrt{7i}}{14}$
		0	0	$-\frac{\sqrt{70i}}{56}$	0	0	$-\frac{\sqrt{105}}{84}$	0	$-\frac{\sqrt{105i}}{168}$	0	0	$-\frac{\sqrt{42i}}{56}$	0	0	$-\frac{\sqrt{7}}{56}$
		0	0	0	$\frac{\sqrt{70i}}{56}$	$\frac{\sqrt{105}}{84}$	0	$-\frac{\sqrt{105i}}{168}$	0	0	0	0	$\frac{\sqrt{42i}}{56}$	$\frac{\sqrt{7}}{56}$	0
		$\frac{\sqrt{70i}}{56}$	0	0	0	0	$\frac{\sqrt{105i}}{84}$	0	$-\frac{\sqrt{105}}{168}$	$-\frac{\sqrt{42i}}{56}$	0	0	0	0	$-\frac{\sqrt{7i}}{56}$
		0	$-\frac{\sqrt{70i}}{56}$	0	0	$\frac{\sqrt{105i}}{84}$	0	$\frac{\sqrt{105}}{168}$	0	0	$\frac{\sqrt{42i}}{56}$	0	0	$-\frac{\sqrt{7i}}{56}$	0
		0	$\frac{\sqrt{210}}{336}$	0	$-\frac{\sqrt{210i}}{336}$	0	0	0	0	0	$-\frac{3\sqrt{14}}{112}$	0	$-\frac{3\sqrt{14i}}{112}$	0	0
		$-\frac{\sqrt{210}}{336}$	0	$-\frac{\sqrt{210i}}{336}$	0	0	0	0	0	$\frac{3\sqrt{14}}{112}$	0	$-\frac{3\sqrt{14i}}{112}$	0	0	0
647	symmetry	$-\frac{5x^6}{16} - \frac{15x^4y^2}{16} + \frac{45x^4z^2}{8} - \frac{15x^2y^4}{16} + \frac{45x^2y^2z^2}{4} - \frac{15x^2z^4}{2} - \frac{5y^6}{16} + \frac{45y^4z^2}{8} - \frac{15y^2z^4}{2} + z^6$													
	$\mathbb{G}_6^{(1,-1;a)}(A_{1u}, 1)$	0	$-\frac{\sqrt{462i}}{1848}$	0	$-\frac{\sqrt{462}}{1848}$	$\frac{\sqrt{77i}}{154}$	0	0	0	0	$\frac{\sqrt{770i}}{616}$	0	$-\frac{\sqrt{770}}{616}$	0	0
		$-\frac{\sqrt{462i}}{1848}$	0	$\frac{\sqrt{462}}{1848}$	0	0	$-\frac{\sqrt{77i}}{154}$	0	0	$\frac{\sqrt{770i}}{616}$	0	$\frac{\sqrt{770}}{616}$	0	0	0
		0	$\frac{\sqrt{462}}{1848}$	0	$-\frac{\sqrt{462i}}{1848}$	0	0	$\frac{\sqrt{77i}}{154}$	0	0	$\frac{\sqrt{770}}{616}$	0	$\frac{\sqrt{770i}}{616}$	0	0
		$-\frac{\sqrt{462}}{1848}$	0	$-\frac{\sqrt{462i}}{1848}$	0	0	0	$-\frac{\sqrt{77i}}{154}$	$-\frac{\sqrt{770}}{616}$	0	$\frac{\sqrt{770i}}{616}$	0	0	0	0
		0	0	0	0	0	$\frac{\sqrt{77i}}{154}$	0	$\frac{\sqrt{77}}{154}$	$-\frac{\sqrt{770i}}{154}$	0	0	0	0	$-\frac{\sqrt{1155i}}{231}$
		0	0	0	0	$\frac{\sqrt{77i}}{154}$	0	$-\frac{\sqrt{77}}{154}$	0	0	$\frac{\sqrt{770i}}{154}$	0	0	$-\frac{\sqrt{1155i}}{231}$	0
		0	0	0	0	0	$-\frac{\sqrt{77}}{154}$	0	$\frac{\sqrt{77i}}{154}$	0	0	$-\frac{\sqrt{770i}}{154}$	0	0	$-\frac{\sqrt{1155}}{231}$
		0	0	0	0	$\frac{\sqrt{77}}{154}$	0	$\frac{\sqrt{77i}}{154}$	0	0	0	0	$\frac{\sqrt{770i}}{154}$	$\frac{\sqrt{1155}}{231}$	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{2310i}}{308}$	0	$-\frac{\sqrt{2310}}{308}$	$\frac{\sqrt{385i}}{77}$	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{2310i}}{308}$	0	$\frac{\sqrt{2310}}{308}$	0	0	$-\frac{\sqrt{385i}}{77}$
648	symmetry	$\frac{\sqrt{462}(x-y)(x+y)(x^2-4xy+y^2)(x^2+4xy+y^2)}{32}$													

continued ...

Table 9

No.	multipole	matrix
	$\mathbb{G}_6^{(1,-1;a)}(A_{1u}, 2)$	$\begin{bmatrix} 0 & \frac{i}{4} & 0 & -\frac{1}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{i}{4} & 0 & \frac{1}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{1}{4} & 0 & -\frac{i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{1}{4} & 0 & -\frac{i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
649	symmetry	$-\frac{\sqrt{210}yz(3x^2-y^2)(3x^2+3y^2-8z^2)}{16}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{330}}{440} & 0 & -\frac{\sqrt{330}i}{440} & 0 & 0 & \frac{\sqrt{33}i}{44} & 0 & 0 & \frac{\sqrt{22}}{44} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{330}}{440} & 0 & -\frac{\sqrt{330}i}{440} & 0 & 0 & 0 & 0 & -\frac{\sqrt{33}i}{44} & -\frac{\sqrt{22}}{44} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{330}i}{440} & 0 & -\frac{\sqrt{330}}{440} & \frac{\sqrt{33}i}{44} & 0 & 0 & 0 & 0 & \frac{\sqrt{22}i}{44} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{330}i}{440} & 0 & \frac{\sqrt{330}}{440} & 0 & 0 & -\frac{\sqrt{33}i}{44} & 0 & 0 & \frac{\sqrt{22}i}{44} & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{55}i}{110} & 0 & 0 & \frac{\sqrt{330}i}{110} & 0 & 0 & \frac{\sqrt{33}}{44} & 0 & \frac{\sqrt{33}i}{44} & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{55}i}{110} & 0 & 0 & 0 & 0 & -\frac{\sqrt{330}i}{110} & -\frac{\sqrt{33}}{44} & 0 & \frac{\sqrt{33}i}{44} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{55}}{110} & \frac{\sqrt{330}i}{110} & 0 & 0 & 0 & 0 & \frac{\sqrt{33}i}{44} & 0 & -\frac{\sqrt{33}}{44} & 0 & 0 \\ 0 & 0 & \frac{\sqrt{55}}{110} & 0 & 0 & -\frac{\sqrt{330}i}{110} & 0 & 0 & \frac{\sqrt{33}i}{44} & 0 & \frac{\sqrt{33}}{44} & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{165}i}{110} & 0 & 0 & \frac{3\sqrt{110}}{220} & 0 & \frac{3\sqrt{110}i}{220} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{165}i}{110} & -\frac{3\sqrt{110}}{220} & 0 & \frac{3\sqrt{110}i}{220} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
650	symmetry	$\frac{\sqrt{462}xy(x^2-3y^2)(3x^2-y^2)}{16}$

continued ...

Table 9

No.	multipole	matrix
	$\mathbb{G}_6^{(1,-1;a)}(A_{2u}, 1)$	$\begin{bmatrix} 0 & \frac{1}{4} & 0 & \frac{i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{1}{4} & 0 & \frac{i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{i}{4} & 0 & -\frac{1}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{i}{4} & 0 & \frac{1}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
651	symmetry	$-\frac{\sqrt{210}xz(x^2-3y^2)(3x^2+3y^2-8z^2)}{16}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{330}i}{440} & 0 & -\frac{\sqrt{330}}{440} & \frac{\sqrt{33}i}{44} & 0 & 0 & 0 & 0 & \frac{\sqrt{22}i}{44} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{330}i}{440} & 0 & \frac{\sqrt{330}}{440} & 0 & 0 & -\frac{\sqrt{33}i}{44} & 0 & 0 & \frac{\sqrt{22}i}{44} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{330}}{440} & 0 & \frac{\sqrt{330}i}{440} & 0 & 0 & -\frac{\sqrt{33}i}{44} & 0 & 0 & -\frac{\sqrt{22}i}{44} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{330}}{440} & 0 & \frac{\sqrt{330}i}{440} & 0 & 0 & 0 & \frac{\sqrt{33}i}{44} & \frac{\sqrt{22}i}{44} & 0 & 0 \\ 0 & -\frac{\sqrt{55}i}{110} & 0 & 0 & \frac{\sqrt{330}i}{110} & 0 & 0 & 0 & 0 & \frac{\sqrt{33}i}{44} & 0 & -\frac{\sqrt{33}}{44} & 0 & 0 \\ -\frac{\sqrt{55}i}{110} & 0 & 0 & 0 & 0 & -\frac{\sqrt{330}i}{110} & 0 & 0 & \frac{\sqrt{33}i}{44} & 0 & \frac{\sqrt{33}}{44} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{55}}{110} & 0 & 0 & 0 & 0 & -\frac{\sqrt{330}i}{110} & 0 & 0 & -\frac{\sqrt{33}}{44} & 0 & -\frac{\sqrt{33}i}{44} & 0 & 0 \\ \frac{\sqrt{55}}{110} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{330}i}{110} & \frac{\sqrt{33}}{44} & 0 & -\frac{\sqrt{33}i}{44} & 0 & 0 & 0 \\ \frac{\sqrt{165}i}{110} & 0 & 0 & 0 & 0 & \frac{3\sqrt{110}i}{220} & 0 & -\frac{3\sqrt{110}}{220} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{165}i}{110} & 0 & 0 & \frac{3\sqrt{110}i}{220} & 0 & \frac{3\sqrt{110}}{220} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
652	symmetry	$\frac{3\sqrt{154}yz(5x^4-10x^2y^2+y^4)}{16}$

continued ...

Table 9

No.	multipole	matrix
	$\mathbb{G}_{6,1}^{(1,-1;a)}(E_u, 1)$	$\begin{bmatrix} 0 & 0 & \frac{\sqrt{3}i}{12} & 0 & 0 & \frac{\sqrt{2}}{8} & 0 & \frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{3}i}{12} & -\frac{\sqrt{2}}{8} & 0 & \frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{3}i}{12} & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{8} & 0 & -\frac{\sqrt{2}}{8} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{3}i}{12} & 0 & 0 & \frac{\sqrt{2}i}{8} & 0 & \frac{\sqrt{2}}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{3}}{12} & 0 & \frac{\sqrt{3}i}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{3}}{12} & 0 & \frac{\sqrt{3}i}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{3}i}{12} & 0 & -\frac{\sqrt{3}}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{3}i}{12} & 0 & \frac{\sqrt{3}}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
653	symmetry	$\frac{3\sqrt{154}xz(x^4-10x^2y^2+5y^4)}{16}$ $\begin{bmatrix} \frac{\sqrt{3}i}{12} & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{8} & 0 & -\frac{\sqrt{2}}{8} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{3}i}{12} & 0 & 0 & \frac{\sqrt{2}i}{8} & 0 & \frac{\sqrt{2}}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{3}i}{12} & 0 & 0 & -\frac{\sqrt{2}}{8} & 0 & -\frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{3}i}{12} & \frac{\sqrt{2}}{8} & 0 & -\frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{3}i}{12} & 0 & -\frac{\sqrt{3}}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{3}i}{12} & 0 & \frac{\sqrt{3}}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{3}}{12} & 0 & -\frac{\sqrt{3}i}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{3}}{12} & 0 & -\frac{\sqrt{3}i}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
654	symmetry	$\frac{\sqrt{21}yz(5x^4+10x^2y^2-20x^2z^2+5y^4-20y^2z^2+8z^4)}{8}$

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{G}_{6,1}^{(1,-1;a)}(E_u, 2)$	0	0	$\frac{\sqrt{22}i}{264}$	0	0	$\frac{\sqrt{33}}{132}$	0	0	0	0	$\frac{\sqrt{330}i}{264}$	0	0	$\frac{\sqrt{55}}{132}$
		0	0	0	$-\frac{\sqrt{22}i}{264}$	$-\frac{\sqrt{33}}{132}$	0	0	0	0	0	0	$-\frac{\sqrt{330}i}{264}$	$-\frac{\sqrt{55}}{132}$	0
		$-\frac{\sqrt{22}i}{264}$	0	0	0	0	0	$\frac{\sqrt{33}}{132}$	$-\frac{\sqrt{330}i}{264}$	0	0	0	0	0	$-\frac{\sqrt{55}i}{132}$
		0	$\frac{\sqrt{22}i}{264}$	0	0	0	0	$-\frac{\sqrt{33}}{132}$	0	0	$\frac{\sqrt{330}i}{264}$	0	0	$-\frac{\sqrt{55}i}{132}$	0
		0	$-\frac{\sqrt{22}}{264}$	0	$\frac{\sqrt{22}i}{264}$	0	0	$-\frac{\sqrt{33}i}{66}$	0	0	$-\frac{\sqrt{330}}{264}$	0	$-\frac{\sqrt{330}i}{264}$	0	0
		$\frac{\sqrt{22}}{264}$	0	$\frac{\sqrt{22}i}{264}$	0	0	0	$\frac{\sqrt{33}i}{66}$	$\frac{\sqrt{330}}{264}$	0	$-\frac{\sqrt{330}i}{264}$	0	0	0	0
		0	$-\frac{\sqrt{22}i}{264}$	0	$-\frac{\sqrt{22}}{264}$	$\frac{\sqrt{33}i}{66}$	0	0	0	0	$-\frac{\sqrt{330}i}{264}$	0	$-\frac{\sqrt{330}}{88}$	$\frac{\sqrt{55}i}{33}$	0
		$-\frac{\sqrt{22}i}{264}$	0	$\frac{\sqrt{22}}{264}$	0	0	$-\frac{\sqrt{33}i}{66}$	0	0	$-\frac{\sqrt{330}i}{264}$	0	$\frac{\sqrt{330}}{88}$	0	0	$-\frac{\sqrt{55}i}{33}$
		0	0	0	0	0	$\frac{\sqrt{11}}{44}$	0	$-\frac{\sqrt{11}i}{44}$	0	0	$\frac{\sqrt{110}i}{44}$	0	0	$\frac{\sqrt{165}}{66}$
		0	0	0	0	$-\frac{\sqrt{11}}{44}$	0	$-\frac{\sqrt{11}i}{44}$	0	0	0	0	$-\frac{\sqrt{110}i}{44}$	$-\frac{\sqrt{165}}{66}$	0
655	symmetry	$-\frac{\sqrt{21}xz(5x^4+10x^2y^2-20x^2z^2+5y^4-20y^2z^2+8z^4)}{8}$													
	$\mathbb{G}_{6,2}^{(1,-1;a)}(E_u, 2)$	$-\frac{\sqrt{22}i}{264}$	0	0	0	0	$-\frac{\sqrt{33}i}{132}$	0	0	$\frac{\sqrt{330}i}{264}$	0	0	0	0	$\frac{\sqrt{55}i}{132}$
		0	$\frac{\sqrt{22}i}{264}$	0	0	$-\frac{\sqrt{33}i}{132}$	0	0	0	0	$-\frac{\sqrt{330}i}{264}$	0	0	$\frac{\sqrt{55}i}{132}$	0
		0	0	$-\frac{\sqrt{22}i}{264}$	0	0	0	0	$-\frac{\sqrt{33}i}{132}$	0	0	$\frac{\sqrt{330}i}{264}$	0	0	$\frac{\sqrt{55}}{132}$
		0	0	0	$\frac{\sqrt{22}i}{264}$	0	0	$-\frac{\sqrt{33}i}{132}$	0	0	0	0	$-\frac{\sqrt{330}i}{264}$	$-\frac{\sqrt{55}}{132}$	0
		0	$-\frac{\sqrt{22}i}{264}$	0	$-\frac{\sqrt{22}}{264}$	$\frac{\sqrt{33}i}{66}$	0	0	0	0	$\frac{\sqrt{330}i}{88}$	0	$\frac{\sqrt{330}}{264}$	$-\frac{\sqrt{55}i}{33}$	0
		$-\frac{\sqrt{22}i}{264}$	0	$\frac{\sqrt{22}}{264}$	0	0	$-\frac{\sqrt{33}i}{66}$	0	0	$\frac{\sqrt{330}i}{88}$	0	$-\frac{\sqrt{330}}{264}$	0	0	$\frac{\sqrt{55}i}{33}$
		0	$\frac{\sqrt{22}}{264}$	0	$-\frac{\sqrt{22}i}{264}$	0	0	$\frac{\sqrt{33}i}{66}$	0	0	$\frac{\sqrt{330}}{264}$	0	$\frac{\sqrt{330}i}{264}$	0	0
		$-\frac{\sqrt{22}}{264}$	0	$-\frac{\sqrt{22}i}{264}$	0	0	0	0	$-\frac{\sqrt{33}i}{66}$	$-\frac{\sqrt{330}}{264}$	0	$\frac{\sqrt{330}i}{264}$	0	0	0
		0	0	0	0	0	$\frac{\sqrt{11}i}{44}$	0	$\frac{\sqrt{11}}{44}$	$-\frac{\sqrt{110}i}{44}$	0	0	0	0	$-\frac{\sqrt{165}i}{66}$
		0	0	0	0	$\frac{\sqrt{11}i}{44}$	0	$-\frac{\sqrt{11}}{44}$	0	0	$\frac{\sqrt{110}i}{44}$	0	0	$-\frac{\sqrt{165}i}{66}$	0
656	symmetry	$-\frac{3\sqrt{7}(x^2+y^2-10z^2)(x^2-2xy-y^2)(x^2+2xy-y^2)}{16}$													

continued ...

Table 9

No.	multipole	matrix
	$\mathbb{G}_{6,1}^{(1,-1;a)}(E_u, 3)$	$\begin{bmatrix} 0 & -\frac{\sqrt{66}i}{264} & 0 & -\frac{\sqrt{66}}{264} & \frac{\sqrt{11}i}{22} & 0 & 0 & 0 & 0 & \frac{\sqrt{110}i}{88} & 0 & -\frac{\sqrt{110}}{88} & 0 & 0 \\ -\frac{\sqrt{66}i}{264} & 0 & \frac{\sqrt{66}}{264} & 0 & 0 & -\frac{\sqrt{11}i}{22} & 0 & 0 & \frac{\sqrt{110}i}{88} & 0 & \frac{\sqrt{110}}{88} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{66}}{264} & 0 & \frac{\sqrt{66}i}{264} & 0 & 0 & -\frac{\sqrt{11}i}{22} & 0 & 0 & -\frac{\sqrt{110}}{88} & 0 & -\frac{\sqrt{110}i}{88} & 0 & 0 \\ \frac{\sqrt{66}}{264} & 0 & \frac{\sqrt{66}i}{264} & 0 & 0 & 0 & 0 & \frac{\sqrt{11}i}{22} & \frac{\sqrt{110}}{88} & 0 & -\frac{\sqrt{110}i}{88} & 0 & 0 & 0 \\ \frac{\sqrt{66}i}{66} & 0 & 0 & 0 & 0 & \frac{\sqrt{11}i}{22} & 0 & -\frac{\sqrt{11}}{22} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{66}i}{66} & 0 & 0 & \frac{\sqrt{11}i}{22} & 0 & \frac{\sqrt{11}}{22} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{66}i}{66} & 0 & 0 & -\frac{\sqrt{11}}{22} & 0 & -\frac{\sqrt{11}i}{22} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{66}i}{66} & \frac{\sqrt{11}}{22} & 0 & -\frac{\sqrt{11}i}{22} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{22}i}{44} & 0 & -\frac{\sqrt{22}}{44} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{22}i}{44} & 0 & \frac{\sqrt{22}}{44} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
657	symmetry	$-\frac{3\sqrt{7}xy(x-y)(x+y)(x^2+y^2-10z^2)}{4}$ $\begin{bmatrix} 0 & \frac{\sqrt{66}}{264} & 0 & -\frac{\sqrt{66}i}{264} & 0 & 0 & \frac{\sqrt{11}i}{22} & 0 & 0 & \frac{\sqrt{110}}{88} & 0 & \frac{\sqrt{110}i}{88} & 0 & 0 \\ -\frac{\sqrt{66}}{264} & 0 & -\frac{\sqrt{66}i}{264} & 0 & 0 & 0 & 0 & -\frac{\sqrt{11}i}{22} & -\frac{\sqrt{110}}{88} & 0 & \frac{\sqrt{110}i}{88} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{66}i}{264} & 0 & -\frac{\sqrt{66}}{264} & \frac{\sqrt{11}i}{22} & 0 & 0 & 0 & 0 & \frac{\sqrt{110}i}{88} & 0 & -\frac{\sqrt{110}}{88} & 0 & 0 \\ -\frac{\sqrt{66}i}{264} & 0 & \frac{\sqrt{66}}{264} & 0 & 0 & -\frac{\sqrt{11}i}{22} & 0 & 0 & \frac{\sqrt{110}i}{88} & 0 & \frac{\sqrt{110}}{88} & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{66}i}{66} & 0 & 0 & \frac{\sqrt{11}}{22} & 0 & \frac{\sqrt{11}i}{22} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{66}i}{66} & -\frac{\sqrt{11}}{22} & 0 & \frac{\sqrt{11}i}{22} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{66}i}{66} & 0 & 0 & 0 & 0 & \frac{\sqrt{11}i}{22} & 0 & -\frac{\sqrt{11}}{22} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{66}i}{66} & 0 & 0 & \frac{\sqrt{11}i}{22} & 0 & \frac{\sqrt{11}}{22} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{22}}{44} & 0 & \frac{\sqrt{22}i}{44} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{22}}{44} & 0 & \frac{\sqrt{22}i}{44} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
658	symmetry	$\frac{\sqrt{210}(x-y)(x+y)(x^4+2x^2y^2-16x^2z^2+y^4-16y^2z^2+16z^4)}{32}$

continued ...

Table 9

No.	multipole	matrix												
	$\mathbb{G}_{6,1}^{(1,-1;a)}(E_u, 4)$	0	$\frac{\sqrt{55}i}{660}$	0	$-\frac{\sqrt{55}}{660}$	0	0	0	0	$-\frac{\sqrt{33}i}{66}$	0	$-\frac{\sqrt{33}}{66}$	$\frac{\sqrt{22}i}{33}$	0
		$\frac{\sqrt{55}i}{660}$	0	$\frac{\sqrt{55}}{660}$	0	0	0	0	$-\frac{\sqrt{33}i}{66}$	0	$\frac{\sqrt{33}}{66}$	0	0	$-\frac{\sqrt{22}i}{33}$
		0	$\frac{\sqrt{55}}{660}$	0	$\frac{\sqrt{55}i}{660}$	0	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{55}}{660}$	0	$\frac{\sqrt{55}i}{660}$	0	0	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{55}i}{165}$	0	0	0	0	$-\frac{\sqrt{330}i}{165}$	0	0	$\frac{\sqrt{33}i}{33}$	0	0	0	$\frac{\sqrt{22}i}{33}$
		0	$\frac{\sqrt{55}i}{165}$	0	0	$-\frac{\sqrt{330}i}{165}$	0	0	0	$-\frac{\sqrt{33}i}{33}$	0	0	$\frac{\sqrt{22}i}{33}$	0
		0	0	$-\frac{\sqrt{55}i}{165}$	0	0	$-\frac{\sqrt{330}}{165}$	0	0	0	$-\frac{\sqrt{33}i}{33}$	0	0	$-\frac{\sqrt{22}}{33}$
		0	0	0	$\frac{\sqrt{55}i}{165}$	$\frac{\sqrt{330}}{165}$	0	0	0	0	$\frac{\sqrt{33}i}{33}$	$\frac{\sqrt{22}}{33}$	0	0
		0	$-\frac{\sqrt{165}i}{330}$	0	$-\frac{\sqrt{165}}{330}$	$\frac{\sqrt{110}i}{55}$	0	0	0	$\frac{\sqrt{11}i}{22}$	0	$-\frac{\sqrt{11}}{22}$	0	0
		$-\frac{\sqrt{165}i}{330}$	0	$\frac{\sqrt{165}}{330}$	0	0	$-\frac{\sqrt{110}i}{55}$	0	0	$\frac{\sqrt{11}i}{22}$	0	$\frac{\sqrt{11}}{22}$	0	0
659	symmetry	$-\frac{\sqrt{210}xy(x^4+2x^2y^2-16x^2z^2+y^4-16y^2z^2+16z^4)}{16}$												
	$\mathbb{G}_{6,2}^{(1,-1;a)}(E_u, 4)$	0	$-\frac{\sqrt{55}}{660}$	0	$-\frac{\sqrt{55}i}{660}$	0	0	0	0	0	0	0	0	0
		$\frac{\sqrt{55}}{660}$	0	$-\frac{\sqrt{55}i}{660}$	0	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{55}i}{660}$	0	$-\frac{\sqrt{55}}{660}$	0	0	0	0	$\frac{\sqrt{33}i}{66}$	0	$\frac{\sqrt{33}}{66}$	$-\frac{\sqrt{22}i}{33}$	0
		$\frac{\sqrt{55}i}{660}$	0	$\frac{\sqrt{55}}{660}$	0	0	0	0	$\frac{\sqrt{33}i}{66}$	0	$-\frac{\sqrt{33}}{66}$	0	0	$\frac{\sqrt{22}i}{33}$
		0	0	$\frac{\sqrt{55}i}{165}$	0	0	0	0	$\frac{\sqrt{330}i}{165}$	0	$-\frac{\sqrt{33}i}{33}$	0	0	$-\frac{\sqrt{22}}{33}$
		0	0	0	$-\frac{\sqrt{55}i}{165}$	0	0	$\frac{\sqrt{330}i}{165}$	0	0	$\frac{\sqrt{33}i}{33}$	$\frac{\sqrt{22}}{33}$	0	0
		$-\frac{\sqrt{55}i}{165}$	0	0	0	0	0	$\frac{\sqrt{330}}{165}$	$-\frac{\sqrt{33}i}{33}$	0	0	0	0	$-\frac{\sqrt{22}i}{33}$
		0	$\frac{\sqrt{55}i}{165}$	0	0	0	$-\frac{\sqrt{330}}{165}$	0	0	$\frac{\sqrt{33}i}{33}$	0	0	$-\frac{\sqrt{22}i}{33}$	0
		0	$-\frac{\sqrt{165}i}{330}$	0	$\frac{\sqrt{165}i}{330}$	0	0	$-\frac{\sqrt{110}i}{55}$	0	0	$-\frac{\sqrt{11}}{22}$	0	$-\frac{\sqrt{11}i}{22}$	0
		$\frac{\sqrt{165}i}{330}$	0	$\frac{\sqrt{165}i}{330}$	0	0	0	$\frac{\sqrt{110}i}{55}$	$\frac{\sqrt{11}}{22}$	0	$-\frac{\sqrt{11}i}{22}$	0	0	0
660	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$												

continued ...

Table 9

No.	multipole	matrix
	$\mathbb{G}_2^{(1,0;a)}(A_{1u})$	$ \begin{bmatrix} 0 & \frac{\sqrt{70}i}{56} & 0 & \frac{\sqrt{70}}{56} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}i}{56} & 0 & -\frac{\sqrt{42}}{56} & 0 & 0 \\ \frac{\sqrt{70}i}{56} & 0 & -\frac{\sqrt{70}}{56} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}i}{56} & 0 & \frac{\sqrt{42}}{56} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{70}}{56} & 0 & \frac{\sqrt{70}i}{56} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}}{56} & 0 & \frac{\sqrt{42}i}{56} & 0 & 0 \\ \frac{\sqrt{70}}{56} & 0 & \frac{\sqrt{70}i}{56} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}}{56} & 0 & \frac{\sqrt{42}i}{56} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}i}{14} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}i}{14} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{14} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}}{14} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}i}{28} & 0 & -\frac{\sqrt{14}}{28} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}i}{28} & 0 & \frac{\sqrt{14}}{28} & 0 & 0 & 0 \end{bmatrix} $
661	symmetry	$ \begin{matrix} \sqrt{3}yz \\ \left[\begin{array}{cccccccccccccc} 0 & 0 & -\frac{\sqrt{210}i}{168} & 0 & 0 & 0 & 0 & \frac{\sqrt{35}i}{28} & 0 & 0 & \frac{\sqrt{14}i}{56} & 0 & 0 & \frac{\sqrt{21}}{84} \\ 0 & 0 & 0 & \frac{\sqrt{210}i}{168} & 0 & 0 & \frac{\sqrt{35}i}{28} & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}i}{56} & -\frac{\sqrt{21}}{84} & 0 \\ \frac{\sqrt{210}i}{168} & 0 & 0 & 0 & 0 & -\frac{\sqrt{35}i}{28} & 0 & 0 & -\frac{\sqrt{14}i}{56} & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}i}{84} \\ 0 & -\frac{\sqrt{210}i}{168} & 0 & 0 & -\frac{\sqrt{35}i}{28} & 0 & 0 & 0 & 0 & \frac{\sqrt{14}i}{56} & 0 & 0 & -\frac{\sqrt{21}i}{84} & 0 \\ 0 & \frac{\sqrt{210}}{168} & 0 & -\frac{\sqrt{210}i}{168} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}}{56} & 0 & \frac{3\sqrt{14}i}{56} & 0 & 0 \\ -\frac{\sqrt{210}}{168} & 0 & -\frac{\sqrt{210}i}{168} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}}{56} & 0 & \frac{3\sqrt{14}i}{56} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{210}i}{168} & 0 & \frac{\sqrt{210}}{168} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}i}{56} & 0 & \frac{\sqrt{14}}{56} & -\frac{\sqrt{21}i}{42} & 0 \\ \frac{\sqrt{210}i}{168} & 0 & -\frac{\sqrt{210}}{168} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}i}{56} & 0 & -\frac{\sqrt{14}}{56} & 0 & 0 & \frac{\sqrt{21}i}{42} \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{105}}{84} & 0 & -\frac{\sqrt{105}i}{84} & 0 & 0 & \frac{\sqrt{42}i}{84} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{105}}{84} & 0 & -\frac{\sqrt{105}i}{84} & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}i}{84} & 0 & 0 \end{array} \right] \end{matrix} $
	$\mathbb{G}_{2,1}^{(1,0;a)}(E_u, 1)$	
662	symmetry	$-\sqrt{3}xz$

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{G}_{2,2}^{(1,0;a)}(E_u, 1)$	$\frac{\sqrt{210i}}{168}$	0	0	0	0	0	0	$\frac{\sqrt{35}}{28}$	$\frac{\sqrt{14i}}{56}$	0	0	0	0	$\frac{\sqrt{21i}}{84}$
		0	$-\frac{\sqrt{210i}}{168}$	0	0	0	0	$-\frac{\sqrt{35}}{28}$	0	0	$-\frac{\sqrt{14i}}{56}$	0	0	$\frac{\sqrt{21i}}{84}$	0
		0	0	$\frac{\sqrt{210i}}{168}$	0	0	$-\frac{\sqrt{35}}{28}$	0	0	0	0	$\frac{\sqrt{14i}}{56}$	0	0	$\frac{\sqrt{21i}}{84}$
		0	0	0	$-\frac{\sqrt{210i}}{168}$	$\frac{\sqrt{35}}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{14i}}{56}$	$-\frac{\sqrt{21i}}{84}$	0
		0	$\frac{\sqrt{210i}}{168}$	0	$\frac{\sqrt{210i}}{168}$	0	0	0	0	0	$-\frac{\sqrt{14i}}{56}$	0	$\frac{\sqrt{14i}}{56}$	$\frac{\sqrt{21i}}{42}$	0
		$\frac{\sqrt{210i}}{168}$	0	$-\frac{\sqrt{210i}}{168}$	0	0	0	0	0	$-\frac{\sqrt{14i}}{56}$	0	$-\frac{\sqrt{14i}}{56}$	0	0	$-\frac{\sqrt{21i}}{42}$
		0	$-\frac{\sqrt{210i}}{168}$	0	$\frac{\sqrt{210i}}{168}$	0	0	0	0	0	$-\frac{3\sqrt{14i}}{56}$	0	$\frac{\sqrt{14i}}{56}$	0	0
		$\frac{\sqrt{210i}}{168}$	0	$\frac{\sqrt{210i}}{168}$	0	0	0	0	0	$\frac{3\sqrt{14i}}{56}$	0	$\frac{\sqrt{14i}}{56}$	0	0	0
		0	0	0	0	0	$\frac{\sqrt{105i}}{84}$	0	$\frac{\sqrt{105i}}{84}$	$-\frac{\sqrt{42i}}{84}$	0	0	0	0	0
		0	0	0	0	$\frac{\sqrt{105i}}{84}$	0	$-\frac{\sqrt{105i}}{84}$	0	0	$\frac{\sqrt{42i}}{84}$	0	0	0	0
663	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$													
	$\mathbb{G}_{2,1}^{(1,0;a)}(E_u, 2)$	0	$\frac{\sqrt{210i}}{168}$	0	$-\frac{\sqrt{210i}}{168}$	0	0	0	0	0	$\frac{\sqrt{14i}}{56}$	0	$\frac{\sqrt{14i}}{56}$	$\frac{\sqrt{21i}}{42}$	0
		$\frac{\sqrt{210i}}{168}$	0	$\frac{\sqrt{210i}}{168}$	0	0	0	0	0	$\frac{\sqrt{14i}}{56}$	0	$-\frac{\sqrt{14i}}{56}$	0	0	$-\frac{\sqrt{21i}}{42}$
		0	$\frac{\sqrt{210i}}{168}$	0	$\frac{\sqrt{210i}}{168}$	0	0	0	0	0	$-\frac{\sqrt{14i}}{56}$	0	$\frac{\sqrt{14i}}{56}$	0	0
		$-\frac{\sqrt{210i}}{168}$	0	$\frac{\sqrt{210i}}{168}$	0	0	0	0	0	$\frac{\sqrt{14i}}{56}$	0	$\frac{\sqrt{14i}}{56}$	0	0	0
		$\frac{\sqrt{210i}}{84}$	0	0	0	0	0	0	0	$-\frac{\sqrt{14i}}{28}$	0	0	0	0	$\frac{\sqrt{21i}}{42}$
		0	$-\frac{\sqrt{210i}}{84}$	0	0	0	0	0	0	0	$\frac{\sqrt{14i}}{28}$	0	0	$\frac{\sqrt{21i}}{42}$	0
		0	0	$\frac{\sqrt{210i}}{84}$	0	0	0	0	0	0	0	$\frac{\sqrt{14i}}{28}$	0	0	$-\frac{\sqrt{21i}}{42}$
		0	0	0	$-\frac{\sqrt{210i}}{84}$	0	0	0	0	0	0	0	$-\frac{\sqrt{14i}}{28}$	$\frac{\sqrt{21i}}{42}$	0
		0	0	0	0	$\frac{\sqrt{105i}}{42}$	0	0	0	0	$-\frac{\sqrt{42i}}{84}$	0	$\frac{\sqrt{42i}}{84}$	0	0
		0	0	0	0	0	$-\frac{\sqrt{105i}}{42}$	0	0	0	$-\frac{\sqrt{42i}}{84}$	0	$-\frac{\sqrt{42i}}{84}$	0	0
664	symmetry	$-\sqrt{3}xy$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{G}_{2,2}^{(1,0;a)}(E_u, 2)$	0	$-\frac{\sqrt{210}}{168}$	0	$-\frac{\sqrt{210i}}{168}$	0	0	0	0	0	$-\frac{\sqrt{14}}{56}$	0	$\frac{\sqrt{14i}}{56}$	0	0
		$\frac{\sqrt{210}}{168}$	0	$-\frac{\sqrt{210i}}{168}$	0	0	0	0	0	$\frac{\sqrt{14}}{56}$	0	$\frac{\sqrt{14i}}{56}$	0	0	0
		0	$\frac{\sqrt{210i}}{168}$	0	$-\frac{\sqrt{210}}{168}$	0	0	0	0	0	$-\frac{\sqrt{14i}}{56}$	0	$-\frac{\sqrt{14}}{56}$	$-\frac{\sqrt{21i}}{42}$	0
		$\frac{\sqrt{210i}}{168}$	0	$\frac{\sqrt{210}}{168}$	0	0	0	0	0	$-\frac{\sqrt{14i}}{56}$	0	$\frac{\sqrt{14}}{56}$	0	0	$\frac{\sqrt{21i}}{42}$
		0	0	$-\frac{\sqrt{210i}}{84}$	0	0	0	0	0	0	0	$\frac{\sqrt{14i}}{28}$	0	0	$-\frac{\sqrt{21}}{42}$
		0	0	0	$\frac{\sqrt{210i}}{84}$	0	0	0	0	0	0	0	$-\frac{\sqrt{14i}}{28}$	$\frac{\sqrt{21}}{42}$	0
		$\frac{\sqrt{210i}}{84}$	0	0	0	0	0	0	0	$\frac{\sqrt{14i}}{28}$	0	0	0	0	$-\frac{\sqrt{21i}}{42}$
		0	$-\frac{\sqrt{210i}}{84}$	0	0	0	0	0	0	$-\frac{\sqrt{14i}}{28}$	0	0	0	$-\frac{\sqrt{21i}}{42}$	0
		0	0	0	0	0	0	$-\frac{\sqrt{105i}}{42}$	0	0	$\frac{\sqrt{42}}{84}$	0	$\frac{\sqrt{42i}}{84}$	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{105i}}{42}$	$-\frac{\sqrt{42}}{84}$	0	$\frac{\sqrt{42i}}{84}$	0	0	0
665	symmetry	$\frac{3x^4}{8} + \frac{3x^2y^2}{4} - 3x^2z^2 + \frac{3y^4}{8} - 3y^2z^2 + z^4$													
	$\mathbb{G}_4^{(1,0;a)}(A_{1u}, 1)$	0	$-\frac{\sqrt{210i}}{280}$	0	$-\frac{\sqrt{210}}{280}$	0	0	0	0	0	$-\frac{\sqrt{14i}}{28}$	0	$\frac{\sqrt{14}}{28}$	0	0
		$-\frac{\sqrt{210i}}{280}$	0	$\frac{\sqrt{210}}{280}$	0	0	0	0	0	$-\frac{\sqrt{14i}}{28}$	0	$-\frac{\sqrt{14}}{28}$	0	0	0
		0	$\frac{\sqrt{210i}}{280}$	0	$-\frac{\sqrt{210}}{280}$	0	0	0	0	0	$-\frac{\sqrt{14i}}{28}$	0	$-\frac{\sqrt{14i}}{28}$	0	0
		$-\frac{\sqrt{210i}}{280}$	0	$-\frac{\sqrt{210i}}{280}$	0	0	0	0	0	$\frac{\sqrt{14}}{28}$	0	$-\frac{\sqrt{14i}}{28}$	0	0	0
		0	0	0	0	0	$\frac{\sqrt{35i}}{40}$	0	$\frac{\sqrt{35}}{40}$	0	0	0	0	0	$\frac{\sqrt{21i}}{28}$
		0	0	0	0	$\frac{\sqrt{35i}}{40}$	0	$-\frac{\sqrt{35}}{40}$	0	0	0	0	0	0	$\frac{\sqrt{21i}}{28}$
		0	0	0	0	0	$-\frac{\sqrt{35}}{40}$	0	$\frac{\sqrt{35i}}{40}$	0	0	0	0	0	$\frac{\sqrt{21}}{28}$
		0	0	0	0	$\frac{\sqrt{35}}{40}$	0	$\frac{\sqrt{35i}}{40}$	0	0	0	0	0	0	$-\frac{\sqrt{21}}{28}$
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{42i}}{56}$	0	$-\frac{\sqrt{42}}{56}$	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{42i}}{56}$	0	$\frac{\sqrt{42}}{56}$	0	0	0
666	symmetry	$\frac{\sqrt{70}yz(3x^2-y^2)}{4}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{G}_4^{(1,0;a)}(A_{1u}, 2)$	0	0	0	0	0	$-\frac{\sqrt{2}}{20}$	0	$\frac{\sqrt{2}i}{20}$	0	0	$-\frac{3\sqrt{5}i}{40}$	0	0	$\frac{\sqrt{30}}{40}$
		0	0	0	0	$\frac{\sqrt{2}}{20}$	0	$\frac{\sqrt{2}i}{20}$	0	0	0	0	$\frac{3\sqrt{5}i}{40}$	$-\frac{\sqrt{30}}{40}$	0
		0	0	0	0	0	$\frac{\sqrt{2}i}{20}$	0	$\frac{\sqrt{2}}{20}$	$-\frac{3\sqrt{5}i}{40}$	0	0	0	0	$\frac{\sqrt{30}i}{40}$
		0	0	0	0	$\frac{\sqrt{2}i}{20}$	0	$-\frac{\sqrt{2}}{20}$	0	0	$\frac{3\sqrt{5}i}{40}$	0	0	$\frac{\sqrt{30}i}{40}$	0
		0	$\frac{7\sqrt{3}}{80}$	0	$-\frac{\sqrt{3}i}{80}$	0	0	$\frac{3\sqrt{2}i}{80}$	0	0	$\frac{\sqrt{5}}{80}$	0	$\frac{\sqrt{5}i}{80}$	0	0
		$-\frac{7\sqrt{3}}{80}$	0	$-\frac{\sqrt{3}i}{80}$	0	0	0	0	$-\frac{3\sqrt{2}i}{80}$	$-\frac{\sqrt{5}}{80}$	0	$\frac{\sqrt{5}i}{80}$	0	0	0
		0	$-\frac{7\sqrt{3}i}{80}$	0	$-\frac{\sqrt{3}}{80}$	$\frac{3\sqrt{2}i}{80}$	0	0	0	0	$\frac{\sqrt{5}i}{80}$	0	$-\frac{\sqrt{5}}{80}$	0	0
		$-\frac{7\sqrt{3}i}{80}$	0	$\frac{\sqrt{3}}{80}$	0	0	$-\frac{3\sqrt{2}i}{80}$	0	0	$\frac{\sqrt{5}i}{80}$	0	$\frac{\sqrt{5}}{80}$	0	0	0
		0	0	$\frac{9i}{40}$	0	0	$-\frac{\sqrt{6}}{20}$	0	$-\frac{\sqrt{6}i}{20}$	0	0	0	0	0	0
		0	0	0	$-\frac{9i}{40}$	$\frac{\sqrt{6}}{20}$	0	$-\frac{\sqrt{6}i}{20}$	0	0	0	0	0	0	0
667	symmetry	$\frac{\sqrt{70}xz(x^2-3y^2)}{4}$													
	$\mathbb{G}_4^{(1,0;a)}(A_{2u})$	0	0	0	0	0	$\frac{\sqrt{2}i}{20}$	0	$\frac{\sqrt{2}}{20}$	$-\frac{3\sqrt{5}i}{40}$	0	0	0	0	$\frac{\sqrt{30}i}{40}$
		0	0	0	0	$\frac{\sqrt{2}i}{20}$	0	$-\frac{\sqrt{2}}{20}$	0	0	$\frac{3\sqrt{5}i}{40}$	0	0	$\frac{\sqrt{30}i}{40}$	0
		0	0	0	0	0	$\frac{\sqrt{2}}{20}$	0	$-\frac{\sqrt{2}i}{20}$	0	0	$\frac{3\sqrt{5}i}{40}$	0	0	$-\frac{\sqrt{30}}{40}$
		0	0	0	0	$-\frac{\sqrt{2}}{20}$	0	$-\frac{\sqrt{2}i}{20}$	0	0	0	0	$-\frac{3\sqrt{5}i}{40}$	$\frac{\sqrt{30}}{40}$	0
		0	$-\frac{\sqrt{3}i}{80}$	0	$-\frac{7\sqrt{3}}{80}$	$\frac{3\sqrt{2}i}{80}$	0	0	0	0	$\frac{\sqrt{5}i}{80}$	0	$-\frac{\sqrt{5}}{80}$	0	0
		$-\frac{\sqrt{3}i}{80}$	0	$\frac{7\sqrt{3}}{80}$	0	0	$-\frac{3\sqrt{2}i}{80}$	0	0	$\frac{\sqrt{5}i}{80}$	0	$\frac{\sqrt{5}}{80}$	0	0	0
		0	$-\frac{\sqrt{3}}{80}$	0	$\frac{7\sqrt{3}i}{80}$	0	0	$-\frac{3\sqrt{2}i}{80}$	0	0	$-\frac{\sqrt{5}}{80}$	0	$-\frac{\sqrt{5}i}{80}$	0	0
		$\frac{\sqrt{3}}{80}$	0	$\frac{7\sqrt{3}i}{80}$	0	0	0	0	$\frac{3\sqrt{2}i}{80}$	$\frac{\sqrt{5}}{80}$	0	$-\frac{\sqrt{5}i}{80}$	0	0	0
		$\frac{9i}{40}$	0	0	0	0	$-\frac{\sqrt{6}i}{20}$	0	$\frac{\sqrt{6}}{20}$	0	0	0	0	0	0
		0	$-\frac{9i}{40}$	0	0	$-\frac{\sqrt{6}i}{20}$	0	$-\frac{\sqrt{6}}{20}$	0	0	0	0	0	0	0
668	symmetry	$-\frac{\sqrt{10}yz(3x^2+3y^2-4z^2)}{4}$													

continued ...

Table 9

No.	multipole	matrix														
$\mathbb{G}_{4,1}^{(1,0;a)}(E_u, 1)$		0	0	$\frac{\sqrt{21}i}{280}$	0	0	0	0	$-\frac{\sqrt{14}i}{28}$	0	0	$-\frac{\sqrt{35}i}{140}$	0	0	$-\frac{3\sqrt{210}}{280}$	
		0	0	0	$-\frac{\sqrt{21}i}{280}$	0	0	$-\frac{\sqrt{14}i}{28}$	0	0	0	0	$\frac{\sqrt{35}i}{140}$	$\frac{3\sqrt{210}}{280}$	0	
		$-\frac{\sqrt{21}i}{280}$	0	0	0	0	$\frac{\sqrt{14}i}{28}$	0	0	$\frac{\sqrt{35}i}{140}$	0	0	0	0	$\frac{3\sqrt{210}i}{280}$	
		0	$\frac{\sqrt{21}i}{280}$	0	0	$\frac{\sqrt{14}i}{28}$	0	0	0	0	$-\frac{\sqrt{35}i}{140}$	0	0	$\frac{3\sqrt{210}i}{280}$	0	
		0	$-\frac{9\sqrt{21}}{560}$	0	$\frac{9\sqrt{21}i}{560}$	0	0	0	$-\frac{\sqrt{14}i}{80}$	0	0	$-\frac{3\sqrt{35}}{560}$	0	$\frac{23\sqrt{35}i}{560}$	0	0
		$\frac{9\sqrt{21}}{560}$	0	$\frac{9\sqrt{21}i}{560}$	0	0	0	0	$\frac{\sqrt{14}i}{80}$	$\frac{3\sqrt{35}}{560}$	0	$\frac{23\sqrt{35}i}{560}$	0	0	0	0
		0	$-\frac{9\sqrt{21}i}{560}$	0	$-\frac{9\sqrt{21}}{560}$	$\frac{\sqrt{14}i}{80}$	0	0	0	0	$-\frac{17\sqrt{35}i}{560}$	0	$\frac{3\sqrt{35}}{560}$	$-\frac{\sqrt{210}i}{280}$	0	0
		$-\frac{9\sqrt{21}i}{560}$	0	$\frac{9\sqrt{21}}{560}$	0	0	$-\frac{\sqrt{14}i}{80}$	0	0	$-\frac{17\sqrt{35}i}{560}$	0	$-\frac{3\sqrt{35}}{560}$	0	0	0	$\frac{\sqrt{210}i}{280}$
		0	0	0	0	0	$\frac{3\sqrt{42}}{140}$	0	$-\frac{3\sqrt{42}i}{140}$	0	0	$\frac{\sqrt{105}i}{280}$	0	0	0	0
		0	0	0	0	$-\frac{3\sqrt{42}}{140}$	0	$-\frac{3\sqrt{42}i}{140}$	0	0	0	0	$-\frac{\sqrt{105}i}{280}$	0	0	0
669	symmetry	$\frac{\sqrt{10xz}(3x^2+3y^2-4z^2)}{4}$														
$\mathbb{G}_{4,2}^{(1,0;a)}(E_u, 1)$		$-\frac{\sqrt{21}i}{280}$	0	0	0	0	0	0	$-\frac{\sqrt{14}}{28}$	$-\frac{\sqrt{35}i}{140}$	0	0	0	0	$-\frac{3\sqrt{210}i}{280}$	
		0	$\frac{\sqrt{21}i}{280}$	0	0	0	0	$\frac{\sqrt{14}}{28}$	0	0	$\frac{\sqrt{35}i}{140}$	0	0	$-\frac{3\sqrt{210}i}{280}$	0	
		0	0	$-\frac{\sqrt{21}i}{280}$	0	0	$\frac{\sqrt{14}}{28}$	0	0	0	0	$-\frac{\sqrt{35}i}{140}$	0	0	$-\frac{3\sqrt{210}}{280}$	
		0	0	0	$\frac{\sqrt{21}i}{280}$	$-\frac{\sqrt{14}}{28}$	0	0	0	0	0	0	$\frac{\sqrt{35}i}{140}$	$\frac{3\sqrt{210}}{280}$	0	0
		0	$-\frac{9\sqrt{21}i}{560}$	0	$-\frac{9\sqrt{21}}{560}$	$\frac{\sqrt{14}i}{80}$	0	0	0	0	$-\frac{3\sqrt{35}i}{560}$	0	$\frac{17\sqrt{35}}{560}$	$\frac{\sqrt{210}i}{280}$	0	0
		$-\frac{9\sqrt{21}i}{560}$	0	$\frac{9\sqrt{21}}{560}$	0	0	$-\frac{\sqrt{14}i}{80}$	0	0	$-\frac{3\sqrt{35}i}{560}$	0	$-\frac{17\sqrt{35}}{560}$	0	0	$-\frac{\sqrt{210}i}{280}$	0
		0	$\frac{9\sqrt{21}}{560}$	0	$-\frac{9\sqrt{21}i}{560}$	0	0	$\frac{\sqrt{14}i}{80}$	0	0	$-\frac{23\sqrt{35}}{560}$	0	$\frac{3\sqrt{35}i}{560}$	0	0	0
		$-\frac{9\sqrt{21}}{560}$	0	$-\frac{9\sqrt{21}i}{560}$	0	0	0	0	$-\frac{\sqrt{14}i}{80}$	$\frac{23\sqrt{35}}{560}$	0	$\frac{3\sqrt{35}i}{560}$	0	0	0	0
		0	0	0	0	0	$\frac{3\sqrt{42}i}{140}$	0	$\frac{3\sqrt{42}}{140}$	$-\frac{\sqrt{105}i}{280}$	0	0	0	0	0	0
		0	0	0	0	$\frac{3\sqrt{42}i}{140}$	0	$-\frac{3\sqrt{42}}{140}$	0	0	$\frac{\sqrt{105}i}{280}$	0	0	0	0	0
670	symmetry	$\frac{\sqrt{35}(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$														

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{G}_{4,1}^{(1,0;a)}(E_u, 2)$	0	0	0	0	$-\frac{i}{5}$	0	0	0	0	$\frac{\sqrt{10}i}{40}$	0	$-\frac{\sqrt{10}}{40}$	0	0
		0	0	0	0	0	$\frac{i}{5}$	0	0	$\frac{\sqrt{10}i}{40}$	0	$\frac{\sqrt{10}}{40}$	0	0	0
		0	0	0	0	0	0	$\frac{i}{5}$	0	0	$-\frac{\sqrt{10}}{40}$	0	$-\frac{\sqrt{10}i}{40}$	0	0
		0	0	0	0	0	0	0	$-\frac{i}{5}$	$\frac{\sqrt{10}}{40}$	0	$-\frac{\sqrt{10}i}{40}$	0	0	0
		$\frac{\sqrt{6}i}{10}$	0	0	0	0	$-\frac{i}{40}$	0	$\frac{1}{40}$	0	0	0	0	0	0
		0	$-\frac{\sqrt{6}i}{10}$	0	0	$-\frac{i}{40}$	0	$-\frac{1}{40}$	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{6}i}{10}$	0	0	$\frac{1}{40}$	0	$\frac{i}{40}$	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{6}i}{10}$	$-\frac{1}{40}$	0	$\frac{i}{40}$	0	0	0	0	0	0	0
		0	$-\frac{3\sqrt{2}i}{40}$	0	$\frac{3\sqrt{2}}{40}$	0	0	0	0	0	0	0	0	0	0
		$-\frac{3\sqrt{2}i}{40}$	0	$-\frac{3\sqrt{2}}{40}$	0	0	0	0	0	0	0	0	0	0	0
671	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$													
	$\mathbb{G}_{4,2}^{(1,0;a)}(E_u, 2)$	0	0	0	0	0	0	$-\frac{i}{5}$	0	0	$\frac{\sqrt{10}}{40}$	0	$\frac{\sqrt{10}i}{40}$	0	0
		0	0	0	0	0	0	0	$\frac{i}{5}$	$-\frac{\sqrt{10}}{40}$	0	$\frac{\sqrt{10}i}{40}$	0	0	0
		0	0	0	0	$-\frac{i}{5}$	0	0	0	0	$\frac{\sqrt{10}i}{40}$	0	$-\frac{\sqrt{10}}{40}$	0	0
		0	0	0	0	0	$\frac{i}{5}$	0	0	$\frac{\sqrt{10}i}{40}$	0	$\frac{\sqrt{10}}{40}$	0	0	0
		0	0	$\frac{\sqrt{6}i}{10}$	0	0	$-\frac{1}{40}$	0	$-\frac{i}{40}$	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{6}i}{10}$	$\frac{1}{40}$	0	$-\frac{i}{40}$	0	0	0	0	0	0	0
		$\frac{\sqrt{6}i}{10}$	0	0	0	0	$-\frac{i}{40}$	0	$\frac{1}{40}$	0	0	0	0	0	0
		0	$-\frac{\sqrt{6}i}{10}$	0	0	$-\frac{i}{40}$	0	$-\frac{1}{40}$	0	0	0	0	0	0	0
		0	$-\frac{3\sqrt{2}}{40}$	0	$-\frac{3\sqrt{2}i}{40}$	0	0	0	0	0	0	0	0	0	0
		$\frac{3\sqrt{2}}{40}$	0	$-\frac{3\sqrt{2}i}{40}$	0	0	0	0	0	0	0	0	0	0	0
672	symmetry	$-\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{G}_{4,1}^{(1,0;a)}(E_u, 3)$	0	$-\frac{3\sqrt{42i}}{560}$	0	$\frac{3\sqrt{42}}{560}$	0	0	0	0	0	$\frac{\sqrt{70i}}{560}$	0	$\frac{\sqrt{70}}{560}$	$-\frac{\sqrt{105i}}{70}$	0
		$-\frac{3\sqrt{42i}}{560}$	0	$-\frac{3\sqrt{42}}{560}$	0	0	0	0	0	$\frac{\sqrt{70i}}{560}$	0	$-\frac{\sqrt{70}}{560}$	0	0	$\frac{\sqrt{105i}}{70}$
		0	$-\frac{3\sqrt{42}}{560}$	0	$-\frac{3\sqrt{42i}}{560}$	0	0	0	0	0	$\frac{13\sqrt{70}}{560}$	0	$-\frac{13\sqrt{70i}}{560}$	0	0
		$\frac{3\sqrt{42}}{560}$	0	$-\frac{3\sqrt{42i}}{560}$	0	0	0	0	0	$-\frac{13\sqrt{70}}{560}$	0	$-\frac{13\sqrt{70i}}{560}$	0	0	0
		$-\frac{3\sqrt{42i}}{280}$	0	0	0	0	$\frac{\sqrt{7i}}{40}$	0	$-\frac{\sqrt{7}}{20}$	$-\frac{\sqrt{70i}}{280}$	0	0	0	0	$\frac{3\sqrt{105i}}{280}$
		0	$\frac{3\sqrt{42i}}{280}$	0	0	$\frac{\sqrt{7i}}{40}$	0	$\frac{\sqrt{7}}{20}$	0	0	$\frac{\sqrt{70i}}{280}$	0	0	$\frac{3\sqrt{105i}}{280}$	0
		0	0	$-\frac{3\sqrt{42i}}{280}$	0	0	$\frac{\sqrt{7}}{40}$	0	$\frac{\sqrt{7i}}{20}$	0	0	$\frac{\sqrt{70i}}{280}$	0	0	$-\frac{3\sqrt{105}}{280}$
		0	0	0	$\frac{3\sqrt{42i}}{280}$	$-\frac{\sqrt{7}}{40}$	0	$\frac{\sqrt{7i}}{20}$	0	0	0	$-\frac{\sqrt{70i}}{280}$	$\frac{3\sqrt{105}}{280}$	0	0
		0	$-\frac{3\sqrt{14i}}{80}$	0	$-\frac{3\sqrt{14}}{80}$	$\frac{\sqrt{21i}}{35}$	0	0	0	0	$-\frac{3\sqrt{210i}}{560}$	0	$\frac{3\sqrt{210}}{560}$	0	0
		$-\frac{3\sqrt{14i}}{80}$	0	$\frac{3\sqrt{14}}{80}$	0	0	$-\frac{\sqrt{21i}}{35}$	0	0	$-\frac{3\sqrt{210i}}{560}$	0	$-\frac{3\sqrt{210}}{560}$	0	0	0
673	symmetry	$\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$													
	$\mathbb{G}_{4,2}^{(1,0;a)}(E_u, 3)$	0	$\frac{3\sqrt{42}}{560}$	0	$\frac{3\sqrt{42i}}{560}$	0	0	0	0	0	$\frac{13\sqrt{70}}{560}$	0	$-\frac{13\sqrt{70i}}{560}$	0	0
		$-\frac{3\sqrt{42}}{560}$	0	$\frac{3\sqrt{42i}}{560}$	0	0	0	0	0	$-\frac{13\sqrt{70}}{560}$	0	$-\frac{13\sqrt{70i}}{560}$	0	0	0
		0	$-\frac{3\sqrt{42i}}{560}$	0	$\frac{3\sqrt{42}}{560}$	0	0	0	0	0	$-\frac{\sqrt{70i}}{560}$	0	$-\frac{\sqrt{70}}{560}$	$\frac{\sqrt{105i}}{70}$	0
		$-\frac{3\sqrt{42i}}{560}$	0	$-\frac{3\sqrt{42}}{560}$	0	0	0	0	0	$-\frac{\sqrt{70i}}{560}$	0	$\frac{\sqrt{70}}{560}$	0	0	$-\frac{\sqrt{105i}}{70}$
		0	0	$\frac{3\sqrt{42i}}{280}$	0	0	$-\frac{\sqrt{7}}{20}$	0	$-\frac{\sqrt{7i}}{40}$	0	0	$\frac{\sqrt{70i}}{280}$	0	0	$-\frac{3\sqrt{105}}{280}$
		0	0	0	$-\frac{3\sqrt{42i}}{280}$	$\frac{\sqrt{7}}{20}$	0	$-\frac{\sqrt{7i}}{40}$	0	0	0	0	$-\frac{\sqrt{70i}}{280}$	$\frac{3\sqrt{105}}{280}$	0
		$-\frac{3\sqrt{42i}}{280}$	0	0	0	0	$\frac{\sqrt{7i}}{20}$	0	$-\frac{\sqrt{7}}{40}$	$\frac{\sqrt{70i}}{280}$	0	0	0	0	$-\frac{3\sqrt{105i}}{280}$
		0	$\frac{3\sqrt{42i}}{280}$	0	0	$\frac{\sqrt{7i}}{20}$	0	$\frac{\sqrt{7}}{40}$	0	0	$-\frac{\sqrt{70i}}{280}$	0	0	$-\frac{3\sqrt{105i}}{280}$	0
		0	$-\frac{3\sqrt{14}}{80}$	0	$\frac{3\sqrt{14i}}{80}$	0	0	$-\frac{\sqrt{21i}}{35}$	0	0	$\frac{3\sqrt{210}}{560}$	0	$\frac{3\sqrt{210i}}{560}$	0	0
		$\frac{3\sqrt{14}}{80}$	0	$\frac{3\sqrt{14i}}{80}$	0	0	0	$\frac{\sqrt{21i}}{35}$	$-\frac{3\sqrt{210}}{560}$	0	$\frac{3\sqrt{210i}}{560}$	0	0	0	0
674	symmetry	1													

continued ...

Table 9

No.	multipole	matrix												
	$\mathbb{G}_0^{(1,1;a)}(A_{1u})$	0	$\frac{\sqrt{14}i}{28}$	0	$\frac{\sqrt{14}}{28}$	$\frac{\sqrt{21}i}{42}$	0	0	0	$-\frac{\sqrt{210}i}{420}$	0	$\frac{\sqrt{210}}{420}$	0	0
		$\frac{\sqrt{14}i}{28}$	0	$-\frac{\sqrt{14}}{28}$	0	0	$-\frac{\sqrt{21}i}{42}$	0	0	$-\frac{\sqrt{210}i}{420}$	0	$-\frac{\sqrt{210}}{420}$	0	0
		0	$-\frac{\sqrt{14}}{28}$	0	$\frac{\sqrt{14}i}{28}$	0	0	$\frac{\sqrt{21}i}{42}$	0	$-\frac{\sqrt{210}}{420}$	0	$-\frac{\sqrt{210}i}{420}$	0	0
		$\frac{\sqrt{14}}{28}$	0	$\frac{\sqrt{14}i}{28}$	0	0	0	$-\frac{\sqrt{21}i}{42}$	$\frac{\sqrt{210}}{420}$	0	$-\frac{\sqrt{210}i}{420}$	0	0	0
		0	0	0	0	0	$\frac{\sqrt{21}i}{42}$	0	$\frac{\sqrt{21}}{42}$	$\frac{\sqrt{210}i}{105}$	0	0	0	$-\frac{\sqrt{35}i}{70}$
		0	0	0	0	$\frac{\sqrt{21}i}{42}$	0	$-\frac{\sqrt{21}}{42}$	0	$-\frac{\sqrt{210}i}{105}$	0	0	$-\frac{\sqrt{35}i}{70}$	0
		0	0	0	0	0	$-\frac{\sqrt{21}}{42}$	0	$\frac{\sqrt{21}i}{42}$	0	0	$\frac{\sqrt{210}i}{105}$	0	$-\frac{\sqrt{35}}{70}$
		0	0	0	0	$\frac{\sqrt{21}}{42}$	0	$\frac{\sqrt{21}i}{42}$	0	0	0	$-\frac{\sqrt{210}i}{105}$	$\frac{\sqrt{35}}{70}$	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{70}i}{70}$	0	$\frac{\sqrt{70}}{70}$	$\frac{\sqrt{105}i}{70}$	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{70}i}{70}$	0	$-\frac{\sqrt{70}}{70}$	0	$-\frac{\sqrt{105}i}{70}$
675	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$												
	$\mathbb{G}_2^{(1,1;a)}(A_{1u})$	0	$-\frac{\sqrt{42}i}{84}$	0	$-\frac{\sqrt{42}}{84}$	$-\frac{\sqrt{7}i}{14}$	0	0	0	$\frac{\sqrt{70}i}{70}$	0	$-\frac{\sqrt{70}}{70}$	0	0
		$-\frac{\sqrt{42}i}{84}$	0	$\frac{\sqrt{42}}{84}$	0	0	$\frac{\sqrt{7}i}{14}$	0	0	$\frac{\sqrt{70}i}{70}$	0	$\frac{\sqrt{70}}{70}$	0	0
		0	$\frac{\sqrt{42}}{84}$	0	$-\frac{\sqrt{42}i}{84}$	0	0	$-\frac{\sqrt{7}i}{14}$	0	$\frac{\sqrt{70}}{70}$	0	$\frac{\sqrt{70}i}{70}$	0	0
		$-\frac{\sqrt{42}}{84}$	0	$-\frac{\sqrt{42}i}{84}$	0	0	0	$\frac{\sqrt{7}i}{14}$	$-\frac{\sqrt{70}}{70}$	0	$\frac{\sqrt{70}i}{70}$	0	0	0
		0	0	0	0	0	$\frac{\sqrt{7}i}{28}$	0	$\frac{\sqrt{7}}{28}$	$\frac{\sqrt{70}i}{140}$	0	0	0	$\frac{\sqrt{105}i}{210}$
		0	0	0	0	$\frac{\sqrt{7}i}{28}$	0	$-\frac{\sqrt{7}}{28}$	0	$-\frac{\sqrt{70}i}{140}$	0	0	$\frac{\sqrt{105}i}{210}$	0
		0	0	0	0	0	$-\frac{\sqrt{7}}{28}$	0	$\frac{\sqrt{7}i}{28}$	0	0	$\frac{\sqrt{70}i}{140}$	0	$\frac{\sqrt{105}}{210}$
		0	0	0	0	$\frac{\sqrt{7}}{28}$	0	$\frac{\sqrt{7}i}{28}$	0	0	0	$-\frac{\sqrt{70}i}{140}$	$-\frac{\sqrt{105}}{210}$	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{210}i}{140}$	0	$\frac{\sqrt{210}}{140}$	$\frac{\sqrt{35}i}{35}$	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{210}i}{140}$	0	$-\frac{\sqrt{210}}{140}$	0	$-\frac{\sqrt{35}i}{35}$
676	symmetry	$\sqrt{3}yz$												

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{G}_{2,1}^{(1,1;a)}(E_u, 1)$	0	0	$-\frac{\sqrt{14}i}{42}$	0	0	$\frac{\sqrt{21}}{42}$	0	0	0	0	$-\frac{\sqrt{210}i}{105}$	0	0	$\frac{\sqrt{35}}{42}$
		0	0	0	$\frac{\sqrt{14}i}{42}$	$-\frac{\sqrt{21}}{42}$	0	0	0	0	0	0	$\frac{\sqrt{210}i}{105}$	$-\frac{\sqrt{35}}{42}$	0
		$\frac{\sqrt{14}i}{42}$	0	0	0	0	0	$\frac{\sqrt{21}}{42}$	$\frac{\sqrt{210}i}{105}$	0	0	0	0	0	$-\frac{\sqrt{35}i}{42}$
		0	$-\frac{\sqrt{14}i}{42}$	0	0	0	0	$-\frac{\sqrt{21}}{42}$	0	0	$-\frac{\sqrt{210}i}{105}$	0	0	$-\frac{\sqrt{35}i}{42}$	0
		0	$-\frac{5\sqrt{14}}{168}$	0	$\frac{5\sqrt{14}i}{168}$	0	0	$\frac{\sqrt{21}i}{42}$	0	0	$-\frac{\sqrt{210}}{120}$	0	$\frac{\sqrt{210}i}{168}$	0	0
		$\frac{5\sqrt{14}}{168}$	0	$\frac{5\sqrt{14}i}{168}$	0	0	0	$-\frac{\sqrt{21}i}{42}$	$\frac{\sqrt{210}}{120}$	0	$\frac{\sqrt{210}i}{168}$	0	0	0	0
		0	$-\frac{5\sqrt{14}i}{168}$	0	$-\frac{5\sqrt{14}}{168}$	$-\frac{\sqrt{21}i}{42}$	0	0	0	0	$\frac{\sqrt{210}i}{168}$	0	$\frac{\sqrt{210}}{280}$	$\frac{\sqrt{35}i}{105}$	0
		$-\frac{5\sqrt{14}i}{168}$	0	$\frac{5\sqrt{14}}{168}$	0	0	$\frac{\sqrt{21}i}{42}$	0	0	$\frac{\sqrt{210}i}{168}$	0	$-\frac{\sqrt{210}}{280}$	0	0	$-\frac{\sqrt{35}i}{105}$
		0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{70}i}{70}$	0	0	$-\frac{\sqrt{105}}{105}$
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{70}i}{70}$	$\frac{\sqrt{105}}{105}$	0
677	symmetry	$-\sqrt{3}xz$													
	$\mathbb{G}_{2,2}^{(1,1;a)}(E_u, 1)$	$\frac{\sqrt{14}i}{42}$	0	0	0	0	$-\frac{\sqrt{21}i}{42}$	0	0	$-\frac{\sqrt{210}i}{105}$	0	0	0	0	$\frac{\sqrt{35}i}{42}$
		0	$-\frac{\sqrt{14}i}{42}$	0	0	$-\frac{\sqrt{21}i}{42}$	0	0	0	0	$\frac{\sqrt{210}i}{105}$	0	0	$\frac{\sqrt{35}i}{42}$	0
		0	0	$\frac{\sqrt{14}i}{42}$	0	0	0	$-\frac{\sqrt{21}i}{42}$	0	0	$-\frac{\sqrt{210}i}{105}$	0	0	$\frac{\sqrt{35}}{42}$	$\frac{\sqrt{35}}{42}$
		0	0	0	$-\frac{\sqrt{14}i}{42}$	0	0	$-\frac{\sqrt{21}i}{42}$	0	0	0	0	$\frac{\sqrt{210}i}{105}$	$-\frac{\sqrt{35}}{42}$	0
		0	$-\frac{5\sqrt{14}i}{168}$	0	$-\frac{5\sqrt{14}}{168}$	$-\frac{\sqrt{21}i}{42}$	0	0	0	0	$-\frac{\sqrt{210}i}{280}$	0	$-\frac{\sqrt{210}}{168}$	$-\frac{\sqrt{35}i}{105}$	0
		$-\frac{5\sqrt{14}i}{168}$	0	$\frac{5\sqrt{14}}{168}$	0	0	$\frac{\sqrt{21}i}{42}$	0	0	$-\frac{\sqrt{210}i}{280}$	0	$\frac{\sqrt{210}}{168}$	0	0	$\frac{\sqrt{35}i}{105}$
		0	$\frac{5\sqrt{14}}{168}$	0	$-\frac{5\sqrt{14}i}{168}$	0	0	$-\frac{\sqrt{21}i}{42}$	0	0	$-\frac{\sqrt{210}}{168}$	0	$\frac{\sqrt{210}i}{120}$	0	0
		$-\frac{5\sqrt{14}}{168}$	0	$-\frac{5\sqrt{14}i}{168}$	0	0	0	$\frac{\sqrt{21}i}{42}$	$\frac{\sqrt{210}}{168}$	0	$\frac{\sqrt{210}i}{120}$	0	0	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{70}i}{70}$	0	0	0	0	$\frac{\sqrt{105}i}{105}$
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{70}i}{70}$	0	0	$\frac{\sqrt{105}i}{105}$	0
678	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{G}_{2,1}^{(1,1;a)}(E_u, 2)$	0	$\frac{\sqrt{14}i}{168}$	0	$-\frac{\sqrt{14}}{168}$	0	0	0	0	0	$-\frac{\sqrt{210}i}{120}$	0	$-\frac{\sqrt{210}}{120}$	$-\frac{\sqrt{35}i}{42}$	0
		$\frac{\sqrt{14}i}{168}$	0	$\frac{\sqrt{14}}{168}$	0	0	0	0	0	$-\frac{\sqrt{210}i}{120}$	0	$\frac{\sqrt{210}}{120}$	0	0	$\frac{\sqrt{35}i}{42}$
		0	$\frac{\sqrt{14}}{168}$	0	$\frac{\sqrt{14}i}{168}$	0	0	0	0	0	$-\frac{\sqrt{210}}{280}$	0	$\frac{\sqrt{210}i}{280}$	0	0
		$-\frac{\sqrt{14}}{168}$	0	$\frac{\sqrt{14}i}{168}$	0	0	0	0	0	$\frac{\sqrt{210}}{280}$	0	$\frac{\sqrt{210}i}{280}$	0	0	0
		$\frac{5\sqrt{14}i}{168}$	0	0	0	0	$\frac{\sqrt{21}i}{42}$	0	$\frac{\sqrt{21}}{28}$	$\frac{\sqrt{210}i}{168}$	0	0	0	0	$-\frac{\sqrt{35}i}{420}$
		0	$-\frac{5\sqrt{14}i}{168}$	0	0	$\frac{\sqrt{21}i}{42}$	0	$-\frac{\sqrt{21}}{28}$	0	0	$-\frac{\sqrt{210}i}{168}$	0	0	$-\frac{\sqrt{35}i}{420}$	0
		0	0	$\frac{5\sqrt{14}i}{168}$	0	0	$\frac{\sqrt{21}}{42}$	0	$-\frac{\sqrt{21}i}{28}$	0	0	$-\frac{\sqrt{210}i}{168}$	0	0	$\frac{\sqrt{35}}{420}$
		0	0	0	$-\frac{5\sqrt{14}i}{168}$	$-\frac{\sqrt{21}}{42}$	0	$-\frac{\sqrt{21}i}{28}$	0	0	0	0	$\frac{\sqrt{210}i}{168}$	$-\frac{\sqrt{35}}{420}$	0
		0	$-\frac{5\sqrt{42}i}{168}$	0	$-\frac{5\sqrt{42}}{168}$	0	0	0	0	0	$-\frac{\sqrt{70}i}{280}$	0	$\frac{\sqrt{70}}{280}$	0	0
		$-\frac{5\sqrt{42}i}{168}$	0	$\frac{5\sqrt{42}}{168}$	0	0	0	0	0	$-\frac{\sqrt{70}i}{280}$	0	$-\frac{\sqrt{70}}{280}$	0	0	0
679	symmetry	$-\sqrt{3}xy$													
	$\mathbb{G}_{2,2}^{(1,1;a)}(E_u, 2)$	0	$-\frac{\sqrt{14}}{168}$	0	$-\frac{\sqrt{14}i}{168}$	0	0	0	0	0	$-\frac{\sqrt{210}}{280}$	0	$\frac{\sqrt{210}i}{280}$	0	0
		$\frac{\sqrt{14}}{168}$	0	$-\frac{\sqrt{14}i}{168}$	0	0	0	0	0	$\frac{\sqrt{210}}{280}$	0	$\frac{\sqrt{210}i}{280}$	0	0	0
		0	$\frac{\sqrt{14}i}{168}$	0	$-\frac{\sqrt{14}}{168}$	0	0	0	0	0	$\frac{\sqrt{210}i}{120}$	0	$\frac{\sqrt{210}}{120}$	$\frac{\sqrt{35}i}{42}$	0
		$\frac{\sqrt{14}i}{168}$	0	$\frac{\sqrt{14}}{168}$	0	0	0	0	0	$\frac{\sqrt{210}i}{120}$	0	$-\frac{\sqrt{210}}{120}$	0	0	$-\frac{\sqrt{35}i}{42}$
		0	0	$-\frac{5\sqrt{14}i}{168}$	0	0	$\frac{\sqrt{21}}{28}$	0	$-\frac{\sqrt{21}i}{42}$	0	0	$-\frac{\sqrt{210}i}{168}$	0	0	$\frac{\sqrt{35}}{420}$
		0	0	0	$\frac{5\sqrt{14}i}{168}$	$-\frac{\sqrt{21}}{28}$	0	$-\frac{\sqrt{21}i}{42}$	0	0	0	0	$\frac{\sqrt{210}i}{168}$	$-\frac{\sqrt{35}}{420}$	0
		$\frac{5\sqrt{14}i}{168}$	0	0	0	0	$-\frac{\sqrt{21}i}{28}$	0	$-\frac{\sqrt{21}}{42}$	$-\frac{\sqrt{210}i}{168}$	0	0	0	0	$\frac{\sqrt{35}i}{420}$
		0	$-\frac{5\sqrt{14}i}{168}$	0	0	$-\frac{\sqrt{21}i}{28}$	0	$\frac{\sqrt{21}}{42}$	0	0	$\frac{\sqrt{210}i}{168}$	0	0	$\frac{\sqrt{35}i}{420}$	0
		0	$-\frac{5\sqrt{42}}{168}$	0	$\frac{5\sqrt{42}i}{168}$	0	0	0	0	0	$\frac{\sqrt{70}}{280}$	0	$\frac{\sqrt{70}i}{280}$	0	0
		$\frac{5\sqrt{42}}{168}$	0	$\frac{5\sqrt{42}i}{168}$	0	0	0	0	0	$-\frac{\sqrt{70}i}{280}$	0	$\frac{\sqrt{70}}{280}$	0	0	0
680	symmetry	$\frac{3x^4}{8} + \frac{3x^2y^2}{4} - 3x^2z^2 + \frac{3y^4}{8} - 3y^2z^2 + z^4$													

continued ...

Table 9

No.	multipole	matrix													
$\mathbb{G}_4^{(1,1;a)}(A_{1u}, 1)$		0	$\frac{\sqrt{385}i}{1540}$	0	$\frac{\sqrt{385}}{1540}$	$\frac{\sqrt{2310}i}{924}$	0	0	0	0	$-\frac{\sqrt{231}i}{308}$	0	$\frac{\sqrt{231}}{308}$	0	0
		$\frac{\sqrt{385}i}{1540}$	0	$-\frac{\sqrt{385}}{1540}$	0	0	$-\frac{\sqrt{2310}i}{924}$	0	0	$-\frac{\sqrt{231}i}{308}$	0	$-\frac{\sqrt{231}}{308}$	0	0	0
		0	$-\frac{\sqrt{385}}{1540}$	0	$\frac{\sqrt{385}i}{1540}$	0	0	$\frac{\sqrt{2310}i}{924}$	0	0	$-\frac{\sqrt{231}}{308}$	0	$-\frac{\sqrt{231}i}{308}$	0	0
		$\frac{\sqrt{385}}{1540}$	0	$\frac{\sqrt{385}i}{1540}$	0	0	0	$-\frac{\sqrt{2310}i}{924}$	$\frac{\sqrt{231}}{308}$	0	$-\frac{\sqrt{231}i}{308}$	0	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{2310}i}{770}$	0	$-\frac{\sqrt{2310}}{770}$	$-\frac{5\sqrt{231}i}{462}$	0	0	0	0	$\frac{\sqrt{154}i}{77}$
		0	0	0	0	$-\frac{\sqrt{2310}i}{770}$	0	$\frac{\sqrt{2310}}{770}$	0	0	$\frac{5\sqrt{231}i}{462}$	0	0	$\frac{\sqrt{154}i}{77}$	0
		0	0	0	0	0	$\frac{\sqrt{2310}}{770}$	0	$-\frac{\sqrt{2310}i}{770}$	0	0	$-\frac{5\sqrt{231}i}{462}$	0	0	$\frac{\sqrt{154}}{77}$
		0	0	0	0	$-\frac{\sqrt{2310}}{770}$	0	$-\frac{\sqrt{2310}i}{770}$	0	0	0	$\frac{5\sqrt{231}i}{462}$	$-\frac{\sqrt{154}}{77}$	0	0
		0	0	0	0	0	0	0	0	$\frac{3\sqrt{77}i}{154}$	0	$\frac{3\sqrt{77}}{154}$	$\frac{5\sqrt{462}i}{462}$	0	0
		0	0	0	0	0	0	0	$\frac{3\sqrt{77}i}{154}$	0	$-\frac{3\sqrt{77}}{154}$	0	0	0	$-\frac{5\sqrt{462}i}{462}$
681	symmetry	$\frac{\sqrt{70}yz(3x^2-y^2)}{4}$													
$\mathbb{G}_4^{(1,1;a)}(A_{1u}, 2)$		0	0	0	0	0	$-\frac{3\sqrt{33}}{110}$	0	$\frac{3\sqrt{33}i}{110}$	0	0	$\frac{\sqrt{330}i}{165}$	0	0	$-\frac{\sqrt{55}}{220}$
		0	0	0	0	$\frac{3\sqrt{33}}{110}$	0	$\frac{3\sqrt{33}i}{110}$	0	0	0	$-\frac{\sqrt{330}i}{165}$	$\frac{\sqrt{55}}{220}$	0	0
		0	0	0	0	0	$\frac{3\sqrt{33}i}{110}$	0	$\frac{3\sqrt{33}}{110}$	$\frac{\sqrt{330}i}{165}$	0	0	0	0	$-\frac{\sqrt{55}i}{220}$
		0	0	0	0	$\frac{3\sqrt{33}i}{110}$	0	$-\frac{3\sqrt{33}}{110}$	0	0	$-\frac{\sqrt{330}i}{165}$	0	0	$-\frac{\sqrt{55}i}{220}$	0
		0	$-\frac{\sqrt{22}}{40}$	0	$\frac{13\sqrt{22}i}{440}$	0	0	$\frac{4\sqrt{33}i}{165}$	0	0	$-\frac{\sqrt{330}}{440}$	0	$-\frac{\sqrt{330}i}{440}$	0	0
		$\frac{\sqrt{22}}{40}$	0	$\frac{13\sqrt{22}i}{440}$	0	0	0	$-\frac{4\sqrt{33}i}{165}$	$\frac{\sqrt{330}}{440}$	0	$-\frac{\sqrt{330}i}{440}$	0	0	0	0
		0	$\frac{\sqrt{22}i}{40}$	0	$\frac{13\sqrt{22}}{440}$	$\frac{4\sqrt{33}i}{165}$	0	0	0	0	$-\frac{\sqrt{330}i}{440}$	0	$\frac{\sqrt{330}}{440}$	0	0
		$\frac{\sqrt{22}i}{40}$	0	$-\frac{13\sqrt{22}}{440}$	0	0	$-\frac{4\sqrt{33}i}{165}$	0	0	$-\frac{\sqrt{330}i}{440}$	0	$-\frac{\sqrt{330}}{440}$	0	0	0
		0	0	$\frac{2\sqrt{66}i}{165}$	0	0	$-\frac{3\sqrt{11}}{220}$	0	$-\frac{3\sqrt{11}i}{220}$	0	0	0	0	0	0
		0	0	0	$-\frac{2\sqrt{66}i}{165}$	$\frac{3\sqrt{11}}{220}$	0	$-\frac{3\sqrt{11}i}{220}$	0	0	0	0	0	0	0
682	symmetry	$\frac{\sqrt{70}xz(x^2-3y^2)}{4}$													

continued ...

Table 9

No.	multipole	matrix													
$\mathbb{G}_4^{(1,1;a)}(A_{2u})$		0	0	0	0	0	$\frac{3\sqrt{33}i}{110}$	0	$\frac{3\sqrt{33}}{110}$	$\frac{\sqrt{330}i}{165}$	0	0	0	$-\frac{\sqrt{55}i}{220}$	
		0	0	0	0	$\frac{3\sqrt{33}i}{110}$	0	$-\frac{3\sqrt{33}}{110}$	0	0	$-\frac{\sqrt{330}i}{165}$	0	0	$-\frac{\sqrt{55}i}{220}$	0
		0	0	0	0	0	$\frac{3\sqrt{33}}{110}$	0	$-\frac{3\sqrt{33}i}{110}$	0	0	$-\frac{\sqrt{330}i}{165}$	0	0	$\frac{\sqrt{55}}{220}$
		0	0	0	0	$-\frac{3\sqrt{33}}{110}$	0	$-\frac{3\sqrt{33}i}{110}$	0	0	0	0	$\frac{\sqrt{330}i}{165}$	$-\frac{\sqrt{55}}{220}$	0
		0	$\frac{13\sqrt{22}i}{440}$	0	$\frac{\sqrt{22}}{40}$	$\frac{4\sqrt{33}i}{165}$	0	0	0	0	$-\frac{\sqrt{330}i}{440}$	0	$\frac{\sqrt{330}}{440}$	0	0
		$\frac{13\sqrt{22}i}{440}$	0	$-\frac{\sqrt{22}}{40}$	0	0	$-\frac{4\sqrt{33}i}{165}$	0	0	$-\frac{\sqrt{330}i}{440}$	0	$-\frac{\sqrt{330}}{440}$	0	0	0
		0	$\frac{13\sqrt{22}}{440}$	0	$-\frac{\sqrt{22}i}{40}$	0	0	$-\frac{4\sqrt{33}i}{165}$	0	0	$\frac{\sqrt{330}}{440}$	0	$\frac{\sqrt{330}i}{440}$	0	0
		$-\frac{13\sqrt{22}}{440}$	0	$-\frac{\sqrt{22}i}{40}$	0	0	0	0	$\frac{4\sqrt{33}i}{165}$	$-\frac{\sqrt{330}}{440}$	0	$\frac{\sqrt{330}i}{440}$	0	0	0
		$\frac{2\sqrt{66}i}{165}$	0	0	0	0	$-\frac{3\sqrt{11}i}{220}$	0	$\frac{3\sqrt{11}}{220}$	0	0	0	0	0	0
		0	$-\frac{2\sqrt{66}i}{165}$	0	0	$-\frac{3\sqrt{11}i}{220}$	0	$-\frac{3\sqrt{11}}{220}$	0	0	0	0	0	0	0
683	symmetry	$-\frac{\sqrt{10}yz(3x^2+3y^2-4z^2)}{4}$													
$\mathbb{G}_{4,1}^{(1,1;a)}(E_u, 1)$		0	0	$\frac{\sqrt{154}i}{770}$	0	0	$-\frac{\sqrt{231}}{462}$	0	0	0	0	$\frac{\sqrt{2310}i}{770}$	0	0	$-\frac{\sqrt{385}}{220}$
		0	0	0	$-\frac{\sqrt{154}i}{770}$	$\frac{\sqrt{231}}{462}$	0	0	0	0	0	0	$-\frac{\sqrt{2310}i}{770}$	$\frac{\sqrt{385}}{220}$	0
		$-\frac{\sqrt{154}i}{770}$	0	0	0	0	0	0	$-\frac{\sqrt{231}}{462}$	$-\frac{\sqrt{2310}i}{770}$	0	0	0	0	$\frac{\sqrt{385}i}{220}$
		0	$\frac{\sqrt{154}i}{770}$	0	0	0	0	$\frac{\sqrt{231}}{462}$	0	0	$\frac{\sqrt{2310}i}{770}$	0	0	$\frac{\sqrt{385}i}{220}$	0
		0	$\frac{\sqrt{154}}{440}$	0	$-\frac{\sqrt{154}i}{440}$	0	0	$-\frac{2\sqrt{231}i}{385}$	0	0	$-\frac{\sqrt{2310}}{9240}$	0	$\frac{\sqrt{2310}i}{440}$	0	0
		$-\frac{\sqrt{154}}{440}$	0	$-\frac{\sqrt{154}i}{440}$	0	0	0	0	$\frac{2\sqrt{231}i}{385}$	$\frac{\sqrt{2310}}{9240}$	0	$\frac{\sqrt{2310}i}{440}$	0	0	0
		0	$\frac{\sqrt{154}i}{440}$	0	$\frac{\sqrt{154}}{440}$	$\frac{2\sqrt{231}i}{385}$	0	0	0	0	$\frac{\sqrt{2310}i}{440}$	0	$\frac{41\sqrt{2310}}{9240}$	$\frac{4\sqrt{385}i}{385}$	0
		$\frac{\sqrt{154}i}{440}$	0	$-\frac{\sqrt{154}}{440}$	0	0	$-\frac{2\sqrt{231}i}{385}$	0	0	$\frac{\sqrt{2310}i}{440}$	0	$-\frac{41\sqrt{2310}}{9240}$	0	0	$-\frac{4\sqrt{385}i}{385}$
		0	0	0	0	0	$-\frac{3\sqrt{77}}{220}$	0	$\frac{3\sqrt{77}i}{220}$	0	0	$\frac{3\sqrt{770}i}{385}$	0	0	$-\frac{\sqrt{1155}}{231}$
		0	0	0	0	$\frac{3\sqrt{77}}{220}$	0	$\frac{3\sqrt{77}i}{220}$	0	0	0	0	$-\frac{3\sqrt{770}i}{385}$	$\frac{\sqrt{1155}}{231}$	0
684	symmetry	$\frac{\sqrt{10}xz(3x^2+3y^2-4z^2)}{4}$													

continued ...

Table 9

No.	multipole	matrix												
	$\mathbb{G}_{4,2}^{(1,1;a)}(E_u, 1)$	$-\frac{\sqrt{154i}}{770}$	0	0	0	0	$\frac{\sqrt{231i}}{462}$	0	0	$\frac{\sqrt{2310i}}{770}$	0	0	0	$-\frac{\sqrt{385i}}{220}$
		0	$\frac{\sqrt{154i}}{770}$	0	0	$\frac{\sqrt{231i}}{462}$	0	0	0	$-\frac{\sqrt{2310i}}{770}$	0	0	$-\frac{\sqrt{385i}}{220}$	0
		0	0	$-\frac{\sqrt{154i}}{770}$	0	0	0	0	$\frac{\sqrt{231i}}{462}$	0	$\frac{\sqrt{2310i}}{770}$	0	0	$-\frac{\sqrt{385i}}{220}$
		0	0	0	$\frac{\sqrt{154i}}{770}$	0	0	$\frac{\sqrt{231i}}{462}$	0	0	0	$-\frac{\sqrt{2310i}}{770}$	$\frac{\sqrt{385i}}{220}$	0
		0	$\frac{\sqrt{154i}}{440}$	0	$\frac{\sqrt{154i}}{440}$	$\frac{2\sqrt{231i}}{385}$	0	0	0	$-\frac{41\sqrt{2310i}}{9240}$	0	$-\frac{\sqrt{2310i}}{440}$	$-\frac{4\sqrt{385i}}{385}$	0
		$\frac{\sqrt{154i}}{440}$	0	$-\frac{\sqrt{154i}}{440}$	0	0	$-\frac{2\sqrt{231i}}{385}$	0	0	$-\frac{41\sqrt{2310i}}{9240}$	0	$\frac{\sqrt{2310i}}{440}$	0	$\frac{4\sqrt{385i}}{385}$
		0	$-\frac{\sqrt{154i}}{440}$	0	$\frac{\sqrt{154i}}{440}$	0	0	$\frac{2\sqrt{231i}}{385}$	0	0	$-\frac{\sqrt{2310i}}{440}$	0	$\frac{\sqrt{2310i}}{9240}$	0
		$\frac{\sqrt{154i}}{440}$	0	$\frac{\sqrt{154i}}{440}$	0	0	0	$-\frac{2\sqrt{231i}}{385}$	$\frac{\sqrt{2310i}}{440}$	0	$\frac{\sqrt{2310i}}{9240}$	0	0	0
		0	0	0	0	0	$-\frac{3\sqrt{77i}}{220}$	0	$-\frac{3\sqrt{77i}}{220}$	$-\frac{3\sqrt{770i}}{385}$	0	0	0	$\frac{\sqrt{1155i}}{231}$
		0	0	0	0	$-\frac{3\sqrt{77i}}{220}$	0	$\frac{3\sqrt{77i}}{220}$	0	0	$\frac{3\sqrt{770i}}{385}$	0	0	$\frac{\sqrt{1155i}}{231}$
685	symmetry	$\frac{\sqrt{35}(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$												
	$\mathbb{G}_{4,1}^{(1,1;a)}(E_u, 2)$	0	$\frac{3\sqrt{11i}}{44}$	0	$\frac{3\sqrt{11i}}{44}$	$\frac{3\sqrt{66i}}{220}$	0	0	0	0	$-\frac{\sqrt{165i}}{660}$	0	$\frac{\sqrt{165i}}{660}$	0
		$\frac{3\sqrt{11i}}{44}$	0	$-\frac{3\sqrt{11i}}{44}$	0	0	$-\frac{3\sqrt{66i}}{220}$	0	0	$-\frac{\sqrt{165i}}{660}$	0	$-\frac{\sqrt{165i}}{660}$	0	0
		0	$\frac{3\sqrt{11i}}{44}$	0	$-\frac{3\sqrt{11i}}{44}$	0	0	$-\frac{3\sqrt{66i}}{220}$	0	0	$\frac{\sqrt{165i}}{660}$	0	$\frac{\sqrt{165i}}{660}$	0
		$-\frac{3\sqrt{11i}}{44}$	0	$-\frac{3\sqrt{11i}}{44}$	0	0	0	$\frac{3\sqrt{66i}}{220}$	$-\frac{\sqrt{165i}}{660}$	0	$\frac{\sqrt{165i}}{660}$	0	0	0
		$\frac{3\sqrt{11i}}{110}$	0	0	0	0	$-\frac{\sqrt{66i}}{330}$	0	$\frac{\sqrt{66i}}{330}$	0	0	0	0	0
		0	$-\frac{3\sqrt{11i}}{110}$	0	0	$-\frac{\sqrt{66i}}{330}$	0	$-\frac{\sqrt{66i}}{330}$	0	0	0	0	0	0
		0	0	$-\frac{3\sqrt{11i}}{110}$	0	0	$\frac{\sqrt{66i}}{330}$	0	$\frac{\sqrt{66i}}{330}$	0	0	0	0	0
		0	0	0	$\frac{3\sqrt{11i}}{110}$	$-\frac{\sqrt{66i}}{330}$	0	$\frac{\sqrt{66i}}{330}$	0	0	0	0	0	0
		0	$-\frac{\sqrt{33i}}{330}$	0	$\frac{\sqrt{33i}}{330}$	0	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{33i}}{330}$	0	$-\frac{\sqrt{33i}}{330}$	0	0	0	0	0	0	0	0	0	0
686	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$												

continued ...

Table 9

No.	multipole	matrix														
$\mathbb{G}_{4,2}^{(1,1;a)}(E_u, 2)$		0	$-\frac{3\sqrt{11}}{44}$	0	$\frac{3\sqrt{11}i}{44}$	0	0	$\frac{3\sqrt{66}i}{220}$	0	0	$-\frac{\sqrt{165}}{660}$	0	$-\frac{\sqrt{165}i}{660}$	0	0	
		$\frac{3\sqrt{11}}{44}$	0	$\frac{3\sqrt{11}i}{44}$	0	0	0	0	$-\frac{3\sqrt{66}i}{220}$	$\frac{\sqrt{165}}{660}$	0	$-\frac{\sqrt{165}i}{660}$	0	0	0	
		0	$\frac{3\sqrt{11}i}{44}$	0	$\frac{3\sqrt{11}}{44}$	$\frac{3\sqrt{66}i}{220}$	0	0	0	0	$-\frac{\sqrt{165}i}{660}$	0	$\frac{\sqrt{165}}{660}$	0	0	
		$\frac{3\sqrt{11}i}{44}$	0	$-\frac{3\sqrt{11}}{44}$	0	0	$-\frac{3\sqrt{66}i}{220}$	0	0	$-\frac{\sqrt{165}i}{660}$	0	$-\frac{\sqrt{165}}{660}$	0	0	0	
		0	0	$\frac{3\sqrt{11}i}{110}$	0	0	$-\frac{\sqrt{66}}{330}$	0	$-\frac{\sqrt{66}i}{330}$	0	0	0	0	0	0	
		0	0	0	$-\frac{3\sqrt{11}i}{110}$	$\frac{\sqrt{66}}{330}$	0	$-\frac{\sqrt{66}i}{330}$	0	0	0	0	0	0	0	0
		$\frac{3\sqrt{11}i}{110}$	0	0	0	0	$-\frac{\sqrt{66}i}{330}$	0	$\frac{\sqrt{66}}{330}$	0	0	0	0	0	0	0
		0	$-\frac{3\sqrt{11}i}{110}$	0	0	$-\frac{\sqrt{66}i}{330}$	0	$-\frac{\sqrt{66}}{330}$	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{33}}{330}$	0	$-\frac{\sqrt{33}i}{330}$	0	0	0	0	0	0	0	0	0	0	0
		$\frac{\sqrt{33}}{330}$	0	$-\frac{\sqrt{33}i}{330}$	0	0	0	0	0	0	0	0	0	0	0	0
687	symmetry	$-\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$														
$\mathbb{G}_{4,1}^{(1,1;a)}(E_u, 3)$		0	$-\frac{\sqrt{77}i}{1540}$	0	$\frac{\sqrt{77}}{1540}$	0	0	0	0	$\frac{17\sqrt{1155}i}{4620}$	0	$\frac{17\sqrt{1155}}{4620}$	$\frac{\sqrt{770}i}{220}$	0	0	
		$-\frac{\sqrt{77}i}{1540}$	0	$-\frac{\sqrt{77}}{1540}$	0	0	0	0	$\frac{17\sqrt{1155}i}{4620}$	0	$-\frac{17\sqrt{1155}}{4620}$	0	0	$-\frac{\sqrt{770}i}{220}$	0	
		0	$-\frac{\sqrt{77}}{1540}$	0	$-\frac{\sqrt{77}i}{1540}$	0	0	0	0	$\frac{\sqrt{1155}}{420}$	0	$-\frac{\sqrt{1155}i}{420}$	0	0	0	
		$\frac{\sqrt{77}}{1540}$	0	$-\frac{\sqrt{77}i}{1540}$	0	0	0	0	$-\frac{\sqrt{1155}}{420}$	0	$-\frac{\sqrt{1155}i}{420}$	0	0	0	0	
		$-\frac{\sqrt{77}i}{220}$	0	0	0	0	$\frac{17\sqrt{462}i}{2310}$	0	$\frac{\sqrt{462}}{210}$	$\frac{\sqrt{1155}i}{220}$	0	0	0	0	$-\frac{\sqrt{770}i}{385}$	
		0	$\frac{\sqrt{77}i}{220}$	0	0	$\frac{17\sqrt{462}i}{2310}$	0	$-\frac{\sqrt{462}}{210}$	0	$-\frac{\sqrt{1155}i}{220}$	0	0	0	$-\frac{\sqrt{770}i}{385}$	0	
		0	0	$-\frac{\sqrt{77}i}{220}$	0	0	$\frac{17\sqrt{462}}{2310}$	0	$-\frac{\sqrt{462}i}{210}$	0	0	$-\frac{\sqrt{1155}i}{220}$	0	0	$\frac{\sqrt{770}}{385}$	
		0	0	0	$\frac{\sqrt{77}i}{220}$	$-\frac{17\sqrt{462}}{2310}$	0	$-\frac{\sqrt{462}i}{210}$	0	0	0	0	$\frac{\sqrt{1155}i}{220}$	$-\frac{\sqrt{770}}{385}$	0	
		0	$\frac{\sqrt{231}i}{165}$	0	$\frac{\sqrt{231}}{165}$	$\frac{3\sqrt{154}i}{220}$	0	0	0	0	$-\frac{3\sqrt{385}i}{770}$	0	$\frac{3\sqrt{385}}{770}$	0	0	
		$\frac{\sqrt{231}i}{165}$	0	$-\frac{\sqrt{231}}{165}$	0	0	$-\frac{3\sqrt{154}i}{220}$	0	0	$-\frac{3\sqrt{385}i}{770}$	0	$-\frac{3\sqrt{385}}{770}$	0	0	0	
688	symmetry	$\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$														

continued ...

Table 9

No.	multipole	matrix													
$\mathbb{G}_{4,2}^{(1,1;a)}(E_u, 3)$	0	$\frac{\sqrt{77}}{1540}$	0	$\frac{\sqrt{77}i}{1540}$	0	0	0	0	0	0	$\frac{\sqrt{1155}}{420}$	0	$-\frac{\sqrt{1155}i}{420}$	0	0
	$-\frac{\sqrt{77}}{1540}$	0	$\frac{\sqrt{77}i}{1540}$	0	0	0	0	0	$-\frac{\sqrt{1155}}{420}$	0	$-\frac{\sqrt{1155}i}{420}$	0	0	0	0
	0	$-\frac{\sqrt{77}i}{1540}$	0	$\frac{\sqrt{77}}{1540}$	0	0	0	0	0	$-\frac{17\sqrt{1155}i}{4620}$	0	$-\frac{17\sqrt{1155}}{4620}$	$-\frac{\sqrt{770}i}{220}$	0	0
	$-\frac{\sqrt{77}i}{1540}$	0	$-\frac{\sqrt{77}}{1540}$	0	0	0	0	0	$-\frac{17\sqrt{1155}i}{4620}$	0	$\frac{17\sqrt{1155}}{4620}$	0	0	$\frac{\sqrt{770}i}{220}$	0
	0	0	$\frac{\sqrt{77}i}{220}$	0	0	$\frac{\sqrt{462}}{210}$	0	$-\frac{17\sqrt{462}i}{2310}$	0	0	$-\frac{\sqrt{1155}i}{220}$	0	0	$\frac{\sqrt{770}}{385}$	0
	0	0	0	$-\frac{\sqrt{77}i}{220}$	$-\frac{\sqrt{462}}{210}$	0	$-\frac{17\sqrt{462}i}{2310}$	0	0	0	0	$\frac{\sqrt{1155}i}{220}$	$-\frac{\sqrt{770}}{385}$	0	0
	$-\frac{\sqrt{77}i}{220}$	0	0	0	0	$-\frac{\sqrt{462}i}{210}$	0	$-\frac{17\sqrt{462}}{2310}$	$-\frac{\sqrt{1155}i}{220}$	0	0	0	0	$\frac{\sqrt{770}i}{385}$	0
	0	$\frac{\sqrt{77}i}{220}$	0	0	$-\frac{\sqrt{462}i}{210}$	0	$\frac{17\sqrt{462}}{2310}$	0	0	$\frac{\sqrt{1155}i}{220}$	0	0	0	$\frac{\sqrt{770}i}{385}$	0
	0	$\frac{\sqrt{231}}{165}$	0	$-\frac{\sqrt{231}i}{165}$	0	0	$-\frac{3\sqrt{154}i}{220}$	0	0	$\frac{3\sqrt{385}}{770}$	0	$\frac{3\sqrt{385}i}{770}$	0	0	0
	$-\frac{\sqrt{231}i}{165}$	0	$-\frac{\sqrt{231}}{165}$	0	0	0	0	$\frac{3\sqrt{154}i}{220}$	$-\frac{3\sqrt{385}}{770}$	0	$\frac{3\sqrt{385}i}{770}$	0	0	0	0
689	symmetry	z													
$\mathbb{T}_1^{(a)}(A_{2u})$	0	0	0	0	$\frac{\sqrt{7}i}{14}$	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	$\frac{\sqrt{7}i}{14}$	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	$\frac{\sqrt{7}i}{14}$	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	$\frac{\sqrt{7}i}{14}$	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	$\frac{\sqrt{70}i}{35}$	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{70}i}{35}$	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{70}i}{35}$	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{70}i}{35}$	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{3\sqrt{35}i}{70}$	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{3\sqrt{35}i}{70}$	0
690	symmetry	x													

continued ...

Table 9

No.	multipole	matrix												
	$\mathbb{T}_{1,1}^{(a)}(E_u)$	$\frac{\sqrt{42i}}{28}$	0	0	0	0	0	0	0	$-\frac{\sqrt{70i}}{140}$	0	0	0	0
		0	$\frac{\sqrt{42i}}{28}$	0	0	0	0	0	0	0	$-\frac{\sqrt{70i}}{140}$	0	0	0
		0	0	$\frac{\sqrt{42i}}{28}$	0	0	0	0	0	0	0	$-\frac{\sqrt{70i}}{140}$	0	0
		0	0	0	$\frac{\sqrt{42i}}{28}$	0	0	0	0	0	0	0	$-\frac{\sqrt{70i}}{140}$	0
		0	0	0	0	$\frac{\sqrt{7i}}{14}$	0	0	0	0	0	0	0	$-\frac{\sqrt{105i}}{70}$
		0	0	0	0	0	$\frac{\sqrt{7i}}{14}$	0	0	0	0	0	0	$-\frac{\sqrt{105i}}{70}$
		0	0	0	0	0	0	$\frac{\sqrt{7i}}{14}$	0	0	0	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{7i}}{14}$	0	0	0	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{210i}}{70}$	0	0	0	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{210i}}{70}$	0	0	0
691	symmetry	y												
	$\mathbb{T}_{1,2}^{(a)}(E_u)$	0	0	$\frac{\sqrt{42i}}{28}$	0	0	0	0	0	0	$\frac{\sqrt{70i}}{140}$	0	0	0
		0	0	0	$\frac{\sqrt{42i}}{28}$	0	0	0	0	0	0	$\frac{\sqrt{70i}}{140}$	0	0
		$-\frac{\sqrt{42i}}{28}$	0	0	0	0	0	0	0	$-\frac{\sqrt{70i}}{140}$	0	0	0	0
		0	$-\frac{\sqrt{42i}}{28}$	0	0	0	0	0	0	0	$-\frac{\sqrt{70i}}{140}$	0	0	0
		0	0	0	0	0	0	$\frac{\sqrt{7i}}{14}$	0	0	0	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{7i}}{14}$	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{7i}}{14}$	0	0	0	0	0	0	$-\frac{\sqrt{105i}}{70}$	0
		0	0	0	0	0	$-\frac{\sqrt{7i}}{14}$	0	0	0	0	0	0	$-\frac{\sqrt{105i}}{70}$
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{210i}}{70}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{210i}}{70}$	0	0
692	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$												

continued ...

Table 9

No.	multipole	matrix
	$T_3^{(a)}(A_{1u})$	$ \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{12} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{12} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}i}{12} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}i}{12} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{24} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{24} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}i}{24} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}i}{24} & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{15}i}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{15}i}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} $
693	symmetry	$ -\frac{z(3x^2+3y^2-2z^2)}{2} $ $ \begin{bmatrix} 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{6} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{60} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{60} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{60} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{60} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{15} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{15} \end{bmatrix} $
694	symmetry	$ \frac{\sqrt{10}y(3x^2-y^2)}{4} $

continued ...

Table 9

No.	multipole	matrix
	$\mathbb{T}_3^{(a)}(A_{2u}, 2)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{12} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{12} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{12} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{12} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{24} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{24} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{24} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{24} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{15}i}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{15}i}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
695	symmetry	$-\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$ $\begin{bmatrix} -\frac{\sqrt{3}i}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{5}i}{10} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{3}i}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{5}i}{10} & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{3}i}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{5}i}{10} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{3}i}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{5}i}{10} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{60} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{60} \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{20} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{20} & 0 & 0 & 0 & 0 \end{bmatrix}$
696	symmetry	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$

continued ...

Table 9

No.	multipole	matrix
	$\mathbb{T}_{3,2}^{(a)}(E_u, 1)$	$ \begin{bmatrix} 0 & 0 & -\frac{\sqrt{3}i}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{10} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{3}i}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{10} & 0 & 0 \\ \frac{\sqrt{3}i}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{5}i}{10} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{3}i}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{5}i}{10} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{60} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{60} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{20} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{20} & 0 & 0 \end{bmatrix} $
697	symmetry	$ \begin{matrix} \sqrt{15}xyz \\ \left[\begin{array}{cccccccccccccccc} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{6} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{6} \\ 0 & 0 & \frac{\sqrt{30}i}{24} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{8} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{30}i}{24} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{8} & 0 & 0 \\ -\frac{\sqrt{30}i}{24} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{30}i}{24} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{array} \right] \end{matrix} $
698	symmetry	$ \frac{\sqrt{15}z(x-y)(x+y)}{2} $

continued ...

Table 9

No.	multipole	matrix
	$\mathbb{T}_{3,2}^{(a)}(E_u, 2)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{6} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{6} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{30}i}{24} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{30}i}{24} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{30}i}{24} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{30}i}{24} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{8} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
699	symmetry	$-\frac{\sqrt{70}x(x^2-3y^2)(x^2+y^2-8z^2)}{16}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{12} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{12} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{12} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{12} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{15} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{15} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}i}{15} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}i}{15} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{30}i}{30} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{30}i}{30} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
700	symmetry	$\frac{z(15x^4+30x^2y^2-40x^2z^2+15y^4-40y^2z^2+8z^4)}{8}$

continued ...

Table 9

No.	multipole	matrix
	$\mathbb{T}_5^{(a)}(A_{2u}, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & \frac{\sqrt{42i}}{84} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42i}}{84} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42i}}{84} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42i}}{84} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{105i}}{42} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{105i}}{42} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{105i}}{42} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{105i}}{42} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{210i}}{42} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{210i}}{42} \end{bmatrix}$
701	symmetry	$-\frac{\sqrt{70y(3x^2-y^2)}(x^2+y^2-8z^2)}{16}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6i}}{12} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6i}}{12} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6i}}{12} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6i}}{12} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15i}}{15} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15i}}{15} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{15i}}{15} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15i}}{15} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{30i}}{30} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{30i}}{30} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
702	symmetry	$\frac{3\sqrt{14x}(x^4-10x^2y^2+5y^4)}{16}$

continued ...

Table 9

No.	multipole	matrix
	$\mathbb{T}_{5,1}^{(a)}(E_u, 1)$	$\begin{bmatrix} \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
703	symmetry	$-\frac{3\sqrt{14}y(5x^4-10x^2y^2+y^4)}{16}$ $\begin{bmatrix} 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
704	symmetry	$\frac{\sqrt{15}x(x^4+2x^2y^2-12x^2z^2+y^4-12y^2z^2+8z^4)}{8}$

continued ...

Table 9

No.	multipole	matrix												
	$\mathbb{T}_{5,1}^{(a)}(E_u, 2)$	$\frac{\sqrt{105i}}{420}$	0	0	0	0	0	0	0	$-\frac{\sqrt{7i}}{28}$	0	0	0	0
		0	$\frac{\sqrt{105i}}{420}$	0	0	0	0	0	0	0	$-\frac{\sqrt{7i}}{28}$	0	0	0
		0	0	$\frac{\sqrt{105i}}{420}$	0	0	0	0	0	0	0	$-\frac{\sqrt{7i}}{28}$	0	0
		0	0	0	$\frac{\sqrt{105i}}{420}$	0	0	0	0	0	0	0	$-\frac{\sqrt{7i}}{28}$	0
		0	0	0	0	$-\frac{\sqrt{70i}}{70}$	0	0	0	0	0	0	0	$\frac{\sqrt{42i}}{21}$
		0	0	0	0	0	$-\frac{\sqrt{70i}}{70}$	0	0	0	0	0	0	$\frac{\sqrt{42i}}{21}$
		0	0	0	0	0	0	$-\frac{\sqrt{70i}}{70}$	0	0	0	0	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{70i}}{70}$	0	0	0	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{21i}}{14}$	0	0	0	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{21i}}{14}$	0	0	0
705	symmetry	$\frac{\sqrt{15y(x^4+2x^2y^2-12x^2z^2+y^4-12y^2z^2+8z^4)}}{8}$												
	$\mathbb{T}_{5,2}^{(a)}(E_u, 2)$	0	0	$\frac{\sqrt{105i}}{420}$	0	0	0	0	0	0	$\frac{\sqrt{7i}}{28}$	0	0	0
		0	0	0	$\frac{\sqrt{105i}}{420}$	0	0	0	0	0	0	$\frac{\sqrt{7i}}{28}$	0	0
		$-\frac{\sqrt{105i}}{420}$	0	0	0	0	0	0	0	$-\frac{\sqrt{7i}}{28}$	0	0	0	0
		0	$-\frac{\sqrt{105i}}{420}$	0	0	0	0	0	0	0	$-\frac{\sqrt{7i}}{28}$	0	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{70i}}{70}$	0	0	0	0	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{70i}}{70}$	0	0	0	0	0
		0	0	0	0	$\frac{\sqrt{70i}}{70}$	0	0	0	0	0	0	$\frac{\sqrt{42i}}{21}$	0
		0	0	0	0	0	$\frac{\sqrt{70i}}{70}$	0	0	0	0	0	0	$\frac{\sqrt{42i}}{21}$
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{21i}}{14}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{21i}}{14}$	0	0
706	symmetry	$-\frac{3\sqrt{35}xyz(x-y)(x+y)}{2}$												

continued ...

Table 9

No.	multipole	matrix
	$\mathbb{T}_{5,1}^{(a)}(E_u, 3)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30i}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30i}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{30i}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30i}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{5i}}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{5i}}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{5i}}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{5i}}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
707	symmetry	$\frac{3\sqrt{35}z(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & \frac{\sqrt{30i}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30i}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30i}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30i}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{5i}}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{5i}}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{5i}}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{5i}}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
708	symmetry	$-\frac{\sqrt{105}xyz(x^2+y^2-2z^2)}{2}$

continued ...

Table 9

No.	multipole	matrix
	$\mathbb{T}_{5,1}^{(a)}(E_u, 4)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{12} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{12} & 0 \\ 0 & 0 & -\frac{\sqrt{15}i}{60} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{i}{4} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{15}i}{60} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{i}{4} & 0 & 0 & 0 \\ \frac{\sqrt{15}i}{60} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{i}{4} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{15}i}{60} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{i}{4} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
709	symmetry	$-\frac{\sqrt{105}z(x-y)(x+y)(x^2+y^2-2z^2)}{4}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{12} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{12} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{15}i}{60} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{i}{4} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{15}i}{60} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{i}{4} & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{15}i}{60} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{i}{4} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{15}i}{60} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{i}{4} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
710	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{T}_3^{(1,-1;a)}(A_{1u})$	0	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{7}i}{28}$
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{7}i}{28}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{7}}{28}$
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{7}}{28}$	0
		0	$\frac{\sqrt{70}i}{56}$	0	$-\frac{\sqrt{70}}{56}$	0	0	0	0	0	$-\frac{\sqrt{42}i}{56}$	0	$\frac{\sqrt{42}}{56}$	0	0
		$-\frac{\sqrt{70}i}{56}$	0	$-\frac{\sqrt{70}}{56}$	0	0	0	0	0	$\frac{\sqrt{42}i}{56}$	0	$\frac{\sqrt{42}}{56}$	0	0	0
		0	$\frac{\sqrt{70}}{56}$	0	$\frac{\sqrt{70}i}{56}$	0	0	0	0	0	$\frac{\sqrt{42}}{56}$	0	$\frac{\sqrt{42}i}{56}$	0	0
		$\frac{\sqrt{70}}{56}$	0	$-\frac{\sqrt{70}i}{56}$	0	0	0	0	0	$\frac{\sqrt{42}}{56}$	0	$-\frac{\sqrt{42}i}{56}$	0	0	0
		0	0	0	0	0	$\frac{\sqrt{35}i}{28}$	0	$-\frac{\sqrt{35}}{28}$	0	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{35}i}{28}$	0	$-\frac{\sqrt{35}}{28}$	0	0	0	0	0	0	0
711	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$													
	$\mathbb{T}_3^{(1,-1;a)}(A_{2u}, 1)$	0	$-\frac{\sqrt{7}i}{28}$	0	$-\frac{\sqrt{7}}{28}$	0	0	$\frac{\sqrt{42}}{28}$	0	0	$-\frac{\sqrt{105}i}{140}$	0	$\frac{\sqrt{105}}{140}$	0	0
		$\frac{\sqrt{7}i}{28}$	0	$-\frac{\sqrt{7}}{28}$	0	0	0	0	$-\frac{\sqrt{42}}{28}$	$\frac{\sqrt{105}i}{140}$	0	$\frac{\sqrt{105}}{140}$	0	0	0
		0	$\frac{\sqrt{7}}{28}$	0	$-\frac{\sqrt{7}i}{28}$	$-\frac{\sqrt{42}}{28}$	0	0	0	0	$-\frac{\sqrt{105}}{140}$	0	$-\frac{\sqrt{105}i}{140}$	0	0
		$\frac{\sqrt{7}}{28}$	0	$\frac{\sqrt{7}i}{28}$	0	0	$\frac{\sqrt{42}}{28}$	0	0	$-\frac{\sqrt{105}}{140}$	0	$\frac{\sqrt{105}i}{140}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{105}}{70}$	0	0	$-\frac{\sqrt{70}i}{70}$
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{105}}{70}$	$\frac{\sqrt{70}i}{70}$	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{105}}{70}$	0	0	0	0	$-\frac{\sqrt{70}}{70}$
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{105}}{70}$	0	0	$-\frac{\sqrt{70}}{70}$	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{35}i}{70}$	0	$\frac{\sqrt{35}}{70}$	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{35}i}{70}$	0	$\frac{\sqrt{35}}{70}$	0	0	0
712	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{T}_3^{(1,-1;a)}(A_{2u}, 2)$	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{7}}{28}$	
		0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{7}}{28}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{7}i}{28}$	
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{7}i}{28}$	0
		0	$\frac{\sqrt{70}}{56}$	0	$\frac{\sqrt{70}i}{56}$	0	0	0	0	0	$-\frac{\sqrt{42}}{56}$	0	$-\frac{\sqrt{42}i}{56}$	0	0
		$\frac{\sqrt{70}}{56}$	0	$-\frac{\sqrt{70}i}{56}$	0	0	0	0	0	$-\frac{\sqrt{42}}{56}$	0	$\frac{\sqrt{42}i}{56}$	0	0	0
		0	$-\frac{\sqrt{70}i}{56}$	0	$\frac{\sqrt{70}}{56}$	0	0	0	0	0	$-\frac{\sqrt{42}i}{56}$	0	$\frac{\sqrt{42}}{56}$	0	0
		$\frac{\sqrt{70}i}{56}$	0	$\frac{\sqrt{70}}{56}$	0	0	0	0	0	$\frac{\sqrt{42}i}{56}$	0	$\frac{\sqrt{42}}{56}$	0	0	0
		0	0	0	0	0	$\frac{\sqrt{35}}{28}$	0	$\frac{\sqrt{35}i}{28}$	0	0	0	0	0	0
		0	0	0	0	$\frac{\sqrt{35}}{28}$	0	$-\frac{\sqrt{35}i}{28}$	0	0	0	0	0	0	0
713	symmetry	$-\frac{\sqrt{6x(x^2+y^2-4z^2)}}{4}$													
	$\mathbb{T}_{3,1}^{(1,-1;a)}(E_u, 1)$	0	0	$\frac{\sqrt{42}}{42}$	0	0	0	0	$\frac{\sqrt{7}}{14}$	0	0	$-\frac{\sqrt{70}}{70}$	0	0	$\frac{\sqrt{105}i}{420}$
		0	0	0	$-\frac{\sqrt{42}}{42}$	0	0	$\frac{\sqrt{7}}{14}$	0	0	0	0	$\frac{\sqrt{70}}{70}$	$-\frac{\sqrt{105}i}{420}$	0
		$-\frac{\sqrt{42}}{42}$	0	0	0	0	$-\frac{\sqrt{7}}{14}$	0	0	$\frac{\sqrt{70}}{70}$	0	0	0	0	$\frac{\sqrt{105}}{420}$
		0	$\frac{\sqrt{42}}{42}$	0	0	$-\frac{\sqrt{7}}{14}$	0	0	0	0	$-\frac{\sqrt{70}}{70}$	0	0	$\frac{\sqrt{105}}{420}$	0
		0	$\frac{\sqrt{42}i}{168}$	0	$\frac{\sqrt{42}}{168}$	0	0	0	0	0	$-\frac{\sqrt{70}i}{280}$	0	$\frac{3\sqrt{70}}{280}$	0	0
		$-\frac{\sqrt{42}i}{168}$	0	$\frac{\sqrt{42}}{168}$	0	0	0	0	0	$\frac{\sqrt{70}i}{280}$	0	$\frac{3\sqrt{70}}{280}$	0	0	0
		0	$-\frac{\sqrt{42}}{168}$	0	$\frac{\sqrt{42}i}{168}$	0	0	0	0	0	$-\frac{\sqrt{70}}{56}$	0	$\frac{\sqrt{70}i}{280}$	$\frac{2\sqrt{105}}{105}$	0
		$-\frac{\sqrt{42}}{168}$	0	$-\frac{\sqrt{42}i}{168}$	0	0	0	0	0	$-\frac{\sqrt{70}}{56}$	0	$-\frac{\sqrt{70}i}{280}$	0	0	$-\frac{2\sqrt{105}}{105}$
		0	0	0	0	0	$\frac{\sqrt{21}i}{84}$	0	$\frac{\sqrt{21}}{84}$	0	0	$-\frac{\sqrt{210}}{105}$	0	0	0
		0	0	0	0	$-\frac{\sqrt{21}i}{84}$	0	$\frac{\sqrt{21}}{84}$	0	0	0	0	$\frac{\sqrt{210}}{105}$	0	0
714	symmetry	$-\frac{\sqrt{6y(x^2+y^2-4z^2)}}{4}$													

continued ...

Table 9

No.	multipole	matrix												
	$\mathbb{T}_{3,2}^{(1,-1;a)}(E_u, 1)$	$-\frac{\sqrt{42}}{42}$	0	0	0	0	0	0	$-\frac{\sqrt{7}i}{14}$	$-\frac{\sqrt{70}}{70}$	0	0	0	$-\frac{\sqrt{105}}{420}$
		0	$\frac{\sqrt{42}}{42}$	0	0	0	0	$\frac{\sqrt{7}i}{14}$	0	0	$\frac{\sqrt{70}}{70}$	0	0	$-\frac{\sqrt{105}}{420}$
		0	0	$-\frac{\sqrt{42}}{42}$	0	0	$\frac{\sqrt{7}i}{14}$	0	0	0	0	$-\frac{\sqrt{70}}{70}$	0	$\frac{\sqrt{105}i}{420}$
		0	0	0	$\frac{\sqrt{42}}{42}$	$-\frac{\sqrt{7}i}{14}$	0	0	0	0	0	$\frac{\sqrt{70}}{70}$	$-\frac{\sqrt{105}i}{420}$	0
		0	$-\frac{\sqrt{42}}{168}$	0	$\frac{\sqrt{42}i}{168}$	0	0	0	0	0	$\frac{\sqrt{70}}{280}$	0	$-\frac{\sqrt{70}i}{56}$	$-\frac{2\sqrt{105}}{105}$
		$-\frac{\sqrt{42}}{168}$	0	$-\frac{\sqrt{42}i}{168}$	0	0	0	0	0	$\frac{\sqrt{70}}{280}$	0	$\frac{\sqrt{70}i}{56}$	0	$\frac{2\sqrt{105}}{105}$
		0	$-\frac{\sqrt{42}i}{168}$	0	$-\frac{\sqrt{42}}{168}$	0	0	0	0	0	$\frac{3\sqrt{70}i}{280}$	0	$-\frac{\sqrt{70}}{280}$	0
		$\frac{\sqrt{42}i}{168}$	0	$-\frac{\sqrt{42}}{168}$	0	0	0	0	0	$-\frac{3\sqrt{70}i}{280}$	0	$-\frac{\sqrt{70}}{280}$	0	0
		0	0	0	0	0	$-\frac{\sqrt{21}}{84}$	0	$\frac{\sqrt{21}i}{84}$	$\frac{\sqrt{210}}{105}$	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{21}}{84}$	0	$-\frac{\sqrt{21}i}{84}$	0	0	$-\frac{\sqrt{210}}{105}$	0	0	0
715	symmetry	$\sqrt{15}xyz$												
	$\mathbb{T}_{3,1}^{(1,-1;a)}(E_u, 2)$	0	$-\frac{\sqrt{105}}{84}$	0	$-\frac{\sqrt{105}i}{84}$	0	0	0	0	$-\frac{\sqrt{7}}{28}$	0	$\frac{\sqrt{7}i}{28}$	$\frac{\sqrt{42}}{84}$	0
		$-\frac{\sqrt{105}}{84}$	0	$\frac{\sqrt{105}i}{84}$	0	0	0	0	$-\frac{\sqrt{7}}{28}$	0	$-\frac{\sqrt{7}i}{28}$	0	0	$-\frac{\sqrt{42}}{84}$
		0	$\frac{\sqrt{105}i}{84}$	0	$-\frac{\sqrt{105}}{84}$	0	0	0	0	$-\frac{\sqrt{7}i}{28}$	0	$-\frac{\sqrt{7}}{28}$	0	0
		$-\frac{\sqrt{105}i}{84}$	0	$-\frac{\sqrt{105}}{84}$	0	0	0	0	$\frac{\sqrt{7}i}{28}$	0	$-\frac{\sqrt{7}}{28}$	0	0	0
		$\frac{\sqrt{105}}{84}$	0	0	0	0	0	0	$-\frac{\sqrt{7}}{28}$	0	0	0	0	$-\frac{\sqrt{42}}{42}$
		0	$-\frac{\sqrt{105}}{84}$	0	0	0	0	0	0	$\frac{\sqrt{7}}{28}$	0	0	$-\frac{\sqrt{42}}{42}$	0
		0	0	$\frac{\sqrt{105}}{84}$	0	0	0	0	0	0	$\frac{\sqrt{7}}{28}$	0	0	$-\frac{\sqrt{42}i}{42}$
		0	0	0	$-\frac{\sqrt{105}}{84}$	0	0	0	0	0	0	$-\frac{\sqrt{7}}{28}$	$\frac{\sqrt{42}i}{42}$	0
		0	0	0	0	$\frac{\sqrt{210}}{84}$	0	0	0	0	$\frac{\sqrt{21}}{42}$	0	$\frac{\sqrt{21}i}{42}$	0
		0	0	0	0	0	$-\frac{\sqrt{210}}{84}$	0	0	$\frac{\sqrt{21}}{42}$	0	$-\frac{\sqrt{21}i}{42}$	0	0
716	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$												

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{T}_{3,2}^{(1,-1;a)}(E_u, 2)$	0	$-\frac{\sqrt{105}i}{84}$	0	$\frac{\sqrt{105}}{84}$	0	0	0	0	0	$-\frac{\sqrt{7}i}{28}$	0	$-\frac{\sqrt{7}}{28}$	0	0
		$\frac{\sqrt{105}i}{84}$	0	$\frac{\sqrt{105}}{84}$	0	0	0	0	0	$\frac{\sqrt{7}i}{28}$	0	$-\frac{\sqrt{7}}{28}$	0	0	0
		0	$-\frac{\sqrt{105}}{84}$	0	$-\frac{\sqrt{105}i}{84}$	0	0	0	0	0	$\frac{\sqrt{7}}{28}$	0	$-\frac{\sqrt{7}i}{28}$	$-\frac{\sqrt{42}}{84}$	0
		$-\frac{\sqrt{105}}{84}$	0	$\frac{\sqrt{105}i}{84}$	0	0	0	0	0	$\frac{\sqrt{7}}{28}$	0	$\frac{\sqrt{7}i}{28}$	0	0	$\frac{\sqrt{42}}{84}$
		0	0	$-\frac{\sqrt{105}}{84}$	0	0	0	0	0	0	$\frac{\sqrt{7}}{28}$	0	0	0	$-\frac{\sqrt{42}i}{42}$
		0	0	0	$\frac{\sqrt{105}}{84}$	0	0	0	0	0	0	$-\frac{\sqrt{7}}{28}$	$\frac{\sqrt{42}i}{42}$	0	0
		$\frac{\sqrt{105}}{84}$	0	0	0	0	0	0	0	$\frac{\sqrt{7}}{28}$	0	0	0	0	$\frac{\sqrt{42}}{42}$
		0	$-\frac{\sqrt{105}}{84}$	0	0	0	0	0	0	$-\frac{\sqrt{7}}{28}$	0	0	0	$\frac{\sqrt{42}}{42}$	0
		0	0	0	0	0	0	$-\frac{\sqrt{210}}{84}$	0	0	$\frac{\sqrt{21}i}{42}$	0	$-\frac{\sqrt{21}}{42}$	0	0
		0	0	0	0	0	0	$\frac{\sqrt{210}}{84}$	$-\frac{\sqrt{21}i}{42}$	0	$-\frac{\sqrt{21}}{42}$	0	0	0	0
717	symmetry	$-\frac{\sqrt{70}x(x^2-3y^2)(x^2+y^2-8z^2)}{16}$													
	$\mathbb{T}_5^{(1,-1;a)}(A_{1u})$	0	0	0	0	0	$-\frac{\sqrt{2}i}{60}$	0	$-\frac{\sqrt{2}}{60}$	0	0	$\frac{\sqrt{5}}{15}$	0	0	$-\frac{\sqrt{30}i}{30}$
		0	0	0	0	$\frac{\sqrt{2}i}{60}$	0	$-\frac{\sqrt{2}}{60}$	0	0	0	0	$-\frac{\sqrt{5}}{15}$	$\frac{\sqrt{30}i}{30}$	0
		0	0	0	0	0	$-\frac{\sqrt{2}}{60}$	0	$\frac{\sqrt{2}i}{60}$	$\frac{\sqrt{5}}{15}$	0	0	0	0	$\frac{\sqrt{30}}{30}$
		0	0	0	0	$-\frac{\sqrt{2}}{60}$	0	$-\frac{\sqrt{2}i}{60}$	0	0	$-\frac{\sqrt{5}}{15}$	0	0	$\frac{\sqrt{30}}{30}$	0
		0	$-\frac{\sqrt{3}i}{30}$	0	$\frac{\sqrt{3}}{15}$	0	0	$-\frac{\sqrt{2}}{30}$	0	0	$-\frac{\sqrt{5}i}{60}$	0	$\frac{\sqrt{5}}{60}$	0	0
		$\frac{\sqrt{3}i}{30}$	0	$\frac{\sqrt{3}}{15}$	0	0	0	$\frac{\sqrt{2}}{30}$	$\frac{\sqrt{5}i}{60}$	0	$\frac{\sqrt{5}}{60}$	0	0	0	0
		0	$-\frac{\sqrt{3}}{30}$	0	$-\frac{\sqrt{3}i}{15}$	$-\frac{\sqrt{2}}{30}$	0	0	0	$\frac{\sqrt{5}}{60}$	0	$\frac{\sqrt{5}i}{60}$	0	0	0
		$-\frac{\sqrt{3}}{30}$	0	$\frac{\sqrt{3}i}{15}$	0	0	$\frac{\sqrt{2}}{30}$	0	0	$\frac{\sqrt{5}}{60}$	0	$-\frac{\sqrt{5}i}{60}$	0	0	0
		0	0	$-\frac{1}{5}$	0	0	$\frac{\sqrt{6}i}{15}$	0	$-\frac{\sqrt{6}}{15}$	0	0	0	0	0	0
		0	0	0	$\frac{1}{5}$	$-\frac{\sqrt{6}i}{15}$	0	$-\frac{\sqrt{6}}{15}$	0	0	0	0	0	0	0
718	symmetry	$\frac{z(15x^4+30x^2y^2-40x^2z^2+15y^4-40y^2z^2+8z^4)}{8}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{T}_5^{(1,-1;a)}(A_{2u}, 1)$	0	$\frac{\sqrt{210}i}{420}$	0	$\frac{\sqrt{210}}{420}$	0	0	$-\frac{\sqrt{35}}{42}$	0	0	$\frac{\sqrt{14}i}{42}$	0	$-\frac{\sqrt{14}}{42}$	0	0
		$-\frac{\sqrt{210}i}{420}$	0	$\frac{\sqrt{210}}{420}$	0	0	0	0	$\frac{\sqrt{35}}{42}$	$-\frac{\sqrt{14}i}{42}$	0	$-\frac{\sqrt{14}}{42}$	0	0	0
		0	$-\frac{\sqrt{210}}{420}$	0	$\frac{\sqrt{210}i}{420}$	$\frac{\sqrt{35}}{42}$	0	0	0	0	$\frac{\sqrt{14}}{42}$	0	$\frac{\sqrt{14}i}{42}$	0	0
		$-\frac{\sqrt{210}}{420}$	0	$-\frac{\sqrt{210}i}{420}$	0	0	$-\frac{\sqrt{35}}{42}$	0	0	$\frac{\sqrt{14}}{42}$	0	$-\frac{\sqrt{14}i}{42}$	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{35}i}{60}$	0	$-\frac{\sqrt{35}}{60}$	0	0	$\frac{5\sqrt{14}}{84}$	0	0	$-\frac{\sqrt{21}i}{42}$
		0	0	0	0	$\frac{\sqrt{35}i}{60}$	0	$-\frac{\sqrt{35}}{60}$	0	0	0	$-\frac{5\sqrt{14}}{84}$	$\frac{\sqrt{21}i}{42}$	0	0
		0	0	0	0	0	$\frac{\sqrt{35}}{60}$	0	$-\frac{\sqrt{35}i}{60}$	$-\frac{5\sqrt{14}}{84}$	0	0	0	0	$-\frac{\sqrt{21}}{42}$
		0	0	0	0	$\frac{\sqrt{35}}{60}$	0	$\frac{\sqrt{35}i}{60}$	0	0	$\frac{5\sqrt{14}}{84}$	0	0	$-\frac{\sqrt{21}}{42}$	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{42}i}{84}$	0	$\frac{\sqrt{42}}{84}$	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{42}i}{84}$	0	$\frac{\sqrt{42}}{84}$	0	0	0
719	symmetry	$-\frac{\sqrt{70}y(3x^2-y^2)(x^2+y^2-8z^2)}{16}$													
	$\mathbb{T}_5^{(1,-1;a)}(A_{2u}, 2)$	0	0	0	0	0	$\frac{\sqrt{2}}{60}$	0	$-\frac{\sqrt{2}i}{60}$	$-\frac{\sqrt{5}}{15}$	0	0	0	0	$-\frac{\sqrt{30}}{30}$
		0	0	0	0	$\frac{\sqrt{2}}{60}$	0	$\frac{\sqrt{2}i}{60}$	0	0	$\frac{\sqrt{5}}{15}$	0	0	$-\frac{\sqrt{30}}{30}$	0
		0	0	0	0	0	$-\frac{\sqrt{2}i}{60}$	0	$-\frac{\sqrt{2}}{60}$	0	0	$\frac{\sqrt{5}}{15}$	0	0	$-\frac{\sqrt{30}i}{30}$
		0	0	0	0	$\frac{\sqrt{2}i}{60}$	0	$-\frac{\sqrt{2}}{60}$	0	0	0	0	$-\frac{\sqrt{5}}{15}$	$\frac{\sqrt{30}i}{30}$	0
		0	$-\frac{\sqrt{3}}{15}$	0	$-\frac{\sqrt{3}i}{30}$	$\frac{\sqrt{2}}{30}$	0	0	0	0	$-\frac{\sqrt{5}}{60}$	0	$-\frac{\sqrt{5}i}{60}$	0	0
		$-\frac{\sqrt{3}}{15}$	0	$\frac{\sqrt{3}i}{30}$	0	0	$-\frac{\sqrt{2}}{30}$	0	0	$-\frac{\sqrt{5}}{60}$	0	$\frac{\sqrt{5}i}{60}$	0	0	0
		0	$\frac{\sqrt{3}i}{15}$	0	$-\frac{\sqrt{3}}{30}$	0	0	$-\frac{\sqrt{2}}{30}$	0	0	$-\frac{\sqrt{5}i}{60}$	0	$\frac{\sqrt{5}}{60}$	0	0
		$-\frac{\sqrt{3}i}{15}$	0	$-\frac{\sqrt{3}}{30}$	0	0	0	$\frac{\sqrt{2}}{30}$	$\frac{\sqrt{5}i}{60}$	0	$\frac{\sqrt{5}}{60}$	0	0	0	0
		$\frac{1}{5}$	0	0	0	0	$\frac{\sqrt{6}}{15}$	0	$\frac{\sqrt{6}i}{15}$	0	0	0	0	0	0
		0	$-\frac{1}{5}$	0	0	$\frac{\sqrt{6}}{15}$	0	$-\frac{\sqrt{6}i}{15}$	0	0	0	0	0	0	0
720	symmetry	$\frac{3\sqrt{14}x(x^4-10x^2y^2+5y^4)}{16}$													

continued ...

Table 9

No.	multipole	matrix
	$\mathbb{T}_{5,1}^{(1,-1;a)}(E_u, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}i}{20} & 0 & \frac{\sqrt{10}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{20} & 0 & \frac{\sqrt{10}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{20} & 0 & \frac{\sqrt{10}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{20} & 0 & -\frac{\sqrt{10}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{15}i}{20} & 0 & -\frac{\sqrt{15}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{15}i}{20} & 0 & -\frac{\sqrt{15}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{15}}{20} & 0 & -\frac{\sqrt{15}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{15}}{20} & 0 & \frac{\sqrt{15}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
721	symmetry	$-\frac{3\sqrt{14}y(5x^4-10x^2y^2+y^4)}{16}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{20} & 0 & \frac{\sqrt{10}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{20} & 0 & -\frac{\sqrt{10}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{20} & 0 & -\frac{\sqrt{10}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{10}i}{20} & 0 & -\frac{\sqrt{10}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{15}}{20} & 0 & -\frac{\sqrt{15}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{15}}{20} & 0 & \frac{\sqrt{15}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{15}i}{20} & 0 & \frac{\sqrt{15}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{15}i}{20} & 0 & \frac{\sqrt{15}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
722	symmetry	$\frac{\sqrt{15}x(x^4+2x^2y^2-12x^2z^2+y^4-12y^2z^2+8z^4)}{8}$

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{T}_{5,1}^{(1,-1;a)}(E_u, 2)$	0	0	$-\frac{\sqrt{14}}{70}$	0	0	0	0	$-\frac{\sqrt{21}}{42}$	0	0	$\frac{\sqrt{210}}{105}$	0	0	$-\frac{\sqrt{35i}}{70}$
		0	0	0	$\frac{\sqrt{14}}{70}$	0	0	$-\frac{\sqrt{21}}{42}$	0	0	0	0	$-\frac{\sqrt{210}}{105}$	$\frac{\sqrt{35i}}{70}$	0
		$\frac{\sqrt{14}}{70}$	0	0	0	0	$\frac{\sqrt{21}}{42}$	0	0	$-\frac{\sqrt{210}}{105}$	0	0	0	0	$-\frac{\sqrt{35}}{70}$
		0	$-\frac{\sqrt{14}}{70}$	0	0	$\frac{\sqrt{21}}{42}$	0	0	0	0	$\frac{\sqrt{210}}{105}$	0	0	$-\frac{\sqrt{35}}{70}$	0
		0	$-\frac{3\sqrt{14i}}{280}$	0	$-\frac{3\sqrt{14}}{280}$	0	0	$\frac{\sqrt{21}}{30}$	0	0	$-\frac{\sqrt{210i}}{840}$	0	$\frac{3\sqrt{210}}{280}$	0	0
		$\frac{3\sqrt{14i}}{280}$	0	$-\frac{3\sqrt{14}}{280}$	0	0	0	$-\frac{\sqrt{21}}{30}$	$\frac{\sqrt{210i}}{840}$	0	$\frac{3\sqrt{210}}{280}$	0	0	0	0
		0	$\frac{3\sqrt{14}}{280}$	0	$-\frac{3\sqrt{14i}}{280}$	$-\frac{\sqrt{21}}{30}$	0	0	0	0	$-\frac{11\sqrt{210}}{840}$	0	$\frac{\sqrt{210i}}{840}$	$\frac{\sqrt{35}}{35}$	0
		$\frac{3\sqrt{14}}{280}$	0	$\frac{3\sqrt{14i}}{280}$	0	0	$\frac{\sqrt{21}}{30}$	0	0	$-\frac{11\sqrt{210}}{840}$	0	$-\frac{\sqrt{210i}}{840}$	0	0	$-\frac{\sqrt{35}}{35}$
		0	0	0	0	0	$\frac{\sqrt{7i}}{35}$	0	$\frac{\sqrt{7}}{35}$	0	0	$-\frac{\sqrt{70}}{70}$	0	0	0
		0	0	0	0	$-\frac{\sqrt{7i}}{35}$	0	$\frac{\sqrt{7}}{35}$	0	0	0	0	$\frac{\sqrt{70}}{70}$	0	0
723	symmetry	$\frac{\sqrt{15}y(x^4+2x^2y^2-12x^2z^2+y^4-12y^2z^2+8z^4)}{8}$													
	$\mathbb{T}_{5,2}^{(1,-1;a)}(E_u, 2)$	$\frac{\sqrt{14}}{70}$	0	0	0	0	0	0	$\frac{\sqrt{21i}}{42}$	$\frac{\sqrt{210}}{105}$	0	0	0	0	$\frac{\sqrt{35}}{70}$
		0	$-\frac{\sqrt{14}}{70}$	0	0	0	0	$-\frac{\sqrt{21i}}{42}$	0	0	$-\frac{\sqrt{210}}{105}$	0	0	$\frac{\sqrt{35}}{70}$	0
		0	0	$\frac{\sqrt{14}}{70}$	0	0	$-\frac{\sqrt{21i}}{42}$	0	0	0	0	$\frac{\sqrt{210}}{105}$	0	0	$-\frac{\sqrt{35i}}{70}$
		0	0	0	$-\frac{\sqrt{14}}{70}$	$\frac{\sqrt{21i}}{42}$	0	0	0	0	0	$-\frac{\sqrt{210}}{105}$	$\frac{\sqrt{35i}}{70}$	0	0
		0	$\frac{3\sqrt{14}}{280}$	0	$-\frac{3\sqrt{14i}}{280}$	$-\frac{\sqrt{21}}{30}$	0	0	0	0	$\frac{\sqrt{210}}{840}$	0	$-\frac{11\sqrt{210i}}{840}$	$-\frac{\sqrt{35}}{35}$	0
		$\frac{3\sqrt{14}}{280}$	0	$\frac{3\sqrt{14i}}{280}$	0	0	$\frac{\sqrt{21}}{30}$	0	0	$\frac{\sqrt{210}}{840}$	0	$\frac{11\sqrt{210i}}{840}$	0	0	$\frac{\sqrt{35}}{35}$
		0	$\frac{3\sqrt{14i}}{280}$	0	$\frac{3\sqrt{14}}{280}$	0	0	$-\frac{\sqrt{21}}{30}$	0	0	$\frac{3\sqrt{210i}}{280}$	0	$-\frac{\sqrt{210}}{840}$	0	0
		$-\frac{3\sqrt{14i}}{280}$	0	$\frac{3\sqrt{14}}{280}$	0	0	0	0	$\frac{\sqrt{21}}{30}$	$-\frac{3\sqrt{210i}}{280}$	0	$-\frac{\sqrt{210}}{840}$	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{7}}{35}$	0	$\frac{\sqrt{7i}}{35}$	$\frac{\sqrt{70}}{70}$	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{7}}{35}$	0	$-\frac{\sqrt{7i}}{35}$	0	0	$-\frac{\sqrt{70}}{70}$	0	0	0	0
724	symmetry	$-\frac{3\sqrt{35}xyz(x-y)(x+y)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{T}_{5,1}^{(1,-1;a)}(E_u, 3)$	0	0	0	0	$\frac{1}{10}$	0	0	0	0	$\frac{\sqrt{10}}{20}$	0	$\frac{\sqrt{10}i}{20}$	0	0
		0	0	0	0	0	$-\frac{1}{10}$	0	0	$\frac{\sqrt{10}}{20}$	0	$-\frac{\sqrt{10}i}{20}$	0	0	0
		0	0	0	0	0	0	$-\frac{1}{10}$	0	0	$\frac{\sqrt{10}i}{20}$	0	$-\frac{\sqrt{10}}{20}$	0	0
		0	0	0	0	0	0	0	$\frac{1}{10}$	$-\frac{\sqrt{10}i}{20}$	0	$-\frac{\sqrt{10}}{20}$	0	0	0
		$-\frac{\sqrt{6}}{20}$	0	0	0	0	$-\frac{1}{20}$	0	$-\frac{i}{20}$	0	0	0	0	0	0
		0	$\frac{\sqrt{6}}{20}$	0	0	$-\frac{1}{20}$	0	$\frac{i}{20}$	0	0	0	0	0	0	0
		0	0	$\frac{\sqrt{6}}{20}$	0	0	$-\frac{i}{20}$	0	$\frac{1}{20}$	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{6}}{20}$	$\frac{i}{20}$	0	$\frac{1}{20}$	0	0	0	0	0	0	0
		0	$-\frac{3\sqrt{2}}{20}$	0	$-\frac{3\sqrt{2}i}{20}$	0	0	0	0	0	0	0	0	0	0
		$-\frac{3\sqrt{2}}{20}$	0	$\frac{3\sqrt{2}i}{20}$	0	0	0	0	0	0	0	0	0	0	0
725	symmetry	$\frac{3\sqrt{35}z(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$													
	$\mathbb{T}_{5,2}^{(1,-1;a)}(E_u, 3)$	0	0	0	0	0	0	$\frac{1}{10}$	0	0	$-\frac{\sqrt{10}i}{20}$	0	$\frac{\sqrt{10}}{20}$	0	0
		0	0	0	0	0	0	0	$-\frac{1}{10}$	$\frac{\sqrt{10}i}{20}$	0	$\frac{\sqrt{10}}{20}$	0	0	0
		0	0	0	0	$\frac{1}{10}$	0	0	0	0	$\frac{\sqrt{10}}{20}$	0	$\frac{\sqrt{10}i}{20}$	0	0
		0	0	0	0	0	$-\frac{1}{10}$	0	0	$\frac{\sqrt{10}}{20}$	0	$-\frac{\sqrt{10}i}{20}$	0	0	0
		0	0	$-\frac{\sqrt{6}}{20}$	0	0	$\frac{i}{20}$	0	$-\frac{1}{20}$	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{6}}{20}$	$-\frac{i}{20}$	0	$-\frac{1}{20}$	0	0	0	0	0	0	0
		$-\frac{\sqrt{6}}{20}$	0	0	0	0	$-\frac{1}{20}$	0	$-\frac{i}{20}$	0	0	0	0	0	0
		0	$\frac{\sqrt{6}}{20}$	0	0	$-\frac{1}{20}$	0	$\frac{i}{20}$	0	0	0	0	0	0	0
		0	$\frac{3\sqrt{2}i}{20}$	0	$-\frac{3\sqrt{2}}{20}$	0	0	0	0	0	0	0	0	0	0
		$-\frac{3\sqrt{2}i}{20}$	0	$-\frac{3\sqrt{2}}{20}$	0	0	0	0	0	0	0	0	0	0	0
726	symmetry	$-\frac{\sqrt{105}xyz(x^2+y^2-2z^2)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{T}_{5,1}^{(1,-1;a)}(E_u, 4)$	0	$\frac{\sqrt{2}}{40}$	0	$\frac{\sqrt{2}i}{40}$	0	0	0	0	0	$\frac{\sqrt{30}}{40}$	0	$-\frac{\sqrt{30}i}{40}$	$-\frac{\sqrt{5}}{10}$	0
		$\frac{\sqrt{2}}{40}$	0	$-\frac{\sqrt{2}i}{40}$	0	0	0	0	0	$\frac{\sqrt{30}}{40}$	0	$\frac{\sqrt{30}i}{40}$	0	0	$\frac{\sqrt{5}}{10}$
		0	$-\frac{\sqrt{2}i}{40}$	0	$\frac{\sqrt{2}}{40}$	0	0	0	0	0	$\frac{\sqrt{30}i}{120}$	0	$\frac{\sqrt{30}}{120}$	0	0
		$\frac{\sqrt{2}i}{40}$	0	$\frac{\sqrt{2}}{40}$	0	0	0	0	0	$-\frac{\sqrt{30}i}{120}$	0	$\frac{\sqrt{30}}{120}$	0	0	0
		$-\frac{3\sqrt{2}}{40}$	0	0	0	0	$-\frac{\sqrt{3}}{15}$	0	$-\frac{\sqrt{3}i}{20}$	$-\frac{\sqrt{30}}{120}$	0	0	0	0	$-\frac{\sqrt{5}}{20}$
		0	$\frac{3\sqrt{2}}{40}$	0	0	$-\frac{\sqrt{3}}{15}$	0	$\frac{\sqrt{3}i}{20}$	0	0	$\frac{\sqrt{30}}{120}$	0	0	$-\frac{\sqrt{5}}{20}$	0
		0	0	$-\frac{3\sqrt{2}}{40}$	0	0	$\frac{\sqrt{3}i}{15}$	0	$-\frac{\sqrt{3}}{20}$	0	0	$\frac{\sqrt{30}}{120}$	0	0	$-\frac{\sqrt{5}i}{20}$
		0	0	0	$\frac{3\sqrt{2}}{40}$	$-\frac{\sqrt{3}i}{15}$	0	$-\frac{\sqrt{3}}{20}$	0	0	0	$-\frac{\sqrt{30}}{120}$	$\frac{\sqrt{5}i}{20}$	0	0
		0	$-\frac{\sqrt{6}}{40}$	0	$\frac{\sqrt{6}i}{40}$	$\frac{1}{5}$	0	0	0	0	$\frac{\sqrt{10}}{40}$	0	$\frac{\sqrt{10}i}{40}$	0	0
		$-\frac{\sqrt{6}}{40}$	0	$-\frac{\sqrt{6}i}{40}$	0	0	$-\frac{1}{5}$	0	0	$\frac{\sqrt{10}}{40}$	0	$-\frac{\sqrt{10}i}{40}$	0	0	0
727	symmetry	$-\frac{\sqrt{105}z(x-y)(x+y)(x^2+y^2-2z^2)}{4}$													
	$\mathbb{T}_{5,2}^{(1,-1;a)}(E_u, 4)$	0	$\frac{\sqrt{2}i}{40}$	0	$-\frac{\sqrt{2}}{40}$	0	0	0	0	0	$\frac{\sqrt{30}i}{120}$	0	$\frac{\sqrt{30}}{120}$	0	0
		$-\frac{\sqrt{2}i}{40}$	0	$-\frac{\sqrt{2}}{40}$	0	0	0	0	0	$-\frac{\sqrt{30}i}{120}$	0	$\frac{\sqrt{30}}{120}$	0	0	0
		0	$\frac{\sqrt{2}}{40}$	0	$\frac{\sqrt{2}i}{40}$	0	0	0	0	0	$-\frac{\sqrt{30}}{40}$	0	$\frac{\sqrt{30}i}{40}$	$\frac{\sqrt{5}}{10}$	0
		$\frac{\sqrt{2}}{40}$	0	$-\frac{\sqrt{2}i}{40}$	0	0	0	0	0	$-\frac{\sqrt{30}}{40}$	0	$-\frac{\sqrt{30}i}{40}$	0	0	$-\frac{\sqrt{5}}{10}$
		0	0	$\frac{3\sqrt{2}}{40}$	0	0	$-\frac{\sqrt{3}i}{20}$	0	$\frac{\sqrt{3}}{15}$	0	0	$\frac{\sqrt{30}}{120}$	0	0	$-\frac{\sqrt{5}i}{20}$
		0	0	0	$-\frac{3\sqrt{2}}{40}$	$\frac{\sqrt{3}i}{20}$	0	$\frac{\sqrt{3}}{15}$	0	0	0	0	$-\frac{\sqrt{30}}{120}$	$\frac{\sqrt{5}i}{20}$	0
		$-\frac{3\sqrt{2}}{40}$	0	0	0	0	$-\frac{\sqrt{3}}{20}$	0	$-\frac{\sqrt{3}i}{15}$	$\frac{\sqrt{30}}{120}$	0	0	0	0	$\frac{\sqrt{5}}{20}$
		0	$\frac{3\sqrt{2}}{40}$	0	0	$-\frac{\sqrt{3}}{20}$	0	$\frac{\sqrt{3}i}{15}$	0	0	$-\frac{\sqrt{30}}{120}$	0	0	$\frac{\sqrt{5}}{20}$	0
		0	$\frac{\sqrt{6}i}{40}$	0	$\frac{\sqrt{6}}{40}$	0	0	$-\frac{1}{5}$	0	0	$\frac{\sqrt{10}i}{40}$	0	$-\frac{\sqrt{10}}{40}$	0	0
		$-\frac{\sqrt{6}i}{40}$	0	$\frac{\sqrt{6}}{40}$	0	0	0	$\frac{1}{5}$	$-\frac{\sqrt{10}i}{40}$	0	$-\frac{\sqrt{10}}{40}$	0	0	0	0
728	symmetry	z													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{T}_1^{(1,0;a)}(A_{2u})$	0	$\frac{\sqrt{21}i}{28}$	0	$\frac{\sqrt{21}}{28}$	0	0	0	0	0	$-\frac{\sqrt{35}i}{140}$	0	$\frac{\sqrt{35}}{140}$	0	0
		$-\frac{\sqrt{21}i}{28}$	0	$\frac{\sqrt{21}}{28}$	0	0	0	0	0	$\frac{\sqrt{35}i}{140}$	0	$\frac{\sqrt{35}}{140}$	0	0	0
		0	$-\frac{\sqrt{21}}{28}$	0	$\frac{\sqrt{21}i}{28}$	0	0	0	0	0	$-\frac{\sqrt{35}}{140}$	0	$-\frac{\sqrt{35}i}{140}$	0	0
		$-\frac{\sqrt{21}}{28}$	0	$-\frac{\sqrt{21}i}{28}$	0	0	0	0	0	$-\frac{\sqrt{35}}{140}$	0	$\frac{\sqrt{35}i}{140}$	0	0	0
		0	0	0	0	0	$\frac{\sqrt{14}i}{28}$	0	$\frac{\sqrt{14}}{28}$	0	0	0	0	0	$-\frac{\sqrt{210}i}{140}$
		0	0	0	0	$-\frac{\sqrt{14}i}{28}$	0	$\frac{\sqrt{14}}{28}$	0	0	0	0	0	$\frac{\sqrt{210}i}{140}$	0
		0	0	0	0	0	$-\frac{\sqrt{14}}{28}$	0	$\frac{\sqrt{14}i}{28}$	0	0	0	0	0	$-\frac{\sqrt{210}}{140}$
		0	0	0	0	$-\frac{\sqrt{14}}{28}$	0	$-\frac{\sqrt{14}i}{28}$	0	0	0	0	0	$-\frac{\sqrt{210}}{140}$	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{105}i}{70}$	0	$\frac{\sqrt{105}}{70}$	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{105}i}{70}$	0	$\frac{\sqrt{105}}{70}$	0	0	0
729	symmetry	x													
	$\mathbb{T}_{1,1}^{(1,0;a)}(E_u)$	0	0	$-\frac{\sqrt{21}}{28}$	0	0	$-\frac{\sqrt{14}i}{28}$	0	0	0	0	$-\frac{\sqrt{35}}{140}$	0	0	0
		0	0	0	$\frac{\sqrt{21}}{28}$	$\frac{\sqrt{14}i}{28}$	0	0	0	0	0	0	$\frac{\sqrt{35}}{140}$	0	0
		$\frac{\sqrt{21}}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{14}i}{28}$	$\frac{\sqrt{35}}{140}$	0	0	0	0	0
		0	$-\frac{\sqrt{21}}{28}$	0	0	0	0	$\frac{\sqrt{14}i}{28}$	0	0	$-\frac{\sqrt{35}}{140}$	0	0	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{14}}{28}$	0	0	$-\frac{\sqrt{35}i}{35}$	0	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{14}}{28}$	$\frac{\sqrt{35}i}{35}$	0	0	0	0	0
		0	0	0	0	$\frac{\sqrt{14}}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{35}i}{35}$	$\frac{\sqrt{210}}{140}$	0
		0	0	0	0	0	$-\frac{\sqrt{14}}{28}$	0	0	0	0	$\frac{\sqrt{35}i}{35}$	0	0	$-\frac{\sqrt{210}}{140}$
		0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{105}}{70}$	0	0	$-\frac{3\sqrt{70}i}{140}$
		0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{105}}{70}$	$\frac{3\sqrt{70}i}{140}$	0
730	symmetry	y													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{T}_{1,2}^{(1,0;a)}(E_u)$	$\frac{\sqrt{21}}{28}$	0	0	0	0	$-\frac{\sqrt{14}}{28}$	0	0	$-\frac{\sqrt{35}}{140}$	0	0	0	0	0
		0	$-\frac{\sqrt{21}}{28}$	0	0	$-\frac{\sqrt{14}}{28}$	0	0	0	$\frac{\sqrt{35}}{140}$	0	0	0	0	0
		0	0	$\frac{\sqrt{21}}{28}$	0	0	0	$-\frac{\sqrt{14}}{28}$	0	0	$-\frac{\sqrt{35}}{140}$	0	0	0	0
		0	0	0	$-\frac{\sqrt{21}}{28}$	0	0	$-\frac{\sqrt{14}}{28}$	0	0	0	$\frac{\sqrt{35}}{140}$	0	0	0
		0	0	0	0	$\frac{\sqrt{14}}{28}$	0	0	0	$-\frac{\sqrt{35}}{35}$	0	0	$-\frac{\sqrt{210}}{140}$	0	0
		0	0	0	0	0	$-\frac{\sqrt{14}}{28}$	0	0	$-\frac{\sqrt{35}}{35}$	0	0	0	0	$\frac{\sqrt{210}}{140}$
		0	0	0	0	0	0	$\frac{\sqrt{14}}{28}$	0	0	0	$-\frac{\sqrt{35}}{35}$	0	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{14}}{28}$	0	0	$-\frac{\sqrt{35}}{35}$	0	0	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{105}}{70}$	0	0	0	0	$-\frac{3\sqrt{70}}{140}$
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{105}}{70}$	0	0	$-\frac{3\sqrt{70}}{140}$	0	0
731	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$													
	$\mathbb{T}_3^{(1,0;a)}(A_{1u})$	0	0	0	0	0	0	0	0	0	0	$\frac{1}{8}$	0	0	$\frac{\sqrt{6}i}{24}$
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{1}{8}$	$-\frac{\sqrt{6}i}{24}$	0
		0	0	0	0	0	0	0	0	$\frac{1}{8}$	0	0	0	0	$-\frac{\sqrt{6}}{24}$
		0	0	0	0	0	0	0	0	$-\frac{1}{8}$	0	0	$-\frac{\sqrt{6}}{24}$	0	0
		0	$-\frac{\sqrt{15}i}{48}$	0	$\frac{\sqrt{15}}{48}$	0	0	$-\frac{\sqrt{10}}{16}$	0	0	$-\frac{i}{16}$	0	$\frac{1}{16}$	0	0
		$\frac{\sqrt{15}i}{48}$	0	$\frac{\sqrt{15}}{48}$	0	0	0	0	$\frac{\sqrt{10}}{16}$	$\frac{i}{16}$	0	$\frac{1}{16}$	0	0	0
		0	$-\frac{\sqrt{15}}{48}$	0	$-\frac{\sqrt{15}i}{48}$	$-\frac{\sqrt{10}}{16}$	0	0	0	0	$\frac{1}{16}$	0	$\frac{i}{16}$	0	0
		$-\frac{\sqrt{15}}{48}$	0	$\frac{\sqrt{15}i}{48}$	0	0	$\frac{\sqrt{10}}{16}$	0	0	$\frac{1}{16}$	0	$-\frac{i}{16}$	0	0	0
		0	0	$\frac{\sqrt{5}}{8}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{5}}{8}$	0	0	0	0	0	0	0	0	0	0
732	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$													

continued ...

Table 9

No.	multipole	matrix
	$T_3^{(1,0;a)}(A_{2u}, 1)$	$\begin{bmatrix} 0 & -\frac{\sqrt{6}i}{24} & 0 & -\frac{\sqrt{6}}{24} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{20} & 0 & -\frac{\sqrt{10}}{20} & 0 & 0 \\ \frac{\sqrt{6}i}{24} & 0 & -\frac{\sqrt{6}}{24} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}i}{20} & 0 & -\frac{\sqrt{10}}{20} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{6}}{24} & 0 & -\frac{\sqrt{6}i}{24} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{20} & 0 & \frac{\sqrt{10}i}{20} & 0 & 0 \\ \frac{\sqrt{6}}{24} & 0 & \frac{\sqrt{6}i}{24} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{20} & 0 & -\frac{\sqrt{10}i}{20} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{i}{8} & 0 & \frac{1}{8} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{60} \\ 0 & 0 & 0 & 0 & -\frac{i}{8} & 0 & \frac{1}{8} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}i}{60} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{1}{8} & 0 & \frac{i}{8} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{60} \\ 0 & 0 & 0 & 0 & -\frac{1}{8} & 0 & -\frac{i}{8} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{60} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{40} & 0 & \frac{\sqrt{30}}{40} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}i}{40} & 0 & \frac{\sqrt{30}}{40} & 0 & 0 & 0 \end{bmatrix}$
733	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{1}{8} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{24} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{1}{8} & 0 & 0 & \frac{\sqrt{6}}{24} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{1}{8} & 0 & 0 & \frac{\sqrt{6}i}{24} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{1}{8} & -\frac{\sqrt{6}i}{24} & 0 \\ 0 & -\frac{\sqrt{15}}{48} & 0 & -\frac{\sqrt{15}i}{48} & \frac{\sqrt{10}}{16} & 0 & 0 & 0 & 0 & -\frac{1}{16} & 0 & -\frac{i}{16} & 0 & 0 \\ -\frac{\sqrt{15}}{48} & 0 & \frac{\sqrt{15}i}{48} & 0 & 0 & -\frac{\sqrt{10}}{16} & 0 & 0 & -\frac{1}{16} & 0 & \frac{i}{16} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{15}i}{48} & 0 & -\frac{\sqrt{15}}{48} & 0 & 0 & -\frac{\sqrt{10}}{16} & 0 & 0 & -\frac{i}{16} & 0 & \frac{1}{16} & 0 & 0 \\ -\frac{\sqrt{15}i}{48} & 0 & -\frac{\sqrt{15}}{48} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{16} & \frac{i}{16} & 0 & \frac{1}{16} & 0 & 0 & 0 \\ -\frac{\sqrt{5}}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{5}}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
734	symmetry	$-\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{T}_{3,1}^{(1,0;a)}(E_u, 1)$	0	0	$\frac{1}{24}$	0	0	$\frac{\sqrt{6}i}{12}$	0	0	0	0	$\frac{\sqrt{15}}{60}$	0	0	$-\frac{\sqrt{10}i}{24}$
		0	0	0	$-\frac{1}{24}$	$-\frac{\sqrt{6}i}{12}$	0	0	0	0	0	$-\frac{\sqrt{15}}{60}$	$\frac{\sqrt{10}i}{24}$	0	0
		$-\frac{1}{24}$	0	0	0	0	0	$\frac{\sqrt{6}i}{12}$	$-\frac{\sqrt{15}}{60}$	0	0	0	0	0	$-\frac{\sqrt{10}i}{24}$
		0	$\frac{1}{24}$	0	0	0	0	$-\frac{\sqrt{6}i}{12}$	0	0	$\frac{\sqrt{15}}{60}$	0	0	$-\frac{\sqrt{10}i}{24}$	0
		0	$\frac{5i}{48}$	0	$\frac{5}{48}$	0	0	$-\frac{\sqrt{6}}{48}$	0	0	$\frac{\sqrt{15}i}{240}$	0	$\frac{\sqrt{15}}{48}$	0	0
		$-\frac{5i}{48}$	0	$\frac{5}{48}$	0	0	0	$\frac{\sqrt{6}}{48}$	$-\frac{\sqrt{15}i}{240}$	0	$\frac{\sqrt{15}}{48}$	0	0	0	0
		0	$-\frac{5}{48}$	0	$\frac{5i}{48}$	$\frac{\sqrt{6}}{48}$	0	0	0	0	$\frac{\sqrt{15}}{48}$	0	$-\frac{3\sqrt{15}i}{80}$	$-\frac{\sqrt{10}}{120}$	0
		$-\frac{5}{48}$	0	$-\frac{5i}{48}$	0	0	$-\frac{\sqrt{6}}{48}$	0	0	$\frac{\sqrt{15}}{48}$	0	$\frac{3\sqrt{15}i}{80}$	0	0	$\frac{\sqrt{10}}{120}$
		0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{5}}{40}$	0	0	$-\frac{\sqrt{30}i}{30}$
		0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{5}}{40}$	$\frac{\sqrt{30}i}{30}$	0
735	symmetry	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$													
	$\mathbb{T}_{3,2}^{(1,0;a)}(E_u, 1)$	$-\frac{1}{24}$	0	0	0	0	$\frac{\sqrt{6}}{12}$	0	0	$\frac{\sqrt{15}}{60}$	0	0	0	0	$\frac{\sqrt{10}}{24}$
		0	$\frac{1}{24}$	0	0	$\frac{\sqrt{6}}{12}$	0	0	0	0	$-\frac{\sqrt{15}}{60}$	0	0	$\frac{\sqrt{10}}{24}$	0
		0	0	$-\frac{1}{24}$	0	0	0	$\frac{\sqrt{6}}{12}$	0	0	0	$\frac{\sqrt{15}}{60}$	0	0	$-\frac{\sqrt{10}i}{24}$
		0	0	0	$\frac{1}{24}$	0	0	$\frac{\sqrt{6}}{12}$	0	0	0	0	$-\frac{\sqrt{15}}{60}$	$\frac{\sqrt{10}i}{24}$	0
		0	$-\frac{5}{48}$	0	$\frac{5i}{48}$	$\frac{\sqrt{6}}{48}$	0	0	0	0	$-\frac{3\sqrt{15}}{80}$	0	$\frac{\sqrt{15}i}{48}$	$\frac{\sqrt{10}}{120}$	0
		$-\frac{5}{48}$	0	$-\frac{5i}{48}$	0	0	$-\frac{\sqrt{6}}{48}$	0	0	$-\frac{3\sqrt{15}}{80}$	0	$-\frac{\sqrt{15}i}{48}$	0	0	$-\frac{\sqrt{10}}{120}$
		0	$-\frac{5i}{48}$	0	$-\frac{5}{48}$	0	0	$\frac{\sqrt{6}}{48}$	0	0	$\frac{\sqrt{15}i}{48}$	0	$\frac{\sqrt{15}}{240}$	0	0
		$\frac{5i}{48}$	0	$-\frac{5}{48}$	0	0	0	$-\frac{\sqrt{6}}{48}$	$-\frac{\sqrt{15}i}{48}$	0	$\frac{\sqrt{15}}{240}$	0	0	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{5}}{40}$	0	0	0	0	$-\frac{\sqrt{30}}{30}$
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{5}}{40}$	0	0	0	$-\frac{\sqrt{30}}{30}$	0
736	symmetry	$\sqrt{15}xyz$													

continued ...

Table 9

No.	multipole	matrix
	$\mathbb{T}_{3,1}^{(1,0;a)}(E_u, 2)$	$ \begin{bmatrix} 0 & \frac{\sqrt{10}}{48} & 0 & \frac{\sqrt{10}i}{48} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{48} & 0 & \frac{\sqrt{6}i}{48} & -\frac{1}{6} & 0 \\ \frac{\sqrt{10}}{48} & 0 & -\frac{\sqrt{10}i}{48} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{48} & 0 & -\frac{\sqrt{6}i}{48} & 0 & 0 & \frac{1}{6} \\ 0 & -\frac{\sqrt{10}i}{48} & 0 & \frac{\sqrt{10}}{48} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{16} & 0 & -\frac{\sqrt{6}i}{16} & 0 & 0 \\ \frac{\sqrt{10}i}{48} & 0 & \frac{\sqrt{10}}{48} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{16} & 0 & -\frac{\sqrt{6}}{16} & 0 & 0 & 0 \\ \frac{\sqrt{10}}{24} & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{24} & 0 & 0 & \frac{\sqrt{6}}{24} & 0 & 0 & 0 & 0 & -\frac{1}{24} \\ 0 & -\frac{\sqrt{10}}{24} & 0 & 0 & -\frac{\sqrt{15}}{24} & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{24} & 0 & 0 & 0 & -\frac{1}{24} \\ 0 & 0 & \frac{\sqrt{10}}{24} & 0 & 0 & \frac{\sqrt{15}i}{24} & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{24} & 0 & 0 & -\frac{i}{24} \\ 0 & 0 & 0 & -\frac{\sqrt{10}}{24} & -\frac{\sqrt{15}i}{24} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{24} & \frac{i}{24} & 0 \\ 0 & \frac{\sqrt{30}}{48} & 0 & -\frac{\sqrt{30}i}{48} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{16} & 0 & -\frac{\sqrt{2}i}{16} & 0 & 0 \\ \frac{\sqrt{30}}{48} & 0 & \frac{\sqrt{30}i}{48} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{16} & 0 & \frac{\sqrt{2}i}{16} & 0 & 0 & 0 \end{bmatrix} $
737	symmetry	$ \begin{matrix} \frac{\sqrt{15}z(x-y)(x+y)}{2} \\ \left[\begin{array}{cccccccccccccccc} 0 & \frac{\sqrt{10}i}{48} & 0 & -\frac{\sqrt{10}}{48} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{16} & 0 & -\frac{\sqrt{6}}{16} & 0 & 0 \\ -\frac{\sqrt{10}i}{48} & 0 & -\frac{\sqrt{10}}{48} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{16} & 0 & -\frac{\sqrt{6}}{16} & 0 & 0 \\ 0 & \frac{\sqrt{10}}{48} & 0 & \frac{\sqrt{10}i}{48} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{48} & 0 & -\frac{\sqrt{6}i}{48} & \frac{1}{6} & 0 \\ \frac{\sqrt{10}}{48} & 0 & -\frac{\sqrt{10}i}{48} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{48} & 0 & \frac{\sqrt{6}i}{48} & 0 & -\frac{1}{6} \\ 0 & 0 & -\frac{\sqrt{10}}{24} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{24} & 0 & 0 & -\frac{\sqrt{6}}{24} & 0 & 0 & -\frac{i}{24} \\ 0 & 0 & 0 & \frac{\sqrt{10}}{24} & 0 & 0 & \frac{\sqrt{15}}{24} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{24} & \frac{i}{24} & 0 \\ \frac{\sqrt{10}}{24} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}i}{24} & -\frac{\sqrt{6}}{24} & 0 & 0 & 0 & 0 & \frac{1}{24} \\ 0 & -\frac{\sqrt{10}}{24} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{24} & 0 & 0 & \frac{\sqrt{6}}{24} & 0 & 0 & 0 & \frac{1}{24} \\ 0 & -\frac{\sqrt{30}i}{48} & 0 & -\frac{\sqrt{30}}{48} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{16} & 0 & \frac{\sqrt{2}}{16} & 0 & 0 \\ \frac{\sqrt{30}i}{48} & 0 & -\frac{\sqrt{30}}{48} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{16} & 0 & \frac{\sqrt{2}}{16} & 0 & 0 \end{array} \right] \end{matrix} $
738	symmetry	$ -\frac{\sqrt{70}x(x^2-3y^2)(x^2+y^2-8z^2)}{16} $

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{T}_5^{(1,0;a)}(A_{1u})$	0	0	0	0	0	$\frac{3\sqrt{2}i}{40}$	0	$\frac{3\sqrt{2}}{40}$	0	0	$-\frac{\sqrt{5}}{20}$	0	0	$-\frac{\sqrt{30}i}{60}$
		0	0	0	0	$-\frac{3\sqrt{2}i}{40}$	0	$\frac{3\sqrt{2}}{40}$	0	0	0	0	$\frac{\sqrt{5}}{20}$	$\frac{\sqrt{30}i}{60}$	0
		0	0	0	0	0	$\frac{3\sqrt{2}}{40}$	0	$-\frac{3\sqrt{2}i}{40}$	$-\frac{\sqrt{5}}{20}$	0	0	0	0	$\frac{\sqrt{30}}{60}$
		0	0	0	0	$\frac{3\sqrt{2}}{40}$	0	$\frac{3\sqrt{2}i}{40}$	0	0	$\frac{\sqrt{5}}{20}$	0	0	$\frac{\sqrt{30}}{60}$	0
		0	$\frac{\sqrt{3}i}{15}$	0	$\frac{\sqrt{3}}{30}$	0	0	$-\frac{\sqrt{2}}{10}$	0	0	$-\frac{\sqrt{5}i}{20}$	0	$\frac{\sqrt{5}}{20}$	0	0
		$-\frac{\sqrt{3}i}{15}$	0	$\frac{\sqrt{3}}{30}$	0	0	0	0	$\frac{\sqrt{2}}{10}$	$\frac{\sqrt{5}i}{20}$	0	$\frac{\sqrt{5}}{20}$	0	0	0
		0	$\frac{\sqrt{3}}{15}$	0	$-\frac{\sqrt{3}i}{30}$	$-\frac{\sqrt{2}}{10}$	0	0	0	0	$\frac{\sqrt{5}}{20}$	0	$\frac{\sqrt{5}i}{20}$	0	0
		$\frac{\sqrt{3}}{15}$	0	$\frac{\sqrt{3}i}{30}$	0	0	$\frac{\sqrt{2}}{10}$	0	0	$\frac{\sqrt{5}}{20}$	0	$-\frac{\sqrt{5}i}{20}$	0	0	0
		0	0	$-\frac{1}{10}$	0	0	$-\frac{\sqrt{6}i}{20}$	0	$\frac{\sqrt{6}}{20}$	0	0	0	0	0	0
		0	0	0	$\frac{1}{10}$	$\frac{\sqrt{6}i}{20}$	0	$\frac{\sqrt{6}}{20}$	0	0	0	0	0	0	0
739	symmetry	$\frac{z(15x^4+30x^2y^2-40x^2z^2+15y^4-40y^2z^2+8z^4)}{8}$													
	$\mathbb{T}_5^{(1,0;a)}(A_{2u}, 1)$	0	$\frac{\sqrt{210}i}{840}$	0	$\frac{\sqrt{210}}{840}$	0	0	0	0	0	$-\frac{\sqrt{14}i}{56}$	0	$\frac{\sqrt{14}}{56}$	0	0
		$-\frac{\sqrt{210}i}{840}$	0	$\frac{\sqrt{210}}{840}$	0	0	0	0	0	$\frac{\sqrt{14}i}{56}$	0	$\frac{\sqrt{14}}{56}$	0	0	0
		0	$-\frac{\sqrt{210}}{840}$	0	$\frac{\sqrt{210}i}{840}$	0	0	0	0	0	$-\frac{\sqrt{14}}{56}$	0	$-\frac{\sqrt{14}i}{56}$	0	0
		$-\frac{\sqrt{210}}{840}$	0	$-\frac{\sqrt{210}i}{840}$	0	0	0	0	0	$-\frac{\sqrt{14}}{56}$	0	$\frac{\sqrt{14}i}{56}$	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{35}i}{70}$	0	$-\frac{\sqrt{35}}{70}$	0	0	0	0	0	$\frac{\sqrt{21}i}{21}$
		0	0	0	0	$\frac{\sqrt{35}i}{70}$	0	$-\frac{\sqrt{35}}{70}$	0	0	0	0	0	$-\frac{\sqrt{21}i}{21}$	0
		0	0	0	0	0	$\frac{\sqrt{35}}{70}$	0	$-\frac{\sqrt{35}i}{70}$	0	0	0	0	0	$\frac{\sqrt{21}}{21}$
		0	0	0	0	$\frac{\sqrt{35}}{70}$	0	$\frac{\sqrt{35}i}{70}$	0	0	0	0	0	$\frac{\sqrt{21}}{21}$	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{42}i}{28}$	0	$\frac{\sqrt{42}}{28}$	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{42}i}{28}$	0	$\frac{\sqrt{42}}{28}$	0	0	0
740	symmetry	$-\frac{\sqrt{70}y(3x^2-y^2)(x^2+y^2-8z^2)}{16}$													

continued ...

Table 9

No.	multipole	matrix
	$\mathbb{T}_5^{(1,0;a)}(A_{2u}, 2)$	$ \begin{array}{cccccccccccccccc} 0 & 0 & 0 & 0 & 0 & -\frac{3\sqrt{2}}{40} & 0 & \frac{3\sqrt{2}i}{40} & \frac{\sqrt{5}}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{60} \\ 0 & 0 & 0 & 0 & -\frac{3\sqrt{2}}{40} & 0 & -\frac{3\sqrt{2}i}{40} & 0 & 0 & -\frac{\sqrt{5}}{20} & 0 & 0 & -\frac{\sqrt{30}}{60} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{3\sqrt{2}i}{40} & 0 & \frac{3\sqrt{2}}{40} & 0 & 0 & -\frac{\sqrt{5}}{20} & 0 & 0 & -\frac{\sqrt{30}i}{60} \\ 0 & 0 & 0 & 0 & -\frac{3\sqrt{2}i}{40} & 0 & \frac{3\sqrt{2}}{40} & 0 & 0 & 0 & 0 & \frac{\sqrt{5}}{20} & \frac{\sqrt{30}i}{60} & 0 \\ 0 & -\frac{\sqrt{3}}{30} & 0 & \frac{\sqrt{3}i}{15} & \frac{\sqrt{2}}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{20} & 0 & -\frac{\sqrt{5}i}{20} & 0 & 0 \\ -\frac{\sqrt{3}}{30} & 0 & -\frac{\sqrt{3}i}{15} & 0 & 0 & -\frac{\sqrt{2}}{10} & 0 & 0 & -\frac{\sqrt{5}}{20} & 0 & \frac{\sqrt{5}i}{20} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{3}i}{30} & 0 & \frac{\sqrt{3}}{15} & 0 & 0 & -\frac{\sqrt{2}}{10} & 0 & 0 & -\frac{\sqrt{5}i}{20} & 0 & \frac{\sqrt{5}}{20} & 0 & 0 \\ -\frac{\sqrt{3}i}{30} & 0 & \frac{\sqrt{3}}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{10} & \frac{\sqrt{5}i}{20} & 0 & \frac{\sqrt{5}}{20} & 0 & 0 & 0 \\ \frac{1}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{20} & 0 & -\frac{\sqrt{6}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{1}{10} & 0 & 0 & -\frac{\sqrt{6}}{20} & 0 & \frac{\sqrt{6}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{array} $
741	symmetry	$ \frac{3\sqrt{14}x(x^4 - 10x^2y^2 + 5y^4)}{16} $ $ \begin{array}{cccccccccccccccc} 0 & 0 & -\frac{\sqrt{15}}{12} & 0 & 0 & -\frac{\sqrt{10}i}{40} & 0 & \frac{\sqrt{10}}{40} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{15}}{12} & \frac{\sqrt{10}i}{40} & 0 & \frac{\sqrt{10}}{40} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{15}}{12} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{40} & 0 & \frac{\sqrt{10}i}{40} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{15}}{12} & 0 & 0 & \frac{\sqrt{10}}{40} & 0 & -\frac{\sqrt{10}i}{40} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{15}i}{60} & 0 & \frac{\sqrt{15}}{60} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{15}i}{60} & 0 & \frac{\sqrt{15}}{60} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{15}}{60} & 0 & \frac{\sqrt{15}i}{60} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{15}}{60} & 0 & -\frac{\sqrt{15}i}{60} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{array} $
742	symmetry	$ -\frac{3\sqrt{14}y(5x^4 - 10x^2y^2 + y^4)}{16} $

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{T}_{5,2}^{(1,0;a)}(E_u, 1)$	$-\frac{\sqrt{15}}{12}$	0	0	0	0	$\frac{\sqrt{10}}{40}$	0	$\frac{\sqrt{10}i}{40}$	0	0	0	0	0	0
		0	$\frac{\sqrt{15}}{12}$	0	0	$\frac{\sqrt{10}}{40}$	0	$-\frac{\sqrt{10}i}{40}$	0	0	0	0	0	0	0
		0	0	$\frac{\sqrt{15}}{12}$	0	0	$\frac{\sqrt{10}i}{40}$	0	$-\frac{\sqrt{10}}{40}$	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{15}}{12}$	$-\frac{\sqrt{10}i}{40}$	0	$-\frac{\sqrt{10}}{40}$	0	0	0	0	0	0	0
		0	$\frac{\sqrt{15}}{60}$	0	$\frac{\sqrt{15}i}{60}$	0	0	0	0	0	0	0	0	0	0
		$\frac{\sqrt{15}}{60}$	0	$-\frac{\sqrt{15}i}{60}$	0	0	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{15}i}{60}$	0	$-\frac{\sqrt{15}}{60}$	0	0	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{15}i}{60}$	0	$-\frac{\sqrt{15}}{60}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
743	symmetry	$\frac{\sqrt{15}x(x^4+2x^2y^2-12x^2z^2+y^4-12y^2z^2+8z^4)}{8}$													
	$\mathbb{T}_{5,1}^{(1,0;a)}(E_u, 2)$	0	0	$-\frac{\sqrt{14}}{840}$	0	0	$-\frac{\sqrt{21}i}{84}$	0	0	0	$-\frac{\sqrt{210}}{840}$	0	0	$\frac{\sqrt{35}i}{60}$	0
		0	0	0	$\frac{\sqrt{14}}{840}$	$\frac{\sqrt{21}i}{84}$	0	0	0	0	0	$\frac{\sqrt{210}}{840}$	$-\frac{\sqrt{35}i}{60}$	0	0
		$\frac{\sqrt{14}}{840}$	0	0	0	0	0	$-\frac{\sqrt{21}i}{84}$	$\frac{\sqrt{210}}{840}$	0	0	0	0	$\frac{\sqrt{35}}{60}$	0
		0	$-\frac{\sqrt{14}}{840}$	0	0	0	$\frac{\sqrt{21}i}{84}$	0	0	$-\frac{\sqrt{210}}{840}$	0	0	$\frac{\sqrt{35}}{60}$	0	0
		0	$-\frac{\sqrt{14}i}{120}$	0	$-\frac{\sqrt{14}}{120}$	0	0	$\frac{\sqrt{21}}{210}$	0	0	$\frac{17\sqrt{210}i}{840}$	0	$\frac{\sqrt{210}}{120}$	0	0
		$\frac{\sqrt{14}i}{120}$	0	$-\frac{\sqrt{14}}{120}$	0	0	0	$-\frac{\sqrt{21}}{210}$	$-\frac{17\sqrt{210}i}{840}$	0	$\frac{\sqrt{210}}{120}$	0	0	0	0
		0	$\frac{\sqrt{14}}{120}$	0	$-\frac{\sqrt{14}i}{120}$	$-\frac{\sqrt{21}}{210}$	0	0	0	0	$\frac{\sqrt{210}}{120}$	0	$\frac{\sqrt{210}i}{280}$	$-\frac{\sqrt{35}}{105}$	0
		$\frac{\sqrt{14}}{120}$	0	$\frac{\sqrt{14}i}{120}$	0	0	$\frac{\sqrt{21}}{210}$	0	0	$\frac{\sqrt{210}}{120}$	0	$-\frac{\sqrt{210}i}{280}$	0	0	$\frac{\sqrt{35}}{105}$
		0	0	0	0	0	$\frac{\sqrt{7}i}{20}$	0	$\frac{\sqrt{7}}{20}$	0	0	$-\frac{\sqrt{70}}{140}$	0	0	$-\frac{\sqrt{105}i}{42}$
		0	0	0	0	$-\frac{\sqrt{7}i}{20}$	0	$\frac{\sqrt{7}}{20}$	0	0	0	$\frac{\sqrt{70}}{140}$	$\frac{\sqrt{105}i}{42}$	0	0
744	symmetry	$\frac{\sqrt{15}y(x^4+2x^2y^2-12x^2z^2+y^4-12y^2z^2+8z^4)}{8}$													

continued ...

Table 9

No.	multipole	matrix												
	$\mathbb{T}_{5,2}^{(1,0;a)}(E_u, 2)$	$\frac{\sqrt{14}}{840}$	0	0	0	0	$-\frac{\sqrt{21}}{84}$	0	0	$-\frac{\sqrt{210}}{840}$	0	0	0	$-\frac{\sqrt{35}}{60}$
		0	$-\frac{\sqrt{14}}{840}$	0	0	$-\frac{\sqrt{21}}{84}$	0	0	0	$\frac{\sqrt{210}}{840}$	0	0	$-\frac{\sqrt{35}}{60}$	0
		0	0	$\frac{\sqrt{14}}{840}$	0	0	0	$-\frac{\sqrt{21}}{84}$	0	0	$-\frac{\sqrt{210}}{840}$	0	0	$\frac{\sqrt{35}i}{60}$
		0	0	0	$-\frac{\sqrt{14}}{840}$	0	0	$-\frac{\sqrt{21}}{84}$	0	0	0	$\frac{\sqrt{210}}{840}$	$-\frac{\sqrt{35}i}{60}$	0
		0	$\frac{\sqrt{14}}{120}$	0	$-\frac{\sqrt{14}i}{120}$	$-\frac{\sqrt{21}}{210}$	0	0	0	$\frac{\sqrt{210}}{280}$	0	$\frac{\sqrt{210}i}{120}$	$\frac{\sqrt{35}}{105}$	0
		$\frac{\sqrt{14}}{120}$	0	$\frac{\sqrt{14}i}{120}$	0	0	$\frac{\sqrt{21}}{210}$	0	0	$\frac{\sqrt{210}}{280}$	0	$-\frac{\sqrt{210}i}{120}$	0	$-\frac{\sqrt{35}}{105}$
		0	$\frac{\sqrt{14}i}{120}$	0	$\frac{\sqrt{14}}{120}$	0	0	$-\frac{\sqrt{21}}{210}$	0	0	$\frac{\sqrt{210}i}{120}$	0	$\frac{17\sqrt{210}}{840}$	0
		$-\frac{\sqrt{14}i}{120}$	0	$\frac{\sqrt{14}}{120}$	0	0	0	$\frac{\sqrt{21}}{210}$	$-\frac{\sqrt{210}i}{120}$	0	$\frac{17\sqrt{210}}{840}$	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{7}}{20}$	0	$\frac{\sqrt{7}i}{20}$	$\frac{\sqrt{70}}{140}$	0	0	0	$-\frac{\sqrt{105}}{42}$
		0	0	0	0	$-\frac{\sqrt{7}}{20}$	0	$-\frac{\sqrt{7}i}{20}$	0	0	$-\frac{\sqrt{70}}{140}$	0	0	$-\frac{\sqrt{105}}{42}$
745	symmetry	$-\frac{3\sqrt{35}xyz(x-y)(x+y)}{2}$												
	$\mathbb{T}_{5,1}^{(1,0;a)}(E_u, 3)$	0	$\frac{\sqrt{6}}{24}$	0	$-\frac{\sqrt{6}i}{24}$	$-\frac{1}{5}$	0	0	0	$\frac{\sqrt{10}}{40}$	0	$\frac{\sqrt{10}i}{40}$	0	0
		$\frac{\sqrt{6}}{24}$	0	$\frac{\sqrt{6}i}{24}$	0	0	$\frac{1}{5}$	0	0	$\frac{\sqrt{10}}{40}$	0	$-\frac{\sqrt{10}i}{40}$	0	0
		0	$-\frac{\sqrt{6}i}{24}$	0	$-\frac{\sqrt{6}}{24}$	0	0	$\frac{1}{5}$	0	0	$\frac{\sqrt{10}i}{40}$	0	$-\frac{\sqrt{10}}{40}$	0
		$\frac{\sqrt{6}i}{24}$	0	$-\frac{\sqrt{6}}{24}$	0	0	0	0	$-\frac{1}{5}$	$-\frac{\sqrt{10}i}{40}$	0	$-\frac{\sqrt{10}}{40}$	0	0
		$-\frac{\sqrt{6}}{15}$	0	0	0	0	$\frac{1}{10}$	0	$\frac{i}{10}$	0	0	0	0	0
		0	$\frac{\sqrt{6}}{15}$	0	0	$\frac{1}{10}$	0	$-\frac{i}{10}$	0	0	0	0	0	0
		0	0	$\frac{\sqrt{6}}{15}$	0	0	$\frac{i}{10}$	0	$-\frac{1}{10}$	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{6}}{15}$	$-\frac{i}{10}$	0	$-\frac{1}{10}$	0	0	0	0	0	0
		0	$\frac{\sqrt{2}}{20}$	0	$\frac{\sqrt{2}i}{20}$	0	0	0	0	0	0	0	0	0
		$\frac{\sqrt{2}}{20}$	0	$-\frac{\sqrt{2}i}{20}$	0	0	0	0	0	0	0	0	0	0
746	symmetry	$\frac{3\sqrt{35}z(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$												

continued ...

Table 9

No.	multipole	matrix
	$\mathbb{T}_{5,2}^{(1,0;a)}(E_u, 3)$	$\begin{bmatrix} 0 & \frac{\sqrt{6}i}{24} & 0 & \frac{\sqrt{6}}{24} & 0 & 0 & -\frac{1}{5} & 0 & 0 & -\frac{\sqrt{10}i}{40} & 0 & \frac{\sqrt{10}}{40} & 0 & 0 \\ -\frac{\sqrt{6}i}{24} & 0 & \frac{\sqrt{6}}{24} & 0 & 0 & 0 & 0 & \frac{1}{5} & \frac{\sqrt{10}i}{40} & 0 & \frac{\sqrt{10}}{40} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{6}}{24} & 0 & -\frac{\sqrt{6}i}{24} & -\frac{1}{5} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{40} & 0 & \frac{\sqrt{10}i}{40} & 0 & 0 \\ \frac{\sqrt{6}}{24} & 0 & \frac{\sqrt{6}i}{24} & 0 & 0 & \frac{1}{5} & 0 & 0 & \frac{\sqrt{10}}{40} & 0 & -\frac{\sqrt{10}i}{40} & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{6}}{15} & 0 & 0 & -\frac{i}{10} & 0 & \frac{1}{10} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{6}}{15} & \frac{i}{10} & 0 & \frac{1}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{6}}{15} & 0 & 0 & 0 & 0 & \frac{1}{10} & 0 & \frac{i}{10} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{6}}{15} & 0 & 0 & \frac{1}{10} & 0 & -\frac{i}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{2}i}{20} & 0 & \frac{\sqrt{2}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{2}i}{20} & 0 & \frac{\sqrt{2}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
747	symmetry	$-\frac{\sqrt{105}xyz(x^2+y^2-2z^2)}{2}$ $\begin{bmatrix} 0 & -\frac{\sqrt{2}}{120} & 0 & -\frac{\sqrt{2}i}{120} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{120} & 0 & \frac{\sqrt{30}i}{120} & \frac{\sqrt{5}}{30} & 0 \\ -\frac{\sqrt{2}}{120} & 0 & \frac{\sqrt{2}i}{120} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{120} & 0 & -\frac{\sqrt{30}i}{120} & 0 & 0 & -\frac{\sqrt{5}}{30} \\ 0 & \frac{\sqrt{2}i}{120} & 0 & -\frac{\sqrt{2}}{120} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{40} & 0 & \frac{\sqrt{30}}{40} & 0 & 0 \\ -\frac{\sqrt{2}i}{120} & 0 & -\frac{\sqrt{2}}{120} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}i}{40} & 0 & \frac{\sqrt{30}}{40} & 0 & 0 & 0 \\ -\frac{\sqrt{2}}{60} & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{30} & 0 & \frac{\sqrt{3}i}{10} & \frac{\sqrt{30}}{60} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{15} \\ 0 & \frac{\sqrt{2}}{60} & 0 & 0 & -\frac{\sqrt{3}}{30} & 0 & -\frac{\sqrt{3}i}{10} & 0 & 0 & -\frac{\sqrt{30}}{60} & 0 & 0 & -\frac{\sqrt{5}}{15} & 0 \\ 0 & 0 & -\frac{\sqrt{2}}{60} & 0 & 0 & \frac{\sqrt{3}i}{30} & 0 & \frac{\sqrt{3}}{10} & 0 & 0 & -\frac{\sqrt{30}}{60} & 0 & 0 & -\frac{\sqrt{5}i}{15} \\ 0 & 0 & 0 & \frac{\sqrt{2}}{60} & -\frac{\sqrt{3}i}{30} & 0 & \frac{\sqrt{3}}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{60} & \frac{\sqrt{5}i}{15} & 0 \\ 0 & -\frac{\sqrt{6}}{30} & 0 & \frac{\sqrt{6}i}{30} & \frac{1}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}}{20} & 0 & -\frac{\sqrt{10}i}{20} & 0 & 0 \\ -\frac{\sqrt{6}}{30} & 0 & -\frac{\sqrt{6}i}{30} & 0 & 0 & -\frac{1}{10} & 0 & 0 & -\frac{\sqrt{10}}{20} & 0 & \frac{\sqrt{10}i}{20} & 0 & 0 & 0 \end{bmatrix}$
748	symmetry	$-\frac{\sqrt{105}z(x-y)(x+y)(x^2+y^2-2z^2)}{4}$

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{T}_{5,2}^{(1,0;a)}(E_u, 4)$	0	$-\frac{\sqrt{2}i}{120}$	0	$\frac{\sqrt{2}}{120}$	0	0	0	0	0	$\frac{\sqrt{30}i}{40}$	0	$\frac{\sqrt{30}}{40}$	0	0
		$\frac{\sqrt{2}i}{120}$	0	$\frac{\sqrt{2}}{120}$	0	0	0	0	0	$-\frac{\sqrt{30}i}{40}$	0	$\frac{\sqrt{30}}{40}$	0	0	0
		0	$-\frac{\sqrt{2}}{120}$	0	$-\frac{\sqrt{2}i}{120}$	0	0	0	0	0	$\frac{\sqrt{30}}{120}$	0	$-\frac{\sqrt{30}i}{120}$	$-\frac{\sqrt{5}}{30}$	0
		$-\frac{\sqrt{2}}{120}$	0	$\frac{\sqrt{2}i}{120}$	0	0	0	0	0	$\frac{\sqrt{30}}{120}$	0	$\frac{\sqrt{30}i}{120}$	0	0	$\frac{\sqrt{5}}{30}$
		0	0	$\frac{\sqrt{2}}{60}$	0	0	$\frac{\sqrt{3}i}{10}$	0	$\frac{\sqrt{3}}{30}$	0	0	$-\frac{\sqrt{30}}{60}$	0	0	$-\frac{\sqrt{5}i}{15}$
		0	0	0	$-\frac{\sqrt{2}}{60}$	$-\frac{\sqrt{3}i}{10}$	0	$\frac{\sqrt{3}}{30}$	0	0	0	0	$\frac{\sqrt{30}}{60}$	$\frac{\sqrt{5}i}{15}$	0
		$-\frac{\sqrt{2}}{60}$	0	0	0	0	$\frac{\sqrt{3}}{10}$	0	$-\frac{\sqrt{3}i}{30}$	$-\frac{\sqrt{30}}{60}$	0	0	0	0	$\frac{\sqrt{5}}{15}$
		0	$\frac{\sqrt{2}}{60}$	0	0	$\frac{\sqrt{3}}{10}$	0	$\frac{\sqrt{3}i}{30}$	0	0	$\frac{\sqrt{30}}{60}$	0	0	$\frac{\sqrt{5}}{15}$	0
		0	$\frac{\sqrt{6}i}{30}$	0	$\frac{\sqrt{6}}{30}$	0	0	$-\frac{1}{10}$	0	0	$-\frac{\sqrt{10}i}{20}$	0	$\frac{\sqrt{10}}{20}$	0	0
		$-\frac{\sqrt{6}i}{30}$	0	$\frac{\sqrt{6}}{30}$	0	0	0	0	$\frac{1}{10}$	$\frac{\sqrt{10}i}{20}$	0	$\frac{\sqrt{10}}{20}$	0	0	0
749	symmetry	z													
	$\mathbb{T}_1^{(1,1;a)}(A_{2u})$	0	$\frac{\sqrt{42}i}{56}$	0	$\frac{\sqrt{42}}{56}$	0	0	$\frac{\sqrt{7}}{14}$	0	0	$\frac{3\sqrt{70}i}{280}$	0	$-\frac{3\sqrt{70}}{280}$	0	0
		$-\frac{\sqrt{42}i}{56}$	0	$\frac{\sqrt{42}}{56}$	0	0	0	0	$-\frac{\sqrt{7}}{14}$	$-\frac{3\sqrt{70}i}{280}$	0	$-\frac{3\sqrt{70}}{280}$	0	0	0
		0	$-\frac{\sqrt{42}}{56}$	0	$\frac{\sqrt{42}i}{56}$	$-\frac{\sqrt{7}}{14}$	0	0	0	0	$\frac{3\sqrt{70}}{280}$	0	$\frac{3\sqrt{70}i}{280}$	0	0
		$-\frac{\sqrt{42}}{56}$	0	$-\frac{\sqrt{42}i}{56}$	0	0	$\frac{\sqrt{7}}{14}$	0	0	$\frac{3\sqrt{70}}{280}$	0	$-\frac{3\sqrt{70}i}{280}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{70}}{70}$	0	0	$\frac{\sqrt{105}i}{70}$
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{70}}{70}$	$-\frac{\sqrt{105}i}{70}$	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{70}}{70}$	0	0	0	0	$\frac{\sqrt{105}}{70}$
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{70}}{70}$	0	0	$\frac{\sqrt{105}}{70}$	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{210}i}{140}$	0	$-\frac{\sqrt{210}}{140}$	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{210}i}{140}$	0	$-\frac{\sqrt{210}}{140}$	0	0	0
750	symmetry	x													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{T}_{1,1}^{(1,1;a)}(E_u)$	0	0	$\frac{\sqrt{42}}{56}$	0	0	0	0	$-\frac{\sqrt{7}}{28}$	0	0	$-\frac{3\sqrt{70}}{280}$	0	0	$-\frac{\sqrt{105}i}{140}$
		0	0	0	$-\frac{\sqrt{42}}{56}$	0	0	$-\frac{\sqrt{7}}{28}$	0	0	0	0	$\frac{3\sqrt{70}}{280}$	$\frac{\sqrt{105}i}{140}$	0
		$-\frac{\sqrt{42}}{56}$	0	0	0	0	$\frac{\sqrt{7}}{28}$	0	0	$\frac{3\sqrt{70}}{280}$	0	0	0	0	$-\frac{\sqrt{105}}{140}$
		0	$\frac{\sqrt{42}}{56}$	0	0	$\frac{\sqrt{7}}{28}$	0	0	0	0	$-\frac{3\sqrt{70}}{280}$	0	0	$-\frac{\sqrt{105}}{140}$	0
		0	$-\frac{\sqrt{42}i}{56}$	0	$-\frac{\sqrt{42}}{56}$	0	0	0	0	0	$\frac{3\sqrt{70}i}{280}$	0	$\frac{\sqrt{70}}{280}$	0	0
		$\frac{\sqrt{42}i}{56}$	0	$-\frac{\sqrt{42}}{56}$	0	0	0	0	0	$-\frac{3\sqrt{70}i}{280}$	0	$\frac{\sqrt{70}}{280}$	0	0	0
		0	$\frac{\sqrt{42}}{56}$	0	$-\frac{\sqrt{42}i}{56}$	0	0	0	0	0	$\frac{\sqrt{70}}{56}$	0	$-\frac{3\sqrt{70}i}{280}$	$\frac{\sqrt{105}}{70}$	0
		$\frac{\sqrt{42}}{56}$	0	$\frac{\sqrt{42}i}{56}$	0	0	0	0	0	$\frac{\sqrt{70}}{56}$	0	$\frac{3\sqrt{70}i}{280}$	0	0	$-\frac{\sqrt{105}}{70}$
		0	0	0	0	0	$-\frac{\sqrt{21}i}{28}$	0	$-\frac{\sqrt{21}}{28}$	0	0	$-\frac{\sqrt{210}}{140}$	0	0	0
		0	0	0	0	$\frac{\sqrt{21}i}{28}$	0	$-\frac{\sqrt{21}}{28}$	0	0	0	0	$\frac{\sqrt{210}}{140}$	0	0
751	symmetry	y													
	$\mathbb{T}_{1,2}^{(1,1;a)}(E_u)$	$-\frac{\sqrt{42}}{56}$	0	0	0	0	0	0	$\frac{\sqrt{7}i}{28}$	$-\frac{3\sqrt{70}}{280}$	0	0	0	0	$\frac{\sqrt{105}}{140}$
		0	$\frac{\sqrt{42}}{56}$	0	0	0	0	$-\frac{\sqrt{7}i}{28}$	0	0	$\frac{3\sqrt{70}}{280}$	0	0	$\frac{\sqrt{105}}{140}$	0
		0	0	$-\frac{\sqrt{42}}{56}$	0	0	$-\frac{\sqrt{7}i}{28}$	0	0	0	0	$-\frac{3\sqrt{70}}{280}$	0	0	$-\frac{\sqrt{105}i}{140}$
		0	0	0	$\frac{\sqrt{42}}{56}$	$\frac{\sqrt{7}i}{28}$	0	0	0	0	0	0	$\frac{3\sqrt{70}}{280}$	$\frac{\sqrt{105}i}{140}$	0
		0	$\frac{\sqrt{42}}{56}$	0	$-\frac{\sqrt{42}i}{56}$	0	0	0	0	0	$-\frac{3\sqrt{70}}{280}$	0	$\frac{\sqrt{70}i}{56}$	$-\frac{\sqrt{105}}{70}$	0
		$\frac{\sqrt{42}}{56}$	0	$\frac{\sqrt{42}i}{56}$	0	0	0	0	0	$-\frac{3\sqrt{70}}{280}$	0	$-\frac{\sqrt{70}i}{56}$	0	0	$\frac{\sqrt{105}}{70}$
		0	$\frac{\sqrt{42}i}{56}$	0	$\frac{\sqrt{42}}{56}$	0	0	0	0	0	$\frac{\sqrt{70}i}{280}$	0	$\frac{3\sqrt{70}}{280}$	0	0
		$-\frac{\sqrt{42}i}{56}$	0	$\frac{\sqrt{42}}{56}$	0	0	0	0	0	$-\frac{\sqrt{70}i}{280}$	0	$\frac{3\sqrt{70}}{280}$	0	0	0
		0	0	0	0	0	$\frac{\sqrt{21}}{28}$	0	$-\frac{\sqrt{21}i}{28}$	$\frac{\sqrt{210}}{140}$	0	0	0	0	0
		0	0	0	0	$\frac{\sqrt{21}}{28}$	0	$\frac{\sqrt{21}i}{28}$	0	0	$-\frac{\sqrt{210}}{140}$	0	0	0	0
752	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{T}_3^{(1,1;a)}(A_{1u})$	0	0	0	0	0	$\frac{\sqrt{70}i}{60}$	0	$\frac{\sqrt{70}}{60}$	0	0	$\frac{\sqrt{7}}{24}$	0	0	$\frac{\sqrt{42}i}{168}$
		0	0	0	0	$-\frac{\sqrt{70}i}{60}$	0	$\frac{\sqrt{70}}{60}$	0	0	0	0	$-\frac{\sqrt{7}}{24}$	$-\frac{\sqrt{42}i}{168}$	0
		0	0	0	0	0	$\frac{\sqrt{70}}{60}$	0	$-\frac{\sqrt{70}i}{60}$	$\frac{\sqrt{7}}{24}$	0	0	0	0	$-\frac{\sqrt{42}}{168}$
		0	0	0	0	$\frac{\sqrt{70}}{60}$	0	$\frac{\sqrt{70}i}{60}$	0	0	$-\frac{\sqrt{7}}{24}$	0	0	$-\frac{\sqrt{42}}{168}$	0
		0	$-\frac{5\sqrt{105}i}{336}$	0	$-\frac{31\sqrt{105}}{1680}$	0	0	$-\frac{\sqrt{70}}{240}$	0	0	$\frac{\sqrt{7}i}{336}$	0	$-\frac{\sqrt{7}}{336}$	0	0
		$\frac{5\sqrt{105}i}{336}$	0	$-\frac{31\sqrt{105}}{1680}$	0	0	0	$\frac{\sqrt{70}}{240}$	$-\frac{\sqrt{7}i}{336}$	0	$-\frac{\sqrt{7}}{336}$	0	0	0	0
		0	$-\frac{5\sqrt{105}}{336}$	0	$\frac{31\sqrt{105}i}{1680}$	$-\frac{\sqrt{70}}{240}$	0	0	0	0	$-\frac{\sqrt{7}}{336}$	0	$-\frac{\sqrt{7}i}{336}$	0	0
		$-\frac{5\sqrt{105}}{336}$	0	$-\frac{31\sqrt{105}i}{1680}$	0	0	$\frac{\sqrt{70}}{240}$	0	0	$-\frac{\sqrt{7}}{336}$	0	$\frac{\sqrt{7}i}{336}$	0	0	0
		0	0	$-\frac{\sqrt{35}}{40}$	0	0	$-\frac{\sqrt{210}i}{420}$	0	$\frac{\sqrt{210}}{420}$	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{35}}{40}$	$\frac{\sqrt{210}i}{420}$	0	$\frac{\sqrt{210}}{420}$	0	0	0	0	0	0	0
753	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$													
	$\mathbb{T}_3^{(1,1;a)}(A_{2u}, 1)$	0	$-\frac{\sqrt{42}i}{168}$	0	$-\frac{\sqrt{42}}{168}$	0	0	$-\frac{\sqrt{7}}{21}$	0	0	$-\frac{\sqrt{70}i}{84}$	0	$\frac{\sqrt{70}}{84}$	0	0
		$\frac{\sqrt{42}i}{168}$	0	$-\frac{\sqrt{42}}{168}$	0	0	0	0	$\frac{\sqrt{7}}{21}$	$\frac{\sqrt{70}i}{84}$	0	$\frac{\sqrt{70}}{84}$	0	0	0
		0	$\frac{\sqrt{42}}{168}$	0	$-\frac{\sqrt{42}i}{168}$	$\frac{\sqrt{7}}{21}$	0	0	0	$-\frac{\sqrt{70}}{84}$	0	$-\frac{\sqrt{70}i}{84}$	0	0	0
		$\frac{\sqrt{42}}{168}$	0	$\frac{\sqrt{42}i}{168}$	0	0	$-\frac{\sqrt{7}}{21}$	0	0	$-\frac{\sqrt{70}}{84}$	0	$\frac{\sqrt{70}i}{84}$	0	0	0
		0	0	0	0	0	$\frac{\sqrt{7}i}{24}$	0	$\frac{\sqrt{7}}{24}$	0	0	$\frac{\sqrt{70}}{42}$	0	0	$\frac{\sqrt{105}i}{84}$
		0	0	0	0	$-\frac{\sqrt{7}i}{24}$	0	$\frac{\sqrt{7}}{24}$	0	0	0	0	$-\frac{\sqrt{70}}{42}$	$-\frac{\sqrt{105}i}{84}$	0
		0	0	0	0	0	$-\frac{\sqrt{7}}{24}$	0	$\frac{\sqrt{7}i}{24}$	$-\frac{\sqrt{70}}{42}$	0	0	0	0	$\frac{\sqrt{105}}{84}$
		0	0	0	0	$-\frac{\sqrt{7}}{24}$	0	$-\frac{\sqrt{7}i}{24}$	0	0	$\frac{\sqrt{70}}{42}$	0	0	$\frac{\sqrt{105}i}{84}$	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{210}i}{168}$	0	$-\frac{\sqrt{210}}{168}$	0	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{210}i}{168}$	0	$-\frac{\sqrt{210}}{168}$	0	0	0
754	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{T}_3^{(1,1;a)}(A_{2u}, 2)$	0	0	0	0	0	$-\frac{\sqrt{70}}{60}$	0	$\frac{\sqrt{70}i}{60}$	$-\frac{\sqrt{7}}{24}$	0	0	0	$\frac{\sqrt{42}}{168}$	
		0	0	0	0	$-\frac{\sqrt{70}}{60}$	0	$-\frac{\sqrt{70}i}{60}$	0	0	$\frac{\sqrt{7}}{24}$	0	0	$\frac{\sqrt{42}}{168}$	0
		0	0	0	0	0	$\frac{\sqrt{70}i}{60}$	0	$\frac{\sqrt{70}}{60}$	0	0	$\frac{\sqrt{7}}{24}$	0	0	$\frac{\sqrt{42}i}{168}$
		0	0	0	0	$-\frac{\sqrt{70}i}{60}$	0	$\frac{\sqrt{70}}{60}$	0	0	0	$-\frac{\sqrt{7}}{24}$	$-\frac{\sqrt{42}i}{168}$	0	0
		0	$\frac{31\sqrt{105}}{1680}$	0	$-\frac{5\sqrt{105}i}{336}$	$\frac{\sqrt{70}}{240}$	0	0	0	0	$\frac{\sqrt{7}}{336}$	0	$\frac{\sqrt{7}i}{336}$	0	0
		$\frac{31\sqrt{105}}{1680}$	0	$\frac{5\sqrt{105}i}{336}$	0	0	$-\frac{\sqrt{70}}{240}$	0	0	$\frac{\sqrt{7}}{336}$	0	$-\frac{\sqrt{7}i}{336}$	0	0	0
		0	$-\frac{31\sqrt{105}i}{1680}$	0	$-\frac{5\sqrt{105}}{336}$	0	0	$-\frac{\sqrt{70}}{240}$	0	0	$\frac{\sqrt{7}i}{336}$	0	$-\frac{\sqrt{7}}{336}$	0	0
		$\frac{31\sqrt{105}i}{1680}$	0	$-\frac{5\sqrt{105}}{336}$	0	0	0	0	$\frac{\sqrt{70}}{240}$	$-\frac{\sqrt{7}i}{336}$	0	$-\frac{\sqrt{7}}{336}$	0	0	0
		$\frac{\sqrt{35}}{40}$	0	0	0	0	$-\frac{\sqrt{210}}{420}$	0	$-\frac{\sqrt{210}i}{420}$	0	0	0	0	0	0
		0	$-\frac{\sqrt{35}}{40}$	0	0	$-\frac{\sqrt{210}}{420}$	0	$\frac{\sqrt{210}i}{420}$	0	0	0	0	0	0	0
755	symmetry	$-\frac{\sqrt{6x(x^2+y^2-4z^2)}}{4}$													
	$\mathbb{T}_{3,1}^{(1,1;a)}(E_u, 1)$	0	0	$-\frac{\sqrt{7}}{56}$	0	0	0	0	$\frac{\sqrt{42}}{84}$	0	0	$\frac{\sqrt{105}}{84}$	0	0	$\frac{\sqrt{70}i}{56}$
		0	0	0	$\frac{\sqrt{7}}{56}$	0	0	$\frac{\sqrt{42}}{84}$	0	0	0	0	$-\frac{\sqrt{105}}{84}$	$-\frac{\sqrt{70}i}{56}$	0
		$\frac{\sqrt{7}}{56}$	0	0	0	0	$-\frac{\sqrt{42}}{84}$	0	0	$-\frac{\sqrt{105}}{84}$	0	0	0	0	$\frac{\sqrt{70}}{56}$
		0	$-\frac{\sqrt{7}}{56}$	0	0	$-\frac{\sqrt{42}}{84}$	0	0	0	0	$\frac{\sqrt{105}}{84}$	0	0	$\frac{\sqrt{70}}{56}$	0
		0	$\frac{3\sqrt{7}i}{112}$	0	$\frac{3\sqrt{7}}{112}$	0	0	$\frac{\sqrt{42}}{48}$	0	0	$\frac{\sqrt{105}i}{336}$	0	$-\frac{\sqrt{105}}{112}$	0	0
		$-\frac{3\sqrt{7}i}{112}$	0	$\frac{3\sqrt{7}}{112}$	0	0	0	$-\frac{\sqrt{42}}{48}$	$-\frac{\sqrt{105}i}{336}$	0	$-\frac{\sqrt{105}}{112}$	0	0	0	0
		0	$-\frac{3\sqrt{7}}{112}$	0	$\frac{3\sqrt{7}i}{112}$	$-\frac{\sqrt{42}}{48}$	0	0	0	0	$\frac{5\sqrt{105}}{336}$	0	$-\frac{\sqrt{105}i}{336}$	$\frac{\sqrt{70}}{56}$	0
		$-\frac{3\sqrt{7}}{112}$	0	$-\frac{3\sqrt{7}i}{112}$	0	0	$\frac{\sqrt{42}}{48}$	0	0	$\frac{5\sqrt{105}}{336}$	0	$\frac{\sqrt{105}i}{336}$	0	0	$-\frac{\sqrt{70}}{56}$
		0	0	0	0	0	$-\frac{\sqrt{14}i}{28}$	0	$-\frac{\sqrt{14}}{28}$	0	0	$-\frac{\sqrt{35}}{56}$	0	0	0
		0	0	0	0	$\frac{\sqrt{14}i}{28}$	0	$-\frac{\sqrt{14}}{28}$	0	0	0	0	$\frac{\sqrt{35}}{56}$	0	0
756	symmetry	$-\frac{\sqrt{6y}(x^2+y^2-4z^2)}{4}$													

continued ...

Table 9

No.	multipole	matrix												
	$\mathbb{T}_{3,2}^{(1,1;a)}(E_u, 1)$	$\frac{\sqrt{7}}{56}$	0	0	0	0	0	0	$-\frac{\sqrt{42i}}{84}$	$\frac{\sqrt{105}}{84}$	0	0	0	$-\frac{\sqrt{70}}{56}$
		0	$-\frac{\sqrt{7}}{56}$	0	0	0	0	$\frac{\sqrt{42i}}{84}$	0	0	$-\frac{\sqrt{105}}{84}$	0	0	$-\frac{\sqrt{70}}{56}$
		0	0	$\frac{\sqrt{7}}{56}$	0	0	$\frac{\sqrt{42i}}{84}$	0	0	0	$\frac{\sqrt{105}}{84}$	0	0	$\frac{\sqrt{70i}}{56}$
		0	0	0	$-\frac{\sqrt{7}}{56}$	$-\frac{\sqrt{42i}}{84}$	0	0	0	0	0	$-\frac{\sqrt{105}}{84}$	$-\frac{\sqrt{70i}}{56}$	0
		0	$-\frac{3\sqrt{7}}{112}$	0	$\frac{3\sqrt{7i}}{112}$	$-\frac{\sqrt{42}}{48}$	0	0	0	0	$-\frac{\sqrt{105}}{336}$	0	$\frac{5\sqrt{105i}}{336}$	$-\frac{\sqrt{70}}{56}$
		$-\frac{3\sqrt{7}}{112}$	0	$-\frac{3\sqrt{7i}}{112}$	0	0	$\frac{\sqrt{42}}{48}$	0	0	$-\frac{\sqrt{105}}{336}$	0	$-\frac{5\sqrt{105i}}{336}$	0	$\frac{\sqrt{70}}{56}$
		0	$-\frac{3\sqrt{7i}}{112}$	0	$-\frac{3\sqrt{7}}{112}$	0	0	$-\frac{\sqrt{42}}{48}$	0	0	$-\frac{\sqrt{105i}}{112}$	0	$\frac{\sqrt{105}}{336}$	0
		$\frac{3\sqrt{7i}}{112}$	0	$-\frac{3\sqrt{7}}{112}$	0	0	0	$\frac{\sqrt{42}}{48}$	$\frac{\sqrt{105i}}{112}$	0	$\frac{\sqrt{105}}{336}$	0	0	0
		0	0	0	0	0	$\frac{\sqrt{14}}{28}$	0	$-\frac{\sqrt{14i}}{28}$	$\frac{\sqrt{35}}{56}$	0	0	0	0
		0	0	0	0	$\frac{\sqrt{14}}{28}$	0	$\frac{\sqrt{14i}}{28}$	0	0	$-\frac{\sqrt{35}}{56}$	0	0	0
757	symmetry	$\sqrt{15}xyz$												
	$\mathbb{T}_{3,1}^{(1,1;a)}(E_u, 2)$	0	$-\frac{\sqrt{70}}{560}$	0	$-\frac{\sqrt{70i}}{560}$	0	0	0	0	$-\frac{3\sqrt{42}}{112}$	0	$\frac{3\sqrt{42i}}{112}$	$-\frac{\sqrt{7}}{14}$	0
		$-\frac{\sqrt{70}}{560}$	0	$\frac{\sqrt{70i}}{560}$	0	0	0	0	$-\frac{3\sqrt{42}}{112}$	0	$-\frac{3\sqrt{42i}}{112}$	0	0	$\frac{\sqrt{7}}{14}$
		0	$\frac{\sqrt{70i}}{560}$	0	$-\frac{\sqrt{70}}{560}$	0	0	0	0	$\frac{5\sqrt{42i}}{336}$	0	$\frac{5\sqrt{42}}{336}$	0	0
		$-\frac{\sqrt{70i}}{560}$	0	$-\frac{\sqrt{70}}{560}$	0	0	0	0	$-\frac{5\sqrt{42i}}{336}$	0	$\frac{5\sqrt{42}}{336}$	0	0	0
		$-\frac{3\sqrt{70}}{280}$	0	0	0	0	$\frac{\sqrt{105}}{120}$	0	$-\frac{\sqrt{42}}{168}$	0	0	0	0	$\frac{\sqrt{7}}{56}$
		0	$\frac{3\sqrt{70}}{280}$	0	0	$\frac{\sqrt{105}}{120}$	0	0	0	$\frac{\sqrt{42}}{168}$	0	0	$\frac{\sqrt{7}}{56}$	0
		0	0	$-\frac{3\sqrt{70}}{280}$	0	0	$-\frac{\sqrt{105i}}{120}$	0	0	0	$\frac{\sqrt{42}}{168}$	0	0	$\frac{\sqrt{7i}}{56}$
		0	0	0	$\frac{3\sqrt{70}}{280}$	$\frac{\sqrt{105i}}{120}$	0	0	0	0	0	$-\frac{\sqrt{42}}{168}$	$-\frac{\sqrt{7i}}{56}$	0
		0	$\frac{\sqrt{210}}{80}$	0	$-\frac{\sqrt{210i}}{80}$	$\frac{\sqrt{35}}{35}$	0	0	0	$-\frac{\sqrt{14}}{112}$	0	$-\frac{\sqrt{14i}}{112}$	0	0
		$\frac{\sqrt{210}}{80}$	0	$\frac{\sqrt{210i}}{80}$	0	0	$-\frac{\sqrt{35}}{35}$	0	$-\frac{\sqrt{14}}{112}$	0	$\frac{\sqrt{14i}}{112}$	0	0	0
758	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$												

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{T}_{3,2}^{(1,1;a)}(E_u, 2)$	0	$-\frac{\sqrt{70}i}{560}$	0	$\frac{\sqrt{70}}{560}$	0	0	0	0	0	$\frac{5\sqrt{42}i}{336}$	0	$\frac{5\sqrt{42}}{336}$	0	0
		$\frac{\sqrt{70}i}{560}$	0	$\frac{\sqrt{70}}{560}$	0	0	0	0	0	$-\frac{5\sqrt{42}i}{336}$	0	$\frac{5\sqrt{42}}{336}$	0	0	0
		0	$-\frac{\sqrt{70}}{560}$	0	$-\frac{\sqrt{70}i}{560}$	0	0	0	0	0	$\frac{3\sqrt{42}}{112}$	0	$-\frac{3\sqrt{42}i}{112}$	$\frac{\sqrt{7}}{14}$	0
		$-\frac{\sqrt{70}}{560}$	0	$\frac{\sqrt{70}i}{560}$	0	0	0	0	0	$\frac{3\sqrt{42}}{112}$	0	$\frac{3\sqrt{42}i}{112}$	0	0	$-\frac{\sqrt{7}}{14}$
		0	0	$\frac{3\sqrt{70}}{280}$	0	0	0	0	$-\frac{\sqrt{105}}{120}$	0	0	$\frac{\sqrt{42}}{168}$	0	0	$\frac{\sqrt{7}i}{56}$
		0	0	0	$-\frac{3\sqrt{70}}{280}$	0	0	$-\frac{\sqrt{105}}{120}$	0	0	0	0	$-\frac{\sqrt{42}}{168}$	$-\frac{\sqrt{7}i}{56}$	0
		$-\frac{3\sqrt{70}}{280}$	0	0	0	0	0	$\frac{\sqrt{105}i}{120}$	$\frac{\sqrt{42}}{168}$	0	0	0	0	0	$-\frac{\sqrt{7}}{56}$
		0	$\frac{3\sqrt{70}}{280}$	0	0	0	0	$-\frac{\sqrt{105}i}{120}$	0	0	$-\frac{\sqrt{42}}{168}$	0	0	$-\frac{\sqrt{7}}{56}$	0
		0	$-\frac{\sqrt{210}i}{80}$	0	$-\frac{\sqrt{210}}{80}$	0	0	$-\frac{\sqrt{35}}{35}$	0	0	$-\frac{\sqrt{14}i}{112}$	0	$\frac{\sqrt{14}}{112}$	0	0
		$\frac{\sqrt{210}i}{80}$	0	$-\frac{\sqrt{210}}{80}$	0	0	0	$\frac{\sqrt{35}}{35}$	$\frac{\sqrt{14}i}{112}$	0	$\frac{\sqrt{14}}{112}$	0	0	0	0
759	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$													
	$M_2^{(a)}(A_{1u})$	0	0	0	0	0	0	$-\frac{\sqrt{70}i}{28}$	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{70}i}{28}$	0	0	0	0	0	0
		0	0	0	0	$\frac{\sqrt{70}i}{28}$	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	$\frac{\sqrt{70}i}{28}$	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{7}i}{14}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{7}i}{14}$	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{7}i}{14}$	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{7}i}{14}$	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
760	symmetry	$\sqrt{3}yz$													

continued ...

Table 9

No.	multipole	matrix
	$\mathbb{M}_{2,1}^{(a)}(E_u, 1)$	$\begin{bmatrix} \frac{\sqrt{35i}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21i}}{28} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{35i}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21i}}{28} & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{35i}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21i}}{28} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{35i}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21i}}{28} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14i}}{14} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14i}}{14} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7i}}{14} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7i}}{14} & 0 & 0 & 0 & 0 \end{bmatrix}$
761	symmetry	$-\sqrt{3}xz$ $\begin{bmatrix} 0 & 0 & \frac{\sqrt{35i}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21i}}{28} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{35i}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21i}}{28} & 0 & 0 \\ -\frac{\sqrt{35i}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21i}}{28} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{35i}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21i}}{28} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14i}}{14} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14i}}{14} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7i}}{14} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7i}}{14} & 0 & 0 \end{bmatrix}$
762	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$

continued ...

Table 9

No.	multipole	matrix
	$M_{2,1}^{(a)}(E_u, 2)$	$ \begin{array}{cccccccccccccccc} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}i}{28} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}i}{28} \\ 0 & 0 & \frac{\sqrt{35}i}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}i}{28} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{35}i}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}i}{28} & 0 & 0 \\ -\frac{\sqrt{35}i}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}i}{28} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{35}i}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}i}{28} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{70}i}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{70}i}{28} & 0 & 0 & 0 & 0 & 0 & 0 \end{array} $
763	symmetry	$ \begin{array}{c} -\sqrt{3}xy \\ \left[\begin{array}{cccccccccccccccc} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}i}{28} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}i}{28} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{35}i}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}i}{28} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{35}i}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}i}{28} & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{35}i}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}i}{28} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{35}i}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}i}{28} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{70}i}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{70}i}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{array} \right] \end{array} $
764	symmetry	$ \frac{3x^4}{8} + \frac{3x^2y^2}{4} - 3x^2z^2 + \frac{3y^4}{8} - 3y^2z^2 + z^4 $

continued ...

Table 9

No.	multipole	matrix
	$M_4^{(a)}(A_{1u}, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}i}{14} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}i}{14} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{7}i}{14} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}i}{14} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}i}{28} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}i}{28} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{70}i}{28} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{70}i}{28} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
765	symmetry	$\frac{\sqrt{70}yz(3x^2-y^2)}{4}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{i}{4} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{i}{4} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{i}{4} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{i}{4} & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{10}i}{40} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}i}{40} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{40} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{40} & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{3\sqrt{5}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{3\sqrt{5}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
766	symmetry	$\frac{\sqrt{70}xz(x^2-3y^2)}{4}$

continued ...

Table 9

No.	multipole	matrix												
	$M_{4,2}^{(a)}(E_u, 1)$	0	0	$-\frac{\sqrt{105}i}{140}$	0	0	0	0	0	0	$\frac{\sqrt{7}i}{14}$	0	0	0
		0	0	0	$-\frac{\sqrt{105}i}{140}$	0	0	0	0	0	0	$\frac{\sqrt{7}i}{14}$	0	0
		$\frac{\sqrt{105}i}{140}$	0	0	0	0	0	0	0	$-\frac{\sqrt{7}i}{14}$	0	0	0	0
		0	$\frac{\sqrt{105}i}{140}$	0	0	0	0	0	0	$-\frac{\sqrt{7}i}{14}$	0	0	0	0
		0	0	0	0	0	0	$\frac{\sqrt{70}i}{40}$	0	0	0	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{70}i}{40}$	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{70}i}{40}$	0	0	0	0	0	0	$\frac{\sqrt{42}i}{28}$	0
		0	0	0	0	0	$-\frac{\sqrt{70}i}{40}$	0	0	0	0	0	0	$\frac{\sqrt{42}i}{28}$
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{21}i}{28}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{21}i}{28}$	0	0
769	symmetry	$\frac{\sqrt{35}(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$												
	$M_{4,1}^{(a)}(E_u, 2)$	0	0	0	0	0	0	$-\frac{\sqrt{5}i}{10}$	0	0	0	0	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{5}i}{10}$	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{5}i}{10}$	0	0	0	0	0	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{5}i}{10}$	0	0	0	0	0	0	0
		0	0	$\frac{\sqrt{30}i}{20}$	0	0	0	0	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{30}i}{20}$	0	0	0	0	0	0	0	0	0
		$\frac{\sqrt{30}i}{20}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{30}i}{20}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0
770	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$												

continued ...

Table 9

No.	multipole	matrix
	$\mathbb{M}_{4,2}^{(a)}(E_u, 2)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & \frac{\sqrt{5}i}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{5}i}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{10} & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{30}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{30}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{30}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{30}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
771	symmetry	$-\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$
	$\mathbb{M}_{4,1}^{(a)}(E_u, 3)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}i}{14} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}i}{14} & 0 \\ 0 & 0 & -\frac{3\sqrt{210}i}{280} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}i}{56} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{3\sqrt{210}i}{280} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}i}{56} & 0 & 0 & 0 \\ \frac{3\sqrt{210}i}{280} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}i}{56} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{3\sqrt{210}i}{280} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}i}{56} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{105}i}{35} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{105}i}{35} & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
772	symmetry	$\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$

continued ...

Table 9

No.	multipole	matrix													
	$M_{4,2}^{(a)}(E_u, 3)$	0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{21}i}{14}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{21}i}{14}$
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		$-\frac{3\sqrt{210}i}{280}$	0	0	0	0	0	0	0	$-\frac{\sqrt{14}i}{56}$	0	0	0	0	0
		0	$-\frac{3\sqrt{210}i}{280}$	0	0	0	0	0	0	0	$-\frac{\sqrt{14}i}{56}$	0	0	0	0
		0	0	$-\frac{3\sqrt{210}i}{280}$	0	0	0	0	0	0	0	$\frac{\sqrt{14}i}{56}$	0	0	0
		0	0	0	$-\frac{3\sqrt{210}i}{280}$	0	0	0	0	0	0	0	$\frac{\sqrt{14}i}{56}$	0	0
		0	0	0	0	$\frac{\sqrt{105}i}{35}$	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	$\frac{\sqrt{105}i}{35}$	0	0	0	0	0	0	0	0
773	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$													
	$M_2^{(1,-1;a)}(A_{1u})$	0	$-\frac{\sqrt{7}}{28}$	0	$\frac{\sqrt{7}i}{28}$	$\frac{\sqrt{42}}{42}$	0	0	0	$\frac{\sqrt{105}}{420}$	0	$\frac{\sqrt{105}i}{420}$	0	0	
		$-\frac{\sqrt{7}}{28}$	0	$-\frac{\sqrt{7}i}{28}$	0	0	$-\frac{\sqrt{42}}{42}$	0	0	$\frac{\sqrt{105}}{420}$	0	$-\frac{\sqrt{105}i}{420}$	0	0	
		0	$-\frac{\sqrt{7}i}{28}$	0	$-\frac{\sqrt{7}}{28}$	0	0	$\frac{\sqrt{42}}{42}$	0	0	$-\frac{\sqrt{105}i}{420}$	0	$\frac{\sqrt{105}}{420}$	0	0
		$\frac{\sqrt{7}i}{28}$	0	$-\frac{\sqrt{7}}{28}$	0	0	0	$-\frac{\sqrt{42}}{42}$	$\frac{\sqrt{105}i}{420}$	0	$\frac{\sqrt{105}}{420}$	0	0	0	
		0	0	0	0	0	$-\frac{\sqrt{42}}{84}$	0	$\frac{\sqrt{42}i}{84}$	$\frac{2\sqrt{105}}{105}$	0	0	0	$\frac{\sqrt{70}}{140}$	
		0	0	0	0	$-\frac{\sqrt{42}}{84}$	0	$-\frac{\sqrt{42}i}{84}$	0	0	$-\frac{2\sqrt{105}}{105}$	0	0	$\frac{\sqrt{70}}{140}$	
		0	0	0	0	0	$-\frac{\sqrt{42}i}{84}$	0	$-\frac{\sqrt{42}}{84}$	0	0	$\frac{2\sqrt{105}}{105}$	0	$-\frac{\sqrt{70}i}{140}$	
		0	0	0	0	$\frac{\sqrt{42}i}{84}$	0	$-\frac{\sqrt{42}}{84}$	0	0	0	$-\frac{2\sqrt{105}}{105}$	$\frac{\sqrt{70}i}{140}$	0	
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{35}}{70}$	0	$\frac{\sqrt{35}i}{70}$	$\frac{\sqrt{210}}{70}$	0	
		0	0	0	0	0	0	0	$-\frac{\sqrt{35}}{70}$	0	$-\frac{\sqrt{35}i}{70}$	0	0	$-\frac{\sqrt{210}}{70}$	
774	symmetry	$\sqrt{3}yz$													

continued ...

Table 9

No.	multipole	matrix													
	$M_{2,1}^{(1,-1;a)}(E_u, 1)$	0	0	$\frac{\sqrt{21}}{28}$	0	0	$-\frac{\sqrt{14}i}{28}$	0	0	0	0	$\frac{\sqrt{35}}{140}$	0	0	0
		0	0	0	$-\frac{\sqrt{21}}{28}$	$\frac{\sqrt{14}i}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{35}}{140}$	0	0
		$-\frac{\sqrt{21}}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{14}i}{28}$	$-\frac{\sqrt{35}}{140}$	0	0	0	0	0
		0	$\frac{\sqrt{21}}{28}$	0	0	0	0	$\frac{\sqrt{14}i}{28}$	0	0	$\frac{\sqrt{35}}{140}$	0	0	0	0
		0	0	0	0	0	0	$\frac{\sqrt{14}}{28}$	0	0	$-\frac{\sqrt{35}i}{35}$	0	0	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{14}}{28}$	$\frac{\sqrt{35}i}{35}$	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{14}}{28}$	0	0	0	0	0	$-\frac{\sqrt{35}i}{35}$	$-\frac{\sqrt{210}}{140}$	0	0
		0	0	0	0	0	$\frac{\sqrt{14}}{28}$	0	0	0	0	$\frac{\sqrt{35}i}{35}$	0	0	$\frac{\sqrt{210}}{140}$
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{105}}{70}$	0	0	0	$-\frac{3\sqrt{70}i}{140}$
		0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{105}}{70}$	$\frac{3\sqrt{70}i}{140}$	0	0
775	symmetry	$-\sqrt{3}xz$													
	$M_{2,2}^{(1,-1;a)}(E_u, 1)$	$-\frac{\sqrt{21}}{28}$	0	0	0	0	$-\frac{\sqrt{14}}{28}$	0	0	$\frac{\sqrt{35}}{140}$	0	0	0	0	0
		0	$\frac{\sqrt{21}}{28}$	0	0	$-\frac{\sqrt{14}}{28}$	0	0	0	0	$-\frac{\sqrt{35}}{140}$	0	0	0	0
		0	0	$-\frac{\sqrt{21}}{28}$	0	0	0	0	$-\frac{\sqrt{14}}{28}$	0	0	$\frac{\sqrt{35}}{140}$	0	0	0
		0	0	0	$\frac{\sqrt{21}}{28}$	0	0	$-\frac{\sqrt{14}}{28}$	0	0	0	$-\frac{\sqrt{35}}{140}$	0	0	0
		0	0	0	0	$-\frac{\sqrt{14}}{28}$	0	0	0	0	$-\frac{\sqrt{35}}{35}$	0	0	$\frac{\sqrt{210}}{140}$	0
		0	0	0	0	0	$\frac{\sqrt{14}}{28}$	0	0	$-\frac{\sqrt{35}}{35}$	0	0	0	0	$-\frac{\sqrt{210}}{140}$
		0	0	0	0	0	0	$-\frac{\sqrt{14}}{28}$	0	0	0	$-\frac{\sqrt{35}}{35}$	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{14}}{28}$	0	0	$-\frac{\sqrt{35}}{35}$	0	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{105}}{70}$	0	0	0	0	$-\frac{3\sqrt{70}}{140}$
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{105}}{70}$	0	0	$-\frac{3\sqrt{70}}{140}$	0
776	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$M_{2,1}^{(1,-1;a)}(E_u, 2)$	0	$\frac{\sqrt{21}}{28}$	0	$\frac{\sqrt{21}i}{28}$	0	0	0	0	0	$-\frac{\sqrt{35}}{140}$	0	$\frac{\sqrt{35}i}{140}$	0	0
		$\frac{\sqrt{21}}{28}$	0	$-\frac{\sqrt{21}i}{28}$	0	0	0	0	0	$-\frac{\sqrt{35}}{140}$	0	$-\frac{\sqrt{35}i}{140}$	0	0	0
		0	$-\frac{\sqrt{21}i}{28}$	0	$\frac{\sqrt{21}}{28}$	0	0	0	0	$-\frac{\sqrt{35}}{140}$	0	$-\frac{\sqrt{35}i}{140}$	0	0	0
		$\frac{\sqrt{21}i}{28}$	0	$\frac{\sqrt{21}}{28}$	0	0	0	0	0	$\frac{\sqrt{35}i}{140}$	0	$-\frac{\sqrt{35}}{140}$	0	0	0
		0	0	0	0	0	$\frac{\sqrt{14}}{28}$	0	$\frac{\sqrt{14}i}{28}$	0	0	0	0	0	$-\frac{\sqrt{210}}{140}$
		0	0	0	0	$\frac{\sqrt{14}}{28}$	0	$-\frac{\sqrt{14}i}{28}$	0	0	0	0	0	$-\frac{\sqrt{210}}{140}$	0
		0	0	0	0	0	$-\frac{\sqrt{14}i}{28}$	0	$\frac{\sqrt{14}}{28}$	0	0	0	0	0	$-\frac{\sqrt{210}i}{140}$
		0	0	0	0	$\frac{\sqrt{14}i}{28}$	0	$\frac{\sqrt{14}}{28}$	0	0	0	0	0	$\frac{\sqrt{210}i}{140}$	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{105}}{70}$	0	$\frac{\sqrt{105}i}{70}$	0	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{105}i}{70}$	0	$-\frac{\sqrt{105}}{70}$	0	0	0
777	symmetry	$-\sqrt{3}xy$													
	$M_{2,2}^{(1,-1;a)}(E_u, 2)$	0	$\frac{\sqrt{21}i}{28}$	0	$-\frac{\sqrt{21}}{28}$	0	0	0	0	0	$-\frac{\sqrt{35}i}{140}$	0	$-\frac{\sqrt{35}}{140}$	0	0
		$-\frac{\sqrt{21}i}{28}$	0	$-\frac{\sqrt{21}}{28}$	0	0	0	0	0	$\frac{\sqrt{35}i}{140}$	0	$-\frac{\sqrt{35}}{140}$	0	0	0
		0	$\frac{\sqrt{21}}{28}$	0	$\frac{\sqrt{21}i}{28}$	0	0	0	0	0	$\frac{\sqrt{35}}{140}$	0	$-\frac{\sqrt{35}i}{140}$	0	0
		$\frac{\sqrt{21}}{28}$	0	$-\frac{\sqrt{21}i}{28}$	0	0	0	0	0	$\frac{\sqrt{35}}{140}$	0	$\frac{\sqrt{35}i}{140}$	0	0	0
		0	0	0	0	0	$\frac{\sqrt{14}i}{28}$	0	$-\frac{\sqrt{14}}{28}$	0	0	0	0	0	$-\frac{\sqrt{210}i}{140}$
		0	0	0	0	$-\frac{\sqrt{14}i}{28}$	0	$-\frac{\sqrt{14}}{28}$	0	0	0	0	0	$\frac{\sqrt{210}i}{140}$	0
		0	0	0	0	0	$\frac{\sqrt{14}}{28}$	0	$\frac{\sqrt{14}i}{28}$	0	0	0	0	0	$\frac{\sqrt{210}}{140}$
		0	0	0	0	$\frac{\sqrt{14}}{28}$	0	$-\frac{\sqrt{14}i}{28}$	0	0	0	0	0	$\frac{\sqrt{210}}{140}$	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{105}i}{70}$	0	$-\frac{\sqrt{105}}{70}$	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{105}i}{70}$	0	$-\frac{\sqrt{105}}{70}$	0	0	0
778	symmetry	$\frac{3x^4}{8} + \frac{3x^2y^2}{4} - 3x^2z^2 + \frac{3y^4}{8} - 3y^2z^2 + z^4$													

continued ...

Table 9

No.	multipole	matrix													
	$M_4^{(1,-1;a)}(A_{1u}, 1)$	0	$\frac{\sqrt{14}}{56}$	0	$-\frac{\sqrt{14}i}{56}$	$-\frac{\sqrt{21}}{21}$	0	0	0	0	$-\frac{\sqrt{210}}{140}$	0	$-\frac{\sqrt{210}i}{140}$	0	0
		$\frac{\sqrt{14}}{56}$	0	$\frac{\sqrt{14}i}{56}$	0	0	$\frac{\sqrt{21}}{21}$	0	0	$-\frac{\sqrt{210}}{140}$	0	$\frac{\sqrt{210}i}{140}$	0	0	0
		0	$\frac{\sqrt{14}i}{56}$	0	$\frac{\sqrt{14}}{56}$	0	0	$-\frac{\sqrt{21}}{21}$	0	0	$\frac{\sqrt{210}i}{140}$	0	$-\frac{\sqrt{210}}{140}$	0	0
		$-\frac{\sqrt{14}i}{56}$	0	$\frac{\sqrt{14}}{56}$	0	0	0	0	$\frac{\sqrt{21}}{21}$	$-\frac{\sqrt{210}i}{140}$	0	$-\frac{\sqrt{210}}{140}$	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{21}}{56}$	0	$\frac{\sqrt{21}i}{56}$	$\frac{\sqrt{210}}{210}$	0	0	0	0	$-\frac{\sqrt{35}}{140}$
		0	0	0	0	$-\frac{\sqrt{21}}{56}$	0	$-\frac{\sqrt{21}i}{56}$	0	0	$-\frac{\sqrt{210}}{210}$	0	0	$-\frac{\sqrt{35}}{140}$	0
		0	0	0	0	0	$-\frac{\sqrt{21}i}{56}$	0	$-\frac{\sqrt{21}}{56}$	0	0	$\frac{\sqrt{210}}{210}$	0	0	$\frac{\sqrt{35}i}{140}$
		0	0	0	0	$\frac{\sqrt{21}i}{56}$	0	$-\frac{\sqrt{21}}{56}$	0	0	0	$-\frac{\sqrt{210}}{210}$	$-\frac{\sqrt{35}i}{140}$	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{3\sqrt{70}}{280}$	0	$\frac{3\sqrt{70}i}{280}$	$\frac{2\sqrt{105}}{105}$	0
		0	0	0	0	0	0	0	0	$-\frac{3\sqrt{70}}{280}$	0	$-\frac{3\sqrt{70}i}{280}$	0	0	$-\frac{2\sqrt{105}}{105}$
779	symmetry	$\frac{\sqrt{70}yz(3x^2-y^2)}{4}$													
	$M_4^{(1,-1;a)}(A_{1u}, 2)$	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{3}}{24}$	0	0	$\frac{\sqrt{2}i}{8}$
		0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{3}}{24}$	$-\frac{\sqrt{2}i}{8}$	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{3}}{24}$	0	0	0	0	$-\frac{\sqrt{2}}{8}$
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{3}}{24}$	0	0	$-\frac{\sqrt{2}}{8}$	0
		0	$-\frac{\sqrt{5}i}{16}$	0	$\frac{\sqrt{5}}{16}$	0	0	$\frac{\sqrt{30}}{48}$	0	0	$-\frac{\sqrt{3}i}{16}$	0	$\frac{\sqrt{3}}{16}$	0	0
		$\frac{\sqrt{5}i}{16}$	0	$\frac{\sqrt{5}}{16}$	0	0	0	$-\frac{\sqrt{30}}{48}$	$\frac{\sqrt{3}i}{16}$	0	$\frac{\sqrt{3}}{16}$	0	0	0	0
		0	$-\frac{\sqrt{5}}{16}$	0	$-\frac{\sqrt{5}i}{16}$	$\frac{\sqrt{30}}{48}$	0	0	0	0	$\frac{\sqrt{3}}{16}$	0	$\frac{\sqrt{3}i}{16}$	0	0
		$-\frac{\sqrt{5}}{16}$	0	$\frac{\sqrt{5}i}{16}$	0	0	$-\frac{\sqrt{30}}{48}$	0	0	$\frac{\sqrt{3}}{16}$	0	$-\frac{\sqrt{3}i}{16}$	0	0	0
		0	0	$-\frac{\sqrt{15}}{24}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{15}}{24}$	0	0	0	0	0	0	0	0	0	0
780	symmetry	$\frac{\sqrt{70}xz(x^2-3y^2)}{4}$													

continued ...

Table 9

No.	multipole	matrix													
	$M_4^{(1,-1;a)}(A_{2u})$	0	0	0	0	0	0	0	0	$-\frac{\sqrt{3}}{24}$	0	0	0	0	$-\frac{\sqrt{2}}{8}$
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{3}}{24}$	0	0	$-\frac{\sqrt{2}}{8}$	0
		0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{3}}{24}$	0	0	$-\frac{\sqrt{2}i}{8}$
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{3}}{24}$	$\frac{\sqrt{2}i}{8}$	0
		0	$\frac{\sqrt{5}}{16}$	0	$\frac{\sqrt{5}i}{16}$	$\frac{\sqrt{30}}{48}$	0	0	0	0	$\frac{\sqrt{3}}{16}$	0	$\frac{\sqrt{3}i}{16}$	0	0
		$\frac{\sqrt{5}}{16}$	0	$-\frac{\sqrt{5}i}{16}$	0	0	$-\frac{\sqrt{30}}{48}$	0	0	$\frac{\sqrt{3}}{16}$	0	$-\frac{\sqrt{3}i}{16}$	0	0	0
		0	$-\frac{\sqrt{5}i}{16}$	0	$\frac{\sqrt{5}}{16}$	0	0	$-\frac{\sqrt{30}}{48}$	0	0	$\frac{\sqrt{3}i}{16}$	0	$-\frac{\sqrt{3}}{16}$	0	0
		$\frac{\sqrt{5}i}{16}$	0	$\frac{\sqrt{5}}{16}$	0	0	0	$\frac{\sqrt{30}}{48}$	$-\frac{\sqrt{3}i}{16}$	0	$-\frac{\sqrt{3}}{16}$	0	0	0	0
		$-\frac{\sqrt{15}}{24}$	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{15}}{24}$	0	0	0	0	0	0	0	0	0	0	0	0
781	symmetry	$-\frac{\sqrt{10}yz(3x^2+3y^2-4z^2)}{4}$													
	$M_{4,1}^{(1,-1;a)}(E_u, 1)$	0	0	$-\frac{\sqrt{35}}{56}$	0	0	$\frac{\sqrt{210}i}{84}$	0	0	0	0	$-\frac{\sqrt{21}}{28}$	0	0	$\frac{\sqrt{14}i}{56}$
		0	0	0	$\frac{\sqrt{35}}{56}$	$-\frac{\sqrt{210}i}{84}$	0	0	0	0	0	0	$\frac{\sqrt{21}}{28}$	$-\frac{\sqrt{14}i}{56}$	0
		$\frac{\sqrt{35}}{56}$	0	0	0	0	0	$\frac{\sqrt{210}i}{84}$	$\frac{\sqrt{21}}{28}$	0	0	0	0	0	$\frac{\sqrt{14}}{56}$
		0	$-\frac{\sqrt{35}}{56}$	0	0	0	$-\frac{\sqrt{210}i}{84}$	0	0	$-\frac{\sqrt{21}}{28}$	0	0	0	$\frac{\sqrt{14}}{56}$	0
		0	$-\frac{\sqrt{35}i}{112}$	0	$-\frac{\sqrt{35}}{112}$	0	0	$\frac{\sqrt{210}}{112}$	0	0	$-\frac{\sqrt{21}i}{48}$	0	$-\frac{\sqrt{21}}{112}$	0	0
		$\frac{\sqrt{35}i}{112}$	0	$-\frac{\sqrt{35}}{112}$	0	0	0	$-\frac{\sqrt{210}}{112}$	$\frac{\sqrt{21}i}{48}$	0	$-\frac{\sqrt{21}}{112}$	0	0	0	0
		0	$\frac{\sqrt{35}}{112}$	0	$-\frac{\sqrt{35}i}{112}$	$-\frac{\sqrt{210}}{112}$	0	0	0	$-\frac{\sqrt{21}}{112}$	0	$-\frac{\sqrt{21}i}{336}$	$\frac{\sqrt{14}}{56}$	0	0
		$\frac{\sqrt{35}}{112}$	0	$\frac{\sqrt{35}i}{112}$	0	0	$\frac{\sqrt{210}}{112}$	0	0	$-\frac{\sqrt{21}}{112}$	0	$\frac{\sqrt{21}i}{336}$	0	0	$-\frac{\sqrt{14}}{56}$
		0	0	0	0	0	0	0	0	0	0	$\frac{3\sqrt{7}}{56}$	0	0	$-\frac{\sqrt{42}i}{42}$
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{3\sqrt{7}}{56}$	$\frac{\sqrt{42}i}{42}$	0
782	symmetry	$\frac{\sqrt{10}xz(3x^2+3y^2-4z^2)}{4}$													

continued ...

Table 9

No.	multipole	matrix												
	$M_{4,2}^{(1,-1;a)}(E_u, 1)$	$\frac{\sqrt{35}}{56}$	0	0	0	0	$\frac{\sqrt{210}}{84}$	0	0	$-\frac{\sqrt{21}}{28}$	0	0	0	$-\frac{\sqrt{14}}{56}$
		0	$-\frac{\sqrt{35}}{56}$	0	0	$\frac{\sqrt{210}}{84}$	0	0	0	$\frac{\sqrt{21}}{28}$	0	0	$-\frac{\sqrt{14}}{56}$	0
		0	0	$\frac{\sqrt{35}}{56}$	0	0	0	$\frac{\sqrt{210}}{84}$	0	0	$-\frac{\sqrt{21}}{28}$	0	0	$\frac{\sqrt{14}i}{56}$
		0	0	0	$-\frac{\sqrt{35}}{56}$	0	0	$\frac{\sqrt{210}}{84}$	0	0	0	$\frac{\sqrt{21}}{28}$	$-\frac{\sqrt{14}i}{56}$	0
		0	$\frac{\sqrt{35}}{112}$	0	$-\frac{\sqrt{35}i}{112}$	$-\frac{\sqrt{210}}{112}$	0	0	0	$-\frac{\sqrt{21}}{336}$	0	$-\frac{\sqrt{21}i}{112}$	$-\frac{\sqrt{14}}{56}$	0
		$\frac{\sqrt{35}}{112}$	0	$\frac{\sqrt{35}i}{112}$	0	0	$\frac{\sqrt{210}}{112}$	0	0	$-\frac{\sqrt{21}}{336}$	0	$\frac{\sqrt{21}i}{112}$	0	$\frac{\sqrt{14}}{56}$
		0	$\frac{\sqrt{35}i}{112}$	0	$\frac{\sqrt{35}}{112}$	0	0	$-\frac{\sqrt{210}}{112}$	0	$-\frac{\sqrt{21}i}{112}$	0	$-\frac{\sqrt{21}}{48}$	0	0
		$-\frac{\sqrt{35}i}{112}$	0	$\frac{\sqrt{35}}{112}$	0	0	0	$\frac{\sqrt{210}}{112}$	$\frac{\sqrt{21}i}{112}$	0	$-\frac{\sqrt{21}}{48}$	0	0	0
		0	0	0	0	0	0	0	$-\frac{3\sqrt{7}}{56}$	0	0	0	0	$-\frac{\sqrt{42}}{42}$
		0	0	0	0	0	0	0	0	$\frac{3\sqrt{7}}{56}$	0	0	$-\frac{\sqrt{42}}{42}$	0
783	symmetry	$\frac{\sqrt{35}(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$												
	$M_{4,1}^{(1,-1;a)}(E_u, 2)$	0	0	0	0	0	0	0	0	$-\frac{\sqrt{6}}{24}$	0	$-\frac{\sqrt{6}i}{24}$	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{6}}{24}$	0	$\frac{\sqrt{6}i}{24}$	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{6}i}{24}$	0	$\frac{\sqrt{6}}{24}$	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{6}i}{24}$	0	$\frac{\sqrt{6}}{24}$	0	0
		0	0	0	0	0	$\frac{\sqrt{15}}{24}$	0	$\frac{\sqrt{15}i}{24}$	0	0	0	0	0
		0	0	0	0	$\frac{\sqrt{15}}{24}$	0	$-\frac{\sqrt{15}i}{24}$	0	0	0	0	0	0
		0	0	0	0	0	$\frac{\sqrt{15}i}{24}$	0	$-\frac{\sqrt{15}}{24}$	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{15}i}{24}$	0	$-\frac{\sqrt{15}}{24}$	0	0	0	0	0	0
		0	$-\frac{\sqrt{30}}{24}$	0	$-\frac{\sqrt{30}i}{24}$	0	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{30}}{24}$	0	$\frac{\sqrt{30}i}{24}$	0	0	0	0	0	0	0	0	0	0
784	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$												

continued ...

Table 9

No.	multipole	matrix													
	$M_{4,2}^{(1,-1;a)}(E_u, 2)$	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{6}i}{24}$	0	$-\frac{\sqrt{6}}{24}$	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{6}i}{24}$	0	$-\frac{\sqrt{6}}{24}$	0	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{6}}{24}$	0	$-\frac{\sqrt{6}i}{24}$	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{6}}{24}$	0	$\frac{\sqrt{6}i}{24}$	0	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{15}i}{24}$	0	$\frac{\sqrt{15}}{24}$	0	0	0	0	0	0
		0	0	0	0	$\frac{\sqrt{15}i}{24}$	0	$\frac{\sqrt{15}}{24}$	0	0	0	0	0	0	0
		0	0	0	0	0	$\frac{\sqrt{15}}{24}$	0	$\frac{\sqrt{15}i}{24}$	0	0	0	0	0	0
		0	0	0	0	$\frac{\sqrt{15}}{24}$	0	$-\frac{\sqrt{15}i}{24}$	0	0	0	0	0	0	0
		0	$\frac{\sqrt{30}i}{24}$	0	$-\frac{\sqrt{30}}{24}$	0	0	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{30}i}{24}$	0	$-\frac{\sqrt{30}}{24}$	0	0	0	0	0	0	0	0	0	0	0
785	symmetry	$-\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$													
	$M_{4,1}^{(1,-1;a)}(E_u, 3)$	0	$-\frac{\sqrt{70}}{112}$	0	$-\frac{\sqrt{70}i}{112}$	0	0	0	0	0	$\frac{\sqrt{42}}{48}$	0	$-\frac{\sqrt{42}i}{48}$	$-\frac{\sqrt{7}}{14}$	0
		$-\frac{\sqrt{70}}{112}$	0	$\frac{\sqrt{70}i}{112}$	0	0	0	0	0	$\frac{\sqrt{42}}{48}$	0	$\frac{\sqrt{42}i}{48}$	0	0	$\frac{\sqrt{7}}{14}$
		0	$\frac{\sqrt{70}i}{112}$	0	$-\frac{\sqrt{70}}{112}$	0	0	0	0	0	$\frac{5\sqrt{42}i}{336}$	0	$\frac{5\sqrt{42}}{336}$	0	0
		$-\frac{\sqrt{70}i}{112}$	0	$-\frac{\sqrt{70}}{112}$	0	0	0	0	0	$-\frac{5\sqrt{42}i}{336}$	0	$\frac{5\sqrt{42}}{336}$	0	0	0
		$\frac{\sqrt{70}}{56}$	0	0	0	0	$\frac{\sqrt{105}}{168}$	0	$\frac{\sqrt{105}i}{84}$	$\frac{\sqrt{42}}{56}$	0	0	0	0	$\frac{\sqrt{7}}{56}$
		0	$-\frac{\sqrt{70}}{56}$	0	0	$\frac{\sqrt{105}}{168}$	0	$-\frac{\sqrt{105}i}{84}$	0	0	$-\frac{\sqrt{42}}{56}$	0	0	$\frac{\sqrt{7}}{56}$	0
		0	0	$\frac{\sqrt{70}}{56}$	0	0	$-\frac{\sqrt{105}i}{168}$	0	$\frac{\sqrt{105}}{84}$	0	0	$-\frac{\sqrt{42}}{56}$	0	0	$\frac{\sqrt{7}i}{56}$
		0	0	0	$-\frac{\sqrt{70}}{56}$	$\frac{\sqrt{105}i}{168}$	0	$\frac{\sqrt{105}}{84}$	0	0	0	0	$\frac{\sqrt{42}}{56}$	$-\frac{\sqrt{7}i}{56}$	0
		0	$\frac{\sqrt{210}}{336}$	0	$-\frac{\sqrt{210}i}{336}$	0	0	0	0	0	$\frac{3\sqrt{14}}{112}$	0	$\frac{3\sqrt{14}i}{112}$	0	0
		$\frac{\sqrt{210}i}{336}$	0	$\frac{\sqrt{210}}{336}$	0	0	0	0	0	$\frac{3\sqrt{14}}{112}$	0	$-\frac{3\sqrt{14}i}{112}$	0	0	0
786	symmetry	$\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$M_{4,2}^{(1,-1;a)}(E_u, 3)$	0	$-\frac{\sqrt{70}i}{112}$	0	$\frac{\sqrt{70}}{112}$	0	0	0	0	0	$\frac{5\sqrt{42}i}{336}$	0	$\frac{5\sqrt{42}}{336}$	0	0
		$\frac{\sqrt{70}i}{112}$	0	$\frac{\sqrt{70}}{112}$	0	0	0	0	0	$-\frac{5\sqrt{42}i}{336}$	0	$\frac{5\sqrt{42}}{336}$	0	0	0
		0	$-\frac{\sqrt{70}}{112}$	0	$-\frac{\sqrt{70}i}{112}$	0	0	0	0	0	$-\frac{\sqrt{42}}{48}$	0	$\frac{\sqrt{42}i}{48}$	$\frac{\sqrt{7}}{14}$	0
		$-\frac{\sqrt{70}}{112}$	0	$\frac{\sqrt{70}i}{112}$	0	0	0	0	0	$-\frac{\sqrt{42}}{48}$	0	$-\frac{\sqrt{42}i}{48}$	0	0	$-\frac{\sqrt{7}}{14}$
		0	0	$-\frac{\sqrt{70}}{56}$	0	0	$\frac{\sqrt{105}i}{84}$	0	$-\frac{\sqrt{105}}{168}$	0	0	$-\frac{\sqrt{42}}{56}$	0	0	$\frac{\sqrt{7}i}{56}$
		0	0	0	$\frac{\sqrt{70}}{56}$	$-\frac{\sqrt{105}i}{84}$	0	$-\frac{\sqrt{105}}{168}$	0	0	0	0	$\frac{\sqrt{42}}{56}$	$-\frac{\sqrt{7}i}{56}$	0
		$\frac{\sqrt{70}}{56}$	0	0	0	0	$\frac{\sqrt{105}}{84}$	0	$\frac{\sqrt{105}i}{168}$	$-\frac{\sqrt{42}}{56}$	0	0	0	0	$-\frac{\sqrt{7}}{56}$
		0	$-\frac{\sqrt{70}}{56}$	0	0	$\frac{\sqrt{105}}{84}$	0	$-\frac{\sqrt{105}i}{168}$	0	0	$\frac{\sqrt{42}}{56}$	0	0	$-\frac{\sqrt{7}}{56}$	0
		0	$-\frac{\sqrt{210}i}{336}$	0	$-\frac{\sqrt{210}}{336}$	0	0	0	0	0	$\frac{3\sqrt{14}i}{112}$	0	$-\frac{3\sqrt{14}}{112}$	0	0
		$\frac{\sqrt{210}i}{336}$	0	$-\frac{\sqrt{210}}{336}$	0	0	0	0	0	$-\frac{3\sqrt{14}i}{112}$	0	$-\frac{3\sqrt{14}}{112}$	0	0	0
787	symmetry	$-\frac{5x^6}{16} - \frac{15x^4y^2}{16} + \frac{45x^4z^2}{8} - \frac{15x^2y^4}{16} + \frac{45x^2y^2z^2}{4} - \frac{15x^2z^4}{2} - \frac{5y^6}{16} + \frac{45y^4z^2}{8} - \frac{15y^2z^4}{2} + z^6$													
	$M_6^{(1,-1;a)}(A_{1u}, 1)$	0	$-\frac{\sqrt{462}}{1848}$	0	$\frac{\sqrt{462}i}{1848}$	$\frac{\sqrt{77}}{154}$	0	0	0	0	$\frac{\sqrt{770}}{616}$	0	$\frac{\sqrt{770}i}{616}$	0	0
		$-\frac{\sqrt{462}}{1848}$	0	$-\frac{\sqrt{462}i}{1848}$	0	0	$-\frac{\sqrt{77}}{154}$	0	0	$\frac{\sqrt{770}}{616}$	0	$-\frac{\sqrt{770}i}{616}$	0	0	0
		0	$-\frac{\sqrt{462}i}{1848}$	0	$-\frac{\sqrt{462}}{1848}$	0	0	$\frac{\sqrt{77}}{154}$	0	0	$-\frac{\sqrt{770}i}{616}$	0	$\frac{\sqrt{770}}{616}$	0	0
		$\frac{\sqrt{462}i}{1848}$	0	$-\frac{\sqrt{462}}{1848}$	0	0	0	$-\frac{\sqrt{77}}{154}$	$\frac{\sqrt{770}i}{616}$	0	$\frac{\sqrt{770}}{616}$	0	0	0	0
		0	0	0	0	$\frac{\sqrt{77}}{154}$	0	$-\frac{\sqrt{77}i}{154}$	$-\frac{\sqrt{770}}{154}$	0	0	0	0	0	$-\frac{\sqrt{1155}}{231}$
		0	0	0	0	$\frac{\sqrt{77}}{154}$	0	$\frac{\sqrt{77}i}{154}$	0	0	$\frac{\sqrt{770}}{154}$	0	0	$-\frac{\sqrt{1155}}{231}$	0
		0	0	0	0	0	$\frac{\sqrt{77}i}{154}$	0	$\frac{\sqrt{77}}{154}$	0	0	$-\frac{\sqrt{770}}{154}$	0	0	$\frac{\sqrt{1155}i}{231}$
		0	0	0	0	$-\frac{\sqrt{77}i}{154}$	0	$\frac{\sqrt{77}}{154}$	0	0	0	0	$\frac{\sqrt{770}}{154}$	$-\frac{\sqrt{1155}i}{231}$	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{2310}}{308}$	0	$\frac{\sqrt{2310}i}{308}$	$\frac{\sqrt{385}}{77}$	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{2310}}{308}$	0	$-\frac{\sqrt{2310}i}{308}$	0	0	0	$-\frac{\sqrt{385}}{77}$
788	symmetry	$\frac{\sqrt{462}(x-y)(x+y)(x^2-4xy+y^2)(x^2+4xy+y^2)}{32}$													

continued ...

Table 9

No.	multipole	matrix
	$M_6^{(1,-1;a)}(A_{1u}, 2)$	$\begin{bmatrix} 0 & \frac{1}{4} & 0 & \frac{i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{1}{4} & 0 & -\frac{i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{i}{4} & 0 & -\frac{1}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{i}{4} & 0 & -\frac{1}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
789	symmetry	$-\frac{\sqrt{210}yz(3x^2-y^2)(3x^2+3y^2-8z^2)}{16}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{330}i}{440} & 0 & -\frac{\sqrt{330}}{440} & 0 & 0 & \frac{\sqrt{33}}{44} & 0 & 0 & -\frac{\sqrt{22}i}{44} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{330}i}{440} & 0 & -\frac{\sqrt{330}}{440} & 0 & 0 & 0 & 0 & -\frac{\sqrt{33}}{44} & \frac{\sqrt{22}i}{44} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{330}}{440} & 0 & \frac{\sqrt{330}i}{440} & \frac{\sqrt{33}}{44} & 0 & 0 & 0 & 0 & \frac{\sqrt{22}}{44} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{330}}{440} & 0 & -\frac{\sqrt{330}i}{440} & 0 & 0 & -\frac{\sqrt{33}}{44} & 0 & 0 & \frac{\sqrt{22}}{44} & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{55}}{110} & 0 & 0 & \frac{\sqrt{330}}{110} & 0 & 0 & -\frac{\sqrt{33}i}{44} & 0 & \frac{\sqrt{33}}{44} & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{55}}{110} & 0 & 0 & 0 & 0 & -\frac{\sqrt{330}}{110} & \frac{\sqrt{33}i}{44} & 0 & \frac{\sqrt{33}}{44} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{55}i}{110} & \frac{\sqrt{330}}{110} & 0 & 0 & 0 & 0 & \frac{\sqrt{33}}{44} & 0 & \frac{\sqrt{33}i}{44} & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{55}i}{110} & 0 & 0 & -\frac{\sqrt{330}}{110} & 0 & 0 & \frac{\sqrt{33}}{44} & 0 & -\frac{\sqrt{33}i}{44} & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{165}}{110} & 0 & 0 & -\frac{3\sqrt{110}i}{220} & 0 & \frac{3\sqrt{110}}{220} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{165}}{110} & \frac{3\sqrt{110}i}{220} & 0 & \frac{3\sqrt{110}}{220} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
790	symmetry	$\frac{\sqrt{462}xy(x^2-3y^2)(3x^2-y^2)}{16}$

continued ...

Table 9

No.	multipole	matrix
	$M_6^{(1,-1;a)}(A_{2u}, 1)$	$\begin{bmatrix} 0 & -\frac{i}{4} & 0 & \frac{1}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{i}{4} & 0 & \frac{1}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{1}{4} & 0 & \frac{i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{1}{4} & 0 & -\frac{i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
791	symmetry	$-\frac{\sqrt{210}xz(x^2-3y^2)(3x^2+3y^2-8z^2)}{16}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{330}}{440} & 0 & \frac{\sqrt{330}i}{440} & \frac{\sqrt{33}}{44} & 0 & 0 & 0 & 0 & \frac{\sqrt{22}}{44} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{330}}{440} & 0 & -\frac{\sqrt{330}i}{440} & 0 & 0 & -\frac{\sqrt{33}}{44} & 0 & 0 & \frac{\sqrt{22}}{44} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{330}i}{440} & 0 & \frac{\sqrt{330}}{440} & 0 & 0 & -\frac{\sqrt{33}}{44} & 0 & 0 & \frac{\sqrt{22}i}{44} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{330}i}{440} & 0 & \frac{\sqrt{330}}{440} & 0 & 0 & 0 & \frac{\sqrt{33}}{44} & -\frac{\sqrt{22}i}{44} & 0 & 0 \\ 0 & -\frac{\sqrt{55}}{110} & 0 & 0 & \frac{\sqrt{330}}{110} & 0 & 0 & 0 & 0 & \frac{\sqrt{33}}{44} & 0 & \frac{\sqrt{33}i}{44} & 0 & 0 \\ -\frac{\sqrt{55}}{110} & 0 & 0 & 0 & 0 & -\frac{\sqrt{330}}{110} & 0 & 0 & \frac{\sqrt{33}}{44} & 0 & -\frac{\sqrt{33}i}{44} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{55}i}{110} & 0 & 0 & 0 & 0 & -\frac{\sqrt{330}}{110} & 0 & 0 & \frac{\sqrt{33}i}{44} & 0 & -\frac{\sqrt{33}}{44} & 0 & 0 \\ -\frac{\sqrt{55}i}{110} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{330}}{110} & -\frac{\sqrt{33}i}{44} & 0 & -\frac{\sqrt{33}}{44} & 0 & 0 & 0 \\ \frac{\sqrt{165}}{110} & 0 & 0 & 0 & 0 & \frac{3\sqrt{110}}{220} & 0 & \frac{3\sqrt{110}i}{220} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{165}}{110} & 0 & 0 & \frac{3\sqrt{110}}{220} & 0 & -\frac{3\sqrt{110}i}{220} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
792	symmetry	$\frac{3\sqrt{154}yz(5x^4-10x^2y^2+y^4)}{16}$

continued ...

Table 9

No.	multipole	matrix
	$M_{6,1}^{(1,-1;a)}(E_u, 1)$	$\begin{bmatrix} 0 & 0 & \frac{\sqrt{3}}{12} & 0 & 0 & -\frac{\sqrt{2}i}{8} & 0 & \frac{\sqrt{2}}{8} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{3}}{12} & \frac{\sqrt{2}i}{8} & 0 & \frac{\sqrt{2}}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{3}}{12} & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{8} & 0 & \frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{3}}{12} & 0 & 0 & \frac{\sqrt{2}}{8} & 0 & -\frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{3}i}{12} & 0 & \frac{\sqrt{3}}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{3}i}{12} & 0 & \frac{\sqrt{3}}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{3}}{12} & 0 & \frac{\sqrt{3}i}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{3}}{12} & 0 & -\frac{\sqrt{3}i}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
793	symmetry	$\frac{3\sqrt{154}xz(x^4-10x^2y^2+5y^4)}{16}$ $\begin{bmatrix} \frac{\sqrt{3}}{12} & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{8} & 0 & \frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{3}}{12} & 0 & 0 & \frac{\sqrt{2}}{8} & 0 & -\frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{3}}{12} & 0 & 0 & \frac{\sqrt{2}i}{8} & 0 & -\frac{\sqrt{2}}{8} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{3}}{12} & -\frac{\sqrt{2}i}{8} & 0 & -\frac{\sqrt{2}}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{3}}{12} & 0 & \frac{\sqrt{3}i}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{3}}{12} & 0 & -\frac{\sqrt{3}i}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{3}i}{12} & 0 & -\frac{\sqrt{3}}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{3}i}{12} & 0 & -\frac{\sqrt{3}}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
794	symmetry	$\frac{\sqrt{21}yz(5x^4+10x^2y^2-20x^2z^2+5y^4-20y^2z^2+8z^4)}{8}$

continued ...

Table 9

No.	multipole	matrix													
$M_{6,1}^{(1,-1;a)}(E_u, 2)$		0	0	$\frac{\sqrt{22}}{264}$	0	0	$-\frac{\sqrt{33i}}{132}$	0	0	0	0	$\frac{\sqrt{330}}{264}$	0	0	$-\frac{\sqrt{55i}}{132}$
		0	0	0	$-\frac{\sqrt{22}}{264}$	$\frac{\sqrt{33i}}{132}$	0	0	0	0	0	0	$-\frac{\sqrt{330}}{264}$	$\frac{\sqrt{55i}}{132}$	0
		$-\frac{\sqrt{22}}{264}$	0	0	0	0	0	0	$-\frac{\sqrt{33i}}{132}$	$-\frac{\sqrt{330}}{264}$	0	0	0	0	$-\frac{\sqrt{55i}}{132}$
		0	$\frac{\sqrt{22}}{264}$	0	0	0	0	$\frac{\sqrt{33i}}{132}$	0	0	$\frac{\sqrt{330}}{264}$	0	0	$-\frac{\sqrt{55i}}{132}$	0
		0	$\frac{\sqrt{22i}}{264}$	0	$\frac{\sqrt{22}}{264}$	0	0	$-\frac{\sqrt{33}}{66}$	0	0	$\frac{\sqrt{330i}}{264}$	0	$-\frac{\sqrt{330}}{264}$	0	0
		$-\frac{\sqrt{22i}}{264}$	0	$\frac{\sqrt{22}}{264}$	0	0	0	0	$\frac{\sqrt{33}}{66}$	$-\frac{\sqrt{330i}}{264}$	0	$-\frac{\sqrt{330}}{264}$	0	0	0
		0	$-\frac{\sqrt{22}}{264}$	0	$\frac{\sqrt{22i}}{264}$	$\frac{\sqrt{33}}{66}$	0	0	0	0	$-\frac{\sqrt{330}}{264}$	0	$\frac{\sqrt{330i}}{88}$	$\frac{\sqrt{55}}{33}$	0
		$-\frac{\sqrt{22}}{264}$	0	$-\frac{\sqrt{22i}}{264}$	0	0	$-\frac{\sqrt{33}}{66}$	0	0	$-\frac{\sqrt{330}}{264}$	0	$-\frac{\sqrt{330i}}{88}$	0	0	$-\frac{\sqrt{55}}{33}$
		0	0	0	0	0	$-\frac{\sqrt{11i}}{44}$	0	$-\frac{\sqrt{11}}{44}$	0	0	$\frac{\sqrt{110}}{44}$	0	0	$-\frac{\sqrt{165i}}{66}$
		0	0	0	0	$\frac{\sqrt{11i}}{44}$	0	$-\frac{\sqrt{11}}{44}$	0	0	0	0	$-\frac{\sqrt{110}}{44}$	$\frac{\sqrt{165i}}{66}$	0
795	symmetry	$-\frac{\sqrt{21}xz(5x^4+10x^2y^2-20x^2z^2+5y^4-20y^2z^2+8z^4)}{8}$													
$M_{6,2}^{(1,-1;a)}(E_u, 2)$		$-\frac{\sqrt{22}}{264}$	0	0	0	0	$-\frac{\sqrt{33}}{132}$	0	0	$\frac{\sqrt{330}}{264}$	0	0	0	0	$\frac{\sqrt{55}}{132}$
		0	$\frac{\sqrt{22}}{264}$	0	0	$-\frac{\sqrt{33}}{132}$	0	0	0	0	$-\frac{\sqrt{330}}{264}$	0	0	$\frac{\sqrt{55}}{132}$	0
		0	0	$-\frac{\sqrt{22}}{264}$	0	0	0	0	$-\frac{\sqrt{33}}{132}$	0	0	$\frac{\sqrt{330}}{264}$	0	0	$-\frac{\sqrt{55i}}{132}$
		0	0	0	$\frac{\sqrt{22}}{264}$	0	0	$-\frac{\sqrt{33}}{132}$	0	0	0	0	$-\frac{\sqrt{330}}{264}$	$\frac{\sqrt{55i}}{132}$	0
		0	$-\frac{\sqrt{22}}{264}$	0	$\frac{\sqrt{22i}}{264}$	$\frac{\sqrt{33}}{66}$	0	0	0	0	$\frac{\sqrt{330}}{88}$	0	$-\frac{\sqrt{330i}}{264}$	$-\frac{\sqrt{55}}{33}$	0
		$-\frac{\sqrt{22}}{264}$	0	$-\frac{\sqrt{22i}}{264}$	0	0	$-\frac{\sqrt{33}}{66}$	0	0	$\frac{\sqrt{330}}{88}$	0	$\frac{\sqrt{330i}}{264}$	0	0	$\frac{\sqrt{55}}{33}$
		0	$-\frac{\sqrt{22i}}{264}$	0	$-\frac{\sqrt{22}}{264}$	0	0	$\frac{\sqrt{33}}{66}$	0	0	$-\frac{\sqrt{330i}}{264}$	0	$\frac{\sqrt{330}}{264}$	0	0
		$\frac{\sqrt{22i}}{264}$	0	$-\frac{\sqrt{22}}{264}$	0	0	0	0	$-\frac{\sqrt{33}}{66}$	$\frac{\sqrt{330i}}{264}$	0	$\frac{\sqrt{330}}{264}$	0	0	0
		0	0	0	0	0	$\frac{\sqrt{11}}{44}$	0	$-\frac{\sqrt{11i}}{44}$	$-\frac{\sqrt{110}}{44}$	0	0	0	0	$-\frac{\sqrt{165}}{66}$
		0	0	0	0	$\frac{\sqrt{11}}{44}$	0	$\frac{\sqrt{11i}}{44}$	0	0	$\frac{\sqrt{110}}{44}$	0	0	$-\frac{\sqrt{165}}{66}$	0
796	symmetry	$-\frac{3\sqrt{7}(x^2+y^2-10z^2)(x^2-2xy-y^2)(x^2+2xy-y^2)}{16}$													

continued ...

Table 9

No.	multipole	matrix
	$M_{6,1}^{(1,-1;a)}(E_u, 3)$	$\begin{bmatrix} 0 & -\frac{\sqrt{66}}{264} & 0 & \frac{\sqrt{66i}}{264} & \frac{\sqrt{11}}{22} & 0 & 0 & 0 & 0 & \frac{\sqrt{110}}{88} & 0 & \frac{\sqrt{110i}}{88} & 0 & 0 \\ -\frac{\sqrt{66}}{264} & 0 & -\frac{\sqrt{66i}}{264} & 0 & 0 & -\frac{\sqrt{11}}{22} & 0 & 0 & \frac{\sqrt{110}}{88} & 0 & -\frac{\sqrt{110i}}{88} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{66i}}{264} & 0 & \frac{\sqrt{66}}{264} & 0 & 0 & -\frac{\sqrt{11}}{22} & 0 & 0 & \frac{\sqrt{110i}}{88} & 0 & -\frac{\sqrt{110}}{88} & 0 & 0 \\ -\frac{\sqrt{66i}}{264} & 0 & \frac{\sqrt{66}}{264} & 0 & 0 & 0 & 0 & \frac{\sqrt{11}}{22} & -\frac{\sqrt{110i}}{88} & 0 & -\frac{\sqrt{110}}{88} & 0 & 0 & 0 \\ \frac{\sqrt{66}}{66} & 0 & 0 & 0 & 0 & \frac{\sqrt{11}}{22} & 0 & \frac{\sqrt{11i}}{22} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{66}}{66} & 0 & 0 & \frac{\sqrt{11}}{22} & 0 & -\frac{\sqrt{11i}}{22} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{66}}{66} & 0 & 0 & \frac{\sqrt{11i}}{22} & 0 & -\frac{\sqrt{11}}{22} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{66}}{66} & -\frac{\sqrt{11i}}{22} & 0 & -\frac{\sqrt{11}}{22} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{22}}{44} & 0 & \frac{\sqrt{22i}}{44} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{22}}{44} & 0 & -\frac{\sqrt{22i}}{44} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
797	symmetry	$-\frac{3\sqrt{7}xy(x-y)(x+y)(x^2+y^2-10z^2)}{4}$ $\begin{bmatrix} 0 & -\frac{\sqrt{66i}}{264} & 0 & -\frac{\sqrt{66}}{264} & 0 & 0 & \frac{\sqrt{11}}{22} & 0 & 0 & -\frac{\sqrt{110i}}{88} & 0 & \frac{\sqrt{110}}{88} & 0 & 0 \\ \frac{\sqrt{66i}}{264} & 0 & -\frac{\sqrt{66}}{264} & 0 & 0 & 0 & 0 & -\frac{\sqrt{11}}{22} & \frac{\sqrt{110i}}{88} & 0 & \frac{\sqrt{110}}{88} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{66}}{264} & 0 & \frac{\sqrt{66i}}{264} & \frac{\sqrt{11}}{22} & 0 & 0 & 0 & 0 & \frac{\sqrt{110}}{88} & 0 & \frac{\sqrt{110i}}{88} & 0 & 0 \\ -\frac{\sqrt{66}}{264} & 0 & -\frac{\sqrt{66i}}{264} & 0 & 0 & -\frac{\sqrt{11}}{22} & 0 & 0 & \frac{\sqrt{110}}{88} & 0 & -\frac{\sqrt{110i}}{88} & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{66}}{66} & 0 & 0 & -\frac{\sqrt{11i}}{22} & 0 & \frac{\sqrt{11}}{22} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{66}}{66} & \frac{\sqrt{11i}}{22} & 0 & \frac{\sqrt{11}}{22} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{66}}{66} & 0 & 0 & 0 & 0 & \frac{\sqrt{11}}{22} & 0 & \frac{\sqrt{11i}}{22} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{66}}{66} & 0 & 0 & \frac{\sqrt{11}}{22} & 0 & -\frac{\sqrt{11i}}{22} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{22i}}{44} & 0 & \frac{\sqrt{22}}{44} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{22i}}{44} & 0 & \frac{\sqrt{22}}{44} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
798	symmetry	$\frac{\sqrt{210}(x-y)(x+y)(x^4+2x^2y^2-16x^2z^2+y^4-16y^2z^2+16z^4)}{32}$

continued ...

Table 9

No.	multipole	matrix													
	$M_{6,1}^{(1,-1;a)}(E_u, 4)$	0	$\frac{\sqrt{55}}{660}$	0	$\frac{\sqrt{55i}}{660}$	0	0	0	0	0	$-\frac{\sqrt{33}}{66}$	0	$\frac{\sqrt{33i}}{66}$	$\frac{\sqrt{22}}{33}$	0
		$\frac{\sqrt{55}}{660}$	0	$-\frac{\sqrt{55i}}{660}$	0	0	0	0	0	$-\frac{\sqrt{33}}{66}$	0	$-\frac{\sqrt{33i}}{66}$	0	0	$-\frac{\sqrt{22}}{33}$
		0	$-\frac{\sqrt{55i}}{660}$	0	$\frac{\sqrt{55}}{660}$	0	0	0	0	0	0	0	0	0	0
		$\frac{\sqrt{55i}}{660}$	0	$\frac{\sqrt{55}}{660}$	0	0	0	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{55}}{165}$	0	0	0	0	$-\frac{\sqrt{330}}{165}$	0	0	$\frac{\sqrt{33}}{33}$	0	0	0	0	$\frac{\sqrt{22}}{33}$
		0	$\frac{\sqrt{55}}{165}$	0	0	$-\frac{\sqrt{330}}{165}$	0	0	0	$-\frac{\sqrt{33}}{33}$	0	0	0	$\frac{\sqrt{22}}{33}$	0
		0	0	$-\frac{\sqrt{55}}{165}$	0	0	$\frac{\sqrt{330i}}{165}$	0	0	0	$-\frac{\sqrt{33}}{33}$	0	0	0	$\frac{\sqrt{22i}}{33}$
		0	0	0	$\frac{\sqrt{55}}{165}$	$-\frac{\sqrt{330i}}{165}$	0	0	0	0	0	$\frac{\sqrt{33}}{33}$	$-\frac{\sqrt{22i}}{33}$	0	0
		0	$-\frac{\sqrt{165}}{330}$	0	$\frac{\sqrt{165i}}{330}$	$\frac{\sqrt{110}}{55}$	0	0	0	$\frac{\sqrt{11}}{22}$	0	$\frac{\sqrt{11i}}{22}$	0	0	0
		$-\frac{\sqrt{165}}{330}$	0	$-\frac{\sqrt{165i}}{330}$	0	0	$-\frac{\sqrt{110}}{55}$	0	0	$\frac{\sqrt{11}}{22}$	0	$-\frac{\sqrt{11i}}{22}$	0	0	0
799	symmetry	$-\frac{\sqrt{210xy}(x^4+2x^2y^2-16x^2z^2+y^4-16y^2z^2+16z^4)}{16}$													
	$M_{6,2}^{(1,-1;a)}(E_u, 4)$	0	$\frac{\sqrt{55i}}{660}$	0	$-\frac{\sqrt{55}}{660}$	0	0	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{55i}}{660}$	0	$-\frac{\sqrt{55}}{660}$	0	0	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{55}}{660}$	0	$\frac{\sqrt{55i}}{660}$	0	0	0	0	$\frac{\sqrt{33}}{66}$	0	$-\frac{\sqrt{33i}}{66}$	$-\frac{\sqrt{22}}{33}$	0	0
		$\frac{\sqrt{55}}{660}$	0	$-\frac{\sqrt{55i}}{660}$	0	0	0	0	$\frac{\sqrt{33}}{66}$	0	$\frac{\sqrt{33i}}{66}$	0	0	$\frac{\sqrt{22}}{33}$	0
		0	0	$\frac{\sqrt{55}}{165}$	0	0	0	$\frac{\sqrt{330}}{165}$	0	0	$-\frac{\sqrt{33}}{33}$	0	0	$\frac{\sqrt{22i}}{33}$	0
		0	0	0	$-\frac{\sqrt{55}}{165}$	0	0	$\frac{\sqrt{330}}{165}$	0	0	0	$\frac{\sqrt{33}}{33}$	$-\frac{\sqrt{22i}}{33}$	0	0
		$-\frac{\sqrt{55}}{165}$	0	0	0	0	0	$-\frac{\sqrt{330i}}{165}$	$-\frac{\sqrt{33}}{33}$	0	0	0	0	$-\frac{\sqrt{22}}{33}$	0
		0	$\frac{\sqrt{55}}{165}$	0	0	0	0	$\frac{\sqrt{330i}}{165}$	0	0	$\frac{\sqrt{33}}{33}$	0	0	$-\frac{\sqrt{22}}{33}$	0
		0	$\frac{\sqrt{165i}}{330}$	0	$\frac{\sqrt{165}}{330}$	0	0	$-\frac{\sqrt{110}}{55}$	0	0	$\frac{\sqrt{11i}}{22}$	0	$-\frac{\sqrt{11}}{22}$	0	0
		$-\frac{\sqrt{165i}}{330}$	0	$\frac{\sqrt{165}}{330}$	0	0	0	$\frac{\sqrt{110}}{55}$	$-\frac{\sqrt{11i}}{22}$	0	$-\frac{\sqrt{11}}{22}$	0	0	0	0
800	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$													

continued ...

Table 9

No.	multipole	matrix
	$M_2^{(1,0;a)}(A_{1u})$	$ \begin{bmatrix} 0 & -\frac{\sqrt{70}}{56} & 0 & \frac{\sqrt{70}i}{56} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}}{56} & 0 & -\frac{\sqrt{42}i}{56} & 0 & 0 \\ -\frac{\sqrt{70}}{56} & 0 & -\frac{\sqrt{70}i}{56} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}}{56} & 0 & \frac{\sqrt{42}i}{56} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{70}i}{56} & 0 & -\frac{\sqrt{70}}{56} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}}{56} & 0 & -\frac{\sqrt{42}}{56} & 0 & 0 \\ \frac{\sqrt{70}i}{56} & 0 & -\frac{\sqrt{70}}{56} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}}{56} & 0 & -\frac{\sqrt{42}}{56} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}}{14} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}}{14} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}i}{14} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}i}{14} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}}{28} & 0 & -\frac{\sqrt{14}i}{28} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}}{28} & 0 & \frac{\sqrt{14}i}{28} & 0 & 0 & 0 \end{bmatrix} $
801	symmetry	$ \begin{matrix} \sqrt{3}yz \\ \left[\begin{array}{cccccccccccccc} 0 & 0 & \frac{\sqrt{210}}{168} & 0 & 0 & 0 & 0 & -\frac{\sqrt{35}}{28} & 0 & 0 & -\frac{\sqrt{14}}{56} & 0 & 0 & \frac{\sqrt{21}i}{84} \\ 0 & 0 & 0 & -\frac{\sqrt{210}}{168} & 0 & 0 & -\frac{\sqrt{35}}{28} & 0 & 0 & 0 & 0 & \frac{\sqrt{14}}{56} & -\frac{\sqrt{21}i}{84} & 0 \\ -\frac{\sqrt{210}}{168} & 0 & 0 & 0 & 0 & \frac{\sqrt{35}}{28} & 0 & 0 & \frac{\sqrt{14}}{56} & 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{84} \\ 0 & \frac{\sqrt{210}}{168} & 0 & 0 & \frac{\sqrt{35}}{28} & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}}{56} & 0 & 0 & \frac{\sqrt{21}}{84} & 0 \\ 0 & \frac{\sqrt{210}i}{168} & 0 & \frac{\sqrt{210}}{168} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}i}{56} & 0 & -\frac{3\sqrt{14}}{56} & 0 & 0 \\ -\frac{\sqrt{210}i}{168} & 0 & \frac{\sqrt{210}}{168} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}i}{56} & 0 & -\frac{3\sqrt{14}}{56} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{210}}{168} & 0 & \frac{\sqrt{210}i}{168} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}}{56} & 0 & \frac{\sqrt{14}i}{56} & \frac{\sqrt{21}}{42} & 0 \\ -\frac{\sqrt{210}}{168} & 0 & -\frac{\sqrt{210}i}{168} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}}{56} & 0 & -\frac{\sqrt{14}i}{56} & 0 & 0 & -\frac{\sqrt{21}}{42} \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{105}i}{84} & 0 & \frac{\sqrt{105}}{84} & 0 & 0 & -\frac{\sqrt{42}}{84} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{105}i}{84} & 0 & \frac{\sqrt{105}}{84} & 0 & 0 & 0 & 0 & \frac{\sqrt{42}}{84} & 0 & 0 \end{array} \right] \end{matrix} $
802	symmetry	$-\sqrt{3}xz$

continued ...

Table 9

No.	multipole	matrix													
	$M_{2,2}^{(1,0;a)}(E_u, 1)$	$-\frac{\sqrt{210}}{168}$	0	0	0	0	0	0	$\frac{\sqrt{35i}}{28}$	$-\frac{\sqrt{14}}{56}$	0	0	0	0	$-\frac{\sqrt{21}}{84}$
		0	$\frac{\sqrt{210}}{168}$	0	0	0	0	$-\frac{\sqrt{35i}}{28}$	0	0	$\frac{\sqrt{14}}{56}$	0	0	$-\frac{\sqrt{21}}{84}$	0
		0	0	$-\frac{\sqrt{210}}{168}$	0	0	$-\frac{\sqrt{35i}}{28}$	0	0	0	0	$-\frac{\sqrt{14}}{56}$	0	0	$\frac{\sqrt{21}i}{84}$
		0	0	0	$\frac{\sqrt{210}}{168}$	$\frac{\sqrt{35i}}{28}$	0	0	0	0	0	$\frac{\sqrt{14}}{56}$	$-\frac{\sqrt{21}i}{84}$	0	0
		0	$-\frac{\sqrt{210}}{168}$	0	$\frac{\sqrt{210}i}{168}$	0	0	0	0	0	$\frac{\sqrt{14}}{56}$	0	$\frac{\sqrt{14}i}{56}$	$-\frac{\sqrt{21}}{42}$	0
		$-\frac{\sqrt{210}}{168}$	0	$-\frac{\sqrt{210}i}{168}$	0	0	0	0	0	$\frac{\sqrt{14}}{56}$	0	$-\frac{\sqrt{14}i}{56}$	0	0	$\frac{\sqrt{21}}{42}$
		0	$-\frac{\sqrt{210}i}{168}$	0	$-\frac{\sqrt{210}}{168}$	0	0	0	0	0	$-\frac{3\sqrt{14}i}{56}$	0	$-\frac{\sqrt{14}}{56}$	0	0
		$\frac{\sqrt{210}i}{168}$	0	$-\frac{\sqrt{210}}{168}$	0	0	0	0	0	$\frac{3\sqrt{14}i}{56}$	0	$-\frac{\sqrt{14}}{56}$	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{105}}{84}$	0	$\frac{\sqrt{105}i}{84}$	$\frac{\sqrt{42}}{84}$	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{105}}{84}$	0	$-\frac{\sqrt{105}i}{84}$	0	0	$-\frac{\sqrt{42}}{84}$	0	0	0	0
803	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$													
	$M_{2,1}^{(1,0;a)}(E_u, 2)$	0	$-\frac{\sqrt{210}}{168}$	0	$-\frac{\sqrt{210}i}{168}$	0	0	0	0	$-\frac{\sqrt{14}}{56}$	0	$\frac{\sqrt{14}i}{56}$	$-\frac{\sqrt{21}}{42}$	0	0
		$-\frac{\sqrt{210}}{168}$	0	$\frac{\sqrt{210}i}{168}$	0	0	0	0	$-\frac{\sqrt{14}}{56}$	0	$-\frac{\sqrt{14}i}{56}$	0	0	$\frac{\sqrt{21}}{42}$	0
		0	$\frac{\sqrt{210}i}{168}$	0	$-\frac{\sqrt{210}}{168}$	0	0	0	0	$-\frac{\sqrt{14}i}{56}$	0	$-\frac{\sqrt{14}}{56}$	0	0	0
		$-\frac{\sqrt{210}i}{168}$	0	$-\frac{\sqrt{210}}{168}$	0	0	0	0	$\frac{\sqrt{14}i}{56}$	0	$-\frac{\sqrt{14}}{56}$	0	0	0	0
		$-\frac{\sqrt{210}}{84}$	0	0	0	0	0	0	$\frac{\sqrt{14}}{28}$	0	0	0	0	$-\frac{\sqrt{21}}{42}$	0
		0	$\frac{\sqrt{210}}{84}$	0	0	0	0	0	0	$-\frac{\sqrt{14}}{28}$	0	0	$-\frac{\sqrt{21}}{42}$	0	0
		0	0	$-\frac{\sqrt{210}}{84}$	0	0	0	0	0	0	$-\frac{\sqrt{14}}{28}$	0	0	$-\frac{\sqrt{21}i}{42}$	0
		0	0	0	$\frac{\sqrt{210}}{84}$	0	0	0	0	0	0	$\frac{\sqrt{14}}{28}$	$\frac{\sqrt{21}i}{42}$	0	0
		0	0	0	0	$-\frac{\sqrt{105}}{42}$	0	0	0	$\frac{\sqrt{42}}{84}$	0	$\frac{\sqrt{42}i}{84}$	0	0	0
		0	0	0	0	0	$\frac{\sqrt{105}}{42}$	0	0	$\frac{\sqrt{42}}{84}$	0	$-\frac{\sqrt{42}i}{84}$	0	0	0
804	symmetry	$-\sqrt{3}xy$													

continued ...

Table 9

No.	multipole	matrix													
	$M_4^{(1,0;a)}(A_{1u}, 2)$	0	0	0	0	0	$-\frac{\sqrt{2}i}{20}$	0	$-\frac{\sqrt{2}}{20}$	0	0	$\frac{3\sqrt{5}}{40}$	0	0	$\frac{\sqrt{30}i}{40}$
		0	0	0	0	$\frac{\sqrt{2}i}{20}$	0	$-\frac{\sqrt{2}}{20}$	0	0	0	0	$-\frac{3\sqrt{5}}{40}$	$-\frac{\sqrt{30}i}{40}$	0
		0	0	0	0	0	$-\frac{\sqrt{2}}{20}$	0	$\frac{\sqrt{2}i}{20}$	$\frac{3\sqrt{5}}{40}$	0	0	0	0	$-\frac{\sqrt{30}}{40}$
		0	0	0	0	$-\frac{\sqrt{2}}{20}$	0	$-\frac{\sqrt{2}i}{20}$	0	0	$-\frac{3\sqrt{5}}{40}$	0	0	$-\frac{\sqrt{30}}{40}$	0
		0	$\frac{7\sqrt{3}i}{80}$	0	$\frac{\sqrt{3}}{80}$	0	0	$-\frac{3\sqrt{2}}{80}$	0	0	$\frac{\sqrt{5}i}{80}$	0	$-\frac{\sqrt{5}}{80}$	0	0
		$-\frac{7\sqrt{3}i}{80}$	0	$\frac{\sqrt{3}}{80}$	0	0	0	0	$\frac{3\sqrt{2}}{80}$	$-\frac{\sqrt{5}i}{80}$	0	$-\frac{\sqrt{5}}{80}$	0	0	0
		0	$\frac{7\sqrt{3}}{80}$	0	$-\frac{\sqrt{3}i}{80}$	$-\frac{3\sqrt{2}}{80}$	0	0	0	0	$-\frac{\sqrt{5}}{80}$	0	$-\frac{\sqrt{5}i}{80}$	0	0
		$\frac{7\sqrt{3}}{80}$	0	$\frac{\sqrt{3}i}{80}$	0	0	$\frac{3\sqrt{2}}{80}$	0	0	$-\frac{\sqrt{5}}{80}$	0	$\frac{\sqrt{5}i}{80}$	0	0	0
		0	0	$-\frac{9}{40}$	0	0	$-\frac{\sqrt{6}i}{20}$	0	$\frac{\sqrt{6}}{20}$	0	0	0	0	0	0
		0	0	0	$\frac{9}{40}$	$\frac{\sqrt{6}i}{20}$	0	$\frac{\sqrt{6}}{20}$	0	0	0	0	0	0	0
807	symmetry	$\frac{\sqrt{70}xz(x^2-3y^2)}{4}$													
	$M_4^{(1,0;a)}(A_{2u})$	0	0	0	0	0	$-\frac{\sqrt{2}}{20}$	0	$\frac{\sqrt{2}i}{20}$	$\frac{3\sqrt{5}}{40}$	0	0	0	0	$-\frac{\sqrt{30}}{40}$
		0	0	0	0	$-\frac{\sqrt{2}}{20}$	0	$-\frac{\sqrt{2}i}{20}$	0	0	$-\frac{3\sqrt{5}}{40}$	0	0	$-\frac{\sqrt{30}}{40}$	0
		0	0	0	0	0	$\frac{\sqrt{2}i}{20}$	0	$\frac{\sqrt{2}}{20}$	0	0	$-\frac{3\sqrt{5}}{40}$	0	0	$-\frac{\sqrt{30}i}{40}$
		0	0	0	0	$-\frac{\sqrt{2}i}{20}$	0	$\frac{\sqrt{2}}{20}$	0	0	0	0	$\frac{3\sqrt{5}}{40}$	$\frac{\sqrt{30}i}{40}$	0
		0	$\frac{\sqrt{3}}{80}$	0	$-\frac{7\sqrt{3}i}{80}$	$-\frac{3\sqrt{2}}{80}$	0	0	0	0	$-\frac{\sqrt{5}}{80}$	0	$-\frac{\sqrt{5}i}{80}$	0	0
		$\frac{\sqrt{3}}{80}$	0	$\frac{7\sqrt{3}i}{80}$	0	0	$\frac{3\sqrt{2}}{80}$	0	0	$-\frac{\sqrt{5}}{80}$	0	$\frac{\sqrt{5}i}{80}$	0	0	0
		0	$-\frac{\sqrt{3}i}{80}$	0	$-\frac{7\sqrt{3}}{80}$	0	0	$\frac{3\sqrt{2}}{80}$	0	0	$-\frac{\sqrt{5}i}{80}$	0	$\frac{\sqrt{5}}{80}$	0	0
		$\frac{\sqrt{3}i}{80}$	0	$-\frac{7\sqrt{3}}{80}$	0	0	0	0	$-\frac{3\sqrt{2}}{80}$	$\frac{\sqrt{5}i}{80}$	0	$\frac{\sqrt{5}}{80}$	0	0	0
		$-\frac{9}{40}$	0	0	0	0	$\frac{\sqrt{6}}{20}$	0	$\frac{\sqrt{6}i}{20}$	0	0	0	0	0	0
		0	$\frac{9}{40}$	0	0	$\frac{\sqrt{6}}{20}$	0	$-\frac{\sqrt{6}i}{20}$	0	0	0	0	0	0	0
808	symmetry	$-\frac{\sqrt{10}yz(3x^2+3y^2-4z^2)}{4}$													

continued ...

Table 9

No.	multipole	matrix													
	$M_{4,1}^{(1,0;a)}(E_u, 1)$	0	0	$-\frac{\sqrt{21}}{280}$	0	0	0	0	$\frac{\sqrt{14}}{28}$	0	0	$\frac{\sqrt{35}}{140}$	0	0	$-\frac{3\sqrt{210}i}{280}$
		0	0	0	$\frac{\sqrt{21}}{280}$	0	0	$\frac{\sqrt{14}}{28}$	0	0	0	0	$-\frac{\sqrt{35}}{140}$	$\frac{3\sqrt{210}i}{280}$	0
		$\frac{\sqrt{21}}{280}$	0	0	0	0	$-\frac{\sqrt{14}}{28}$	0	0	$-\frac{\sqrt{35}}{140}$	0	0	0	0	$-\frac{3\sqrt{210}i}{280}$
		0	$-\frac{\sqrt{21}}{280}$	0	0	$-\frac{\sqrt{14}}{28}$	0	0	0	0	$\frac{\sqrt{35}}{140}$	0	0	$-\frac{3\sqrt{210}i}{280}$	0
		0	$-\frac{9\sqrt{21}i}{560}$	0	$-\frac{9\sqrt{21}}{560}$	0	0	$\frac{\sqrt{14}}{80}$	0	0	$-\frac{3\sqrt{35}i}{560}$	0	$-\frac{23\sqrt{35}}{560}$	0	0
		$\frac{9\sqrt{21}i}{560}$	0	$-\frac{9\sqrt{21}}{560}$	0	0	0	$-\frac{\sqrt{14}}{80}$	$\frac{3\sqrt{35}i}{560}$	0	0	$-\frac{23\sqrt{35}}{560}$	0	0	0
		0	$\frac{9\sqrt{21}}{560}$	0	$-\frac{9\sqrt{21}i}{560}$	$-\frac{\sqrt{14}}{80}$	0	0	0	0	$\frac{17\sqrt{35}}{560}$	0	$\frac{3\sqrt{35}i}{560}$	$\frac{\sqrt{210}}{280}$	0
		$\frac{9\sqrt{21}}{560}$	0	$\frac{9\sqrt{21}i}{560}$	0	0	$\frac{\sqrt{14}}{80}$	0	0	$\frac{17\sqrt{35}}{560}$	0	$-\frac{3\sqrt{35}i}{560}$	0	0	$-\frac{\sqrt{210}}{280}$
		0	0	0	0	0	$\frac{3\sqrt{42}i}{140}$	0	$\frac{3\sqrt{42}}{140}$	0	0	$-\frac{\sqrt{105}}{280}$	0	0	0
		0	0	0	0	$-\frac{3\sqrt{42}i}{140}$	0	$\frac{3\sqrt{42}}{140}$	0	0	0	0	$\frac{\sqrt{105}}{280}$	0	0
809	symmetry	$\frac{\sqrt{10xz}(3x^2+3y^2-4z^2)}{4}$													
	$M_{4,2}^{(1,0;a)}(E_u, 1)$	$\frac{\sqrt{21}}{280}$	0	0	0	0	0	$-\frac{\sqrt{14}i}{28}$	$\frac{\sqrt{35}}{140}$	0	0	0	0	$\frac{3\sqrt{210}i}{280}$	0
		0	$-\frac{\sqrt{21}}{280}$	0	0	0	0	$\frac{\sqrt{14}i}{28}$	0	0	$-\frac{\sqrt{35}}{140}$	0	0	$\frac{3\sqrt{210}i}{280}$	0
		0	0	$\frac{\sqrt{21}}{280}$	0	0	$\frac{\sqrt{14}i}{28}$	0	0	0	0	$\frac{\sqrt{35}}{140}$	0	0	$-\frac{3\sqrt{210}i}{280}$
		0	0	0	$-\frac{\sqrt{21}}{280}$	$-\frac{\sqrt{14}i}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{35}}{140}$	$\frac{3\sqrt{210}i}{280}$	0
		0	$\frac{9\sqrt{21}}{560}$	0	$-\frac{9\sqrt{21}i}{560}$	$-\frac{\sqrt{14}}{80}$	0	0	0	0	$\frac{3\sqrt{35}}{560}$	0	$\frac{17\sqrt{35}i}{560}$	$-\frac{\sqrt{210}}{280}$	0
		$\frac{9\sqrt{21}}{560}$	0	$\frac{9\sqrt{21}i}{560}$	0	0	$\frac{\sqrt{14}}{80}$	0	0	$\frac{3\sqrt{35}}{560}$	0	$-\frac{17\sqrt{35}i}{560}$	0	0	$\frac{\sqrt{210}}{280}$
		0	$\frac{9\sqrt{21}i}{560}$	0	$\frac{9\sqrt{21}}{560}$	0	0	$-\frac{\sqrt{14}}{80}$	0	0	$-\frac{23\sqrt{35}i}{560}$	0	$-\frac{3\sqrt{35}}{560}$	0	0
		$-\frac{9\sqrt{21}i}{560}$	0	$\frac{9\sqrt{21}}{560}$	0	0	0	0	$\frac{\sqrt{14}}{80}$	$\frac{23\sqrt{35}i}{560}$	0	$-\frac{3\sqrt{35}}{560}$	0	0	0
		0	0	0	0	0	$-\frac{3\sqrt{42}}{140}$	0	$\frac{3\sqrt{42}i}{140}$	$\frac{\sqrt{105}}{280}$	0	0	0	0	0
		0	0	0	0	$-\frac{3\sqrt{42}}{140}$	0	$-\frac{3\sqrt{42}i}{140}$	0	0	$-\frac{\sqrt{105}}{280}$	0	0	0	0
810	symmetry	$\frac{\sqrt{35}(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$													

continued ...

Table 9

No.	multipole	matrix													
	$M_{4,1}^{(1,0;a)}(E_u, 2)$	0	0	0	0	$\frac{1}{5}$	0	0	0	0	$-\frac{\sqrt{10}}{40}$	0	$-\frac{\sqrt{10}i}{40}$	0	0
		0	0	0	0	0	$-\frac{1}{5}$	0	0	$-\frac{\sqrt{10}}{40}$	0	$\frac{\sqrt{10}i}{40}$	0	0	0
		0	0	0	0	0	0	$-\frac{1}{5}$	0	0	$-\frac{\sqrt{10}i}{40}$	0	$\frac{\sqrt{10}}{40}$	0	0
		0	0	0	0	0	0	0	$\frac{1}{5}$	$\frac{\sqrt{10}i}{40}$	0	$\frac{\sqrt{10}}{40}$	0	0	0
		$-\frac{\sqrt{6}}{10}$	0	0	0	0	$\frac{1}{40}$	0	$\frac{i}{40}$	0	0	0	0	0	0
		0	$\frac{\sqrt{6}}{10}$	0	0	$\frac{1}{40}$	0	$-\frac{i}{40}$	0	0	0	0	0	0	0
		0	0	$\frac{\sqrt{6}}{10}$	0	0	$\frac{i}{40}$	0	$-\frac{1}{40}$	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{6}}{10}$	$-\frac{i}{40}$	0	$-\frac{1}{40}$	0	0	0	0	0	0	0
		0	$\frac{3\sqrt{2}}{40}$	0	$\frac{3\sqrt{2}i}{40}$	0	0	0	0	0	0	0	0	0	0
		$\frac{3\sqrt{2}}{40}$	0	$-\frac{3\sqrt{2}i}{40}$	0	0	0	0	0	0	0	0	0	0	0
811	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$													
	$M_{4,2}^{(1,0;a)}(E_u, 2)$	0	0	0	0	0	0	$\frac{1}{5}$	0	0	$\frac{\sqrt{10}i}{40}$	0	$-\frac{\sqrt{10}}{40}$	0	0
		0	0	0	0	0	0	0	$-\frac{1}{5}$	$-\frac{\sqrt{10}i}{40}$	0	$-\frac{\sqrt{10}}{40}$	0	0	0
		0	0	0	0	$\frac{1}{5}$	0	0	0	0	$-\frac{\sqrt{10}}{40}$	0	$-\frac{\sqrt{10}i}{40}$	0	0
		0	0	0	0	0	$-\frac{1}{5}$	0	0	$-\frac{\sqrt{10}i}{40}$	0	$\frac{\sqrt{10}i}{40}$	0	0	0
		0	0	$-\frac{\sqrt{6}}{10}$	0	0	$-\frac{i}{40}$	0	$\frac{1}{40}$	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{6}}{10}$	$\frac{i}{40}$	0	$\frac{1}{40}$	0	0	0	0	0	0	0
		$-\frac{\sqrt{6}}{10}$	0	0	0	0	$\frac{1}{40}$	0	$\frac{i}{40}$	0	0	0	0	0	0
		0	$\frac{\sqrt{6}}{10}$	0	0	$\frac{1}{40}$	0	$-\frac{i}{40}$	0	0	0	0	0	0	0
		0	$-\frac{3\sqrt{2}i}{40}$	0	$\frac{3\sqrt{2}}{40}$	0	0	0	0	0	0	0	0	0	0
		$\frac{3\sqrt{2}i}{40}$	0	$\frac{3\sqrt{2}}{40}$	0	0	0	0	0	0	0	0	0	0	0
812	symmetry	$-\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$													

continued ...

Table 9

No.	multipole	matrix													
	$M_{4,1}^{(1,0;a)}(E_u, 3)$	0	$\frac{3\sqrt{42}}{560}$	0	$\frac{3\sqrt{42}i}{560}$	0	0	0	0	0	$-\frac{\sqrt{70}}{560}$	0	$\frac{\sqrt{70}i}{560}$	$\frac{\sqrt{105}}{70}$	0
		$\frac{3\sqrt{42}}{560}$	0	$-\frac{3\sqrt{42}i}{560}$	0	0	0	0	0	$-\frac{\sqrt{70}}{560}$	0	$-\frac{\sqrt{70}i}{560}$	0	0	$-\frac{\sqrt{105}}{70}$
		0	$-\frac{3\sqrt{42}i}{560}$	0	$\frac{3\sqrt{42}}{560}$	0	0	0	0	0	$\frac{13\sqrt{70}i}{560}$	0	$\frac{13\sqrt{70}}{560}$	0	0
		$\frac{3\sqrt{42}i}{560}$	0	$\frac{3\sqrt{42}}{560}$	0	0	0	0	0	$-\frac{13\sqrt{70}i}{560}$	0	$\frac{13\sqrt{70}}{560}$	0	0	0
		$\frac{3\sqrt{42}}{280}$	0	0	0	0	$-\frac{\sqrt{7}}{40}$	0	$-\frac{\sqrt{7}i}{20}$	$\frac{\sqrt{70}}{280}$	0	0	0	0	$-\frac{3\sqrt{105}}{280}$
		0	$-\frac{3\sqrt{42}}{280}$	0	0	$-\frac{\sqrt{7}}{40}$	0	$\frac{\sqrt{7}i}{20}$	0	$-\frac{\sqrt{70}}{280}$	0	0	0	$-\frac{3\sqrt{105}}{280}$	0
		0	0	$\frac{3\sqrt{42}}{280}$	0	0	$\frac{\sqrt{7}i}{40}$	0	$-\frac{\sqrt{7}}{20}$	0	0	$-\frac{\sqrt{70}}{280}$	0	0	$-\frac{3\sqrt{105}i}{280}$
		0	0	0	$-\frac{3\sqrt{42}}{280}$	$-\frac{\sqrt{7}i}{40}$	0	$-\frac{\sqrt{7}}{20}$	0	0	0	$\frac{\sqrt{70}}{280}$	$\frac{3\sqrt{105}i}{280}$	0	0
		0	$\frac{3\sqrt{14}}{80}$	0	$-\frac{3\sqrt{14}i}{80}$	$-\frac{\sqrt{21}}{35}$	0	0	0	0	$\frac{3\sqrt{210}}{560}$	0	$\frac{3\sqrt{210}i}{560}$	0	0
		$\frac{3\sqrt{14}}{80}$	0	$\frac{3\sqrt{14}i}{80}$	0	0	$\frac{\sqrt{21}}{35}$	0	0	$\frac{3\sqrt{210}}{560}$	0	$-\frac{3\sqrt{210}i}{560}$	0	0	0
813	symmetry	$\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$													
	$M_{4,2}^{(1,0;a)}(E_u, 3)$	0	$\frac{3\sqrt{42}i}{560}$	0	$-\frac{3\sqrt{42}}{560}$	0	0	0	0	0	$\frac{13\sqrt{70}i}{560}$	0	$\frac{13\sqrt{70}}{560}$	0	0
		$-\frac{3\sqrt{42}i}{560}$	0	$-\frac{3\sqrt{42}}{560}$	0	0	0	0	0	$-\frac{13\sqrt{70}i}{560}$	0	$\frac{13\sqrt{70}}{560}$	0	0	0
		0	$\frac{3\sqrt{42}}{560}$	0	$\frac{3\sqrt{42}i}{560}$	0	0	0	0	0	$\frac{\sqrt{70}}{560}$	0	$-\frac{\sqrt{70}i}{560}$	$-\frac{\sqrt{105}}{70}$	0
		$\frac{3\sqrt{42}}{560}$	0	$-\frac{3\sqrt{42}i}{560}$	0	0	0	0	0	$\frac{\sqrt{70}}{560}$	0	$\frac{\sqrt{70}i}{560}$	0	0	$\frac{\sqrt{105}}{70}$
		0	0	$-\frac{3\sqrt{42}}{280}$	0	0	$-\frac{\sqrt{7}i}{20}$	0	$\frac{\sqrt{7}}{40}$	0	0	$-\frac{\sqrt{70}}{280}$	0	0	$-\frac{3\sqrt{105}i}{280}$
		0	0	0	$\frac{3\sqrt{42}}{280}$	$\frac{\sqrt{7}i}{20}$	0	$\frac{\sqrt{7}}{40}$	0	0	0	$\frac{\sqrt{70}}{280}$	$\frac{3\sqrt{105}i}{280}$	0	0
		$\frac{3\sqrt{42}}{280}$	0	0	0	0	$-\frac{\sqrt{7}}{20}$	0	$-\frac{\sqrt{7}i}{40}$	$-\frac{\sqrt{70}}{280}$	0	0	0	0	$\frac{3\sqrt{105}}{280}$
		0	$-\frac{3\sqrt{42}}{280}$	0	0	$-\frac{\sqrt{7}}{20}$	0	$\frac{\sqrt{7}i}{40}$	0	0	$\frac{\sqrt{70}}{280}$	0	0	$\frac{3\sqrt{105}}{280}$	0
		0	$-\frac{3\sqrt{14}i}{80}$	0	$-\frac{3\sqrt{14}}{80}$	0	0	$\frac{\sqrt{21}}{35}$	0	0	$\frac{3\sqrt{210}i}{560}$	0	$-\frac{3\sqrt{210}}{560}$	0	0
		$\frac{3\sqrt{14}i}{80}$	0	$-\frac{3\sqrt{14}}{80}$	0	0	0	$-\frac{\sqrt{21}}{35}$	$-\frac{3\sqrt{210}i}{560}$	0	$-\frac{3\sqrt{210}}{560}$	0	0	0	0
814	symmetry	1													

continued ...

Table 9

No.	multipole	matrix													
	$M_0^{(1,1;a)}(A_{1u})$	0	$\frac{\sqrt{14}}{28}$	0	$-\frac{\sqrt{14}i}{28}$	$\frac{\sqrt{21}}{42}$	0	0	0	0	$-\frac{\sqrt{210}}{420}$	0	$-\frac{\sqrt{210}i}{420}$	0	0
		$\frac{\sqrt{14}}{28}$	0	$\frac{\sqrt{14}i}{28}$	0	0	$-\frac{\sqrt{21}}{42}$	0	0	$-\frac{\sqrt{210}}{420}$	0	$\frac{\sqrt{210}i}{420}$	0	0	0
		0	$\frac{\sqrt{14}i}{28}$	0	$\frac{\sqrt{14}}{28}$	0	0	$\frac{\sqrt{21}}{42}$	0	0	$\frac{\sqrt{210}i}{420}$	0	$-\frac{\sqrt{210}}{420}$	0	0
		$-\frac{\sqrt{14}i}{28}$	0	$\frac{\sqrt{14}}{28}$	0	0	0	$-\frac{\sqrt{21}}{42}$	$-\frac{\sqrt{210}i}{420}$	0	$-\frac{\sqrt{210}}{420}$	0	0	0	0
		0	0	0	0	0	$\frac{\sqrt{21}}{42}$	0	$-\frac{\sqrt{21}i}{42}$	$\frac{\sqrt{210}}{105}$	0	0	0	0	$-\frac{\sqrt{35}}{70}$
		0	0	0	0	$\frac{\sqrt{21}}{42}$	0	$\frac{\sqrt{21}i}{42}$	0	0	$-\frac{\sqrt{210}}{105}$	0	0	$-\frac{\sqrt{35}}{70}$	0
		0	0	0	0	0	$\frac{\sqrt{21}i}{42}$	0	$\frac{\sqrt{21}}{42}$	0	0	$\frac{\sqrt{210}}{105}$	0	0	$\frac{\sqrt{35}i}{70}$
		0	0	0	0	$-\frac{\sqrt{21}i}{42}$	0	$\frac{\sqrt{21}}{42}$	0	0	0	0	$-\frac{\sqrt{210}}{105}$	$-\frac{\sqrt{35}i}{70}$	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{70}}{70}$	0	$-\frac{\sqrt{70}i}{70}$	$\frac{\sqrt{105}}{70}$	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{70}}{70}$	0	$\frac{\sqrt{70}i}{70}$	0	0	$-\frac{\sqrt{105}}{70}$
815	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$													
	$M_2^{(1,1;a)}(A_{1u})$	0	$-\frac{\sqrt{42}}{84}$	0	$\frac{\sqrt{42}i}{84}$	$-\frac{\sqrt{7}}{14}$	0	0	0	0	$\frac{\sqrt{70}}{70}$	0	$\frac{\sqrt{70}i}{70}$	0	0
		$-\frac{\sqrt{42}}{84}$	0	$-\frac{\sqrt{42}i}{84}$	0	0	$\frac{\sqrt{7}}{14}$	0	0	$\frac{\sqrt{70}}{70}$	0	$-\frac{\sqrt{70}i}{70}$	0	0	0
		0	$-\frac{\sqrt{42}i}{84}$	0	$-\frac{\sqrt{42}}{84}$	0	0	$-\frac{\sqrt{7}}{14}$	0	0	$-\frac{\sqrt{70}i}{70}$	0	$\frac{\sqrt{70}}{70}$	0	0
		$\frac{\sqrt{42}i}{84}$	0	$-\frac{\sqrt{42}}{84}$	0	0	0	0	$\frac{\sqrt{7}}{14}$	$\frac{\sqrt{70}i}{70}$	0	$\frac{\sqrt{70}}{70}$	0	0	0
		0	0	0	0	0	$\frac{\sqrt{7}}{28}$	0	$-\frac{\sqrt{7}i}{28}$	$\frac{\sqrt{70}}{140}$	0	0	0	0	$\frac{\sqrt{105}}{210}$
		0	0	0	0	$\frac{\sqrt{7}}{28}$	0	$\frac{\sqrt{7}i}{28}$	0	0	$-\frac{\sqrt{70}}{140}$	0	0	$\frac{\sqrt{105}}{210}$	0
		0	0	0	0	0	$\frac{\sqrt{7}i}{28}$	0	$\frac{\sqrt{7}}{28}$	0	0	$\frac{\sqrt{70}}{140}$	0	0	$-\frac{\sqrt{105}i}{210}$
		0	0	0	0	$-\frac{\sqrt{7}i}{28}$	0	$\frac{\sqrt{7}}{28}$	0	0	0	0	$-\frac{\sqrt{70}}{140}$	$\frac{\sqrt{105}i}{210}$	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{210}}{140}$	0	$-\frac{\sqrt{210}i}{140}$	$\frac{\sqrt{35}}{35}$	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{210}}{140}$	0	$\frac{\sqrt{210}i}{140}$	0	0	$-\frac{\sqrt{35}}{35}$
816	symmetry	$\sqrt{3}yz$													

continued ...

Table 9

No.	multipole	matrix													
	$M_{2,1}^{(1,1;a)}(E_u, 1)$	0	0	$-\frac{\sqrt{14}}{42}$	0	0	$-\frac{\sqrt{21}i}{42}$	0	0	0	0	$-\frac{\sqrt{210}}{105}$	0	0	$-\frac{\sqrt{35}i}{42}$
		0	0	0	$\frac{\sqrt{14}}{42}$	$\frac{\sqrt{21}i}{42}$	0	0	0	0	0	$\frac{\sqrt{210}}{105}$	$\frac{\sqrt{35}i}{42}$	0	0
		$\frac{\sqrt{14}}{42}$	0	0	0	0	0	$-\frac{\sqrt{21}i}{42}$	$\frac{\sqrt{210}}{105}$	0	0	0	0	$-\frac{\sqrt{35}}{42}$	0
		0	$-\frac{\sqrt{14}}{42}$	0	0	0	0	$\frac{\sqrt{21}i}{42}$	0	0	$-\frac{\sqrt{210}}{105}$	0	0	$-\frac{\sqrt{35}}{42}$	0
		0	$\frac{5\sqrt{14}i}{168}$	0	$\frac{5\sqrt{14}}{168}$	0	0	$\frac{\sqrt{21}}{42}$	0	0	$\frac{\sqrt{210}i}{120}$	0	$\frac{\sqrt{210}}{168}$	0	0
		$-\frac{5\sqrt{14}i}{168}$	0	$\frac{5\sqrt{14}}{168}$	0	0	0	$-\frac{\sqrt{21}}{42}$	$-\frac{\sqrt{210}i}{120}$	0	$\frac{\sqrt{210}}{168}$	0	0	0	0
		0	$-\frac{5\sqrt{14}}{168}$	0	$\frac{5\sqrt{14}i}{168}$	$-\frac{\sqrt{21}}{42}$	0	0	0	0	$\frac{\sqrt{210}}{168}$	0	$-\frac{\sqrt{210}i}{280}$	$\frac{\sqrt{35}}{105}$	0
		$-\frac{5\sqrt{14}}{168}$	0	$-\frac{5\sqrt{14}i}{168}$	0	0	$\frac{\sqrt{21}}{42}$	0	0	$\frac{\sqrt{210}}{168}$	0	$\frac{\sqrt{210}i}{280}$	0	0	$-\frac{\sqrt{35}}{105}$
		0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{70}}{70}$	0	0	$\frac{\sqrt{105}i}{105}$
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{70}}{70}$	$-\frac{\sqrt{105}i}{105}$	0
817	symmetry	$-\sqrt{3}xz$													
	$M_{2,2}^{(1,1;a)}(E_u, 1)$	$\frac{\sqrt{14}}{42}$	0	0	0	0	$-\frac{\sqrt{21}}{42}$	0	0	$-\frac{\sqrt{210}}{105}$	0	0	0	0	$\frac{\sqrt{35}}{42}$
		0	$-\frac{\sqrt{14}}{42}$	0	0	$-\frac{\sqrt{21}}{42}$	0	0	0	0	$\frac{\sqrt{210}}{105}$	0	0	$\frac{\sqrt{35}}{42}$	0
		0	0	$\frac{\sqrt{14}}{42}$	0	0	0	$-\frac{\sqrt{21}}{42}$	0	0	$-\frac{\sqrt{210}}{105}$	0	0	$-\frac{\sqrt{35}i}{42}$	0
		0	0	0	$-\frac{\sqrt{14}}{42}$	0	0	$-\frac{\sqrt{21}}{42}$	0	0	0	0	$\frac{\sqrt{210}}{105}$	$\frac{\sqrt{35}i}{42}$	0
		0	$-\frac{5\sqrt{14}}{168}$	0	$\frac{5\sqrt{14}i}{168}$	$-\frac{\sqrt{21}}{42}$	0	0	0	0	$-\frac{\sqrt{210}}{280}$	0	$\frac{\sqrt{210}i}{168}$	$-\frac{\sqrt{35}}{105}$	0
		$-\frac{5\sqrt{14}}{168}$	0	$-\frac{5\sqrt{14}i}{168}$	0	0	$\frac{\sqrt{21}}{42}$	0	0	$-\frac{\sqrt{210}}{280}$	0	$-\frac{\sqrt{210}i}{168}$	0	0	$\frac{\sqrt{35}}{105}$
		0	$-\frac{5\sqrt{14}i}{168}$	0	$-\frac{5\sqrt{14}}{168}$	0	0	$-\frac{\sqrt{21}}{42}$	0	0	$\frac{\sqrt{210}i}{168}$	0	$\frac{\sqrt{210}}{120}$	0	0
		$\frac{5\sqrt{14}i}{168}$	0	$-\frac{5\sqrt{14}}{168}$	0	0	0	0	$\frac{\sqrt{21}}{42}$	$-\frac{\sqrt{210}i}{168}$	0	$\frac{\sqrt{210}}{120}$	0	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{70}}{70}$	0	0	0	0	$\frac{\sqrt{105}}{105}$
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{70}}{70}$	0	0	$\frac{\sqrt{105}}{105}$	0
818	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$M_{2,1}^{(1,1;a)}(E_u, 2)$	0	$\frac{\sqrt{14}}{168}$	0	$\frac{\sqrt{14}i}{168}$	0	0	0	0	0	$-\frac{\sqrt{210}}{120}$	0	$\frac{\sqrt{210}i}{120}$	$-\frac{\sqrt{35}}{42}$	0
		$\frac{\sqrt{14}}{168}$	0	$-\frac{\sqrt{14}i}{168}$	0	0	0	0	0	$-\frac{\sqrt{210}}{120}$	0	$-\frac{\sqrt{210}i}{120}$	0	0	$\frac{\sqrt{35}}{42}$
		0	$-\frac{\sqrt{14}i}{168}$	0	$\frac{\sqrt{14}}{168}$	0	0	0	0	0	$\frac{\sqrt{210}i}{280}$	0	$\frac{\sqrt{210}}{280}$	0	0
		$\frac{\sqrt{14}i}{168}$	0	$\frac{\sqrt{14}}{168}$	0	0	0	0	0	$-\frac{\sqrt{210}i}{280}$	0	$\frac{\sqrt{210}}{280}$	0	0	0
		$\frac{5\sqrt{14}}{168}$	0	0	0	0	$\frac{\sqrt{21}}{42}$	0	$-\frac{\sqrt{21}i}{28}$	$\frac{\sqrt{210}}{168}$	0	0	0	0	$-\frac{\sqrt{35}}{420}$
		0	$-\frac{5\sqrt{14}}{168}$	0	0	$\frac{\sqrt{21}}{42}$	0	$\frac{\sqrt{21}i}{28}$	0	0	$-\frac{\sqrt{210}}{168}$	0	0	$-\frac{\sqrt{35}}{420}$	0
		0	0	$\frac{5\sqrt{14}}{168}$	0	0	$-\frac{\sqrt{21}i}{42}$	0	$-\frac{\sqrt{21}}{28}$	0	0	$-\frac{\sqrt{210}}{168}$	0	0	$-\frac{\sqrt{35}i}{420}$
		0	0	0	$-\frac{5\sqrt{14}}{168}$	$\frac{\sqrt{21}i}{42}$	0	$-\frac{\sqrt{21}}{28}$	0	0	0	0	$\frac{\sqrt{210}}{168}$	$\frac{\sqrt{35}i}{420}$	0
		0	$-\frac{5\sqrt{42}}{168}$	0	$\frac{5\sqrt{42}i}{168}$	0	0	0	0	0	$-\frac{\sqrt{70}}{280}$	0	$-\frac{\sqrt{70}i}{280}$	0	0
		$-\frac{5\sqrt{42}}{168}$	0	$-\frac{5\sqrt{42}i}{168}$	0	0	0	0	0	$-\frac{\sqrt{70}}{280}$	0	$\frac{\sqrt{70}i}{280}$	0	0	0
819	symmetry	$-\sqrt{3}xy$													
	$M_{2,2}^{(1,1;a)}(E_u, 2)$	0	$\frac{\sqrt{14}i}{168}$	0	$-\frac{\sqrt{14}}{168}$	0	0	0	0	0	$\frac{\sqrt{210}i}{280}$	0	$\frac{\sqrt{210}}{280}$	0	0
		$-\frac{\sqrt{14}i}{168}$	0	$-\frac{\sqrt{14}}{168}$	0	0	0	0	0	$-\frac{\sqrt{210}i}{280}$	0	$\frac{\sqrt{210}}{280}$	0	0	0
		0	$\frac{\sqrt{14}}{168}$	0	$\frac{\sqrt{14}i}{168}$	0	0	0	0	0	$\frac{\sqrt{210}}{120}$	0	$-\frac{\sqrt{210}i}{120}$	$\frac{\sqrt{35}}{42}$	0
		$\frac{\sqrt{14}}{168}$	0	$-\frac{\sqrt{14}i}{168}$	0	0	0	0	0	$\frac{\sqrt{210}}{120}$	0	$\frac{\sqrt{210}i}{120}$	0	0	$-\frac{\sqrt{35}}{42}$
		0	0	$-\frac{5\sqrt{14}}{168}$	0	0	$-\frac{\sqrt{21}i}{28}$	0	$-\frac{\sqrt{21}}{42}$	0	0	$-\frac{\sqrt{210}}{168}$	0	0	$-\frac{\sqrt{35}i}{420}$
		0	0	0	$\frac{5\sqrt{14}}{168}$	$\frac{\sqrt{21}i}{28}$	0	$-\frac{\sqrt{21}}{42}$	0	0	0	0	$\frac{\sqrt{210}}{168}$	$\frac{\sqrt{35}i}{420}$	0
		$\frac{5\sqrt{14}}{168}$	0	0	0	0	$-\frac{\sqrt{21}}{28}$	0	$\frac{\sqrt{21}i}{42}$	$-\frac{\sqrt{210}}{168}$	0	0	0	0	$\frac{\sqrt{35}}{420}$
		0	$-\frac{5\sqrt{14}}{168}$	0	0	$-\frac{\sqrt{21}}{28}$	0	$-\frac{\sqrt{21}i}{42}$	0	0	$\frac{\sqrt{210}}{168}$	0	0	$\frac{\sqrt{35}}{420}$	0
		0	$\frac{5\sqrt{42}i}{168}$	0	$\frac{5\sqrt{42}}{168}$	0	0	0	0	0	$-\frac{\sqrt{70}i}{280}$	0	$\frac{\sqrt{70}}{280}$	0	0
		$-\frac{5\sqrt{42}i}{168}$	0	$\frac{5\sqrt{42}}{168}$	0	0	0	0	0	$\frac{\sqrt{70}i}{280}$	0	$\frac{\sqrt{70}}{280}$	0	0	0
820	symmetry	$\frac{3x^4}{8} + \frac{3x^2y^2}{4} - 3x^2z^2 + \frac{3y^4}{8} - 3y^2z^2 + z^4$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{M}_4^{(1,1;a)}(A_{1u}, 1)$	0	$\frac{\sqrt{385}}{1540}$	0	$-\frac{\sqrt{385}i}{1540}$	$\frac{\sqrt{2310}}{924}$	0	0	0	0	$-\frac{\sqrt{231}}{308}$	0	$-\frac{\sqrt{231}i}{308}$	0	0
		$\frac{\sqrt{385}}{1540}$	0	$\frac{\sqrt{385}i}{1540}$	0	0	$-\frac{\sqrt{2310}}{924}$	0	0	$-\frac{\sqrt{231}}{308}$	0	$\frac{\sqrt{231}i}{308}$	0	0	0
		0	$\frac{\sqrt{385}i}{1540}$	0	$\frac{\sqrt{385}}{1540}$	0	0	$\frac{\sqrt{2310}}{924}$	0	0	$\frac{\sqrt{231}i}{308}$	0	$-\frac{\sqrt{231}}{308}$	0	0
		$-\frac{\sqrt{385}i}{1540}$	0	$\frac{\sqrt{385}}{1540}$	0	0	0	$-\frac{\sqrt{2310}}{924}$	$-\frac{\sqrt{231}i}{308}$	0	$-\frac{\sqrt{231}}{308}$	0	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{2310}}{770}$	0	$\frac{\sqrt{2310}i}{770}$	$-\frac{5\sqrt{231}}{462}$	0	0	0	0	$\frac{\sqrt{154}}{77}$
		0	0	0	0	$-\frac{\sqrt{2310}}{770}$	0	$-\frac{\sqrt{2310}i}{770}$	0	0	$\frac{5\sqrt{231}}{462}$	0	0	$\frac{\sqrt{154}}{77}$	0
		0	0	0	0	0	$-\frac{\sqrt{2310}i}{770}$	0	$-\frac{\sqrt{2310}}{770}$	0	0	$-\frac{5\sqrt{231}}{462}$	0	0	$-\frac{\sqrt{154}i}{77}$
		0	0	0	0	$\frac{\sqrt{2310}i}{770}$	0	$-\frac{\sqrt{2310}}{770}$	0	0	0	$\frac{5\sqrt{231}}{462}$	$\frac{\sqrt{154}i}{77}$	0	0
		0	0	0	0	0	0	0	0	0	$\frac{3\sqrt{77}}{154}$	0	$-\frac{3\sqrt{77}i}{154}$	$\frac{5\sqrt{462}}{462}$	0
		0	0	0	0	0	0	0	0	$\frac{3\sqrt{77}}{154}$	0	$\frac{3\sqrt{77}i}{154}$	0	0	$-\frac{5\sqrt{462}}{462}$
821	symmetry	$\frac{\sqrt{70}yz(3x^2-y^2)}{4}$													
	$\mathbb{M}_4^{(1,1;a)}(A_{1u}, 2)$	0	0	0	0	0	$\frac{3\sqrt{33}i}{110}$	0	$\frac{3\sqrt{33}}{110}$	0	0	$\frac{\sqrt{330}}{165}$	0	0	$\frac{\sqrt{55}i}{220}$
		0	0	0	0	$-\frac{3\sqrt{33}i}{110}$	0	$\frac{3\sqrt{33}}{110}$	0	0	0	0	$-\frac{\sqrt{330}}{165}$	$-\frac{\sqrt{55}i}{220}$	0
		0	0	0	0	0	$\frac{3\sqrt{33}}{110}$	0	$-\frac{3\sqrt{33}i}{110}$	$\frac{\sqrt{330}}{165}$	0	0	0	0	$-\frac{\sqrt{55}}{220}$
		0	0	0	0	$\frac{3\sqrt{33}}{110}$	0	$\frac{3\sqrt{33}i}{110}$	0	0	$-\frac{\sqrt{330}}{165}$	0	0	$-\frac{\sqrt{55}}{220}$	0
		0	$\frac{\sqrt{22}i}{40}$	0	$\frac{13\sqrt{22}}{440}$	0	0	$\frac{4\sqrt{33}}{165}$	0	0	$\frac{\sqrt{330}i}{440}$	0	$-\frac{\sqrt{330}}{440}$	0	0
		$-\frac{\sqrt{22}i}{40}$	0	$\frac{13\sqrt{22}}{440}$	0	0	0	$-\frac{4\sqrt{33}}{165}$	$-\frac{\sqrt{330}i}{440}$	0	$-\frac{\sqrt{330}}{440}$	0	0	0	0
		0	$\frac{\sqrt{22}}{40}$	0	$-\frac{13\sqrt{22}i}{440}$	$\frac{4\sqrt{33}}{165}$	0	0	0	0	$-\frac{\sqrt{330}}{440}$	0	$-\frac{\sqrt{330}i}{440}$	0	0
		$\frac{\sqrt{22}}{40}$	0	$\frac{13\sqrt{22}i}{440}$	0	0	$-\frac{4\sqrt{33}}{165}$	0	0	$-\frac{\sqrt{330}}{440}$	0	$\frac{\sqrt{330}i}{440}$	0	0	0
		0	0	$\frac{2\sqrt{66}}{165}$	0	0	$\frac{3\sqrt{11}i}{220}$	0	$-\frac{3\sqrt{11}}{220}$	0	0	0	0	0	0
		0	0	0	$-\frac{2\sqrt{66}}{165}$	$-\frac{3\sqrt{11}i}{220}$	0	$-\frac{3\sqrt{11}}{220}$	0	0	0	0	0	0	0
822	symmetry	$\frac{\sqrt{70}xz(x^2-3y^2)}{4}$													

continued ...

Table 9

No.	multipole	matrix													
$M_4^{(1,1;a)}(A_{2u})$		0	0	0	0	0	$\frac{3\sqrt{33}}{110}$	0	$-\frac{3\sqrt{33}i}{110}$	$\frac{\sqrt{330}}{165}$	0	0	0	0	$-\frac{\sqrt{55}}{220}$
		0	0	0	0	$\frac{3\sqrt{33}}{110}$	0	$\frac{3\sqrt{33}i}{110}$	0	0	$-\frac{\sqrt{330}}{165}$	0	0	$-\frac{\sqrt{55}}{220}$	0
		0	0	0	0	0	$-\frac{3\sqrt{33}i}{110}$	0	$-\frac{3\sqrt{33}}{110}$	0	0	$-\frac{\sqrt{330}}{165}$	0	0	$-\frac{\sqrt{55}i}{220}$
		0	0	0	0	$\frac{3\sqrt{33}i}{110}$	0	$-\frac{3\sqrt{33}}{110}$	0	0	0	0	$\frac{\sqrt{330}}{165}$	$\frac{\sqrt{55}i}{220}$	0
		0	$\frac{13\sqrt{22}}{440}$	0	$-\frac{\sqrt{22}i}{40}$	$\frac{4\sqrt{33}}{165}$	0	0	0	0	$-\frac{\sqrt{330}}{440}$	0	$-\frac{\sqrt{330}i}{440}$	0	0
		$\frac{13\sqrt{22}}{440}$	0	$\frac{\sqrt{22}i}{40}$	0	0	$-\frac{4\sqrt{33}}{165}$	0	0	$-\frac{\sqrt{330}}{440}$	0	$\frac{\sqrt{330}i}{440}$	0	0	0
		0	$-\frac{13\sqrt{22}i}{440}$	0	$-\frac{\sqrt{22}}{40}$	0	0	$-\frac{4\sqrt{33}}{165}$	0	0	$-\frac{\sqrt{330}i}{440}$	0	$\frac{\sqrt{330}}{440}$	0	0
		$\frac{13\sqrt{22}i}{440}$	0	$-\frac{\sqrt{22}}{40}$	0	0	0	0	$\frac{4\sqrt{33}}{165}$	$\frac{\sqrt{330}i}{440}$	0	$\frac{\sqrt{330}}{440}$	0	0	0
		$\frac{2\sqrt{66}}{165}$	0	0	0	0	$-\frac{3\sqrt{11}}{220}$	0	$-\frac{3\sqrt{11}i}{220}$	0	0	0	0	0	0
		0	$-\frac{2\sqrt{66}}{165}$	0	0	$-\frac{3\sqrt{11}}{220}$	0	$\frac{3\sqrt{11}i}{220}$	0	0	0	0	0	0	0
823	symmetry	$-\frac{\sqrt{10}yz(3x^2+3y^2-4z^2)}{4}$													
$M_{4,1}^{(1,1;a)}(E_u, 1)$		0	0	$\frac{\sqrt{154}}{770}$	0	0	$\frac{\sqrt{231}i}{462}$	0	0	0	0	$\frac{\sqrt{2310}}{770}$	0	0	$\frac{\sqrt{385}i}{220}$
		0	0	0	$-\frac{\sqrt{154}}{770}$	$-\frac{\sqrt{231}i}{462}$	0	0	0	0	0	0	$-\frac{\sqrt{2310}}{770}$	$-\frac{\sqrt{385}i}{220}$	0
		$-\frac{\sqrt{154}}{770}$	0	0	0	0	0	0	$\frac{\sqrt{231}i}{462}$	$-\frac{\sqrt{2310}}{770}$	0	0	0	0	$\frac{\sqrt{385}}{220}$
		0	$\frac{\sqrt{154}}{770}$	0	0	0	0	$-\frac{\sqrt{231}i}{462}$	0	0	$\frac{\sqrt{2310}}{770}$	0	0	$\frac{\sqrt{385}}{220}$	0
		0	$-\frac{\sqrt{154}i}{440}$	0	$-\frac{\sqrt{154}}{440}$	0	0	$-\frac{2\sqrt{231}}{385}$	0	0	$\frac{\sqrt{2310}i}{9240}$	0	$\frac{\sqrt{2310}}{440}$	0	0
		$\frac{\sqrt{154}i}{440}$	0	$-\frac{\sqrt{154}}{440}$	0	0	0	$\frac{2\sqrt{231}}{385}$	$-\frac{\sqrt{2310}i}{9240}$	0	$\frac{\sqrt{2310}}{440}$	0	0	0	0
		0	$\frac{\sqrt{154}}{440}$	0	$-\frac{\sqrt{154}i}{440}$	$\frac{2\sqrt{231}}{385}$	0	0	0	0	$\frac{\sqrt{2310}}{440}$	0	$-\frac{41\sqrt{2310}i}{9240}$	$\frac{4\sqrt{385}}{385}$	0
		$\frac{\sqrt{154}}{440}$	0	$\frac{\sqrt{154}i}{440}$	0	0	$-\frac{2\sqrt{231}}{385}$	0	0	$\frac{\sqrt{2310}}{440}$	0	$\frac{41\sqrt{2310}i}{9240}$	0	0	$-\frac{4\sqrt{385}}{385}$
		0	0	0	0	0	$\frac{3\sqrt{77}i}{220}$	0	$\frac{3\sqrt{77}}{220}$	0	0	$\frac{3\sqrt{770}}{385}$	0	0	$\frac{\sqrt{1155}i}{231}$
		0	0	0	0	$-\frac{3\sqrt{77}i}{220}$	0	$\frac{3\sqrt{77}}{220}$	0	0	0	0	$-\frac{3\sqrt{770}}{385}$	$-\frac{\sqrt{1155}i}{231}$	0
824	symmetry	$\frac{\sqrt{10}xz(3x^2+3y^2-4z^2)}{4}$													

continued ...

Table 9

No.	multipole	matrix													
	$M_{4,2}^{(1,1;a)}(E_u, 1)$	$-\frac{\sqrt{154}}{770}$	0	0	0	0	$\frac{\sqrt{231}}{462}$	0	0	$\frac{\sqrt{2310}}{770}$	0	0	0	0	$-\frac{\sqrt{385}}{220}$
		0	$\frac{\sqrt{154}}{770}$	0	0	$\frac{\sqrt{231}}{462}$	0	0	0	$-\frac{\sqrt{2310}}{770}$	0	0	0	$-\frac{\sqrt{385}}{220}$	0
		0	0	$-\frac{\sqrt{154}}{770}$	0	0	0	0	$\frac{\sqrt{231}}{462}$	0	0	$\frac{\sqrt{2310}}{770}$	0	0	$\frac{\sqrt{385}i}{220}$
		0	0	0	$\frac{\sqrt{154}}{770}$	0	0	$\frac{\sqrt{231}}{462}$	0	0	0	0	$-\frac{\sqrt{2310}}{770}$	$-\frac{\sqrt{385}i}{220}$	0
		0	$\frac{\sqrt{154}}{440}$	0	$-\frac{\sqrt{154}i}{440}$	$\frac{2\sqrt{231}}{385}$	0	0	0	$-\frac{41\sqrt{2310}}{9240}$	0	$\frac{\sqrt{2310}i}{440}$	$-\frac{4\sqrt{385}}{385}$	0	0
		$\frac{\sqrt{154}}{440}$	0	$\frac{\sqrt{154}i}{440}$	0	0	$-\frac{2\sqrt{231}}{385}$	0	0	$-\frac{41\sqrt{2310}}{9240}$	0	$-\frac{\sqrt{2310}i}{440}$	0	0	$\frac{4\sqrt{385}}{385}$
		0	$\frac{\sqrt{154}i}{440}$	0	$\frac{\sqrt{154}}{440}$	0	0	$\frac{2\sqrt{231}}{385}$	0	0	$\frac{\sqrt{2310}i}{440}$	0	$\frac{\sqrt{2310}}{9240}$	0	0
		$-\frac{\sqrt{154}i}{440}$	0	$\frac{\sqrt{154}}{440}$	0	0	0	0	$-\frac{2\sqrt{231}}{385}$	$-\frac{\sqrt{2310}i}{440}$	0	$\frac{\sqrt{2310}}{9240}$	0	0	0
		0	0	0	0	0	$-\frac{3\sqrt{77}}{220}$	0	$\frac{3\sqrt{77}i}{220}$	$-\frac{3\sqrt{770}}{385}$	0	0	0	0	$\frac{\sqrt{1155}}{231}$
		0	0	0	0	$-\frac{3\sqrt{77}}{220}$	0	$-\frac{3\sqrt{77}i}{220}$	0	0	$\frac{3\sqrt{770}}{385}$	0	0	$\frac{\sqrt{1155}}{231}$	0
825	symmetry	$\frac{\sqrt{35}(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$													
	$M_{4,1}^{(1,1;a)}(E_u, 2)$	0	$\frac{3\sqrt{11}}{44}$	0	$-\frac{3\sqrt{11}i}{44}$	$\frac{3\sqrt{66}}{220}$	0	0	0	0	$-\frac{\sqrt{165}}{660}$	0	$-\frac{\sqrt{165}i}{660}$	0	0
		$\frac{3\sqrt{11}}{44}$	0	$\frac{3\sqrt{11}i}{44}$	0	0	$-\frac{3\sqrt{66}}{220}$	0	0	$-\frac{\sqrt{165}}{660}$	0	$\frac{\sqrt{165}i}{660}$	0	0	0
		0	$-\frac{3\sqrt{11}i}{44}$	0	$-\frac{3\sqrt{11}}{44}$	0	0	$-\frac{3\sqrt{66}}{220}$	0	0	$-\frac{\sqrt{165}i}{660}$	0	$\frac{\sqrt{165}}{660}$	0	0
		$\frac{3\sqrt{11}i}{44}$	0	$-\frac{3\sqrt{11}}{44}$	0	0	0	0	$\frac{3\sqrt{66}}{220}$	$\frac{\sqrt{165}i}{660}$	0	$\frac{\sqrt{165}}{660}$	0	0	0
		$\frac{3\sqrt{11}}{110}$	0	0	0	0	$-\frac{\sqrt{66}}{330}$	0	$-\frac{\sqrt{66}i}{330}$	0	0	0	0	0	0
		0	$-\frac{3\sqrt{11}}{110}$	0	0	$-\frac{\sqrt{66}}{330}$	0	$\frac{\sqrt{66}i}{330}$	0	0	0	0	0	0	0
		0	0	$-\frac{3\sqrt{11}}{110}$	0	0	$-\frac{\sqrt{66}i}{330}$	0	$\frac{\sqrt{66}}{330}$	0	0	0	0	0	0
		0	0	0	$\frac{3\sqrt{11}}{110}$	$\frac{\sqrt{66}i}{330}$	0	$\frac{\sqrt{66}}{330}$	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{33}}{330}$	0	$-\frac{\sqrt{33}i}{330}$	0	0	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{33}}{330}$	0	$\frac{\sqrt{33}i}{330}$	0	0	0	0	0	0	0	0	0	0	0
826	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$M_{4,2}^{(1,1;a)}(E_u, 2)$	0	$\frac{3\sqrt{11}i}{44}$	0	$\frac{3\sqrt{11}}{44}$	0	0	$\frac{3\sqrt{66}}{220}$	0	0	$\frac{\sqrt{165}i}{660}$	0	$-\frac{\sqrt{165}}{660}$	0	0
		$-\frac{3\sqrt{11}i}{44}$	0	$\frac{3\sqrt{11}}{44}$	0	0	0	0	$-\frac{3\sqrt{66}}{220}$	$-\frac{\sqrt{165}i}{660}$	0	$-\frac{\sqrt{165}}{660}$	0	0	0
		0	$\frac{3\sqrt{11}}{44}$	0	$-\frac{3\sqrt{11}i}{44}$	$\frac{3\sqrt{66}}{220}$	0	0	0	0	$-\frac{\sqrt{165}}{660}$	0	$-\frac{\sqrt{165}i}{660}$	0	0
		$\frac{3\sqrt{11}}{44}$	0	$\frac{3\sqrt{11}i}{44}$	0	0	$-\frac{3\sqrt{66}}{220}$	0	0	$-\frac{\sqrt{165}}{660}$	0	$\frac{\sqrt{165}i}{660}$	0	0	0
		0	0	$\frac{3\sqrt{11}}{110}$	0	0	$\frac{\sqrt{66}i}{330}$	0	$-\frac{\sqrt{66}}{330}$	0	0	0	0	0	0
		0	0	0	$-\frac{3\sqrt{11}}{110}$	$-\frac{\sqrt{66}i}{330}$	0	$-\frac{\sqrt{66}}{330}$	0	0	0	0	0	0	0
		$\frac{3\sqrt{11}}{110}$	0	0	0	0	$-\frac{\sqrt{66}}{330}$	0	$-\frac{\sqrt{66}i}{330}$	0	0	0	0	0	0
		0	$-\frac{3\sqrt{11}}{110}$	0	0	$-\frac{\sqrt{66}}{330}$	0	$\frac{\sqrt{66}i}{330}$	0	0	0	0	0	0	0
		0	$\frac{\sqrt{33}i}{330}$	0	$-\frac{\sqrt{33}}{330}$	0	0	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{33}i}{330}$	0	$-\frac{\sqrt{33}}{330}$	0	0	0	0	0	0	0	0	0	0	0
827	symmetry	$-\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$													
	$M_{4,1}^{(1,1;a)}(E_u, 3)$	0	$-\frac{\sqrt{77}}{1540}$	0	$-\frac{\sqrt{77}i}{1540}$	0	0	0	0	$\frac{17\sqrt{1155}}{4620}$	0	$-\frac{17\sqrt{1155}i}{4620}$	$\frac{\sqrt{770}}{220}$	0	0
		$-\frac{\sqrt{77}}{1540}$	0	$\frac{\sqrt{77}i}{1540}$	0	0	0	0	0	$\frac{17\sqrt{1155}}{4620}$	0	$\frac{17\sqrt{1155}i}{4620}$	0	0	$-\frac{\sqrt{770}}{220}$
		0	$\frac{\sqrt{77}i}{1540}$	0	$-\frac{\sqrt{77}}{1540}$	0	0	0	0	$-\frac{\sqrt{1155}i}{420}$	0	$-\frac{\sqrt{1155}}{420}$	0	0	0
		$-\frac{\sqrt{77}i}{1540}$	0	$-\frac{\sqrt{77}}{1540}$	0	0	0	0	0	$\frac{\sqrt{1155}i}{420}$	0	$-\frac{\sqrt{1155}}{420}$	0	0	0
		$-\frac{\sqrt{77}}{220}$	0	0	0	0	$\frac{17\sqrt{462}}{2310}$	0	$-\frac{\sqrt{462}i}{210}$	$\frac{\sqrt{1155}}{220}$	0	0	0	0	$-\frac{\sqrt{770}}{385}$
		0	$\frac{\sqrt{77}}{220}$	0	0	$\frac{17\sqrt{462}}{2310}$	0	$\frac{\sqrt{462}i}{210}$	0	$-\frac{\sqrt{1155}}{220}$	0	0	0	$-\frac{\sqrt{770}}{385}$	0
		0	0	$-\frac{\sqrt{77}}{220}$	0	0	$-\frac{17\sqrt{462}i}{2310}$	0	$-\frac{\sqrt{462}}{210}$	0	0	$-\frac{\sqrt{1155}}{220}$	0	0	$-\frac{\sqrt{770}i}{385}$
		0	0	0	$\frac{\sqrt{77}}{220}$	$\frac{17\sqrt{462}i}{2310}$	0	$-\frac{\sqrt{462}}{210}$	0	0	0	0	$\frac{\sqrt{1155}}{220}$	$\frac{\sqrt{770}i}{385}$	0
		0	$\frac{\sqrt{231}}{165}$	0	$-\frac{\sqrt{231}i}{165}$	$\frac{3\sqrt{154}}{220}$	0	0	0	0	$-\frac{3\sqrt{385}}{770}$	0	$-\frac{3\sqrt{385}i}{770}$	0	0
		$\frac{\sqrt{231}}{165}$	0	$\frac{\sqrt{231}i}{165}$	0	0	$-\frac{3\sqrt{154}}{220}$	0	0	$-\frac{3\sqrt{385}}{770}$	0	$\frac{3\sqrt{385}i}{770}$	0	0	0
828	symmetry	$\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
$M_{4,2}^{(1,1;a)}(E_u, 3)$		0	$-\frac{\sqrt{77}i}{1540}$	0	$\frac{\sqrt{77}}{1540}$	0	0	0	0	0	$-\frac{\sqrt{1155}i}{420}$	0	$-\frac{\sqrt{1155}}{420}$	0	0
		$\frac{\sqrt{77}i}{1540}$	0	$\frac{\sqrt{77}}{1540}$	0	0	0	0	0	$\frac{\sqrt{1155}i}{420}$	0	$-\frac{\sqrt{1155}}{420}$	0	0	0
		0	$-\frac{\sqrt{77}}{1540}$	0	$-\frac{\sqrt{77}i}{1540}$	0	0	0	0	0	$-\frac{17\sqrt{1155}}{4620}$	0	$\frac{17\sqrt{1155}i}{4620}$	$-\frac{\sqrt{770}}{220}$	0
		$-\frac{\sqrt{77}}{1540}$	0	$\frac{\sqrt{77}i}{1540}$	0	0	0	0	0	$-\frac{17\sqrt{1155}}{4620}$	0	$-\frac{17\sqrt{1155}i}{4620}$	0	0	$\frac{\sqrt{770}}{220}$
		0	0	$\frac{\sqrt{77}}{220}$	0	0	$-\frac{\sqrt{462}i}{210}$	0	$-\frac{17\sqrt{462}}{2310}$	0	0	$-\frac{\sqrt{1155}}{220}$	0	0	$-\frac{\sqrt{770}i}{385}$
		0	0	0	$-\frac{\sqrt{77}}{220}$	$\frac{\sqrt{462}i}{210}$	0	$-\frac{17\sqrt{462}}{2310}$	0	0	0	0	$\frac{\sqrt{1155}}{220}$	$\frac{\sqrt{770}i}{385}$	0
		$-\frac{\sqrt{77}}{220}$	0	0	0	0	$-\frac{\sqrt{462}}{210}$	0	$\frac{17\sqrt{462}i}{2310}$	$-\frac{\sqrt{1155}}{220}$	0	0	0	0	$\frac{\sqrt{770}}{385}$
		0	$\frac{\sqrt{77}}{220}$	0	0	$-\frac{\sqrt{462}}{210}$	0	$-\frac{17\sqrt{462}i}{2310}$	0	0	$\frac{\sqrt{1155}}{220}$	0	0	$\frac{\sqrt{770}}{385}$	0
		0	$-\frac{\sqrt{231}i}{165}$	0	$-\frac{\sqrt{231}}{165}$	0	0	$-\frac{3\sqrt{154}}{220}$	0	0	$-\frac{3\sqrt{385}i}{770}$	0	$\frac{3\sqrt{385}}{770}$	0	0
		$\frac{\sqrt{231}i}{165}$	0	$-\frac{\sqrt{231}}{165}$	0	0	0	$\frac{3\sqrt{154}}{220}$	$\frac{3\sqrt{385}i}{770}$	0	$\frac{3\sqrt{385}}{770}$	0	0	0	0

bra: = $\langle f_2, \uparrow |, \langle f_2, \downarrow |, \langle f_1, \uparrow |, \langle f_1, \downarrow |, \langle f_{bz}, \uparrow |, \langle f_{bz}, \downarrow |, \langle f_3, \uparrow |, \langle f_3, \downarrow |, \langle f_{3x}, \uparrow |, \langle f_{3x}, \downarrow |, \langle f_{3y}, \uparrow |, \langle f_{3y}, \downarrow |, \langle f_{az}, \uparrow |, \langle f_{az}, \downarrow |$
ket: = $|f_2, \uparrow \rangle, |f_2, \downarrow \rangle, |f_1, \uparrow \rangle, |f_1, \downarrow \rangle, |f_{bz}, \uparrow \rangle, |f_{bz}, \downarrow \rangle, |f_3, \uparrow \rangle, |f_3, \downarrow \rangle, |f_{3x}, \uparrow \rangle, |f_{3x}, \downarrow \rangle, |f_{3y}, \uparrow \rangle, |f_{3y}, \downarrow \rangle, |f_{az}, \uparrow \rangle, |f_{az}, \downarrow \rangle$

Table 10: (f,f) block.

No.	multipole	matrix
829	symmetry	1

continued ...

Table 10

No.	multipole	matrix													
		$-\frac{5\sqrt{42}}{84}$	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	$-\frac{5\sqrt{42}}{84}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	$-\frac{5\sqrt{42}}{84}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	$-\frac{5\sqrt{42}}{84}$	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{42}}{28}$	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{42}}{28}$	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{42}}{28}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{42}}{28}$	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{42}}{21}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{42}}{21}$
831	symmetry	$\sqrt{3}yz$													

continued ...

Table 10

No.	multipole	matrix															
		0	0	0	0	0	0	$-\frac{5\sqrt{21}}{84}$	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	$-\frac{5\sqrt{21}}{84}$	0	0	0	0	0	0	0	0
		0	0	0	0	$\frac{5\sqrt{21}}{84}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	$\frac{5\sqrt{21}}{84}$	0	0	0	0	0	0	0	0	0	0
		0	0	$\frac{5\sqrt{21}}{84}$	0	0	0	0	0	0	0	$-\frac{\sqrt{35}}{28}$	0	0	0	0	
		0	0	0	$\frac{5\sqrt{21}}{84}$	0	0	0	0	0	0	0	$-\frac{\sqrt{35}}{28}$	0	0	0	
	$\mathbb{Q}_{2,1}^{(a)}(E_g, 1)$	$-\frac{5\sqrt{21}}{84}$	0	0	0	0	0	0	0	$\frac{\sqrt{35}}{28}$	0	0	0	0	0	0	
		0	$-\frac{5\sqrt{21}}{84}$	0	0	0	0	0	0	0	$\frac{\sqrt{35}}{28}$	0	0	0	0	0	
		0	0	0	0	0	0	$\frac{\sqrt{35}}{28}$	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	$\frac{\sqrt{35}}{28}$	0	0	0	0	0	0	0	
		0	0	0	0	$-\frac{\sqrt{35}}{28}$	0	0	0	0	0	0	0	$\frac{\sqrt{21}}{42}$	0	0	
		0	0	0	0	0	$-\frac{\sqrt{35}}{28}$	0	0	0	0	0	0	0	0	$\frac{\sqrt{21}}{42}$	
		0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{21}}{42}$	0	0	0	0	
		0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{21}}{42}$	0	0	0	
832	symmetry	$-\sqrt{3}xz$															

continued ...

Table 10

No.	multipole	matrix												
		0	0	0	0	$-\frac{5\sqrt{21}}{84}$	0	0	0	0	0	0	0	0
		0	0	0	0	0	$-\frac{5\sqrt{21}}{84}$	0	0	0	0	0	0	0
		0	0	0	0	0	0	$-\frac{5\sqrt{21}}{84}$	0	0	0	0	0	0
		0	0	0	0	0	0	0	$-\frac{5\sqrt{21}}{84}$	0	0	0	0	0
		$-\frac{5\sqrt{21}}{84}$	0	0	0	0	0	0	0	$-\frac{\sqrt{35}}{28}$	0	0	0	0
		0	$-\frac{5\sqrt{21}}{84}$	0	0	0	0	0	0	0	$-\frac{\sqrt{35}}{28}$	0	0	0
	$\mathbb{Q}_{2,2}^{(a)}(E_g, 1)$	0	0	$-\frac{5\sqrt{21}}{84}$	0	0	0	0	0	0	0	$-\frac{\sqrt{35}}{28}$	0	0
		0	0	0	$-\frac{5\sqrt{21}}{84}$	0	0	0	0	0	0	$-\frac{\sqrt{35}}{28}$	0	0
		0	0	0	0	$-\frac{\sqrt{35}}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{21}}{42}$	0
		0	0	0	0	0	$-\frac{\sqrt{35}}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{21}}{42}$
		0	0	0	0	0	0	$-\frac{\sqrt{35}}{28}$	0	0	0	0	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{35}}{28}$	0	0	0	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{21}}{42}$	0	0	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{21}}{42}$	0	0	0
833	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$												

continued ...

Table 10

No.	multipole	matrix												
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{210}}{84}$	0	0	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{210}}{84}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{210}}{84}$	0	0
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{210}}{84}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{210}}{42}$
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{210}}{42}$
	$\mathbb{Q}_{2,1}^{(a)}(E_g, 2)$	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{210}}{84}$	0	0	0	0	0	0	0	$\frac{\sqrt{14}}{14}$	0	0	0	0
		0	$-\frac{\sqrt{210}}{84}$	0	0	0	0	0	0	0	$\frac{\sqrt{14}}{14}$	0	0	0
		0	0	$-\frac{\sqrt{210}}{84}$	0	0	0	0	0	0	0	$-\frac{\sqrt{14}}{14}$	0	0
		0	0	0	$-\frac{\sqrt{210}}{84}$	0	0	0	0	0	0	0	$-\frac{\sqrt{14}}{14}$	0
		0	0	0	0	$-\frac{\sqrt{210}}{42}$	0	0	0	0	0	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{210}}{42}$	0	0	0	0	0	0	0
834	symmetry	$-\sqrt{3}xy$												

continued ...

Table 10

No.	multipole	matrix													
		0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{210}}{84}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{210}}{84}$	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{210}}{84}$	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{210}}{84}$	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{210}}{42}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{210}}{42}$
		0	0	$\frac{\sqrt{210}}{84}$	0	0	0	0	0	0	0	$-\frac{\sqrt{14}}{14}$	0	0	0
		0	0	0	$\frac{\sqrt{210}}{84}$	0	0	0	0	0	0	0	$-\frac{\sqrt{14}}{14}$	0	0
		$-\frac{\sqrt{210}}{84}$	0	0	0	0	0	0	$-\frac{\sqrt{14}}{14}$	0	0	0	0	0	0
		0	$-\frac{\sqrt{210}}{84}$	0	0	0	0	0	0	$-\frac{\sqrt{14}}{14}$	0	0	0	0	0
		0	0	0	0	0	0	$\frac{\sqrt{210}}{42}$	0	0	0	0	0	0	0
		0	0	0	0	0	0	$\frac{\sqrt{210}}{42}$	0	0	0	0	0	0	0
835	symmetry	$\frac{3x^4}{8} + \frac{3x^2y^2}{4} - 3x^2z^2 + \frac{3y^4}{8} - 3y^2z^2 + z^4$													

continued ...

Table 10

No.	multipole	matrix											
		0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	$-\frac{3\sqrt{11}}{22}$	0
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{3\sqrt{11}}{22}$
		0	0	0	0	0	0	0	0	$\frac{\sqrt{11}}{22}$	0	0	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{11}}{22}$	0	0
	$\mathbb{Q}_4^{(a)}(A_{1g}, 2)$	0	0	0	0	0	0	0	$\frac{\sqrt{11}}{22}$	0	0	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{11}}{22}$	0	0	0
		0	0	0	0	0	0	$\frac{\sqrt{11}}{22}$	0	0	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{11}}{22}$	0	0	0	0
		0	0	0	0	$\frac{\sqrt{11}}{22}$	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	$\frac{\sqrt{11}}{22}$	0	0	0	0	0	0	0
		0	0	$-\frac{3\sqrt{11}}{22}$	0	0	0	0	0	0	0	0	0
		0	0	0	$-\frac{3\sqrt{11}}{22}$	0	0	0	0	0	0	0	0
837	symmetry	$\frac{\sqrt{70}xz(x^2-3y^2)}{4}$											

continued ...

Table 10

No.	multipole	matrix													
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{3\sqrt{11}}{22}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{3\sqrt{11}}{22}$
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{11}}{22}$	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{11}}{22}$	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{11}}{22}$	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{11}}{22}$	0	0	0
		0	0	0	0	$\frac{\sqrt{11}}{22}$	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	$\frac{\sqrt{11}}{22}$	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{11}}{22}$	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{11}}{22}$	0	0	0	0	0	0
		$-\frac{3\sqrt{11}}{22}$	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	$-\frac{3\sqrt{11}}{22}$	0	0	0	0	0	0	0	0	0	0	0	0
838	symmetry	$-\frac{\sqrt{10}yz(3x^2+3y^2-4z^2)}{4}$													

continued ...

Table 10

No.	multipole	matrix													
		0	0	0	0	0	0	$\frac{\sqrt{1155}}{154}$	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{1155}}{154}$	0	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{1155}}{154}$	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{1155}}{154}$	0	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{1155}}{154}$	0	0	0	0	0	0	$-\frac{2\sqrt{77}}{77}$	0	0	0	0
		0	0	0	$-\frac{\sqrt{1155}}{154}$	0	0	0	0	0	0	$-\frac{2\sqrt{77}}{77}$	0	0	0
	$\mathbb{Q}_{4,1}^{(a)}(E_g, 1)$	$\frac{\sqrt{1155}}{154}$	0	0	0	0	0	0	0	$\frac{2\sqrt{77}}{77}$	0	0	0	0	0
		0	$\frac{\sqrt{1155}}{154}$	0	0	0	0	0	0	0	$\frac{2\sqrt{77}}{77}$	0	0	0	0
		0	0	0	0	0	0	$\frac{2\sqrt{77}}{77}$	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	$\frac{2\sqrt{77}}{77}$	0	0	0	0	0	0
		0	0	0	0	$-\frac{2\sqrt{77}}{77}$	0	0	0	0	0	0	$\frac{\sqrt{1155}}{154}$	0	0
		0	0	0	0	0	$-\frac{2\sqrt{77}}{77}$	0	0	0	0	0	0	$\frac{\sqrt{1155}}{154}$	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{1155}}{154}$	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{1155}}{154}$	0	0	0
839	symmetry	$\frac{\sqrt{10}xz(3x^2+3y^2-4z^2)}{4}$													

continued ...

Table 10

No.	multipole	matrix												
		0	0	0	0	$\frac{\sqrt{1155}}{154}$	0	0	0	0	0	0	0	0
		0	0	0	0	0	$\frac{\sqrt{1155}}{154}$	0	0	0	0	0	0	0
		0	0	0	0	0	0	$\frac{\sqrt{1155}}{154}$	0	0	0	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{1155}}{154}$	0	0	0	0	0
		$\frac{\sqrt{1155}}{154}$	0	0	0	0	0	0	0	$-\frac{2\sqrt{77}}{77}$	0	0	0	0
		0	$\frac{\sqrt{1155}}{154}$	0	0	0	0	0	0	0	$-\frac{2\sqrt{77}}{77}$	0	0	0
		0	0	$\frac{\sqrt{1155}}{154}$	0	0	0	0	0	0	0	$-\frac{2\sqrt{77}}{77}$	0	0
		0	0	0	$\frac{\sqrt{1155}}{154}$	0	0	0	0	0	0	0	$-\frac{2\sqrt{77}}{77}$	0
		0	0	0	0	$-\frac{2\sqrt{77}}{77}$	0	0	0	0	0	0	0	$-\frac{\sqrt{1155}}{154}$
		0	0	0	0	0	$-\frac{2\sqrt{77}}{77}$	0	0	0	0	0	0	$-\frac{\sqrt{1155}}{154}$
		0	0	0	0	0	0	$-\frac{2\sqrt{77}}{77}$	0	0	0	0	0	0
		0	0	0	0	0	0	0	$-\frac{2\sqrt{77}}{77}$	0	0	0	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{1155}}{154}$	0	0	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{1155}}{154}$	0	0	0
840	symmetry	$\frac{\sqrt{35}(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$												

continued ...

Table 10

No.	multipole	matrix													
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{33}}{22}$	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{33}}{22}$	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{33}}{22}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{33}}{22}$	0	0
		0	0	0	0	$\frac{\sqrt{55}}{22}$	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	$\frac{\sqrt{55}}{22}$	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{55}}{22}$	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{55}}{22}$	0	0	0	0	0	0
		$-\frac{\sqrt{33}}{22}$	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{33}}{22}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	$\frac{\sqrt{33}}{22}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{33}}{22}$	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
841	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$													

continued ...

Table 10

No.	multipole	matrix													
		0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{33}}{22}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{33}}{22}$	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{33}}{22}$	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{33}}{22}$	0	0	0	0
		0	0	0	0	0	0	$\frac{\sqrt{55}}{22}$	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{55}}{22}$	0	0	0	0	0	0
	$\mathbb{Q}_{4,2}^{(a)}(E_g, 2)$	0	0	0	0	$\frac{\sqrt{55}}{22}$	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	$\frac{\sqrt{55}}{22}$	0	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{33}}{22}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{33}}{22}$	0	0	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{33}}{22}$	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{33}}{22}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
842	symmetry	$-\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$													

continued ...

Table 10

No.	multipole	matrix													
		0	0	0	0	0	0	0	0	$\frac{3\sqrt{231}}{154}$	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	$\frac{3\sqrt{231}}{154}$	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	$\frac{3\sqrt{231}}{154}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	$\frac{3\sqrt{231}}{154}$	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{231}}{154}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{231}}{154}$
	$\mathbb{Q}_{4,1}^{(a)}(E_g, 3)$	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		$\frac{3\sqrt{231}}{154}$	0	0	0	0	0	0	0	$\frac{\sqrt{385}}{77}$	0	0	0	0	0
		0	$\frac{3\sqrt{231}}{154}$	0	0	0	0	0	0	0	$\frac{\sqrt{385}}{77}$	0	0	0	0
		0	0	$\frac{3\sqrt{231}}{154}$	0	0	0	0	0	0	0	$-\frac{\sqrt{385}}{77}$	0	0	0
		0	0	0	$\frac{3\sqrt{231}}{154}$	0	0	0	0	0	0	0	$-\frac{\sqrt{385}}{77}$	0	0
		0	0	0	0	$-\frac{\sqrt{231}}{154}$	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{231}}{154}$	0	0	0	0	0	0	0	0
843	symmetry	$\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$													

continued ...

Table 10

No.	multipole	matrix												
		0	0	0	0	0	0	0	0	0	$\frac{3\sqrt{231}}{154}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	$\frac{3\sqrt{231}}{154}$	0	0
		0	0	0	0	0	0	0	$-\frac{3\sqrt{231}}{154}$	0	0	0	0	0
		0	0	0	0	0	0	0	0	$-\frac{3\sqrt{231}}{154}$	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{231}}{154}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{231}}{154}$
		0	0	$-\frac{3\sqrt{231}}{154}$	0	0	0	0	0	0	0	$-\frac{\sqrt{385}}{77}$	0	0
		0	0	0	$-\frac{3\sqrt{231}}{154}$	0	0	0	0	0	0	$-\frac{\sqrt{385}}{77}$	0	0
		$\frac{3\sqrt{231}}{154}$	0	0	0	0	0	0	$-\frac{\sqrt{385}}{77}$	0	0	0	0	0
		0	$\frac{3\sqrt{231}}{154}$	0	0	0	0	0	0	$-\frac{\sqrt{385}}{77}$	0	0	0	0
		0	0	0	0	0	$\frac{\sqrt{231}}{154}$	0	0	0	0	0	0	0
		0	0	0	0	0	0	$\frac{\sqrt{231}}{154}$	0	0	0	0	0	0
844	symmetry	$-\frac{5x^6}{16} - \frac{15x^4y^2}{16} + \frac{45x^4z^2}{8} - \frac{15x^2y^4}{16} + \frac{45x^2y^2z^2}{4} - \frac{15x^2z^4}{2} - \frac{5y^6}{16} + \frac{45y^4z^2}{8} - \frac{15y^2z^4}{2} + z^6$												

continued ...

Table 10

No.	multipole	matrix												
		$-\frac{\sqrt{462}}{924}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{462}}{924}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{462}}{924}$	0	0	0	0	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{462}}{924}$	0	0	0	0	0	0	0	0	0
		0	0	0	0	$\frac{\sqrt{462}}{154}$	0	0	0	0	0	0	0	0
		0	0	0	0	0	$\frac{\sqrt{462}}{154}$	0	0	0	0	0	0	0
	$\mathbb{Q}_6^{(a)}(A_{1g}, 1)$	0	0	0	0	0	0	$\frac{\sqrt{462}}{154}$	0	0	0	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{462}}{154}$	0	0	0	0	0
		0	0	0	0	0	0	0	0	$-\frac{5\sqrt{462}}{308}$	0	0	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{5\sqrt{462}}{308}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	$-\frac{5\sqrt{462}}{308}$	0	0
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{5\sqrt{462}}{308}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	$\frac{5\sqrt{462}}{231}$
		0	0	0	0	0	0	0	0	0	0	0	0	$\frac{5\sqrt{462}}{231}$
845	symmetry	$\frac{\sqrt{462}(x-y)(x+y)(x^2-4xy+y^2)(x^2+4xy+y^2)}{32}$												

continued ...

Table 10

No.	multipole	matrix												
		0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{22}}{22}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{22}}{22}$
		0	0	0	0	0	0	0	0	0	$\frac{3\sqrt{22}}{44}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	$\frac{3\sqrt{22}}{44}$	0	0
	$\mathbb{Q}_6^{(a)}(A_{1g}, 3)$	0	0	0	0	0	0	0	$\frac{3\sqrt{22}}{44}$	0	0	0	0	0
		0	0	0	0	0	0	0	0	$\frac{3\sqrt{22}}{44}$	0	0	0	0
		0	0	0	0	0	$\frac{3\sqrt{22}}{44}$	0	0	0	0	0	0	0
		0	0	0	0	0	0	$\frac{3\sqrt{22}}{44}$	0	0	0	0	0	0
		0	0	0	0	$\frac{3\sqrt{22}}{44}$	0	0	0	0	0	0	0	0
		0	0	0	0	0	$\frac{3\sqrt{22}}{44}$	0	0	0	0	0	0	0
		0	0	$\frac{\sqrt{22}}{22}$	0	0	0	0	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{22}}{22}$	0	0	0	0	0	0	0	0	0
847	symmetry	$\frac{\sqrt{462}xy(x^2-3y^2)(3x^2-y^2)}{16}$												

continued ...

Table 10

No.	multipole	matrix													
		0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{22}}{22}$	0	
		0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{22}}{22}$	
		0	0	0	0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	$\frac{3\sqrt{22}}{44}$	0	0	0	0	0	
		0	0	0	0	0	0	0	0	$\frac{3\sqrt{22}}{44}$	0	0	0	0	
		0	0	0	0	0	0	0	0	0	$-\frac{3\sqrt{22}}{44}$	0	0	0	
		0	0	0	0	0	0	0	0	0	0	$-\frac{3\sqrt{22}}{44}$	0	0	
		0	0	0	0	$\frac{3\sqrt{22}}{44}$	0	0	0	0	0	0	0	0	
		0	0	0	0	0	$\frac{3\sqrt{22}}{44}$	0	0	0	0	0	0	0	
		0	0	0	0	0	0	$-\frac{3\sqrt{22}}{44}$	0	0	0	0	0	0	
		0	0	0	0	0	0	0	$-\frac{3\sqrt{22}}{44}$	0	0	0	0	0	
		$\frac{\sqrt{22}}{22}$	0	0	0	0	0	0	0	0	0	0	0	0	
		0	$\frac{\sqrt{22}}{22}$	0	0	0	0	0	0	0	0	0	0	0	
849	symmetry	$\frac{3\sqrt{154}yz(5x^4-10x^2y^2+y^4)}{16}$													

continued ...

Table 10

No.	multipole	matrix
		$ \begin{array}{cccccccccccccccc} 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{array} $
850	symmetry	$\frac{3\sqrt{154}xz(x^4-10x^2y^2+5y^4)}{16}$

continued ...

Table 10

No.	multipole	matrix
	$\mathbb{Q}_{6,2}^{(a)}(E_g, 1)$	$ \begin{array}{cccccccccccccccc} 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{array} $
851	symmetry	$\frac{\sqrt{21}yz(5x^4+10x^2y^2-20x^2z^2+5y^4-20y^2z^2+8z^4)}{8}$

continued ...

Table 10

No.	multipole	matrix													
		0	0	0	0	0	0	$-\frac{\sqrt{33}}{132}$	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{33}}{132}$	0	0	0	0	0	0
		0	0	0	0	$\frac{\sqrt{33}}{132}$	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	$\frac{\sqrt{33}}{132}$	0	0	0	0	0	0	0	0
		0	0	$\frac{\sqrt{33}}{132}$	0	0	0	0	0	0	$\frac{\sqrt{55}}{44}$	0	0	0	0
		0	0	0	$\frac{\sqrt{33}}{132}$	0	0	0	0	0	0	$\frac{\sqrt{55}}{44}$	0	0	0
	$\mathbb{Q}_{6,1}^{(a)}(E_g, 2)$	$-\frac{\sqrt{33}}{132}$	0	0	0	0	0	0	0	$-\frac{\sqrt{55}}{44}$	0	0	0	0	0
		0	$-\frac{\sqrt{33}}{132}$	0	0	0	0	0	0	0	$-\frac{\sqrt{55}}{44}$	0	0	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{55}}{44}$	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{55}}{44}$	0	0	0	0	0	0
		0	0	0	0	$\frac{\sqrt{55}}{44}$	0	0	0	0	0	0	$\frac{5\sqrt{33}}{66}$	0	0
		0	0	0	0	0	$\frac{\sqrt{55}}{44}$	0	0	0	0	0	0	$\frac{5\sqrt{33}}{66}$	0
		0	0	0	0	0	0	0	0	0	$\frac{5\sqrt{33}}{66}$	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	$\frac{5\sqrt{33}}{66}$	0	0	0
852	symmetry	$-\frac{\sqrt{21}xz(5x^4+10x^2y^2-20x^2z^2+5y^4-20y^2z^2+8z^4)}{8}$													

continued ...

Table 10

No.	multipole	matrix												
		0	0	0	0	$-\frac{\sqrt{33}}{132}$	0	0	0	0	0	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{33}}{132}$	0	0	0	0	0	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{33}}{132}$	0	0	0	0	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{33}}{132}$	0	0	0	0	0
		$-\frac{\sqrt{33}}{132}$	0	0	0	0	0	0	0	$\frac{\sqrt{55}}{44}$	0	0	0	0
		0	$-\frac{\sqrt{33}}{132}$	0	0	0	0	0	0	0	$\frac{\sqrt{55}}{44}$	0	0	0
	$\mathbb{Q}_{6,2}^{(a)}(E_g, 2)$	0	0	$-\frac{\sqrt{33}}{132}$	0	0	0	0	0	0	0	$\frac{\sqrt{55}}{44}$	0	0
		0	0	0	$-\frac{\sqrt{33}}{132}$	0	0	0	0	0	0	0	$\frac{\sqrt{55}}{44}$	0
		0	0	0	0	$\frac{\sqrt{55}}{44}$	0	0	0	0	0	0	0	$-\frac{5\sqrt{33}}{66}$
		0	0	0	0	0	$\frac{\sqrt{55}}{44}$	0	0	0	0	0	0	$-\frac{5\sqrt{33}}{66}$
		0	0	0	0	0	0	$\frac{\sqrt{55}}{44}$	0	0	0	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{55}}{44}$	0	0	0	0	0
		0	0	0	0	0	0	0	0	$-\frac{5\sqrt{33}}{66}$	0	0	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{5\sqrt{33}}{66}$	0	0	0
853	symmetry	$-\frac{3\sqrt{7}(x^2+y^2-10z^2)(x^2-2xy-y^2)(x^2+2xy-y^2)}{16}$												

continued ...

Table 10

No.	multipole	matrix												
		0	0	0	0	0	0	0	0	$\frac{\sqrt{110}}{44}$	0	0	0	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{110}}{44}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{110}}{44}$	0	0
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{110}}{44}$	0
		0	0	0	0	$\frac{\sqrt{66}}{22}$	0	0	0	0	0	0	0	0
		0	0	0	0	0	$\frac{\sqrt{66}}{22}$	0	0	0	0	0	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{66}}{22}$	0	0	0	0	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{66}}{22}$	0	0	0	0	0
		$\frac{\sqrt{110}}{44}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{110}}{44}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{110}}{44}$	0	0	0	0	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{110}}{44}$	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0
854	symmetry	$-\frac{3\sqrt{7}xy(x-y)(x+y)(x^2+y^2-10z^2)}{4}$												

continued ...

Table 10

No.	multipole	matrix												
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{110}}{44}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{110}}{44}$	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{110}}{44}$	0	0	0	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{110}}{44}$	0	0	0	0
		0	0	0	0	0	0	$\frac{\sqrt{66}}{22}$	0	0	0	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{66}}{22}$	0	0	0	0	0
	$\mathbb{Q}_{6,2}^{(a)}(E_g, 3)$	0	0	0	0	$\frac{\sqrt{66}}{22}$	0	0	0	0	0	0	0	0
		0	0	0	0	0	$\frac{\sqrt{66}}{22}$	0	0	0	0	0	0	0
		0	0	$\frac{\sqrt{110}}{44}$	0	0	0	0	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{110}}{44}$	0	0	0	0	0	0	0	0	0
		$\frac{\sqrt{110}}{44}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{110}}{44}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0
855	symmetry	$\frac{\sqrt{210}(x-y)(x+y)(x^4+2x^2y^2-16x^2z^2+y^4-16y^2z^2+16z^4)}{32}$												

continued ...

Table 10

No.	multipole	matrix												
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{33}}{66}$	0	0	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{33}}{66}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{33}}{66}$	0	0
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{33}}{66}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	$\frac{2\sqrt{33}}{33}$
		0	0	0	0	0	0	0	0	0	0	0	0	$\frac{2\sqrt{33}}{33}$
	$\mathbb{Q}_{6,1}^{(a)}(E_g, 4)$	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{33}}{66}$	0	0	0	0	0	0	0	$\frac{\sqrt{55}}{22}$	0	0	0	0
		0	$-\frac{\sqrt{33}}{66}$	0	0	0	0	0	0	0	$\frac{\sqrt{55}}{22}$	0	0	0
		0	0	$-\frac{\sqrt{33}}{66}$	0	0	0	0	0	0	0	$-\frac{\sqrt{55}}{22}$	0	0
		0	0	0	$-\frac{\sqrt{33}}{66}$	0	0	0	0	0	0	0	$-\frac{\sqrt{55}}{22}$	0
		0	0	0	0	$\frac{2\sqrt{33}}{33}$	0	0	0	0	0	0	0	0
		0	0	0	0	0	$\frac{2\sqrt{33}}{33}$	0	0	0	0	0	0	0
856	symmetry	$-\frac{\sqrt{210}xy(x^4+2x^2y^2-16x^2z^2+y^4-16y^2z^2+16z^4)}{16}$												

continued ...

Table 10

No.	multipole	matrix													
		0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{33}}{66}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{33}}{66}$	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{33}}{66}$	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{33}}{66}$	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{2\sqrt{33}}{33}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{2\sqrt{33}}{33}$
		0	0	$\frac{\sqrt{33}}{66}$	0	0	0	0	0	0	0	$-\frac{\sqrt{55}}{22}$	0	0	0
		0	0	0	$\frac{\sqrt{33}}{66}$	0	0	0	0	0	0	0	$-\frac{\sqrt{55}}{22}$	0	0
		$-\frac{\sqrt{33}}{66}$	0	0	0	0	0	0	0	$-\frac{\sqrt{55}}{22}$	0	0	0	0	0
		0	$-\frac{\sqrt{33}}{66}$	0	0	0	0	0	0	0	$-\frac{\sqrt{55}}{22}$	0	0	0	0
		0	0	0	0	0	0	$-\frac{2\sqrt{33}}{33}$	0	0	0	0	0	0	0
		0	0	0	0	0	0	$-\frac{2\sqrt{33}}{33}$	0	0	0	0	0	0	0
857	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$													

continued ...

Table 10

No.	multipole	matrix													
		0	0	$-\frac{\sqrt{21}i}{14}$	0	0	$-\frac{\sqrt{14}}{56}$	0	$-\frac{\sqrt{14}i}{56}$	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{21}i}{14}$	$\frac{\sqrt{14}}{56}$	0	$-\frac{\sqrt{14}i}{56}$	0	0	0	0	0	0	0
		$\frac{\sqrt{21}i}{14}$	0	0	0	0	$\frac{\sqrt{14}i}{56}$	0	$-\frac{\sqrt{14}}{56}$	0	0	0	0	0	0
		0	$-\frac{\sqrt{21}i}{14}$	0	0	$\frac{\sqrt{14}i}{56}$	0	$\frac{\sqrt{14}}{56}$	0	0	0	0	0	0	0
		0	$\frac{\sqrt{14}}{56}$	0	$-\frac{\sqrt{14}i}{56}$	0	0	$-\frac{\sqrt{21}i}{21}$	0	0	$-\frac{\sqrt{210}}{168}$	0	$-\frac{\sqrt{210}i}{168}$	0	0
		$-\frac{\sqrt{14}}{56}$	0	$-\frac{\sqrt{14}i}{56}$	0	0	0	0	$\frac{\sqrt{21}i}{21}$	$\frac{\sqrt{210}}{168}$	0	$-\frac{\sqrt{210}i}{168}$	0	0	0
	$\mathbb{Q}_2^{(1,-1;a)}(A_{1g})$	0	$\frac{\sqrt{14}i}{56}$	0	$\frac{\sqrt{14}}{56}$	$\frac{\sqrt{21}i}{21}$	0	0	0	0	$\frac{\sqrt{210}i}{168}$	0	$-\frac{\sqrt{210}}{168}$	0	0
		$\frac{\sqrt{14}i}{56}$	0	$-\frac{\sqrt{14}}{56}$	0	0	$-\frac{\sqrt{21}i}{21}$	0	0	$\frac{\sqrt{210}i}{168}$	0	$\frac{\sqrt{210}}{168}$	0	0	0
		0	0	0	0	0	$\frac{\sqrt{210}}{168}$	0	$-\frac{\sqrt{210}i}{168}$	0	0	$-\frac{\sqrt{21}i}{42}$	0	0	$-\frac{\sqrt{14}}{28}$
		0	0	0	0	$-\frac{\sqrt{210}}{168}$	0	$-\frac{\sqrt{210}i}{168}$	0	0	0	$\frac{\sqrt{21}i}{42}$	$\frac{\sqrt{14}}{28}$	0	0
		0	0	0	0	0	$\frac{\sqrt{210}i}{168}$	0	$\frac{\sqrt{210}}{168}$	$\frac{\sqrt{21}i}{42}$	0	0	0	0	$\frac{\sqrt{14}i}{28}$
		0	0	0	0	$\frac{\sqrt{210}i}{168}$	0	$-\frac{\sqrt{210}}{168}$	0	0	$-\frac{\sqrt{21}i}{42}$	0	0	$\frac{\sqrt{14}i}{28}$	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{14}}{28}$	0	$-\frac{\sqrt{14}i}{28}$	0	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{14}}{28}$	0	$-\frac{\sqrt{14}i}{28}$	0	0	0
858	symmetry	$\sqrt{3}yz$													

continued ...

Table 10

No.	multipole	matrix													
		0	0	0	$-\frac{3\sqrt{7}}{28}$	$\frac{\sqrt{42i}}{56}$	0	0	0	0	0	0	0	0	0
		0	0	$\frac{3\sqrt{7}}{28}$	0	0	$-\frac{\sqrt{42i}}{56}$	0	0	0	0	0	0	0	0
		0	$\frac{3\sqrt{7}}{28}$	0	0	0	0	$\frac{\sqrt{42i}}{56}$	0	0	0	0	0	0	0
		$-\frac{3\sqrt{7}}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{42i}}{56}$	0	0	0	0	0	0
		$-\frac{\sqrt{42i}}{56}$	0	0	0	0	0	0	$-\frac{\sqrt{7}}{14}$	$\frac{\sqrt{70i}}{56}$	0	0	0	0	0
		0	$\frac{\sqrt{42i}}{56}$	0	0	0	0	$\frac{\sqrt{7}}{14}$	0	0	$-\frac{\sqrt{70i}}{56}$	0	0	0	0
	$\mathbb{Q}_{2,1}^{(1,-1;\alpha)}(E_g, 1)$	0	0	$-\frac{\sqrt{42i}}{56}$	0	0	$\frac{\sqrt{7}}{14}$	0	0	0	0	$\frac{\sqrt{70i}}{56}$	0	0	0
		0	0	0	$\frac{\sqrt{42i}}{56}$	$-\frac{\sqrt{7}}{14}$	0	0	0	0	0	0	$-\frac{\sqrt{70i}}{56}$	0	0
		0	0	0	0	$-\frac{\sqrt{70i}}{56}$	0	0	0	0	0	0	$-\frac{\sqrt{7}}{28}$	$\frac{\sqrt{42i}}{28}$	0
		0	0	0	0	0	$\frac{\sqrt{70i}}{56}$	0	0	0	0	$\frac{\sqrt{7}}{28}$	0	0	$-\frac{\sqrt{42i}}{28}$
		0	0	0	0	0	0	$-\frac{\sqrt{70i}}{56}$	0	0	$\frac{\sqrt{7}}{28}$	0	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{70i}}{56}$	$-\frac{\sqrt{7}}{28}$	0	0	0	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{42i}}{28}$	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{42i}}{28}$	0	0	0	0
859	symmetry	$-\sqrt{3}xz$													

continued ...

Table 10

No.	multipole	matrix													
		0	0	0	0	0	$-\frac{\sqrt{42}}{56}$	0	$\frac{\sqrt{42}i}{56}$	0	0	0	0	0	0
		0	0	0	0	$\frac{\sqrt{42}}{56}$	0	$\frac{\sqrt{42}i}{56}$	0	0	0	0	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{42}i}{56}$	0	$-\frac{\sqrt{42}}{56}$	0	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{42}i}{56}$	0	$\frac{\sqrt{42}}{56}$	0	0	0	0	0	0	0
		0	$\frac{\sqrt{42}}{56}$	0	$\frac{\sqrt{42}i}{56}$	0	0	0	0	0	$-\frac{\sqrt{70}}{56}$	0	$\frac{\sqrt{70}i}{56}$	0	0
		$-\frac{\sqrt{42}}{56}$	0	$\frac{\sqrt{42}i}{56}$	0	0	0	0	0	$\frac{\sqrt{70}}{56}$	0	$\frac{\sqrt{70}i}{56}$	0	0	0
	$\mathbb{Q}_{2,1}^{(1,-1;\alpha)}(E_g, 2)$	0	$-\frac{\sqrt{42}i}{56}$	0	$\frac{\sqrt{42}}{56}$	0	0	0	0	0	$-\frac{\sqrt{70}i}{56}$	0	$-\frac{\sqrt{70}}{56}$	0	0
		$-\frac{\sqrt{42}i}{56}$	0	$-\frac{\sqrt{42}}{56}$	0	0	0	0	0	$-\frac{\sqrt{70}i}{56}$	0	$\frac{\sqrt{70}}{56}$	0	0	0
		0	0	0	0	0	$\frac{\sqrt{70}}{56}$	0	$\frac{\sqrt{70}i}{56}$	0	0	0	0	0	$-\frac{\sqrt{42}}{28}$
		0	0	0	0	$-\frac{\sqrt{70}}{56}$	0	$\frac{\sqrt{70}i}{56}$	0	0	0	0	0	$\frac{\sqrt{42}}{28}$	0
		0	0	0	0	0	$-\frac{\sqrt{70}i}{56}$	0	$\frac{\sqrt{70}}{56}$	0	0	0	0	0	$-\frac{\sqrt{42}i}{28}$
		0	0	0	0	$-\frac{\sqrt{70}i}{56}$	0	$-\frac{\sqrt{70}}{56}$	0	0	0	0	0	$-\frac{\sqrt{42}i}{28}$	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{42}}{28}$	0	$\frac{\sqrt{42}i}{28}$	0	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{42}}{28}$	0	$\frac{\sqrt{42}i}{28}$	0	0	0
861	symmetry	$-\sqrt{3}xy$													

continued ...

Table 10

No.	multipole	matrix													
		0	0	0	0	0	$-\frac{\sqrt{42}i}{56}$	0	$-\frac{\sqrt{42}}{56}$	0	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{42}i}{56}$	0	$\frac{\sqrt{42}}{56}$	0	0	0	0	0	0	0
		0	0	0	0	0	$\frac{\sqrt{42}}{56}$	0	$-\frac{\sqrt{42}i}{56}$	0	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{42}}{56}$	0	$-\frac{\sqrt{42}i}{56}$	0	0	0	0	0	0	0
		0	$\frac{\sqrt{42}i}{56}$	0	$-\frac{\sqrt{42}}{56}$	0	0	0	0	0	$-\frac{\sqrt{70}i}{56}$	0	$-\frac{\sqrt{70}}{56}$	0	0
		$\frac{\sqrt{42}i}{56}$	0	$\frac{\sqrt{42}}{56}$	0	0	0	0	0	$-\frac{\sqrt{70}i}{56}$	0	$\frac{\sqrt{70}}{56}$	0	0	0
	$\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g, 2)$	0	$\frac{\sqrt{42}}{56}$	0	$\frac{\sqrt{42}i}{56}$	0	0	0	0	0	$\frac{\sqrt{70}}{56}$	0	$-\frac{\sqrt{70}i}{56}$	0	0
		$-\frac{\sqrt{42}}{56}$	0	$\frac{\sqrt{42}i}{56}$	0	0	0	0	0	$-\frac{\sqrt{70}}{56}$	0	$-\frac{\sqrt{70}i}{56}$	0	0	0
		0	0	0	0	0	$\frac{\sqrt{70}i}{56}$	0	$-\frac{\sqrt{70}}{56}$	0	0	0	0	0	$-\frac{\sqrt{42}i}{28}$
		0	0	0	0	$\frac{\sqrt{70}i}{56}$	0	$\frac{\sqrt{70}}{56}$	0	0	0	0	0	$-\frac{\sqrt{42}i}{28}$	0
		0	0	0	0	0	$\frac{\sqrt{70}}{56}$	0	$\frac{\sqrt{70}i}{56}$	0	0	0	0	0	$\frac{\sqrt{42}}{28}$
		0	0	0	0	$-\frac{\sqrt{70}}{56}$	0	$\frac{\sqrt{70}i}{56}$	0	0	0	0	0	$-\frac{\sqrt{42}}{28}$	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{42}i}{28}$	0	$-\frac{\sqrt{42}}{28}$	0	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{42}i}{28}$	0	$\frac{\sqrt{42}}{28}$	0	0	0
862	symmetry	$\frac{3x^4}{8} + \frac{3x^2y^2}{4} - 3x^2z^2 + \frac{3y^4}{8} - 3y^2z^2 + z^4$													

continued ...

Table 10

No.	multipole	matrix													
		0	0	$\frac{\sqrt{21}i}{21}$	0	0	$\frac{\sqrt{14}}{28}$	0	$\frac{\sqrt{14}i}{28}$	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{21}i}{21}$	$-\frac{\sqrt{14}}{28}$	0	$\frac{\sqrt{14}i}{28}$	0	0	0	0	0	0	0
		$-\frac{\sqrt{21}i}{21}$	0	0	0	0	$-\frac{\sqrt{14}i}{28}$	0	$\frac{\sqrt{14}}{28}$	0	0	0	0	0	0
		0	$\frac{\sqrt{21}i}{21}$	0	0	$-\frac{\sqrt{14}i}{28}$	0	$-\frac{\sqrt{14}}{28}$	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{14}}{28}$	0	$\frac{\sqrt{14}i}{28}$	0	0	$-\frac{\sqrt{21}i}{21}$	0	0	0	0	0	0	0
		$\frac{\sqrt{14}}{28}$	0	$\frac{\sqrt{14}i}{28}$	0	0	0	0	$\frac{\sqrt{21}i}{21}$	0	0	0	0	0	0
		0	$-\frac{\sqrt{14}i}{28}$	0	$-\frac{\sqrt{14}}{28}$	$\frac{\sqrt{21}i}{21}$	0	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{14}i}{28}$	0	$\frac{\sqrt{14}}{28}$	0	0	$-\frac{\sqrt{21}i}{21}$	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{21}i}{21}$	0	0	$-\frac{\sqrt{14}}{28}$
		0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{21}i}{21}$	$\frac{\sqrt{14}}{28}$	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{21}i}{21}$	0	0	0	0	$\frac{\sqrt{14}i}{28}$
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{21}i}{21}$	0	0	$\frac{\sqrt{14}i}{28}$	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{14}}{28}$	0	$-\frac{\sqrt{14}i}{28}$	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{14}}{28}$	0	$-\frac{\sqrt{14}i}{28}$	0	0	0
863	symmetry	$\frac{\sqrt{70}yz(3x^2 - y^2)}{4}$													

continued ...

Table 10

No.	multipole	matrix													
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{2}i}{8}$	0	$\frac{\sqrt{2}}{8}$	$-\frac{\sqrt{3}i}{12}$	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{2}i}{8}$	0	$-\frac{\sqrt{2}}{8}$	0	0	$\frac{\sqrt{3}i}{12}$
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{2}}{8}$	0	$\frac{\sqrt{2}i}{8}$	0	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{2}}{8}$	0	$\frac{\sqrt{2}i}{8}$	0	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{3}i}{12}$	0	0	0	0	$\frac{\sqrt{2}i}{8}$
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{3}i}{12}$	0	0	0	$\frac{\sqrt{2}i}{8}$	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{3}i}{12}$	0	0	0	$-\frac{\sqrt{2}}{8}$
		0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{3}i}{12}$	$\frac{\sqrt{2}}{8}$	0	0
		0	$-\frac{\sqrt{2}i}{8}$	0	$\frac{\sqrt{2}}{8}$	$-\frac{\sqrt{3}i}{12}$	0	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{2}i}{8}$	0	$-\frac{\sqrt{2}}{8}$	0	0	$\frac{\sqrt{3}i}{12}$	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{2}}{8}$	0	$-\frac{\sqrt{2}i}{8}$	0	0	$\frac{\sqrt{3}i}{12}$	0	0	0	0	0	0	0
		$\frac{\sqrt{2}}{8}$	0	$-\frac{\sqrt{2}i}{8}$	0	0	0	$-\frac{\sqrt{3}i}{12}$	0	0	0	0	0	0	0
		$\frac{\sqrt{3}i}{12}$	0	0	0	0	$-\frac{\sqrt{2}i}{8}$	0	$\frac{\sqrt{2}}{8}$	0	0	0	0	0	0
		0	$-\frac{\sqrt{3}i}{12}$	0	0	$-\frac{\sqrt{2}i}{8}$	0	$-\frac{\sqrt{2}}{8}$	0	0	0	0	0	0	0
864	symmetry	$\frac{\sqrt{70}xz(x^2-3y^2)}{4}$													

continued ...

Table 10

No.	multipole	matrix													
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{2}}{8}$	0	$\frac{\sqrt{2}i}{8}$	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{2}}{8}$	0	$\frac{\sqrt{2}i}{8}$	0	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{2}i}{8}$	0	$-\frac{\sqrt{2}}{8}$	$\frac{\sqrt{3}i}{12}$	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{2}i}{8}$	0	$\frac{\sqrt{2}}{8}$	0	0	$-\frac{\sqrt{3}i}{12}$
		0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{3}i}{12}$	0	0	$-\frac{\sqrt{2}}{8}$
		0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{3}i}{12}$	$\frac{\sqrt{2}}{8}$	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{3}i}{12}$	0	0	0	0	$-\frac{\sqrt{2}i}{8}$
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{3}i}{12}$	0	0	$-\frac{\sqrt{2}i}{8}$	0
		0	$\frac{\sqrt{2}}{8}$	0	$\frac{\sqrt{2}i}{8}$	0	0	$\frac{\sqrt{3}i}{12}$	0	0	0	0	0	0	0
		$-\frac{\sqrt{2}}{8}$	0	$\frac{\sqrt{2}i}{8}$	0	0	0	0	$-\frac{\sqrt{3}i}{12}$	0	0	0	0	0	0
		0	$-\frac{\sqrt{2}i}{8}$	0	$\frac{\sqrt{2}}{8}$	$\frac{\sqrt{3}i}{12}$	0	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{2}i}{8}$	0	$-\frac{\sqrt{2}}{8}$	0	0	$-\frac{\sqrt{3}i}{12}$	0	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{3}i}{12}$	0	0	$\frac{\sqrt{2}}{8}$	0	$\frac{\sqrt{2}i}{8}$	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{3}i}{12}$	$-\frac{\sqrt{2}}{8}$	0	$\frac{\sqrt{2}i}{8}$	0	0	0	0	0	0	0
865	symmetry	$-\frac{\sqrt{10}yz(3x^2+3y^2-4z^2)}{4}$													

continued ...

Table 10

No.	multipole	matrix														
$\mathbb{Q}_{4,1}^{(1,-1;\alpha)}(E_g, 1)$		0	0	0	$\frac{\sqrt{210}}{84}$	$-\frac{\sqrt{35i}}{28}$	0	0	0	0	$-\frac{\sqrt{14i}}{56}$	0	$\frac{\sqrt{14}}{56}$	0	0	
		0	0	$-\frac{\sqrt{210}}{84}$	0	0	$\frac{\sqrt{35i}}{28}$	0	0	$-\frac{\sqrt{14i}}{56}$	0	$-\frac{\sqrt{14}}{56}$	0	0	0	
		0	$-\frac{\sqrt{210}}{84}$	0	0	0	0	$-\frac{\sqrt{35i}}{28}$	0	0	$-\frac{\sqrt{14}}{56}$	0	$-\frac{\sqrt{14i}}{56}$	0	0	
		$\frac{\sqrt{210}}{84}$	0	0	0	0	0	0	$\frac{\sqrt{35i}}{28}$	$\frac{\sqrt{14}}{56}$	0	$-\frac{\sqrt{14i}}{56}$	0	0	0	
		$\frac{\sqrt{35i}}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{210}}{84}$	0	0	0	0	0	$-\frac{\sqrt{14i}}{56}$	
		0	$-\frac{\sqrt{35i}}{28}$	0	0	0	0	0	$\frac{\sqrt{210}}{84}$	0	0	0	0	0	$-\frac{\sqrt{14i}}{56}$	0
		0	0	$\frac{\sqrt{35i}}{28}$	0	0	$\frac{\sqrt{210}}{84}$	0	0	0	0	0	0	0	0	$-\frac{\sqrt{14}}{56}$
		0	0	0	$-\frac{\sqrt{35i}}{28}$	$-\frac{\sqrt{210}}{84}$	0	0	0	0	0	0	0	$\frac{\sqrt{14}}{56}$	0	0
		0	$\frac{\sqrt{14i}}{56}$	0	$\frac{\sqrt{14}}{56}$	0	0	0	0	0	0	0	$-\frac{\sqrt{210}}{84}$	$\frac{\sqrt{35i}}{28}$	0	0
		$\frac{\sqrt{14i}}{56}$	0	$-\frac{\sqrt{14}}{56}$	0	0	0	0	0	0	0	$\frac{\sqrt{210}}{84}$	0	0	0	$-\frac{\sqrt{35i}}{28}$
		0	$-\frac{\sqrt{14}}{56}$	0	$\frac{\sqrt{14i}}{56}$	0	0	0	0	0	$\frac{\sqrt{210}}{84}$	0	0	0	0	0
		$\frac{\sqrt{14}}{56}$	0	$\frac{\sqrt{14i}}{56}$	0	0	0	0	0	$-\frac{\sqrt{210}}{84}$	0	0	0	0	0	0
		0	0	0	0	0	$\frac{\sqrt{14i}}{56}$	0	$\frac{\sqrt{14}}{56}$	$-\frac{\sqrt{35i}}{28}$	0	0	0	0	0	0
		0	0	0	0	$\frac{\sqrt{14i}}{56}$	0	$-\frac{\sqrt{14}}{56}$	0	0	$\frac{\sqrt{35i}}{28}$	0	0	0	0	0
866	symmetry	$\frac{\sqrt{10}xz(3x^2+3y^2-4z^2)}{4}$														

continued ...

Table 10

No.	multipole	matrix													
		0	0	0	$-\frac{\sqrt{210i}}{84}$	0	0	$\frac{\sqrt{35i}}{28}$	0	0	$\frac{\sqrt{14}}{56}$	0	$\frac{\sqrt{14i}}{56}$	0	0
		0	0	$-\frac{\sqrt{210i}}{84}$	0	0	0	0	$-\frac{\sqrt{35i}}{28}$	$-\frac{\sqrt{14}}{56}$	0	$\frac{\sqrt{14i}}{56}$	0	0	0
		0	$\frac{\sqrt{210i}}{84}$	0	0	$-\frac{\sqrt{35i}}{28}$	0	0	0	0	$-\frac{\sqrt{14i}}{56}$	0	$\frac{\sqrt{14}}{56}$	0	0
		$\frac{\sqrt{210i}}{84}$	0	0	0	0	$\frac{\sqrt{35i}}{28}$	0	0	$-\frac{\sqrt{14}}{56}$	0	$-\frac{\sqrt{14i}}{56}$	0	0	0
		0	0	$\frac{\sqrt{35i}}{28}$	0	0	0	0	$\frac{\sqrt{210i}}{84}$	0	0	0	0	0	$\frac{\sqrt{14}}{56}$
		0	0	0	$-\frac{\sqrt{35i}}{28}$	0	0	$\frac{\sqrt{210i}}{84}$	0	0	0	0	0	$-\frac{\sqrt{14}}{56}$	0
	$\mathbb{Q}_{4,2}^{(1,-1;\alpha)}(E_g, 1)$	$-\frac{\sqrt{35i}}{28}$	0	0	0	0	$-\frac{\sqrt{210i}}{84}$	0	0	0	0	0	0	0	$-\frac{\sqrt{14i}}{56}$
		0	$\frac{\sqrt{35i}}{28}$	0	0	$-\frac{\sqrt{210i}}{84}$	0	0	0	0	0	0	0	$-\frac{\sqrt{14i}}{56}$	0
		0	$-\frac{\sqrt{14}}{56}$	0	$\frac{\sqrt{14i}}{56}$	0	0	0	0	0	0	0	$\frac{\sqrt{210i}}{84}$	0	0
		$\frac{\sqrt{14}}{56}$	0	$\frac{\sqrt{14i}}{56}$	0	0	0	0	0	0	0	$\frac{\sqrt{210i}}{84}$	0	0	0
		0	$-\frac{\sqrt{14i}}{56}$	0	$-\frac{\sqrt{14}}{56}$	0	0	0	0	$-\frac{\sqrt{210i}}{84}$	0	0	0	$\frac{\sqrt{35i}}{28}$	0
		$-\frac{\sqrt{14i}}{56}$	0	$\frac{\sqrt{14}}{56}$	0	0	0	0	0	$-\frac{\sqrt{210i}}{84}$	0	0	0	0	$-\frac{\sqrt{35i}}{28}$
		0	0	0	0	0	$-\frac{\sqrt{14}}{56}$	0	$\frac{\sqrt{14i}}{56}$	0	0	$-\frac{\sqrt{35i}}{28}$	0	0	0
		0	0	0	0	$\frac{\sqrt{14}}{56}$	0	$\frac{\sqrt{14i}}{56}$	0	0	0	0	$\frac{\sqrt{35i}}{28}$	0	0
867	symmetry	$\frac{\sqrt{35}(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$													

continued ...

Table 10

No.	multipole	matrix													
		0	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{6}}{12}$
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{6}}{12}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{6}i}{12}$
		0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{6}i}{12}$	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{6}}{12}$	0	$-\frac{\sqrt{6}i}{12}$	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{6}}{12}$	0	$-\frac{\sqrt{6}i}{12}$	0	0	0	0
	$\mathbb{Q}_{4,1}^{(1,-1;a)}(E_g, 2)$	0	0	0	0	0	0	0	0	$-\frac{\sqrt{6}i}{12}$	0	$\frac{\sqrt{6}}{12}$	0	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{6}i}{12}$	0	$-\frac{\sqrt{6}}{12}$	0	0	0
		0	0	0	0	0	$\frac{\sqrt{6}}{12}$	0	$\frac{\sqrt{6}i}{12}$	0	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{6}}{12}$	0	$\frac{\sqrt{6}i}{12}$	0	0	0	0	0	0	0
		0	0	0	0	0	$\frac{\sqrt{6}i}{12}$	0	$-\frac{\sqrt{6}}{12}$	0	0	0	0	0	0
		0	0	0	0	$\frac{\sqrt{6}i}{12}$	0	$\frac{\sqrt{6}}{12}$	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{6}}{12}$	0	$-\frac{\sqrt{6}i}{12}$	0	0	0	0	0	0	0	0	0	0
		$\frac{\sqrt{6}}{12}$	0	$-\frac{\sqrt{6}i}{12}$	0	0	0	0	0	0	0	0	0	0	0
868	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$													

continued ...

Table 10

No.	multipole	matrix												
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{6}i}{12}$
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{6}i}{12}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{6}}{12}$
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{6}}{12}$	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{6}i}{12}$	0	$-\frac{\sqrt{6}}{12}$	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{6}i}{12}$	0	$\frac{\sqrt{6}}{12}$	0	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{6}}{12}$	0	$-\frac{\sqrt{6}i}{12}$	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{6}}{12}$	0	$-\frac{\sqrt{6}i}{12}$	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{6}i}{12}$	0	$\frac{\sqrt{6}}{12}$	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{6}i}{12}$	0	$-\frac{\sqrt{6}}{12}$	0	0	0	0	0	0
		0	0	0	0	0	$\frac{\sqrt{6}}{12}$	0	$\frac{\sqrt{6}i}{12}$	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{6}}{12}$	0	$\frac{\sqrt{6}i}{12}$	0	0	0	0	0	0
		0	$\frac{\sqrt{6}i}{12}$	0	$-\frac{\sqrt{6}}{12}$	0	0	0	0	0	0	0	0	0
		$\frac{\sqrt{6}i}{12}$	0	$\frac{\sqrt{6}}{12}$	0	0	0	0	0	0	0	0	0	0
869	symmetry	$-\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$												

continued ...

Table 10

No.	multipole	matrix													
		0	0	0	0	0	$\frac{\sqrt{70}}{56}$	0	$-\frac{\sqrt{70i}}{56}$	0	0	$\frac{\sqrt{7i}}{14}$	0	0	$\frac{\sqrt{42}}{168}$
		0	0	0	0	$-\frac{\sqrt{70}}{56}$	0	$-\frac{\sqrt{70i}}{56}$	0	0	0	0	$-\frac{\sqrt{7i}}{14}$	$-\frac{\sqrt{42i}}{168}$	0
		0	0	0	0	0	$\frac{\sqrt{70i}}{56}$	0	$\frac{\sqrt{70}}{56}$	$-\frac{\sqrt{7i}}{14}$	0	0	0	0	$-\frac{\sqrt{42i}}{168}$
		0	0	0	0	$\frac{\sqrt{70i}}{56}$	0	$-\frac{\sqrt{70}}{56}$	0	0	$\frac{\sqrt{7i}}{14}$	0	0	$-\frac{\sqrt{42i}}{168}$	0
		0	$-\frac{\sqrt{70}}{56}$	0	$-\frac{\sqrt{70i}}{56}$	0	0	0	0	0	$-\frac{\sqrt{42}}{168}$	0	$\frac{\sqrt{42i}}{168}$	0	0
		$\frac{\sqrt{70}}{56}$	0	$-\frac{\sqrt{70i}}{56}$	0	0	0	0	0	$\frac{\sqrt{42}}{168}$	0	$\frac{\sqrt{42i}}{168}$	0	0	0
	$\mathbb{Q}_{4,1}^{(1,-1;\alpha)}(E_g, 3)$	0	$\frac{\sqrt{70i}}{56}$	0	$-\frac{\sqrt{70}}{56}$	0	0	0	0	0	$\frac{\sqrt{42i}}{168}$	0	$\frac{\sqrt{42}}{168}$	$-\frac{\sqrt{7i}}{14}$	0
		$\frac{\sqrt{70i}}{56}$	0	$\frac{\sqrt{70}}{56}$	0	0	0	0	0	$\frac{\sqrt{42i}}{168}$	0	$-\frac{\sqrt{42}}{168}$	0	0	$\frac{\sqrt{7i}}{14}$
		0	0	$\frac{\sqrt{7i}}{14}$	0	0	$\frac{\sqrt{42}}{168}$	0	$-\frac{\sqrt{42i}}{168}$	0	0	0	0	0	$-\frac{\sqrt{70}}{56}$
		0	0	0	$-\frac{\sqrt{7i}}{14}$	$-\frac{\sqrt{42}}{168}$	0	$-\frac{\sqrt{42i}}{168}$	0	0	0	0	0	$\frac{\sqrt{70}}{56}$	0
		$-\frac{\sqrt{7i}}{14}$	0	0	0	0	$-\frac{\sqrt{42i}}{168}$	0	$-\frac{\sqrt{42}}{168}$	0	0	0	0	0	$-\frac{\sqrt{70i}}{56}$
		0	$\frac{\sqrt{7i}}{14}$	0	0	$-\frac{\sqrt{42i}}{168}$	0	$\frac{\sqrt{42}}{168}$	0	0	0	0	0	$-\frac{\sqrt{70i}}{56}$	0
		0	$-\frac{\sqrt{42}}{168}$	0	$\frac{\sqrt{42i}}{168}$	0	0	$\frac{\sqrt{7i}}{14}$	0	0	$\frac{\sqrt{70}}{56}$	0	$\frac{\sqrt{70i}}{56}$	0	0
		$\frac{\sqrt{42}}{168}$	0	$\frac{\sqrt{42i}}{168}$	0	0	0	$-\frac{\sqrt{7i}}{14}$	$-\frac{\sqrt{70}}{56}$	0	$\frac{\sqrt{70i}}{56}$	0	0	0	0
870	symmetry	$\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$													

continued ...

Table 10

No.	multipole	matrix												
		0	0	0	0	0	$\frac{\sqrt{70}i}{56}$	0	$\frac{\sqrt{70}}{56}$	$-\frac{\sqrt{7}i}{14}$	0	0	0	$-\frac{\sqrt{42}i}{168}$
		0	0	0	0	$\frac{\sqrt{70}i}{56}$	0	$-\frac{\sqrt{70}}{56}$	0	0	$\frac{\sqrt{7}i}{14}$	0	0	$-\frac{\sqrt{42}i}{168}$
		0	0	0	0	0	$-\frac{\sqrt{70}}{56}$	0	$\frac{\sqrt{70}i}{56}$	0	0	$-\frac{\sqrt{7}i}{14}$	0	$-\frac{\sqrt{42}i}{168}$
		0	0	0	0	$\frac{\sqrt{70}}{56}$	0	$\frac{\sqrt{70}i}{56}$	0	0	0	$\frac{\sqrt{7}i}{14}$	$\frac{\sqrt{42}}{168}$	0
		0	$-\frac{\sqrt{70}i}{56}$	0	$\frac{\sqrt{70}}{56}$	0	0	0	0	0	$\frac{\sqrt{42}i}{168}$	0	$\frac{\sqrt{42}}{168}$	$-\frac{\sqrt{7}i}{14}$
		$-\frac{\sqrt{70}i}{56}$	0	$-\frac{\sqrt{70}}{56}$	0	0	0	0	0	$\frac{\sqrt{42}i}{168}$	0	$-\frac{\sqrt{42}}{168}$	0	$\frac{\sqrt{7}i}{14}$
	$\mathbb{Q}_{4,2}^{(1,-1;\alpha)}(E_g, 3)$	0	$-\frac{\sqrt{70}}{56}$	0	$-\frac{\sqrt{70}i}{56}$	0	0	0	0	0	$\frac{\sqrt{42}}{168}$	0	$-\frac{\sqrt{42}i}{168}$	0
		$\frac{\sqrt{70}}{56}$	0	$-\frac{\sqrt{70}i}{56}$	0	0	0	0	0	$-\frac{\sqrt{42}}{168}$	0	$-\frac{\sqrt{42}i}{168}$	0	0
		$\frac{\sqrt{7}i}{14}$	0	0	0	0	$-\frac{\sqrt{42}i}{168}$	0	$-\frac{\sqrt{42}}{168}$	0	0	0	0	$-\frac{\sqrt{70}i}{56}$
		0	$-\frac{\sqrt{7}i}{14}$	0	0	$-\frac{\sqrt{42}i}{168}$	0	$\frac{\sqrt{42}}{168}$	0	0	0	0	0	$-\frac{\sqrt{70}i}{56}$
		0	0	$\frac{\sqrt{7}i}{14}$	0	0	$-\frac{\sqrt{42}}{168}$	0	$\frac{\sqrt{42}i}{168}$	0	0	0	0	$\frac{\sqrt{70}}{56}$
		0	0	0	$-\frac{\sqrt{7}i}{14}$	$\frac{\sqrt{42}}{168}$	0	$\frac{\sqrt{42}i}{168}$	0	0	0	0	0	$-\frac{\sqrt{70}}{56}$
		0	$\frac{\sqrt{42}i}{168}$	0	$\frac{\sqrt{42}}{168}$	$\frac{\sqrt{7}i}{14}$	0	0	0	0	$\frac{\sqrt{70}i}{56}$	0	$-\frac{\sqrt{70}}{56}$	0
		$\frac{\sqrt{42}i}{168}$	0	$-\frac{\sqrt{42}}{168}$	0	0	$-\frac{\sqrt{7}i}{14}$	0	0	$\frac{\sqrt{70}i}{56}$	0	$\frac{\sqrt{70}}{56}$	0	0
871	symmetry	$-\frac{5x^6}{16} - \frac{15x^4y^2}{16} + \frac{45x^4z^2}{8} - \frac{15x^2y^4}{16} + \frac{45x^2y^2z^2}{4} - \frac{15x^2z^4}{2} - \frac{5y^6}{16} + \frac{45y^4z^2}{8} - \frac{15y^2z^4}{2} + z^6$												

continued ...

Table 10

No.	multipole	matrix												
		0	0	$-\frac{\sqrt{77}i}{154}$	0	0	$-\frac{5\sqrt{462}}{1848}$	0	$-\frac{5\sqrt{462}i}{1848}$	0	0	0	0	0
		0	0	0	$\frac{\sqrt{77}i}{154}$	$\frac{5\sqrt{462}}{1848}$	0	$-\frac{5\sqrt{462}i}{1848}$	0	0	0	0	0	0
		$\frac{\sqrt{77}i}{154}$	0	0	0	0	$\frac{5\sqrt{462}i}{1848}$	0	$-\frac{5\sqrt{462}}{1848}$	0	0	0	0	0
		0	$-\frac{\sqrt{77}i}{154}$	0	0	$\frac{5\sqrt{462}i}{1848}$	0	$\frac{5\sqrt{462}}{1848}$	0	0	0	0	0	0
		0	$\frac{5\sqrt{462}}{1848}$	0	$-\frac{5\sqrt{462}i}{1848}$	0	0	$\frac{2\sqrt{77}i}{77}$	0	0	$\frac{3\sqrt{770}}{616}$	0	$\frac{3\sqrt{770}i}{616}$	0
		$-\frac{5\sqrt{462}}{1848}$	0	$-\frac{5\sqrt{462}i}{1848}$	0	0	0	$-\frac{2\sqrt{77}i}{77}$	$-\frac{3\sqrt{770}}{616}$	0	$\frac{3\sqrt{770}i}{616}$	0	0	0
	$\mathbb{Q}_6^{(1,-1;a)}(A_{1g}, 1)$	0	$\frac{5\sqrt{462}i}{1848}$	0	$\frac{5\sqrt{462}}{1848}$	$-\frac{2\sqrt{77}i}{77}$	0	0	0	$-\frac{3\sqrt{770}i}{616}$	0	$\frac{3\sqrt{770}}{616}$	0	0
		$\frac{5\sqrt{462}i}{1848}$	0	$-\frac{5\sqrt{462}}{1848}$	0	0	$\frac{2\sqrt{77}i}{77}$	0	0	$-\frac{3\sqrt{770}i}{616}$	0	$-\frac{3\sqrt{770}}{616}$	0	0
		0	0	0	0	0	$-\frac{3\sqrt{770}}{616}$	0	$\frac{3\sqrt{770}i}{616}$	0	0	$-\frac{5\sqrt{77}i}{154}$	0	$-\frac{5\sqrt{462}}{924}$
		0	0	0	0	$\frac{3\sqrt{770}}{616}$	0	$\frac{3\sqrt{770}i}{616}$	0	0	0	$\frac{5\sqrt{77}i}{154}$	$\frac{5\sqrt{462}}{924}$	0
		0	0	0	0	0	$-\frac{3\sqrt{770}i}{616}$	0	$-\frac{3\sqrt{770}}{616}$	$\frac{5\sqrt{77}i}{154}$	0	0	0	$\frac{5\sqrt{462}i}{924}$
		0	0	0	0	$-\frac{3\sqrt{770}i}{616}$	0	$\frac{3\sqrt{770}}{616}$	0	0	$-\frac{5\sqrt{77}i}{154}$	0	$\frac{5\sqrt{462}i}{924}$	0
		0	0	0	0	0	0	0	0	$\frac{5\sqrt{462}}{924}$	0	$-\frac{5\sqrt{462}i}{924}$	0	0
		0	0	0	0	0	0	0	0	$-\frac{5\sqrt{462}}{924}$	0	$-\frac{5\sqrt{462}i}{924}$	0	0
872	symmetry	$\frac{\sqrt{462}(x-y)(x+y)(x^2-4xy+y^2)(x^2+4xy+y^2)}{32}$												

continued ...

Table 10

No.	multipole	matrix
		$ \begin{array}{cccccccccccccccc} 0 & 0 & 0 & 0 & 0 & -\frac{1}{4} & 0 & -\frac{i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{1}{4} & 0 & -\frac{i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{i}{4} & 0 & \frac{1}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{i}{4} & 0 & -\frac{1}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{1}{4} & 0 & \frac{i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{1}{4} & 0 & \frac{i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{i}{4} & 0 & -\frac{1}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{i}{4} & 0 & \frac{1}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{array} $
873	symmetry	$-\frac{\sqrt{210}yz(3x^2-y^2)(3x^2+3y^2-8z^2)}{16}$

continued ...

Table 10

No.	multipole	matrix														
$\mathbb{Q}_6^{(1,-1;a)}(A_{1g}, 3)$		0	0	0	0	0	0	0	0	0	$-\frac{3\sqrt{22}i}{88}$	0	$-\frac{3\sqrt{22}}{88}$	$\frac{\sqrt{33}i}{22}$	0	
		0	0	0	0	0	0	0	0	$-\frac{3\sqrt{22}i}{88}$	0	$\frac{3\sqrt{22}}{88}$	0	0	$-\frac{\sqrt{33}i}{22}$	
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{22}}{88}$	0	$-\frac{\sqrt{22}i}{88}$	0	0	
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{22}}{88}$	0	$-\frac{\sqrt{22}i}{88}$	0	0	0	
		0	0	0	0	0	0	0	0	$\frac{\sqrt{33}i}{44}$	0	0	0	0	$\frac{\sqrt{22}i}{22}$	
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{33}i}{44}$	0	0	$\frac{\sqrt{22}i}{22}$	0	
		0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{33}i}{44}$	0	0	$-\frac{\sqrt{22}}{22}$	
		0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{33}i}{44}$	$\frac{\sqrt{22}}{22}$	0	
		0	$\frac{3\sqrt{22}i}{88}$	0	$-\frac{\sqrt{22}}{88}$	$-\frac{\sqrt{33}i}{44}$	0	0	0	0	0	0	0	0	0	0
		$\frac{3\sqrt{22}i}{88}$	0	$\frac{\sqrt{22}}{88}$	0	0	$\frac{\sqrt{33}i}{44}$	0	0	0	0	0	0	0	0	0
		0	$\frac{3\sqrt{22}}{88}$	0	$\frac{\sqrt{22}i}{88}$	0	0	$\frac{\sqrt{33}i}{44}$	0	0	0	0	0	0	0	0
		$-\frac{3\sqrt{22}}{88}$	0	$\frac{\sqrt{22}i}{88}$	0	0	0	0	$-\frac{\sqrt{33}i}{44}$	0	0	0	0	0	0	0
		$-\frac{\sqrt{33}i}{22}$	0	0	0	0	$-\frac{\sqrt{22}i}{22}$	0	$\frac{\sqrt{22}}{22}$	0	0	0	0	0	0	0
		0	$\frac{\sqrt{33}i}{22}$	0	0	$-\frac{\sqrt{22}i}{22}$	0	$-\frac{\sqrt{22}}{22}$	0	0	0	0	0	0	0	0
	874	symmetry	$\frac{\sqrt{462}xy(x^2-3y^2)(3x^2-y^2)}{16}$													

continued ...

Table 10

No.	multipole	matrix
	$\mathbb{Q}_6^{(1,-1;a)}(A_{2g}, 1)$	$ \begin{array}{cccccccccccccccc} 0 & 0 & 0 & 0 & 0 & \frac{i}{4} & 0 & -\frac{1}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{i}{4} & 0 & \frac{1}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{1}{4} & 0 & -\frac{i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{1}{4} & 0 & -\frac{i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{i}{4} & 0 & \frac{1}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{i}{4} & 0 & -\frac{1}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{1}{4} & 0 & \frac{i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{1}{4} & 0 & \frac{i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{array} $
875	symmetry	$-\frac{\sqrt{210}xz(x^2-3y^2)(3x^2+3y^2-8z^2)}{16}$

continued ...

Table 10

No.	multipole	matrix													
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{22}}{88}$	0	$-\frac{\sqrt{22}i}{88}$	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{22}}{88}$	0	$-\frac{\sqrt{22}i}{88}$	0	0	0
		0	0	0	0	0	0	0	0	0	$\frac{3\sqrt{22}i}{88}$	0	$\frac{3\sqrt{22}}{88}$	$-\frac{\sqrt{33}i}{22}$	0
		0	0	0	0	0	0	0	0	$\frac{3\sqrt{22}i}{88}$	0	$-\frac{3\sqrt{22}}{88}$	0	0	$\frac{\sqrt{33}i}{22}$
		0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{33}i}{44}$	0	0	$-\frac{\sqrt{22}}{22}$
		0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{33}i}{44}$	$\frac{\sqrt{22}}{22}$	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{33}i}{44}$	0	0	0	0	$-\frac{\sqrt{22}i}{22}$
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{33}i}{44}$	0	0	$-\frac{\sqrt{22}i}{22}$	0
		0	$-\frac{\sqrt{22}}{88}$	0	$-\frac{3\sqrt{22}i}{88}$	0	0	$\frac{\sqrt{33}i}{44}$	0	0	0	0	0	0	0
		$\frac{\sqrt{22}}{88}$	0	$-\frac{3\sqrt{22}i}{88}$	0	0	0	0	$-\frac{\sqrt{33}i}{44}$	0	0	0	0	0	0
		0	$\frac{\sqrt{22}i}{88}$	0	$-\frac{3\sqrt{22}}{88}$	$\frac{\sqrt{33}i}{44}$	0	0	0	0	0	0	0	0	0
		$\frac{\sqrt{22}i}{88}$	0	$\frac{3\sqrt{22}}{88}$	0	0	$-\frac{\sqrt{33}i}{44}$	0	0	0	0	0	0	0	0
		0	0	$\frac{\sqrt{33}i}{22}$	0	0	$\frac{\sqrt{22}}{22}$	0	$\frac{\sqrt{22}i}{22}$	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{33}i}{22}$	$-\frac{\sqrt{22}}{22}$	0	$\frac{\sqrt{22}i}{22}$	0	0	0	0	0	0	0
876	symmetry	$\frac{3\sqrt{154}yz(5x^4-10x^2y^2+y^4)}{16}$													

continued ...

Table 10

No.	multipole	matrix													
		0	0	0	0	$\frac{\sqrt{3}i}{12}$	0	0	0	0	$\frac{\sqrt{30}i}{24}$	0	$-\frac{\sqrt{30}}{24}$	0	0
		0	0	0	0	0	$-\frac{\sqrt{3}i}{12}$	0	0	$\frac{\sqrt{30}i}{24}$	0	$\frac{\sqrt{30}}{24}$	0	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{3}i}{12}$	0	0	$-\frac{\sqrt{30}i}{24}$	0	$-\frac{\sqrt{30}}{24}$	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{3}i}{12}$	$\frac{\sqrt{30}}{24}$	0	$-\frac{\sqrt{30}i}{24}$	0	0	0
		$-\frac{\sqrt{3}i}{12}$	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{3}i}{12}$	0	0	0	0	0	0	0	0	0	0	0	0
	$\mathbb{Q}_{6,1}^{(1,-1;a)}(E_g, 1)$	0	0	$\frac{\sqrt{3}i}{12}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{3}i}{12}$	0	0	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{30}i}{24}$	0	$\frac{\sqrt{30}}{24}$	0	0	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{30}i}{24}$	0	$-\frac{\sqrt{30}}{24}$	0	0	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{30}}{24}$	0	$\frac{\sqrt{30}i}{24}$	0	0	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{30}}{24}$	0	$\frac{\sqrt{30}i}{24}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
877	symmetry	$\frac{3\sqrt{154}xz(x^4 - 10x^2y^2 + 5y^4)}{16}$													

continued ...

Table 10

No.	multipole	matrix													
		0	0	0	0	0	0	$-\frac{\sqrt{3}i}{12}$	0	0	$-\frac{\sqrt{30}}{24}$	0	$-\frac{\sqrt{30}i}{24}$	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{3}i}{12}$	$\frac{\sqrt{30}}{24}$	0	$-\frac{\sqrt{30}i}{24}$	0	0	0
		0	0	0	0	$-\frac{\sqrt{3}i}{12}$	0	0	0	0	$-\frac{\sqrt{30}i}{24}$	0	$\frac{\sqrt{30}}{24}$	0	0
		0	0	0	0	0	$\frac{\sqrt{3}i}{12}$	0	0	$-\frac{\sqrt{30}i}{24}$	0	$-\frac{\sqrt{30}}{24}$	0	0	0
		0	0	$\frac{\sqrt{3}i}{12}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{3}i}{12}$	0	0	0	0	0	0	0	0	0	0
	$\mathbb{Q}_{6,2}^{(1,-1;a)}(E_g, 1)$	$\frac{\sqrt{3}i}{12}$	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{3}i}{12}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{30}}{24}$	0	$\frac{\sqrt{30}i}{24}$	0	0	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{30}}{24}$	0	$\frac{\sqrt{30}i}{24}$	0	0	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{30}i}{24}$	0	$-\frac{\sqrt{30}}{24}$	0	0	0	0	0	0	0	0	0	0
		$\frac{\sqrt{30}i}{24}$	0	$\frac{\sqrt{30}}{24}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
878	symmetry	$\frac{\sqrt{21}yz(5x^4+10x^2y^2-20x^2z^2+5y^4-20y^2z^2+8z^4)}{8}$													

continued ...

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{6,1}^{(1,-1;\alpha)}(E_g, 2)$		0	0	0	$-\frac{\sqrt{33}}{132}$	$\frac{5\sqrt{22}i}{264}$	0	0	0	0	$\frac{\sqrt{55}i}{132}$	0	$-\frac{\sqrt{55}}{132}$	0	0
		0	0	$\frac{\sqrt{33}}{132}$	0	0	$-\frac{5\sqrt{22}i}{264}$	0	0	$\frac{\sqrt{55}i}{132}$	0	$\frac{\sqrt{55}}{132}$	0	0	0
		0	$\frac{\sqrt{33}}{132}$	0	0	0	0	$\frac{5\sqrt{22}i}{264}$	0	0	$\frac{\sqrt{55}}{132}$	0	$\frac{\sqrt{55}i}{132}$	0	0
		$-\frac{\sqrt{33}}{132}$	0	0	0	0	0	0	$-\frac{5\sqrt{22}i}{264}$	$-\frac{\sqrt{55}}{132}$	0	$\frac{\sqrt{55}i}{132}$	0	0	0
		$-\frac{5\sqrt{22}i}{264}$	0	0	0	0	0	0	0	$\frac{\sqrt{33}}{33}$	$-\frac{\sqrt{330}i}{88}$	0	0	0	$-\frac{\sqrt{55}i}{66}$
		0	$\frac{5\sqrt{22}i}{264}$	0	0	0	0	$-\frac{\sqrt{33}}{33}$	0	0	$\frac{\sqrt{330}i}{88}$	0	0	$-\frac{\sqrt{55}i}{66}$	0
		0	0	$-\frac{5\sqrt{22}i}{264}$	0	0	$-\frac{\sqrt{33}}{33}$	0	0	0	0	$-\frac{\sqrt{330}i}{88}$	0	0	$-\frac{\sqrt{55}}{66}$
		0	0	0	$\frac{5\sqrt{22}i}{264}$	$\frac{\sqrt{33}}{33}$	0	0	0	0	0	$\frac{\sqrt{330}i}{88}$	$\frac{\sqrt{55}}{66}$	0	0
		0	$-\frac{\sqrt{55}i}{132}$	0	$-\frac{\sqrt{55}}{132}$	$\frac{\sqrt{330}i}{88}$	0	0	0	0	0	0	$-\frac{5\sqrt{33}}{132}$	$\frac{5\sqrt{22}i}{132}$	0
		$-\frac{\sqrt{55}i}{132}$	0	$\frac{\sqrt{55}}{132}$	0	0	$-\frac{\sqrt{330}i}{88}$	0	0	0	0	$\frac{5\sqrt{33}}{132}$	0	0	$-\frac{5\sqrt{22}i}{132}$
		0	$\frac{\sqrt{55}}{132}$	0	$-\frac{\sqrt{55}i}{132}$	0	0	0	$\frac{\sqrt{330}i}{88}$	0	0	$\frac{5\sqrt{33}}{132}$	0	0	0
		$-\frac{\sqrt{55}}{132}$	0	$-\frac{\sqrt{55}i}{132}$	0	0	0	0	$-\frac{\sqrt{330}i}{88}$	$-\frac{5\sqrt{33}}{132}$	0	0	0	0	0
		0	0	0	0	0	$\frac{\sqrt{55}i}{66}$	0	$\frac{\sqrt{55}}{66}$	$-\frac{5\sqrt{22}i}{132}$	0	0	0	0	0
		0	0	0	0	$\frac{\sqrt{55}i}{66}$	0	$-\frac{\sqrt{55}}{66}$	0	0	$\frac{5\sqrt{22}i}{132}$	0	0	0	0
	879	symmetry	$-\frac{\sqrt{21}xz(5x^4+10x^2y^2-20x^2z^2+5y^4-20y^2z^2+8z^4)}{8}$												

continued ...

Table 10

No.	multipole	matrix													
		0	0	0	$\frac{\sqrt{33i}}{132}$	0	0	$-\frac{5\sqrt{22i}}{264}$	0	0	$-\frac{\sqrt{55}}{132}$	0	$-\frac{\sqrt{55i}}{132}$	0	0
		0	0	$\frac{\sqrt{33i}}{132}$	0	0	0	0	$\frac{5\sqrt{22i}}{264}$	$\frac{\sqrt{55}}{132}$	0	$-\frac{\sqrt{55i}}{132}$	0	0	0
		0	$-\frac{\sqrt{33i}}{132}$	0	0	$\frac{5\sqrt{22i}}{264}$	0	0	0	0	$\frac{\sqrt{55i}}{132}$	0	$-\frac{\sqrt{55}}{132}$	0	0
		$-\frac{\sqrt{33i}}{132}$	0	0	0	0	$-\frac{5\sqrt{22i}}{264}$	0	0	$\frac{\sqrt{55i}}{132}$	0	$\frac{\sqrt{55}}{132}$	0	0	0
		0	0	$-\frac{5\sqrt{22i}}{264}$	0	0	0	0	$-\frac{\sqrt{33i}}{33}$	0	0	$\frac{\sqrt{330i}}{88}$	0	0	$\frac{\sqrt{55}}{66}$
		0	0	0	$\frac{5\sqrt{22i}}{264}$	0	0	$-\frac{\sqrt{33i}}{33}$	0	0	0	0	$-\frac{\sqrt{330i}}{88}$	$-\frac{\sqrt{55}}{66}$	0
		$\frac{5\sqrt{22i}}{264}$	0	0	0	0	$\frac{\sqrt{33i}}{33}$	0	0	$-\frac{\sqrt{330i}}{88}$	0	0	0	0	$-\frac{\sqrt{55i}}{66}$
		0	$-\frac{5\sqrt{22i}}{264}$	0	0	$\frac{\sqrt{33i}}{33}$	0	0	0	0	$\frac{\sqrt{330i}}{88}$	0	0	$-\frac{\sqrt{55i}}{66}$	0
		0	$\frac{\sqrt{55}}{132}$	0	$-\frac{\sqrt{55i}}{132}$	0	0	$\frac{\sqrt{330i}}{88}$	0	0	0	0	$\frac{5\sqrt{33i}}{132}$	0	0
		$-\frac{\sqrt{55}}{132}$	0	$-\frac{\sqrt{55i}}{132}$	0	0	0	$-\frac{\sqrt{330i}}{88}$	0	0	0	$\frac{5\sqrt{33i}}{132}$	0	0	0
		0	$\frac{\sqrt{55i}}{132}$	0	$\frac{\sqrt{55}}{132}$	$-\frac{\sqrt{330i}}{88}$	0	0	0	0	$-\frac{5\sqrt{33i}}{132}$	0	0	$\frac{5\sqrt{22i}}{132}$	0
		$\frac{\sqrt{55i}}{132}$	0	$-\frac{\sqrt{55}}{132}$	0	0	$\frac{\sqrt{330i}}{88}$	0	0	$-\frac{5\sqrt{33i}}{132}$	0	0	0	0	$-\frac{5\sqrt{22i}}{132}$
		0	0	0	0	0	$-\frac{\sqrt{55}}{66}$	0	$\frac{\sqrt{55i}}{66}$	0	0	$-\frac{5\sqrt{22i}}{132}$	0	0	0
		0	0	0	0	$\frac{\sqrt{55}}{66}$	0	$\frac{\sqrt{55i}}{66}$	0	0	0	0	$\frac{5\sqrt{22i}}{132}$	0	0
880	symmetry	$-\frac{3\sqrt{7}(x^2+y^2-10z^2)(x^2-2xy-y^2)(x^2+2xy-y^2)}{16}$													

continued ...

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{6,1}^{(1,-1;a)}(E_g, 3)$		0	0	0	0	0	$-\frac{\sqrt{66}}{264}$	0	$\frac{\sqrt{66}i}{264}$	0	0	$-\frac{\sqrt{165}i}{66}$	0	0	$-\frac{\sqrt{110}}{44}$
		0	0	0	0	$\frac{\sqrt{66}}{264}$	0	$\frac{\sqrt{66}i}{264}$	0	0	0	0	$\frac{\sqrt{165}i}{66}$	$\frac{\sqrt{110}}{44}$	0
		0	0	0	0	0	$\frac{\sqrt{66}i}{264}$	0	$\frac{\sqrt{66}}{264}$	$-\frac{\sqrt{165}i}{66}$	0	0	0	0	$-\frac{\sqrt{110}i}{44}$
		0	0	0	0	$\frac{\sqrt{66}i}{264}$	0	$-\frac{\sqrt{66}}{264}$	0	0	$\frac{\sqrt{165}i}{66}$	0	0	$-\frac{\sqrt{110}i}{44}$	0
		0	$\frac{\sqrt{66}}{264}$	0	$-\frac{\sqrt{66}i}{264}$	0	0	0	0	0	$-\frac{\sqrt{110}}{88}$	0	$-\frac{\sqrt{110}i}{88}$	0	0
		$-\frac{\sqrt{66}}{264}$	0	$-\frac{\sqrt{66}i}{264}$	0	0	0	0	0	$\frac{\sqrt{110}}{88}$	0	$-\frac{\sqrt{110}i}{88}$	0	0	0
		0	$-\frac{\sqrt{66}i}{264}$	0	$-\frac{\sqrt{66}}{264}$	0	0	0	0	0	$-\frac{\sqrt{110}i}{88}$	0	$\frac{\sqrt{110}}{88}$	0	0
		$-\frac{\sqrt{66}i}{264}$	0	$\frac{\sqrt{66}}{264}$	0	0	0	0	0	$-\frac{\sqrt{110}i}{88}$	0	$-\frac{\sqrt{110}}{88}$	0	0	0
		0	0	$\frac{\sqrt{165}i}{66}$	0	0	$\frac{\sqrt{110}}{88}$	0	$\frac{\sqrt{110}i}{88}$	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{165}i}{66}$	$-\frac{\sqrt{110}}{88}$	0	$\frac{\sqrt{110}i}{88}$	0	0	0	0	0	0	0
		$\frac{\sqrt{165}i}{66}$	0	0	0	0	$\frac{\sqrt{110}i}{88}$	0	$-\frac{\sqrt{110}}{88}$	0	0	0	0	0	0
		0	$-\frac{\sqrt{165}i}{66}$	0	0	$\frac{\sqrt{110}i}{88}$	0	$\frac{\sqrt{110}}{88}$	0	0	0	0	0	0	0
		0	$\frac{\sqrt{110}}{44}$	0	$\frac{\sqrt{110}i}{44}$	0	0	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{110}}{44}$	0	$\frac{\sqrt{110}i}{44}$	0	0	0	0	0	0	0	0	0	0	0
881	symmetry	$-\frac{3\sqrt{7}xy(x-y)(x+y)(x^2+y^2-10z^2)}{4}$													

continued ...

Table 10

No.	multipole	matrix												
		0	0	0	0	0	$-\frac{\sqrt{66i}}{264}$	0	$-\frac{\sqrt{66}}{264}$	$\frac{\sqrt{165i}}{66}$	0	0	0	$\frac{\sqrt{110i}}{44}$
		0	0	0	0	$-\frac{\sqrt{66i}}{264}$	0	$\frac{\sqrt{66}}{264}$	0	0	$-\frac{\sqrt{165i}}{66}$	0	0	$\frac{\sqrt{110i}}{44}$
		0	0	0	0	0	$-\frac{\sqrt{66}}{264}$	0	$\frac{\sqrt{66i}}{264}$	0	0	$-\frac{\sqrt{165i}}{66}$	0	$-\frac{\sqrt{110}}{44}$
		0	0	0	0	$\frac{\sqrt{66}}{264}$	0	$\frac{\sqrt{66i}}{264}$	0	0	0	$\frac{\sqrt{165i}}{66}$	$\frac{\sqrt{110}}{44}$	0
		0	$\frac{\sqrt{66i}}{264}$	0	$\frac{\sqrt{66}}{264}$	0	0	0	0	0	$\frac{\sqrt{110i}}{88}$	0	$-\frac{\sqrt{110}}{88}$	0
		$\frac{\sqrt{66i}}{264}$	0	$-\frac{\sqrt{66}}{264}$	0	0	0	0	0	$\frac{\sqrt{110i}}{88}$	0	$\frac{\sqrt{110}}{88}$	0	0
	$\mathbb{Q}_{6,2}^{(1,-1;a)}(E_g, 3)$	0	$\frac{\sqrt{66}}{264}$	0	$-\frac{\sqrt{66i}}{264}$	0	0	0	0	0	$-\frac{\sqrt{110}}{88}$	0	$-\frac{\sqrt{110i}}{88}$	0
		$-\frac{\sqrt{66}}{264}$	0	$-\frac{\sqrt{66i}}{264}$	0	0	0	0	0	$\frac{\sqrt{110}}{88}$	0	$-\frac{\sqrt{110i}}{88}$	0	0
		$-\frac{\sqrt{165i}}{66}$	0	0	0	0	$-\frac{\sqrt{110i}}{88}$	0	$\frac{\sqrt{110}}{88}$	0	0	0	0	0
		0	$\frac{\sqrt{165i}}{66}$	0	0	$-\frac{\sqrt{110i}}{88}$	0	$-\frac{\sqrt{110}}{88}$	0	0	0	0	0	0
		0	0	$\frac{\sqrt{165i}}{66}$	0	0	$\frac{\sqrt{110}}{88}$	0	$\frac{\sqrt{110i}}{88}$	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{165i}}{66}$	$-\frac{\sqrt{110}}{88}$	0	$\frac{\sqrt{110i}}{88}$	0	0	0	0	0	0
		0	$-\frac{\sqrt{110i}}{44}$	0	$\frac{\sqrt{110}}{44}$	0	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{110i}}{44}$	0	$-\frac{\sqrt{110}}{44}$	0	0	0	0	0	0	0	0	0	0
882	symmetry	$\frac{\sqrt{210}(x-y)(x+y)(x^4+2x^2y^2-16x^2z^2+y^4-16y^2z^2+16z^4)}{32}$												

continued ...

Table 10

No.	multipole	matrix														
$\mathbb{Q}_{6,1}^{(1,-1;a)}(E_g, 4)$		0	0	0	0	0	$-\frac{\sqrt{55}}{132}$	0	$\frac{\sqrt{55}i}{132}$	0	0	$-\frac{\sqrt{22}i}{33}$	0	0	$-\frac{\sqrt{33}}{66}$	
		0	0	0	0	$\frac{\sqrt{55}}{132}$	0	$\frac{\sqrt{55}i}{132}$	0	0	0	0	$\frac{\sqrt{22}i}{33}$	$\frac{\sqrt{33}}{66}$	0	
		0	0	0	0	0	$-\frac{\sqrt{55}i}{132}$	0	$-\frac{\sqrt{55}}{132}$	$\frac{\sqrt{22}i}{33}$	0	0	0	0	$\frac{\sqrt{33}i}{66}$	
		0	0	0	0	$-\frac{\sqrt{55}i}{132}$	0	$\frac{\sqrt{55}}{132}$	0	0	$-\frac{\sqrt{22}i}{33}$	0	0	$\frac{\sqrt{33}i}{66}$	0	
		0	$\frac{\sqrt{55}}{132}$	0	$\frac{\sqrt{55}i}{132}$	0	0	0	0	0	0	$\frac{\sqrt{33}}{66}$	0	$-\frac{\sqrt{33}i}{66}$	0	0
		$-\frac{\sqrt{55}}{132}$	0	$\frac{\sqrt{55}i}{132}$	0	0	0	0	0	0	$-\frac{\sqrt{33}}{66}$	0	$-\frac{\sqrt{33}i}{66}$	0	0	0
		0	$-\frac{\sqrt{55}i}{132}$	0	$\frac{\sqrt{55}}{132}$	0	0	0	0	0	0	$\frac{\sqrt{33}i}{33}$	0	$\frac{\sqrt{33}}{33}$	$-\frac{2\sqrt{22}i}{33}$	0
		$-\frac{\sqrt{55}i}{132}$	0	$-\frac{\sqrt{55}}{132}$	0	0	0	0	0	0	$\frac{\sqrt{33}i}{33}$	0	$-\frac{\sqrt{33}}{33}$	0	0	$\frac{2\sqrt{22}i}{33}$
		0	0	$-\frac{\sqrt{22}i}{33}$	0	0	$-\frac{\sqrt{33}}{66}$	0	$-\frac{\sqrt{33}i}{33}$	0	0	0	0	0	0	$-\frac{\sqrt{55}}{66}$
		0	0	0	$\frac{\sqrt{22}i}{33}$	$\frac{\sqrt{33}}{66}$	0	$-\frac{\sqrt{33}i}{33}$	0	0	0	0	0	0	$\frac{\sqrt{55}}{66}$	0
		$\frac{\sqrt{22}i}{33}$	0	0	0	0	$\frac{\sqrt{33}i}{66}$	0	$-\frac{\sqrt{33}}{33}$	0	0	0	0	0	0	$-\frac{\sqrt{55}i}{66}$
		0	$-\frac{\sqrt{22}i}{33}$	0	0	$\frac{\sqrt{33}i}{66}$	0	$\frac{\sqrt{33}}{33}$	0	0	0	0	0	0	$-\frac{\sqrt{55}i}{66}$	0
		0	$\frac{\sqrt{33}}{66}$	0	$-\frac{\sqrt{33}i}{66}$	0	0	$\frac{2\sqrt{22}i}{33}$	0	0	$\frac{\sqrt{55}}{66}$	0	$\frac{\sqrt{55}i}{66}$	0	0	0
		$-\frac{\sqrt{33}}{66}$	0	$-\frac{\sqrt{33}i}{66}$	0	0	0	0	$-\frac{2\sqrt{22}i}{33}$	$-\frac{\sqrt{55}}{66}$	0	$\frac{\sqrt{55}i}{66}$	0	0	0	0
	883	symmetry	$-\frac{\sqrt{210}xy(x^4+2x^2y^2-16x^2z^2+y^4-16y^2z^2+16z^4)}{16}$													

continued ...

Table 10

No.	multipole	matrix														
$\mathbb{Q}_{6,2}^{(1,-1;a)}(E_g, 4)$		0	0	0	0	0	$-\frac{\sqrt{55}i}{132}$	0	$-\frac{\sqrt{55}}{132}$	$\frac{\sqrt{22}i}{33}$	0	0	0	0	$\frac{\sqrt{33}i}{66}$	
		0	0	0	0	$-\frac{\sqrt{55}i}{132}$	0	$\frac{\sqrt{55}}{132}$	0	0	$-\frac{\sqrt{22}i}{33}$	0	0	$\frac{\sqrt{33}i}{66}$	0	
		0	0	0	0	0	$\frac{\sqrt{55}}{132}$	0	$-\frac{\sqrt{55}i}{132}$	0	0	$\frac{\sqrt{22}i}{33}$	0	0	$\frac{\sqrt{33}}{66}$	
		0	0	0	0	$-\frac{\sqrt{55}}{132}$	0	$-\frac{\sqrt{55}i}{132}$	0	0	0	0	$-\frac{\sqrt{22}i}{33}$	$-\frac{\sqrt{33}}{66}$	0	
		0	$\frac{\sqrt{55}i}{132}$	0	$-\frac{\sqrt{55}}{132}$	0	0	0	0	0	0	$\frac{\sqrt{33}i}{33}$	0	$\frac{\sqrt{33}}{33}$	$-\frac{2\sqrt{22}i}{33}$	0
		$\frac{\sqrt{55}i}{132}$	0	$\frac{\sqrt{55}}{132}$	0	0	0	0	0	$\frac{\sqrt{33}i}{33}$	0	$-\frac{\sqrt{33}}{33}$	0	0	$\frac{2\sqrt{22}i}{33}$	0
		0	$\frac{\sqrt{55}}{132}$	0	$\frac{\sqrt{55}i}{132}$	0	0	0	0	0	$-\frac{\sqrt{33}}{66}$	0	$\frac{\sqrt{33}i}{66}$	0	0	0
		$-\frac{\sqrt{55}}{132}$	0	$\frac{\sqrt{55}i}{132}$	0	0	0	0	0	$\frac{\sqrt{33}}{66}$	0	$\frac{\sqrt{33}i}{66}$	0	0	0	0
		$-\frac{\sqrt{22}i}{33}$	0	0	0	0	$-\frac{\sqrt{33}i}{33}$	0	$\frac{\sqrt{33}}{66}$	0	0	0	0	0	0	$-\frac{\sqrt{55}i}{66}$
		0	$\frac{\sqrt{22}i}{33}$	0	0	$-\frac{\sqrt{33}i}{33}$	0	$-\frac{\sqrt{33}}{66}$	0	0	0	0	0	0	$-\frac{\sqrt{55}i}{66}$	0
		0	0	$-\frac{\sqrt{22}i}{33}$	0	0	$-\frac{\sqrt{33}}{33}$	0	$-\frac{\sqrt{33}i}{66}$	0	0	0	0	0	0	$\frac{\sqrt{55}}{66}$
		0	0	0	$\frac{\sqrt{22}i}{33}$	$\frac{\sqrt{33}}{33}$	0	$-\frac{\sqrt{33}i}{66}$	0	0	0	0	0	0	$-\frac{\sqrt{55}}{66}$	0
		0	$-\frac{\sqrt{33}i}{66}$	0	$-\frac{\sqrt{33}}{66}$	$\frac{2\sqrt{22}i}{33}$	0	0	0	0	$\frac{\sqrt{55}i}{66}$	0	$-\frac{\sqrt{55}}{66}$	0	0	0
		$-\frac{\sqrt{33}i}{66}$	0	$\frac{\sqrt{33}}{66}$	0	0	$-\frac{2\sqrt{22}i}{33}$	0	0	$\frac{\sqrt{55}i}{66}$	0	$\frac{\sqrt{55}}{66}$	0	0	0	0
884	symmetry	1														

continued ...

Table 10

No.	multipole	matrix													
$\mathbb{Q}_0^{(1,1;a)}(A_{1g})$		0	0	$-\frac{\sqrt{42}i}{28}$	0	0	$\frac{\sqrt{7}}{28}$	0	$\frac{\sqrt{7}i}{28}$	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{42}i}{28}$	$-\frac{\sqrt{7}}{28}$	0	$\frac{\sqrt{7}i}{28}$	0	0	0	0	0	0	0
		$\frac{\sqrt{42}i}{28}$	0	0	0	0	$-\frac{\sqrt{7}i}{28}$	0	$\frac{\sqrt{7}}{28}$	0	0	0	0	0	0
		0	$-\frac{\sqrt{42}i}{28}$	0	0	$-\frac{\sqrt{7}i}{28}$	0	$-\frac{\sqrt{7}}{28}$	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{7}}{28}$	0	$\frac{\sqrt{7}i}{28}$	0	0	$-\frac{\sqrt{42}i}{42}$	0	0	$\frac{\sqrt{105}}{84}$	0	$\frac{\sqrt{105}i}{84}$	0	0
		$\frac{\sqrt{7}}{28}$	0	$\frac{\sqrt{7}i}{28}$	0	0	0	0	$\frac{\sqrt{42}i}{42}$	$-\frac{\sqrt{105}}{84}$	0	$\frac{\sqrt{105}i}{84}$	0	0	0
		0	$-\frac{\sqrt{7}i}{28}$	0	$-\frac{\sqrt{7}}{28}$	$\frac{\sqrt{42}i}{42}$	0	0	0	0	$-\frac{\sqrt{105}i}{84}$	0	$\frac{\sqrt{105}}{84}$	0	0
		$-\frac{\sqrt{7}i}{28}$	0	$\frac{\sqrt{7}}{28}$	0	0	$-\frac{\sqrt{42}i}{42}$	0	0	$-\frac{\sqrt{105}i}{84}$	0	$-\frac{\sqrt{105}}{84}$	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{105}}{84}$	0	$\frac{\sqrt{105}i}{84}$	0	0	$-\frac{\sqrt{42}i}{84}$	0	0	$\frac{\sqrt{7}}{14}$
		0	0	0	0	$\frac{\sqrt{105}}{84}$	0	$\frac{\sqrt{105}i}{84}$	0	0	0	$\frac{\sqrt{42}i}{84}$	$-\frac{\sqrt{7}}{14}$	0	0
		0	0	0	0	0	$-\frac{\sqrt{105}i}{84}$	0	$-\frac{\sqrt{105}}{84}$	$\frac{\sqrt{42}i}{84}$	0	0	0	0	$-\frac{\sqrt{7}i}{14}$
		0	0	0	0	$-\frac{\sqrt{105}i}{84}$	0	$\frac{\sqrt{105}}{84}$	0	0	$-\frac{\sqrt{42}i}{84}$	0	0	$-\frac{\sqrt{7}i}{14}$	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{7}}{14}$	0	$\frac{\sqrt{7}i}{14}$	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{7}}{14}$	0	$\frac{\sqrt{7}i}{14}$	0	0	0
885	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$													

continued ...

Table 10

No.	multipole	matrix												
		0	0	$\frac{\sqrt{7}i}{14}$	0	0	$-\frac{\sqrt{42}}{42}$	0	$-\frac{\sqrt{42}i}{42}$	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{7}i}{14}$	$\frac{\sqrt{42}}{42}$	0	$-\frac{\sqrt{42}i}{42}$	0	0	0	0	0	0
		$-\frac{\sqrt{7}i}{14}$	0	0	0	0	$\frac{\sqrt{42}i}{42}$	0	$-\frac{\sqrt{42}}{42}$	0	0	0	0	0
		0	$\frac{\sqrt{7}i}{14}$	0	0	$\frac{\sqrt{42}i}{42}$	0	$\frac{\sqrt{42}}{42}$	0	0	0	0	0	0
		0	$\frac{\sqrt{42}}{42}$	0	$-\frac{\sqrt{42}i}{42}$	0	0	$-\frac{\sqrt{7}i}{14}$	0	0	0	0	0	0
		$-\frac{\sqrt{42}}{42}$	0	$-\frac{\sqrt{42}i}{42}$	0	0	0	0	$\frac{\sqrt{7}i}{14}$	0	0	0	0	0
		0	$\frac{\sqrt{42}i}{42}$	0	$\frac{\sqrt{42}}{42}$	$\frac{\sqrt{7}i}{14}$	0	0	0	0	0	0	0	0
		$\frac{\sqrt{42}i}{42}$	0	$-\frac{\sqrt{42}}{42}$	0	0	$-\frac{\sqrt{7}i}{14}$	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{7}i}{14}$	0	0	$\frac{\sqrt{42}}{42}$
		0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{7}i}{14}$	$-\frac{\sqrt{42}}{42}$	0
		0	0	0	0	0	0	0	$\frac{\sqrt{7}i}{14}$	0	0	0	0	$-\frac{\sqrt{42}i}{42}$
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{7}i}{14}$	0	0	$-\frac{\sqrt{42}i}{42}$	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{42}}{42}$	0	$\frac{\sqrt{42}i}{42}$	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{42}}{42}$	0	$\frac{\sqrt{42}i}{42}$	0	0	0
886	symmetry	$\sqrt{3}yz$												

continued ...

Table 10

No.	multipole	matrix													
		0	0	0	$-\frac{\sqrt{21}}{42}$	$-\frac{\sqrt{14i}}{21}$	0	0	0	0	$\frac{\sqrt{35i}}{42}$	0	$-\frac{\sqrt{35}}{42}$	0	0
		0	0	$\frac{\sqrt{21}}{42}$	0	0	$\frac{\sqrt{14i}}{21}$	0	0	$\frac{\sqrt{35i}}{42}$	0	$\frac{\sqrt{35}}{42}$	0	0	0
		0	$\frac{\sqrt{21}}{42}$	0	0	0	0	$-\frac{\sqrt{14i}}{21}$	0	0	$\frac{\sqrt{35}}{42}$	0	$\frac{\sqrt{35i}}{42}$	0	0
		$-\frac{\sqrt{21}}{42}$	0	0	0	0	0	0	$\frac{\sqrt{14i}}{21}$	$-\frac{\sqrt{35}}{42}$	0	$\frac{\sqrt{35i}}{42}$	0	0	0
		$\frac{\sqrt{14i}}{21}$	0	0	0	0	0	0	$\frac{\sqrt{21}}{42}$	0	0	0	0	0	$\frac{\sqrt{35i}}{42}$
		0	$-\frac{\sqrt{14i}}{21}$	0	0	0	0	$-\frac{\sqrt{21}}{42}$	0	0	0	0	0	$\frac{\sqrt{35i}}{42}$	0
	$\mathbb{Q}_{2,1}^{(1,1;a)}(E_g, 1)$	0	0	$\frac{\sqrt{14i}}{21}$	0	0	$-\frac{\sqrt{21}}{42}$	0	0	0	0	0	0	0	$\frac{\sqrt{35}}{42}$
		0	0	0	$-\frac{\sqrt{14i}}{21}$	$\frac{\sqrt{21}}{42}$	0	0	0	0	0	0	0	$-\frac{\sqrt{35}}{42}$	0
		0	$-\frac{\sqrt{35i}}{42}$	0	$-\frac{\sqrt{35}}{42}$	0	0	0	0	0	0	0	$\frac{\sqrt{21}}{42}$	$\frac{\sqrt{14i}}{21}$	0
		$-\frac{\sqrt{35i}}{42}$	0	$\frac{\sqrt{35}}{42}$	0	0	0	0	0	0	0	$-\frac{\sqrt{21}}{42}$	0	0	$-\frac{\sqrt{14i}}{21}$
		0	$\frac{\sqrt{35}}{42}$	0	$-\frac{\sqrt{35i}}{42}$	0	0	0	0	0	$-\frac{\sqrt{21}}{42}$	0	0	0	0
		$-\frac{\sqrt{35}}{42}$	0	$-\frac{\sqrt{35i}}{42}$	0	0	0	0	0	$\frac{\sqrt{21}}{42}$	0	0	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{35i}}{42}$	0	$-\frac{\sqrt{35}}{42}$	$-\frac{\sqrt{14i}}{21}$	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{35i}}{42}$	0	$\frac{\sqrt{35}}{42}$	0	0	$\frac{\sqrt{14i}}{21}$	0	0	0	0
887	symmetry	$-\sqrt{3}xz$													

continued ...

Table 10

No.	multipole	matrix													
		0	0	0	$\frac{\sqrt{21}i}{42}$	0	0	$\frac{\sqrt{14}i}{21}$	0	0	$-\frac{\sqrt{35}}{42}$	0	$-\frac{\sqrt{35}i}{42}$	0	0
		0	0	$\frac{\sqrt{21}i}{42}$	0	0	0	$-\frac{\sqrt{14}i}{21}$	$\frac{\sqrt{35}}{42}$	0	$-\frac{\sqrt{35}i}{42}$	0	0	0	0
		0	$-\frac{\sqrt{21}i}{42}$	0	0	$-\frac{\sqrt{14}i}{21}$	0	0	0	$\frac{\sqrt{35}i}{42}$	0	$-\frac{\sqrt{35}}{42}$	0	0	0
		$-\frac{\sqrt{21}i}{42}$	0	0	0	0	$\frac{\sqrt{14}i}{21}$	0	0	$\frac{\sqrt{35}i}{42}$	0	$\frac{\sqrt{35}}{42}$	0	0	0
		0	0	$\frac{\sqrt{14}i}{21}$	0	0	0	$-\frac{\sqrt{21}i}{42}$	0	0	0	0	0	0	$-\frac{\sqrt{35}}{42}$
		0	0	0	$-\frac{\sqrt{14}i}{21}$	0	0	$-\frac{\sqrt{21}i}{42}$	0	0	0	0	0	$\frac{\sqrt{35}}{42}$	0
	$\mathbb{Q}_{2,2}^{(1,1;a)}(E_g, 1)$	$-\frac{\sqrt{14}i}{21}$	0	0	0	0	$\frac{\sqrt{21}i}{42}$	0	0	0	0	0	0	0	$\frac{\sqrt{35}i}{42}$
		0	$\frac{\sqrt{14}i}{21}$	0	0	$\frac{\sqrt{21}i}{42}$	0	0	0	0	0	0	0	$\frac{\sqrt{35}i}{42}$	0
		0	$\frac{\sqrt{35}}{42}$	0	$-\frac{\sqrt{35}i}{42}$	0	0	0	0	0	0	0	$-\frac{\sqrt{21}i}{42}$	0	0
		$-\frac{\sqrt{35}}{42}$	0	$-\frac{\sqrt{35}i}{42}$	0	0	0	0	0	0	0	$-\frac{\sqrt{21}i}{42}$	0	0	0
		0	$\frac{\sqrt{35}i}{42}$	0	$\frac{\sqrt{35}}{42}$	0	0	0	0	0	$\frac{\sqrt{21}i}{42}$	0	0	$\frac{\sqrt{14}i}{21}$	0
		$\frac{\sqrt{35}i}{42}$	0	$-\frac{\sqrt{35}}{42}$	0	0	0	0	0	$\frac{\sqrt{21}i}{42}$	0	0	0	0	$-\frac{\sqrt{14}i}{21}$
		0	0	0	0	0	$\frac{\sqrt{35}}{42}$	0	$-\frac{\sqrt{35}i}{42}$	0	0	$-\frac{\sqrt{14}i}{21}$	0	0	0
		0	0	0	0	$-\frac{\sqrt{35}}{42}$	0	$-\frac{\sqrt{35}i}{42}$	0	0	0	0	$\frac{\sqrt{14}i}{21}$	0	0
888	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$													

continued ...

Table 10

No.	multipole	matrix													
	$\mathbb{Q}_{2,1}^{(1,1;a)}(E_g, 2)$	0	0	0	0	0	$-\frac{\sqrt{14}}{84}$	0	$\frac{\sqrt{14}i}{84}$	0	0	$\frac{\sqrt{35}i}{42}$	0	0	$-\frac{\sqrt{210}}{84}$
		0	0	0	0	$\frac{\sqrt{14}}{84}$	0	$\frac{\sqrt{14}i}{84}$	0	0	0	0	$-\frac{\sqrt{35}i}{42}$	$\frac{\sqrt{210}}{84}$	0
		0	0	0	0	0	$-\frac{\sqrt{14}i}{84}$	0	$-\frac{\sqrt{14}}{84}$	$-\frac{\sqrt{35}i}{42}$	0	0	0	0	$\frac{\sqrt{210}i}{84}$
		0	0	0	0	$-\frac{\sqrt{14}i}{84}$	0	$\frac{\sqrt{14}}{84}$	0	0	$\frac{\sqrt{35}i}{42}$	0	0	$\frac{\sqrt{210}i}{84}$	0
		0	$\frac{\sqrt{14}}{84}$	0	$\frac{\sqrt{14}i}{84}$	0	0	0	0	0	$\frac{\sqrt{210}}{84}$	0	$-\frac{\sqrt{210}i}{84}$	0	0
		$-\frac{\sqrt{14}}{84}$	0	$\frac{\sqrt{14}i}{84}$	0	0	0	0	0	$-\frac{\sqrt{210}}{84}$	0	$-\frac{\sqrt{210}i}{84}$	0	0	0
		0	$-\frac{\sqrt{14}i}{84}$	0	$\frac{\sqrt{14}}{84}$	0	0	0	0	0	$-\frac{\sqrt{210}i}{84}$	0	$-\frac{\sqrt{210}}{84}$	$-\frac{\sqrt{35}i}{42}$	0
		$-\frac{\sqrt{14}i}{84}$	0	$-\frac{\sqrt{14}}{84}$	0	0	0	0	0	$-\frac{\sqrt{210}i}{84}$	0	$\frac{\sqrt{210}}{84}$	0	0	$\frac{\sqrt{35}i}{42}$
		0	0	$\frac{\sqrt{35}i}{42}$	0	0	$-\frac{\sqrt{210}}{84}$	0	$\frac{\sqrt{210}i}{84}$	0	0	0	0	0	$\frac{\sqrt{14}}{84}$
		0	0	0	$-\frac{\sqrt{35}i}{42}$	$\frac{\sqrt{210}}{84}$	0	$\frac{\sqrt{210}i}{84}$	0	0	0	0	0	$-\frac{\sqrt{14}}{84}$	0
		$-\frac{\sqrt{35}i}{42}$	0	0	0	0	$\frac{\sqrt{210}i}{84}$	0	$\frac{\sqrt{210}}{84}$	0	0	0	0	0	$\frac{\sqrt{14}i}{84}$
		0	$\frac{\sqrt{35}i}{42}$	0	0	$\frac{\sqrt{210}i}{84}$	0	$-\frac{\sqrt{210}}{84}$	0	0	0	0	0	$\frac{\sqrt{14}i}{84}$	0
		0	$\frac{\sqrt{210}}{84}$	0	$-\frac{\sqrt{210}i}{84}$	0	0	$\frac{\sqrt{35}i}{42}$	0	0	$-\frac{\sqrt{14}}{84}$	0	$-\frac{\sqrt{14}i}{84}$	0	0
		$-\frac{\sqrt{210}}{84}$	0	$-\frac{\sqrt{210}i}{84}$	0	0	0	0	$-\frac{\sqrt{35}i}{42}$	$\frac{\sqrt{14}}{84}$	0	$-\frac{\sqrt{14}i}{84}$	0	0	0
889	symmetry	$-\sqrt{3}xy$													

continued ...

Table 10

No.	multipole	matrix													
		0	0	0	0	0	$-\frac{\sqrt{14}i}{84}$	0	$-\frac{\sqrt{14}}{84}$	$-\frac{\sqrt{35}i}{42}$	0	0	0	$\frac{\sqrt{210}i}{84}$	
		0	0	0	0	$-\frac{\sqrt{14}i}{84}$	0	$\frac{\sqrt{14}}{84}$	0	0	$\frac{\sqrt{35}i}{42}$	0	0	$\frac{\sqrt{210}i}{84}$	0
		0	0	0	0	0	$\frac{\sqrt{14}}{84}$	0	$-\frac{\sqrt{14}i}{84}$	0	0	$-\frac{\sqrt{35}i}{42}$	0	0	$\frac{\sqrt{210}i}{84}$
		0	0	0	0	$-\frac{\sqrt{14}}{84}$	0	$-\frac{\sqrt{14}i}{84}$	0	0	0	$\frac{\sqrt{35}i}{42}$	$-\frac{\sqrt{210}}{84}$	0	0
		0	$\frac{\sqrt{14}i}{84}$	0	$-\frac{\sqrt{14}}{84}$	0	0	0	0	0	$-\frac{\sqrt{210}i}{84}$	0	$-\frac{\sqrt{210}}{84}$	$-\frac{\sqrt{35}i}{42}$	0
		$\frac{\sqrt{14}i}{84}$	0	$\frac{\sqrt{14}}{84}$	0	0	0	0	0	$-\frac{\sqrt{210}i}{84}$	0	$\frac{\sqrt{210}}{84}$	0	0	$\frac{\sqrt{35}i}{42}$
	$\mathbb{Q}_{2,2}^{(1,1;a)}(E_g, 2)$	0	$\frac{\sqrt{14}}{84}$	0	$\frac{\sqrt{14}i}{84}$	0	0	0	0	0	$-\frac{\sqrt{210}}{84}$	0	$\frac{\sqrt{210}i}{84}$	0	0
		$-\frac{\sqrt{14}}{84}$	0	$\frac{\sqrt{14}i}{84}$	0	0	0	0	0	$\frac{\sqrt{210}}{84}$	0	$\frac{\sqrt{210}i}{84}$	0	0	0
		$\frac{\sqrt{35}i}{42}$	0	0	0	0	$\frac{\sqrt{210}i}{84}$	0	$\frac{\sqrt{210}}{84}$	0	0	0	0	0	$\frac{\sqrt{14}i}{84}$
		0	$-\frac{\sqrt{35}i}{42}$	0	0	$\frac{\sqrt{210}i}{84}$	0	$-\frac{\sqrt{210}}{84}$	0	0	0	0	0	$\frac{\sqrt{14}i}{84}$	0
		0	0	$\frac{\sqrt{35}i}{42}$	0	0	$\frac{\sqrt{210}}{84}$	0	$-\frac{\sqrt{210}i}{84}$	0	0	0	0	0	$-\frac{\sqrt{14}}{84}$
		0	0	0	$-\frac{\sqrt{35}i}{42}$	$-\frac{\sqrt{210}}{84}$	0	$-\frac{\sqrt{210}i}{84}$	0	0	0	0	0	$\frac{\sqrt{14}}{84}$	0
		0	$-\frac{\sqrt{210}i}{84}$	0	$-\frac{\sqrt{210}}{84}$	$\frac{\sqrt{35}i}{42}$	0	0	0	0	$-\frac{\sqrt{14}i}{84}$	0	$\frac{\sqrt{14}}{84}$	0	0
		$-\frac{\sqrt{210}i}{84}$	0	$\frac{\sqrt{210}}{84}$	0	0	$-\frac{\sqrt{35}i}{42}$	0	0	$-\frac{\sqrt{14}i}{84}$	0	$-\frac{\sqrt{14}}{84}$	0	0	0
890	symmetry	$\frac{3x^4}{8} + \frac{3x^2y^2}{4} - 3x^2z^2 + \frac{3y^4}{8} - 3y^2z^2 + z^4$													

continued ...

Table 10

No.	multipole	matrix												
$\mathbb{Q}_4^{(1,1;a)}(A_{1g}, 1)$	0	0	$-\frac{\sqrt{2310i}}{924}$	0	0	$\frac{\sqrt{385}}{308}$	0	$\frac{\sqrt{385i}}{308}$	0	0	0	0	0	0
	0	0	0	$\frac{\sqrt{2310i}}{924}$	$-\frac{\sqrt{385}}{308}$	0	$\frac{\sqrt{385i}}{308}$	0	0	0	0	0	0	0
	$\frac{\sqrt{2310i}}{924}$	0	0	0	0	$-\frac{\sqrt{385i}}{308}$	0	$\frac{\sqrt{385}}{308}$	0	0	0	0	0	0
	0	$-\frac{\sqrt{2310i}}{924}$	0	0	$-\frac{\sqrt{385i}}{308}$	0	$-\frac{\sqrt{385}}{308}$	0	0	0	0	0	0	0
	0	$-\frac{\sqrt{385}}{308}$	0	$\frac{\sqrt{385i}}{308}$	0	0	$\frac{\sqrt{2310i}}{231}$	0	0	$-\frac{3\sqrt{231}}{308}$	0	$-\frac{3\sqrt{231i}}{308}$	0	0
	$\frac{\sqrt{385}}{308}$	0	$\frac{\sqrt{385i}}{308}$	0	0	0	$-\frac{\sqrt{2310i}}{231}$	$\frac{3\sqrt{231}}{308}$	0	$-\frac{3\sqrt{231i}}{308}$	0	0	0	0
	0	$-\frac{\sqrt{385i}}{308}$	0	$-\frac{\sqrt{385}}{308}$	$-\frac{\sqrt{2310i}}{231}$	0	0	0	0	$\frac{3\sqrt{231i}}{308}$	0	$-\frac{3\sqrt{231}}{308}$	0	0
	$-\frac{\sqrt{385i}}{308}$	0	$\frac{\sqrt{385}}{308}$	0	0	$\frac{\sqrt{2310i}}{231}$	0	0	$\frac{3\sqrt{231i}}{308}$	0	$\frac{3\sqrt{231}}{308}$	0	0	0
	0	0	0	0	0	$\frac{3\sqrt{231}}{308}$	0	$-\frac{3\sqrt{231i}}{308}$	0	0	$-\frac{5\sqrt{2310i}}{924}$	0	0	$\frac{\sqrt{385}}{154}$
	0	0	0	0	$-\frac{3\sqrt{231}}{308}$	0	$-\frac{3\sqrt{231i}}{308}$	0	0	0	0	$\frac{5\sqrt{2310i}}{924}$	$-\frac{\sqrt{385}}{154}$	0
	0	0	0	0	0	$\frac{3\sqrt{231i}}{308}$	0	$\frac{3\sqrt{231}}{308}$	$\frac{5\sqrt{2310i}}{924}$	0	0	0	0	$-\frac{\sqrt{385i}}{154}$
	0	0	0	0	$\frac{3\sqrt{231i}}{308}$	0	$-\frac{3\sqrt{231}}{308}$	0	0	$-\frac{5\sqrt{2310i}}{924}$	0	0	$-\frac{\sqrt{385i}}{154}$	0
	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{385}}{154}$	0	$\frac{\sqrt{385i}}{154}$	0	0
0	0	0	0	0	0	0	0	$\frac{\sqrt{385}}{154}$	0	$\frac{\sqrt{385i}}{154}$	0	0	0	
891	symmetry	$\frac{\sqrt{70}yz(3x^2-y^2)}{4}$												

continued ...

Table 10

No.	multipole	matrix													
		0	0	0	0	0	0	0	0	0	$\frac{7\sqrt{55}i}{220}$	0	$\frac{7\sqrt{55}}{220}$	$\frac{2\sqrt{330}i}{165}$	0
		0	0	0	0	0	0	0	0	$\frac{7\sqrt{55}i}{220}$	0	$-\frac{7\sqrt{55}}{220}$	0	0	$-\frac{2\sqrt{330}i}{165}$
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{55}}{44}$	0	$-\frac{\sqrt{55}i}{44}$	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{55}}{44}$	0	$-\frac{\sqrt{55}i}{44}$	0	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{330}i}{165}$	0	0	0	0	$-\frac{\sqrt{55}i}{110}$
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{330}i}{165}$	0	0	$-\frac{\sqrt{55}i}{110}$	0
		0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{330}i}{165}$	0	0	$\frac{\sqrt{55}}{110}$
		0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{330}i}{165}$	$-\frac{\sqrt{55}}{110}$	0
		0	$-\frac{7\sqrt{55}i}{220}$	0	$-\frac{\sqrt{55}}{44}$	$-\frac{\sqrt{330}i}{165}$	0	0	0	0	0	0	0	0	0
		$-\frac{7\sqrt{55}i}{220}$	0	$\frac{\sqrt{55}}{44}$	0	$\frac{\sqrt{330}i}{165}$	0	0	0	0	0	0	0	0	0
		0	$-\frac{7\sqrt{55}}{220}$	0	$\frac{\sqrt{55}i}{44}$	0	0	$\frac{\sqrt{330}i}{165}$	0	0	0	0	0	0	0
		$\frac{7\sqrt{55}}{220}$	0	$\frac{\sqrt{55}i}{44}$	0	0	0	$-\frac{\sqrt{330}i}{165}$	0	0	0	0	0	0	0
		$-\frac{2\sqrt{330}i}{165}$	0	0	0	$\frac{\sqrt{55}i}{110}$	0	$-\frac{\sqrt{55}}{110}$	0	0	0	0	0	0	0
		0	$\frac{2\sqrt{330}i}{165}$	0	0	$\frac{\sqrt{55}i}{110}$	0	$\frac{\sqrt{55}}{110}$	0	0	0	0	0	0	0
892	symmetry	$\frac{\sqrt{70}xz(x^2-3y^2)}{4}$													

continued ...

Table 10

No.	multipole	matrix													
$\mathbb{Q}_4^{(1,1;a)}(A_{2g})$		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{55}}{44}$	0	$-\frac{\sqrt{55}i}{44}$	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{55}}{44}$	0	$-\frac{\sqrt{55}i}{44}$	0	0	0
		0	0	0	0	0	0	0	0	$-\frac{7\sqrt{55}i}{220}$	0	$-\frac{7\sqrt{55}}{220}$	$-\frac{2\sqrt{330}i}{165}$	0	
		0	0	0	0	0	0	0	$-\frac{7\sqrt{55}i}{220}$	0	$\frac{7\sqrt{55}}{220}$	0	0	$\frac{2\sqrt{330}i}{165}$	
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{330}i}{165}$	0	0	$\frac{\sqrt{55}}{110}$	
		0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{330}i}{165}$	$-\frac{\sqrt{55}}{110}$	0	
		0	0	0	0	0	0	0	$-\frac{\sqrt{330}i}{165}$	0	0	0	0	$\frac{\sqrt{55}i}{110}$	
		0	0	0	0	0	0	0	0	$\frac{\sqrt{330}i}{165}$	0	0	$\frac{\sqrt{55}i}{110}$	0	
		0	$-\frac{\sqrt{55}}{44}$	0	$\frac{7\sqrt{55}i}{220}$	0	0	$\frac{\sqrt{330}i}{165}$	0	0	0	0	0	0	0
		$\frac{\sqrt{55}}{44}$	0	$\frac{7\sqrt{55}i}{220}$	0	0	0	$-\frac{\sqrt{330}i}{165}$	0	0	0	0	0	0	0
		0	$\frac{\sqrt{55}i}{44}$	0	$\frac{7\sqrt{55}}{220}$	$\frac{\sqrt{330}i}{165}$	0	0	0	0	0	0	0	0	0
		$\frac{\sqrt{55}i}{44}$	0	$-\frac{7\sqrt{55}}{220}$	0	0	$-\frac{\sqrt{330}i}{165}$	0	0	0	0	0	0	0	0
		0	0	$\frac{2\sqrt{330}i}{165}$	0	0	$-\frac{\sqrt{55}}{110}$	0	$-\frac{\sqrt{55}i}{110}$	0	0	0	0	0	0
		0	0	0	$-\frac{2\sqrt{330}i}{165}$	$\frac{\sqrt{55}}{110}$	0	$-\frac{\sqrt{55}i}{110}$	0	0	0	0	0	0	0
893	symmetry	$-\frac{\sqrt{10}yz(3x^2+3y^2-4z^2)}{4}$													

continued ...

Table 10

No.	multipole	matrix														
$\mathbb{Q}_{4,1}^{(1,1;a)}(E_g, 1)$		0	0	0	$\frac{\sqrt{231}}{462}$	$\frac{\sqrt{154i}}{154}$	0	0	0	0	$-\frac{\sqrt{385i}}{220}$	0	$\frac{\sqrt{385}}{220}$	0	0	
		0	0	$-\frac{\sqrt{231}}{462}$	0	0	$-\frac{\sqrt{154i}}{154}$	0	0	$-\frac{\sqrt{385i}}{220}$	0	$-\frac{\sqrt{385}}{220}$	0	0	0	
		0	$-\frac{\sqrt{231}}{462}$	0	0	0	0	$\frac{\sqrt{154i}}{154}$	0	0	$-\frac{\sqrt{385}}{220}$	0	$-\frac{\sqrt{385i}}{220}$	0	0	
		$\frac{\sqrt{231}}{462}$	0	0	0	0	0	0	$-\frac{\sqrt{154i}}{154}$	$\frac{\sqrt{385}}{220}$	0	$-\frac{\sqrt{385i}}{220}$	0	0	0	
		$-\frac{\sqrt{154i}}{154}$	0	0	0	0	0	0	$-\frac{2\sqrt{231}}{231}$	$-\frac{3\sqrt{2310i}}{770}$	0	0	0	0	$\frac{\sqrt{385i}}{110}$	
		0	$\frac{\sqrt{154i}}{154}$	0	0	0	0	0	$\frac{2\sqrt{231}}{231}$	0	0	$\frac{3\sqrt{2310i}}{770}$	0	0	$\frac{\sqrt{385i}}{110}$	0
		0	0	$-\frac{\sqrt{154i}}{154}$	0	0	$\frac{2\sqrt{231}}{231}$	0	0	0	0	$-\frac{3\sqrt{2310i}}{770}$	0	0	$\frac{\sqrt{385}}{110}$	0
		0	0	0	$\frac{\sqrt{154i}}{154}$	$-\frac{2\sqrt{231}}{231}$	0	0	0	0	0	0	$\frac{3\sqrt{2310i}}{770}$	$-\frac{\sqrt{385}}{110}$	0	0
		0	$\frac{\sqrt{385i}}{220}$	0	$\frac{\sqrt{385}}{220}$	$\frac{3\sqrt{2310i}}{770}$	0	0	0	0	0	0	$\frac{5\sqrt{231}}{462}$	$\frac{\sqrt{154i}}{77}$	0	0
		$\frac{\sqrt{385i}}{220}$	0	$-\frac{\sqrt{385}}{220}$	0	0	$-\frac{3\sqrt{2310i}}{770}$	0	0	0	0	$-\frac{5\sqrt{231}}{462}$	0	0	0	$-\frac{\sqrt{154i}}{77}$
		0	$-\frac{\sqrt{385}}{220}$	0	$\frac{\sqrt{385i}}{220}$	0	0	0	$\frac{3\sqrt{2310i}}{770}$	0	0	$-\frac{5\sqrt{231}}{462}$	0	0	0	0
		$\frac{\sqrt{385}}{220}$	0	$\frac{\sqrt{385i}}{220}$	0	0	0	0	$-\frac{3\sqrt{2310i}}{770}$	$\frac{5\sqrt{231}}{462}$	0	0	0	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{385i}}{110}$	0	$-\frac{\sqrt{385}}{110}$	$-\frac{\sqrt{154i}}{77}$	0	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{385i}}{110}$	0	$\frac{\sqrt{385}}{110}$	0	0	$\frac{\sqrt{154i}}{77}$	0	0	0	0	0
	894	symmetry	$\frac{\sqrt{10}xz(3x^2+3y^2-4z^2)}{4}$													

continued ...

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{4,2}^{(1,1;a)}(E_g, 1)$		0	0	0	$-\frac{\sqrt{231}i}{462}$	0	0	$-\frac{\sqrt{154}i}{154}$	0	0	$\frac{\sqrt{385}}{220}$	0	$\frac{\sqrt{385}i}{220}$	0	0
		0	0	$-\frac{\sqrt{231}i}{462}$	0	0	0	0	$\frac{\sqrt{154}i}{154}$	$-\frac{\sqrt{385}}{220}$	0	$\frac{\sqrt{385}i}{220}$	0	0	0
		0	$\frac{\sqrt{231}i}{462}$	0	0	$\frac{\sqrt{154}i}{154}$	0	0	0	0	$-\frac{\sqrt{385}i}{220}$	0	$\frac{\sqrt{385}}{220}$	0	0
		$\frac{\sqrt{231}i}{462}$	0	0	0	0	$-\frac{\sqrt{154}i}{154}$	0	0	$-\frac{\sqrt{385}i}{220}$	0	$-\frac{\sqrt{385}}{220}$	0	0	0
		0	0	$-\frac{\sqrt{154}i}{154}$	0	0	0	0	$\frac{2\sqrt{231}i}{231}$	0	0	$\frac{3\sqrt{2310}i}{770}$	0	0	$-\frac{\sqrt{385}}{110}$
		0	0	0	$\frac{\sqrt{154}i}{154}$	0	0	0	$\frac{2\sqrt{231}i}{231}$	0	0	0	$-\frac{3\sqrt{2310}i}{770}$	$\frac{\sqrt{385}}{110}$	0
		$\frac{\sqrt{154}i}{154}$	0	0	0	0	$-\frac{2\sqrt{231}i}{231}$	0	0	$-\frac{3\sqrt{2310}i}{770}$	0	0	0	0	$\frac{\sqrt{385}i}{110}$
		0	$-\frac{\sqrt{154}i}{154}$	0	0	$-\frac{2\sqrt{231}i}{231}$	0	0	0	0	$\frac{3\sqrt{2310}i}{770}$	0	0	$\frac{\sqrt{385}i}{110}$	0
		0	$-\frac{\sqrt{385}}{220}$	0	$\frac{\sqrt{385}i}{220}$	0	0	0	$\frac{3\sqrt{2310}i}{770}$	0	0	0	$-\frac{5\sqrt{231}i}{462}$	0	0
		$\frac{\sqrt{385}}{220}$	0	$\frac{\sqrt{385}i}{220}$	0	0	0	0	$-\frac{3\sqrt{2310}i}{770}$	0	0	$-\frac{5\sqrt{231}i}{462}$	0	0	0
		0	$-\frac{\sqrt{385}i}{220}$	0	$-\frac{\sqrt{385}}{220}$	$-\frac{3\sqrt{2310}i}{770}$	0	0	0	0	$\frac{5\sqrt{231}i}{462}$	0	0	$\frac{\sqrt{154}i}{77}$	0
		$-\frac{\sqrt{385}i}{220}$	0	$\frac{\sqrt{385}}{220}$	0	0	$\frac{3\sqrt{2310}i}{770}$	0	0	$\frac{5\sqrt{231}i}{462}$	0	0	0	0	$-\frac{\sqrt{154}i}{77}$
		0	0	0	0	0	$\frac{\sqrt{385}}{110}$	0	$-\frac{\sqrt{385}i}{110}$	0	0	$-\frac{\sqrt{154}i}{77}$	0	0	0
		0	0	0	0	$-\frac{\sqrt{385}}{110}$	0	$-\frac{\sqrt{385}i}{110}$	0	0	0	0	$\frac{\sqrt{154}i}{77}$	0	0
895	symmetry	$\frac{\sqrt{35}(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$													

continued ...

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{4,1}^{(1,1;a)}(E_g, 2)$	0	0	0	0	0	$\frac{3\sqrt{11}}{44}$	0	$-\frac{3\sqrt{11}i}{44}$	0	0	$-\frac{3\sqrt{110}i}{220}$	0	0	$\frac{\sqrt{165}}{330}$	
	0	0	0	0	$-\frac{3\sqrt{11}}{44}$	0	$-\frac{3\sqrt{11}i}{44}$	0	0	0	0	$\frac{3\sqrt{110}i}{220}$	$-\frac{\sqrt{165}}{330}$	0	
	0	0	0	0	0	$-\frac{3\sqrt{11}i}{44}$	0	$-\frac{3\sqrt{11}}{44}$	$-\frac{3\sqrt{110}i}{220}$	0	0	0	0	$\frac{\sqrt{165}i}{330}$	
	0	0	0	0	$-\frac{3\sqrt{11}i}{44}$	0	$\frac{3\sqrt{11}}{44}$	0	0	$\frac{3\sqrt{110}i}{220}$	0	0	$\frac{\sqrt{165}i}{330}$	0	
	0	$-\frac{3\sqrt{11}}{44}$	0	$\frac{3\sqrt{11}i}{44}$	0	0	0	0	0	$\frac{\sqrt{165}}{660}$	0	$\frac{\sqrt{165}i}{660}$	0	0	
	$\frac{3\sqrt{11}}{44}$	0	$\frac{3\sqrt{11}i}{44}$	0	0	0	0	0	$-\frac{\sqrt{165}}{660}$	0	$\frac{\sqrt{165}i}{660}$	0	0	0	
	0	$\frac{3\sqrt{11}i}{44}$	0	$\frac{3\sqrt{11}}{44}$	0	0	0	0	0	$\frac{\sqrt{165}i}{660}$	0	$-\frac{\sqrt{165}}{660}$	0	0	
	$\frac{3\sqrt{11}i}{44}$	0	$-\frac{3\sqrt{11}}{44}$	0	0	0	0	0	$\frac{\sqrt{165}i}{660}$	0	$\frac{\sqrt{165}}{660}$	0	0	0	
	0	0	$\frac{3\sqrt{110}i}{220}$	0	0	$-\frac{\sqrt{165}}{660}$	0	$-\frac{\sqrt{165}i}{660}$	0	0	0	0	0	0	
	0	0	0	$-\frac{3\sqrt{110}i}{220}$	$\frac{\sqrt{165}}{660}$	0	$-\frac{\sqrt{165}i}{660}$	0	0	0	0	0	0	0	
	$\frac{3\sqrt{110}i}{220}$	0	0	0	0	$-\frac{\sqrt{165}i}{660}$	0	$\frac{\sqrt{165}}{660}$	0	0	0	0	0	0	
	0	$-\frac{3\sqrt{110}i}{220}$	0	0	$-\frac{\sqrt{165}i}{660}$	0	$-\frac{\sqrt{165}}{660}$	0	0	0	0	0	0	0	
	0	$-\frac{\sqrt{165}}{330}$	0	$-\frac{\sqrt{165}i}{330}$	0	0	0	0	0	0	0	0	0	0	
	$\frac{\sqrt{165}}{330}$	0	$-\frac{\sqrt{165}i}{330}$	0	0	0	0	0	0	0	0	0	0	0	
	896	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$												

continued ...

Table 10

No.	multipole	matrix													
		0	0	0	0	0	$\frac{3\sqrt{11}i}{44}$	0	$\frac{3\sqrt{11}}{44}$	$\frac{3\sqrt{110}i}{220}$	0	0	0	$-\frac{\sqrt{165}i}{330}$	
		0	0	0	0	$\frac{3\sqrt{11}i}{44}$	0	$-\frac{3\sqrt{11}}{44}$	0	0	$-\frac{3\sqrt{110}i}{220}$	0	0	$-\frac{\sqrt{165}i}{330}$	0
		0	0	0	0	0	$\frac{3\sqrt{11}}{44}$	0	$-\frac{3\sqrt{11}i}{44}$	0	0	$-\frac{3\sqrt{110}i}{220}$	0	0	$\frac{\sqrt{165}}{330}$
		0	0	0	0	$-\frac{3\sqrt{11}}{44}$	0	$-\frac{3\sqrt{11}i}{44}$	0	0	0	$\frac{3\sqrt{110}i}{220}$	$-\frac{\sqrt{165}}{330}$	0	0
		0	$-\frac{3\sqrt{11}i}{44}$	0	$-\frac{3\sqrt{11}}{44}$	0	0	0	0	0	$-\frac{\sqrt{165}i}{660}$	0	$\frac{\sqrt{165}}{660}$	0	0
		$-\frac{3\sqrt{11}i}{44}$	0	$\frac{3\sqrt{11}}{44}$	0	0	0	0	0	$-\frac{\sqrt{165}i}{660}$	0	$-\frac{\sqrt{165}}{660}$	0	0	0
	$\mathbb{Q}_{4,2}^{(1,1;a)}(E_g, 2)$	0	$-\frac{3\sqrt{11}}{44}$	0	$\frac{3\sqrt{11}i}{44}$	0	0	0	0	0	$\frac{\sqrt{165}}{660}$	0	$\frac{\sqrt{165}i}{660}$	0	0
		$\frac{3\sqrt{11}}{44}$	0	$\frac{3\sqrt{11}i}{44}$	0	0	0	0	0	$-\frac{\sqrt{165}}{660}$	0	$\frac{\sqrt{165}i}{660}$	0	0	0
		$-\frac{3\sqrt{110}i}{220}$	0	0	0	0	$\frac{\sqrt{165}i}{660}$	0	$-\frac{\sqrt{165}}{660}$	0	0	0	0	0	0
		0	$\frac{3\sqrt{110}i}{220}$	0	0	$\frac{\sqrt{165}i}{660}$	0	$\frac{\sqrt{165}}{660}$	0	0	0	0	0	0	0
		0	0	$\frac{3\sqrt{110}i}{220}$	0	0	$-\frac{\sqrt{165}}{660}$	0	$-\frac{\sqrt{165}i}{660}$	0	0	0	0	0	0
		0	0	0	$-\frac{3\sqrt{110}i}{220}$	$\frac{\sqrt{165}}{660}$	0	$-\frac{\sqrt{165}i}{660}$	0	0	0	0	0	0	0
		0	$\frac{\sqrt{165}i}{330}$	0	$-\frac{\sqrt{165}}{330}$	0	0	0	0	0	0	0	0	0	0
		$\frac{\sqrt{165}i}{330}$	0	$\frac{\sqrt{165}}{330}$	0	0	0	0	0	0	0	0	0	0	0
897	symmetry	$-\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$													

continued ...

Table 10

No.	multipole	matrix													
		0	0	0	0	0	$\frac{\sqrt{77}}{308}$	0	$-\frac{\sqrt{77}i}{308}$	0	0	$-\frac{\sqrt{770}i}{220}$	0	0	$\frac{\sqrt{1155}}{165}$
		0	0	0	0	$-\frac{\sqrt{77}}{308}$	0	$-\frac{\sqrt{77}i}{308}$	0	0	0	$\frac{\sqrt{770}i}{220}$	$-\frac{\sqrt{1155}}{165}$	0	0
		0	0	0	0	0	$\frac{\sqrt{77}i}{308}$	0	$\frac{\sqrt{77}}{308}$	$\frac{\sqrt{770}i}{220}$	0	0	0	0	$-\frac{\sqrt{1155}i}{165}$
		0	0	0	0	$\frac{\sqrt{77}i}{308}$	0	$-\frac{\sqrt{77}}{308}$	0	0	$-\frac{\sqrt{770}i}{220}$	0	0	$-\frac{\sqrt{1155}i}{165}$	0
		0	$-\frac{\sqrt{77}}{308}$	0	$-\frac{\sqrt{77}i}{308}$	0	0	0	0	0	$\frac{\sqrt{1155}}{924}$	0	$-\frac{\sqrt{1155}i}{924}$	0	0
		$\frac{\sqrt{77}}{308}$	0	$-\frac{\sqrt{77}i}{308}$	0	0	0	0	0	$-\frac{\sqrt{1155}}{924}$	0	$-\frac{\sqrt{1155}i}{924}$	0	0	0
	$\mathbb{Q}_{4,1}^{(1,1;a)}(E_g, 3)$	0	$\frac{\sqrt{77}i}{308}$	0	$-\frac{\sqrt{77}}{308}$	0	0	0	0	0	$-\frac{23\sqrt{1155}i}{4620}$	0	$-\frac{23\sqrt{1155}}{4620}$	$-\frac{\sqrt{770}i}{110}$	0
		$\frac{\sqrt{77}i}{308}$	0	$\frac{\sqrt{77}}{308}$	0	0	0	0	0	$-\frac{23\sqrt{1155}i}{4620}$	0	$\frac{23\sqrt{1155}}{4620}$	0	0	$\frac{\sqrt{770}i}{110}$
		0	0	$-\frac{\sqrt{770}i}{220}$	0	0	$-\frac{\sqrt{1155}}{924}$	0	$\frac{23\sqrt{1155}i}{4620}$	0	0	0	0	0	$\frac{\sqrt{77}}{154}$
		0	0	0	$\frac{\sqrt{770}i}{220}$	$\frac{\sqrt{1155}}{924}$	0	$\frac{23\sqrt{1155}i}{4620}$	0	0	0	0	0	$-\frac{\sqrt{77}}{154}$	0
		$\frac{\sqrt{770}i}{220}$	0	0	0	0	$\frac{\sqrt{1155}i}{924}$	0	$\frac{23\sqrt{1155}}{4620}$	0	0	0	0	0	$\frac{\sqrt{77}i}{154}$
		0	$-\frac{\sqrt{770}i}{220}$	0	0	$\frac{\sqrt{1155}i}{924}$	0	$-\frac{23\sqrt{1155}}{4620}$	0	0	0	0	0	$\frac{\sqrt{77}i}{154}$	0
		0	$-\frac{\sqrt{1155}}{165}$	0	$\frac{\sqrt{1155}i}{165}$	0	0	$\frac{\sqrt{770}i}{110}$	0	0	$-\frac{\sqrt{77}}{154}$	0	$-\frac{\sqrt{77}i}{154}$	0	0
		$\frac{\sqrt{1155}}{165}$	0	$\frac{\sqrt{1155}i}{165}$	0	0	0	$-\frac{\sqrt{770}i}{110}$	$\frac{\sqrt{77}}{154}$	0	$-\frac{\sqrt{77}i}{154}$	0	0	0	0
898	symmetry	$\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$													

continued ...

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{4,2}^{(1,1;a)}(E_g, 3)$	0	0	0	0	0	$\frac{\sqrt{77}i}{308}$	0	$\frac{\sqrt{77}}{308}$	$\frac{\sqrt{770}i}{220}$	0	0	0	0	$-\frac{\sqrt{1155}i}{165}$	
	0	0	0	0	$\frac{\sqrt{77}i}{308}$	0	$-\frac{\sqrt{77}}{308}$	0	0	$-\frac{\sqrt{770}i}{220}$	0	0	$-\frac{\sqrt{1155}i}{165}$	0	
	0	0	0	0	0	$-\frac{\sqrt{77}}{308}$	0	$\frac{\sqrt{77}i}{308}$	0	0	$\frac{\sqrt{770}i}{220}$	0	0	$-\frac{\sqrt{1155}i}{165}$	
	0	0	0	0	$\frac{\sqrt{77}}{308}$	0	$\frac{\sqrt{77}i}{308}$	0	0	0	0	$-\frac{\sqrt{770}i}{220}$	$\frac{\sqrt{1155}i}{165}$	0	
	0	$-\frac{\sqrt{77}i}{308}$	0	$\frac{\sqrt{77}}{308}$	0	0	0	0	0	$-\frac{23\sqrt{1155}i}{4620}$	0	$-\frac{23\sqrt{1155}}{4620}$	$-\frac{\sqrt{770}i}{110}$	0	
	$-\frac{\sqrt{77}i}{308}$	0	$-\frac{\sqrt{77}}{308}$	0	0	0	0	0	$-\frac{23\sqrt{1155}i}{4620}$	0	$\frac{23\sqrt{1155}}{4620}$	0	0	$\frac{\sqrt{770}i}{110}$	
	0	$-\frac{\sqrt{77}}{308}$	0	$-\frac{\sqrt{77}i}{308}$	0	0	0	0	0	$-\frac{\sqrt{1155}}{924}$	0	$\frac{\sqrt{1155}i}{924}$	0	0	
	$\frac{\sqrt{77}}{308}$	0	$-\frac{\sqrt{77}i}{308}$	0	0	0	0	0	$\frac{\sqrt{1155}}{924}$	0	$\frac{\sqrt{1155}i}{924}$	0	0	0	
	$-\frac{\sqrt{770}i}{220}$	0	0	0	0	$\frac{23\sqrt{1155}i}{4620}$	0	$\frac{\sqrt{1155}}{924}$	0	0	0	0	0	$\frac{\sqrt{77}i}{154}$	
	0	$\frac{\sqrt{770}i}{220}$	0	0	$\frac{23\sqrt{1155}i}{4620}$	0	$-\frac{\sqrt{1155}}{924}$	0	0	0	0	0	0	$\frac{\sqrt{77}i}{154}$	0
	0	0	$-\frac{\sqrt{770}i}{220}$	0	0	$\frac{23\sqrt{1155}}{4620}$	0	$-\frac{\sqrt{1155}i}{924}$	0	0	0	0	0	$-\frac{\sqrt{77}}{154}$	
	0	0	0	$\frac{\sqrt{770}i}{220}$	$-\frac{23\sqrt{1155}}{4620}$	0	$-\frac{\sqrt{1155}i}{924}$	0	0	0	0	0	0	$\frac{\sqrt{77}}{154}$	0
	0	$\frac{\sqrt{1155}i}{165}$	0	$\frac{\sqrt{1155}}{165}$	$\frac{\sqrt{770}i}{110}$	0	0	0	0	$-\frac{\sqrt{77}i}{154}$	0	$\frac{\sqrt{77}}{154}$	0	0	
	$\frac{\sqrt{1155}i}{165}$	0	$-\frac{\sqrt{1155}}{165}$	0	0	$-\frac{\sqrt{770}i}{110}$	0	0	$-\frac{\sqrt{77}i}{154}$	0	$-\frac{\sqrt{77}}{154}$	0	0	0	
	899	symmetry	z												

continued ...

Table 10

No.	multipole	matrix													
$\mathbb{G}_1^{(1,0;a)}(A_{2g})$		0	0	0	0	0	$\frac{\sqrt{42}i}{56}$	0	$-\frac{\sqrt{42}}{56}$	0	0	0	0	0	0
		0	0	0	0	$\frac{\sqrt{42}i}{56}$	0	$\frac{\sqrt{42}}{56}$	0	0	0	0	0	0	0
		0	0	0	0	0	$\frac{\sqrt{42}}{56}$	0	$\frac{\sqrt{42}i}{56}$	0	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{42}}{56}$	0	$\frac{\sqrt{42}i}{56}$	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{42}i}{56}$	0	$-\frac{\sqrt{42}}{56}$	0	0	0	0	0	$\frac{\sqrt{70}i}{56}$	0	$-\frac{\sqrt{70}}{56}$	0	0
		$-\frac{\sqrt{42}i}{56}$	0	$\frac{\sqrt{42}}{56}$	0	0	0	0	0	$\frac{\sqrt{70}i}{56}$	0	$\frac{\sqrt{70}}{56}$	0	0	0
		0	$\frac{\sqrt{42}}{56}$	0	$-\frac{\sqrt{42}i}{56}$	0	0	0	0	0	$\frac{\sqrt{70}}{56}$	0	$\frac{\sqrt{70}i}{56}$	0	0
		$-\frac{\sqrt{42}}{56}$	0	$-\frac{\sqrt{42}i}{56}$	0	0	0	0	0	$-\frac{\sqrt{70}}{56}$	0	$\frac{\sqrt{70}i}{56}$	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{70}i}{56}$	0	$-\frac{\sqrt{70}}{56}$	0	0	0	0	0	$\frac{\sqrt{42}i}{28}$
		0	0	0	0	$-\frac{\sqrt{70}i}{56}$	0	$\frac{\sqrt{70}}{56}$	0	0	0	0	0	$\frac{\sqrt{42}i}{28}$	0
		0	0	0	0	0	$\frac{\sqrt{70}}{56}$	0	$-\frac{\sqrt{70}i}{56}$	0	0	0	0	0	$\frac{\sqrt{42}}{28}$
		0	0	0	0	$-\frac{\sqrt{70}}{56}$	0	$-\frac{\sqrt{70}i}{56}$	0	0	0	0	0	$-\frac{\sqrt{42}}{28}$	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{42}i}{28}$	0	$-\frac{\sqrt{42}}{28}$	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{42}i}{28}$	0	$\frac{\sqrt{42}}{28}$	0	0	0
900	symmetry	x													

continued ...

Table 10

No.	multipole	matrix												
$\mathbb{G}_{1,1}^{(1,0;a)}(E_g)$		0	0	0	$-\frac{3\sqrt{7}}{28}$	$-\frac{\sqrt{42i}}{56}$	0	0	0	0	0	0	0	0
		0	0	$\frac{3\sqrt{7}}{28}$	0	0	$\frac{\sqrt{42i}}{56}$	0	0	0	0	0	0	0
		0	$\frac{3\sqrt{7}}{28}$	0	0	0	0	$-\frac{\sqrt{42i}}{56}$	0	0	0	0	0	0
		$-\frac{3\sqrt{7}}{28}$	0	0	0	0	0	0	$\frac{\sqrt{42i}}{56}$	0	0	0	0	0
		$\frac{\sqrt{42i}}{56}$	0	0	0	0	0	0	$-\frac{\sqrt{7}}{14}$	$-\frac{\sqrt{70i}}{56}$	0	0	0	0
		0	$-\frac{\sqrt{42i}}{56}$	0	0	0	0	$\frac{\sqrt{7}}{14}$	0	0	$\frac{\sqrt{70i}}{56}$	0	0	0
		0	0	$\frac{\sqrt{42i}}{56}$	0	0	$\frac{\sqrt{7}}{14}$	0	0	0	$-\frac{\sqrt{70i}}{56}$	0	0	0
		0	0	0	$-\frac{\sqrt{42i}}{56}$	$-\frac{\sqrt{7}}{14}$	0	0	0	0	0	$\frac{\sqrt{70i}}{56}$	0	0
		0	0	0	0	$\frac{\sqrt{70i}}{56}$	0	0	0	0	0	$-\frac{\sqrt{7}}{28}$	$-\frac{\sqrt{42i}}{28}$	0
		0	0	0	0	0	$-\frac{\sqrt{70i}}{56}$	0	0	0	0	$\frac{\sqrt{7}}{28}$	0	$\frac{\sqrt{42i}}{28}$
		0	0	0	0	0	0	$\frac{\sqrt{70i}}{56}$	0	0	$\frac{\sqrt{7}}{28}$	0	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{70i}}{56}$	$-\frac{\sqrt{7}}{28}$	0	0	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{42i}}{28}$	0	0	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{42i}}{28}$	0	0	0
	901	symmetry	y											

continued ...

Table 10

No.	multipole	matrix													
$\mathbb{G}_{1,2}^{(1,0;a)}(E_g)$		0	0	0	$\frac{3\sqrt{7}i}{28}$	0	0	$\frac{\sqrt{42}i}{56}$	0	0	0	0	0	0	0
		0	0	$\frac{3\sqrt{7}i}{28}$	0	0	0	0	$-\frac{\sqrt{42}i}{56}$	0	0	0	0	0	0
		0	$-\frac{3\sqrt{7}i}{28}$	0	0	$-\frac{\sqrt{42}i}{56}$	0	0	0	0	0	0	0	0	0
		$-\frac{3\sqrt{7}i}{28}$	0	0	0	0	$\frac{\sqrt{42}i}{56}$	0	0	0	0	0	0	0	0
		0	0	$\frac{\sqrt{42}i}{56}$	0	0	0	0	$\frac{\sqrt{7}i}{14}$	0	0	$\frac{\sqrt{70}i}{56}$	0	0	0
		0	0	0	$-\frac{\sqrt{42}i}{56}$	0	0	$\frac{\sqrt{7}i}{14}$	0	0	0	0	$-\frac{\sqrt{70}i}{56}$	0	0
		$-\frac{\sqrt{42}i}{56}$	0	0	0	0	$-\frac{\sqrt{7}i}{14}$	0	0	$-\frac{\sqrt{70}i}{56}$	0	0	0	0	0
		0	$\frac{\sqrt{42}i}{56}$	0	0	$-\frac{\sqrt{7}i}{14}$	0	0	0	0	$\frac{\sqrt{70}i}{56}$	0	0	0	0
		0	0	0	0	0	0	$\frac{\sqrt{70}i}{56}$	0	0	0	0	$\frac{\sqrt{7}i}{28}$	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{70}i}{56}$	0	0	$\frac{\sqrt{7}i}{28}$	0	0	0
		0	0	0	0	$-\frac{\sqrt{70}i}{56}$	0	0	0	0	$-\frac{\sqrt{7}i}{28}$	0	0	$-\frac{\sqrt{42}i}{28}$	0
		0	0	0	0	0	$\frac{\sqrt{70}i}{56}$	0	0	$-\frac{\sqrt{7}i}{28}$	0	0	0	0	$\frac{\sqrt{42}i}{28}$
		0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{42}i}{28}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{42}i}{28}$	0	0
902	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$													

continued ...

Table 10

No.	multipole	matrix													
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{6}i}{24}$	0	$\frac{\sqrt{6}}{24}$	$\frac{i}{4}$	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{6}i}{24}$	0	$-\frac{\sqrt{6}}{24}$	0	0	$-\frac{i}{4}$
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{6}}{24}$	0	$\frac{\sqrt{6}i}{24}$	0	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{6}}{24}$	0	$\frac{\sqrt{6}i}{24}$	0	0	0
		0	0	0	0	0	0	0	0	$-\frac{i}{4}$	0	0	0	0	$\frac{\sqrt{6}i}{24}$
		0	0	0	0	0	0	0	0	$\frac{i}{4}$	0	0	0	$\frac{\sqrt{6}i}{24}$	0
		0	0	0	0	0	0	0	0	0	$\frac{i}{4}$	0	0	0	$-\frac{\sqrt{6}}{24}$
		0	0	0	0	0	0	0	0	0	0	$-\frac{i}{4}$	$\frac{\sqrt{6}}{24}$	0	0
		0	$-\frac{\sqrt{6}i}{24}$	0	$\frac{\sqrt{6}}{24}$	$\frac{i}{4}$	0	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{6}i}{24}$	0	$-\frac{\sqrt{6}}{24}$	0	0	$-\frac{i}{4}$	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{6}}{24}$	0	$-\frac{\sqrt{6}i}{24}$	0	0	$-\frac{i}{4}$	0	0	0	0	0	0	0
		$\frac{\sqrt{6}}{24}$	0	$-\frac{\sqrt{6}i}{24}$	0	0	0	$\frac{i}{4}$	0	0	0	0	0	0	0
		$-\frac{i}{4}$	0	0	0	0	$-\frac{\sqrt{6}i}{24}$	0	$\frac{\sqrt{6}}{24}$	0	0	0	0	0	0
		0	$\frac{i}{4}$	0	0	$-\frac{\sqrt{6}i}{24}$	0	$-\frac{\sqrt{6}}{24}$	0	0	0	0	0	0	0
903	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$													

continued ...

Table 10

No.	multipole	matrix													
		0	0	0	0	0	$-\frac{\sqrt{6}i}{12}$	0	$\frac{\sqrt{6}}{12}$	0	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{6}i}{12}$	0	$-\frac{\sqrt{6}}{12}$	0	0	0	0	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{6}}{12}$	0	$-\frac{\sqrt{6}i}{12}$	0	0	0	0	0	0
		0	0	0	0	$\frac{\sqrt{6}}{12}$	0	$-\frac{\sqrt{6}i}{12}$	0	0	0	0	0	0	0
		0	$\frac{\sqrt{6}i}{12}$	0	$\frac{\sqrt{6}}{12}$	0	0	0	0	0	0	0	0	0	0
		$\frac{\sqrt{6}i}{12}$	0	$-\frac{\sqrt{6}}{12}$	0	0	0	0	0	0	0	0	0	0	0
	$\mathbb{C}_3^{(1,0;a)}(A_{2g}, 1)$	0	$-\frac{\sqrt{6}}{12}$	0	$\frac{\sqrt{6}i}{12}$	0	0	0	0	0	0	0	0	0	0
		$\frac{\sqrt{6}}{12}$	0	$\frac{\sqrt{6}i}{12}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{6}i}{12}$
		0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{6}i}{12}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{6}}{12}$	0
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{6}}{12}$	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{6}i}{12}$	0	$-\frac{\sqrt{6}}{12}$	0	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{6}i}{12}$	0	$\frac{\sqrt{6}}{12}$	0	0	0
904	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$													

continued ...

Table 10

No.	multipole	matrix													
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{6}}{24}$	0	$-\frac{\sqrt{6i}}{24}$	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{6}}{24}$	0	$-\frac{\sqrt{6i}}{24}$	0	0	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{6i}}{24}$	0	$\frac{\sqrt{6}}{24}$	$\frac{i}{4}$	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{6i}}{24}$	0	$-\frac{\sqrt{6}}{24}$	0	0	$-\frac{i}{4}$
		0	0	0	0	0	0	0	0	0	0	$-\frac{i}{4}$	0	0	$\frac{\sqrt{6}}{24}$
		0	0	0	0	0	0	0	0	0	0	0	$\frac{i}{4}$	$-\frac{\sqrt{6}}{24}$	0
		0	0	0	0	0	0	0	0	$-\frac{i}{4}$	0	0	0	0	$\frac{\sqrt{6i}}{24}$
		0	0	0	0	0	0	0	0	0	$\frac{i}{4}$	0	0	$\frac{\sqrt{6i}}{24}$	0
		0	$-\frac{\sqrt{6}}{24}$	0	$-\frac{\sqrt{6i}}{24}$	0	0	$\frac{i}{4}$	0	0	0	0	0	0	0
		$\frac{\sqrt{6}}{24}$	0	$-\frac{\sqrt{6i}}{24}$	0	0	0	0	$-\frac{i}{4}$	0	0	0	0	0	0
		0	$\frac{\sqrt{6i}}{24}$	0	$-\frac{\sqrt{6}}{24}$	$\frac{i}{4}$	0	0	0	0	0	0	0	0	0
		$\frac{\sqrt{6i}}{24}$	0	$\frac{\sqrt{6}}{24}$	0	0	$-\frac{i}{4}$	0	0	0	0	0	0	0	0
		0	0	$-\frac{i}{4}$	0	0	$-\frac{\sqrt{6}}{24}$	0	$-\frac{\sqrt{6i}}{24}$	0	0	0	0	0	0
		0	0	0	$\frac{i}{4}$	$\frac{\sqrt{6}}{24}$	0	$-\frac{\sqrt{6i}}{24}$	0	0	0	0	0	0	0
905	symmetry	$-\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$													

continued ...

Table 10

No.	multipole	matrix													
		0	0	0	$\frac{\sqrt{6}}{12}$	$\frac{i}{12}$	0	0	0	0	$\frac{\sqrt{10}i}{24}$	0	$-\frac{\sqrt{10}}{24}$	0	0
		0	0	$-\frac{\sqrt{6}}{12}$	0	0	$-\frac{i}{12}$	0	0	$\frac{\sqrt{10}i}{24}$	0	$\frac{\sqrt{10}}{24}$	0	0	0
		0	$-\frac{\sqrt{6}}{12}$	0	0	0	0	$\frac{i}{12}$	0	0	$\frac{\sqrt{10}}{24}$	0	$\frac{\sqrt{10}i}{24}$	0	0
		$\frac{\sqrt{6}}{12}$	0	0	0	0	0	0	$-\frac{i}{12}$	$-\frac{\sqrt{10}}{24}$	0	$\frac{\sqrt{10}i}{24}$	0	0	0
		$-\frac{i}{12}$	0	0	0	0	0	0	$-\frac{\sqrt{6}}{12}$	0	0	0	0	0	$\frac{\sqrt{10}i}{24}$
		0	$\frac{i}{12}$	0	0	0	0	$\frac{\sqrt{6}}{12}$	0	0	0	0	0	$\frac{\sqrt{10}i}{24}$	0
		0	0	$-\frac{i}{12}$	0	0	$\frac{\sqrt{6}}{12}$	0	0	0	0	0	0	0	$\frac{\sqrt{10}}{24}$
		0	0	0	$\frac{i}{12}$	$-\frac{\sqrt{6}}{12}$	0	0	0	0	0	0	0	$-\frac{\sqrt{10}}{24}$	0
		0	$-\frac{\sqrt{10}i}{24}$	0	$-\frac{\sqrt{10}}{24}$	0	0	0	0	0	0	0	$-\frac{\sqrt{6}}{12}$	$-\frac{i}{12}$	0
		$-\frac{\sqrt{10}i}{24}$	0	$\frac{\sqrt{10}}{24}$	0	0	0	0	0	0	0	$\frac{\sqrt{6}}{12}$	0	0	$\frac{i}{12}$
		0	$\frac{\sqrt{10}}{24}$	0	$-\frac{\sqrt{10}i}{24}$	0	0	0	0	0	$\frac{\sqrt{6}}{12}$	0	0	0	0
		$-\frac{\sqrt{10}}{24}$	0	$-\frac{\sqrt{10}i}{24}$	0	0	0	0	0	$-\frac{\sqrt{6}}{12}$	0	0	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{10}i}{24}$	0	$-\frac{\sqrt{10}}{24}$	$\frac{i}{12}$	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{10}i}{24}$	0	$\frac{\sqrt{10}}{24}$	0	0	$-\frac{i}{12}$	0	0	0	0
906	symmetry	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$													

continued ...

Table 10

No.	multipole	matrix													
$\mathbb{G}_{3,2}^{(1,0;a)}(E_g, 1)$		0	0	0	$-\frac{\sqrt{6}i}{12}$	0	0	$-\frac{i}{12}$	0	0	$-\frac{\sqrt{10}}{24}$	0	$-\frac{\sqrt{10}i}{24}$	0	0
		0	0	$-\frac{\sqrt{6}i}{12}$	0	0	0	0	$\frac{i}{12}$	$\frac{\sqrt{10}}{24}$	0	$-\frac{\sqrt{10}i}{24}$	0	0	0
		0	$\frac{\sqrt{6}i}{12}$	0	0	$\frac{i}{12}$	0	0	0	0	$\frac{\sqrt{10}i}{24}$	0	$-\frac{\sqrt{10}}{24}$	0	0
		$\frac{\sqrt{6}i}{12}$	0	0	0	0	$-\frac{i}{12}$	0	0	$\frac{\sqrt{10}i}{24}$	0	$\frac{\sqrt{10}}{24}$	0	0	0
		0	0	$-\frac{i}{12}$	0	0	0	0	$\frac{\sqrt{6}i}{12}$	0	0	0	0	0	$-\frac{\sqrt{10}}{24}$
		0	0	0	$\frac{i}{12}$	0	0	$\frac{\sqrt{6}i}{12}$	0	0	0	0	0	$\frac{\sqrt{10}}{24}$	0
		$\frac{i}{12}$	0	0	0	0	$-\frac{\sqrt{6}i}{12}$	0	0	0	0	0	0	0	$\frac{\sqrt{10}i}{24}$
		0	$-\frac{i}{12}$	0	0	$-\frac{\sqrt{6}i}{12}$	0	0	0	0	0	0	0	$\frac{\sqrt{10}i}{24}$	0
		0	$\frac{\sqrt{10}}{24}$	0	$-\frac{\sqrt{10}i}{24}$	0	0	0	0	0	0	0	$\frac{\sqrt{6}i}{12}$	0	0
		$-\frac{\sqrt{10}}{24}$	0	$-\frac{\sqrt{10}i}{24}$	0	0	0	0	0	0	0	$\frac{\sqrt{6}i}{12}$	0	0	0
		0	$\frac{\sqrt{10}i}{24}$	0	$\frac{\sqrt{10}}{24}$	0	0	0	0	0	$-\frac{\sqrt{6}i}{12}$	0	0	$-\frac{i}{12}$	0
		$\frac{\sqrt{10}i}{24}$	0	$-\frac{\sqrt{10}}{24}$	0	0	0	0	0	$-\frac{\sqrt{6}i}{12}$	0	0	0	0	$\frac{i}{12}$
		0	0	0	0	0	$\frac{\sqrt{10}}{24}$	0	$-\frac{\sqrt{10}i}{24}$	0	0	$\frac{i}{12}$	0	0	0
		0	0	0	0	$-\frac{\sqrt{10}}{24}$	0	$-\frac{\sqrt{10}i}{24}$	0	0	0	0	$-\frac{i}{12}$	0	0
	907	symmetry	$\sqrt{15}xyz$												

continued ...

Table 10

No.	multipole	matrix													
$\mathbb{G}_{3,1}^{(1,0;a)}(E_g, 2)$		0	0	0	0	0	$-\frac{\sqrt{10}}{24}$	0	$\frac{\sqrt{10}i}{24}$	0	0	$\frac{i}{6}$	0	0	$\frac{\sqrt{6}}{24}$
		0	0	0	0	$\frac{\sqrt{10}}{24}$	0	$\frac{\sqrt{10}i}{24}$	0	0	0	0	$-\frac{i}{6}$	$-\frac{\sqrt{6}}{24}$	0
		0	0	0	0	0	$-\frac{\sqrt{10}i}{24}$	0	$-\frac{\sqrt{10}}{24}$	$-\frac{i}{6}$	0	0	0	0	$-\frac{\sqrt{6}i}{24}$
		0	0	0	0	$-\frac{\sqrt{10}i}{24}$	0	$\frac{\sqrt{10}}{24}$	0	0	$\frac{i}{6}$	0	0	$-\frac{\sqrt{6}i}{24}$	0
		0	$\frac{\sqrt{10}}{24}$	0	$\frac{\sqrt{10}i}{24}$	0	0	0	0	0	$-\frac{\sqrt{6}}{24}$	0	$\frac{\sqrt{6}i}{24}$	0	0
		$-\frac{\sqrt{10}}{24}$	0	$\frac{\sqrt{10}i}{24}$	0	0	0	0	0	$\frac{\sqrt{6}}{24}$	0	$\frac{\sqrt{6}i}{24}$	0	0	0
		0	$-\frac{\sqrt{10}i}{24}$	0	$\frac{\sqrt{10}}{24}$	0	0	0	0	0	$\frac{\sqrt{6}i}{24}$	0	$\frac{\sqrt{6}}{24}$	$-\frac{i}{6}$	0
		$-\frac{\sqrt{10}i}{24}$	0	$-\frac{\sqrt{10}}{24}$	0	0	0	0	0	$\frac{\sqrt{6}i}{24}$	0	$-\frac{\sqrt{6}}{24}$	0	0	$\frac{i}{6}$
		0	0	$\frac{i}{6}$	0	0	$\frac{\sqrt{6}}{24}$	0	$-\frac{\sqrt{6}i}{24}$	0	0	0	0	0	$\frac{\sqrt{10}}{24}$
		0	0	0	$-\frac{i}{6}$	$-\frac{\sqrt{6}}{24}$	0	$-\frac{\sqrt{6}i}{24}$	0	0	0	0	0	$-\frac{\sqrt{10}}{24}$	0
		$-\frac{i}{6}$	0	0	0	0	$-\frac{\sqrt{6}i}{24}$	0	$-\frac{\sqrt{6}}{24}$	0	0	0	0	0	$\frac{\sqrt{10}i}{24}$
		0	$\frac{i}{6}$	0	0	$-\frac{\sqrt{6}i}{24}$	0	$\frac{\sqrt{6}}{24}$	0	0	0	0	0	$\frac{\sqrt{10}i}{24}$	0
		0	$-\frac{\sqrt{6}}{24}$	0	$\frac{\sqrt{6}i}{24}$	0	0	$\frac{i}{6}$	0	0	$-\frac{\sqrt{10}}{24}$	0	$-\frac{\sqrt{10}i}{24}$	0	0
		$\frac{\sqrt{6}}{24}$	0	$\frac{\sqrt{6}i}{24}$	0	0	0	0	$-\frac{i}{6}$	$\frac{\sqrt{10}}{24}$	0	$-\frac{\sqrt{10}i}{24}$	0	0	0
	908	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$												

continued ...

Table 10

No.	multipole	matrix													
		0	0	0	0	0	$-\frac{\sqrt{10}i}{24}$	0	$-\frac{\sqrt{10}}{24}$	$-\frac{i}{6}$	0	0	0	0	$-\frac{\sqrt{6}i}{24}$
		0	0	0	0	$-\frac{\sqrt{10}i}{24}$	0	$\frac{\sqrt{10}}{24}$	0	0	$\frac{i}{6}$	0	0	$-\frac{\sqrt{6}i}{24}$	0
		0	0	0	0	0	$\frac{\sqrt{10}}{24}$	0	$-\frac{\sqrt{10}i}{24}$	0	0	$-\frac{i}{6}$	0	0	$-\frac{\sqrt{6}}{24}$
		0	0	0	0	$-\frac{\sqrt{10}}{24}$	0	$-\frac{\sqrt{10}i}{24}$	0	0	0	$\frac{i}{6}$	$\frac{\sqrt{6}}{24}$	0	0
		0	$\frac{\sqrt{10}i}{24}$	0	$-\frac{\sqrt{10}}{24}$	0	0	0	0	0	$\frac{\sqrt{6}i}{24}$	0	$\frac{\sqrt{6}}{24}$	$-\frac{i}{6}$	0
		$\frac{\sqrt{10}i}{24}$	0	$\frac{\sqrt{10}}{24}$	0	0	0	0	0	$\frac{\sqrt{6}i}{24}$	0	$-\frac{\sqrt{6}}{24}$	0	0	$\frac{i}{6}$
	$\mathbb{G}_{3,2}^{(1,0;a)}(E_g, 2)$	0	$\frac{\sqrt{10}}{24}$	0	$\frac{\sqrt{10}i}{24}$	0	0	0	0	0	$\frac{\sqrt{6}}{24}$	0	$-\frac{\sqrt{6}i}{24}$	0	0
		$-\frac{\sqrt{10}}{24}$	0	$\frac{\sqrt{10}i}{24}$	0	0	0	0	0	$-\frac{\sqrt{6}}{24}$	0	$-\frac{\sqrt{6}i}{24}$	0	0	0
		$\frac{i}{6}$	0	0	0	0	$-\frac{\sqrt{6}i}{24}$	0	$-\frac{\sqrt{6}}{24}$	0	0	0	0	0	$\frac{\sqrt{10}i}{24}$
		0	$-\frac{i}{6}$	0	0	$-\frac{\sqrt{6}i}{24}$	0	$\frac{\sqrt{6}}{24}$	0	0	0	0	0	$\frac{\sqrt{10}i}{24}$	0
		0	0	$\frac{i}{6}$	0	0	$-\frac{\sqrt{6}}{24}$	0	$\frac{\sqrt{6}i}{24}$	0	0	0	0	0	$-\frac{\sqrt{10}}{24}$
		0	0	0	$-\frac{i}{6}$	$\frac{\sqrt{6}}{24}$	0	$\frac{\sqrt{6}i}{24}$	0	0	0	0	0	$\frac{\sqrt{10}}{24}$	0
		0	$\frac{\sqrt{6}i}{24}$	0	$\frac{\sqrt{6}}{24}$	$\frac{i}{6}$	0	0	0	0	$-\frac{\sqrt{10}i}{24}$	0	$\frac{\sqrt{10}}{24}$	0	0
		$\frac{\sqrt{6}i}{24}$	0	$-\frac{\sqrt{6}}{24}$	0	0	$-\frac{i}{6}$	0	0	$-\frac{\sqrt{10}i}{24}$	0	$-\frac{\sqrt{10}}{24}$	0	0	0
909	symmetry	$-\frac{\sqrt{70}x(x^2-3y^2)(x^2+y^2-8z^2)}{16}$													

continued ...

Table 10

No.	multipole	matrix													
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{30i}}{120}$	0	$\frac{\sqrt{30}}{120}$	$-\frac{\sqrt{5i}}{10}$	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{30i}}{120}$	0	$-\frac{\sqrt{30}}{120}$	0	0	$\frac{\sqrt{5i}}{10}$
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{30}}{24}$	0	$-\frac{\sqrt{30i}}{24}$	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{30}}{24}$	0	$-\frac{\sqrt{30i}}{24}$	0	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{5i}}{20}$	0	0	0	0	$\frac{\sqrt{30i}}{30}$
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{5i}}{20}$	0	0	$\frac{\sqrt{30i}}{30}$	0
		0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{5i}}{20}$	0	0	$-\frac{\sqrt{30}}{30}$
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{5i}}{20}$	$\frac{\sqrt{30}}{30}$	0
		0	$-\frac{\sqrt{30i}}{120}$	0	$-\frac{\sqrt{30}}{24}$	$\frac{\sqrt{5i}}{20}$	0	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{30i}}{120}$	0	$\frac{\sqrt{30}}{24}$	0	$-\frac{\sqrt{5i}}{20}$	0	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{30}}{120}$	0	$\frac{\sqrt{30i}}{24}$	0	0	$-\frac{\sqrt{5i}}{20}$	0	0	0	0	0	0	0
		$\frac{\sqrt{30}}{120}$	0	$\frac{\sqrt{30i}}{24}$	0	0	0	$\frac{\sqrt{5i}}{20}$	0	0	0	0	0	0	0
		$\frac{\sqrt{5i}}{10}$	0	0	0	0	$-\frac{\sqrt{30i}}{30}$	0	$\frac{\sqrt{30}}{30}$	0	0	0	0	0	0
		0	$-\frac{\sqrt{5i}}{10}$	0	0	$-\frac{\sqrt{30i}}{30}$	0	$-\frac{\sqrt{30}}{30}$	0	0	0	0	0	0	0
910	symmetry	$\frac{z(15x^4+30x^2y^2-40x^2z^2+15y^4-40y^2z^2+8z^4)}{8}$													

continued ...

Table 10

No.	multipole	matrix													
$\mathbb{G}_5^{(1,0;a)}(A_{2g}, 1)$		0	0	0	0	0	$\frac{\sqrt{210}i}{168}$	0	$-\frac{\sqrt{210}}{168}$	0	0	0	0	0	0
		0	0	0	0	$\frac{\sqrt{210}i}{168}$	0	$\frac{\sqrt{210}}{168}$	0	0	0	0	0	0	0
		0	0	0	0	0	$\frac{\sqrt{210}}{168}$	0	$\frac{\sqrt{210}i}{168}$	0	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{210}}{168}$	0	$\frac{\sqrt{210}i}{168}$	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{210}i}{168}$	0	$-\frac{\sqrt{210}}{168}$	0	0	0	0	0	$-\frac{3\sqrt{14}i}{56}$	0	$\frac{3\sqrt{14}}{56}$	0	0
		$-\frac{\sqrt{210}i}{168}$	0	$\frac{\sqrt{210}}{168}$	0	0	0	0	0	$-\frac{3\sqrt{14}i}{56}$	0	$-\frac{3\sqrt{14}}{56}$	0	0	0
		0	$\frac{\sqrt{210}}{168}$	0	$-\frac{\sqrt{210}i}{168}$	0	0	0	0	0	$-\frac{3\sqrt{14}}{56}$	0	$-\frac{3\sqrt{14}i}{56}$	0	0
		$-\frac{\sqrt{210}}{168}$	0	$-\frac{\sqrt{210}i}{168}$	0	0	0	0	0	$\frac{3\sqrt{14}}{56}$	0	$-\frac{3\sqrt{14}i}{56}$	0	0	0
		0	0	0	0	0	$\frac{3\sqrt{14}i}{56}$	0	$\frac{3\sqrt{14}}{56}$	0	0	0	0	0	$\frac{\sqrt{210}i}{84}$
		0	0	0	0	$\frac{3\sqrt{14}i}{56}$	0	$-\frac{3\sqrt{14}}{56}$	0	0	0	0	0	$\frac{\sqrt{210}i}{84}$	0
		0	0	0	0	0	$-\frac{3\sqrt{14}}{56}$	0	$\frac{3\sqrt{14}i}{56}$	0	0	0	0	0	$\frac{\sqrt{210}}{84}$
		0	0	0	0	$\frac{3\sqrt{14}}{56}$	0	$\frac{3\sqrt{14}i}{56}$	0	0	0	0	0	$-\frac{\sqrt{210}}{84}$	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{210}i}{84}$	0	$-\frac{\sqrt{210}}{84}$	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{210}i}{84}$	0	$\frac{\sqrt{210}}{84}$	0	0	0
911	symmetry	$-\frac{\sqrt{70}y(3x^2-y^2)(x^2+y^2-8z^2)}{16}$													

continued ...

Table 10

No.	multipole	matrix													
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{30}}{24}$	0	$\frac{\sqrt{30}i}{24}$	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{30}}{24}$	0	$\frac{\sqrt{30}i}{24}$	0	0	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{30}i}{120}$	0	$\frac{\sqrt{30}}{120}$	$-\frac{\sqrt{5}i}{10}$	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{30}i}{120}$	0	$-\frac{\sqrt{30}}{120}$	0	0	$\frac{\sqrt{5}i}{10}$
		0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{5}i}{20}$	0	0	$\frac{\sqrt{30}}{30}$
		0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{5}i}{20}$	$-\frac{\sqrt{30}}{30}$	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{5}i}{20}$	0	0	0	0	$\frac{\sqrt{30}i}{30}$
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{5}i}{20}$	0	0	$\frac{\sqrt{30}i}{30}$	0
	$\mathbb{G}_5^{(1,0;a)}(A_{2g}, 2)$	0	$\frac{\sqrt{30}}{24}$	0	$-\frac{\sqrt{30}i}{120}$	0	0	$\frac{\sqrt{5}i}{20}$	0	0	0	0	0	0	0
		$-\frac{\sqrt{30}}{24}$	0	$-\frac{\sqrt{30}i}{120}$	0	0	0	0	$-\frac{\sqrt{5}i}{20}$	0	0	0	0	0	0
		0	$-\frac{\sqrt{30}i}{24}$	0	$-\frac{\sqrt{30}}{120}$	$\frac{\sqrt{5}i}{20}$	0	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{30}i}{24}$	0	$\frac{\sqrt{30}}{120}$	0	0	$-\frac{\sqrt{5}i}{20}$	0	0	0	0	0	0	0	0
		0	0	$\frac{\sqrt{5}i}{10}$	0	0	$-\frac{\sqrt{30}}{30}$	0	$-\frac{\sqrt{30}i}{30}$	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{5}i}{10}$	$\frac{\sqrt{30}}{30}$	0	$-\frac{\sqrt{30}i}{30}$	0	0	0	0	0	0	0
912	symmetry	$\frac{3\sqrt{14}x(x^4 - 10x^2y^2 + 5y^4)}{16}$													

continued ...

Table 10

No.	multipole	matrix													
		0	0	0	0	$-\frac{\sqrt{15}i}{12}$	0	0	0	0	$\frac{\sqrt{6}i}{24}$	0	$-\frac{\sqrt{6}}{24}$	0	0
		0	0	0	0	0	$\frac{\sqrt{15}i}{12}$	0	0	$\frac{\sqrt{6}i}{24}$	0	$\frac{\sqrt{6}}{24}$	0	0	0
		0	0	0	0	0	0	$\frac{\sqrt{15}i}{12}$	0	0	$-\frac{\sqrt{6}}{24}$	0	$-\frac{\sqrt{6}i}{24}$	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{15}i}{12}$	$\frac{\sqrt{6}}{24}$	0	$-\frac{\sqrt{6}i}{24}$	0	0	0
		$\frac{\sqrt{15}i}{12}$	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{15}i}{12}$	0	0	0	0	0	0	0	0	0	0	0	0
	$\mathbb{G}_{5,1}^{(1,0;a)}(E_g, 1)$	0	0	$-\frac{\sqrt{15}i}{12}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{15}i}{12}$	0	0	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{6}i}{24}$	0	$\frac{\sqrt{6}}{24}$	0	0	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{6}i}{24}$	0	$-\frac{\sqrt{6}}{24}$	0	0	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{6}}{24}$	0	$\frac{\sqrt{6}i}{24}$	0	0	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{6}}{24}$	0	$\frac{\sqrt{6}i}{24}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
913	symmetry	$-\frac{3\sqrt{14}y(5x^4-10x^2y^2+y^4)}{16}$													

continued ...

Table 10

No.	multipole	matrix													
		0	0	0	0	0	0	$\frac{\sqrt{15}i}{12}$	0	0	$-\frac{\sqrt{6}}{24}$	0	$-\frac{\sqrt{6}i}{24}$	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{15}i}{12}$	$\frac{\sqrt{6}}{24}$	0	$-\frac{\sqrt{6}i}{24}$	0	0	0
		0	0	0	0	$\frac{\sqrt{15}i}{12}$	0	0	0	0	$-\frac{\sqrt{6}}{24}$	0	$\frac{\sqrt{6}}{24}$	0	0
		0	0	0	0	0	$-\frac{\sqrt{15}i}{12}$	0	0	$-\frac{\sqrt{6}}{24}$	0	$-\frac{\sqrt{6}}{24}$	0	0	0
		0	0	$-\frac{\sqrt{15}i}{12}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{15}i}{12}$	0	0	0	0	0	0	0	0	0	0
	$\mathbb{G}_{5,2}^{(1,0;a)}(E_g, 1)$	$-\frac{\sqrt{15}i}{12}$	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{15}i}{12}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{6}}{24}$	0	$\frac{\sqrt{6}i}{24}$	0	0	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{6}}{24}$	0	$\frac{\sqrt{6}i}{24}$	0	0	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{6}i}{24}$	0	$-\frac{\sqrt{6}}{24}$	0	0	0	0	0	0	0	0	0	0
		$\frac{\sqrt{6}i}{24}$	0	$\frac{\sqrt{6}}{24}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
914	symmetry	$\frac{\sqrt{15}x(x^4+2x^2y^2-12x^2z^2+y^4-12y^2z^2+8z^4)}{8}$													

continued ...

Table 10

No.	multipole	matrix													
$\mathbb{G}_{5,1}^{(1,0;a)}(E_g, 2)$		0	0	0	$-\frac{\sqrt{21}}{84}$	$-\frac{\sqrt{14i}}{168}$	0	0	0	0	$-\frac{\sqrt{35i}}{60}$	0	$\frac{\sqrt{35}}{60}$	0	0
		0	0	$\frac{\sqrt{21}}{84}$	0	0	$\frac{\sqrt{14i}}{168}$	0	0	$-\frac{\sqrt{35i}}{60}$	0	$-\frac{\sqrt{35}}{60}$	0	0	0
		0	$\frac{\sqrt{21}}{84}$	0	0	0	0	$-\frac{\sqrt{14i}}{168}$	0	0	$-\frac{\sqrt{35}}{60}$	0	$-\frac{\sqrt{35i}}{60}$	0	0
		$-\frac{\sqrt{21}}{84}$	0	0	0	0	0	0	$\frac{\sqrt{14i}}{168}$	$\frac{\sqrt{35}}{60}$	0	$-\frac{\sqrt{35i}}{60}$	0	0	0
		$\frac{\sqrt{14i}}{168}$	0	0	0	0	0	0	$\frac{\sqrt{21}}{21}$	$\frac{\sqrt{210i}}{280}$	0	0	0	0	$\frac{\sqrt{35i}}{30}$
		0	$-\frac{\sqrt{14i}}{168}$	0	0	0	0	$-\frac{\sqrt{21}}{21}$	0	0	$-\frac{\sqrt{210i}}{280}$	0	0	$\frac{\sqrt{35i}}{30}$	0
		0	0	$\frac{\sqrt{14i}}{168}$	0	0	$-\frac{\sqrt{21}}{21}$	0	0	0	0	$\frac{\sqrt{210i}}{280}$	0	0	$\frac{\sqrt{35}}{30}$
		0	0	0	$-\frac{\sqrt{14i}}{168}$	$\frac{\sqrt{21}}{21}$	0	0	0	0	0	0	$-\frac{\sqrt{210i}}{280}$	$-\frac{\sqrt{35}}{30}$	0
		0	$\frac{\sqrt{35i}}{60}$	0	$\frac{\sqrt{35}}{60}$	$-\frac{\sqrt{210i}}{280}$	0	0	0	0	0	0	$-\frac{5\sqrt{21}}{84}$	$-\frac{\sqrt{14i}}{84}$	0
		$\frac{\sqrt{35i}}{60}$	0	$-\frac{\sqrt{35}}{60}$	0	0	$\frac{\sqrt{210i}}{280}$	0	0	0	0	$\frac{5\sqrt{21}}{84}$	0	0	$\frac{\sqrt{14i}}{84}$
		0	$-\frac{\sqrt{35}}{60}$	0	$\frac{\sqrt{35i}}{60}$	0	0	$-\frac{\sqrt{210i}}{280}$	0	0	$\frac{5\sqrt{21}}{84}$	0	0	0	0
		$\frac{\sqrt{35}}{60}$	0	$\frac{\sqrt{35i}}{60}$	0	0	0	0	$\frac{\sqrt{210i}}{280}$	$-\frac{5\sqrt{21}}{84}$	0	0	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{35i}}{30}$	0	$-\frac{\sqrt{35}}{30}$	$\frac{\sqrt{14i}}{84}$	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{35i}}{30}$	0	$\frac{\sqrt{35}}{30}$	0	0	$-\frac{\sqrt{14i}}{84}$	0	0	0	0
	915	symmetry	$\frac{\sqrt{15}y(x^4+2x^2y^2-12x^2z^2+y^4-12y^2z^2+8z^4)}{8}$												

continued ...

Table 10

No.	multipole	matrix													
		0	0	0	$\frac{\sqrt{21}i}{84}$	0	0	$\frac{\sqrt{14}i}{168}$	0	0	$\frac{\sqrt{35}}{60}$	0	$\frac{\sqrt{35}i}{60}$	0	0
		0	0	$\frac{\sqrt{21}i}{84}$	0	0	0	$-\frac{\sqrt{14}i}{168}$	$-\frac{\sqrt{35}}{60}$	0	$\frac{\sqrt{35}i}{60}$	0	0	0	0
		0	$-\frac{\sqrt{21}i}{84}$	0	0	$-\frac{\sqrt{14}i}{168}$	0	0	0	$-\frac{\sqrt{35}i}{60}$	0	$\frac{\sqrt{35}}{60}$	0	0	0
		$-\frac{\sqrt{21}i}{84}$	0	0	0	0	$\frac{\sqrt{14}i}{168}$	0	0	$-\frac{\sqrt{35}i}{60}$	0	$-\frac{\sqrt{35}}{60}$	0	0	0
		0	0	$\frac{\sqrt{14}i}{168}$	0	0	0	$-\frac{\sqrt{21}i}{21}$	0	0	$-\frac{\sqrt{210}i}{280}$	0	0	$-\frac{\sqrt{35}}{30}$	0
		0	0	0	$-\frac{\sqrt{14}i}{168}$	0	0	$-\frac{\sqrt{21}i}{21}$	0	0	0	0	$\frac{\sqrt{210}i}{280}$	$\frac{\sqrt{35}}{30}$	0
		$-\frac{\sqrt{14}i}{168}$	0	0	0	0	$\frac{\sqrt{21}i}{21}$	0	0	$\frac{\sqrt{210}i}{280}$	0	0	0	0	$\frac{\sqrt{35}i}{30}$
	$\mathbb{G}_{5,2}^{(1,0;a)}(E_g, 2)$	0	$\frac{\sqrt{14}i}{168}$	0	0	$\frac{\sqrt{21}i}{21}$	0	0	0	$-\frac{\sqrt{210}i}{280}$	0	0	$\frac{\sqrt{35}i}{30}$	0	0
		0	$-\frac{\sqrt{35}}{60}$	0	$\frac{\sqrt{35}i}{60}$	0	0	$-\frac{\sqrt{210}i}{280}$	0	0	0	0	$\frac{5\sqrt{21}i}{84}$	0	0
		$\frac{\sqrt{35}}{60}$	0	$\frac{\sqrt{35}i}{60}$	0	0	0	$\frac{\sqrt{210}i}{280}$	0	0	$\frac{5\sqrt{21}i}{84}$	0	0	0	0
		0	$-\frac{\sqrt{35}i}{60}$	0	$-\frac{\sqrt{35}}{60}$	$\frac{\sqrt{210}i}{280}$	0	0	0	$-\frac{5\sqrt{21}i}{84}$	0	0	0	$-\frac{\sqrt{14}i}{84}$	0
		$-\frac{\sqrt{35}i}{60}$	0	$\frac{\sqrt{35}}{60}$	0	0	$-\frac{\sqrt{210}i}{280}$	0	0	$-\frac{5\sqrt{21}i}{84}$	0	0	0	0	$\frac{\sqrt{14}i}{84}$
		0	0	0	0	0	$\frac{\sqrt{35}}{30}$	0	$-\frac{\sqrt{35}i}{30}$	0	0	$\frac{\sqrt{14}i}{84}$	0	0	0
		0	0	0	0	$-\frac{\sqrt{35}}{30}$	0	$-\frac{\sqrt{35}i}{30}$	0	0	0	0	$-\frac{\sqrt{14}i}{84}$	0	0
916	symmetry	$-\frac{3\sqrt{35}xyz(x-y)(x+y)}{2}$													

continued ...

Table 10

No.	multipole	matrix													
$\mathbb{G}_{5,1}^{(1,0;a)}(E_g, 3)$		0	0	0	0	0	$\frac{\sqrt{6}}{24}$	0	$-\frac{\sqrt{6}i}{24}$	0	0	$\frac{\sqrt{15}i}{15}$	0	0	$-\frac{\sqrt{10}}{20}$
		0	0	0	0	$-\frac{\sqrt{6}}{24}$	0	$-\frac{\sqrt{6}i}{24}$	0	0	0	0	$-\frac{\sqrt{15}i}{15}$	$\frac{\sqrt{10}}{20}$	0
		0	0	0	0	0	$-\frac{\sqrt{6}i}{24}$	0	$-\frac{\sqrt{6}}{24}$	$\frac{\sqrt{15}i}{15}$	0	0	0	0	$-\frac{\sqrt{10}i}{20}$
		0	0	0	0	$-\frac{\sqrt{6}i}{24}$	0	$\frac{\sqrt{6}}{24}$	0	0	$-\frac{\sqrt{15}i}{15}$	0	0	$-\frac{\sqrt{10}i}{20}$	0
		0	$-\frac{\sqrt{6}}{24}$	0	$\frac{\sqrt{6}i}{24}$	0	0	0	0	0	$-\frac{\sqrt{10}}{40}$	0	$-\frac{\sqrt{10}i}{40}$	0	0
		$\frac{\sqrt{6}}{24}$	0	$\frac{\sqrt{6}i}{24}$	0	0	0	0	0	$\frac{\sqrt{10}}{40}$	0	$-\frac{\sqrt{10}i}{40}$	0	0	0
		0	$\frac{\sqrt{6}i}{24}$	0	$\frac{\sqrt{6}}{24}$	0	0	0	0	0	$-\frac{\sqrt{10}i}{40}$	0	$\frac{\sqrt{10}}{40}$	0	0
		$\frac{\sqrt{6}i}{24}$	0	$-\frac{\sqrt{6}}{24}$	0	0	0	0	0	$-\frac{\sqrt{10}i}{40}$	0	$-\frac{\sqrt{10}}{40}$	0	0	0
		0	0	$-\frac{\sqrt{15}i}{15}$	0	0	$\frac{\sqrt{10}}{40}$	0	$\frac{\sqrt{10}i}{40}$	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{15}i}{15}$	$-\frac{\sqrt{10}}{40}$	0	$\frac{\sqrt{10}i}{40}$	0	0	0	0	0	0	0
		$-\frac{\sqrt{15}i}{15}$	0	0	0	0	$\frac{\sqrt{10}i}{40}$	0	$-\frac{\sqrt{10}}{40}$	0	0	0	0	0	0
		0	$\frac{\sqrt{15}i}{15}$	0	0	$\frac{\sqrt{10}i}{40}$	0	$\frac{\sqrt{10}}{40}$	0	0	0	0	0	0	0
		0	$\frac{\sqrt{10}}{20}$	0	$\frac{\sqrt{10}i}{20}$	0	0	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{10}}{20}$	0	$\frac{\sqrt{10}i}{20}$	0	0	0	0	0	0	0	0	0	0	0
	917	symmetry	$\frac{3\sqrt{35}z(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$												

continued ...

Table 10

No.	multipole	matrix													
		0	0	0	0	0	$\frac{\sqrt{6}i}{24}$	0	$\frac{\sqrt{6}}{24}$	$-\frac{\sqrt{15}i}{15}$	0	0	0	0	$\frac{\sqrt{10}i}{20}$
		0	0	0	0	$\frac{\sqrt{6}i}{24}$	0	$-\frac{\sqrt{6}}{24}$	0	0	$\frac{\sqrt{15}i}{15}$	0	0	$\frac{\sqrt{10}i}{20}$	0
		0	0	0	0	0	$\frac{\sqrt{6}}{24}$	0	$-\frac{\sqrt{6}i}{24}$	0	0	$\frac{\sqrt{15}i}{15}$	0	0	$-\frac{\sqrt{10}}{20}$
		0	0	0	0	$-\frac{\sqrt{6}}{24}$	0	$-\frac{\sqrt{6}i}{24}$	0	0	0	0	$-\frac{\sqrt{15}i}{15}$	$\frac{\sqrt{10}}{20}$	0
		0	$-\frac{\sqrt{6}i}{24}$	0	$-\frac{\sqrt{6}}{24}$	0	0	0	0	0	0	$\frac{\sqrt{10}i}{40}$	0	$-\frac{\sqrt{10}}{40}$	0
		$-\frac{\sqrt{6}i}{24}$	0	$\frac{\sqrt{6}}{24}$	0	0	0	0	0	0	$\frac{\sqrt{10}i}{40}$	0	$\frac{\sqrt{10}}{40}$	0	0
	$\mathbb{G}_{5,2}^{(1,0;a)}(E_g, 3)$	0	$-\frac{\sqrt{6}}{24}$	0	$\frac{\sqrt{6}i}{24}$	0	0	0	0	0	0	$-\frac{\sqrt{10}}{40}$	0	$-\frac{\sqrt{10}i}{40}$	0
		$\frac{\sqrt{6}}{24}$	0	$\frac{\sqrt{6}i}{24}$	0	0	0	0	0	0	$\frac{\sqrt{10}}{40}$	0	$-\frac{\sqrt{10}i}{40}$	0	0
		$\frac{\sqrt{15}i}{15}$	0	0	0	0	$-\frac{\sqrt{10}i}{40}$	0	$\frac{\sqrt{10}}{40}$	0	0	0	0	0	0
		0	$-\frac{\sqrt{15}i}{15}$	0	0	$-\frac{\sqrt{10}i}{40}$	0	$-\frac{\sqrt{10}}{40}$	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{15}i}{15}$	0	0	$\frac{\sqrt{10}}{40}$	0	$\frac{\sqrt{10}i}{40}$	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{15}i}{15}$	$-\frac{\sqrt{10}}{40}$	0	$\frac{\sqrt{10}i}{40}$	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{10}i}{20}$	0	$\frac{\sqrt{10}}{20}$	0	0	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{10}i}{20}$	0	$-\frac{\sqrt{10}}{20}$	0	0	0	0	0	0	0	0	0	0	0
918	symmetry	$-\frac{\sqrt{105}xyz(x^2+y^2-2z^2)}{2}$													

continued ...

Table 10

No.	multipole	matrix													
		0	0	0	0	0	$\frac{\sqrt{2}}{24}$	0	$-\frac{\sqrt{2}i}{24}$	0	0	$-\frac{\sqrt{5}i}{30}$	0	0	$-\frac{\sqrt{30}}{30}$
		0	0	0	0	$-\frac{\sqrt{2}}{24}$	0	$-\frac{\sqrt{2}i}{24}$	0	0	0	0	$\frac{\sqrt{5}i}{30}$	$\frac{\sqrt{30}}{30}$	0
		0	0	0	0	0	$\frac{\sqrt{2}i}{24}$	0	$\frac{\sqrt{2}}{24}$	$\frac{\sqrt{5}i}{30}$	0	0	0	0	$\frac{\sqrt{30}i}{30}$
		0	0	0	0	$\frac{\sqrt{2}i}{24}$	0	$-\frac{\sqrt{2}}{24}$	0	0	$-\frac{\sqrt{5}i}{30}$	0	0	$\frac{\sqrt{30}i}{30}$	0
		0	$-\frac{\sqrt{2}}{24}$	0	$-\frac{\sqrt{2}i}{24}$	0	0	0	0	0	$-\frac{\sqrt{30}}{24}$	0	$\frac{\sqrt{30}i}{24}$	0	0
		$\frac{\sqrt{2}}{24}$	0	$-\frac{\sqrt{2}i}{24}$	0	0	0	0	0	$\frac{\sqrt{30}}{24}$	0	$\frac{\sqrt{30}i}{24}$	0	0	0
	$\mathbb{G}_{5,1}^{(1,0;a)}(E_g, 4)$	0	$\frac{\sqrt{2}i}{24}$	0	$-\frac{\sqrt{2}}{24}$	0	0	0	0	0	$-\frac{\sqrt{30}i}{120}$	0	$-\frac{\sqrt{30}}{120}$	$-\frac{\sqrt{5}i}{15}$	0
		$\frac{\sqrt{2}i}{24}$	0	$\frac{\sqrt{2}}{24}$	0	0	0	0	0	$-\frac{\sqrt{30}i}{120}$	0	$\frac{\sqrt{30}}{120}$	0	0	$\frac{\sqrt{5}i}{15}$
		0	0	$-\frac{\sqrt{5}i}{30}$	0	0	$\frac{\sqrt{30}}{24}$	0	$\frac{\sqrt{30}i}{120}$	0	0	0	0	0	$\frac{\sqrt{2}}{12}$
		0	0	0	$\frac{\sqrt{5}i}{30}$	$-\frac{\sqrt{30}}{24}$	0	$\frac{\sqrt{30}i}{120}$	0	0	0	0	0	0	$-\frac{\sqrt{2}}{12}$
		$\frac{\sqrt{5}i}{30}$	0	0	0	0	$-\frac{\sqrt{30}i}{24}$	0	$\frac{\sqrt{30}}{120}$	0	0	0	0	0	$\frac{\sqrt{2}i}{12}$
		0	$-\frac{\sqrt{5}i}{30}$	0	0	$-\frac{\sqrt{30}i}{24}$	0	$-\frac{\sqrt{30}}{120}$	0	0	0	0	0	$\frac{\sqrt{2}i}{12}$	0
		0	$\frac{\sqrt{30}}{30}$	0	$-\frac{\sqrt{30}i}{30}$	0	0	$\frac{\sqrt{5}i}{15}$	0	0	$-\frac{\sqrt{2}}{12}$	0	$-\frac{\sqrt{2}i}{12}$	0	0
		$-\frac{\sqrt{30}}{30}$	0	$-\frac{\sqrt{30}i}{30}$	0	0	0	0	$-\frac{\sqrt{5}i}{15}$	$\frac{\sqrt{2}}{12}$	0	$-\frac{\sqrt{2}i}{12}$	0	0	0
919	symmetry	$-\frac{\sqrt{105}z(x-y)(x+y)(x^2+y^2-2z^2)}{4}$													

continued ...

Table 10

No.	multipole	matrix													
		0	0	0	0	0	$\frac{\sqrt{2}i}{24}$	0	$\frac{\sqrt{2}}{24}$	$\frac{\sqrt{5}i}{30}$	0	0	0	$\frac{\sqrt{30}i}{30}$	
		0	0	0	0	$\frac{\sqrt{2}i}{24}$	0	$-\frac{\sqrt{2}}{24}$	0	0	$-\frac{\sqrt{5}i}{30}$	0	0	$\frac{\sqrt{30}i}{30}$	
		0	0	0	0	0	$-\frac{\sqrt{2}}{24}$	0	$\frac{\sqrt{2}i}{24}$	0	0	$\frac{\sqrt{5}i}{30}$	0	$\frac{\sqrt{30}}{30}$	
		0	0	0	0	$\frac{\sqrt{2}}{24}$	0	$\frac{\sqrt{2}i}{24}$	0	0	0	$-\frac{\sqrt{5}i}{30}$	$-\frac{\sqrt{30}}{30}$	0	
		0	$-\frac{\sqrt{2}i}{24}$	0	$\frac{\sqrt{2}}{24}$	0	0	0	0	0	$-\frac{\sqrt{30}i}{120}$	0	$-\frac{\sqrt{30}}{120}$	$-\frac{\sqrt{5}i}{15}$	
		$-\frac{\sqrt{2}i}{24}$	0	$-\frac{\sqrt{2}}{24}$	0	0	0	0	0	$-\frac{\sqrt{30}i}{120}$	0	$\frac{\sqrt{30}}{120}$	0	$\frac{\sqrt{5}i}{15}$	
	$\mathbb{G}_{5,2}^{(1,0;a)}(E_g, 4)$	0	$-\frac{\sqrt{2}}{24}$	0	$-\frac{\sqrt{2}i}{24}$	0	0	0	0	0	$\frac{\sqrt{30}}{24}$	0	$-\frac{\sqrt{30}i}{24}$	0	
		$\frac{\sqrt{2}}{24}$	0	$-\frac{\sqrt{2}i}{24}$	0	0	0	0	0	$-\frac{\sqrt{30}}{24}$	0	$-\frac{\sqrt{30}i}{24}$	0	0	
		$-\frac{\sqrt{5}i}{30}$	0	0	0	0	$\frac{\sqrt{30}i}{120}$	0	$-\frac{\sqrt{30}}{24}$	0	0	0	0	$\frac{\sqrt{2}i}{12}$	
		0	$\frac{\sqrt{5}i}{30}$	0	0	$\frac{\sqrt{30}i}{120}$	0	$\frac{\sqrt{30}}{24}$	0	0	0	0	0	$\frac{\sqrt{2}i}{12}$	
		0	0	$-\frac{\sqrt{5}i}{30}$	0	0	$\frac{\sqrt{30}}{120}$	0	$\frac{\sqrt{30}i}{24}$	0	0	0	0	$-\frac{\sqrt{2}}{12}$	
		0	0	0	$\frac{\sqrt{5}i}{30}$	$-\frac{\sqrt{30}}{120}$	0	$\frac{\sqrt{30}i}{24}$	0	0	0	0	0	$\frac{\sqrt{2}}{12}$	
		0	$-\frac{\sqrt{30}i}{30}$	0	$-\frac{\sqrt{30}}{30}$	$\frac{\sqrt{5}i}{15}$	0	0	0	0	$-\frac{\sqrt{2}i}{12}$	0	$\frac{\sqrt{2}}{12}$	0	
		$-\frac{\sqrt{30}i}{30}$	0	$\frac{\sqrt{30}}{30}$	0	0	$-\frac{\sqrt{5}i}{15}$	0	0	$-\frac{\sqrt{2}i}{12}$	0	$-\frac{\sqrt{2}}{12}$	0	0	
920	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$													

continued ...

Table 10

No.	multipole	matrix													
		0	0	0	0	0	$\frac{5\sqrt{42}i}{168}$	0	$-\frac{5\sqrt{42}}{168}$	0	0	0	0	0	0
		0	0	0	0	$-\frac{5\sqrt{42}i}{168}$	0	$-\frac{5\sqrt{42}}{168}$	0	0	0	0	0	0	0
		0	0	0	0	0	$\frac{5\sqrt{42}}{168}$	0	$\frac{5\sqrt{42}i}{168}$	0	0	0	0	0	0
		0	0	0	0	$\frac{5\sqrt{42}}{168}$	0	$-\frac{5\sqrt{42}i}{168}$	0	0	0	0	0	0	0
		0	$\frac{5\sqrt{42}i}{168}$	0	$\frac{5\sqrt{42}}{168}$	0	0	0	0	0	$\frac{\sqrt{70}i}{56}$	0	$-\frac{\sqrt{70}}{56}$	0	0
		$-\frac{5\sqrt{42}i}{168}$	0	$\frac{5\sqrt{42}}{168}$	0	0	0	0	0	$-\frac{\sqrt{70}i}{56}$	0	$-\frac{\sqrt{70}}{56}$	0	0	0
	$\mathbb{T}_2^{(1,0;\alpha)}(A_{1g})$	0	$-\frac{5\sqrt{42}}{168}$	0	$\frac{5\sqrt{42}i}{168}$	0	0	0	0	0	$\frac{\sqrt{70}}{56}$	0	$\frac{\sqrt{70}i}{56}$	0	0
		$-\frac{5\sqrt{42}}{168}$	0	$-\frac{5\sqrt{42}i}{168}$	0	0	0	0	0	$\frac{\sqrt{70}}{56}$	0	$-\frac{\sqrt{70}i}{56}$	0	0	0
		0	0	0	0	0	$\frac{\sqrt{70}i}{56}$	0	$\frac{\sqrt{70}}{56}$	0	0	0	0	0	$\frac{\sqrt{42}i}{84}$
		0	0	0	0	$-\frac{\sqrt{70}i}{56}$	0	$\frac{\sqrt{70}}{56}$	0	0	0	0	0	$-\frac{\sqrt{42}i}{84}$	0
		0	0	0	0	0	$-\frac{\sqrt{70}}{56}$	0	$\frac{\sqrt{70}i}{56}$	0	0	0	0	0	$\frac{\sqrt{42}}{84}$
		0	0	0	0	$-\frac{\sqrt{70}}{56}$	0	$-\frac{\sqrt{70}i}{56}$	0	0	0	0	0	$\frac{\sqrt{42}i}{84}$	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{42}i}{84}$	0	$\frac{\sqrt{42}}{84}$	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{42}i}{84}$	0	$\frac{\sqrt{42}}{84}$	0	0	0
921	symmetry	$\sqrt{3}yz$													

continued ...

Table 10

No.	multipole	matrix													
	$\mathbb{T}_{2,1}^{(1,0;a)}(E_g, 1)$	0	$\frac{5\sqrt{21}}{84}$	0	0	$\frac{5\sqrt{14}}{168}$	0	0	0	0	$\frac{\sqrt{35}}{84}$	0	$\frac{\sqrt{35}i}{84}$	0	0
		$\frac{5\sqrt{21}}{84}$	0	0	0	0	$-\frac{5\sqrt{14}}{168}$	0	0	$\frac{\sqrt{35}}{84}$	0	$-\frac{\sqrt{35}i}{84}$	0	0	0
		0	0	0	$\frac{5\sqrt{21}}{84}$	0	0	$\frac{5\sqrt{14}}{168}$	0	0	$-\frac{\sqrt{35}i}{84}$	0	$\frac{\sqrt{35}}{84}$	0	0
		0	0	$\frac{5\sqrt{21}}{84}$	0	0	0	0	$-\frac{5\sqrt{14}}{168}$	$\frac{\sqrt{35}i}{84}$	0	$\frac{\sqrt{35}}{84}$	0	0	0
		$\frac{5\sqrt{14}}{168}$	0	0	0	0	0	0	0	$\frac{\sqrt{210}}{168}$	0	0	0	0	$\frac{\sqrt{35}}{42}$
		0	$-\frac{5\sqrt{14}}{168}$	0	0	0	0	0	0	0	$-\frac{\sqrt{210}}{168}$	0	0	$\frac{\sqrt{35}}{42}$	0
		0	0	$\frac{5\sqrt{14}}{168}$	0	0	0	0	0	0	0	$\frac{\sqrt{210}}{168}$	0	0	$-\frac{\sqrt{35}i}{42}$
		0	0	0	$-\frac{5\sqrt{14}}{168}$	0	0	0	0	0	0	$-\frac{\sqrt{210}}{168}$	$\frac{\sqrt{35}i}{42}$	0	0
		0	$\frac{\sqrt{35}}{84}$	0	$-\frac{\sqrt{35}i}{84}$	$\frac{\sqrt{210}}{168}$	0	0	0	0	$-\frac{5\sqrt{21}}{84}$	0	$\frac{\sqrt{21}i}{42}$	$\frac{\sqrt{14}}{84}$	0
		$\frac{\sqrt{35}}{84}$	0	$\frac{\sqrt{35}i}{84}$	0	0	$-\frac{\sqrt{210}}{168}$	0	0	$-\frac{5\sqrt{21}}{84}$	0	$-\frac{\sqrt{21}i}{42}$	0	0	$-\frac{\sqrt{14}}{84}$
		0	$\frac{\sqrt{35}i}{84}$	0	$\frac{\sqrt{35}}{84}$	0	0	0	$\frac{\sqrt{210}}{168}$	0	0	$\frac{\sqrt{21}i}{42}$	0	$-\frac{\sqrt{21}}{84}$	0
		$-\frac{\sqrt{35}i}{84}$	0	$\frac{\sqrt{35}}{84}$	0	0	0	0	$-\frac{\sqrt{210}}{168}$	$-\frac{\sqrt{21}i}{42}$	0	$-\frac{\sqrt{21}}{84}$	0	0	0
		0	0	0	0	0	$\frac{\sqrt{35}}{42}$	0	$-\frac{\sqrt{35}i}{42}$	$\frac{\sqrt{14}}{84}$	0	0	0	0	$-\frac{\sqrt{21}}{21}$
		0	0	0	0	$\frac{\sqrt{35}}{42}$	0	$\frac{\sqrt{35}i}{42}$	0	0	$-\frac{\sqrt{14}}{84}$	0	0	$-\frac{\sqrt{21}}{21}$	0
922	symmetry	$-\sqrt{3}xz$													

continued ...

Table 10

No.	multipole	matrix													
		0	$-\frac{5\sqrt{21}i}{84}$	0	0	0	0	$-\frac{5\sqrt{14}}{168}$	0	0	$\frac{\sqrt{35}i}{84}$	0	$-\frac{\sqrt{35}}{84}$	0	0
		$\frac{5\sqrt{21}i}{84}$	0	0	0	0	0	0	$\frac{5\sqrt{14}}{168}$	$-\frac{\sqrt{35}i}{84}$	0	$-\frac{\sqrt{35}}{84}$	0	0	0
		0	0	0	$-\frac{5\sqrt{21}i}{84}$	$\frac{5\sqrt{14}}{168}$	0	0	0	0	$\frac{\sqrt{35}}{84}$	0	$\frac{\sqrt{35}i}{84}$	0	0
		0	0	$\frac{5\sqrt{21}i}{84}$	0	0	$-\frac{5\sqrt{14}}{168}$	0	0	$\frac{\sqrt{35}}{84}$	0	$-\frac{\sqrt{35}i}{84}$	0	0	0
		0	0	$\frac{5\sqrt{14}}{168}$	0	0	0	0	0	0	0	$-\frac{\sqrt{210}}{168}$	0	0	$\frac{\sqrt{35}i}{42}$
		0	0	0	$-\frac{5\sqrt{14}}{168}$	0	0	0	0	0	0	0	$\frac{\sqrt{210}}{168}$	$-\frac{\sqrt{35}i}{42}$	0
	$\mathbb{T}_{2,2}^{(1,0;a)}(E_g, 1)$	$-\frac{5\sqrt{14}}{168}$	0	0	0	0	0	0	0	$\frac{\sqrt{210}}{168}$	0	0	0	0	$\frac{\sqrt{35}}{42}$
		0	$\frac{5\sqrt{14}}{168}$	0	0	0	0	0	0	0	$-\frac{\sqrt{210}}{168}$	0	0	$\frac{\sqrt{35}}{42}$	0
		0	$\frac{\sqrt{35}i}{84}$	0	$\frac{\sqrt{35}}{84}$	0	0	$\frac{\sqrt{210}}{168}$	0	0	$\frac{\sqrt{21}i}{84}$	0	$-\frac{\sqrt{21}}{42}$	0	0
		$-\frac{\sqrt{35}i}{84}$	0	$\frac{\sqrt{35}}{84}$	0	0	0	$-\frac{\sqrt{210}}{168}$	$-\frac{\sqrt{21}i}{84}$	0	$-\frac{\sqrt{21}}{42}$	0	0	0	0
		0	$-\frac{\sqrt{35}}{84}$	0	$\frac{\sqrt{35}i}{84}$	$-\frac{\sqrt{210}}{168}$	0	0	0	0	$-\frac{\sqrt{21}}{42}$	0	$\frac{5\sqrt{21}i}{84}$	$\frac{\sqrt{14}}{84}$	0
		$-\frac{\sqrt{35}}{84}$	0	$-\frac{\sqrt{35}i}{84}$	0	0	$\frac{\sqrt{210}}{168}$	0	0	$-\frac{\sqrt{21}}{42}$	0	$-\frac{5\sqrt{21}i}{84}$	0	0	$-\frac{\sqrt{14}}{84}$
		0	0	0	0	0	$\frac{\sqrt{35}i}{42}$	0	$\frac{\sqrt{35}}{42}$	0	0	$\frac{\sqrt{14}}{84}$	0	0	$\frac{\sqrt{21}i}{21}$
		0	0	0	0	$-\frac{\sqrt{35}i}{42}$	0	$\frac{\sqrt{35}}{42}$	0	0	0	0	$-\frac{\sqrt{14}}{84}$	$-\frac{\sqrt{21}i}{21}$	0
923	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$													

continued ...

Table 10

No.	multipole	matrix													
		0	0	0	0	0	$-\frac{5\sqrt{14}i}{168}$	0	$-\frac{5\sqrt{14}}{168}$	0	0	$-\frac{\sqrt{35}}{42}$	0	0	0
		0	0	0	0	$\frac{5\sqrt{14}i}{168}$	0	$-\frac{5\sqrt{14}}{168}$	0	0	0	0	$\frac{\sqrt{35}}{42}$	0	0
		0	0	0	0	0	$\frac{5\sqrt{14}}{168}$	0	$-\frac{5\sqrt{14}i}{168}$	$\frac{\sqrt{35}}{42}$	0	0	0	0	0
		0	0	0	0	$\frac{5\sqrt{14}}{168}$	0	$\frac{5\sqrt{14}i}{168}$	0	0	$-\frac{\sqrt{35}}{42}$	0	0	0	0
		0	$-\frac{5\sqrt{14}i}{168}$	0	$\frac{5\sqrt{14}}{168}$	0	0	0	0	0	$-\frac{\sqrt{210}i}{168}$	0	$-\frac{\sqrt{210}}{168}$	0	0
		$\frac{5\sqrt{14}i}{168}$	0	$\frac{5\sqrt{14}}{168}$	0	0	0	0	0	$\frac{\sqrt{210}i}{168}$	0	$-\frac{\sqrt{210}}{168}$	0	0	0
	$\mathbb{T}_{2,1}^{(1,0;a)}(E_g, 2)$	0	$-\frac{5\sqrt{14}}{168}$	0	$-\frac{5\sqrt{14}i}{168}$	0	0	0	0	0	$\frac{\sqrt{210}}{168}$	0	$-\frac{\sqrt{210}i}{168}$	$\frac{\sqrt{35}}{21}$	0
		$-\frac{5\sqrt{14}}{168}$	0	$\frac{5\sqrt{14}i}{168}$	0	0	0	0	0	$\frac{\sqrt{210}}{168}$	0	$\frac{\sqrt{210}i}{168}$	0	0	$-\frac{\sqrt{35}}{21}$
		0	0	$\frac{\sqrt{35}}{42}$	0	0	$-\frac{\sqrt{210}i}{168}$	0	$\frac{\sqrt{210}}{168}$	0	0	$-\frac{\sqrt{21}}{21}$	0	0	$-\frac{\sqrt{14}i}{84}$
		0	0	0	$-\frac{\sqrt{35}}{42}$	$\frac{\sqrt{210}i}{168}$	0	$\frac{\sqrt{210}}{168}$	0	0	0	0	$\frac{\sqrt{21}}{21}$	$\frac{\sqrt{14}i}{84}$	0
		$-\frac{\sqrt{35}}{42}$	0	0	0	0	$-\frac{\sqrt{210}}{168}$	0	$-\frac{\sqrt{210}i}{168}$	$-\frac{\sqrt{21}}{21}$	0	0	0	0	$\frac{\sqrt{14}}{84}$
		0	$\frac{\sqrt{35}}{42}$	0	0	$-\frac{\sqrt{210}}{168}$	0	$\frac{\sqrt{210}i}{168}$	0	0	$\frac{\sqrt{21}}{21}$	0	0	$\frac{\sqrt{14}}{84}$	0
		0	0	0	0	0	0	$\frac{\sqrt{35}}{21}$	0	0	$-\frac{\sqrt{14}i}{84}$	0	$\frac{\sqrt{14}}{84}$	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{35}}{21}$	$\frac{\sqrt{14}i}{84}$	0	$\frac{\sqrt{14}}{84}$	0	0	0
924	symmetry	$-\sqrt{3}xy$													

continued ...

Table 10

No.	multipole	matrix												
		0	0	0	0	0	$\frac{5\sqrt{14}}{168}$	0	$-\frac{5\sqrt{14}i}{168}$	$\frac{\sqrt{35}}{42}$	0	0	0	0
		0	0	0	0	$\frac{5\sqrt{14}}{168}$	0	$\frac{5\sqrt{14}i}{168}$	0	0	$-\frac{\sqrt{35}}{42}$	0	0	0
		0	0	0	0	0	$\frac{5\sqrt{14}i}{168}$	0	$\frac{5\sqrt{14}}{168}$	0	0	$\frac{\sqrt{35}}{42}$	0	0
		0	0	0	0	$-\frac{5\sqrt{14}i}{168}$	0	$\frac{5\sqrt{14}}{168}$	0	0	0	$-\frac{\sqrt{35}}{42}$	0	0
		0	$\frac{5\sqrt{14}}{168}$	0	$\frac{5\sqrt{14}i}{168}$	0	0	0	0	0	$\frac{\sqrt{210}}{168}$	0	$-\frac{\sqrt{210}i}{168}$	$\frac{\sqrt{35}}{21}$
		$\frac{5\sqrt{14}}{168}$	0	$-\frac{5\sqrt{14}i}{168}$	0	0	0	0	0	$\frac{\sqrt{210}}{168}$	0	$\frac{\sqrt{210}i}{168}$	0	$-\frac{\sqrt{35}}{21}$
	$\mathbb{T}_{2,2}^{(1,0;a)}(E_g, 2)$	0	$-\frac{5\sqrt{14}i}{168}$	0	$\frac{5\sqrt{14}}{168}$	0	0	0	0	0	$\frac{\sqrt{210}i}{168}$	0	$\frac{\sqrt{210}}{168}$	0
		$\frac{5\sqrt{14}i}{168}$	0	$\frac{5\sqrt{14}}{168}$	0	0	0	0	0	$-\frac{\sqrt{210}i}{168}$	0	$\frac{\sqrt{210}}{168}$	0	0
		$\frac{\sqrt{35}}{42}$	0	0	0	0	$\frac{\sqrt{210}}{168}$	0	$\frac{\sqrt{210}i}{168}$	$-\frac{\sqrt{21}}{21}$	0	0	0	$\frac{\sqrt{14}}{84}$
		0	$-\frac{\sqrt{35}}{42}$	0	0	$\frac{\sqrt{210}}{168}$	0	$-\frac{\sqrt{210}i}{168}$	0	0	$\frac{\sqrt{21}}{21}$	0	0	$\frac{\sqrt{14}}{84}$
		0	0	$\frac{\sqrt{35}}{42}$	0	0	$-\frac{\sqrt{210}i}{168}$	0	$\frac{\sqrt{210}}{168}$	0	0	$\frac{\sqrt{21}}{21}$	0	$\frac{\sqrt{14}i}{84}$
		0	0	0	$-\frac{\sqrt{35}}{42}$	$\frac{\sqrt{210}i}{168}$	0	$\frac{\sqrt{210}}{168}$	0	0	0	$-\frac{\sqrt{21}}{21}$	$-\frac{\sqrt{14}i}{84}$	0
		0	0	0	0	$\frac{\sqrt{35}}{21}$	0	0	0	0	$\frac{\sqrt{14}}{84}$	0	$\frac{\sqrt{14}i}{84}$	0
		0	0	0	0	0	$-\frac{\sqrt{35}}{21}$	0	0	$\frac{\sqrt{14}}{84}$	0	$-\frac{\sqrt{14}i}{84}$	0	0
925	symmetry	$\frac{3x^4}{8} + \frac{3x^2y^2}{4} - 3x^2z^2 + \frac{3y^4}{8} - 3y^2z^2 + z^4$												

continued ...

Table 10

No.	multipole	matrix													
$T_4^{(1,0;a)}(A_{1g}, 1)$	0	0	0	0	0	$-\frac{\sqrt{2310i}}{308}$	0	$\frac{\sqrt{2310}}{308}$	0	0	0	0	0	0	
	0	0	0	0	$\frac{\sqrt{2310i}}{308}$	0	$\frac{\sqrt{2310}}{308}$	0	0	0	0	0	0	0	
	0	0	0	0	0	$-\frac{\sqrt{2310i}}{308}$	0	$-\frac{\sqrt{2310i}}{308}$	0	0	0	0	0	0	
	0	0	0	0	$-\frac{\sqrt{2310i}}{308}$	0	$\frac{\sqrt{2310i}}{308}$	0	0	0	0	0	0	0	
	0	$-\frac{\sqrt{2310i}}{308}$	0	$-\frac{\sqrt{2310i}}{308}$	0	0	0	0	0	$\frac{\sqrt{154i}}{77}$	0	$-\frac{\sqrt{154}}{77}$	0	0	
	$\frac{\sqrt{2310i}}{308}$	0	$-\frac{\sqrt{2310i}}{308}$	0	0	0	0	0	$-\frac{\sqrt{154i}}{77}$	0	$-\frac{\sqrt{154}}{77}$	0	0	0	
	0	$\frac{\sqrt{2310i}}{308}$	0	$-\frac{\sqrt{2310i}}{308}$	0	0	0	0	0	$\frac{\sqrt{154}}{77}$	0	$\frac{\sqrt{154i}}{77}$	0	0	
	$\frac{\sqrt{2310i}}{308}$	0	$\frac{\sqrt{2310i}}{308}$	0	0	0	0	0	$\frac{\sqrt{154}}{77}$	0	$-\frac{\sqrt{154i}}{77}$	0	0	0	
	0	0	0	0	0	$\frac{\sqrt{154i}}{77}$	0	$\frac{\sqrt{154}}{77}$	0	0	0	0	0	$\frac{\sqrt{2310i}}{308}$	
	0	0	0	0	$-\frac{\sqrt{154i}}{77}$	0	$\frac{\sqrt{154}}{77}$	0	0	0	0	0	$-\frac{\sqrt{2310i}}{308}$	0	
	0	0	0	0	0	$-\frac{\sqrt{154}}{77}$	0	$\frac{\sqrt{154i}}{77}$	0	0	0	0	0	$\frac{\sqrt{2310i}}{308}$	
	0	0	0	0	$-\frac{\sqrt{154}}{77}$	0	$-\frac{\sqrt{154i}}{77}$	0	0	0	0	0	$\frac{\sqrt{2310i}}{308}$	0	
	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{2310i}}{308}$	0	$\frac{\sqrt{2310i}}{308}$	0	0	
	0	0	0	0	0	0	0	0	$-\frac{\sqrt{2310i}}{308}$	0	$\frac{\sqrt{2310i}}{308}$	0	0	0	
926	symmetry	$\frac{\sqrt{70}yz(3x^2 - y^2)}{4}$													

continued ...

Table 10

No.	multipole	matrix													
$T_4^{(1,0;a)}(A_{1g}, 2)$		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{330}}{440}$	0	$\frac{\sqrt{330i}}{440}$	$-\frac{9\sqrt{55}}{220}$	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{330}}{440}$	0	$-\frac{\sqrt{330i}}{440}$	0	0	$\frac{9\sqrt{55}}{220}$
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{330i}}{88}$	0	$-\frac{\sqrt{330}}{88}$	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{330i}}{88}$	0	$-\frac{\sqrt{330}}{88}$	0	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{22}}{44}$	0	$\frac{\sqrt{22i}}{44}$	$\frac{3\sqrt{55}}{220}$	0	0	0	0	$\frac{\sqrt{330}}{440}$
		0	0	0	0	$-\frac{\sqrt{22}}{44}$	0	$-\frac{\sqrt{22i}}{44}$	0	0	$-\frac{3\sqrt{55}}{220}$	0	0	$\frac{\sqrt{330}}{440}$	0
		0	0	0	0	0	$\frac{\sqrt{22i}}{44}$	0	$\frac{\sqrt{22}}{44}$	0	0	$-\frac{3\sqrt{55}}{220}$	0	0	$\frac{\sqrt{330i}}{440}$
		0	0	0	0	$-\frac{\sqrt{22i}}{44}$	0	$\frac{\sqrt{22}}{44}$	0	0	0	0	$\frac{3\sqrt{55}}{220}$	$-\frac{\sqrt{330i}}{440}$	0
		0	$-\frac{\sqrt{330}}{440}$	0	$-\frac{\sqrt{330i}}{88}$	$\frac{3\sqrt{55}}{220}$	0	0	0	0	$-\frac{\sqrt{22}}{44}$	0	$-\frac{\sqrt{22i}}{44}$	0	0
		$-\frac{\sqrt{330}}{440}$	0	$\frac{\sqrt{330i}}{88}$	0	0	$-\frac{3\sqrt{55}}{220}$	0	0	$-\frac{\sqrt{22}}{44}$	0	$\frac{\sqrt{22i}}{44}$	0	0	0
		0	$\frac{\sqrt{330i}}{440}$	0	$-\frac{\sqrt{330}}{88}$	0	0	$-\frac{3\sqrt{55}}{220}$	0	0	$-\frac{\sqrt{22i}}{44}$	0	$\frac{\sqrt{22}}{44}$	0	0
		$-\frac{\sqrt{330i}}{440}$	0	$-\frac{\sqrt{330}}{88}$	0	0	0	0	$\frac{3\sqrt{55}}{220}$	$\frac{\sqrt{22i}}{44}$	0	$\frac{\sqrt{22}}{44}$	0	0	0
		$-\frac{9\sqrt{55}}{220}$	0	0	0	0	$\frac{\sqrt{330}}{440}$	0	$\frac{\sqrt{330i}}{440}$	0	0	0	0	0	0
		0	$\frac{9\sqrt{55}}{220}$	0	0	$\frac{\sqrt{330}}{440}$	0	$-\frac{\sqrt{330i}}{440}$	0	0	0	0	0	0	0
	927	symmetry	$\frac{\sqrt{70}xz(x^2-3y^2)}{4}$												

continued ...

Table 10

No.	multipole	matrix													
$\mathbb{T}_4^{(1,0;\alpha)}(A_{2g})$		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{330i}}{88}$	0	$-\frac{\sqrt{330}}{88}$	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{330i}}{88}$	0	$-\frac{\sqrt{330}}{88}$	0	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{330}}{440}$	0	$-\frac{\sqrt{330i}}{440}$	$\frac{9\sqrt{55}}{220}$	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{330}}{440}$	0	$\frac{\sqrt{330i}}{440}$	0	0	$-\frac{9\sqrt{55}}{220}$	0
		0	0	0	0	0	$\frac{\sqrt{22i}}{44}$	0	$\frac{\sqrt{22}}{44}$	0	0	$-\frac{3\sqrt{55}}{220}$	0	0	$\frac{\sqrt{330i}}{440}$
		0	0	0	0	$-\frac{\sqrt{22i}}{44}$	0	$\frac{\sqrt{22}}{44}$	0	0	0	0	$\frac{3\sqrt{55}}{220}$	$-\frac{\sqrt{330i}}{440}$	0
		0	0	0	0	0	$\frac{\sqrt{22}}{44}$	0	$-\frac{\sqrt{22i}}{44}$	$-\frac{3\sqrt{55}}{220}$	0	0	0	0	$-\frac{\sqrt{330}}{440}$
		0	0	0	0	$\frac{\sqrt{22}}{44}$	0	$\frac{\sqrt{22i}}{44}$	0	0	$\frac{3\sqrt{55}}{220}$	0	0	$-\frac{\sqrt{330}}{440}$	0
		0	$-\frac{\sqrt{330i}}{88}$	0	$\frac{\sqrt{330}}{440}$	0	0	$-\frac{3\sqrt{55}}{220}$	0	0	$-\frac{\sqrt{22i}}{44}$	0	$\frac{\sqrt{22}}{44}$	0	0
		$\frac{\sqrt{330i}}{88}$	0	$\frac{\sqrt{330}}{440}$	0	0	0	$\frac{3\sqrt{55}}{220}$	$\frac{\sqrt{22i}}{44}$	0	$\frac{\sqrt{22}}{44}$	0	0	0	0
		0	$-\frac{\sqrt{330}}{88}$	0	$-\frac{\sqrt{330i}}{440}$	$-\frac{3\sqrt{55}}{220}$	0	0	0	0	$\frac{\sqrt{22}}{44}$	0	$\frac{\sqrt{22i}}{44}$	0	0
		$-\frac{\sqrt{330}}{88}$	0	$\frac{\sqrt{330i}}{440}$	0	0	$\frac{3\sqrt{55}}{220}$	0	0	$\frac{\sqrt{22}}{44}$	0	$-\frac{\sqrt{22i}}{44}$	0	0	0
		0	0	$\frac{9\sqrt{55}}{220}$	0	0	$\frac{\sqrt{330i}}{440}$	0	$-\frac{\sqrt{330}}{440}$	0	0	0	0	0	0
		0	0	0	$-\frac{9\sqrt{55}}{220}$	$-\frac{\sqrt{330i}}{440}$	0	$-\frac{\sqrt{330}}{440}$	0	0	0	0	0	0	0
	928	symmetry	$-\frac{\sqrt{10}yz(3x^2+3y^2-4z^2)}{4}$												

continued ...

Table 10

No.	multipole	matrix												
$\mathbb{T}_{4,1}^{(1,0;a)}(E_g, 1)$	0	$-\frac{3\sqrt{154}}{308}$	0	0	$-\frac{\sqrt{231}}{308}$	0	0	0	0	$-\frac{9\sqrt{2310}}{3080}$	0	$-\frac{9\sqrt{2310i}}{3080}$	0	0
	$-\frac{3\sqrt{154}}{308}$	0	0	0	0	$\frac{\sqrt{231}}{308}$	0	0	$-\frac{9\sqrt{2310}}{3080}$	0	$\frac{9\sqrt{2310i}}{3080}$	0	0	0
	0	0	0	$-\frac{3\sqrt{154}}{308}$	0	0	$-\frac{\sqrt{231}}{308}$	0	0	$\frac{9\sqrt{2310i}}{3080}$	0	$-\frac{9\sqrt{2310}}{3080}$	0	0
	0	0	$-\frac{3\sqrt{154}}{308}$	0	0	0	0	$\frac{\sqrt{231}}{308}$	$-\frac{9\sqrt{2310i}}{3080}$	0	$-\frac{9\sqrt{2310}}{3080}$	0	0	0
	$-\frac{\sqrt{231}}{308}$	0	0	0	0	$\frac{\sqrt{154}}{44}$	0	0	$\frac{\sqrt{385}}{385}$	0	0	0	0	$\frac{3\sqrt{2310}}{3080}$
	0	$\frac{\sqrt{231}}{308}$	0	0	$\frac{\sqrt{154}}{44}$	0	0	0	0	$-\frac{\sqrt{385}}{385}$	0	0	$\frac{3\sqrt{2310}}{3080}$	0
	0	0	$-\frac{\sqrt{231}}{308}$	0	0	0	0	$\frac{\sqrt{154}}{44}$	0	0	$\frac{\sqrt{385}}{385}$	0	0	$-\frac{3\sqrt{2310i}}{3080}$
	0	0	0	$\frac{\sqrt{231}}{308}$	0	0	$\frac{\sqrt{154}}{44}$	0	0	0	0	$-\frac{\sqrt{385}}{385}$	$\frac{3\sqrt{2310i}}{3080}$	0
	0	$-\frac{9\sqrt{2310}}{3080}$	0	$\frac{9\sqrt{2310i}}{3080}$	$\frac{\sqrt{385}}{385}$	0	0	0	0	$-\frac{\sqrt{154}}{77}$	0	$\frac{3\sqrt{154i}}{308}$	$\frac{\sqrt{231}}{308}$	0
	$-\frac{9\sqrt{2310}}{3080}$	0	$-\frac{9\sqrt{2310i}}{3080}$	0	0	$-\frac{\sqrt{385}}{385}$	0	0	$-\frac{\sqrt{154}}{77}$	0	$-\frac{3\sqrt{154i}}{308}$	0	0	$-\frac{\sqrt{231}}{308}$
	0	$-\frac{9\sqrt{2310i}}{3080}$	0	$-\frac{9\sqrt{2310}}{3080}$	0	0	$\frac{\sqrt{385}}{385}$	0	0	$\frac{3\sqrt{154i}}{308}$	0	$\frac{\sqrt{154}}{154}$	0	0
	$\frac{9\sqrt{2310i}}{3080}$	0	$-\frac{9\sqrt{2310}}{3080}$	0	0	0	0	$-\frac{\sqrt{385}}{385}$	$-\frac{3\sqrt{154i}}{308}$	0	$\frac{\sqrt{154}}{154}$	0	0	0
	0	0	0	0	0	$\frac{3\sqrt{2310}}{3080}$	0	$-\frac{3\sqrt{2310i}}{3080}$	$\frac{\sqrt{231}}{308}$	0	0	0	0	$-\frac{3\sqrt{154}}{154}$
	0	0	0	0	$\frac{3\sqrt{2310}}{3080}$	0	$\frac{3\sqrt{2310i}}{3080}$	0	0	$-\frac{\sqrt{231}}{308}$	0	0	$-\frac{3\sqrt{154}}{154}$	0
929	symmetry	$\frac{\sqrt{10}xz(3x^2+3y^2-4z^2)}{4}$												

continued ...

Table 10

No.	multipole	matrix														
$\mathbb{T}_{4,2}^{(1,0;a)}(E_g, 1)$	0	$\frac{3\sqrt{154}i}{308}$	0	0	0	0	$\frac{\sqrt{231}}{308}$	0	0	$-\frac{9\sqrt{2310}i}{3080}$	0	$\frac{9\sqrt{2310}}{3080}$	0	0		
	$-\frac{3\sqrt{154}i}{308}$	0	0	0	0	0	0	$-\frac{\sqrt{231}}{308}$	$\frac{9\sqrt{2310}i}{3080}$	0	$\frac{9\sqrt{2310}}{3080}$	0	0	0		
	0	0	0	$\frac{3\sqrt{154}i}{308}$	$-\frac{\sqrt{231}}{308}$	0	0	0	0	$-\frac{9\sqrt{2310}}{3080}$	0	$-\frac{9\sqrt{2310}i}{3080}$	0	0	0	
	0	0	$-\frac{3\sqrt{154}i}{308}$	0	0	$\frac{\sqrt{231}}{308}$	0	0	$-\frac{9\sqrt{2310}}{3080}$	0	$\frac{9\sqrt{2310}i}{3080}$	0	0	0	0	
	0	0	$-\frac{\sqrt{231}}{308}$	0	0	$-\frac{\sqrt{154}i}{44}$	0	0	0	0	$-\frac{\sqrt{385}}{385}$	0	0	$\frac{3\sqrt{2310}i}{3080}$	0	
	0	0	0	$\frac{\sqrt{231}}{308}$	$\frac{\sqrt{154}i}{44}$	0	0	0	0	0	0	$\frac{\sqrt{385}}{385}$	$-\frac{3\sqrt{2310}i}{3080}$	0	0	
	$\frac{\sqrt{231}}{308}$	0	0	0	0	0	0	$-\frac{\sqrt{154}i}{44}$	$\frac{\sqrt{385}}{385}$	0	0	0	0	0	$\frac{3\sqrt{2310}}{3080}$	0
	0	$-\frac{\sqrt{231}}{308}$	0	0	0	0	$\frac{\sqrt{154}i}{44}$	0	0	$-\frac{\sqrt{385}}{385}$	0	0	0	$\frac{3\sqrt{2310}}{3080}$	0	0
	0	$-\frac{9\sqrt{2310}i}{3080}$	0	$-\frac{9\sqrt{2310}}{3080}$	0	0	$\frac{\sqrt{385}}{385}$	0	0	$-\frac{\sqrt{154}i}{154}$	0	$-\frac{3\sqrt{154}}{308}$	0	0	0	0
	$\frac{9\sqrt{2310}i}{3080}$	0	$-\frac{9\sqrt{2310}}{3080}$	0	0	0	0	$-\frac{\sqrt{385}}{385}$	$\frac{\sqrt{154}i}{154}$	0	$-\frac{3\sqrt{154}}{308}$	0	0	0	0	0
	0	$\frac{9\sqrt{2310}}{3080}$	0	$-\frac{9\sqrt{2310}i}{3080}$	$-\frac{\sqrt{385}}{385}$	0	0	0	0	$-\frac{3\sqrt{154}}{308}$	0	$\frac{\sqrt{154}i}{77}$	$\frac{\sqrt{231}}{308}$	0	0	0
	$\frac{9\sqrt{2310}}{3080}$	0	$\frac{9\sqrt{2310}i}{3080}$	0	0	$\frac{\sqrt{385}}{385}$	0	0	$-\frac{3\sqrt{154}}{308}$	0	$-\frac{\sqrt{154}i}{77}$	0	0	0	$-\frac{\sqrt{231}}{308}$	0
	0	0	0	0	0	$\frac{3\sqrt{2310}i}{3080}$	0	$\frac{3\sqrt{2310}}{3080}$	0	0	$\frac{\sqrt{231}}{308}$	0	0	0	$\frac{3\sqrt{154}i}{154}$	0
	0	0	0	0	$-\frac{3\sqrt{2310}i}{3080}$	0	$\frac{3\sqrt{2310}}{3080}$	0	0	0	0	$-\frac{\sqrt{231}}{308}$	$-\frac{3\sqrt{154}i}{154}$	0	0	0
930	symmetry	$\frac{\sqrt{35}(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$														

continued ...

Table 10

No.	multipole	matrix													
$\mathbb{T}_{4,1}^{(1,0;a)}(E_g, 2)$		0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{165}}{55}$	0	0	$\frac{3\sqrt{110}i}{220}$
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{165}}{55}$	$-\frac{3\sqrt{110}i}{220}$	0
		0	0	0	0	0	0	0	$\frac{\sqrt{165}}{55}$	0	0	0	0	0	$-\frac{3\sqrt{110}i}{220}$
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{165}}{55}$	0	0	$-\frac{3\sqrt{110}i}{220}$	0	
		0	0	0	0	0	0	$-\frac{\sqrt{11}}{11}$	0	0	$-\frac{\sqrt{110}i}{220}$	0	$\frac{\sqrt{110}}{220}$	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{11}}{11}$	$\frac{\sqrt{110}i}{220}$	0	$\frac{\sqrt{110}}{220}$	0	0	0
		0	0	0	0	$-\frac{\sqrt{11}}{11}$	0	0	0	0	$\frac{\sqrt{110}}{220}$	0	$\frac{\sqrt{110}i}{220}$	0	0
		0	0	0	0	0	$\frac{\sqrt{11}}{11}$	0	0	$\frac{\sqrt{110}}{220}$	0	$-\frac{\sqrt{110}i}{220}$	0	0	0
		0	0	$\frac{\sqrt{165}}{55}$	0	0	$-\frac{\sqrt{110}i}{220}$	0	$\frac{\sqrt{110}}{220}$	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{165}}{55}$	$\frac{\sqrt{110}i}{220}$	0	$\frac{\sqrt{110}}{220}$	0	0	0	0	0	0	0
		$\frac{\sqrt{165}}{55}$	0	0	0	0	$\frac{\sqrt{110}}{220}$	0	$\frac{\sqrt{110}i}{220}$	0	0	0	0	0	0
		0	$-\frac{\sqrt{165}}{55}$	0	0	$\frac{\sqrt{110}}{220}$	0	$-\frac{\sqrt{110}i}{220}$	0	0	0	0	0	0	0
		0	$\frac{3\sqrt{110}i}{220}$	0	$-\frac{3\sqrt{110}}{220}$	0	0	0	0	0	0	0	0	0	0
		$-\frac{3\sqrt{110}i}{220}$	0	$-\frac{3\sqrt{110}}{220}$	0	0	0	0	0	0	0	0	0	0	0
	931	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$												

continued ...

Table 10

No.	multipole	matrix													
$\mathbb{T}_{4,2}^{(1,0;a)}(E_g, 2)$		0	0	0	0	0	0	0	0	$-\frac{\sqrt{165}}{55}$	0	0	0	$\frac{3\sqrt{110}}{220}$	
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{165}}{55}$	0	0	$\frac{3\sqrt{110}}{220}$	0
		0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{165}}{55}$	0	0	$\frac{3\sqrt{110}i}{220}$
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{165}}{55}$	$-\frac{3\sqrt{110}i}{220}$	0
		0	0	0	0	$\frac{\sqrt{11}}{11}$	0	0	0	0	$-\frac{\sqrt{110}}{220}$	0	$-\frac{\sqrt{110}i}{220}$	0	0
		0	0	0	0	0	$-\frac{\sqrt{11}}{11}$	0	0	$-\frac{\sqrt{110}}{220}$	0	$\frac{\sqrt{110}i}{220}$	0	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{11}}{11}$	0	0	$-\frac{\sqrt{110}i}{220}$	0	$\frac{\sqrt{110}}{220}$	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{11}}{11}$	$\frac{\sqrt{110}i}{220}$	0	$\frac{\sqrt{110}}{220}$	0	0	0
		$-\frac{\sqrt{165}}{55}$	0	0	0	0	$-\frac{\sqrt{110}}{220}$	0	$-\frac{\sqrt{110}i}{220}$	0	0	0	0	0	0
		0	$\frac{\sqrt{165}}{55}$	0	0	$-\frac{\sqrt{110}}{220}$	0	$\frac{\sqrt{110}i}{220}$	0	0	0	0	0	0	0
		0	0	$\frac{\sqrt{165}}{55}$	0	0	$-\frac{\sqrt{110}i}{220}$	0	$\frac{\sqrt{110}}{220}$	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{165}}{55}$	$\frac{\sqrt{110}i}{220}$	0	$\frac{\sqrt{110}}{220}$	0	0	0	0	0	0	0
		0	$\frac{3\sqrt{110}}{220}$	0	$\frac{3\sqrt{110}i}{220}$	0	0	0	0	0	0	0	0	0	0
		$\frac{3\sqrt{110}}{220}$	0	$-\frac{3\sqrt{110}i}{220}$	0	0	0	0	0	0	0	0	0	0	0
932	symmetry	$-\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$													

continued ...

Table 10

No.	multipole	matrix												
$\mathbb{T}_{4,1}^{(1,0;a)}(E_g, 3)$	0	0	0	0	0	$\frac{3\sqrt{462}i}{616}$	0	$\frac{3\sqrt{462}}{616}$	0	0	$\frac{3\sqrt{1155}}{770}$	0	0	$-\frac{3\sqrt{770}i}{440}$
	0	0	0	0	$-\frac{3\sqrt{462}i}{616}$	0	$\frac{3\sqrt{462}}{616}$	0	0	0	0	$-\frac{3\sqrt{1155}}{770}$	$\frac{3\sqrt{770}i}{440}$	0
	0	0	0	0	0	$-\frac{3\sqrt{462}}{616}$	0	$\frac{3\sqrt{462}i}{616}$	$-\frac{3\sqrt{1155}}{770}$	0	0	0	0	$-\frac{3\sqrt{770}}{440}$
	0	0	0	0	$-\frac{3\sqrt{462}}{616}$	0	$-\frac{3\sqrt{462}i}{616}$	0	0	$\frac{3\sqrt{1155}}{770}$	0	0	$-\frac{3\sqrt{770}}{440}$	0
	0	$\frac{3\sqrt{462}i}{616}$	0	$-\frac{3\sqrt{462}}{616}$	0	0	0	0	0	$-\frac{\sqrt{770}i}{616}$	0	$-\frac{\sqrt{770}}{616}$	0	0
	$-\frac{3\sqrt{462}i}{616}$	0	$-\frac{3\sqrt{462}}{616}$	0	0	0	0	0	$\frac{\sqrt{770}i}{616}$	0	$-\frac{\sqrt{770}}{616}$	0	0	0
	0	$\frac{3\sqrt{462}}{616}$	0	$\frac{3\sqrt{462}i}{616}$	0	0	0	0	0	$\frac{19\sqrt{770}}{3080}$	0	$-\frac{19\sqrt{770}i}{3080}$	$\frac{\sqrt{1155}}{770}$	0
	$\frac{3\sqrt{462}}{616}$	0	$-\frac{3\sqrt{462}i}{616}$	0	0	0	0	0	$\frac{19\sqrt{770}}{3080}$	0	$\frac{19\sqrt{770}i}{3080}$	0	0	$-\frac{\sqrt{1155}}{770}$
	0	0	$-\frac{3\sqrt{1155}}{770}$	0	0	$-\frac{\sqrt{770}i}{616}$	0	$\frac{19\sqrt{770}}{3080}$	0	0	$-\frac{\sqrt{77}}{77}$	0	0	$-\frac{3\sqrt{462}i}{616}$
	0	0	0	$\frac{3\sqrt{1155}}{770}$	$\frac{\sqrt{770}i}{616}$	0	$\frac{19\sqrt{770}}{3080}$	0	0	0	0	$\frac{\sqrt{77}}{77}$	$\frac{3\sqrt{462}i}{616}$	0
	$\frac{3\sqrt{1155}}{770}$	0	0	0	0	$-\frac{\sqrt{770}}{616}$	0	$-\frac{19\sqrt{770}i}{3080}$	$-\frac{\sqrt{77}}{77}$	0	0	0	0	$\frac{3\sqrt{462}}{616}$
	0	$-\frac{3\sqrt{1155}}{770}$	0	0	$-\frac{\sqrt{770}}{616}$	0	$\frac{19\sqrt{770}i}{3080}$	0	0	$\frac{\sqrt{77}}{77}$	0	0	$\frac{3\sqrt{462}}{616}$	0
	0	$-\frac{3\sqrt{770}i}{440}$	0	$-\frac{3\sqrt{770}}{440}$	0	0	$\frac{\sqrt{1155}}{770}$	0	0	$-\frac{3\sqrt{462}i}{616}$	0	$\frac{3\sqrt{462}}{616}$	0	0
	$\frac{3\sqrt{770}i}{440}$	0	$-\frac{3\sqrt{770}}{440}$	0	0	0	0	$-\frac{\sqrt{1155}}{770}$	$\frac{3\sqrt{462}i}{616}$	0	$\frac{3\sqrt{462}}{616}$	0	0	0
933	symmetry	$\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$												

continued ...

Table 10

No.	multipole	matrix													
$\mathbb{T}_{4,2}^{(1,0;a)}(E_g, 3)$		0	0	0	0	0	$-\frac{3\sqrt{462}}{616}$	0	$\frac{3\sqrt{462}i}{616}$	$-\frac{3\sqrt{1155}}{770}$	0	0	0	$-\frac{3\sqrt{770}}{440}$	
		0	0	0	0	$-\frac{3\sqrt{462}}{616}$	0	$-\frac{3\sqrt{462}i}{616}$	0	0	$\frac{3\sqrt{1155}}{770}$	0	0	$-\frac{3\sqrt{770}}{440}$	0
		0	0	0	0	0	$-\frac{3\sqrt{462}i}{616}$	0	$-\frac{3\sqrt{462}}{616}$	0	0	$-\frac{3\sqrt{1155}}{770}$	0	0	$\frac{3\sqrt{770}i}{440}$
		0	0	0	0	$\frac{3\sqrt{462}i}{616}$	0	$-\frac{3\sqrt{462}}{616}$	0	0	0	0	$\frac{3\sqrt{1155}}{770}$	$-\frac{3\sqrt{770}i}{440}$	0
		0	$-\frac{3\sqrt{462}}{616}$	0	$-\frac{3\sqrt{462}i}{616}$	0	0	0	0	0	$\frac{19\sqrt{770}}{3080}$	0	$-\frac{19\sqrt{770}i}{3080}$	$\frac{\sqrt{1155}}{770}$	0
		$-\frac{3\sqrt{462}}{616}$	0	$\frac{3\sqrt{462}i}{616}$	0	0	0	0	0	$\frac{19\sqrt{770}}{3080}$	0	$\frac{19\sqrt{770}i}{3080}$	0	0	$-\frac{\sqrt{1155}}{770}$
		0	$\frac{3\sqrt{462}i}{616}$	0	$-\frac{3\sqrt{462}}{616}$	0	0	0	0	0	$\frac{\sqrt{770}i}{616}$	0	$\frac{\sqrt{770}}{616}$	0	0
		$-\frac{3\sqrt{462}i}{616}$	0	$-\frac{3\sqrt{462}}{616}$	0	0	0	0	0	$-\frac{\sqrt{770}i}{616}$	0	$\frac{\sqrt{770}}{616}$	0	0	0
		$-\frac{3\sqrt{1155}}{770}$	0	0	0	0	$\frac{19\sqrt{770}}{3080}$	0	$\frac{\sqrt{770}i}{616}$	$-\frac{\sqrt{77}}{77}$	0	0	0	0	$\frac{3\sqrt{462}}{616}$
		0	$\frac{3\sqrt{1155}}{770}$	0	0	$\frac{19\sqrt{770}}{3080}$	0	$-\frac{\sqrt{770}i}{616}$	0	0	$\frac{\sqrt{77}}{77}$	0	0	0	$\frac{3\sqrt{462}}{616}$
		0	0	$-\frac{3\sqrt{1155}}{770}$	0	0	$-\frac{19\sqrt{770}i}{3080}$	0	$\frac{\sqrt{770}}{616}$	0	0	$\frac{\sqrt{77}}{77}$	0	0	$\frac{3\sqrt{462}i}{616}$
		0	0	0	$\frac{3\sqrt{1155}}{770}$	$\frac{19\sqrt{770}i}{3080}$	0	$\frac{\sqrt{770}}{616}$	0	0	0	0	$-\frac{\sqrt{77}}{77}$	$-\frac{3\sqrt{462}i}{616}$	0
		0	$-\frac{3\sqrt{770}}{440}$	0	$\frac{3\sqrt{770}i}{440}$	$\frac{\sqrt{1155}}{770}$	0	0	0	0	$\frac{3\sqrt{462}}{616}$	0	$\frac{3\sqrt{462}i}{616}$	0	0
		$-\frac{3\sqrt{770}}{440}$	0	$-\frac{3\sqrt{770}i}{440}$	0	0	$-\frac{\sqrt{1155}}{770}$	0	0	$\frac{3\sqrt{462}}{616}$	0	$-\frac{3\sqrt{462}i}{616}$	0	0	0
	934	symmetry	$-\frac{5x^6}{16} - \frac{15x^4y^2}{16} + \frac{45x^4z^2}{8} - \frac{15x^2y^4}{16} + \frac{45x^2y^2z^2}{4} - \frac{15x^2z^4}{2} - \frac{5y^6}{16} + \frac{45y^4z^2}{8} - \frac{15y^2z^4}{2} + z^6$												

continued ...

Table 10

No.	multipole	matrix													
$T_6^{(1,0;a)}(A_{1g}, 1)$		0	0	0	0	0	$\frac{\sqrt{66}i}{264}$	0	$-\frac{\sqrt{66}}{264}$	0	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{66}i}{264}$	0	$-\frac{\sqrt{66}}{264}$	0	0	0	0	0	0	0
		0	0	0	0	0	$\frac{\sqrt{66}}{264}$	0	$\frac{\sqrt{66}i}{264}$	0	0	0	0	0	0
		0	0	0	0	$\frac{\sqrt{66}}{264}$	0	$-\frac{\sqrt{66}i}{264}$	0	0	0	0	0	0	0
		0	$\frac{\sqrt{66}i}{264}$	0	$\frac{\sqrt{66}}{264}$	0	0	0	0	0	$-\frac{\sqrt{110}i}{88}$	0	$\frac{\sqrt{110}}{88}$	0	0
		$-\frac{\sqrt{66}i}{264}$	0	$\frac{\sqrt{66}}{264}$	0	0	0	0	0	$\frac{\sqrt{110}i}{88}$	0	$\frac{\sqrt{110}}{88}$	0	0	0
		0	$-\frac{\sqrt{66}}{264}$	0	$\frac{\sqrt{66}i}{264}$	0	0	0	0	0	$-\frac{\sqrt{110}}{88}$	0	$-\frac{\sqrt{110}i}{88}$	0	0
		$-\frac{\sqrt{66}}{264}$	0	$-\frac{\sqrt{66}i}{264}$	0	0	0	0	0	$-\frac{\sqrt{110}}{88}$	0	$\frac{\sqrt{110}i}{88}$	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{110}i}{88}$	0	$-\frac{\sqrt{110}}{88}$	0	0	0	0	0	$\frac{5\sqrt{66}i}{132}$
		0	0	0	0	$\frac{\sqrt{110}i}{88}$	0	$-\frac{\sqrt{110}}{88}$	0	0	0	0	0	$-\frac{5\sqrt{66}i}{132}$	0
		0	0	0	0	0	$\frac{\sqrt{110}}{88}$	0	$-\frac{\sqrt{110}i}{88}$	0	0	0	0	0	$\frac{5\sqrt{66}}{132}$
		0	0	0	0	$\frac{\sqrt{110}}{88}$	0	$\frac{\sqrt{110}i}{88}$	0	0	0	0	0	$\frac{5\sqrt{66}}{132}$	0
		0	0	0	0	0	0	0	0	0	$\frac{5\sqrt{66}i}{132}$	0	$\frac{5\sqrt{66}}{132}$	0	0
		0	0	0	0	0	0	0	0	$-\frac{5\sqrt{66}i}{132}$	0	$\frac{5\sqrt{66}}{132}$	0	0	0
935	symmetry	$\frac{\sqrt{462}(x-y)(x+y)(x^2-4xy+y^2)(x^2+4xy+y^2)}{32}$													

continued ...

Table 10

No.	multipole	matrix													
		0	0	$-\frac{\sqrt{42}}{14}$	0	0	$-\frac{\sqrt{7}i}{28}$	0	$\frac{\sqrt{7}}{28}$	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{42}}{14}$	$\frac{\sqrt{7}i}{28}$	0	$\frac{\sqrt{7}}{28}$	0	0	0	0	0	0	0
		$-\frac{\sqrt{42}}{14}$	0	0	0	0	$\frac{\sqrt{7}}{28}$	0	$\frac{\sqrt{7}i}{28}$	0	0	0	0	0	0
		0	$\frac{\sqrt{42}}{14}$	0	0	$\frac{\sqrt{7}}{28}$	0	$-\frac{\sqrt{7}i}{28}$	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{7}i}{28}$	0	$\frac{\sqrt{7}}{28}$	0	0	0	0	0	0	0	0	0	0
		$\frac{\sqrt{7}i}{28}$	0	$\frac{\sqrt{7}}{28}$	0	0	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{7}}{28}$	0	$\frac{\sqrt{7}i}{28}$	0	0	0	0	0	0	0	0	0	0
		$\frac{\sqrt{7}}{28}$	0	$-\frac{\sqrt{7}i}{28}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
936	symmetry	$-\frac{\sqrt{210}yz(3x^2-y^2)(3x^2+3y^2-8z^2)}{16}$													

continued ...

Table 10

No.	multipole	matrix													
$T_6^{(1,0;a)}(A_{1g}, 3)$		0	0	0	0	0	0	0	0	0	$-\frac{3\sqrt{154}}{616}$	0	$\frac{3\sqrt{154}i}{616}$	$\frac{\sqrt{231}}{154}$	0
		0	0	0	0	0	0	0	0	$-\frac{3\sqrt{154}i}{616}$	0	$-\frac{3\sqrt{154}i}{616}$	0	0	$-\frac{\sqrt{231}}{154}$
		0	0	0	0	0	0	0	0	$\frac{\sqrt{154}i}{88}$	0	$\frac{\sqrt{154}}{88}$	0	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{154}i}{88}$	0	$\frac{\sqrt{154}}{88}$	0	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{2310}}{308}$	0	$\frac{\sqrt{2310}i}{308}$	$\frac{3\sqrt{231}}{308}$	0	0	0	0	$-\frac{\sqrt{154}}{77}$
		0	0	0	0	$-\frac{\sqrt{2310}}{308}$	0	$-\frac{\sqrt{2310}i}{308}$	0	0	$-\frac{3\sqrt{231}}{308}$	0	0	$-\frac{\sqrt{154}}{77}$	0
		0	0	0	0	0	$\frac{\sqrt{2310}i}{308}$	0	$\frac{\sqrt{2310}}{308}$	0	0	$-\frac{3\sqrt{231}}{308}$	0	0	$-\frac{\sqrt{154}i}{77}$
		0	0	0	0	$-\frac{\sqrt{2310}i}{308}$	0	$\frac{\sqrt{2310}}{308}$	0	0	0	0	$\frac{3\sqrt{231}}{308}$	$\frac{\sqrt{154}i}{77}$	0
		0	$-\frac{3\sqrt{154}}{616}$	0	$\frac{\sqrt{154}i}{88}$	$\frac{3\sqrt{231}}{308}$	0	0	0	0	$-\frac{\sqrt{2310}}{308}$	0	$-\frac{\sqrt{2310}i}{308}$	0	0
		$-\frac{3\sqrt{154}}{616}$	0	$-\frac{\sqrt{154}i}{88}$	0	0	$-\frac{3\sqrt{231}}{308}$	0	0	$-\frac{\sqrt{2310}}{308}$	0	$\frac{\sqrt{2310}i}{308}$	0	0	0
		0	$\frac{3\sqrt{154}i}{616}$	0	$\frac{\sqrt{154}}{88}$	0	0	$-\frac{3\sqrt{231}}{308}$	0	0	$-\frac{\sqrt{2310}i}{308}$	0	$\frac{\sqrt{2310}}{308}$	0	0
		$-\frac{3\sqrt{154}i}{616}$	0	$\frac{\sqrt{154}}{88}$	0	0	0	0	$\frac{3\sqrt{231}}{308}$	$\frac{\sqrt{2310}i}{308}$	0	$\frac{\sqrt{2310}}{308}$	0	0	0
		$\frac{\sqrt{231}}{154}$	0	0	0	0	$-\frac{\sqrt{154}}{77}$	0	$-\frac{\sqrt{154}i}{77}$	0	0	0	0	0	0
		0	$-\frac{\sqrt{231}}{154}$	0	0	$-\frac{\sqrt{154}}{77}$	0	$\frac{\sqrt{154}i}{77}$	0	0	0	0	0	0	0
	937	symmetry	$\frac{\sqrt{462}xy(x^2-3y^2)(3x^2-y^2)}{16}$												

continued ...

Table 10

No.	multipole	matrix													
	$T_6^{(1,0;a)}(A_{2g}, 1)$	$\frac{\sqrt{42}}{14}$	0	0	0	0	$-\frac{\sqrt{7}}{28}$	0	$-\frac{\sqrt{7}i}{28}$	0	0	0	0	0	0
		0	$-\frac{\sqrt{42}}{14}$	0	0	$-\frac{\sqrt{7}}{28}$	0	$\frac{\sqrt{7}i}{28}$	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{42}}{14}$	0	0	$-\frac{\sqrt{7}i}{28}$	0	$\frac{\sqrt{7}}{28}$	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{42}}{14}$	$\frac{\sqrt{7}i}{28}$	0	$\frac{\sqrt{7}}{28}$	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{7}}{28}$	0	$-\frac{\sqrt{7}i}{28}$	0	0	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{7}}{28}$	0	$\frac{\sqrt{7}i}{28}$	0	0	0	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{7}i}{28}$	0	$\frac{\sqrt{7}}{28}$	0	0	0	0	0	0	0	0	0	0
		$\frac{\sqrt{7}i}{28}$	0	$\frac{\sqrt{7}}{28}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
938	symmetry	$-\frac{\sqrt{210}xz(x^2-3y^2)(3x^2+3y^2-8z^2)}{16}$													

continued ...

Table 10

No.	multipole	matrix													
$T_6^{(1,0;a)}(A_{2g}, 2)$		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{154i}}{88}$	0	$\frac{\sqrt{154}}{88}$	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{154i}}{88}$	0	$\frac{\sqrt{154}}{88}$	0	0	0
		0	0	0	0	0	0	0	0	0	$\frac{3\sqrt{154}}{616}$	0	$-\frac{3\sqrt{154i}}{616}$	$-\frac{\sqrt{231}}{154}$	0
		0	0	0	0	0	0	0	0	$\frac{3\sqrt{154}}{616}$	0	$\frac{3\sqrt{154i}}{616}$	0	0	$\frac{\sqrt{231}}{154}$
		0	0	0	0	0	$\frac{\sqrt{2310i}}{308}$	0	$\frac{\sqrt{2310}}{308}$	0	0	$-\frac{3\sqrt{231}}{308}$	0	0	$-\frac{\sqrt{154i}}{77}$
		0	0	0	0	$-\frac{\sqrt{2310i}}{308}$	0	$\frac{\sqrt{2310}}{308}$	0	0	0	0	$\frac{3\sqrt{231}}{308}$	$\frac{\sqrt{154i}}{77}$	0
		0	0	0	0	0	$\frac{\sqrt{2310}}{308}$	0	$-\frac{\sqrt{2310i}}{308}$	$-\frac{3\sqrt{231}}{308}$	0	0	0	0	$\frac{\sqrt{154}}{77}$
		0	0	0	0	$\frac{\sqrt{2310}}{308}$	0	$\frac{\sqrt{2310i}}{308}$	0	0	$\frac{3\sqrt{231}}{308}$	0	0	$\frac{\sqrt{154}}{77}$	0
		0	$\frac{\sqrt{154i}}{88}$	0	$\frac{3\sqrt{154}}{616}$	0	0	$-\frac{3\sqrt{231}}{308}$	0	0	$-\frac{\sqrt{2310i}}{308}$	0	$\frac{\sqrt{2310}}{308}$	0	0
		$-\frac{\sqrt{154i}}{88}$	0	$\frac{3\sqrt{154}}{616}$	0	0	0	0	$\frac{3\sqrt{231}}{308}$	$\frac{\sqrt{2310i}}{308}$	0	$\frac{\sqrt{2310}}{308}$	0	0	0
		0	$\frac{\sqrt{154}}{88}$	0	$-\frac{3\sqrt{154i}}{616}$	$-\frac{3\sqrt{231}}{308}$	0	0	0	0	$\frac{\sqrt{2310}}{308}$	0	$\frac{\sqrt{2310i}}{308}$	0	0
		$\frac{\sqrt{154}}{88}$	0	$\frac{3\sqrt{154i}}{616}$	0	0	$\frac{3\sqrt{231}}{308}$	0	0	$\frac{\sqrt{2310}}{308}$	0	$-\frac{\sqrt{2310i}}{308}$	0	0	0
		0	0	$-\frac{\sqrt{231}}{154}$	0	0	$-\frac{\sqrt{154i}}{77}$	0	$\frac{\sqrt{154}}{77}$	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{231}}{154}$	$\frac{\sqrt{154i}}{77}$	0	$\frac{\sqrt{154}}{77}$	0	0	0	0	0	0	0
	939	symmetry	$\frac{3\sqrt{154}yz(5x^4 - 10x^2y^2 + y^4)}{16}$												

continued ...

Table 10

No.	multipole	matrix													
		0	$-\frac{\sqrt{14}}{28}$	0	$\frac{\sqrt{14}i}{28}$	$\frac{5\sqrt{21}}{84}$	0	0	0	0	$-\frac{\sqrt{210}}{168}$	0	$-\frac{\sqrt{210}i}{168}$	0	0
		$-\frac{\sqrt{14}}{28}$	0	$-\frac{\sqrt{14}i}{28}$	0	0	$-\frac{5\sqrt{21}}{84}$	0	0	$-\frac{\sqrt{210}}{168}$	0	$\frac{\sqrt{210}i}{168}$	0	0	0
		0	$\frac{\sqrt{14}i}{28}$	0	$\frac{\sqrt{14}}{28}$	0	0	$-\frac{5\sqrt{21}}{84}$	0	0	$-\frac{\sqrt{210}i}{168}$	0	$\frac{\sqrt{210}}{168}$	0	0
		$-\frac{\sqrt{14}i}{28}$	0	$\frac{\sqrt{14}}{28}$	0	0	0	0	$\frac{5\sqrt{21}}{84}$	$\frac{\sqrt{210}i}{168}$	0	$\frac{\sqrt{210}}{168}$	0	0	0
		$\frac{5\sqrt{21}}{84}$	0	0	0	0	$-\frac{\sqrt{14}}{28}$	0	$-\frac{\sqrt{14}i}{28}$	0	0	0	0	0	0
		0	$-\frac{5\sqrt{21}}{84}$	0	0	$-\frac{\sqrt{14}}{28}$	0	$\frac{\sqrt{14}i}{28}$	0	0	0	0	0	0	0
		0	0	$-\frac{5\sqrt{21}}{84}$	0	0	$-\frac{\sqrt{14}i}{28}$	0	$\frac{\sqrt{14}}{28}$	0	0	0	0	0	0
		0	0	0	$\frac{5\sqrt{21}}{84}$	$\frac{\sqrt{14}i}{28}$	0	$\frac{\sqrt{14}}{28}$	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{210}}{168}$	0	$-\frac{\sqrt{210}i}{168}$	0	0	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{210}}{168}$	0	$\frac{\sqrt{210}i}{168}$	0	0	0	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{210}i}{168}$	0	$\frac{\sqrt{210}}{168}$	0	0	0	0	0	0	0	0	0	0
		$\frac{\sqrt{210}i}{168}$	0	$\frac{\sqrt{210}}{168}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
940	symmetry	$\frac{3\sqrt{154}xz(x^4 - 10x^2y^2 + 5y^4)}{16}$													

continued ...

Table 10

No.	multipole	matrix													
		0	$\frac{\sqrt{14}i}{28}$	0	$\frac{\sqrt{14}}{28}$	0	0	$-\frac{5\sqrt{21}}{84}$	0	0	$-\frac{\sqrt{210}i}{168}$	0	$\frac{\sqrt{210}}{168}$	0	0
		$-\frac{\sqrt{14}i}{28}$	0	$\frac{\sqrt{14}}{28}$	0	0	0	0	$\frac{5\sqrt{21}}{84}$	$\frac{\sqrt{210}i}{168}$	0	$\frac{\sqrt{210}}{168}$	0	0	0
		0	$\frac{\sqrt{14}}{28}$	0	$-\frac{\sqrt{14}i}{28}$	$-\frac{5\sqrt{21}}{84}$	0	0	0	0	$\frac{\sqrt{210}}{168}$	0	$\frac{\sqrt{210}i}{168}$	0	0
		$\frac{\sqrt{14}}{28}$	0	$\frac{\sqrt{14}i}{28}$	0	0	$\frac{5\sqrt{21}}{84}$	0	0	$\frac{\sqrt{210}}{168}$	0	$-\frac{\sqrt{210}i}{168}$	0	0	0
		0	0	$-\frac{5\sqrt{21}}{84}$	0	0	$-\frac{\sqrt{14}i}{28}$	0	$\frac{\sqrt{14}}{28}$	0	0	0	0	0	0
		0	0	0	$\frac{5\sqrt{21}}{84}$	$\frac{\sqrt{14}i}{28}$	0	$\frac{\sqrt{14}}{28}$	0	0	0	0	0	0	0
		$-\frac{5\sqrt{21}}{84}$	0	0	0	0	$\frac{\sqrt{14}}{28}$	0	$\frac{\sqrt{14}i}{28}$	0	0	0	0	0	0
		0	$\frac{5\sqrt{21}}{84}$	0	0	$\frac{\sqrt{14}}{28}$	0	$-\frac{\sqrt{14}i}{28}$	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{210}i}{168}$	0	$\frac{\sqrt{210}}{168}$	0	0	0	0	0	0	0	0	0	0
		$\frac{\sqrt{210}i}{168}$	0	$\frac{\sqrt{210}}{168}$	0	0	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{210}}{168}$	0	$\frac{\sqrt{210}i}{168}$	0	0	0	0	0	0	0	0	0	0
		$\frac{\sqrt{210}}{168}$	0	$-\frac{\sqrt{210}i}{168}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
941	symmetry	$\frac{\sqrt{21}yz(5x^4+10x^2y^2-20x^2z^2+5y^4-20y^2z^2+8z^4)}{8}$													

continued ...

Table 10

No.	multipole	matrix													
$\mathbb{T}_{6,1}^{(1,0;a)}(E_g, 2)$	0	$\frac{\sqrt{231}}{924}$	0	0	$\frac{\sqrt{154}}{1848}$	0	0	0	0	$\frac{\sqrt{385}}{462}$	0	$\frac{\sqrt{385i}}{462}$	0	0	
	$\frac{\sqrt{231}}{924}$	0	0	0	0	$-\frac{\sqrt{154}}{1848}$	0	0	$\frac{\sqrt{385}}{462}$	0	$-\frac{\sqrt{385i}}{462}$	0	0	0	
	0	0	0	$\frac{\sqrt{231}}{924}$	0	0	$\frac{\sqrt{154}}{1848}$	0	0	$-\frac{\sqrt{385i}}{462}$	0	$\frac{\sqrt{385}}{462}$	0	0	
	0	0	$\frac{\sqrt{231}}{924}$	0	0	0	0	$-\frac{\sqrt{154}}{1848}$	$\frac{\sqrt{385i}}{462}$	0	$\frac{\sqrt{385}}{462}$	0	0	0	
	$\frac{\sqrt{154}}{1848}$	0	0	0	0	$-\frac{\sqrt{231}}{154}$	0	0	$-\frac{\sqrt{2310}}{1848}$	0	0	0	0	$-\frac{2\sqrt{385}}{231}$	
	0	$-\frac{\sqrt{154}}{1848}$	0	0	$-\frac{\sqrt{231}}{154}$	0	0	0	0	$\frac{\sqrt{2310}}{1848}$	0	0	$-\frac{2\sqrt{385}}{231}$	0	
	0	0	$\frac{\sqrt{154}}{1848}$	0	0	0	0	$-\frac{\sqrt{231}}{154}$	0	0	$-\frac{\sqrt{2310}}{1848}$	0	0	$\frac{2\sqrt{385i}}{231}$	
	0	0	0	$-\frac{\sqrt{154}}{1848}$	0	0	$-\frac{\sqrt{231}}{154}$	0	0	0	0	$\frac{\sqrt{2310}}{1848}$	$-\frac{2\sqrt{385i}}{231}$	0	
	0	$\frac{\sqrt{385}}{462}$	0	$-\frac{\sqrt{385i}}{462}$	$-\frac{\sqrt{2310}}{1848}$	0	0	0	0	$\frac{5\sqrt{231}}{924}$	0	$\frac{5\sqrt{231i}}{462}$	$\frac{5\sqrt{154}}{924}$	0	
	$\frac{\sqrt{385}}{462}$	0	$\frac{\sqrt{385i}}{462}$	0	0	$\frac{\sqrt{2310}}{1848}$	0	0	$\frac{5\sqrt{231}}{924}$	0	$-\frac{5\sqrt{231i}}{462}$	0	0	$-\frac{5\sqrt{154}}{924}$	
	0	$\frac{\sqrt{385i}}{462}$	0	$\frac{\sqrt{385}}{462}$	0	0	$-\frac{\sqrt{2310}}{1848}$	0	0	$\frac{5\sqrt{231i}}{462}$	0	$\frac{25\sqrt{231}}{924}$	0	0	
	$-\frac{\sqrt{385i}}{462}$	0	$\frac{\sqrt{385}}{462}$	0	0	0	0	$\frac{\sqrt{2310}}{1848}$	$-\frac{5\sqrt{231i}}{462}$	0	$\frac{25\sqrt{231}}{924}$	0	0	0	
	0	0	0	0	0	$-\frac{2\sqrt{385}}{231}$	0	$\frac{2\sqrt{385i}}{231}$	$\frac{5\sqrt{154}}{924}$	0	0	0	0	$-\frac{5\sqrt{231}}{231}$	
	0	0	0	0	$-\frac{2\sqrt{385}}{231}$	0	$-\frac{2\sqrt{385i}}{231}$	0	0	$-\frac{5\sqrt{154}}{924}$	0	0	$-\frac{5\sqrt{231}}{231}$	0	
942	symmetry	$-\frac{\sqrt{21}xz(5x^4+10x^2y^2-20x^2z^2+5y^4-20y^2z^2+8z^4)}{8}$													

continued ...

Table 10

No.	multipole	matrix													
$\mathbb{T}_{6,2}^{(1,0;a)}(E_g, 2)$		0	$-\frac{\sqrt{231}i}{924}$	0	0	0	0	$-\frac{\sqrt{154}}{1848}$	0	0	$\frac{\sqrt{385}i}{462}$	0	$-\frac{\sqrt{385}}{462}$	0	0
		$\frac{\sqrt{231}i}{924}$	0	0	0	0	0	0	$\frac{\sqrt{154}}{1848}$	$-\frac{\sqrt{385}i}{462}$	0	$-\frac{\sqrt{385}}{462}$	0	0	0
		0	0	0	$-\frac{\sqrt{231}i}{924}$	$\frac{\sqrt{154}}{1848}$	0	0	0	0	$\frac{\sqrt{385}}{462}$	0	$\frac{\sqrt{385}i}{462}$	0	0
		0	0	$\frac{\sqrt{231}i}{924}$	0	0	$-\frac{\sqrt{154}}{1848}$	0	0	$\frac{\sqrt{385}}{462}$	0	$-\frac{\sqrt{385}i}{462}$	0	0	0
		0	0	$\frac{\sqrt{154}}{1848}$	0	0	$\frac{\sqrt{231}i}{154}$	0	0	0	0	$\frac{\sqrt{2310}}{1848}$	0	0	$-\frac{2\sqrt{385}i}{231}$
		0	0	0	$-\frac{\sqrt{154}}{1848}$	$-\frac{\sqrt{231}i}{154}$	0	0	0	0	0	0	$-\frac{\sqrt{2310}}{1848}$	$\frac{2\sqrt{385}i}{231}$	0
		$-\frac{\sqrt{154}}{1848}$	0	0	0	0	0	0	$\frac{\sqrt{231}i}{154}$	$-\frac{\sqrt{2310}}{1848}$	0	0	0	0	$-\frac{2\sqrt{385}}{231}$
		0	$\frac{\sqrt{154}}{1848}$	0	0	0	0	$-\frac{\sqrt{231}i}{154}$	0	0	$\frac{\sqrt{2310}}{1848}$	0	0	$-\frac{2\sqrt{385}}{231}$	0
		0	$\frac{\sqrt{385}i}{462}$	0	$\frac{\sqrt{385}}{462}$	0	0	$-\frac{\sqrt{2310}}{1848}$	0	0	$-\frac{25\sqrt{231}i}{924}$	0	$-\frac{5\sqrt{231}}{462}$	0	0
		$-\frac{\sqrt{385}i}{462}$	0	$\frac{\sqrt{385}}{462}$	0	0	0	0	$\frac{\sqrt{2310}}{1848}$	$\frac{25\sqrt{231}i}{924}$	0	$-\frac{5\sqrt{231}}{462}$	0	0	0
		0	$-\frac{\sqrt{385}}{462}$	0	$\frac{\sqrt{385}i}{462}$	$\frac{\sqrt{2310}}{1848}$	0	0	0	0	$-\frac{5\sqrt{231}}{462}$	0	$-\frac{5\sqrt{231}i}{924}$	$\frac{5\sqrt{154}}{924}$	0
		$-\frac{\sqrt{385}}{462}$	0	$-\frac{\sqrt{385}i}{462}$	0	0	$-\frac{\sqrt{2310}}{1848}$	0	0	$-\frac{5\sqrt{231}}{462}$	0	$\frac{5\sqrt{231}i}{924}$	0	0	$-\frac{5\sqrt{154}}{924}$
		0	0	0	0	0	$-\frac{2\sqrt{385}i}{231}$	0	$-\frac{2\sqrt{385}}{231}$	0	0	$\frac{5\sqrt{154}}{924}$	0	0	$\frac{5\sqrt{231}i}{231}$
		0	0	0	0	$\frac{2\sqrt{385}i}{231}$	0	$-\frac{2\sqrt{385}}{231}$	0	0	0	0	$-\frac{5\sqrt{154}}{924}$	$-\frac{5\sqrt{231}i}{231}$	0
943	symmetry	$-\frac{3\sqrt{7}(x^2+y^2-10z^2)(x^2-2xy-y^2)(x^2+2xy-y^2)}{16}$													

continued ...

Table 10

No.	multipole	matrix													
$\mathbb{T}_{6,1}^{(1,0;a)}(E_g, 3)$		0	0	0	0	0	$\frac{\sqrt{462i}}{168}$	0	$\frac{\sqrt{462}}{168}$	0	0	$-\frac{\sqrt{1155}}{231}$	0	0	$-\frac{\sqrt{770i}}{308}$
		0	0	0	0	$-\frac{\sqrt{462i}}{168}$	0	$\frac{\sqrt{462}}{168}$	0	0	0	0	$\frac{\sqrt{1155}}{231}$	$\frac{\sqrt{770i}}{308}$	0
		0	0	0	0	0	$\frac{\sqrt{462}}{168}$	0	$-\frac{\sqrt{462i}}{168}$	$-\frac{\sqrt{1155}}{231}$	0	0	0	0	$\frac{\sqrt{770}}{308}$
		0	0	0	0	$\frac{\sqrt{462}}{168}$	0	$\frac{\sqrt{462i}}{168}$	0	0	$\frac{\sqrt{1155}}{231}$	0	0	$\frac{\sqrt{770}}{308}$	0
		0	$\frac{\sqrt{462i}}{168}$	0	$\frac{\sqrt{462}}{168}$	0	0	$-\frac{2\sqrt{77}}{77}$	0	0	$-\frac{3\sqrt{770i}}{616}$	0	$\frac{3\sqrt{770}}{616}$	0	0
		$-\frac{\sqrt{462i}}{168}$	0	$\frac{\sqrt{462}}{168}$	0	0	0	0	$\frac{2\sqrt{77}}{77}$	$\frac{3\sqrt{770i}}{616}$	0	$\frac{3\sqrt{770}}{616}$	0	0	0
		0	$\frac{\sqrt{462}}{168}$	0	$-\frac{\sqrt{462i}}{168}$	$-\frac{2\sqrt{77}}{77}$	0	0	0	0	$\frac{3\sqrt{770}}{616}$	0	$\frac{3\sqrt{770i}}{616}$	0	0
		$\frac{\sqrt{462}}{168}$	0	$\frac{\sqrt{462i}}{168}$	0	0	$\frac{2\sqrt{77}}{77}$	0	0	$\frac{3\sqrt{770}}{616}$	0	$-\frac{3\sqrt{770i}}{616}$	0	0	0
		0	0	$-\frac{\sqrt{1155}}{231}$	0	0	$-\frac{3\sqrt{770i}}{616}$	0	$\frac{3\sqrt{770}}{616}$	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{1155}}{231}$	$\frac{3\sqrt{770i}}{616}$	0	$\frac{3\sqrt{770}}{616}$	0	0	0	0	0	0	0
		$-\frac{\sqrt{1155}}{231}$	0	0	0	0	$\frac{3\sqrt{770}}{616}$	0	$\frac{3\sqrt{770i}}{616}$	0	0	0	0	0	0
		0	$\frac{\sqrt{1155}}{231}$	0	0	$\frac{3\sqrt{770}}{616}$	0	$-\frac{3\sqrt{770i}}{616}$	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{770i}}{308}$	0	$\frac{\sqrt{770}}{308}$	0	0	0	0	0	0	0	0	0	0
		$\frac{\sqrt{770i}}{308}$	0	$\frac{\sqrt{770}}{308}$	0	0	0	0	0	0	0	0	0	0	0
	944	symmetry	$-\frac{3\sqrt{7}xy(x-y)(x+y)(x^2+y^2-10z^2)}{4}$												

continued ...

Table 10

No.	multipole	matrix												
$\mathbb{T}_{6,2}^{(1,0;a)}(E_g, 3)$		0	0	0	0	0	$-\frac{\sqrt{462}}{168}$	0	$\frac{\sqrt{462}i}{168}$	$\frac{\sqrt{1155}}{231}$	0	0	0	$-\frac{\sqrt{770}}{308}$
		0	0	0	0	$-\frac{\sqrt{462}}{168}$	0	$-\frac{\sqrt{462}i}{168}$	0	0	$-\frac{\sqrt{1155}}{231}$	0	0	$-\frac{\sqrt{770}}{308}$
		0	0	0	0	0	$\frac{\sqrt{462}i}{168}$	0	$\frac{\sqrt{462}}{168}$	0	0	$-\frac{\sqrt{1155}}{231}$	0	$-\frac{\sqrt{770}i}{308}$
		0	0	0	0	$-\frac{\sqrt{462}i}{168}$	0	$\frac{\sqrt{462}}{168}$	0	0	0	$\frac{\sqrt{1155}}{231}$	$\frac{\sqrt{770}i}{308}$	0
		0	$-\frac{\sqrt{462}}{168}$	0	$\frac{\sqrt{462}i}{168}$	$\frac{2\sqrt{77}}{77}$	0	0	0	0	$-\frac{3\sqrt{770}}{616}$	0	$-\frac{3\sqrt{770}i}{616}$	0
		$-\frac{\sqrt{462}}{168}$	0	$-\frac{\sqrt{462}i}{168}$	0	0	$-\frac{2\sqrt{77}}{77}$	0	0	$-\frac{3\sqrt{770}}{616}$	0	$\frac{3\sqrt{770}i}{616}$	0	0
		0	$\frac{\sqrt{462}i}{168}$	0	$\frac{\sqrt{462}}{168}$	0	0	$-\frac{2\sqrt{77}}{77}$	0	0	$-\frac{3\sqrt{770}i}{616}$	0	$\frac{3\sqrt{770}}{616}$	0
		$-\frac{\sqrt{462}i}{168}$	0	$\frac{\sqrt{462}}{168}$	0	0	0	0	$\frac{2\sqrt{77}}{77}$	$\frac{3\sqrt{770}i}{616}$	0	$\frac{3\sqrt{770}}{616}$	0	0
		$\frac{\sqrt{1155}}{231}$	0	0	0	0	$-\frac{3\sqrt{770}}{616}$	0	$-\frac{3\sqrt{770}i}{616}$	0	0	0	0	0
		0	$-\frac{\sqrt{1155}}{231}$	0	0	$-\frac{3\sqrt{770}}{616}$	0	$\frac{3\sqrt{770}i}{616}$	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{1155}}{231}$	0	0	$-\frac{3\sqrt{770}i}{616}$	0	$\frac{3\sqrt{770}}{616}$	0	0	0	0	0
		0	0	0	$\frac{\sqrt{1155}}{231}$	$\frac{3\sqrt{770}i}{616}$	0	$\frac{3\sqrt{770}}{616}$	0	0	0	0	0	0
		0	$-\frac{\sqrt{770}}{308}$	0	$-\frac{\sqrt{770}i}{308}$	0	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{770}}{308}$	0	$\frac{\sqrt{770}i}{308}$	0	0	0	0	0	0	0	0	0	0
	945	symmetry	$\frac{\sqrt{210}(x-y)(x+y)(x^4+2x^2y^2-16x^2z^2+y^4-16y^2z^2+16z^4)}{32}$											

continued ...

Table 10

No.	multipole	matrix													
		0	0	0	0	0	$-\frac{\sqrt{385}i}{924}$	0	$-\frac{\sqrt{385}}{924}$	0	0	$-\frac{\sqrt{154}}{462}$	0	0	$\frac{\sqrt{231}i}{154}$
		0	0	0	0	$\frac{\sqrt{385}i}{924}$	0	$-\frac{\sqrt{385}}{924}$	0	0	0	0	$\frac{\sqrt{154}}{462}$	$-\frac{\sqrt{231}i}{154}$	0
		0	0	0	0	0	$\frac{\sqrt{385}}{924}$	0	$-\frac{\sqrt{385}i}{924}$	$\frac{\sqrt{154}}{462}$	0	0	0	0	$\frac{\sqrt{231}}{154}$
		0	0	0	0	$\frac{\sqrt{385}}{924}$	0	$\frac{\sqrt{385}i}{924}$	0	0	$-\frac{\sqrt{154}}{462}$	0	0	$\frac{\sqrt{231}}{154}$	0
		0	$-\frac{\sqrt{385}i}{924}$	0	$\frac{\sqrt{385}}{924}$	0	0	0	0	0	0	$\frac{\sqrt{231}i}{66}$	0	$\frac{\sqrt{231}}{66}$	0
		$\frac{\sqrt{385}i}{924}$	0	$\frac{\sqrt{385}}{924}$	0	0	0	0	0	$-\frac{\sqrt{231}i}{66}$	0	$\frac{\sqrt{231}}{66}$	0	0	0
	$\mathbb{T}_{6,1}^{(1,0;a)}(E_g, 4)$	0	$-\frac{\sqrt{385}}{924}$	0	$-\frac{\sqrt{385}i}{924}$	0	0	0	0	0	0	$\frac{\sqrt{231}}{231}$	0	$-\frac{\sqrt{231}i}{231}$	$-\frac{2\sqrt{154}}{231}$
		$-\frac{\sqrt{385}}{924}$	0	$\frac{\sqrt{385}i}{924}$	0	0	0	0	0	$\frac{\sqrt{231}}{231}$	0	$\frac{\sqrt{231}i}{231}$	0	0	$\frac{2\sqrt{154}}{231}$
		0	0	$\frac{\sqrt{154}}{462}$	0	0	$\frac{\sqrt{231}i}{66}$	0	$\frac{\sqrt{231}}{231}$	0	0	$-\frac{\sqrt{2310}}{462}$	0	0	$-\frac{5\sqrt{385}i}{462}$
		0	0	0	$-\frac{\sqrt{154}}{462}$	$-\frac{\sqrt{231}i}{66}$	0	$\frac{\sqrt{231}}{231}$	0	0	0	0	$\frac{\sqrt{2310}}{462}$	$\frac{5\sqrt{385}i}{462}$	0
		$-\frac{\sqrt{154}}{462}$	0	0	0	0	$\frac{\sqrt{231}}{66}$	0	$-\frac{\sqrt{231}i}{231}$	$-\frac{\sqrt{2310}}{462}$	0	0	0	0	$\frac{5\sqrt{385}}{462}$
		0	$\frac{\sqrt{154}}{462}$	0	0	$\frac{\sqrt{231}}{66}$	0	$\frac{\sqrt{231}i}{231}$	0	0	$\frac{\sqrt{2310}}{462}$	0	0	$\frac{5\sqrt{385}}{462}$	0
		0	$\frac{\sqrt{231}i}{154}$	0	$\frac{\sqrt{231}}{154}$	0	0	$-\frac{2\sqrt{154}}{231}$	0	0	$-\frac{5\sqrt{385}i}{462}$	0	$\frac{5\sqrt{385}}{462}$	0	0
		$-\frac{\sqrt{231}i}{154}$	0	$\frac{\sqrt{231}}{154}$	0	0	0	0	$\frac{2\sqrt{154}}{231}$	$\frac{5\sqrt{385}i}{462}$	0	$\frac{5\sqrt{385}}{462}$	0	0	0
946	symmetry	$-\frac{\sqrt{210}xy(x^4+2x^2y^2-16x^2z^2+y^4-16y^2z^2+16z^4)}{16}$													

continued ...

Table 10

No.	multipole	matrix													
$\mathbb{T}_{6,2}^{(1,0;a)}(E_g, 4)$		0	0	0	0	0	$\frac{\sqrt{385}}{924}$	0	$-\frac{\sqrt{385i}}{924}$	$\frac{\sqrt{154}}{462}$	0	0	0	$\frac{\sqrt{231}}{154}$	
		0	0	0	0	$\frac{\sqrt{385}}{924}$	0	$\frac{\sqrt{385i}}{924}$	0	0	$-\frac{\sqrt{154}}{462}$	0	0	$\frac{\sqrt{231}}{154}$	0
		0	0	0	0	0	$\frac{\sqrt{385i}}{924}$	0	$\frac{\sqrt{385}}{924}$	0	0	$\frac{\sqrt{154}}{462}$	0	0	$-\frac{\sqrt{231i}}{154}$
		0	0	0	0	$-\frac{\sqrt{385i}}{924}$	0	$\frac{\sqrt{385}}{924}$	0	0	0	0	$-\frac{\sqrt{154}}{462}$	$\frac{\sqrt{231i}}{154}$	0
		0	$\frac{\sqrt{385}}{924}$	0	$\frac{\sqrt{385i}}{924}$	0	0	0	0	0	$\frac{\sqrt{231}}{231}$	0	$-\frac{\sqrt{231i}}{231}$	$-\frac{2\sqrt{154}}{231}$	0
		$\frac{\sqrt{385}}{924}$	0	$-\frac{\sqrt{385i}}{924}$	0	0	0	0	0	$\frac{\sqrt{231}}{231}$	0	$\frac{\sqrt{231i}}{231}$	0	0	$\frac{2\sqrt{154}}{231}$
		0	$-\frac{\sqrt{385i}}{924}$	0	$\frac{\sqrt{385}}{924}$	0	0	0	0	0	$-\frac{\sqrt{231i}}{66}$	0	$-\frac{\sqrt{231}}{66}$	0	0
		$\frac{\sqrt{385i}}{924}$	0	$\frac{\sqrt{385}}{924}$	0	0	0	0	0	$\frac{\sqrt{231i}}{66}$	0	$-\frac{\sqrt{231}}{66}$	0	0	0
		$\frac{\sqrt{154}}{462}$	0	0	0	0	$\frac{\sqrt{231}}{231}$	0	$-\frac{\sqrt{231i}}{66}$	$-\frac{\sqrt{2310}}{462}$	0	0	0	0	$\frac{5\sqrt{385}}{462}$
		0	$-\frac{\sqrt{154}}{462}$	0	0	$\frac{\sqrt{231}}{231}$	0	$\frac{\sqrt{231i}}{66}$	0	0	$\frac{\sqrt{2310}}{462}$	0	0	$\frac{5\sqrt{385}}{462}$	0
		0	0	$\frac{\sqrt{154}}{462}$	0	0	$-\frac{\sqrt{231i}}{231}$	0	$-\frac{\sqrt{231}}{66}$	0	0	$\frac{\sqrt{2310}}{462}$	0	0	$\frac{5\sqrt{385i}}{462}$
		0	0	0	$-\frac{\sqrt{154}}{462}$	$\frac{\sqrt{231i}}{231}$	0	$-\frac{\sqrt{231}}{66}$	0	0	0	0	$-\frac{\sqrt{2310}}{462}$	$-\frac{5\sqrt{385i}}{462}$	0
		0	$\frac{\sqrt{231}}{154}$	0	$-\frac{\sqrt{231i}}{154}$	$-\frac{2\sqrt{154}}{231}$	0	0	0	0	$\frac{5\sqrt{385}}{462}$	0	$\frac{5\sqrt{385i}}{462}$	0	0
		$\frac{\sqrt{231}}{154}$	0	$\frac{\sqrt{231i}}{154}$	0	0	$\frac{2\sqrt{154}}{231}$	0	0	$\frac{5\sqrt{385}}{462}$	0	$-\frac{5\sqrt{385i}}{462}$	0	0	0
	947	symmetry	z												

continued ...

Table 10

No.	multipole	matrix													
		0	0	$-\frac{3\sqrt{14}i}{28}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	$-\frac{3\sqrt{14}i}{28}$	0	0	0	0	0	0	0	0	0	0
		$\frac{3\sqrt{14}i}{28}$	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	$\frac{3\sqrt{14}i}{28}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{14}i}{14}$	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{14}i}{14}$	0	0	0	0	0	0
		0	0	0	0	$\frac{\sqrt{14}i}{14}$	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	$\frac{\sqrt{14}i}{14}$	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{14}i}{28}$	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{14}i}{28}$	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{14}i}{28}$	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{14}i}{28}$	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
948	symmetry	x													

continued ...

Table 10

No.	multipole	matrix												
$M_{1,1}^{(a)}(E_g)$		0	0	0	0	0	0	$\frac{\sqrt{21}i}{28}$	0	0	0	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{21}i}{28}$	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{21}i}{28}$	0	0	0	0	0	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{21}i}{28}$	0	0	0	0	0	0	0
		0	0	$\frac{\sqrt{21}i}{28}$	0	0	0	0	0	0	$\frac{\sqrt{35}i}{28}$	0	0	0
		0	0	0	$\frac{\sqrt{21}i}{28}$	0	0	0	0	0	0	$\frac{\sqrt{35}i}{28}$	0	0
		$-\frac{\sqrt{21}i}{28}$	0	0	0	0	0	0	0	$-\frac{\sqrt{35}i}{28}$	0	0	0	0
		0	$-\frac{\sqrt{21}i}{28}$	0	0	0	0	0	0	0	$-\frac{\sqrt{35}i}{28}$	0	0	0
		0	0	0	0	0	0	$\frac{\sqrt{35}i}{28}$	0	0	0	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{35}i}{28}$	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{35}i}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{21}i}{14}$	0
		0	0	0	0	0	$-\frac{\sqrt{35}i}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{21}i}{14}$
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{21}i}{14}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{21}i}{14}$	0	0
	949	symmetry	y											

continued ...

Table 10

No.	multipole	matrix													
$M_{1,2}^{(a)}(E_g)$		0	0	0	0	$\frac{\sqrt{21}i}{28}$	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	$\frac{\sqrt{21}i}{28}$	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	$\frac{\sqrt{21}i}{28}$	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{21}i}{28}$	0	0	0	0	0	0
		$-\frac{\sqrt{21}i}{28}$	0	0	0	0	0	0	0	$\frac{\sqrt{35}i}{28}$	0	0	0	0	0
		0	$-\frac{\sqrt{21}i}{28}$	0	0	0	0	0	0	0	$\frac{\sqrt{35}i}{28}$	0	0	0	0
		0	0	$-\frac{\sqrt{21}i}{28}$	0	0	0	0	0	0	0	$\frac{\sqrt{35}i}{28}$	0	0	0
		0	0	0	$-\frac{\sqrt{21}i}{28}$	0	0	0	0	0	0	0	$\frac{\sqrt{35}i}{28}$	0	0
		0	0	0	0	$-\frac{\sqrt{35}i}{28}$	0	0	0	0	0	0	0	$\frac{\sqrt{21}i}{14}$	0
		0	0	0	0	0	$-\frac{\sqrt{35}i}{28}$	0	0	0	0	0	0	0	$\frac{\sqrt{21}i}{14}$
		0	0	0	0	0	0	$-\frac{\sqrt{35}i}{28}$	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{35}i}{28}$	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{21}i}{14}$	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{21}i}{14}$	0	0	0	0
950	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$													

continued ...

Table 10

No.	multipole	matrix											
		0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{3}i}{6}$	0
		0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{3}i}{6}$
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{3}i}{6}$	0	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{3}i}{6}$	0	0
	$M_3^{(a)}(A_{1g})$	0	0	0	0	0	0	0	$-\frac{\sqrt{3}i}{6}$	0	0	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{3}i}{6}$	0	0	0
		0	0	0	0	0	0	$\frac{\sqrt{3}i}{6}$	0	0	0	0	0
		0	0	0	0	0	0	$\frac{\sqrt{3}i}{6}$	0	0	0	0	0
		0	0	0	0	$\frac{\sqrt{3}i}{6}$	0	0	0	0	0	0	0
		0	0	0	0	0	$\frac{\sqrt{3}i}{6}$	0	0	0	0	0	0
		0	0	0	0	0	$\frac{\sqrt{3}i}{6}$	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{3}i}{6}$	0	0	0	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{3}i}{6}$	0	0	0	0	0	0	0	0
951	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$											

continued ...

Table 10

No.	multipole	matrix											
		0	0	$\frac{\sqrt{3}i}{6}$	0	0	0	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{3}i}{6}$	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{3}i}{6}$	0	0	0	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{3}i}{6}$	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{3}i}{6}$	0	0	0	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{3}i}{6}$	0	0	0	0
	$M_3^{(a)}(A_{2g}, 1)$	0	0	0	0	$\frac{\sqrt{3}i}{6}$	0	0	0	0	0	0	0
		0	0	0	0	0	$\frac{\sqrt{3}i}{6}$	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{3}i}{6}$	0	0
		0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{3}i}{6}$	0
		0	0	0	0	0	0	0	$\frac{\sqrt{3}i}{6}$	0	0	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{3}i}{6}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0
952	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$											

continued ...

Table 10

No.	multipole	matrix													
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{3}i}{6}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{3}i}{6}$
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{3}i}{6}$	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{3}i}{6}$	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{3}i}{6}$	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{3}i}{6}$	0	0	0
		0	0	0	0	$-\frac{\sqrt{3}i}{6}$	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{3}i}{6}$	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	$\frac{\sqrt{3}i}{6}$	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{3}i}{6}$	0	0	0	0	0	0
		$\frac{\sqrt{3}i}{6}$	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{3}i}{6}$	0	0	0	0	0	0	0	0	0	0	0	0
953	symmetry	$-\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$													

continued ...

Table 10

No.	multipole	matrix												
		0	0	0	0	0	0	$-\frac{\sqrt{3}i}{6}$	0	0	0	0	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{3}i}{6}$	0	0	0	0	0
		0	0	0	0	$\frac{\sqrt{3}i}{6}$	0	0	0	0	0	0	0	0
		0	0	0	0	0	$\frac{\sqrt{3}i}{6}$	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{3}i}{6}$	0	0	0	0	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{3}i}{6}$	0	0	0	0	0	0	0	0	0
	$M_{3,1}^{(a)}(E_{g,1})$	$\frac{\sqrt{3}i}{6}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{3}i}{6}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{3}i}{6}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{3}i}{6}$
		0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{3}i}{6}$	0	0
		0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{3}i}{6}$	0
954	symmetry	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$												

continued ...

Table 10

No.	multipole	matrix												
		0	0	0	0	$-\frac{\sqrt{3}i}{6}$	0	0	0	0	0	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{3}i}{6}$	0	0	0	0	0	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{3}i}{6}$	0	0	0	0	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{3}i}{6}$	0	0	0	0	0
		$\frac{\sqrt{3}i}{6}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{3}i}{6}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	$\frac{\sqrt{3}i}{6}$	0	0	0	0	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{3}i}{6}$	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{3}i}{6}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{3}i}{6}$
		0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{3}i}{6}$	0	0	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{3}i}{6}$	0	0	0
955	symmetry	$\sqrt{15}xyz$												

continued ...

Table 10

No.	multipole	matrix													
		0	0	0	0	0	0	0	0	$\frac{\sqrt{3}i}{6}$	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{3}i}{6}$	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{3}i}{6}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{3}i}{6}$	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{3}i}{6}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{3}i}{6}$
	$M_{3,1}^{(a)}(E_g, 2)$	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{3}i}{6}$	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{3}i}{6}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{3}i}{6}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{3}i}{6}$	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{3}i}{6}$	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{3}i}{6}$	0	0	0	0	0	0	0	0
956	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$													

continued ...

Table 10

No.	multipole	matrix													
		0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{3}i}{6}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{3}i}{6}$	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{3}i}{6}$	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{3}i}{6}$	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{3}i}{6}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{3}i}{6}$
		0	0	$\frac{\sqrt{3}i}{6}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{3}i}{6}$	0	0	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{3}i}{6}$	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{3}i}{6}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	$\frac{\sqrt{3}i}{6}$	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{3}i}{6}$	0	0	0	0	0	0
957	symmetry	$-\frac{\sqrt{70}x(x^2-3y^2)(x^2+y^2-8z^2)}{16}$													

continued ...

Table 10

No.	multipole	matrix
		$ \begin{array}{cccccccccccccccc} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{6} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{6} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{12} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{12} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{12} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{12} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{6}i}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{6}i}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{array} $
958	symmetry	$\frac{z(15x^4+30x^2y^2-40x^2z^2+15y^4-40y^2z^2+8z^4)}{8}$

continued ...

Table 10

No.	multipole	matrix												
		0	0	$-\frac{\sqrt{42i}}{84}$	0	0	0	0	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{42i}}{84}$	0	0	0	0	0	0	0	0	0
		$\frac{\sqrt{42i}}{84}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{42i}}{84}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	$\frac{\sqrt{42i}}{21}$	0	0	0	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{42i}}{21}$	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{42i}}{21}$	0	0	0	0	0	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{42i}}{21}$	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{5\sqrt{42i}}{84}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	$-\frac{5\sqrt{42i}}{84}$	0	0
		0	0	0	0	0	0	0	0	$\frac{5\sqrt{42i}}{84}$	0	0	0	0
		0	0	0	0	0	0	0	0	0	$\frac{5\sqrt{42i}}{84}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0
959	symmetry	$-\frac{\sqrt{70}y(3x^2-y^2)(x^2+y^2-8z^2)}{16}$												

continued ...

Table 10

No.	multipole	matrix													
		0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{6i}}{6}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{6i}}{6}$
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{6i}}{12}$	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{6i}}{12}$	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{6i}}{12}$	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{6i}}{12}$	0	0	0
		0	0	0	0	$-\frac{\sqrt{6i}}{12}$	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{6i}}{12}$	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	$\frac{\sqrt{6i}}{12}$	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{6i}}{12}$	0	0	0	0	0	0
		$-\frac{\sqrt{6i}}{6}$	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{6i}}{6}$	0	0	0	0	0	0	0	0	0	0	0	0
960	symmetry	$\frac{3\sqrt{14}x(x^4-10x^2y^2+5y^4)}{16}$													

continued ...

Table 10

No.	multipole	matrix
		$ \begin{array}{cccccccccccccccc} 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{array} $
961	symmetry	$-\frac{3\sqrt{14}y(5x^4-10x^2y^2+y^4)}{16}$

continued ...

Table 10

No.	multipole	matrix
	$M_{5,2}^{(a)}(E_g, 1)$	$ \begin{array}{cccccccccccccccc} 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{array} $
962	symmetry	$\frac{\sqrt{15}x(x^4+2x^2y^2-12x^2z^2+y^4-12y^2z^2+8z^4)}{8}$

continued ...

Table 10

No.	multipole	matrix													
$M_{5,1}^{(a)}(E_g, 2)$		0	0	0	0	0	0	$\frac{\sqrt{105i}}{84}$	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{105i}}{84}$	0	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{105i}}{84}$	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{105i}}{84}$	0	0	0	0	0	0	0	0
		0	0	$\frac{\sqrt{105i}}{84}$	0	0	0	0	0	0	0	$-\frac{3\sqrt{7i}}{28}$	0	0	0
		0	0	0	$\frac{\sqrt{105i}}{84}$	0	0	0	0	0	0	0	$-\frac{3\sqrt{7i}}{28}$	0	0
		$-\frac{\sqrt{105i}}{84}$	0	0	0	0	0	0	0	$\frac{3\sqrt{7i}}{28}$	0	0	0	0	0
		0	$-\frac{\sqrt{105i}}{84}$	0	0	0	0	0	0	0	$\frac{3\sqrt{7i}}{28}$	0	0	0	0
		0	0	0	0	0	0	$-\frac{3\sqrt{7i}}{28}$	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	$-\frac{3\sqrt{7i}}{28}$	0	0	0	0	0	0
		0	0	0	0	$\frac{3\sqrt{7i}}{28}$	0	0	0	0	0	0	0	$-\frac{\sqrt{105i}}{42}$	0
		0	0	0	0	0	$\frac{3\sqrt{7i}}{28}$	0	0	0	0	0	0	0	$-\frac{\sqrt{105i}}{42}$
		0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{105i}}{42}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{105i}}{42}$	0	0
963	symmetry	$\frac{\sqrt{15}y(x^4+2x^2y^2-12x^2z^2+y^4-12y^2z^2+8z^4)}{8}$													

continued ...

Table 10

No.	multipole	matrix													
		0	0	0	0	$\frac{\sqrt{105i}}{84}$	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	$\frac{\sqrt{105i}}{84}$	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	$\frac{\sqrt{105i}}{84}$	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{105i}}{84}$	0	0	0	0	0	0
		$-\frac{\sqrt{105i}}{84}$	0	0	0	0	0	0	0	$-\frac{3\sqrt{7i}}{28}$	0	0	0	0	0
		0	$-\frac{\sqrt{105i}}{84}$	0	0	0	0	0	0	0	$-\frac{3\sqrt{7i}}{28}$	0	0	0	0
	$M_{5,2}^{(a)}(E_g, 2)$	0	0	$-\frac{\sqrt{105i}}{84}$	0	0	0	0	0	0	0	$-\frac{3\sqrt{7i}}{28}$	0	0	0
		0	0	0	$-\frac{\sqrt{105i}}{84}$	0	0	0	0	0	0	0	$-\frac{3\sqrt{7i}}{28}$	0	0
		0	0	0	0	$\frac{3\sqrt{7i}}{28}$	0	0	0	0	0	0	0	$\frac{\sqrt{105i}}{42}$	0
		0	0	0	0	0	$\frac{3\sqrt{7i}}{28}$	0	0	0	0	0	0	0	$\frac{\sqrt{105i}}{42}$
		0	0	0	0	0	0	$\frac{3\sqrt{7i}}{28}$	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	$\frac{3\sqrt{7i}}{28}$	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{105i}}{42}$	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{105i}}{42}$	0	0	0	0
964	symmetry	$-\frac{3\sqrt{35}xyz(x-y)(x+y)}{2}$													

continued ...

Table 10

No.	multipole	matrix													
	$M_{5,1}^{(a)}(E_g, 3)$	0	0	0	0	0	0	0	0	$-\frac{\sqrt{2}i}{4}$	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{2}i}{4}$	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{2}i}{4}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{2}i}{4}$	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		$\frac{\sqrt{2}i}{4}$	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{2}i}{4}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{2}i}{4}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{2}i}{4}$	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
965	symmetry	$\frac{3\sqrt{35}z(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$													

continued ...

Table 10

No.	multipole	matrix
	$M_{5,2}^{(a)}(E_g, 3)$	$ \begin{array}{cccccccccccc} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{array} $
966	symmetry	$-\frac{\sqrt{105}xyz(x^2+y^2-2z^2)}{2}$

continued ...

Table 10

No.	multipole	matrix												
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{6}i}{12}$	0	0	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{6}i}{12}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{6}i}{12}$	0	0
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{6}i}{12}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{6}i}{6}$
		0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{6}i}{6}$
	$M_{5,1}^{(a)}(E_g, 4)$	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0
		$\frac{\sqrt{6}i}{12}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{6}i}{12}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	$\frac{\sqrt{6}i}{12}$	0	0	0	0	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{6}i}{12}$	0	0	0	0	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{6}i}{6}$	0	0	0	0	0	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{6}i}{6}$	0	0	0	0	0	0	0
967	symmetry	$-\frac{\sqrt{105}z(x-y)(x+y)(x^2+y^2-2z^2)}{4}$												

continued ...

Table 10

No.	multipole	matrix													
		0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{6i}}{12}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{6i}}{12}$	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{6i}}{12}$	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{6i}}{12}$	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{6i}}{6}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{6i}}{6}$
		0	0	$-\frac{\sqrt{6i}}{12}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{6i}}{12}$	0	0	0	0	0	0	0	0	0	0
		$\frac{\sqrt{6i}}{12}$	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{6i}}{12}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	$\frac{\sqrt{6i}}{6}$	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{6i}}{6}$	0	0	0	0	0	0
968	symmetry	z													

continued ...

Table 10

No.	multipole	matrix													
		$\frac{\sqrt{14}}{14}$	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{14}}{14}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	$\frac{\sqrt{14}}{14}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{14}}{14}$	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	$\frac{\sqrt{14}}{14}$	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{14}}{14}$	0	0	0	0	0	0	0	0
	$M_1^{(1,-1;a)}(A_{2g})$	0	0	0	0	0	0	$\frac{\sqrt{14}}{14}$	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{14}}{14}$	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{14}}{14}$	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{14}}{14}$	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{14}}{14}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{14}}{14}$	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{14}}{14}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{14}}{14}$
969	symmetry	x													

continued ...

Table 10

No.	multipole	matrix													
		0	$\frac{\sqrt{14}}{14}$	0	0	0	0	0	0	0	0	0	0	0	0
		$\frac{\sqrt{14}}{14}$	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{14}}{14}$	0	0	0	0	0	0	0	0	0	0
		0	0	$\frac{\sqrt{14}}{14}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	$\frac{\sqrt{14}}{14}$	0	0	0	0	0	0	0	0
		0	0	0	0	$\frac{\sqrt{14}}{14}$	0	0	0	0	0	0	0	0	0
	$M_{1,1}^{(1,-1;a)}(E_g)$	0	0	0	0	0	0	0	$\frac{\sqrt{14}}{14}$	0	0	0	0	0	0
		0	0	0	0	0	0	$\frac{\sqrt{14}}{14}$	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{14}}{14}$	0	0	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{14}}{14}$	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{14}}{14}$	0	0
		0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{14}}{14}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{14}}{14}$
		0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{14}}{14}$	0
970	symmetry	y													

continued ...

Table 10

No.	multipole	matrix														
		0	$-\frac{\sqrt{14}i}{14}$	0	0	0	0	0	0	0	0	0	0	0	0	
		$\frac{\sqrt{14}i}{14}$	0	0	0	0	0	0	0	0	0	0	0	0	0	
		0	0	0	$-\frac{\sqrt{14}i}{14}$	0	0	0	0	0	0	0	0	0	0	
		0	0	$\frac{\sqrt{14}i}{14}$	0	0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	$-\frac{\sqrt{14}i}{14}$	0	0	0	0	0	0	0	0	
		0	0	0	0	$\frac{\sqrt{14}i}{14}$	0	0	0	0	0	0	0	0	0	
	$M_{1,2}^{(1,-1;a)}(E_g)$	0	0	0	0	0	0	0	$-\frac{\sqrt{14}i}{14}$	0	0	0	0	0	0	
		0	0	0	0	0	0	$\frac{\sqrt{14}i}{14}$	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{14}i}{14}$	0	0	0	0	
		0	0	0	0	0	0	0	0	$\frac{\sqrt{14}i}{14}$	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{14}i}{14}$	0	0	
		0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{14}i}{14}$	0	0	0	
		0	0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{14}i}{14}$	
		0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{14}i}{14}$	0	
971	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$														

continued ...

Table 10

No.	multipole	matrix													
$M_3^{(1,-1;a)}(A_{1g})$		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{105}}{84}$	0	$\frac{\sqrt{105}i}{84}$	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{105}}{84}$	0	$-\frac{\sqrt{105}i}{84}$	0	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{105}i}{84}$	0	$-\frac{\sqrt{105}}{84}$	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{105}i}{84}$	0	$-\frac{\sqrt{105}}{84}$	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{105}}{42}$
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{105}}{42}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{105}i}{42}$
		0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{105}i}{42}$	0
		0	$-\frac{\sqrt{105}}{84}$	0	$-\frac{\sqrt{105}i}{84}$	0	0	0	0	0	$\frac{\sqrt{7}}{14}$	0	$\frac{\sqrt{7}i}{14}$	0	0
		$-\frac{\sqrt{105}}{84}$	0	$\frac{\sqrt{105}i}{84}$	0	0	0	0	0	$\frac{\sqrt{7}}{14}$	0	$-\frac{\sqrt{7}i}{14}$	0	0	0
		0	$\frac{\sqrt{105}i}{84}$	0	$-\frac{\sqrt{105}}{84}$	0	0	0	0	0	$\frac{\sqrt{7}i}{14}$	0	$-\frac{\sqrt{7}}{14}$	0	0
		$-\frac{\sqrt{105}i}{84}$	0	$-\frac{\sqrt{105}}{84}$	0	0	0	0	0	$-\frac{\sqrt{7}i}{14}$	0	$-\frac{\sqrt{7}}{14}$	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{105}}{42}$	0	$-\frac{\sqrt{105}i}{42}$	0	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{105}}{42}$	0	$\frac{\sqrt{105}i}{42}$	0	0	0	0	0	0	0
972	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$													

continued ...

Table 10

No.	multipole	matrix													
$M_3^{(1,-1;a)}(A_{2g}, 1)$		$-\frac{\sqrt{70}}{28}$	0	0	0	0	$-\frac{\sqrt{105}}{84}$	0	$-\frac{\sqrt{105i}}{84}$	0	0	0	0	0	0
		0	$\frac{\sqrt{70}}{28}$	0	0	$-\frac{\sqrt{105}}{84}$	0	$\frac{\sqrt{105i}}{84}$	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{70}}{28}$	0	0	$\frac{\sqrt{105i}}{84}$	0	$-\frac{\sqrt{105}}{84}$	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{70}}{28}$	$-\frac{\sqrt{105i}}{84}$	0	$-\frac{\sqrt{105}}{84}$	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{105}}{84}$	0	$\frac{\sqrt{105i}}{84}$	0	0	0	0	$-\frac{\sqrt{7}}{28}$	0	$-\frac{\sqrt{7i}}{28}$	0	0	0
		$-\frac{\sqrt{105}}{84}$	0	$-\frac{\sqrt{105i}}{84}$	0	0	0	0	$-\frac{\sqrt{7}}{28}$	0	$\frac{\sqrt{7i}}{28}$	0	0	0	0
		0	$-\frac{\sqrt{105i}}{84}$	0	$-\frac{\sqrt{105}}{84}$	0	0	0	0	$\frac{\sqrt{7i}}{28}$	0	$-\frac{\sqrt{7}}{28}$	0	0	0
		$\frac{\sqrt{105i}}{84}$	0	$-\frac{\sqrt{105}}{84}$	0	0	0	0	$-\frac{\sqrt{7i}}{28}$	0	$-\frac{\sqrt{7}}{28}$	0	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{7}}{28}$	0	$\frac{\sqrt{7i}}{28}$	$\frac{3\sqrt{70}}{140}$	0	0	0	0	$-\frac{\sqrt{105}}{210}$
		0	0	0	0	$-\frac{\sqrt{7}}{28}$	0	$-\frac{\sqrt{7i}}{28}$	0	0	$-\frac{3\sqrt{70}}{140}$	0	0	$-\frac{\sqrt{105}}{210}$	0
		0	0	0	0	0	$-\frac{\sqrt{7i}}{28}$	0	$-\frac{\sqrt{7}}{28}$	0	0	$\frac{3\sqrt{70}}{140}$	0	0	$\frac{\sqrt{105i}}{210}$
		0	0	0	0	$\frac{\sqrt{7i}}{28}$	0	$-\frac{\sqrt{7}}{28}$	0	0	0	$-\frac{3\sqrt{70}}{140}$	$-\frac{\sqrt{105i}}{210}$	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{105}}{210}$	0	$\frac{\sqrt{105i}}{210}$	$\frac{\sqrt{70}}{35}$	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{105}}{210}$	0	$-\frac{\sqrt{105i}}{210}$	0	0	$-\frac{\sqrt{70}}{35}$	0
973	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$													

continued ...

Table 10

No.	multipole	matrix													
$M_3^{(1,-1;a)}(A_{2g}, 2)$		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{105}i}{84}$	0	$\frac{\sqrt{105}}{84}$	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{105}i}{84}$	0	$\frac{\sqrt{105}}{84}$	0	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{105}}{84}$	0	$\frac{\sqrt{105}i}{84}$	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{105}}{84}$	0	$-\frac{\sqrt{105}i}{84}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{105}i}{42}$
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{105}i}{42}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{105}}{42}$
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{105}}{42}$	0
		0	$\frac{\sqrt{105}i}{84}$	0	$-\frac{\sqrt{105}}{84}$	0	0	0	0	0	$-\frac{\sqrt{7}i}{14}$	0	$\frac{\sqrt{7}}{14}$	0	0
		$-\frac{\sqrt{105}i}{84}$	0	$-\frac{\sqrt{105}}{84}$	0	0	0	0	0	$\frac{\sqrt{7}i}{14}$	0	$\frac{\sqrt{7}}{14}$	0	0	0
		0	$\frac{\sqrt{105}}{84}$	0	$\frac{\sqrt{105}i}{84}$	0	0	0	0	0	$\frac{\sqrt{7}}{14}$	0	$\frac{\sqrt{7}i}{14}$	0	0
		$\frac{\sqrt{105}}{84}$	0	$-\frac{\sqrt{105}i}{84}$	0	0	0	0	0	$\frac{\sqrt{7}}{14}$	0	$-\frac{\sqrt{7}i}{14}$	0	0	0
		0	0	0	0	0	$\frac{\sqrt{105}i}{42}$	0	$-\frac{\sqrt{105}}{42}$	0	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{105}i}{42}$	0	$-\frac{\sqrt{105}}{42}$	0	0	0	0	0	0	0
	974	symmetry	$-\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$												

continued ...

Table 10

No.	multipole	matrix													
		0	$-\frac{\sqrt{105}}{42}$	0	0	$\frac{\sqrt{70}}{42}$	0	0	0	0	$\frac{\sqrt{7}}{84}$	0	$\frac{\sqrt{7}i}{84}$	0	0
		$-\frac{\sqrt{105}}{42}$	0	0	0	0	$-\frac{\sqrt{70}}{42}$	0	0	$\frac{\sqrt{7}}{84}$	0	$-\frac{\sqrt{7}i}{84}$	0	0	0
		0	0	0	$-\frac{\sqrt{105}}{42}$	0	0	$\frac{\sqrt{70}}{42}$	0	0	$-\frac{\sqrt{7}i}{84}$	0	$\frac{\sqrt{7}}{84}$	0	0
		0	0	$-\frac{\sqrt{105}}{42}$	0	0	0	0	$-\frac{\sqrt{70}}{42}$	$\frac{\sqrt{7}i}{84}$	0	$\frac{\sqrt{7}}{84}$	0	0	0
		$\frac{\sqrt{70}}{42}$	0	0	0	0	0	0	0	$\frac{\sqrt{42}}{42}$	0	0	0	0	$\frac{\sqrt{7}}{42}$
		0	$-\frac{\sqrt{70}}{42}$	0	0	0	0	0	0	0	$-\frac{\sqrt{42}}{42}$	0	0	$\frac{\sqrt{7}}{42}$	0
		0	0	$\frac{\sqrt{70}}{42}$	0	0	0	0	0	0	$\frac{\sqrt{42}}{42}$	0	0	0	$-\frac{\sqrt{7}i}{42}$
		0	0	0	$-\frac{\sqrt{70}}{42}$	0	0	0	0	0	0	$-\frac{\sqrt{42}}{42}$	$\frac{\sqrt{7}i}{42}$	0	0
		0	$\frac{\sqrt{7}}{84}$	0	$-\frac{\sqrt{7}i}{84}$	$\frac{\sqrt{42}}{42}$	0	0	0	0	$\frac{\sqrt{105}}{105}$	0	$\frac{\sqrt{105}i}{210}$	$\frac{\sqrt{70}}{105}$	0
		$\frac{\sqrt{7}}{84}$	0	$\frac{\sqrt{7}i}{84}$	0	0	$-\frac{\sqrt{42}}{42}$	0	0	$\frac{\sqrt{105}}{105}$	0	$-\frac{\sqrt{105}i}{210}$	0	0	$-\frac{\sqrt{70}}{105}$
		0	$\frac{\sqrt{7}i}{84}$	0	$\frac{\sqrt{7}}{84}$	0	0	0	$\frac{\sqrt{42}}{42}$	0	0	$\frac{\sqrt{105}i}{210}$	0	$\frac{2\sqrt{105}}{105}$	0
		$-\frac{\sqrt{7}i}{84}$	0	$\frac{\sqrt{7}}{84}$	0	0	0	0	$-\frac{\sqrt{42}}{42}$	$-\frac{\sqrt{105}i}{210}$	0	$\frac{2\sqrt{105}}{105}$	0	0	0
		0	0	0	0	0	$\frac{\sqrt{7}}{42}$	0	$-\frac{\sqrt{7}i}{42}$	$\frac{\sqrt{70}}{105}$	0	0	0	0	$\frac{2\sqrt{105}}{105}$
		0	0	0	0	$\frac{\sqrt{7}}{42}$	0	$\frac{\sqrt{7}i}{42}$	0	0	$-\frac{\sqrt{70}}{105}$	0	0	$\frac{2\sqrt{105}}{105}$	0
975	symmetry	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$													

continued ...

Table 10

No.	multipole	matrix													
$M_{3,2}^{(1,-1;a)}(E_g, 1)$		0	$\frac{\sqrt{105}i}{42}$	0	0	0	0	$-\frac{\sqrt{70}}{42}$	0	0	$\frac{\sqrt{7}i}{84}$	0	$-\frac{\sqrt{7}}{84}$	0	0
		$-\frac{\sqrt{105}i}{42}$	0	0	0	0	0	0	$\frac{\sqrt{70}}{42}$	$-\frac{\sqrt{7}i}{84}$	0	$-\frac{\sqrt{7}}{84}$	0	0	0
		0	0	0	$\frac{\sqrt{105}i}{42}$	$\frac{\sqrt{70}}{42}$	0	0	0	0	$\frac{\sqrt{7}}{84}$	0	$\frac{\sqrt{7}i}{84}$	0	0
		0	0	$-\frac{\sqrt{105}i}{42}$	0	0	$-\frac{\sqrt{70}}{42}$	0	0	$\frac{\sqrt{7}}{84}$	0	$-\frac{\sqrt{7}i}{84}$	0	0	0
		0	0	$\frac{\sqrt{70}}{42}$	0	0	0	0	0	0	0	$-\frac{\sqrt{42}}{42}$	0	0	$\frac{\sqrt{7}i}{42}$
		0	0	0	$-\frac{\sqrt{70}}{42}$	0	0	0	0	0	0	0	$\frac{\sqrt{42}}{42}$	$-\frac{\sqrt{7}i}{42}$	0
		$-\frac{\sqrt{70}}{42}$	0	0	0	0	0	0	0	$\frac{\sqrt{42}}{42}$	0	0	0	0	$\frac{\sqrt{7}}{42}$
		0	$\frac{\sqrt{70}}{42}$	0	0	0	0	0	0	0	$-\frac{\sqrt{42}}{42}$	0	0	$\frac{\sqrt{7}}{42}$	0
		0	$\frac{\sqrt{7}i}{84}$	0	$\frac{\sqrt{7}}{84}$	0	0	$\frac{\sqrt{42}}{42}$	0	0	$-\frac{2\sqrt{105}i}{105}$	0	$-\frac{\sqrt{105}}{210}$	0	0
		$-\frac{\sqrt{7}i}{84}$	0	$\frac{\sqrt{7}}{84}$	0	0	0	0	$-\frac{\sqrt{42}}{42}$	$\frac{2\sqrt{105}i}{105}$	0	$-\frac{\sqrt{105}}{210}$	0	0	0
		0	$-\frac{\sqrt{7}}{84}$	0	$\frac{\sqrt{7}i}{84}$	$-\frac{\sqrt{42}}{42}$	0	0	0	0	$-\frac{\sqrt{105}}{210}$	0	$-\frac{\sqrt{105}i}{105}$	$\frac{\sqrt{70}}{105}$	0
		$-\frac{\sqrt{7}}{84}$	0	$-\frac{\sqrt{7}i}{84}$	0	0	$\frac{\sqrt{42}}{42}$	0	0	$-\frac{\sqrt{105}}{210}$	0	$\frac{\sqrt{105}i}{105}$	0	0	$-\frac{\sqrt{70}}{105}$
		0	0	0	0	0	$\frac{\sqrt{7}i}{42}$	0	$\frac{\sqrt{7}}{42}$	0	0	$\frac{\sqrt{70}}{105}$	0	0	$-\frac{2\sqrt{105}i}{105}$
		0	0	0	0	$-\frac{\sqrt{7}i}{42}$	0	$\frac{\sqrt{7}}{42}$	0	0	0	0	$-\frac{\sqrt{70}}{105}$	$\frac{2\sqrt{105}i}{105}$	0
976	symmetry	$\sqrt{15}xyz$													

continued ...

Table 10

No.	multipole	matrix													
		0	0	0	0	0	$-\frac{5\sqrt{7}i}{84}$	0	$-\frac{5\sqrt{7}}{84}$	0	0	$\frac{\sqrt{70}}{84}$	0	0	0
		0	0	0	0	$\frac{5\sqrt{7}i}{84}$	0	$-\frac{5\sqrt{7}}{84}$	0	0	0	0	$-\frac{\sqrt{70}}{84}$	0	0
		0	0	0	0	0	$\frac{5\sqrt{7}}{84}$	0	$-\frac{5\sqrt{7}i}{84}$	$-\frac{\sqrt{70}}{84}$	0	0	0	0	0
		0	0	0	0	$\frac{5\sqrt{7}}{84}$	0	$\frac{5\sqrt{7}i}{84}$	0	0	$\frac{\sqrt{70}}{84}$	0	0	0	0
		0	$-\frac{5\sqrt{7}i}{84}$	0	$\frac{5\sqrt{7}}{84}$	0	0	0	0	0	$-\frac{\sqrt{105}i}{84}$	0	$-\frac{\sqrt{105}}{84}$	0	0
		$\frac{5\sqrt{7}i}{84}$	0	$\frac{5\sqrt{7}}{84}$	0	0	0	0	0	$\frac{\sqrt{105}i}{84}$	0	$-\frac{\sqrt{105}}{84}$	0	0	0
	$M_{3,1}^{(1,-1;a)}(E_g, 2)$	0	$-\frac{5\sqrt{7}}{84}$	0	$-\frac{5\sqrt{7}i}{84}$	0	0	0	0	0	$\frac{\sqrt{105}}{84}$	0	$-\frac{\sqrt{105}i}{84}$	$-\frac{\sqrt{70}}{42}$	0
		$-\frac{5\sqrt{7}}{84}$	0	$\frac{5\sqrt{7}i}{84}$	0	0	0	0	0	$\frac{\sqrt{105}}{84}$	0	$\frac{\sqrt{105}i}{84}$	0	0	$\frac{\sqrt{70}}{42}$
		0	0	$-\frac{\sqrt{70}}{84}$	0	0	$-\frac{\sqrt{105}i}{84}$	0	$\frac{\sqrt{105}}{84}$	0	0	$\frac{\sqrt{42}}{42}$	0	0	$-\frac{\sqrt{7}i}{42}$
		0	0	0	$\frac{\sqrt{70}}{84}$	$\frac{\sqrt{105}i}{84}$	0	$\frac{\sqrt{105}}{84}$	0	0	0	$-\frac{\sqrt{42}}{42}$	$\frac{\sqrt{7}i}{42}$	0	0
		$\frac{\sqrt{70}}{84}$	0	0	0	0	$-\frac{\sqrt{105}}{84}$	0	$-\frac{\sqrt{105}i}{84}$	$\frac{\sqrt{42}}{42}$	0	0	0	0	$\frac{\sqrt{7}}{42}$
		0	$-\frac{\sqrt{70}}{84}$	0	0	$-\frac{\sqrt{105}}{84}$	0	$\frac{\sqrt{105}i}{84}$	0	0	$-\frac{\sqrt{42}}{42}$	0	0	$\frac{\sqrt{7}}{42}$	0
		0	0	0	0	0	0	$-\frac{\sqrt{70}}{42}$	0	0	$-\frac{\sqrt{7}i}{42}$	0	$\frac{\sqrt{7}}{42}$	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{70}}{42}$	$\frac{\sqrt{7}i}{42}$	0	$\frac{\sqrt{7}}{42}$	0	0	0
977	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$													

continued ...

Table 10

No.	multipole	matrix													
		0	0	0	0	0	$\frac{5\sqrt{7}}{84}$	0	$-\frac{5\sqrt{7}i}{84}$	$-\frac{\sqrt{70}}{84}$	0	0	0	0	0
		0	0	0	0	$\frac{5\sqrt{7}}{84}$	0	$\frac{5\sqrt{7}i}{84}$	0	0	$\frac{\sqrt{70}}{84}$	0	0	0	0
		0	0	0	0	0	$\frac{5\sqrt{7}i}{84}$	0	$\frac{5\sqrt{7}}{84}$	0	0	$-\frac{\sqrt{70}}{84}$	0	0	0
		0	0	0	0	$-\frac{5\sqrt{7}i}{84}$	0	$\frac{5\sqrt{7}}{84}$	0	0	0	$\frac{\sqrt{70}}{84}$	0	0	0
		0	$\frac{5\sqrt{7}}{84}$	0	$\frac{5\sqrt{7}i}{84}$	0	0	0	0	0	$\frac{\sqrt{105}}{84}$	0	$-\frac{\sqrt{105}i}{84}$	$-\frac{\sqrt{70}}{42}$	0
		$\frac{5\sqrt{7}}{84}$	0	$-\frac{5\sqrt{7}i}{84}$	0	0	0	0	0	$\frac{\sqrt{105}}{84}$	0	$\frac{\sqrt{105}i}{84}$	0	0	$\frac{\sqrt{70}}{42}$
		0	$-\frac{5\sqrt{7}i}{84}$	0	$\frac{5\sqrt{7}}{84}$	0	0	0	0	0	$\frac{\sqrt{105}i}{84}$	0	$\frac{\sqrt{105}}{84}$	0	0
		$\frac{5\sqrt{7}i}{84}$	0	$\frac{5\sqrt{7}}{84}$	0	0	0	0	0	$-\frac{\sqrt{105}i}{84}$	0	$\frac{\sqrt{105}}{84}$	0	0	0
		$-\frac{\sqrt{70}}{84}$	0	0	0	0	$\frac{\sqrt{105}}{84}$	0	$\frac{\sqrt{105}i}{84}$	$\frac{\sqrt{42}}{42}$	0	0	0	0	$\frac{\sqrt{7}}{42}$
		0	$\frac{\sqrt{70}}{84}$	0	0	$\frac{\sqrt{105}}{84}$	0	$-\frac{\sqrt{105}i}{84}$	0	0	$-\frac{\sqrt{42}}{42}$	0	0	$\frac{\sqrt{7}}{42}$	0
		0	0	$-\frac{\sqrt{70}}{84}$	0	0	$-\frac{\sqrt{105}i}{84}$	0	$\frac{\sqrt{105}}{84}$	0	0	$-\frac{\sqrt{42}}{42}$	0	0	$\frac{\sqrt{7}i}{42}$
		0	0	0	$\frac{\sqrt{70}}{84}$	$\frac{\sqrt{105}i}{84}$	0	$\frac{\sqrt{105}}{84}$	0	0	0	$\frac{\sqrt{42}}{42}$	$-\frac{\sqrt{7}i}{42}$	0	0
		0	0	0	0	$-\frac{\sqrt{70}}{42}$	0	0	0	0	$\frac{\sqrt{7}}{42}$	0	$\frac{\sqrt{7}i}{42}$	0	0
		0	0	0	0	0	$\frac{\sqrt{70}}{42}$	0	0	$\frac{\sqrt{7}}{42}$	0	$-\frac{\sqrt{7}i}{42}$	0	0	0
978	symmetry	$-\frac{\sqrt{70}x(x^2-3y^2)(x^2+y^2-8z^2)}{16}$													

continued ...

Table 10

No.	multipole	matrix													
$M_5^{(1,-1;a)}(A_{1g})$		0	0	0	0	0	0	0	0	0	$\frac{7\sqrt{330}}{660}$	0	$-\frac{7\sqrt{330}i}{660}$	$-\frac{2\sqrt{55}}{55}$	0
		0	0	0	0	0	0	0	0	$\frac{7\sqrt{330}}{660}$	0	$\frac{7\sqrt{330}i}{660}$	0	0	$\frac{2\sqrt{55}}{55}$
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{330}i}{132}$	0	$\frac{\sqrt{330}}{132}$	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{330}i}{132}$	0	$\frac{\sqrt{330}}{132}$	0	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{22}}{132}$	0	$\frac{\sqrt{22}i}{132}$	$\frac{2\sqrt{55}}{165}$	0	0	0	0	$-\frac{\sqrt{330}}{330}$
		0	0	0	0	$-\frac{\sqrt{22}}{132}$	0	$-\frac{\sqrt{22}i}{132}$	0	0	$-\frac{2\sqrt{55}}{165}$	0	0	$-\frac{\sqrt{330}}{330}$	0
		0	0	0	0	0	$\frac{\sqrt{22}i}{132}$	0	$\frac{\sqrt{22}}{132}$	0	0	$-\frac{2\sqrt{55}}{165}$	0	0	$-\frac{\sqrt{330}i}{330}$
		0	0	0	0	$-\frac{\sqrt{22}i}{132}$	0	$\frac{\sqrt{22}}{132}$	0	0	0	$\frac{2\sqrt{55}}{165}$	$\frac{\sqrt{330}i}{330}$	0	0
		0	$\frac{7\sqrt{330}}{660}$	0	$\frac{\sqrt{330}i}{132}$	$\frac{2\sqrt{55}}{165}$	0	0	0	0	$\frac{\sqrt{22}}{33}$	0	$\frac{\sqrt{22}i}{33}$	0	0
		$\frac{7\sqrt{330}}{660}$	0	$-\frac{\sqrt{330}i}{132}$	0	0	$-\frac{2\sqrt{55}}{165}$	0	0	$\frac{\sqrt{22}}{33}$	0	$-\frac{\sqrt{22}i}{33}$	0	0	0
		0	$-\frac{7\sqrt{330}i}{660}$	0	$\frac{\sqrt{330}}{132}$	0	0	$-\frac{2\sqrt{55}}{165}$	0	0	$\frac{\sqrt{22}i}{33}$	0	$-\frac{\sqrt{22}}{33}$	0	0
		$\frac{7\sqrt{330}i}{660}$	0	$\frac{\sqrt{330}}{132}$	0	0	0	0	$\frac{2\sqrt{55}}{165}$	$-\frac{\sqrt{22}i}{33}$	0	$-\frac{\sqrt{22}}{33}$	0	0	0
		$-\frac{2\sqrt{55}}{55}$	0	0	0	0	$-\frac{\sqrt{330}}{330}$	0	$-\frac{\sqrt{330}i}{330}$	0	0	0	0	0	0
		0	$\frac{2\sqrt{55}}{55}$	0	0	$-\frac{\sqrt{330}}{330}$	0	$\frac{\sqrt{330}i}{330}$	0	0	0	0	0	0	0
	979	symmetry	$\frac{z(15x^4+30x^2y^2-40x^2z^2+15y^4-40y^2z^2+8z^4)}{8}$												

continued ...

Table 10

No.	multipole	matrix												
$M_5^{(1,-1;a)}(A_{2g}, 1)$		$\frac{\sqrt{385}}{154}$	0	0	0	0	$\frac{\sqrt{2310}}{462}$	0	$\frac{\sqrt{2310i}}{462}$	0	0	0	0	0
		0	$-\frac{\sqrt{385}}{154}$	0	0	$\frac{\sqrt{2310}}{462}$	0	$-\frac{\sqrt{2310i}}{462}$	0	0	0	0	0	0
		0	0	$\frac{\sqrt{385}}{154}$	0	0	$-\frac{\sqrt{2310i}}{462}$	0	$\frac{\sqrt{2310}}{462}$	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{385}}{154}$	$\frac{\sqrt{2310i}}{462}$	0	$\frac{\sqrt{2310}}{462}$	0	0	0	0	0	0
		0	$\frac{\sqrt{2310}}{462}$	0	$-\frac{\sqrt{2310i}}{462}$	$-\frac{\sqrt{385}}{66}$	0	0	0	0	$-\frac{2\sqrt{154}}{231}$	0	$-\frac{2\sqrt{154i}}{231}$	0
		$\frac{\sqrt{2310}}{462}$	0	$\frac{\sqrt{385}}{462}$	0	0	$\frac{\sqrt{385}}{66}$	0	0	$-\frac{2\sqrt{154}}{231}$	0	$\frac{2\sqrt{154i}}{231}$	0	0
		0	$\frac{\sqrt{2310i}}{462}$	0	$\frac{\sqrt{2310}}{462}$	0	0	$-\frac{\sqrt{385}}{66}$	0	0	$\frac{2\sqrt{154i}}{231}$	0	$-\frac{2\sqrt{154}}{231}$	0
		$-\frac{\sqrt{2310i}}{462}$	0	$\frac{\sqrt{2310}}{462}$	0	0	0	0	$\frac{\sqrt{385}}{66}$	$-\frac{2\sqrt{154i}}{231}$	0	$-\frac{2\sqrt{154}}{231}$	0	0
		0	0	0	0	0	$-\frac{2\sqrt{154}}{231}$	0	$\frac{2\sqrt{154i}}{231}$	$\frac{\sqrt{385}}{462}$	0	0	0	$-\frac{\sqrt{2310}}{462}$
		0	0	0	0	0	$-\frac{2\sqrt{154i}}{231}$	0	$-\frac{2\sqrt{154}}{231}$	0	0	$\frac{\sqrt{385}}{462}$	0	$\frac{\sqrt{2310i}}{462}$
		0	0	0	0	$\frac{2\sqrt{154i}}{231}$	0	$-\frac{2\sqrt{154}}{231}$	0	0	0	$-\frac{\sqrt{385}}{462}$	$-\frac{\sqrt{2310i}}{462}$	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{2310}}{462}$	0	$\frac{\sqrt{2310i}}{462}$	$\frac{\sqrt{385}}{77}$
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{2310}}{462}$	0	$-\frac{\sqrt{2310i}}{462}$	0	$-\frac{\sqrt{385}}{77}$
980	symmetry	$-\frac{\sqrt{70}y(3x^2-y^2)(x^2+y^2-8z^2)}{16}$												

continued ...

Table 10

No.	multipole	matrix														
$M_5^{(1,-1;a)}(A_{2g}, 2)$		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{330}i}{132}$	0	$-\frac{\sqrt{330}}{132}$	0	0	
		0	0	0	0	0	0	0	0	$\frac{\sqrt{330}i}{132}$	0	$-\frac{\sqrt{330}}{132}$	0	0	0	
		0	0	0	0	0	0	0	0	0	$\frac{7\sqrt{330}}{660}$	0	$-\frac{7\sqrt{330}i}{660}$	$-\frac{2\sqrt{55}}{55}$	0	
		0	0	0	0	0	0	0	0	$\frac{7\sqrt{330}}{660}$	0	$\frac{7\sqrt{330}i}{660}$	0	0	$\frac{2\sqrt{55}}{55}$	
		0	0	0	0	0	$-\frac{\sqrt{22}i}{132}$	0	$-\frac{\sqrt{22}}{132}$	0	0	0	$\frac{2\sqrt{55}}{165}$	0	$\frac{\sqrt{330}i}{330}$	
		0	0	0	0	$\frac{\sqrt{22}i}{132}$	0	$-\frac{\sqrt{22}}{132}$	0	0	0	0	$-\frac{2\sqrt{55}}{165}$	$-\frac{\sqrt{330}i}{330}$	0	
		0	0	0	0	0	$-\frac{\sqrt{22}}{132}$	0	$\frac{\sqrt{22}i}{132}$	$\frac{2\sqrt{55}}{165}$	0	0	0	0	$-\frac{\sqrt{330}}{330}$	
		0	0	0	0	$-\frac{\sqrt{22}}{132}$	0	$-\frac{\sqrt{22}i}{132}$	0	0	$-\frac{2\sqrt{55}}{165}$	0	0	$-\frac{\sqrt{330}}{330}$	0	
		0	$-\frac{\sqrt{330}i}{132}$	0	$\frac{7\sqrt{330}}{660}$	0	0	0	$\frac{2\sqrt{55}}{165}$	0	0	$-\frac{\sqrt{22}i}{33}$	0	$\frac{\sqrt{22}}{33}$	0	0
		$\frac{\sqrt{330}i}{132}$	0	$\frac{7\sqrt{330}}{660}$	0	0	0	0	$-\frac{2\sqrt{55}}{165}$	$\frac{\sqrt{22}i}{33}$	0	$\frac{\sqrt{22}}{33}$	0	0	0	0
		0	$-\frac{\sqrt{330}}{132}$	0	$-\frac{7\sqrt{330}i}{660}$	$\frac{2\sqrt{55}}{165}$	0	0	0	0	$\frac{\sqrt{22}}{33}$	0	$\frac{\sqrt{22}i}{33}$	0	0	0
		$-\frac{\sqrt{330}}{132}$	0	$\frac{7\sqrt{330}i}{660}$	0	0	$-\frac{2\sqrt{55}}{165}$	0	0	$\frac{\sqrt{22}}{33}$	0	$-\frac{\sqrt{22}i}{33}$	0	0	0	0
		0	0	$-\frac{2\sqrt{55}}{55}$	0	0	$\frac{\sqrt{330}i}{330}$	0	$-\frac{\sqrt{330}}{330}$	0	0	0	0	0	0	0
		0	0	0	$\frac{2\sqrt{55}}{55}$	$-\frac{\sqrt{330}i}{330}$	0	$-\frac{\sqrt{330}}{330}$	0	0	0	0	0	0	0	0
	981	symmetry	$\frac{3\sqrt{14}x(x^4 - 10x^2y^2 + 5y^4)}{16}$													

continued ...

Table 10

No.	multipole	matrix													
$M_{5,1}^{(1,-1;a)}(E_g, 1)$		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{66}}{44}$	0	$-\frac{\sqrt{66i}}{44}$	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{66}}{44}$	0	$\frac{\sqrt{66i}}{44}$	0	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{66i}}{44}$	0	$\frac{\sqrt{66}}{44}$	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{66i}}{44}$	0	$\frac{\sqrt{66}}{44}$	0	0	0	0
		0	0	0	0	0	$\frac{\sqrt{110}}{44}$	0	$\frac{\sqrt{110i}}{44}$	0	0	0	0	0	0
		0	0	0	0	$\frac{\sqrt{110}}{44}$	0	$-\frac{\sqrt{110i}}{44}$	0	0	0	0	0	0	0
		0	0	0	0	0	$\frac{\sqrt{110i}}{44}$	0	$-\frac{\sqrt{110}}{44}$	0	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{110i}}{44}$	0	$-\frac{\sqrt{110}}{44}$	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{66}}{44}$	0	$-\frac{\sqrt{66i}}{44}$	0	0	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{66}}{44}$	0	$\frac{\sqrt{66i}}{44}$	0	0	0	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{66i}}{44}$	0	$\frac{\sqrt{66}}{44}$	0	0	0	0	0	0	0	0	0	0
		$\frac{\sqrt{66i}}{44}$	0	$\frac{\sqrt{66}}{44}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
	982	symmetry	$-\frac{3\sqrt{14}y(5x^4-10x^2y^2+y^4)}{16}$												

continued ...

Table 10

No.	multipole	matrix														
$M_{5,2}^{(1,-1;a)}(E_g, 1)$		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{66}i}{44}$	0	$\frac{\sqrt{66}}{44}$	0	0	
		0	0	0	0	0	0	0	0	$\frac{\sqrt{66}i}{44}$	0	$\frac{\sqrt{66}}{44}$	0	0	0	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{66}}{44}$	0	$\frac{\sqrt{66}i}{44}$	0	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{66}}{44}$	0	$-\frac{\sqrt{66}i}{44}$	0	0	0	0
		0	0	0	0	0	$\frac{\sqrt{110}i}{44}$	0	$-\frac{\sqrt{110}}{44}$	0	0	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{110}i}{44}$	0	$-\frac{\sqrt{110}}{44}$	0	0	0	0	0	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{110}}{44}$	0	$-\frac{\sqrt{110}i}{44}$	0	0	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{110}i}{44}$	0	$\frac{\sqrt{110}i}{44}$	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{66}i}{44}$	0	$\frac{\sqrt{66}}{44}$	0	0	0	0	0	0	0	0	0	0	0
		$\frac{\sqrt{66}i}{44}$	0	$\frac{\sqrt{66}}{44}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{66}}{44}$	0	$\frac{\sqrt{66}i}{44}$	0	0	0	0	0	0	0	0	0	0	0
		$\frac{\sqrt{66}}{44}$	0	$-\frac{\sqrt{66}i}{44}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	983	symmetry	$\frac{\sqrt{15}x(x^4+2x^2y^2-12x^2z^2+y^4-12y^2z^2+8z^4)}{8}$													

continued ...

Table 10

No.	multipole	matrix												
$M_{5,1}^{(1,-1;a)}(E_g, 2)$	0	$\frac{\sqrt{231}}{154}$	0	0	$-\frac{\sqrt{154}}{77}$	0	0	0	0	$-\frac{3\sqrt{385}}{770}$	0	$-\frac{3\sqrt{385}i}{770}$	0	0
	$\frac{\sqrt{231}}{154}$	0	0	0	0	$\frac{\sqrt{154}}{77}$	0	0	$-\frac{3\sqrt{385}}{770}$	0	$\frac{3\sqrt{385}i}{770}$	0	0	0
	0	0	0	$\frac{\sqrt{231}}{154}$	0	0	$-\frac{\sqrt{154}}{77}$	0	0	$\frac{3\sqrt{385}i}{770}$	0	$-\frac{3\sqrt{385}}{770}$	0	0
	0	0	$\frac{\sqrt{231}}{154}$	0	0	0	0	$\frac{\sqrt{154}}{77}$	$-\frac{3\sqrt{385}i}{770}$	0	$-\frac{3\sqrt{385}}{770}$	0	0	0
	$-\frac{\sqrt{154}}{77}$	0	0	0	0	$-\frac{\sqrt{231}}{66}$	0	0	$\frac{4\sqrt{2310}}{1155}$	0	0	0	0	$\frac{\sqrt{385}}{770}$
	0	$\frac{\sqrt{154}}{77}$	0	0	$-\frac{\sqrt{231}}{66}$	0	0	0	0	$-\frac{4\sqrt{2310}}{1155}$	0	0	$\frac{\sqrt{385}}{770}$	0
	0	0	$-\frac{\sqrt{154}}{77}$	0	0	0	0	$-\frac{\sqrt{231}}{66}$	0	0	$\frac{4\sqrt{2310}}{1155}$	0	0	$-\frac{\sqrt{385}i}{770}$
	0	0	0	$\frac{\sqrt{154}}{77}$	0	0	$-\frac{\sqrt{231}}{66}$	0	0	0	0	$-\frac{4\sqrt{2310}}{1155}$	$\frac{\sqrt{385}i}{770}$	0
	0	$-\frac{3\sqrt{385}}{770}$	0	$\frac{3\sqrt{385}i}{770}$	$\frac{4\sqrt{2310}}{1155}$	0	0	0	0	$-\frac{\sqrt{231}}{462}$	0	$\frac{\sqrt{231}i}{231}$	$\frac{\sqrt{154}}{77}$	0
	$-\frac{3\sqrt{385}}{770}$	0	$-\frac{3\sqrt{385}i}{770}$	0	0	$-\frac{4\sqrt{2310}}{1155}$	0	0	$-\frac{\sqrt{231}}{462}$	0	$-\frac{\sqrt{231}i}{231}$	0	0	$-\frac{\sqrt{154}}{77}$
	0	$-\frac{3\sqrt{385}i}{770}$	0	$-\frac{3\sqrt{385}}{770}$	0	0	$\frac{4\sqrt{2310}}{1155}$	0	0	$\frac{\sqrt{231}i}{231}$	0	$\frac{\sqrt{231}}{154}$	0	0
	$\frac{3\sqrt{385}i}{770}$	0	$-\frac{3\sqrt{385}}{770}$	0	0	0	0	$-\frac{4\sqrt{2310}}{1155}$	$-\frac{\sqrt{231}i}{231}$	0	$\frac{\sqrt{231}}{154}$	0	0	0
	0	0	0	0	0	$\frac{\sqrt{385}}{770}$	0	$-\frac{\sqrt{385}i}{770}$	$\frac{\sqrt{154}}{77}$	0	0	0	0	$\frac{\sqrt{231}}{77}$
	0	0	0	0	$\frac{\sqrt{385}}{770}$	0	$\frac{\sqrt{385}i}{770}$	0	0	$-\frac{\sqrt{154}}{77}$	0	0	$\frac{\sqrt{231}}{77}$	0
984	symmetry	$\frac{\sqrt{15}y(x^4+2x^2y^2-12x^2z^2+y^4-12y^2z^2+8z^4)}{8}$												

continued ...

Table 10

No.	multipole	matrix												
$M_{5,2}^{(1,-1;a)}(E_g, 2)$	0	$-\frac{\sqrt{231i}}{154}$	0	0	0	0	$\frac{\sqrt{154}}{77}$	0	0	$-\frac{3\sqrt{385i}}{770}$	0	$\frac{3\sqrt{385}}{770}$	0	0
	$\frac{\sqrt{231i}}{154}$	0	0	0	0	0	0	$-\frac{\sqrt{154}}{77}$	$\frac{3\sqrt{385i}}{770}$	0	$\frac{3\sqrt{385}}{770}$	0	0	0
	0	0	0	$-\frac{\sqrt{231i}}{154}$	$-\frac{\sqrt{154}}{77}$	0	0	0	0	$-\frac{3\sqrt{385}}{770}$	0	$-\frac{3\sqrt{385i}}{770}$	0	0
	0	0	$\frac{\sqrt{231i}}{154}$	0	0	$\frac{\sqrt{154}}{77}$	0	0	$-\frac{3\sqrt{385}}{770}$	0	$\frac{3\sqrt{385i}}{770}$	0	0	0
	0	0	$-\frac{\sqrt{154}}{77}$	0	0	$\frac{\sqrt{231i}}{66}$	0	0	0	0	$-\frac{4\sqrt{2310}}{1155}$	0	0	$\frac{\sqrt{385i}}{770}$
	0	0	0	$\frac{\sqrt{154}}{77}$	$-\frac{\sqrt{231i}}{66}$	0	0	0	0	0	0	$\frac{4\sqrt{2310}}{1155}$	$-\frac{\sqrt{385i}}{770}$	0
	$\frac{\sqrt{154}}{77}$	0	0	0	0	0	0	$\frac{\sqrt{231i}}{66}$	$\frac{4\sqrt{2310}}{1155}$	0	0	0	0	$\frac{\sqrt{385}}{770}$
	0	$-\frac{\sqrt{154}}{77}$	0	0	0	0	$-\frac{\sqrt{231i}}{66}$	0	0	$-\frac{4\sqrt{2310}}{1155}$	0	0	$\frac{\sqrt{385}}{770}$	0
	0	$-\frac{3\sqrt{385i}}{770}$	0	$-\frac{3\sqrt{385}}{770}$	0	0	$\frac{4\sqrt{2310}}{1155}$	0	0	$-\frac{\sqrt{231i}}{154}$	0	$-\frac{\sqrt{231}}{231}$	0	0
	$\frac{3\sqrt{385i}}{770}$	0	$-\frac{3\sqrt{385}}{770}$	0	0	0	0	$-\frac{4\sqrt{2310}}{1155}$	$\frac{\sqrt{231i}}{154}$	0	$-\frac{\sqrt{231}}{231}$	0	0	0
	0	$\frac{3\sqrt{385}}{770}$	0	$-\frac{3\sqrt{385i}}{770}$	$-\frac{4\sqrt{2310}}{1155}$	0	0	0	0	$-\frac{\sqrt{231}}{231}$	0	$\frac{\sqrt{231i}}{462}$	$\frac{\sqrt{154}}{77}$	0
	$\frac{3\sqrt{385}}{770}$	0	$\frac{3\sqrt{385i}}{770}$	0	0	$\frac{4\sqrt{2310}}{1155}$	0	0	$-\frac{\sqrt{231}}{231}$	0	$-\frac{\sqrt{231i}}{462}$	0	0	$-\frac{\sqrt{154}}{77}$
	0	0	0	0	0	$\frac{\sqrt{385i}}{770}$	0	$\frac{\sqrt{385}}{770}$	0	0	$\frac{\sqrt{154}}{77}$	0	0	$-\frac{\sqrt{231i}}{77}$
	0	0	0	0	$-\frac{\sqrt{385i}}{770}$	0	$\frac{\sqrt{385}}{770}$	0	0	0	0	$-\frac{\sqrt{154}}{77}$	$\frac{\sqrt{231i}}{77}$	0
985	symmetry	$-\frac{3\sqrt{35}xyz(x-y)(x+y)}{2}$												

continued ...

Table 10

No.	multipole	matrix													
$M_{5,1}^{(1,-1;a)}(E_g, 3)$		0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{165}}{110}$	0	0	$-\frac{3\sqrt{110}i}{110}$
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{165}}{110}$	$\frac{3\sqrt{110}i}{110}$	0
		0	0	0	0	0	0	0	$\frac{\sqrt{165}}{110}$	0	0	0	0	0	$\frac{3\sqrt{110}i}{110}$
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{165}}{110}$	0	0	0	$\frac{3\sqrt{110}i}{110}$	0
		0	0	0	0	0	0	$-\frac{\sqrt{11}}{22}$	0	0	$\frac{\sqrt{110}i}{110}$	0	$-\frac{\sqrt{110}}{110}$	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{11}}{22}$	$-\frac{\sqrt{110}i}{110}$	0	$-\frac{\sqrt{110}}{110}$	0	0	0
		0	0	0	0	$-\frac{\sqrt{11}}{22}$	0	0	0	0	$-\frac{\sqrt{110}}{110}$	0	$-\frac{\sqrt{110}i}{110}$	0	0
		0	0	0	0	0	$\frac{\sqrt{11}}{22}$	0	0	$-\frac{\sqrt{110}}{110}$	0	$\frac{\sqrt{110}i}{110}$	0	0	0
		0	0	$\frac{\sqrt{165}}{110}$	0	0	$\frac{\sqrt{110}i}{110}$	0	$-\frac{\sqrt{110}}{110}$	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{165}}{110}$	$-\frac{\sqrt{110}i}{110}$	0	$-\frac{\sqrt{110}}{110}$	0	0	0	0	0	0	0
		$\frac{\sqrt{165}}{110}$	0	0	0	0	$-\frac{\sqrt{110}}{110}$	0	$-\frac{\sqrt{110}i}{110}$	0	0	0	0	0	0
		0	$-\frac{\sqrt{165}}{110}$	0	0	$-\frac{\sqrt{110}}{110}$	0	$\frac{\sqrt{110}i}{110}$	0	0	0	0	0	0	0
		0	$-\frac{3\sqrt{110}i}{110}$	0	$\frac{3\sqrt{110}}{110}$	0	0	0	0	0	0	0	0	0	0
		$\frac{3\sqrt{110}i}{110}$	0	$\frac{3\sqrt{110}}{110}$	0	0	0	0	0	0	0	0	0	0	0
986	symmetry	$\frac{3\sqrt{35}z(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$													

continued ...

Table 10

No.	multipole	matrix													
$M_{5,2}^{(1,-1;a)}(E_g, 3)$		0	0	0	0	0	0	0	0	$-\frac{\sqrt{165}}{110}$	0	0	0	$-\frac{3\sqrt{110}}{110}$	
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{165}}{110}$	0	0	$-\frac{3\sqrt{110}}{110}$	0
		0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{165}}{110}$	0	0	$-\frac{3\sqrt{110}i}{110}$
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{165}}{110}$	$\frac{3\sqrt{110}i}{110}$	0
		0	0	0	0	$\frac{\sqrt{11}}{22}$	0	0	0	0	$\frac{\sqrt{110}}{110}$	0	$\frac{\sqrt{110}i}{110}$	0	0
		0	0	0	0	0	$-\frac{\sqrt{11}}{22}$	0	0	$\frac{\sqrt{110}}{110}$	0	$-\frac{\sqrt{110}i}{110}$	0	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{11}}{22}$	0	0	$\frac{\sqrt{110}i}{110}$	0	$-\frac{\sqrt{110}}{110}$	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{11}}{22}$	$-\frac{\sqrt{110}i}{110}$	0	$-\frac{\sqrt{110}}{110}$	0	0	0
		$-\frac{\sqrt{165}}{110}$	0	0	0	0	$\frac{\sqrt{110}}{110}$	0	$\frac{\sqrt{110}i}{110}$	0	0	0	0	0	0
		0	$\frac{\sqrt{165}}{110}$	0	0	$\frac{\sqrt{110}}{110}$	0	$-\frac{\sqrt{110}i}{110}$	0	0	0	0	0	0	0
		0	0	$\frac{\sqrt{165}}{110}$	0	0	$\frac{\sqrt{110}i}{110}$	0	$-\frac{\sqrt{110}}{110}$	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{165}}{110}$	$-\frac{\sqrt{110}i}{110}$	0	$-\frac{\sqrt{110}}{110}$	0	0	0	0	0	0	0
		0	$-\frac{3\sqrt{110}}{110}$	0	$-\frac{3\sqrt{110}i}{110}$	0	0	0	0	0	0	0	0	0	0
		$-\frac{3\sqrt{110}}{110}$	0	$\frac{3\sqrt{110}i}{110}$	0	0	0	0	0	0	0	0	0	0	0
	987	symmetry	$-\frac{\sqrt{105}xyz(x^2+y^2-2z^2)}{2}$												

continued ...

Table 10

No.	multipole	matrix													
$M_{5,1}^{(1,-1;a)}(E_g, 4)$		0	0	0	0	0	$\frac{\sqrt{22}i}{44}$	0	$\frac{\sqrt{22}}{44}$	0	0	$-\frac{3\sqrt{55}}{110}$	0	0	$\frac{\sqrt{330}i}{220}$
		0	0	0	0	$-\frac{\sqrt{22}i}{44}$	0	$\frac{\sqrt{22}}{44}$	0	0	0	0	$\frac{3\sqrt{55}}{110}$	$-\frac{\sqrt{330}i}{220}$	0
		0	0	0	0	0	$-\frac{\sqrt{22}}{44}$	0	$\frac{\sqrt{22}i}{44}$	$\frac{3\sqrt{55}}{110}$	0	0	0	0	$\frac{\sqrt{330}}{220}$
		0	0	0	0	$-\frac{\sqrt{22}}{44}$	0	$-\frac{\sqrt{22}i}{44}$	0	0	$-\frac{3\sqrt{55}}{110}$	0	0	$\frac{\sqrt{330}}{220}$	0
		0	$\frac{\sqrt{22}i}{44}$	0	$-\frac{\sqrt{22}}{44}$	0	0	0	0	0	$-\frac{\sqrt{330}i}{132}$	0	$-\frac{\sqrt{330}}{132}$	0	0
		$-\frac{\sqrt{22}i}{44}$	0	$-\frac{\sqrt{22}}{44}$	0	0	0	0	0	$\frac{\sqrt{330}i}{132}$	0	$-\frac{\sqrt{330}}{132}$	0	0	0
		0	$\frac{\sqrt{22}}{44}$	0	$\frac{\sqrt{22}i}{44}$	0	0	0	0	0	$\frac{\sqrt{330}}{220}$	0	$-\frac{\sqrt{330}i}{220}$	$-\frac{\sqrt{55}}{110}$	0
		$\frac{\sqrt{22}}{44}$	0	$-\frac{\sqrt{22}i}{44}$	0	0	0	0	0	$\frac{\sqrt{330}}{220}$	0	$\frac{\sqrt{330}i}{220}$	0	0	$\frac{\sqrt{55}}{110}$
		0	0	$\frac{3\sqrt{55}}{110}$	0	0	$-\frac{\sqrt{330}i}{132}$	0	$\frac{\sqrt{330}}{220}$	0	0	$\frac{\sqrt{33}}{33}$	0	0	$-\frac{\sqrt{22}i}{44}$
		0	0	0	$-\frac{3\sqrt{55}}{110}$	$\frac{\sqrt{330}i}{132}$	0	$\frac{\sqrt{330}}{220}$	0	0	0	0	$-\frac{\sqrt{33}}{33}$	$\frac{\sqrt{22}i}{44}$	0
		$-\frac{3\sqrt{55}}{110}$	0	0	0	0	$-\frac{\sqrt{330}}{132}$	0	$-\frac{\sqrt{330}i}{220}$	$\frac{\sqrt{33}}{33}$	0	0	0	0	$\frac{\sqrt{22}}{44}$
		0	$\frac{3\sqrt{55}}{110}$	0	0	$-\frac{\sqrt{330}}{132}$	0	$\frac{\sqrt{330}i}{220}$	0	0	$-\frac{\sqrt{33}}{33}$	0	0	$\frac{\sqrt{22}}{44}$	0
		0	$\frac{\sqrt{330}i}{220}$	0	$\frac{\sqrt{330}}{220}$	0	0	$-\frac{\sqrt{55}}{110}$	0	0	$-\frac{\sqrt{22}i}{44}$	0	$\frac{\sqrt{22}}{44}$	0	0
		$-\frac{\sqrt{330}i}{220}$	0	$\frac{\sqrt{330}}{220}$	0	0	0	0	$\frac{\sqrt{55}}{110}$	$\frac{\sqrt{22}i}{44}$	0	$\frac{\sqrt{22}}{44}$	0	0	0
	988	symmetry	$-\frac{\sqrt{105}z(x-y)(x+y)(x^2+y^2-2z^2)}{4}$												

continued ...

Table 10

No.	multipole	matrix												
		0	0	0	0	0	$-\frac{\sqrt{22}}{44}$	0	$\frac{\sqrt{22}i}{44}$	$\frac{3\sqrt{55}}{110}$	0	0	0	$\frac{\sqrt{330}}{220}$
		0	0	0	0	$-\frac{\sqrt{22}}{44}$	0	$-\frac{\sqrt{22}i}{44}$	0	0	$-\frac{3\sqrt{55}}{110}$	0	0	$\frac{\sqrt{330}}{220}$
		0	0	0	0	0	$-\frac{\sqrt{22}i}{44}$	0	$-\frac{\sqrt{22}}{44}$	0	0	$\frac{3\sqrt{55}}{110}$	0	$-\frac{\sqrt{330}i}{220}$
		0	0	0	0	$\frac{\sqrt{22}i}{44}$	0	$-\frac{\sqrt{22}}{44}$	0	0	0	$-\frac{3\sqrt{55}}{110}$	$\frac{\sqrt{330}i}{220}$	0
		0	$-\frac{\sqrt{22}}{44}$	0	$-\frac{\sqrt{22}i}{44}$	0	0	0	0	0	$\frac{\sqrt{330}}{220}$	0	$-\frac{\sqrt{330}i}{220}$	$-\frac{\sqrt{55}}{110}$
		$-\frac{\sqrt{22}}{44}$	0	$\frac{\sqrt{22}i}{44}$	0	0	0	0	0	$\frac{\sqrt{330}}{220}$	0	$\frac{\sqrt{330}i}{220}$	0	$\frac{\sqrt{55}}{110}$
		0	$\frac{\sqrt{22}i}{44}$	0	$-\frac{\sqrt{22}}{44}$	0	0	0	0	0	$\frac{\sqrt{330}i}{132}$	0	$\frac{\sqrt{330}}{132}$	0
		$-\frac{\sqrt{22}i}{44}$	0	$-\frac{\sqrt{22}}{44}$	0	0	0	0	0	$-\frac{\sqrt{330}i}{132}$	0	$\frac{\sqrt{330}}{132}$	0	0
		$\frac{3\sqrt{55}}{110}$	0	0	0	0	$\frac{\sqrt{330}}{220}$	0	$\frac{\sqrt{330}i}{132}$	$\frac{\sqrt{33}}{33}$	0	0	0	$\frac{\sqrt{22}}{44}$
		0	$-\frac{3\sqrt{55}}{110}$	0	0	$\frac{\sqrt{330}}{220}$	0	$-\frac{\sqrt{330}i}{132}$	0	0	$-\frac{\sqrt{33}}{33}$	0	0	$\frac{\sqrt{22}}{44}$
		0	0	$\frac{3\sqrt{55}}{110}$	0	0	$-\frac{\sqrt{330}i}{220}$	0	$\frac{\sqrt{330}}{132}$	0	0	$-\frac{\sqrt{33}}{33}$	0	$\frac{\sqrt{22}i}{44}$
		0	0	0	$-\frac{3\sqrt{55}}{110}$	$\frac{\sqrt{330}i}{220}$	0	$\frac{\sqrt{330}}{132}$	0	0	0	$\frac{\sqrt{33}}{33}$	$-\frac{\sqrt{22}i}{44}$	0
		0	$\frac{\sqrt{330}}{220}$	0	$-\frac{\sqrt{330}i}{220}$	$-\frac{\sqrt{55}}{110}$	0	0	0	0	$\frac{\sqrt{22}}{44}$	0	$\frac{\sqrt{22}i}{44}$	0
		$\frac{\sqrt{330}}{220}$	0	$\frac{\sqrt{330}i}{220}$	0	0	$\frac{\sqrt{55}}{110}$	0	0	$\frac{\sqrt{22}}{44}$	0	$-\frac{\sqrt{22}i}{44}$	0	0
989	symmetry	$\frac{\sqrt{6006}xyz(x^2-3y^2)(3x^2-y^2)}{16}$												

continued ...

Table 10

No.	multipole	matrix													
		0	0	$\frac{\sqrt{7}}{14}$	0	0	$-\frac{\sqrt{42i}}{28}$	0	$\frac{\sqrt{42}}{28}$	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{7}}{14}$	$\frac{\sqrt{42i}}{28}$	0	$\frac{\sqrt{42}}{28}$	0	0	0	0	0	0	0
		$\frac{\sqrt{7}}{14}$	0	0	0	0	$\frac{\sqrt{42}}{28}$	0	$\frac{\sqrt{42i}}{28}$	0	0	0	0	0	0
		0	$-\frac{\sqrt{7}}{14}$	0	0	$\frac{\sqrt{42}}{28}$	0	$-\frac{\sqrt{42i}}{28}$	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{42i}}{28}$	0	$\frac{\sqrt{42}}{28}$	0	0	0	0	0	0	0	0	0	0
		$\frac{\sqrt{42i}}{28}$	0	$\frac{\sqrt{42}}{28}$	0	0	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{42}}{28}$	0	$\frac{\sqrt{42i}}{28}$	0	0	0	0	0	0	0	0	0	0
		$\frac{\sqrt{42}}{28}$	0	$-\frac{\sqrt{42i}}{28}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
990	symmetry	$\frac{\sqrt{21}x(x^2-3y^2)(3x^4+6x^2y^2-60x^2z^2+3y^4-60y^2z^2+80z^4)}{32}$													

continued ...

Table 10

No.	multipole	matrix												
$M_7^{(1,-1;a)}(A_{1g}, 2)$		0	0	0	0	0	0	0	0	$-\frac{\sqrt{30030}}{2002}$	0	$\frac{\sqrt{30030i}}{2002}$	$\frac{2\sqrt{5005}}{1001}$	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{30030}}{2002}$	0	$-\frac{\sqrt{30030i}}{2002}$	0	0	$-\frac{2\sqrt{5005}}{1001}$
		0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	$-\frac{3\sqrt{2002}}{2002}$	0	$\frac{3\sqrt{2002i}}{2002}$	$\frac{3\sqrt{5005}}{1001}$	0	0	0	0	$\frac{\sqrt{30030}}{1001}$
		0	0	0	$-\frac{3\sqrt{2002}}{2002}$	0	$-\frac{3\sqrt{2002i}}{2002}$	0	0	$-\frac{3\sqrt{5005}}{1001}$	0	0	$\frac{\sqrt{30030}}{1001}$	0
		0	0	0	0	$\frac{3\sqrt{2002i}}{2002}$	0	$\frac{3\sqrt{2002}}{2002}$	0	0	$-\frac{3\sqrt{5005}}{1001}$	0	0	$\frac{\sqrt{30030i}}{1001}$
		0	0	0	$-\frac{3\sqrt{2002i}}{2002}$	0	$\frac{3\sqrt{2002}}{2002}$	0	0	0	0	$\frac{3\sqrt{5005}}{1001}$	$-\frac{\sqrt{30030i}}{1001}$	0
		0	$-\frac{\sqrt{30030}}{2002}$	0	0	$\frac{3\sqrt{5005}}{1001}$	0	0	0	$\frac{15\sqrt{2002}}{4004}$	0	$\frac{15\sqrt{2002i}}{4004}$	0	0
		$-\frac{\sqrt{30030}}{2002}$	0	0	0	$-\frac{3\sqrt{5005}}{1001}$	0	0	$\frac{15\sqrt{2002}}{4004}$	0	$-\frac{15\sqrt{2002i}}{4004}$	0	0	0
		0	$\frac{\sqrt{30030i}}{2002}$	0	0	0	$-\frac{3\sqrt{5005}}{1001}$	0	0	$\frac{15\sqrt{2002i}}{4004}$	0	$-\frac{15\sqrt{2002}}{4004}$	0	0
		$-\frac{\sqrt{30030i}}{2002}$	0	0	0	0	0	$\frac{3\sqrt{5005}}{1001}$	$-\frac{15\sqrt{2002i}}{4004}$	0	$-\frac{15\sqrt{2002}}{4004}$	0	0	0
		$\frac{2\sqrt{5005}}{1001}$	0	0	0	$\frac{\sqrt{30030}}{1001}$	0	$\frac{\sqrt{30030i}}{1001}$	0	0	0	0	0	0
		0	$-\frac{2\sqrt{5005}}{1001}$	0	0	$\frac{\sqrt{30030}}{1001}$	0	$-\frac{\sqrt{30030i}}{1001}$	0	0	0	0	0	0
	991	symmetry	$-\frac{z(35x^6+105x^4y^2-210x^4z^2+105x^2y^4-420x^2yz^2+168x^2z^4+35y^6-210y^4z^2+168y^2z^4-16z^6)}{16}$											

continued ...

Table 10

No.	multipole	matrix													
$M_7^{(1,-1;a)}(A_{2g}, 1)$		$-\frac{\sqrt{858}}{1716}$	0	0	0	0	$-\frac{\sqrt{143}}{572}$	0	$-\frac{\sqrt{143}i}{572}$	0	0	0	0	0	0
		0	$\frac{\sqrt{858}}{1716}$	0	0	$-\frac{\sqrt{143}}{572}$	0	$\frac{\sqrt{143}i}{572}$	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{858}}{1716}$	0	0	$\frac{\sqrt{143}i}{572}$	0	$-\frac{\sqrt{143}}{572}$	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{858}}{1716}$	$-\frac{\sqrt{143}i}{572}$	0	$-\frac{\sqrt{143}}{572}$	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{143}}{572}$	0	$\frac{\sqrt{143}i}{572}$	$\frac{\sqrt{858}}{286}$	0	0	0	0	$\frac{\sqrt{2145}}{572}$	0	$\frac{\sqrt{2145}i}{572}$	0	0
		$-\frac{\sqrt{143}}{572}$	0	$-\frac{\sqrt{143}i}{572}$	0	0	$-\frac{\sqrt{858}}{286}$	0	0	$\frac{\sqrt{2145}}{572}$	0	$-\frac{\sqrt{2145}i}{572}$	0	0	0
		0	$-\frac{\sqrt{143}i}{572}$	0	$-\frac{\sqrt{143}}{572}$	0	0	$\frac{\sqrt{858}}{286}$	0	0	$-\frac{\sqrt{2145}i}{572}$	0	$\frac{\sqrt{2145}}{572}$	0	0
		$\frac{\sqrt{143}i}{572}$	0	$-\frac{\sqrt{143}}{572}$	0	0	0	0	$-\frac{\sqrt{858}}{286}$	$\frac{\sqrt{2145}i}{572}$	0	$\frac{\sqrt{2145}}{572}$	0	0	0
		0	0	0	0	0	$\frac{\sqrt{2145}}{572}$	0	$-\frac{\sqrt{2145}i}{572}$	$-\frac{5\sqrt{858}}{572}$	0	0	0	0	$-\frac{5\sqrt{143}}{286}$
		0	0	0	0	$\frac{\sqrt{2145}}{572}$	0	$\frac{\sqrt{2145}i}{572}$	0	0	$\frac{5\sqrt{858}}{572}$	0	0	$-\frac{5\sqrt{143}}{286}$	0
		0	0	0	0	0	$\frac{\sqrt{2145}i}{572}$	0	$\frac{\sqrt{2145}}{572}$	0	0	$-\frac{5\sqrt{858}}{572}$	0	0	$\frac{5\sqrt{143}i}{286}$
		0	0	0	0	$-\frac{\sqrt{2145}i}{572}$	0	$\frac{\sqrt{2145}}{572}$	0	0	0	0	$\frac{5\sqrt{858}}{572}$	$-\frac{5\sqrt{143}i}{286}$	0
		0	0	0	0	0	0	0	0	0	$-\frac{5\sqrt{143}}{286}$	0	$\frac{5\sqrt{143}i}{286}$	$\frac{5\sqrt{858}}{429}$	0
		0	0	0	0	0	0	0	0	$-\frac{5\sqrt{143}}{286}$	0	$-\frac{5\sqrt{143}i}{286}$	0	0	$-\frac{5\sqrt{858}}{429}$
992	symmetry	$\frac{\sqrt{6006}z(x-y)(x+y)(x^2-4xy+y^2)(x^2+4xy+y^2)}{32}$													

continued ...

Table 10

No.	multipole	matrix													
		$\frac{\sqrt{7}}{14}$	0	0	0	0	$\frac{\sqrt{42}}{28}$	0	$\frac{\sqrt{42}i}{28}$	0	0	0	0	0	0
		0	$-\frac{\sqrt{7}}{14}$	0	0	$\frac{\sqrt{42}}{28}$	0	$-\frac{\sqrt{42}i}{28}$	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{7}}{14}$	0	0	$\frac{\sqrt{42}i}{28}$	0	$-\frac{\sqrt{42}}{28}$	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{7}}{14}$	$-\frac{\sqrt{42}i}{28}$	0	$-\frac{\sqrt{42}}{28}$	0	0	0	0	0	0	0
		0	$\frac{\sqrt{42}}{28}$	0	$\frac{\sqrt{42}i}{28}$	0	0	0	0	0	0	0	0	0	0
		$\frac{\sqrt{42}}{28}$	0	$-\frac{\sqrt{42}i}{28}$	0	0	0	0	0	0	0	0	0	0	0
	$M_7^{(1,-1;a)}(A_{2g}, 2)$	0	$\frac{\sqrt{42}i}{28}$	0	$-\frac{\sqrt{42}}{28}$	0	0	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{42}i}{28}$	0	$-\frac{\sqrt{42}}{28}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
993	symmetry	$\frac{\sqrt{21}y(3x^2-y^2)(3x^4+6x^2y^2-60x^2z^2+3y^4-60y^2z^2+80z^4)}{32}$													

continued ...

Table 10

No.	multipole	matrix													
		0	0	0	0	0	0	0	0	0	0	0	0		
		0	0	0	0	0	0	0	0	0	0	0	0		
		0	0	0	0	0	0	0	$-\frac{\sqrt{30030}}{2002}$	0	$\frac{\sqrt{30030i}}{2002}$	$\frac{2\sqrt{5005}}{1001}$	0		
		0	0	0	0	0	0	$-\frac{\sqrt{30030}}{2002}$	0	$-\frac{\sqrt{30030i}}{2002}$	0	0	$-\frac{2\sqrt{5005}}{1001}$		
		0	0	0	0	$-\frac{3\sqrt{2002i}}{2002}$	0	$-\frac{3\sqrt{2002}}{2002}$	0	0	$\frac{3\sqrt{5005}}{1001}$	0	$-\frac{\sqrt{30030i}}{1001}$		
		0	0	0	$\frac{3\sqrt{2002i}}{2002}$	0	$-\frac{3\sqrt{2002}}{2002}$	0	0	0	0	$-\frac{3\sqrt{5005}}{1001}$	$\frac{\sqrt{30030i}}{1001}$	0	
	$M_7^{(1,-1;a)}(A_{2g}, 3)$	0	0	0	0	$-\frac{3\sqrt{2002}}{2002}$	0	$\frac{3\sqrt{2002i}}{2002}$	$\frac{3\sqrt{5005}}{1001}$	0	0	0	$\frac{\sqrt{30030}}{1001}$	0	
		0	0	0	0	$-\frac{3\sqrt{2002}}{2002}$	0	$-\frac{3\sqrt{2002i}}{2002}$	0	0	$-\frac{3\sqrt{5005}}{1001}$	0	$\frac{\sqrt{30030}}{1001}$	0	
		0	0	0	$-\frac{\sqrt{30030}}{2002}$	0	0	$\frac{3\sqrt{5005}}{1001}$	0	0	$-\frac{15\sqrt{2002i}}{4004}$	0	$\frac{15\sqrt{2002}}{4004}$	0	0
		0	0	$-\frac{\sqrt{30030}}{2002}$	0	0	0	$-\frac{3\sqrt{5005}}{1001}$	$\frac{15\sqrt{2002i}}{4004}$	0	$\frac{15\sqrt{2002}}{4004}$	0	0	0	
		0	0	0	$\frac{\sqrt{30030i}}{2002}$	$\frac{3\sqrt{5005}}{1001}$	0	0	0	$\frac{15\sqrt{2002}}{4004}$	0	$\frac{15\sqrt{2002i}}{4004}$	0	0	
		0	0	$-\frac{\sqrt{30030i}}{2002}$	0	0	$-\frac{3\sqrt{5005}}{1001}$	0	0	$\frac{15\sqrt{2002}}{4004}$	0	$-\frac{15\sqrt{2002i}}{4004}$	0	0	
		0	0	$\frac{2\sqrt{5005}}{1001}$	0	0	$-\frac{\sqrt{30030i}}{1001}$	0	$\frac{\sqrt{30030}}{1001}$	0	0	0	0	0	
		0	0	0	$-\frac{2\sqrt{5005}}{1001}$	$\frac{\sqrt{30030i}}{1001}$	0	$\frac{\sqrt{30030}}{1001}$	0	0	0	0	0	0	
994	symmetry	$\frac{\sqrt{429}x(x^6 - 21x^4y^2 + 35x^2y^4 - 7y^6)}{32}$													

continued ...

Table 10

No.	multipole	matrix
	$M_{7,1}^{(1,-1;a)}(E_g, 1)$	$ \begin{array}{cccccccccccccccc} 0 & \frac{\sqrt{2}}{4} & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{2}}{4} & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{2}i}{4} & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{2}i}{4} & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{array} $
995	symmetry	$\frac{\sqrt{429}y(7x^6 - 35x^4y^2 + 21x^2y^4 - y^6)}{32}$

continued ...

Table 10

No.	multipole	matrix													
$M_{7,1}^{(1,-1;a)}(E_g, 2)$		0	$-\frac{\sqrt{182}}{364}$	0	$\frac{\sqrt{182i}}{364}$	$\frac{\sqrt{273}}{91}$	0	0	0	0	$\frac{\sqrt{2730}}{364}$	0	$\frac{\sqrt{2730i}}{364}$	0	0
		$-\frac{\sqrt{182}}{364}$	0	$-\frac{\sqrt{182i}}{364}$	0	0	$-\frac{\sqrt{273}}{91}$	0	0	$\frac{\sqrt{2730}}{364}$	0	$-\frac{\sqrt{2730i}}{364}$	0	0	0
		0	$\frac{\sqrt{182i}}{364}$	0	$\frac{\sqrt{182}}{364}$	0	0	$-\frac{\sqrt{273}}{91}$	0	0	$\frac{\sqrt{2730i}}{364}$	0	$-\frac{\sqrt{2730}}{364}$	0	0
		$-\frac{\sqrt{182i}}{364}$	0	$\frac{\sqrt{182}}{364}$	0	0	0	0	$\frac{\sqrt{273}}{91}$	$-\frac{\sqrt{2730i}}{364}$	0	$-\frac{\sqrt{2730}}{364}$	0	0	0
		$\frac{\sqrt{273}}{91}$	0	0	0	0	$\frac{3\sqrt{182}}{182}$	0	$\frac{3\sqrt{182i}}{182}$	0	0	0	0	0	0
		0	$-\frac{\sqrt{273}}{91}$	0	0	$\frac{3\sqrt{182}}{182}$	0	$-\frac{3\sqrt{182i}}{182}$	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{273}}{91}$	0	0	$\frac{3\sqrt{182i}}{182}$	0	$-\frac{3\sqrt{182}}{182}$	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{273}}{91}$	$-\frac{3\sqrt{182i}}{182}$	0	$-\frac{3\sqrt{182}}{182}$	0	0	0	0	0	0	0
		0	$\frac{\sqrt{2730}}{364}$	0	$\frac{\sqrt{2730i}}{364}$	0	0	0	0	0	0	0	0	0	0
		$\frac{\sqrt{2730}}{364}$	0	$-\frac{\sqrt{2730i}}{364}$	0	0	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{2730i}}{364}$	0	$-\frac{\sqrt{2730}}{364}$	0	0	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{2730i}}{364}$	0	$-\frac{\sqrt{2730}}{364}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
	997	symmetry	$\frac{\sqrt{231}y(x^2+y^2-12z^2)(5x^4-10x^2y^2+y^4)}{32}$												

continued ...

Table 10

No.	multipole	matrix													
$M_{7,2}^{(1,-1;a)}(E_g, 2)$		0	$\frac{\sqrt{182}i}{364}$	0	$\frac{\sqrt{182}}{364}$	0	0	$-\frac{\sqrt{273}}{91}$	0	0	$\frac{\sqrt{2730}i}{364}$	0	$-\frac{\sqrt{2730}}{364}$	0	0
		$-\frac{\sqrt{182}i}{364}$	0	$\frac{\sqrt{182}}{364}$	0	0	0	0	$\frac{\sqrt{273}}{91}$	$-\frac{\sqrt{2730}i}{364}$	0	$-\frac{\sqrt{2730}}{364}$	0	0	0
		0	$\frac{\sqrt{182}}{364}$	0	$-\frac{\sqrt{182}i}{364}$	$-\frac{\sqrt{273}}{91}$	0	0	0	0	$-\frac{\sqrt{2730}}{364}$	0	$-\frac{\sqrt{2730}i}{364}$	0	0
		$\frac{\sqrt{182}}{364}$	0	$\frac{\sqrt{182}i}{364}$	0	0	$\frac{\sqrt{273}}{91}$	0	0	$-\frac{\sqrt{2730}}{364}$	0	$\frac{\sqrt{2730}i}{364}$	0	0	0
		0	0	$-\frac{\sqrt{273}}{91}$	0	0	$\frac{3\sqrt{182}i}{182}$	0	$-\frac{3\sqrt{182}}{182}$	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{273}}{91}$	$-\frac{3\sqrt{182}i}{182}$	0	$-\frac{3\sqrt{182}}{182}$	0	0	0	0	0	0	0
		$-\frac{\sqrt{273}}{91}$	0	0	0	0	$-\frac{3\sqrt{182}}{182}$	0	$-\frac{3\sqrt{182}i}{182}$	0	0	0	0	0	0
		0	$\frac{\sqrt{273}}{91}$	0	0	$-\frac{3\sqrt{182}}{182}$	0	$\frac{3\sqrt{182}i}{182}$	0	0	0	0	0	0	0
		0	$\frac{\sqrt{2730}i}{364}$	0	$-\frac{\sqrt{2730}}{364}$	0	0	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{2730}i}{364}$	0	$-\frac{\sqrt{2730}}{364}$	0	0	0	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{2730}}{364}$	0	$-\frac{\sqrt{2730}i}{364}$	0	0	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{2730}}{364}$	0	$\frac{\sqrt{2730}i}{364}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
998	symmetry	$-\frac{\sqrt{7}x(5x^6+15x^4y^2-120x^4z^2+15x^2y^4-240x^2y^2z^2+240x^2z^4+5y^6-120y^4z^2+240y^2z^4-64z^6)}{32}$													

continued ...

Table 10

No.	multipole	matrix													
$M_{7,1}^{(1,-1;a)}(E_g, 3)$	0	$-\frac{\sqrt{6006}}{6006}$	0	0	$\frac{\sqrt{1001}}{1001}$	0	0	0	0	$\frac{\sqrt{10010}}{4004}$	0	$\frac{\sqrt{10010i}}{4004}$	0	0	
	$-\frac{\sqrt{6006}}{6006}$	0	0	0	0	$-\frac{\sqrt{1001}}{1001}$	0	0	$\frac{\sqrt{10010}}{4004}$	0	$-\frac{\sqrt{10010i}}{4004}$	0	0	0	
	0	0	0	$-\frac{\sqrt{6006}}{6006}$	0	0	$\frac{\sqrt{1001}}{1001}$	0	0	$-\frac{\sqrt{10010i}}{4004}$	0	$\frac{\sqrt{10010}}{4004}$	0	0	
	0	0	$-\frac{\sqrt{6006}}{6006}$	0	0	0	$-\frac{\sqrt{1001}}{1001}$	$\frac{\sqrt{10010i}}{4004}$	0	$\frac{\sqrt{10010}}{4004}$	0	0	0	0	
	$\frac{\sqrt{1001}}{1001}$	0	0	0	0	$\frac{\sqrt{6006}}{1001}$	0	0	$-\frac{\sqrt{15015}}{1001}$	0	0	0	0	$-\frac{\sqrt{10010}}{1001}$	
	0	$-\frac{\sqrt{1001}}{1001}$	0	0	$\frac{\sqrt{6006}}{1001}$	0	0	0	0	$\frac{\sqrt{15015}}{1001}$	0	0	$-\frac{\sqrt{10010}}{1001}$	0	
	0	0	$\frac{\sqrt{1001}}{1001}$	0	0	0	$\frac{\sqrt{6006}}{1001}$	0	0	$-\frac{\sqrt{15015}}{1001}$	0	0	0	$\frac{\sqrt{10010i}}{1001}$	
	0	0	0	$-\frac{\sqrt{1001}}{1001}$	0	0	$\frac{\sqrt{6006}}{1001}$	0	0	0	0	$\frac{\sqrt{15015}}{1001}$	$-\frac{\sqrt{10010i}}{1001}$	0	
	0	$\frac{\sqrt{10010}}{4004}$	0	$-\frac{\sqrt{10010i}}{4004}$	$-\frac{\sqrt{15015}}{1001}$	0	0	0	0	$-\frac{15\sqrt{6006}}{4004}$	0	$\frac{5\sqrt{6006i}}{4004}$	$\frac{10\sqrt{1001}}{1001}$	0	
	$\frac{\sqrt{10010}}{4004}$	0	$\frac{\sqrt{10010i}}{4004}$	0	0	$\frac{\sqrt{15015}}{1001}$	0	0	$-\frac{15\sqrt{6006}}{4004}$	0	$-\frac{5\sqrt{6006i}}{4004}$	0	0	$-\frac{10\sqrt{1001}}{1001}$	
	0	$\frac{\sqrt{10010i}}{4004}$	0	$\frac{\sqrt{10010}}{4004}$	0	0	$-\frac{\sqrt{15015}}{1001}$	0	0	$\frac{5\sqrt{6006i}}{4004}$	0	$-\frac{5\sqrt{6006}}{4004}$	0	0	
	$-\frac{\sqrt{10010i}}{4004}$	0	$\frac{\sqrt{10010}}{4004}$	0	0	0	0	$\frac{\sqrt{15015}}{1001}$	$-\frac{5\sqrt{6006i}}{4004}$	0	$-\frac{5\sqrt{6006}}{4004}$	0	0	0	
	0	0	0	0	0	$-\frac{\sqrt{10010}}{1001}$	0	$\frac{\sqrt{10010i}}{1001}$	$\frac{10\sqrt{1001}}{1001}$	0	0	0	0	$\frac{10\sqrt{6006}}{3003}$	
	0	0	0	0	$-\frac{\sqrt{10010}}{1001}$	0	$-\frac{\sqrt{10010i}}{1001}$	0	0	$-\frac{10\sqrt{1001}}{1001}$	0	0	$\frac{10\sqrt{6006}}{3003}$	0	
999	symmetry	$-\frac{\sqrt{7}y(5x^6+15x^4y^2-120x^4z^2+15x^2y^4-240x^2y^2z^2+240x^2z^4+5y^6-120y^4z^2+240y^2z^4-64z^6)}{32}$													

continued ...

Table 10

No.	multipole	matrix													
$M_{7,2}^{(1,-1;a)}(E_g, 3)$	0	$\frac{\sqrt{6006i}}{6006}$	0	0	0	0	$-\frac{\sqrt{1001}}{1001}$	0	0	$\frac{\sqrt{10010i}}{4004}$	0	$-\frac{\sqrt{10010}}{4004}$	0	0	
	$-\frac{\sqrt{6006i}}{6006}$	0	0	0	0	0	0	$\frac{\sqrt{1001}}{1001}$	$-\frac{\sqrt{10010i}}{4004}$	0	$-\frac{\sqrt{10010}}{4004}$	0	0	0	
	0	0	0	$\frac{\sqrt{6006i}}{6006}$	$\frac{\sqrt{1001}}{1001}$	0	0	0	0	$\frac{\sqrt{10010}}{4004}$	0	$\frac{\sqrt{10010i}}{4004}$	0	0	
	0	0	$-\frac{\sqrt{6006i}}{6006}$	0	0	$-\frac{\sqrt{1001}}{1001}$	0	0	$\frac{\sqrt{10010}}{4004}$	0	$-\frac{\sqrt{10010i}}{4004}$	0	0	0	
	0	0	$\frac{\sqrt{1001}}{1001}$	0	0	$-\frac{\sqrt{6006i}}{1001}$	0	0	0	0	$\frac{\sqrt{15015}}{1001}$	0	0	$-\frac{\sqrt{10010i}}{1001}$	
	0	0	0	$-\frac{\sqrt{1001}}{1001}$	$\frac{\sqrt{6006i}}{1001}$	0	0	0	0	0	0	$-\frac{\sqrt{15015}}{1001}$	$\frac{\sqrt{10010i}}{1001}$	0	
	$-\frac{\sqrt{1001}}{1001}$	0	0	0	0	0	0	$-\frac{\sqrt{6006i}}{1001}$	$-\frac{\sqrt{15015}}{1001}$	0	0	0	0	$-\frac{\sqrt{10010}}{1001}$	
	0	$\frac{\sqrt{1001}}{1001}$	0	0	0	0	$\frac{\sqrt{6006i}}{1001}$	0	0	$\frac{\sqrt{15015}}{1001}$	0	0	$-\frac{\sqrt{10010}}{1001}$	0	
	0	$\frac{\sqrt{10010i}}{4004}$	0	$\frac{\sqrt{10010}}{4004}$	0	0	$-\frac{\sqrt{15015}}{1001}$	0	0	$\frac{5\sqrt{6006i}}{4004}$	0	$-\frac{5\sqrt{6006}}{4004}$	0	0	
	$-\frac{\sqrt{10010i}}{4004}$	0	$\frac{\sqrt{10010}}{4004}$	0	0	0	0	$\frac{\sqrt{15015}}{1001}$	$-\frac{5\sqrt{6006i}}{4004}$	0	$-\frac{5\sqrt{6006}}{4004}$	0	0	0	
	0	$-\frac{\sqrt{10010}}{4004}$	0	$\frac{\sqrt{10010i}}{4004}$	$\frac{\sqrt{15015}}{1001}$	0	0	0	0	$-\frac{5\sqrt{6006}}{4004}$	0	$\frac{15\sqrt{6006i}}{4004}$	$\frac{10\sqrt{1001}}{1001}$	0	
	$-\frac{\sqrt{10010}}{4004}$	0	$-\frac{\sqrt{10010i}}{4004}$	0	0	$-\frac{\sqrt{15015}}{1001}$	0	0	$-\frac{5\sqrt{6006}}{4004}$	0	$-\frac{15\sqrt{6006i}}{4004}$	0	0	$-\frac{10\sqrt{1001}}{1001}$	
	0	0	0	0	0	$-\frac{\sqrt{10010i}}{1001}$	0	$-\frac{\sqrt{10010}}{1001}$	0	0	$\frac{10\sqrt{1001}}{1001}$	0	0	$-\frac{10\sqrt{6006i}}{3003}$	
	0	0	0	0	$\frac{\sqrt{10010i}}{1001}$	0	$-\frac{\sqrt{10010}}{1001}$	0	0	0	0	$-\frac{10\sqrt{1001}}{1001}$	$\frac{10\sqrt{6006i}}{3003}$	0	
1000	symmetry	$\frac{\sqrt{231}xyz(x-y)(x+y)(3x^2+3y^2-10z^2)}{4}$													

continued ...

Table 10

No.	multipole	matrix													
$M_{7,1}^{(1,-1;a)}(E_g, 4)$		0	0	0	0	0	$\frac{\sqrt{273}i}{364}$	0	$\frac{\sqrt{273}}{364}$	0	0	$-\frac{\sqrt{2730}}{364}$	0	0	$\frac{\sqrt{455}i}{182}$
		0	0	0	0	$-\frac{\sqrt{273}i}{364}$	0	$\frac{\sqrt{273}}{364}$	0	0	0	0	$\frac{\sqrt{2730}}{364}$	$-\frac{\sqrt{455}i}{182}$	0
		0	0	0	0	0	$\frac{\sqrt{273}}{364}$	0	$-\frac{\sqrt{273}i}{364}$	$-\frac{\sqrt{2730}}{364}$	0	0	0	0	$-\frac{\sqrt{455}}{182}$
		0	0	0	0	$\frac{\sqrt{273}}{364}$	0	$\frac{\sqrt{273}i}{364}$	0	0	$\frac{\sqrt{2730}}{364}$	0	0	$-\frac{\sqrt{455}}{182}$	0
		0	$\frac{\sqrt{273}i}{364}$	0	$\frac{\sqrt{273}}{364}$	0	0	$-\frac{3\sqrt{182}}{182}$	0	0	$\frac{3\sqrt{455}i}{364}$	0	$-\frac{3\sqrt{455}}{364}$	0	0
		$-\frac{\sqrt{273}i}{364}$	0	$\frac{\sqrt{273}}{364}$	0	0	0	0	$\frac{3\sqrt{182}}{182}$	$-\frac{3\sqrt{455}i}{364}$	0	$-\frac{3\sqrt{455}}{364}$	0	0	0
		0	$\frac{\sqrt{273}}{364}$	0	$-\frac{\sqrt{273}i}{364}$	$-\frac{3\sqrt{182}}{182}$	0	0	0	0	$-\frac{3\sqrt{455}}{364}$	0	$-\frac{3\sqrt{455}i}{364}$	0	0
		$\frac{\sqrt{273}}{364}$	0	$\frac{\sqrt{273}i}{364}$	0	0	$\frac{3\sqrt{182}}{182}$	0	0	$-\frac{3\sqrt{455}i}{364}$	0	$\frac{3\sqrt{455}}{364}$	0	0	0
		0	0	$-\frac{\sqrt{2730}}{364}$	0	0	$\frac{3\sqrt{455}i}{364}$	0	$-\frac{3\sqrt{455}}{364}$	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{2730}}{364}$	$-\frac{3\sqrt{455}i}{364}$	0	$-\frac{3\sqrt{455}}{364}$	0	0	0	0	0	0	0
		$-\frac{\sqrt{2730}}{364}$	0	0	0	0	$-\frac{3\sqrt{455}}{364}$	0	$-\frac{3\sqrt{455}i}{364}$	0	0	0	0	0	0
		0	$\frac{\sqrt{2730}}{364}$	0	0	$-\frac{3\sqrt{455}}{364}$	0	$\frac{3\sqrt{455}i}{364}$	0	0	0	0	0	0	0
		0	$\frac{\sqrt{455}i}{182}$	0	$-\frac{\sqrt{455}}{182}$	0	0	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{455}i}{182}$	0	$-\frac{\sqrt{455}}{182}$	0	0	0	0	0	0	0	0	0	0	0
	1001	symmetry	$-\frac{\sqrt{231}z(x^2-2xy-y^2)(x^2+2xy-y^2)(3x^2+3y^2-10z^2)}{16}$												

continued ...

Table 10

No.	multipole	matrix													
$M_{7,2}^{(1,-1;a)}(E_g, 4)$		0	0	0	0	0	$-\frac{\sqrt{273}}{364}$	0	$\frac{\sqrt{273}i}{364}$	$\frac{\sqrt{2730}}{364}$	0	0	0	$\frac{\sqrt{455}}{182}$	
		0	0	0	0	$-\frac{\sqrt{273}}{364}$	0	$-\frac{\sqrt{273}i}{364}$	0	0	$-\frac{\sqrt{2730}}{364}$	0	0	$\frac{\sqrt{455}}{182}$	0
		0	0	0	0	0	$\frac{\sqrt{273}i}{364}$	0	$\frac{\sqrt{273}}{364}$	0	0	$-\frac{\sqrt{2730}}{364}$	0	0	$\frac{\sqrt{455}i}{182}$
		0	0	0	0	$-\frac{\sqrt{273}i}{364}$	0	$\frac{\sqrt{273}}{364}$	0	0	0	$\frac{\sqrt{2730}}{364}$	$-\frac{\sqrt{455}i}{182}$	0	0
		0	$-\frac{\sqrt{273}}{364}$	0	$\frac{\sqrt{273}i}{364}$	$\frac{3\sqrt{182}}{182}$	0	0	0	0	$\frac{3\sqrt{455}}{364}$	0	$\frac{3\sqrt{455}i}{364}$	0	0
		$-\frac{\sqrt{273}}{364}$	0	$-\frac{\sqrt{273}i}{364}$	0	0	$-\frac{3\sqrt{182}}{182}$	0	0	$\frac{3\sqrt{455}}{364}$	0	$-\frac{3\sqrt{455}i}{364}$	0	0	0
		0	$\frac{\sqrt{273}i}{364}$	0	$\frac{\sqrt{273}}{364}$	0	0	$-\frac{3\sqrt{182}}{182}$	0	0	$\frac{3\sqrt{455}i}{364}$	0	$-\frac{3\sqrt{455}}{364}$	0	0
		$-\frac{\sqrt{273}i}{364}$	0	$\frac{\sqrt{273}}{364}$	0	0	0	0	$\frac{3\sqrt{182}}{182}$	$-\frac{3\sqrt{455}i}{364}$	0	$-\frac{3\sqrt{455}}{364}$	0	0	0
		$\frac{\sqrt{2730}}{364}$	0	0	0	0	$\frac{3\sqrt{455}}{364}$	0	$\frac{3\sqrt{455}i}{364}$	0	0	0	0	0	0
		0	$-\frac{\sqrt{2730}}{364}$	0	0	$\frac{3\sqrt{455}}{364}$	0	$-\frac{3\sqrt{455}i}{364}$	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{2730}}{364}$	0	0	$\frac{3\sqrt{455}i}{364}$	0	$-\frac{3\sqrt{455}}{364}$	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{2730}}{364}$	$-\frac{3\sqrt{455}i}{364}$	0	$-\frac{3\sqrt{455}}{364}$	0	0	0	0	0	0	0
		0	$\frac{\sqrt{455}}{182}$	0	$\frac{\sqrt{455}i}{182}$	0	0	0	0	0	0	0	0	0	0
		$\frac{\sqrt{455}}{182}$	0	$-\frac{\sqrt{455}i}{182}$	0	0	0	0	0	0	0	0	0	0	0
	1002	symmetry	$\frac{\sqrt{42}xyz(15x^4+30x^2y^2-80x^2z^2+15y^4-80y^2z^2+48z^4)}{16}$												

continued ...

Table 10

No.	multipole	matrix												
$M_{7,1}^{(1,-1;a)}(E_g, 5)$	0	0	0	0	0	$-\frac{\sqrt{6006}i}{4004}$	0	$-\frac{\sqrt{6006}}{4004}$	0	0	$\frac{\sqrt{15015}}{2002}$	0	0	$-\frac{\sqrt{10010}i}{2002}$
	0	0	0	0	$\frac{\sqrt{6006}i}{4004}$	0	$-\frac{\sqrt{6006}}{4004}$	0	0	0	0	$-\frac{\sqrt{15015}}{2002}$	$\frac{\sqrt{10010}i}{2002}$	0
	0	0	0	0	0	$\frac{\sqrt{6006}}{4004}$	0	$-\frac{\sqrt{6006}i}{4004}$	$-\frac{\sqrt{15015}}{2002}$	0	0	0	0	$-\frac{\sqrt{10010}}{2002}$
	0	0	0	0	$\frac{\sqrt{6006}}{4004}$	0	$\frac{\sqrt{6006}i}{4004}$	0	0	$\frac{\sqrt{15015}}{2002}$	0	0	$-\frac{\sqrt{10010}}{2002}$	0
	0	$-\frac{\sqrt{6006}i}{4004}$	0	$\frac{\sqrt{6006}}{4004}$	0	0	0	0	0	0	0	0	0	0
	$\frac{\sqrt{6006}i}{4004}$	0	$\frac{\sqrt{6006}}{4004}$	0	0	0	0	0	0	0	0	0	0	0
	0	$-\frac{\sqrt{6006}}{4004}$	0	$-\frac{\sqrt{6006}i}{4004}$	0	0	0	0	0	$-\frac{3\sqrt{10010}}{2002}$	0	$\frac{3\sqrt{10010}i}{2002}$	$\frac{2\sqrt{15015}}{1001}$	0
	$-\frac{\sqrt{6006}}{4004}$	0	$\frac{\sqrt{6006}i}{4004}$	0	0	0	0	0	$-\frac{3\sqrt{10010}}{2002}$	0	$-\frac{3\sqrt{10010}i}{2002}$	0	0	$-\frac{2\sqrt{15015}}{1001}$
	0	0	$-\frac{\sqrt{15015}}{2002}$	0	0	0	0	$-\frac{3\sqrt{10010}i}{2002}$	0	0	$\frac{15\sqrt{1001}}{2002}$	0	0	$-\frac{5\sqrt{6006}i}{2002}$
	0	0	0	$\frac{\sqrt{15015}}{2002}$	0	0	$-\frac{3\sqrt{10010}}{2002}$	0	0	0	0	$-\frac{15\sqrt{1001}}{2002}$	$\frac{5\sqrt{6006}i}{2002}$	0
	$\frac{\sqrt{15015}}{2002}$	0	0	0	0	0	0	$\frac{3\sqrt{10010}i}{2002}$	$\frac{15\sqrt{1001}}{2002}$	0	0	0	0	$\frac{5\sqrt{6006}}{2002}$
	0	$-\frac{\sqrt{15015}}{2002}$	0	0	0	0	$-\frac{3\sqrt{10010}i}{2002}$	0	0	$-\frac{15\sqrt{1001}}{2002}$	0	0	$\frac{5\sqrt{6006}}{2002}$	0
	0	$-\frac{\sqrt{10010}i}{2002}$	0	$-\frac{\sqrt{10010}}{2002}$	0	0	$\frac{2\sqrt{15015}}{1001}$	0	0	$-\frac{5\sqrt{6006}i}{2002}$	0	$\frac{5\sqrt{6006}}{2002}$	0	0
	$\frac{\sqrt{10010}i}{2002}$	0	$-\frac{\sqrt{10010}}{2002}$	0	0	0	0	$-\frac{2\sqrt{15015}}{1001}$	$\frac{5\sqrt{6006}i}{2002}$	0	$\frac{5\sqrt{6006}}{2002}$	0	0	0
1003	symmetry	$\frac{\sqrt{42}z(x-y)(x+y)(15x^4+30x^2y^2-80x^2z^2+15y^4-80y^2z^2+48z^4)}{32}$												

continued ...

Table 10

No.	multipole	matrix													
$M_{7,2}^{(1,-1;a)}(E_g, 5)$	0	0	0	0	0	$\frac{\sqrt{6006}}{4004}$	0	$-\frac{\sqrt{6006i}}{4004}$	$-\frac{\sqrt{15015}}{2002}$	0	0	0	0	$-\frac{\sqrt{10010}}{2002}$	
	0	0	0	0	$\frac{\sqrt{6006}}{4004}$	0	$\frac{\sqrt{6006i}}{4004}$	0	0	$\frac{\sqrt{15015}}{2002}$	0	0	$-\frac{\sqrt{10010}}{2002}$	0	
	0	0	0	0	0	$\frac{\sqrt{6006i}}{4004}$	0	$\frac{\sqrt{6006}}{4004}$	0	0	$-\frac{\sqrt{15015}}{2002}$	0	0	$\frac{\sqrt{10010i}}{2002}$	
	0	0	0	0	$-\frac{\sqrt{6006i}}{4004}$	0	$\frac{\sqrt{6006}}{4004}$	0	0	0	0	$\frac{\sqrt{15015}}{2002}$	$-\frac{\sqrt{10010i}}{2002}$	0	
	0	$\frac{\sqrt{6006}}{4004}$	0	$\frac{\sqrt{6006i}}{4004}$	0	0	0	0	0	$-\frac{3\sqrt{10010}}{2002}$	0	$\frac{3\sqrt{10010i}}{2002}$	$\frac{2\sqrt{15015}}{1001}$	0	
	$\frac{\sqrt{6006}}{4004}$	0	$-\frac{\sqrt{6006i}}{4004}$	0	0	0	0	0	0	$-\frac{3\sqrt{10010}}{2002}$	0	$-\frac{3\sqrt{10010i}}{2002}$	0	0	$-\frac{2\sqrt{15015}}{1001}$
	0	$-\frac{\sqrt{6006i}}{4004}$	0	$\frac{\sqrt{6006}}{4004}$	0	0	0	0	0	0	0	0	0	0	0
	$\frac{\sqrt{6006i}}{4004}$	0	$\frac{\sqrt{6006}}{4004}$	0	0	0	0	0	0	0	0	0	0	0	0
	$-\frac{\sqrt{15015}}{2002}$	0	0	0	0	$-\frac{3\sqrt{10010}}{2002}$	0	0	0	$\frac{15\sqrt{1001}}{2002}$	0	0	0	0	$\frac{5\sqrt{6006}}{2002}$
	0	$\frac{\sqrt{15015}}{2002}$	0	0	$-\frac{3\sqrt{10010}}{2002}$	0	0	0	0	$-\frac{15\sqrt{1001}}{2002}$	0	0	0	$\frac{5\sqrt{6006}}{2002}$	0
	0	0	$-\frac{\sqrt{15015}}{2002}$	0	0	$\frac{3\sqrt{10010i}}{2002}$	0	0	0	0	$-\frac{15\sqrt{1001}}{2002}$	0	0	$\frac{5\sqrt{6006i}}{2002}$	0
	0	0	0	$\frac{\sqrt{15015}}{2002}$	$-\frac{3\sqrt{10010i}}{2002}$	0	0	0	0	0	0	$\frac{15\sqrt{1001}}{2002}$	$-\frac{5\sqrt{6006i}}{2002}$	0	0
	0	$-\frac{\sqrt{10010}}{2002}$	0	$\frac{\sqrt{10010i}}{2002}$	$\frac{2\sqrt{15015}}{1001}$	0	0	0	0	$\frac{5\sqrt{6006}}{2002}$	0	$\frac{5\sqrt{6006i}}{2002}$	0	0	0
	$-\frac{\sqrt{10010}}{2002}$	0	$-\frac{\sqrt{10010i}}{2002}$	0	0	$-\frac{2\sqrt{15015}}{1001}$	0	0	0	$\frac{5\sqrt{6006}}{2002}$	0	$-\frac{5\sqrt{6006i}}{2002}$	0	0	0
	1004	symmetry	z												

continued ...

Table 10

No.	multipole	matrix													
$M_1^{(1,1;a)}(A_{2g})$		$-\frac{\sqrt{105}}{42}$	0	0	0	0	$\frac{\sqrt{70}}{56}$	0	$\frac{\sqrt{70}i}{56}$	0	0	0	0	0	0
		0	$\frac{\sqrt{105}}{42}$	0	0	$\frac{\sqrt{70}}{56}$	0	$-\frac{\sqrt{70}i}{56}$	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{105}}{42}$	0	0	$-\frac{\sqrt{70}i}{56}$	0	$\frac{\sqrt{70}}{56}$	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{105}}{42}$	$\frac{\sqrt{70}i}{56}$	0	$\frac{\sqrt{70}}{56}$	0	0	0	0	0	0	0
		0	$\frac{\sqrt{70}}{56}$	0	$-\frac{\sqrt{70}i}{56}$	0	0	0	0	$\frac{\sqrt{42}}{56}$	0	$\frac{\sqrt{42}i}{56}$	0	0	
		$\frac{\sqrt{70}}{56}$	0	$\frac{\sqrt{70}i}{56}$	0	0	0	0	$\frac{\sqrt{42}}{56}$	0	$-\frac{\sqrt{42}i}{56}$	0	0	0	
		0	$\frac{\sqrt{70}i}{56}$	0	$\frac{\sqrt{70}}{56}$	0	0	0	0	$-\frac{\sqrt{42}i}{56}$	0	$\frac{\sqrt{42}}{56}$	0	0	
		$-\frac{\sqrt{70}i}{56}$	0	$\frac{\sqrt{70}}{56}$	0	0	0	0	$\frac{\sqrt{42}i}{56}$	0	$\frac{\sqrt{42}}{56}$	0	0	0	
		0	0	0	0	0	$\frac{\sqrt{42}}{56}$	0	$-\frac{\sqrt{42}i}{56}$	$\frac{\sqrt{105}}{70}$	0	0	0	$\frac{\sqrt{70}}{140}$	
		0	0	0	0	$\frac{\sqrt{42}}{56}$	0	$\frac{\sqrt{42}i}{56}$	0	0	$-\frac{\sqrt{105}}{70}$	0	0	$\frac{\sqrt{70}}{140}$	
		0	0	0	0	0	$\frac{\sqrt{42}i}{56}$	0	$\frac{\sqrt{42}}{56}$	0	0	$\frac{\sqrt{105}}{70}$	0	$-\frac{\sqrt{70}i}{140}$	
		0	0	0	0	$-\frac{\sqrt{42}i}{56}$	0	$\frac{\sqrt{42}}{56}$	0	0	0	$-\frac{\sqrt{105}}{70}$	$\frac{\sqrt{70}i}{140}$	0	
		0	0	0	0	0	0	0	0	$\frac{\sqrt{70}}{140}$	0	$-\frac{\sqrt{70}i}{140}$	$\frac{2\sqrt{105}}{105}$	0	
		0	0	0	0	0	0	0	$\frac{\sqrt{70}}{140}$	0	$\frac{\sqrt{70}i}{140}$	0	0	$-\frac{2\sqrt{105}}{105}$	
	1005	symmetry	x												

continued ...

Table 10

No.	multipole	matrix													
$M_{1,1}^{(1,1;a)}(E_g)$		0	$\frac{\sqrt{105}}{84}$	0	0	$\frac{\sqrt{70}}{56}$	0	0	0	0	$-\frac{\sqrt{7}}{28}$	0	$-\frac{\sqrt{7}i}{28}$	0	0
		$\frac{\sqrt{105}}{84}$	0	0	0	0	$-\frac{\sqrt{70}}{56}$	0	0	$-\frac{\sqrt{7}}{28}$	0	$\frac{\sqrt{7}i}{28}$	0	0	0
		0	0	0	$\frac{\sqrt{105}}{84}$	0	0	$\frac{\sqrt{70}}{56}$	0	0	$\frac{\sqrt{7}i}{28}$	0	$-\frac{\sqrt{7}}{28}$	0	0
		0	0	$\frac{\sqrt{105}}{84}$	0	0	0	0	$-\frac{\sqrt{70}}{56}$	$-\frac{\sqrt{7}i}{28}$	0	$-\frac{\sqrt{7}}{28}$	0	0	0
		$\frac{\sqrt{70}}{56}$	0	0	0	0	0	0	0	$\frac{\sqrt{42}}{56}$	0	0	0	0	$-\frac{\sqrt{7}}{14}$
		0	$-\frac{\sqrt{70}}{56}$	0	0	0	0	0	0	0	$-\frac{\sqrt{42}}{56}$	0	0	0	$-\frac{\sqrt{7}}{14}$
		0	0	$\frac{\sqrt{70}}{56}$	0	0	0	0	0	0	0	$\frac{\sqrt{42}}{56}$	0	0	$\frac{\sqrt{7}i}{14}$
		0	0	0	$-\frac{\sqrt{70}}{56}$	0	0	0	0	0	0	0	$-\frac{\sqrt{42}}{56}$	$-\frac{\sqrt{7}i}{14}$	0
		0	$-\frac{\sqrt{7}}{28}$	0	$\frac{\sqrt{7}i}{28}$	$\frac{\sqrt{42}}{56}$	0	0	0	0	$\frac{\sqrt{105}}{140}$	0	$-\frac{\sqrt{105}i}{70}$	$\frac{\sqrt{70}}{140}$	0
		$-\frac{\sqrt{7}}{28}$	0	$-\frac{\sqrt{7}i}{28}$	0	0	$-\frac{\sqrt{42}}{56}$	0	0	$\frac{\sqrt{105}}{140}$	0	$\frac{\sqrt{105}i}{70}$	0	0	$-\frac{\sqrt{70}}{140}$
		0	$-\frac{\sqrt{7}i}{28}$	0	$-\frac{\sqrt{7}}{28}$	0	0	$\frac{\sqrt{42}}{56}$	0	0	$-\frac{\sqrt{105}i}{70}$	0	$-\frac{3\sqrt{105}}{140}$	0	0
		$\frac{\sqrt{7}i}{28}$	0	$-\frac{\sqrt{7}}{28}$	0	0	0	0	$-\frac{\sqrt{42}}{56}$	$\frac{\sqrt{105}i}{70}$	0	$-\frac{3\sqrt{105}}{140}$	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{7}}{14}$	0	$\frac{\sqrt{7}i}{14}$	$\frac{\sqrt{70}}{140}$	0	0	0	0	$-\frac{\sqrt{105}}{105}$
		0	0	0	0	$-\frac{\sqrt{7}}{14}$	0	$-\frac{\sqrt{7}i}{14}$	0	0	$-\frac{\sqrt{70}}{140}$	0	0	$-\frac{\sqrt{105}}{105}$	0
1006	symmetry	y													

continued ...

Table 10

No.	multipole	matrix													
$M_{1,2}^{(1,1;a)}(E_g)$		0	$-\frac{\sqrt{105i}}{84}$	0	0	0	0	$-\frac{\sqrt{70}}{56}$	0	0	$-\frac{\sqrt{7i}}{28}$	0	$\frac{\sqrt{7}}{28}$	0	0
		$\frac{\sqrt{105i}}{84}$	0	0	0	0	0	0	$\frac{\sqrt{70}}{56}$	$\frac{\sqrt{7i}}{28}$	0	$\frac{\sqrt{7}}{28}$	0	0	0
		0	0	0	$-\frac{\sqrt{105i}}{84}$	$\frac{\sqrt{70}}{56}$	0	0	0	0	$-\frac{\sqrt{7}}{28}$	0	$-\frac{\sqrt{7i}}{28}$	0	0
		0	0	$\frac{\sqrt{105i}}{84}$	0	0	$-\frac{\sqrt{70}}{56}$	0	0	$-\frac{\sqrt{7}}{28}$	0	$\frac{\sqrt{7i}}{28}$	0	0	0
		0	0	$\frac{\sqrt{70}}{56}$	0	0	0	0	0	0	0	$-\frac{\sqrt{42}}{56}$	0	0	$-\frac{\sqrt{7i}}{14}$
		0	0	0	$-\frac{\sqrt{70}}{56}$	0	0	0	0	0	0	0	$\frac{\sqrt{42}}{56}$	$\frac{\sqrt{7i}}{14}$	0
		$-\frac{\sqrt{70}}{56}$	0	0	0	0	0	0	0	$\frac{\sqrt{42}}{56}$	0	0	0	0	$-\frac{\sqrt{7}}{14}$
		0	$\frac{\sqrt{70}}{56}$	0	0	0	0	0	0	0	$-\frac{\sqrt{42}}{56}$	0	0	$-\frac{\sqrt{7}}{14}$	0
		0	$-\frac{\sqrt{7i}}{28}$	0	$-\frac{\sqrt{7}}{28}$	0	0	$\frac{\sqrt{42}}{56}$	0	0	$\frac{3\sqrt{105i}}{140}$	0	$\frac{\sqrt{105}}{70}$	0	0
		$\frac{\sqrt{7i}}{28}$	0	$-\frac{\sqrt{7}}{28}$	0	0	0	0	$-\frac{\sqrt{42}}{56}$	$-\frac{3\sqrt{105i}}{140}$	0	$\frac{\sqrt{105}}{70}$	0	0	0
		0	$\frac{\sqrt{7}}{28}$	0	$-\frac{\sqrt{7i}}{28}$	$-\frac{\sqrt{42}}{56}$	0	0	0	0	$\frac{\sqrt{105}}{70}$	0	$-\frac{\sqrt{105i}}{140}$	$\frac{\sqrt{70}}{140}$	0
		$\frac{\sqrt{7}}{28}$	0	$\frac{\sqrt{7i}}{28}$	0	0	$\frac{\sqrt{42}}{56}$	0	0	$\frac{\sqrt{105}}{70}$	0	$\frac{\sqrt{105i}}{140}$	0	0	$-\frac{\sqrt{70}}{140}$
		0	0	0	0	0	$-\frac{\sqrt{7i}}{14}$	0	$-\frac{\sqrt{7}}{14}$	0	0	$\frac{\sqrt{70}}{140}$	0	0	$\frac{\sqrt{105i}}{105}$
		0	0	0	0	$\frac{\sqrt{7i}}{14}$	0	$-\frac{\sqrt{7}}{14}$	0	0	0	0	$-\frac{\sqrt{70}}{140}$	$-\frac{\sqrt{105i}}{105}$	0
1007	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$													

continued ...

Table 10

No.	multipole	matrix													
$M_3^{(1,1;a)}(A_{1g})$		0	0	0	0	0	0	0	0	0	$-\frac{17\sqrt{462}}{1848}$	0	$\frac{17\sqrt{462i}}{1848}$	$-\frac{\sqrt{77}}{44}$	0
		0	0	0	0	0	0	0	0	$-\frac{17\sqrt{462}}{1848}$	0	$-\frac{17\sqrt{462i}}{1848}$	0	0	$\frac{\sqrt{77}}{44}$
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{462i}}{168}$	0	$\frac{\sqrt{462}}{168}$	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{462i}}{168}$	0	$\frac{\sqrt{462}}{168}$	0	0	0
		0	0	0	0	0	$\frac{\sqrt{770}}{132}$	0	$-\frac{\sqrt{770i}}{132}$	$\frac{\sqrt{77}}{132}$	0	0	0	0	$\frac{\sqrt{462}}{1848}$
		0	0	0	0	$\frac{\sqrt{770}}{132}$	0	$\frac{\sqrt{770i}}{132}$	0	0	$-\frac{\sqrt{77}}{132}$	0	0	$\frac{\sqrt{462}}{1848}$	0
		0	0	0	0	0	$-\frac{\sqrt{770i}}{132}$	0	$-\frac{\sqrt{770}}{132}$	0	0	$-\frac{\sqrt{77}}{132}$	0	0	$\frac{\sqrt{462i}}{1848}$
		0	0	0	0	$\frac{\sqrt{770i}}{132}$	0	$-\frac{\sqrt{770}}{132}$	0	0	0	0	$\frac{\sqrt{77}}{132}$	$-\frac{\sqrt{462i}}{1848}$	0
		0	$-\frac{17\sqrt{462}}{1848}$	0	$\frac{\sqrt{462i}}{168}$	$\frac{\sqrt{77}}{132}$	0	0	0	0	$-\frac{\sqrt{770}}{924}$	0	$-\frac{\sqrt{770i}}{924}$	0	0
		$-\frac{17\sqrt{462}}{1848}$	0	$-\frac{\sqrt{462i}}{168}$	0	0	$-\frac{\sqrt{77}}{132}$	0	0	$-\frac{\sqrt{770}}{924}$	0	$\frac{\sqrt{770i}}{924}$	0	0	0
		0	$\frac{17\sqrt{462i}}{1848}$	0	$\frac{\sqrt{462}}{168}$	0	0	$-\frac{\sqrt{77}}{132}$	0	0	$-\frac{\sqrt{770i}}{924}$	0	$\frac{\sqrt{770}}{924}$	0	0
		$-\frac{17\sqrt{462i}}{1848}$	0	$\frac{\sqrt{462}}{168}$	0	0	0	$\frac{\sqrt{77}}{132}$	$\frac{\sqrt{770i}}{924}$	0	$\frac{\sqrt{770}}{924}$	0	0	0	0
		$-\frac{\sqrt{77}}{44}$	0	0	0	0	$\frac{\sqrt{462}}{1848}$	0	$\frac{\sqrt{462i}}{1848}$	0	0	0	0	0	0
		0	$\frac{\sqrt{77}}{44}$	0	0	$\frac{\sqrt{462}}{1848}$	0	$-\frac{\sqrt{462i}}{1848}$	0	0	0	0	0	0	0
	1008	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$												

continued ...

Table 10

No.	multipole	matrix													
$M_3^{(1,1;a)}(A_{2g}, 1)$		$\frac{\sqrt{77}}{77}$	0	0	0	0	$-\frac{5\sqrt{462}}{924}$	0	$-\frac{5\sqrt{462}i}{924}$	0	0	0	0	0	0
		0	$-\frac{\sqrt{77}}{77}$	0	0	$-\frac{5\sqrt{462}}{924}$	0	$\frac{5\sqrt{462}i}{924}$	0	0	0	0	0	0	0
		0	0	$\frac{\sqrt{77}}{77}$	0	0	$\frac{5\sqrt{462}i}{924}$	0	$-\frac{5\sqrt{462}}{924}$	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{77}}{77}$	$-\frac{5\sqrt{462}i}{924}$	0	$-\frac{5\sqrt{462}}{924}$	0	0	0	0	0	0	0
		0	$-\frac{5\sqrt{462}}{924}$	0	$\frac{5\sqrt{462}i}{924}$	$-\frac{\sqrt{77}}{33}$	0	0	0	0	$\frac{\sqrt{770}}{231}$	0	$\frac{\sqrt{770}i}{231}$	0	0
		$-\frac{5\sqrt{462}}{924}$	0	$-\frac{5\sqrt{462}i}{924}$	0	0	$\frac{\sqrt{77}}{33}$	0	0	$\frac{\sqrt{770}}{231}$	0	$-\frac{\sqrt{770}i}{231}$	0	0	0
		0	$-\frac{5\sqrt{462}i}{924}$	0	$-\frac{5\sqrt{462}}{924}$	0	0	$-\frac{\sqrt{77}}{33}$	0	0	$-\frac{\sqrt{770}i}{231}$	0	$\frac{\sqrt{770}}{231}$	0	0
		$\frac{5\sqrt{462}i}{924}$	0	$-\frac{5\sqrt{462}}{924}$	0	0	0	0	$\frac{\sqrt{77}}{33}$	$\frac{\sqrt{770}i}{231}$	0	$\frac{\sqrt{770}}{231}$	0	0	0
		0	0	0	0	0	$\frac{\sqrt{770}}{231}$	0	$-\frac{\sqrt{770}i}{231}$	$\frac{\sqrt{77}}{231}$	0	0	0	0	$\frac{5\sqrt{462}}{924}$
		0	0	0	0	$\frac{\sqrt{770}}{231}$	0	$\frac{\sqrt{770}i}{231}$	0	0	$-\frac{\sqrt{77}}{231}$	0	0	$\frac{5\sqrt{462}}{924}$	0
		0	0	0	0	0	$\frac{\sqrt{770}i}{231}$	0	$\frac{\sqrt{770}}{231}$	0	0	$\frac{\sqrt{77}}{231}$	0	0	$-\frac{5\sqrt{462}i}{924}$
		0	0	0	0	$-\frac{\sqrt{770}i}{231}$	0	$\frac{\sqrt{770}}{231}$	0	0	0	$-\frac{\sqrt{77}}{231}$	$\frac{5\sqrt{462}i}{924}$	0	0
		0	0	0	0	0	0	0	0	0	$\frac{5\sqrt{462}}{924}$	0	$-\frac{5\sqrt{462}i}{924}$	$\frac{2\sqrt{77}}{77}$	0
		0	0	0	0	0	0	0	0	0	$\frac{5\sqrt{462}}{924}$	0	$\frac{5\sqrt{462}i}{924}$	0	$-\frac{2\sqrt{77}}{77}$
1009	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$													

continued ...

Table 10

No.	multipole	matrix													
$M_3^{(1,1;a)}(A_{2g}, 2)$		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{462}i}{168}$	0	$-\frac{\sqrt{462}}{168}$	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{462}i}{168}$	0	$-\frac{\sqrt{462}}{168}$	0	0	0
		0	0	0	0	0	0	0	0	$-\frac{17\sqrt{462}}{1848}$	0	$\frac{17\sqrt{462}i}{1848}$	$-\frac{\sqrt{77}}{44}$	0	0
		0	0	0	0	0	0	0	$-\frac{17\sqrt{462}}{1848}$	0	$-\frac{17\sqrt{462}i}{1848}$	0	0	$\frac{\sqrt{77}}{44}$	0
		0	0	0	0	0	$\frac{\sqrt{770}i}{132}$	0	$\frac{\sqrt{770}}{132}$	0	0	$\frac{\sqrt{77}}{132}$	0	0	$-\frac{\sqrt{462}i}{1848}$
		0	0	0	0	$-\frac{\sqrt{770}i}{132}$	0	$\frac{\sqrt{770}}{132}$	0	0	0	0	$-\frac{\sqrt{77}}{132}$	$\frac{\sqrt{462}i}{1848}$	0
		0	0	0	0	0	$\frac{\sqrt{770}}{132}$	0	$-\frac{\sqrt{770}i}{132}$	$\frac{\sqrt{77}}{132}$	0	0	0	0	$\frac{\sqrt{462}}{1848}$
		0	0	0	0	$\frac{\sqrt{770}}{132}$	0	$\frac{\sqrt{770}i}{132}$	0	0	$-\frac{\sqrt{77}}{132}$	0	0	$\frac{\sqrt{462}}{1848}$	0
		0	$-\frac{\sqrt{462}i}{168}$	0	$-\frac{17\sqrt{462}}{1848}$	0	0	$\frac{\sqrt{77}}{132}$	0	0	$\frac{\sqrt{770}i}{924}$	0	$-\frac{\sqrt{770}}{924}$	0	0
		$\frac{\sqrt{462}i}{168}$	0	$-\frac{17\sqrt{462}}{1848}$	0	0	0	$-\frac{\sqrt{77}}{132}$	$-\frac{\sqrt{770}i}{924}$	0	$-\frac{\sqrt{770}}{924}$	0	0	0	0
		0	$-\frac{\sqrt{462}}{168}$	0	$\frac{17\sqrt{462}i}{1848}$	$\frac{\sqrt{77}}{132}$	0	0	0	0	$-\frac{\sqrt{770}}{924}$	0	$-\frac{\sqrt{770}i}{924}$	0	0
		$-\frac{\sqrt{462}}{168}$	0	$-\frac{17\sqrt{462}i}{1848}$	0	0	$-\frac{\sqrt{77}}{132}$	0	$-\frac{\sqrt{770}}{924}$	0	$\frac{\sqrt{770}i}{924}$	0	0	0	0
		0	0	$-\frac{\sqrt{77}}{44}$	0	0	$-\frac{\sqrt{462}i}{1848}$	0	$\frac{\sqrt{462}}{1848}$	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{77}}{44}$	$\frac{\sqrt{462}i}{1848}$	0	$\frac{\sqrt{462}}{1848}$	0	0	0	0	0	0	0
	1010	symmetry	$-\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$												

continued ...

Table 10

No.	multipole	matrix														
$M_{3,1}^{(1,1;a)}(E_g, 1)$		0	$-\frac{\sqrt{462}}{308}$	0	0	$-\frac{5\sqrt{77}}{308}$	0	0	0	$\frac{3\sqrt{770}}{616}$	0	$\frac{3\sqrt{770}i}{616}$	0	0		
		$-\frac{\sqrt{462}}{308}$	0	0	0	0	$\frac{5\sqrt{77}}{308}$	0	0	$\frac{3\sqrt{770}}{616}$	0	$-\frac{3\sqrt{770}i}{616}$	0	0	0	
		0	0	0	$-\frac{\sqrt{462}}{308}$	0	0	$-\frac{5\sqrt{77}}{308}$	0	0	$-\frac{3\sqrt{770}i}{616}$	0	$\frac{3\sqrt{770}}{616}$	0	0	
		0	0	$-\frac{\sqrt{462}}{308}$	0	0	0	0	$\frac{5\sqrt{77}}{308}$	$\frac{3\sqrt{770}i}{616}$	0	$\frac{3\sqrt{770}}{616}$	0	0	0	
		$-\frac{5\sqrt{77}}{308}$	0	0	0	0	$\frac{\sqrt{462}}{132}$	0	0	$\frac{\sqrt{1155}}{231}$	0	0	0	0	$-\frac{\sqrt{770}}{616}$	
		0	$\frac{5\sqrt{77}}{308}$	0	0	$\frac{\sqrt{462}}{132}$	0	0	0	0	$-\frac{\sqrt{1155}}{231}$	0	0	$-\frac{\sqrt{770}}{616}$	0	
		0	0	$-\frac{5\sqrt{77}}{308}$	0	0	0	0	$\frac{\sqrt{462}}{132}$	0	0	$\frac{\sqrt{1155}}{231}$	0	0	$\frac{\sqrt{770}i}{616}$	
		0	0	0	$\frac{5\sqrt{77}}{308}$	0	0	$\frac{\sqrt{462}}{132}$	0	0	0	0	$-\frac{\sqrt{1155}}{231}$	$-\frac{\sqrt{770}i}{616}$	0	
		0	$\frac{3\sqrt{770}}{616}$	0	$-\frac{3\sqrt{770}i}{616}$	$\frac{\sqrt{1155}}{231}$	0	0	0	0	$\frac{\sqrt{462}}{231}$	0	$-\frac{5\sqrt{462}i}{924}$	$\frac{5\sqrt{77}}{308}$	0	
		$\frac{3\sqrt{770}}{616}$	0	$\frac{3\sqrt{770}i}{616}$	0	0	$-\frac{\sqrt{1155}}{231}$	0	0	$\frac{\sqrt{462}}{231}$	0	$\frac{5\sqrt{462}i}{924}$	0	0	$-\frac{5\sqrt{77}}{308}$	
		0	$\frac{3\sqrt{770}i}{616}$	0	$\frac{3\sqrt{770}}{616}$	0	0	0	$\frac{\sqrt{1155}}{231}$	0	0	$-\frac{5\sqrt{462}i}{924}$	0	$-\frac{\sqrt{462}}{154}$	0	0
		$-\frac{3\sqrt{770}i}{616}$	0	$\frac{3\sqrt{770}}{616}$	0	0	0	0	$-\frac{\sqrt{1155}}{231}$	$\frac{5\sqrt{462}i}{924}$	0	$-\frac{\sqrt{462}}{154}$	0	0	0	
		0	0	0	0	0	$-\frac{\sqrt{770}}{616}$	0	$\frac{\sqrt{770}i}{616}$	$\frac{5\sqrt{77}}{308}$	0	0	0	0	$-\frac{\sqrt{462}}{154}$	
		0	0	0	0	$-\frac{\sqrt{770}}{616}$	0	$-\frac{\sqrt{770}i}{616}$	0	0	$-\frac{5\sqrt{77}}{308}$	0	0	$-\frac{\sqrt{462}}{154}$	0	
1011	symmetry	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$														

continued ...

Table 10

No.	multipole	matrix													
	$M_{3,2}^{(1,1;a)}(E_g, 1)$	0	$\frac{\sqrt{462i}}{308}$	0	0	0	0	$\frac{5\sqrt{77}}{308}$	0	0	$\frac{3\sqrt{770i}}{616}$	0	$-\frac{3\sqrt{770}}{616}$	0	0
		$-\frac{\sqrt{462i}}{308}$	0	0	0	0	0	0	$-\frac{5\sqrt{77}}{308}$	$-\frac{3\sqrt{770i}}{616}$	0	$-\frac{3\sqrt{770}}{616}$	0	0	0
		0	0	0	$\frac{\sqrt{462i}}{308}$	$-\frac{5\sqrt{77}}{308}$	0	0	0	0	$\frac{3\sqrt{770}}{616}$	0	$\frac{3\sqrt{770i}}{616}$	0	0
		0	0	$-\frac{\sqrt{462i}}{308}$	0	0	$\frac{5\sqrt{77}}{308}$	0	0	$\frac{3\sqrt{770}}{616}$	0	$-\frac{3\sqrt{770i}}{616}$	0	0	0
		0	0	$-\frac{5\sqrt{77}}{308}$	0	0	$-\frac{\sqrt{462i}}{132}$	0	0	0	0	$-\frac{\sqrt{1155}}{231}$	0	0	$-\frac{\sqrt{770i}}{616}$
		0	0	0	$\frac{5\sqrt{77}}{308}$	$\frac{\sqrt{462i}}{132}$	0	0	0	0	0	0	$\frac{\sqrt{1155}}{231}$	$\frac{\sqrt{770i}}{616}$	0
		$\frac{5\sqrt{77}}{308}$	0	0	0	0	0	0	$-\frac{\sqrt{462i}}{132}$	$\frac{\sqrt{1155}}{231}$	0	0	0	0	$-\frac{\sqrt{770}}{616}$
		0	$-\frac{5\sqrt{77}}{308}$	0	0	0	0	$\frac{\sqrt{462i}}{132}$	0	0	$-\frac{\sqrt{1155}}{231}$	0	0	$-\frac{\sqrt{770}}{616}$	0
		0	$\frac{3\sqrt{770i}}{616}$	0	$\frac{3\sqrt{770}}{616}$	0	0	$\frac{\sqrt{1155}}{231}$	0	0	$\frac{\sqrt{462i}}{154}$	0	$\frac{5\sqrt{462}}{924}$	0	0
		$-\frac{3\sqrt{770i}}{616}$	0	$\frac{3\sqrt{770}}{616}$	0	0	0	$-\frac{\sqrt{1155}}{231}$	$-\frac{\sqrt{462i}}{154}$	0	$\frac{5\sqrt{462}}{924}$	0	0	0	0
		0	$-\frac{3\sqrt{770}}{616}$	0	$\frac{3\sqrt{770i}}{616}$	$-\frac{\sqrt{1155}}{231}$	0	0	0	0	$\frac{5\sqrt{462}}{924}$	0	$-\frac{\sqrt{462i}}{231}$	$\frac{5\sqrt{77}}{308}$	0
		$-\frac{3\sqrt{770}}{616}$	0	$-\frac{3\sqrt{770i}}{616}$	0	0	$\frac{\sqrt{1155}}{231}$	0	0	$\frac{5\sqrt{462}}{924}$	0	$\frac{\sqrt{462i}}{231}$	0	0	$-\frac{5\sqrt{77}}{308}$
		0	0	0	0	$-\frac{\sqrt{770i}}{616}$	0	$-\frac{\sqrt{770}}{616}$	0	0	0	$\frac{5\sqrt{77}}{308}$	0	0	$\frac{\sqrt{462i}}{154}$
		0	0	0	0	$\frac{\sqrt{770i}}{616}$	0	$-\frac{\sqrt{770}}{616}$	0	0	0	0	$-\frac{5\sqrt{77}}{308}$	$-\frac{\sqrt{462i}}{154}$	0
1012	symmetry	$\sqrt{15}xyz$													

continued ...

Table 10

No.	multipole	matrix												
		0	0	0	0	0	$-\frac{\sqrt{770i}}{616}$	0	$-\frac{\sqrt{770}}{616}$	0	0	$-\frac{3\sqrt{77}}{154}$	0	$-\frac{\sqrt{462i}}{88}$
		0	0	0	0	$\frac{\sqrt{770i}}{616}$	0	$-\frac{\sqrt{770}}{616}$	0	0	0	$\frac{3\sqrt{77}}{154}$	$\frac{\sqrt{462i}}{88}$	0
		0	0	0	0	0	$\frac{\sqrt{770}}{616}$	0	$-\frac{\sqrt{770i}}{616}$	$\frac{3\sqrt{77}}{154}$	0	0	0	$-\frac{\sqrt{462}}{88}$
		0	0	0	0	$\frac{\sqrt{770}}{616}$	0	$\frac{\sqrt{770i}}{616}$	0	0	$-\frac{3\sqrt{77}}{154}$	0	0	$-\frac{\sqrt{462}}{88}$
		0	$-\frac{\sqrt{770i}}{616}$	0	$\frac{\sqrt{770}}{616}$	0	0	0	0	0	$\frac{\sqrt{462i}}{168}$	0	$\frac{\sqrt{462}}{168}$	0
		$\frac{\sqrt{770i}}{616}$	0	$\frac{\sqrt{770}}{616}$	0	0	0	0	0	$-\frac{\sqrt{462i}}{168}$	0	$\frac{\sqrt{462}}{168}$	0	0
		0	$-\frac{\sqrt{770}}{616}$	0	$-\frac{\sqrt{770i}}{616}$	0	0	0	0	0	$\frac{\sqrt{462}}{616}$	0	$-\frac{\sqrt{462i}}{616}$	$-\frac{\sqrt{77}}{154}$
		$-\frac{\sqrt{770}}{616}$	0	$\frac{\sqrt{770i}}{616}$	0	0	0	0	0	$\frac{\sqrt{462}}{616}$	0	$\frac{\sqrt{462i}}{616}$	0	$\frac{\sqrt{77}}{154}$
		0	0	$\frac{3\sqrt{77}}{154}$	0	0	$\frac{\sqrt{462i}}{168}$	0	$\frac{\sqrt{462}}{616}$	0	0	$\frac{\sqrt{1155}}{231}$	0	$\frac{\sqrt{770i}}{616}$
		0	0	0	$-\frac{3\sqrt{77}}{154}$	$-\frac{\sqrt{462i}}{168}$	0	$\frac{\sqrt{462}}{616}$	0	0	0	$-\frac{\sqrt{1155}}{231}$	$-\frac{\sqrt{770i}}{616}$	0
		$-\frac{3\sqrt{77}}{154}$	0	0	0	0	$\frac{\sqrt{462}}{168}$	0	$-\frac{\sqrt{462i}}{616}$	$\frac{\sqrt{1155}}{231}$	0	0	0	$-\frac{\sqrt{770}}{616}$
		0	$\frac{3\sqrt{77}}{154}$	0	0	$\frac{\sqrt{462}}{168}$	0	$\frac{\sqrt{462i}}{616}$	0	0	$-\frac{\sqrt{1155}}{231}$	0	0	$-\frac{\sqrt{770}}{616}$
		0	$-\frac{\sqrt{462i}}{88}$	0	$-\frac{\sqrt{462}}{88}$	0	0	$-\frac{\sqrt{77}}{154}$	0	0	$\frac{\sqrt{770i}}{616}$	0	$-\frac{\sqrt{770}}{616}$	0
		$\frac{\sqrt{462i}}{88}$	0	$-\frac{\sqrt{462}}{88}$	0	0	0	$\frac{\sqrt{77}}{154}$	$-\frac{\sqrt{770i}}{616}$	0	$-\frac{\sqrt{770}}{616}$	0	0	0
1013	symmetry	$\frac{\sqrt{15z(x-y)(x+y)}}{2}$												

continued ...

Table 10

No.	multipole	matrix													
		0	0	0	0	0	$\frac{\sqrt{770}}{616}$	0	$-\frac{\sqrt{770}i}{616}$	$\frac{3\sqrt{77}}{154}$	0	0	0	$-\frac{\sqrt{462}}{88}$	
		0	0	0	0	$\frac{\sqrt{770}}{616}$	0	$\frac{\sqrt{770}i}{616}$	0	0	$-\frac{3\sqrt{77}}{154}$	0	0	$-\frac{\sqrt{462}}{88}$	0
		0	0	0	0	0	$\frac{\sqrt{770}i}{616}$	0	$\frac{\sqrt{770}}{616}$	0	0	$\frac{3\sqrt{77}}{154}$	0	0	$\frac{\sqrt{462}i}{88}$
		0	0	0	0	$-\frac{\sqrt{770}i}{616}$	0	$\frac{\sqrt{770}}{616}$	0	0	0	$-\frac{3\sqrt{77}}{154}$	$-\frac{\sqrt{462}i}{88}$	0	0
		0	$\frac{\sqrt{770}}{616}$	0	$\frac{\sqrt{770}i}{616}$	0	0	0	0	0	$\frac{\sqrt{462}}{616}$	0	$-\frac{\sqrt{462}i}{616}$	$-\frac{\sqrt{77}}{154}$	0
		$\frac{\sqrt{770}}{616}$	0	$-\frac{\sqrt{770}i}{616}$	0	0	0	0	0	$\frac{\sqrt{462}}{616}$	0	$\frac{\sqrt{462}i}{616}$	0	0	$\frac{\sqrt{77}}{154}$
	$M_{3,2}^{(1,1;a)}(E_g, 2)$	0	$-\frac{\sqrt{770}i}{616}$	0	$\frac{\sqrt{770}}{616}$	0	0	0	0	0	$-\frac{\sqrt{462}i}{168}$	0	$-\frac{\sqrt{462}}{168}$	0	0
		$\frac{\sqrt{770}i}{616}$	0	$\frac{\sqrt{770}}{616}$	0	0	0	0	0	$\frac{\sqrt{462}i}{168}$	0	$-\frac{\sqrt{462}}{168}$	0	0	0
		$\frac{3\sqrt{77}}{154}$	0	0	0	0	$\frac{\sqrt{462}}{616}$	0	$-\frac{\sqrt{462}i}{168}$	$\frac{\sqrt{1155}}{231}$	0	0	0	0	$-\frac{\sqrt{770}}{616}$
		0	$-\frac{3\sqrt{77}}{154}$	0	0	$\frac{\sqrt{462}}{616}$	0	$\frac{\sqrt{462}i}{168}$	0	0	$-\frac{\sqrt{1155}}{231}$	0	0	$-\frac{\sqrt{770}}{616}$	0
		0	0	$\frac{3\sqrt{77}}{154}$	0	0	$-\frac{\sqrt{462}i}{616}$	0	$-\frac{\sqrt{462}}{168}$	0	0	$-\frac{\sqrt{1155}}{231}$	0	0	$-\frac{\sqrt{770}i}{616}$
		0	0	0	$-\frac{3\sqrt{77}}{154}$	$\frac{\sqrt{462}i}{616}$	0	$-\frac{\sqrt{462}}{168}$	0	0	0	0	$\frac{\sqrt{1155}}{231}$	$\frac{\sqrt{770}i}{616}$	0
		0	$-\frac{\sqrt{462}}{88}$	0	$\frac{\sqrt{462}i}{88}$	$-\frac{\sqrt{77}}{154}$	0	0	0	0	$-\frac{\sqrt{770}}{616}$	0	$-\frac{\sqrt{770}i}{616}$	0	0
		$-\frac{\sqrt{462}}{88}$	0	$-\frac{\sqrt{462}i}{88}$	0	0	$\frac{\sqrt{77}}{154}$	0	0	$-\frac{\sqrt{770}}{616}$	0	$\frac{\sqrt{770}i}{616}$	0	0	0
1014	symmetry	$-\frac{\sqrt{70}x(x^2-3y^2)(x^2+y^2-8z^2)}{16}$													

continued ...

Table 10

No.	multipole	matrix													
$M_5^{(1,1;a)}(A_{1g})$		0	0	0	0	0	0	0	0	0	$\frac{17\sqrt{858}}{3432}$	0	$-\frac{17\sqrt{858}i}{3432}$	$\frac{3\sqrt{143}}{286}$	0
		0	0	0	0	0	0	0	0	$\frac{17\sqrt{858}}{3432}$	0	$\frac{17\sqrt{858}i}{3432}$	0	0	$-\frac{3\sqrt{143}}{286}$
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{858}i}{264}$	0	$-\frac{\sqrt{858}}{264}$	0	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{858}i}{264}$	0	$-\frac{\sqrt{858}}{264}$	0	0	0
		0	0	0	0	0	$\frac{3\sqrt{1430}}{572}$	0	$-\frac{3\sqrt{1430}i}{572}$	$\frac{9\sqrt{143}}{572}$	0	0	0	0	$-\frac{\sqrt{858}}{429}$
		0	0	0	0	$\frac{3\sqrt{1430}}{572}$	0	$\frac{3\sqrt{1430}i}{572}$	0	0	$-\frac{9\sqrt{143}}{572}$	0	0	$-\frac{\sqrt{858}}{429}$	0
		0	0	0	0	0	$-\frac{3\sqrt{1430}i}{572}$	0	$-\frac{3\sqrt{1430}}{572}$	0	0	$-\frac{9\sqrt{143}}{572}$	0	0	$-\frac{\sqrt{858}i}{429}$
		0	0	0	0	$\frac{3\sqrt{1430}i}{572}$	0	$-\frac{3\sqrt{1430}}{572}$	0	0	0	$\frac{9\sqrt{143}}{572}$	$\frac{\sqrt{858}i}{429}$	0	0
		0	$\frac{17\sqrt{858}}{3432}$	0	$-\frac{\sqrt{858}i}{264}$	$\frac{9\sqrt{143}}{572}$	0	0	0	0	$-\frac{\sqrt{1430}}{572}$	0	$-\frac{\sqrt{1430}i}{572}$	0	0
		$\frac{17\sqrt{858}}{3432}$	0	$\frac{\sqrt{858}i}{264}$	0	0	$-\frac{9\sqrt{143}}{572}$	0	0	$-\frac{\sqrt{1430}}{572}$	0	$\frac{\sqrt{1430}i}{572}$	0	0	0
		0	$-\frac{17\sqrt{858}i}{3432}$	0	$-\frac{\sqrt{858}}{264}$	0	0	$-\frac{9\sqrt{143}}{572}$	0	0	$-\frac{\sqrt{1430}i}{572}$	0	$\frac{\sqrt{1430}}{572}$	0	0
		$\frac{17\sqrt{858}i}{3432}$	0	$-\frac{\sqrt{858}}{264}$	0	0	0	0	$\frac{9\sqrt{143}}{572}$	$\frac{\sqrt{1430}i}{572}$	0	$\frac{\sqrt{1430}}{572}$	0	0	0
		$\frac{3\sqrt{143}}{286}$	0	0	0	0	$-\frac{\sqrt{858}}{429}$	0	$-\frac{\sqrt{858}i}{429}$	0	0	0	0	0	0
		0	$-\frac{3\sqrt{143}}{286}$	0	0	$-\frac{\sqrt{858}}{429}$	0	$\frac{\sqrt{858}i}{429}$	0	0	0	0	0	0	0
	1015	symmetry	$\frac{z(15x^4+30x^2y^2-40x^2z^2+15y^4-40y^2z^2+8z^4)}{8}$												

continued ...

Table 10

No.	multipole	matrix													
$M_5^{(1,1;a)}(A_{2g}, 1)$		$-\frac{\sqrt{1001}}{2002}$	0	0	0	0	$\frac{\sqrt{6006}}{3432}$	0	$\frac{\sqrt{6006}i}{3432}$	0	0	0	0	0	0
		0	$\frac{\sqrt{1001}}{2002}$	0	0	$\frac{\sqrt{6006}}{3432}$	0	$-\frac{\sqrt{6006}i}{3432}$	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{1001}}{2002}$	0	0	$-\frac{\sqrt{6006}i}{3432}$	0	$\frac{\sqrt{6006}}{3432}$	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{1001}}{2002}$	$\frac{\sqrt{6006}i}{3432}$	0	$\frac{\sqrt{6006}}{3432}$	0	0	0	0	0	0	0
		0	$\frac{\sqrt{6006}}{3432}$	0	$-\frac{\sqrt{6006}i}{3432}$	$\frac{3\sqrt{1001}}{1001}$	0	0	0	0	$-\frac{\sqrt{10010}}{1144}$	0	$-\frac{\sqrt{10010}i}{1144}$	0	0
		$\frac{\sqrt{6006}}{3432}$	0	$\frac{\sqrt{6006}i}{3432}$	0	0	$-\frac{3\sqrt{1001}}{1001}$	0	0	$-\frac{\sqrt{10010}}{1144}$	0	$\frac{\sqrt{10010}i}{1144}$	0	0	0
		0	$\frac{\sqrt{6006}i}{3432}$	0	$\frac{\sqrt{6006}}{3432}$	0	0	$\frac{3\sqrt{1001}}{1001}$	0	0	$\frac{\sqrt{10010}i}{1144}$	0	$-\frac{\sqrt{10010}}{1144}$	0	0
		$-\frac{\sqrt{6006}i}{3432}$	0	$\frac{\sqrt{6006}}{3432}$	0	0	0	0	$-\frac{3\sqrt{1001}}{1001}$	$-\frac{\sqrt{10010}i}{1144}$	0	$-\frac{\sqrt{10010}}{1144}$	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{10010}}{1144}$	0	$\frac{\sqrt{10010}i}{1144}$	$-\frac{15\sqrt{1001}}{2002}$	0	0	0	0	$\frac{5\sqrt{6006}}{1716}$
		0	0	0	0	$-\frac{\sqrt{10010}}{1144}$	0	$-\frac{\sqrt{10010}i}{1144}$	0	0	$\frac{15\sqrt{1001}}{2002}$	0	0	$\frac{5\sqrt{6006}}{1716}$	0
		0	0	0	0	0	$-\frac{\sqrt{10010}i}{1144}$	0	$-\frac{\sqrt{10010}}{1144}$	0	0	$-\frac{15\sqrt{1001}}{2002}$	0	0	$-\frac{5\sqrt{6006}i}{1716}$
		0	0	0	0	$\frac{\sqrt{10010}i}{1144}$	0	$-\frac{\sqrt{10010}}{1144}$	0	0	0	0	$\frac{15\sqrt{1001}}{2002}$	$\frac{5\sqrt{6006}i}{1716}$	0
		0	0	0	0	0	0	0	0	0	$\frac{5\sqrt{6006}}{1716}$	0	$-\frac{5\sqrt{6006}i}{1716}$	$\frac{10\sqrt{1001}}{1001}$	0
		0	0	0	0	0	0	0	0	$\frac{5\sqrt{6006}}{1716}$	0	$\frac{5\sqrt{6006}i}{1716}$	0	0	$-\frac{10\sqrt{1001}}{1001}$
1016	symmetry	$-\frac{\sqrt{70}y(3x^2-y^2)(x^2+y^2-8z^2)}{16}$													

continued ...

Table 10

No.	multipole	matrix													
$M_5^{(1,1;a)}(A_{2g}, 2)$		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{858i}}{264}$	0	$\frac{\sqrt{858}}{264}$	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{858i}}{264}$	0	$\frac{\sqrt{858}}{264}$	0	0	0
		0	0	0	0	0	0	0	0	0	$\frac{17\sqrt{858}}{3432}$	0	$-\frac{17\sqrt{858i}}{3432}$	$\frac{3\sqrt{143}}{286}$	0
		0	0	0	0	0	0	0	0	$\frac{17\sqrt{858}}{3432}$	0	$\frac{17\sqrt{858i}}{3432}$	0	0	$-\frac{3\sqrt{143}}{286}$
		0	0	0	0	0	$\frac{3\sqrt{1430i}}{572}$	0	$\frac{3\sqrt{1430}}{572}$	0	0	$\frac{9\sqrt{143}}{572}$	0	0	$\frac{\sqrt{858i}}{429}$
		0	0	0	0	$-\frac{3\sqrt{1430i}}{572}$	0	$\frac{3\sqrt{1430}}{572}$	0	0	0	0	$-\frac{9\sqrt{143}}{572}$	$-\frac{\sqrt{858i}}{429}$	0
		0	0	0	0	0	$\frac{3\sqrt{1430}}{572}$	0	$-\frac{3\sqrt{1430i}}{572}$	$\frac{9\sqrt{143}}{572}$	0	0	0	0	$-\frac{\sqrt{858}}{429}$
		0	0	0	0	$\frac{3\sqrt{1430}}{572}$	0	$\frac{3\sqrt{1430i}}{572}$	0	0	$-\frac{9\sqrt{143}}{572}$	0	0	$-\frac{\sqrt{858}}{429}$	0
		0	$\frac{\sqrt{858i}}{264}$	0	$\frac{17\sqrt{858}}{3432}$	0	0	$\frac{9\sqrt{143}}{572}$	0	0	$\frac{\sqrt{1430i}}{572}$	0	$-\frac{\sqrt{1430}}{572}$	0	0
		$-\frac{\sqrt{858i}}{264}$	0	$\frac{17\sqrt{858}}{3432}$	0	0	0	$-\frac{9\sqrt{143}}{572}$	$-\frac{\sqrt{1430i}}{572}$	0	$-\frac{\sqrt{1430}}{572}$	0	0	0	0
		0	$\frac{\sqrt{858}}{264}$	0	$-\frac{17\sqrt{858i}}{3432}$	$\frac{9\sqrt{143}}{572}$	0	0	0	0	$-\frac{\sqrt{1430}}{572}$	0	$-\frac{\sqrt{1430i}}{572}$	0	0
		$\frac{\sqrt{858}}{264}$	0	$\frac{17\sqrt{858i}}{3432}$	0	0	$-\frac{9\sqrt{143}}{572}$	0	0	$-\frac{\sqrt{1430}}{572}$	0	$\frac{\sqrt{1430i}}{572}$	0	0	0
		0	0	$\frac{3\sqrt{143}}{286}$	0	0	$\frac{\sqrt{858i}}{429}$	0	$-\frac{\sqrt{858}}{429}$	0	0	0	0	0	0
		0	0	0	$-\frac{3\sqrt{143}}{286}$	$-\frac{\sqrt{858i}}{429}$	0	$-\frac{\sqrt{858}}{429}$	0	0	0	0	0	0	0
	1017	symmetry	$\frac{3\sqrt{14}x(x^4-10x^2y^2+5y^4)}{16}$												

continued ...

Table 10

No.	multipole	matrix													
$M_{5,1}^{(1,1;a)}(E_g, 1)$		0	$\frac{\sqrt{286}}{52}$	0	$-\frac{\sqrt{286i}}{52}$	$\frac{\sqrt{429}}{156}$	0	0	0	0	$-\frac{\sqrt{4290}}{3432}$	0	$-\frac{\sqrt{4290i}}{3432}$	0	0
		$\frac{\sqrt{286}}{52}$	0	$\frac{\sqrt{286i}}{52}$	0	0	$-\frac{\sqrt{429}}{156}$	0	0	$-\frac{\sqrt{4290}}{3432}$	0	$\frac{\sqrt{4290i}}{3432}$	0	0	0
		0	$-\frac{\sqrt{286i}}{52}$	0	$-\frac{\sqrt{286}}{52}$	0	0	$-\frac{\sqrt{429}}{156}$	0	0	$-\frac{\sqrt{4290i}}{3432}$	0	$\frac{\sqrt{4290}}{3432}$	0	0
		$\frac{\sqrt{286i}}{52}$	0	$-\frac{\sqrt{286}}{52}$	0	0	0	$\frac{\sqrt{429}}{156}$	$\frac{\sqrt{4290i}}{3432}$	0	$\frac{\sqrt{4290}}{3432}$	0	0	0	0
		$\frac{\sqrt{429}}{156}$	0	0	0	0	$-\frac{\sqrt{286}}{572}$	0	$-\frac{\sqrt{286i}}{572}$	0	0	0	0	0	0
		0	$-\frac{\sqrt{429}}{156}$	0	0	$-\frac{\sqrt{286}}{572}$	0	$\frac{\sqrt{286i}}{572}$	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{429}}{156}$	0	0	$-\frac{\sqrt{286i}}{572}$	0	$\frac{\sqrt{286}}{572}$	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{429}}{156}$	$\frac{\sqrt{286i}}{572}$	0	$\frac{\sqrt{286}}{572}$	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{4290}}{3432}$	0	$-\frac{\sqrt{4290i}}{3432}$	0	0	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{4290}}{3432}$	0	$\frac{\sqrt{4290i}}{3432}$	0	0	0	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{4290i}}{3432}$	0	$\frac{\sqrt{4290}}{3432}$	0	0	0	0	0	0	0	0	0	0
		$\frac{\sqrt{4290i}}{3432}$	0	$\frac{\sqrt{4290}}{3432}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
1018	symmetry	$-\frac{3\sqrt{14}y(5x^4-10x^2y^2+y^4)}{16}$													

continued ...

Table 10

No.	multipole	matrix													
	$M_{5,2}^{(1,1;a)}(E_g, 1)$	0	$-\frac{\sqrt{286i}}{52}$	0	$-\frac{\sqrt{286}}{52}$	0	0	$-\frac{\sqrt{429}}{156}$	0	0	$-\frac{\sqrt{4290i}}{3432}$	0	$\frac{\sqrt{4290}}{3432}$	0	0
		$\frac{\sqrt{286i}}{52}$	0	$-\frac{\sqrt{286}}{52}$	0	0	0	0	$\frac{\sqrt{429}}{156}$	$\frac{\sqrt{4290i}}{3432}$	0	$\frac{\sqrt{4290}}{3432}$	0	0	0
		0	$-\frac{\sqrt{286}}{52}$	0	$\frac{\sqrt{286i}}{52}$	$-\frac{\sqrt{429}}{156}$	0	0	0	0	$\frac{\sqrt{4290}}{3432}$	0	$\frac{\sqrt{4290i}}{3432}$	0	0
		$-\frac{\sqrt{286}}{52}$	0	$-\frac{\sqrt{286i}}{52}$	0	0	$\frac{\sqrt{429}}{156}$	0	0	$\frac{\sqrt{4290}}{3432}$	0	$-\frac{\sqrt{4290i}}{3432}$	0	0	0
		0	0	$-\frac{\sqrt{429}}{156}$	0	0	$-\frac{\sqrt{286i}}{572}$	0	$\frac{\sqrt{286}}{572}$	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{429}}{156}$	$\frac{\sqrt{286i}}{572}$	0	$\frac{\sqrt{286}}{572}$	0	0	0	0	0	0	0
		$-\frac{\sqrt{429}}{156}$	0	0	0	0	$\frac{\sqrt{286}}{572}$	0	$\frac{\sqrt{286i}}{572}$	0	0	0	0	0	0
		0	$\frac{\sqrt{429}}{156}$	0	0	$\frac{\sqrt{286}}{572}$	0	$-\frac{\sqrt{286i}}{572}$	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{4290i}}{3432}$	0	$\frac{\sqrt{4290}}{3432}$	0	0	0	0	0	0	0	0	0	0
		$\frac{\sqrt{4290i}}{3432}$	0	$\frac{\sqrt{4290}}{3432}$	0	0	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{4290}}{3432}$	0	$\frac{\sqrt{4290i}}{3432}$	0	0	0	0	0	0	0	0	0	0
		$\frac{\sqrt{4290}}{3432}$	0	$-\frac{\sqrt{4290i}}{3432}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
1019	symmetry	$\frac{\sqrt{15}x(x^4+2x^2y^2-12x^2z^2+y^4-12y^2z^2+8z^4)}{8}$													

continued ...

Table 10

No.	multipole	matrix													
$M_{5,1}^{(1,1;a)}(E_g, 2)$	0	$\frac{\sqrt{15015}}{12012}$	0	0	$\frac{\sqrt{10010}}{3432}$	0	0	0	0	$-\frac{\sqrt{1001}}{858}$	0	$-\frac{\sqrt{1001i}}{858}$	0	0	
	$\frac{\sqrt{15015}}{12012}$	0	0	0	0	$-\frac{\sqrt{10010}}{3432}$	0	0	$-\frac{\sqrt{1001}}{858}$	0	$\frac{\sqrt{1001i}}{858}$	0	0	0	
	0	0	0	$\frac{\sqrt{15015}}{12012}$	0	0	$\frac{\sqrt{10010}}{3432}$	0	0	$\frac{\sqrt{1001i}}{858}$	0	$-\frac{\sqrt{1001}}{858}$	0	0	
	0	0	$\frac{\sqrt{15015}}{12012}$	0	0	0	$-\frac{\sqrt{10010}}{3432}$	$-\frac{\sqrt{1001i}}{858}$	0	$-\frac{\sqrt{1001}}{858}$	0	0	0	0	
	$\frac{\sqrt{10010}}{3432}$	0	0	0	0	$-\frac{\sqrt{15015}}{2002}$	0	0	$-\frac{5\sqrt{6006}}{3432}$	0	0	0	0	$\frac{2\sqrt{1001}}{429}$	
	0	$-\frac{\sqrt{10010}}{3432}$	0	0	$-\frac{\sqrt{15015}}{2002}$	0	0	0	0	$\frac{5\sqrt{6006}}{3432}$	0	0	$\frac{2\sqrt{1001}}{429}$	0	
	0	0	$\frac{\sqrt{10010}}{3432}$	0	0	0	$-\frac{\sqrt{15015}}{2002}$	0	0	$-\frac{5\sqrt{6006}}{3432}$	0	0	0	$-\frac{2\sqrt{1001i}}{429}$	
	0	0	0	$-\frac{\sqrt{10010}}{3432}$	0	0	$-\frac{\sqrt{15015}}{2002}$	0	0	0	0	$\frac{5\sqrt{6006}}{3432}$	$\frac{2\sqrt{1001i}}{429}$	0	
	0	$-\frac{\sqrt{1001}}{858}$	0	$\frac{\sqrt{1001i}}{858}$	$-\frac{5\sqrt{6006}}{3432}$	0	0	0	0	$\frac{29\sqrt{15015}}{12012}$	0	$-\frac{\sqrt{15015i}}{858}$	$\frac{5\sqrt{10010}}{1716}$	0	
	$-\frac{\sqrt{1001}}{858}$	0	$-\frac{\sqrt{1001i}}{858}$	0	0	$\frac{5\sqrt{6006}}{3432}$	0	0	$\frac{29\sqrt{15015}}{12012}$	0	$\frac{\sqrt{15015i}}{858}$	0	0	$-\frac{5\sqrt{10010}}{1716}$	
	0	$-\frac{\sqrt{1001i}}{858}$	0	$-\frac{\sqrt{1001}}{858}$	0	0	$-\frac{5\sqrt{6006}}{3432}$	0	0	$-\frac{\sqrt{15015i}}{858}$	0	$\frac{\sqrt{15015}}{12012}$	0	0	
	$\frac{\sqrt{1001i}}{858}$	0	$-\frac{\sqrt{1001}}{858}$	0	0	0	0	$\frac{5\sqrt{6006}}{3432}$	$\frac{\sqrt{15015i}}{858}$	0	$\frac{\sqrt{15015}}{12012}$	0	0	0	
	0	0	0	0	0	$\frac{2\sqrt{1001}}{429}$	0	$-\frac{2\sqrt{1001i}}{429}$	$\frac{5\sqrt{10010}}{1716}$	0	0	0	0	$-\frac{5\sqrt{15015}}{3003}$	
	0	0	0	0	$\frac{2\sqrt{1001}}{429}$	0	$\frac{2\sqrt{1001i}}{429}$	0	0	$-\frac{5\sqrt{10010}}{1716}$	0	0	$-\frac{5\sqrt{15015}}{3003}$	0	
1020	symmetry	$\frac{\sqrt{15}y(x^4+2x^2y^2-12x^2z^2+y^4-12y^2z^2+8z^4)}{8}$													

continued ...

Table 10

No.	multipole	matrix													
$M_{5,2}^{(1,1;a)}(E_g, 2)$	0	$-\frac{\sqrt{15015i}}{12012}$	0	0	0	0	$-\frac{\sqrt{10010}}{3432}$	0	0	$-\frac{\sqrt{1001i}}{858}$	0	$\frac{\sqrt{1001}}{858}$	0	0	
	$\frac{\sqrt{15015i}}{12012}$	0	0	0	0	0	0	$\frac{\sqrt{10010}}{3432}$	$\frac{\sqrt{1001i}}{858}$	0	$\frac{\sqrt{1001}}{858}$	0	0	0	
	0	0	0	$-\frac{\sqrt{15015i}}{12012}$	$\frac{\sqrt{10010}}{3432}$	0	0	0	0	$-\frac{\sqrt{1001}}{858}$	0	$-\frac{\sqrt{1001i}}{858}$	0	0	0
	0	0	$\frac{\sqrt{15015i}}{12012}$	0	0	$-\frac{\sqrt{10010}}{3432}$	0	0	$-\frac{\sqrt{1001}}{858}$	0	$\frac{\sqrt{1001i}}{858}$	0	0	0	
	0	0	$\frac{\sqrt{10010}}{3432}$	0	0	$\frac{\sqrt{15015i}}{2002}$	0	0	0	0	$\frac{5\sqrt{6006}}{3432}$	0	0	$\frac{2\sqrt{1001i}}{429}$	
	0	0	0	$-\frac{\sqrt{10010}}{3432}$	$-\frac{\sqrt{15015i}}{2002}$	0	0	0	0	0	0	$-\frac{5\sqrt{6006}}{3432}$	$-\frac{2\sqrt{1001i}}{429}$	0	
	$-\frac{\sqrt{10010}}{3432}$	0	0	0	0	0	0	$\frac{\sqrt{15015i}}{2002}$	$-\frac{5\sqrt{6006}}{3432}$	0	0	0	0	$\frac{2\sqrt{1001}}{429}$	
	0	$\frac{\sqrt{10010}}{3432}$	0	0	0	0	$-\frac{\sqrt{15015i}}{2002}$	0	0	$\frac{5\sqrt{6006}}{3432}$	0	0	$\frac{2\sqrt{1001}}{429}$	0	
	0	$-\frac{\sqrt{1001i}}{858}$	0	$-\frac{\sqrt{1001}}{858}$	0	0	$-\frac{5\sqrt{6006}}{3432}$	0	0	$-\frac{\sqrt{15015i}}{12012}$	0	$\frac{\sqrt{15015}}{858}$	0	0	0
	$\frac{\sqrt{1001i}}{858}$	0	$-\frac{\sqrt{1001}}{858}$	0	0	0	0	$\frac{5\sqrt{6006}}{3432}$	$\frac{\sqrt{15015i}}{12012}$	0	$\frac{\sqrt{15015}}{858}$	0	0	0	0
	0	$\frac{\sqrt{1001}}{858}$	0	$-\frac{\sqrt{1001i}}{858}$	$\frac{5\sqrt{6006}}{3432}$	0	0	0	0	$\frac{\sqrt{15015}}{858}$	0	$-\frac{29\sqrt{15015i}}{12012}$	$\frac{5\sqrt{10010}}{1716}$	0	0
	$\frac{\sqrt{1001}}{858}$	0	$\frac{\sqrt{1001i}}{858}$	0	0	$-\frac{5\sqrt{6006}}{3432}$	0	0	$\frac{\sqrt{15015}}{858}$	0	$\frac{29\sqrt{15015i}}{12012}$	0	0	$-\frac{5\sqrt{10010}}{1716}$	
	0	0	0	0	0	$\frac{2\sqrt{1001i}}{429}$	0	$\frac{2\sqrt{1001}}{429}$	0	0	$\frac{5\sqrt{10010}}{1716}$	0	0	$\frac{5\sqrt{15015i}}{3003}$	
	0	0	0	0	$-\frac{2\sqrt{1001i}}{429}$	0	$\frac{2\sqrt{1001}}{429}$	0	0	0	0	$-\frac{5\sqrt{10010}}{1716}$	$-\frac{5\sqrt{15015i}}{3003}$	0	
1021	symmetry	$-\frac{3\sqrt{35}xyz(x-y)(x+y)}{2}$													

continued ...

Table 10

No.	multipole	matrix													
		0	0	0	0	0	$-\frac{\sqrt{4290}i}{312}$	0	$-\frac{\sqrt{4290}}{312}$	0	0	$-\frac{5\sqrt{429}}{858}$	0	0	$-\frac{\sqrt{286}i}{572}$
		0	0	0	0	$\frac{\sqrt{4290}i}{312}$	0	$-\frac{\sqrt{4290}}{312}$	0	0	0	0	$\frac{5\sqrt{429}}{858}$	$\frac{\sqrt{286}i}{572}$	0
		0	0	0	0	0	$-\frac{\sqrt{4290}}{312}$	0	$\frac{\sqrt{4290}i}{312}$	$-\frac{5\sqrt{429}}{858}$	0	0	0	0	$\frac{\sqrt{286}}{572}$
		0	0	0	0	$-\frac{\sqrt{4290}}{312}$	0	$-\frac{\sqrt{4290}i}{312}$	0	0	$\frac{5\sqrt{429}}{858}$	0	0	$\frac{\sqrt{286}}{572}$	0
		0	$-\frac{\sqrt{4290}i}{312}$	0	$-\frac{\sqrt{4290}}{312}$	0	0	$-\frac{\sqrt{715}}{143}$	0	0	$-\frac{3\sqrt{286}i}{1144}$	0	$\frac{3\sqrt{286}}{1144}$	0	0
		$\frac{\sqrt{4290}i}{312}$	0	$-\frac{\sqrt{4290}}{312}$	0	0	0	0	$\frac{\sqrt{715}}{143}$	$\frac{3\sqrt{286}i}{1144}$	0	$\frac{3\sqrt{286}}{1144}$	0	0	0
	$M_{5,1}^{(1,1;a)}(E_g, 3)$	0	$-\frac{\sqrt{4290}}{312}$	0	$\frac{\sqrt{4290}i}{312}$	$-\frac{\sqrt{715}}{143}$	0	0	0	0	$\frac{3\sqrt{286}}{1144}$	0	$\frac{3\sqrt{286}i}{1144}$	0	0
		$-\frac{\sqrt{4290}}{312}$	0	$-\frac{\sqrt{4290}i}{312}$	0	0	$\frac{\sqrt{715}}{143}$	0	0	$\frac{3\sqrt{286}}{1144}$	0	$-\frac{3\sqrt{286}i}{1144}$	0	0	0
		0	0	$-\frac{5\sqrt{429}}{858}$	0	0	$-\frac{3\sqrt{286}i}{1144}$	0	$\frac{3\sqrt{286}}{1144}$	0	0	0	0	0	0
		0	0	0	$\frac{5\sqrt{429}}{858}$	$\frac{3\sqrt{286}i}{1144}$	0	$\frac{3\sqrt{286}}{1144}$	0	0	0	0	0	0	0
		$-\frac{5\sqrt{429}}{858}$	0	0	0	0	$\frac{3\sqrt{286}}{1144}$	0	$\frac{3\sqrt{286}i}{1144}$	0	0	0	0	0	0
		0	$\frac{5\sqrt{429}}{858}$	0	0	$\frac{3\sqrt{286}}{1144}$	0	$-\frac{3\sqrt{286}i}{1144}$	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{286}i}{572}$	0	$\frac{\sqrt{286}}{572}$	0	0	0	0	0	0	0	0	0	0
		$\frac{\sqrt{286}i}{572}$	0	$\frac{\sqrt{286}}{572}$	0	0	0	0	0	0	0	0	0	0	0
1022	symmetry	$\frac{3\sqrt{35}z(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$													

continued ...

Table 10

No.	multipole	matrix													
$M_{5,2}^{(1,1;a)}(E_g, 3)$		0	0	0	0	0	$\frac{\sqrt{4290}}{312}$	0	$-\frac{\sqrt{4290i}}{312}$	$\frac{5\sqrt{429}}{858}$	0	0	0	$-\frac{\sqrt{286}}{572}$	
		0	0	0	0	$\frac{\sqrt{4290}}{312}$	0	$\frac{\sqrt{4290i}}{312}$	0	0	$-\frac{5\sqrt{429}}{858}$	0	0	$-\frac{\sqrt{286}}{572}$	0
		0	0	0	0	0	$-\frac{\sqrt{4290i}}{312}$	0	$-\frac{\sqrt{4290}}{312}$	0	0	$-\frac{5\sqrt{429}}{858}$	0	0	$-\frac{\sqrt{286i}}{572}$
		0	0	0	0	$\frac{\sqrt{4290i}}{312}$	0	$-\frac{\sqrt{4290}}{312}$	0	0	0	0	$\frac{5\sqrt{429}}{858}$	$\frac{\sqrt{286i}}{572}$	0
		0	$\frac{\sqrt{4290}}{312}$	0	$-\frac{\sqrt{4290i}}{312}$	$\frac{\sqrt{715}}{143}$	0	0	0	0	$-\frac{3\sqrt{286}}{1144}$	0	$-\frac{3\sqrt{286i}}{1144}$	0	0
		$\frac{\sqrt{4290}}{312}$	0	$\frac{\sqrt{4290i}}{312}$	0	0	$-\frac{\sqrt{715}}{143}$	0	0	$-\frac{3\sqrt{286}}{1144}$	0	$\frac{3\sqrt{286i}}{1144}$	0	0	0
		0	$-\frac{\sqrt{4290i}}{312}$	0	$-\frac{\sqrt{4290}}{312}$	0	0	$-\frac{\sqrt{715}}{143}$	0	0	$-\frac{3\sqrt{286i}}{1144}$	0	$\frac{3\sqrt{286}}{1144}$	0	0
		$\frac{\sqrt{4290i}}{312}$	0	$-\frac{\sqrt{4290}}{312}$	0	0	0	0	$\frac{\sqrt{715}}{143}$	$\frac{3\sqrt{286i}}{1144}$	0	$\frac{3\sqrt{286}}{1144}$	0	0	0
		$\frac{5\sqrt{429}}{858}$	0	0	0	0	$-\frac{3\sqrt{286}}{1144}$	0	$-\frac{3\sqrt{286i}}{1144}$	0	0	0	0	0	0
		0	$-\frac{5\sqrt{429}}{858}$	0	0	$-\frac{3\sqrt{286}}{1144}$	0	$\frac{3\sqrt{286i}}{1144}$	0	0	0	0	0	0	0
		0	0	$-\frac{5\sqrt{429}}{858}$	0	0	$-\frac{3\sqrt{286i}}{1144}$	0	$\frac{3\sqrt{286}}{1144}$	0	0	0	0	0	0
		0	0	0	$\frac{5\sqrt{429}}{858}$	$\frac{3\sqrt{286i}}{1144}$	0	$\frac{3\sqrt{286}}{1144}$	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{286}}{572}$	0	$-\frac{\sqrt{286i}}{572}$	0	0	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{286}}{572}$	0	$\frac{\sqrt{286i}}{572}$	0	0	0	0	0	0	0	0	0	0	0
	1023	symmetry	$-\frac{\sqrt{105}xyz(x^2+y^2-2z^2)}{2}$												

continued ...

Table 10

No.	multipole	matrix													
$M_{5,1}^{(1,1;a)}(E_g, 4)$		0	0	0	0	0	$\frac{\sqrt{1430i}}{3432}$	0	$\frac{\sqrt{1430}}{3432}$	0	0	$\frac{2\sqrt{143}}{429}$	0	0	$\frac{\sqrt{858i}}{286}$
		0	0	0	0	$-\frac{\sqrt{1430i}}{3432}$	0	$\frac{\sqrt{1430}}{3432}$	0	0	0	0	$-\frac{2\sqrt{143}}{429}$	$-\frac{\sqrt{858i}}{286}$	0
		0	0	0	0	0	$-\frac{\sqrt{1430}}{3432}$	0	$\frac{\sqrt{1430i}}{3432}$	$-\frac{2\sqrt{143}}{429}$	0	0	0	0	$\frac{\sqrt{858}}{286}$
		0	0	0	0	$-\frac{\sqrt{1430}}{3432}$	0	$-\frac{\sqrt{1430i}}{3432}$	0	0	$\frac{2\sqrt{143}}{429}$	0	0	$\frac{\sqrt{858}}{286}$	0
		0	$\frac{\sqrt{1430i}}{3432}$	0	$-\frac{\sqrt{1430}}{3432}$	0	0	0	0	0	$\frac{\sqrt{858i}}{264}$	0	$\frac{\sqrt{858}}{264}$	0	0
		$-\frac{\sqrt{1430i}}{3432}$	0	$-\frac{\sqrt{1430}}{3432}$	0	0	0	0	0	$-\frac{\sqrt{858i}}{264}$	0	$\frac{\sqrt{858}}{264}$	0	0	0
		0	$\frac{\sqrt{1430}}{3432}$	0	$\frac{\sqrt{1430i}}{3432}$	0	0	0	0	0	$\frac{23\sqrt{858}}{3432}$	0	$-\frac{23\sqrt{858i}}{3432}$	$\frac{8\sqrt{143}}{429}$	0
		$\frac{\sqrt{1430}}{3432}$	0	$-\frac{\sqrt{1430i}}{3432}$	0	0	0	0	0	$\frac{23\sqrt{858}}{3432}$	0	$\frac{23\sqrt{858i}}{3432}$	0	0	$-\frac{8\sqrt{143}}{429}$
		0	0	$-\frac{2\sqrt{143}}{429}$	0	0	$\frac{\sqrt{858i}}{264}$	0	$\frac{23\sqrt{858}}{3432}$	0	0	$\frac{2\sqrt{2145}}{429}$	0	0	$\frac{5\sqrt{1430i}}{1716}$
		0	0	0	$\frac{2\sqrt{143}}{429}$	$-\frac{\sqrt{858i}}{264}$	0	$\frac{23\sqrt{858}}{3432}$	0	0	0	0	$-\frac{2\sqrt{2145}}{429}$	$-\frac{5\sqrt{1430i}}{1716}$	0
		$\frac{2\sqrt{143}}{429}$	0	0	0	0	$\frac{\sqrt{858}}{264}$	0	$-\frac{23\sqrt{858i}}{3432}$	$\frac{2\sqrt{2145}}{429}$	0	0	0	0	$-\frac{5\sqrt{1430}}{1716}$
		0	$-\frac{2\sqrt{143}}{429}$	0	0	$\frac{\sqrt{858}}{264}$	0	$\frac{23\sqrt{858i}}{3432}$	0	0	$-\frac{2\sqrt{2145}}{429}$	0	0	$-\frac{5\sqrt{1430}}{1716}$	0
		0	$\frac{\sqrt{858i}}{286}$	0	$\frac{\sqrt{858}}{286}$	0	0	$\frac{8\sqrt{143}}{429}$	0	0	$\frac{5\sqrt{1430i}}{1716}$	0	$-\frac{5\sqrt{1430}}{1716}$	0	0
		$-\frac{\sqrt{858i}}{286}$	0	$\frac{\sqrt{858}}{286}$	0	0	0	0	$-\frac{8\sqrt{143}}{429}$	$-\frac{5\sqrt{1430i}}{1716}$	0	$-\frac{5\sqrt{1430}}{1716}$	0	0	0
1024	symmetry	$-\frac{\sqrt{105}z(x-y)(x+y)(x^2+y^2-2z^2)}{4}$													

continued ...

Table 10

No.	multipole	matrix													
		0	0	0	0	0	$-\frac{\sqrt{1430}}{3432}$	0	$\frac{\sqrt{1430i}}{3432}$	$-\frac{2\sqrt{143}}{429}$	0	0	0	$\frac{\sqrt{858}}{286}$	
		0	0	0	0	$-\frac{\sqrt{1430}}{3432}$	0	$-\frac{\sqrt{1430i}}{3432}$	0	0	$\frac{2\sqrt{143}}{429}$	0	0	$\frac{\sqrt{858}}{286}$	0
		0	0	0	0	0	$-\frac{\sqrt{1430i}}{3432}$	0	$-\frac{\sqrt{1430}}{3432}$	0	0	$-\frac{2\sqrt{143}}{429}$	0	0	$-\frac{\sqrt{858i}}{286}$
		0	0	0	0	$\frac{\sqrt{1430i}}{3432}$	0	$-\frac{\sqrt{1430}}{3432}$	0	0	0	$\frac{2\sqrt{143}}{429}$	$\frac{\sqrt{858i}}{286}$	0	0
		0	$-\frac{\sqrt{1430}}{3432}$	0	$-\frac{\sqrt{1430i}}{3432}$	0	0	0	0	0	$\frac{23\sqrt{858}}{3432}$	0	$-\frac{23\sqrt{858i}}{3432}$	$\frac{8\sqrt{143}}{429}$	0
		$-\frac{\sqrt{1430}}{3432}$	0	$\frac{\sqrt{1430i}}{3432}$	0	0	0	0	0	$\frac{23\sqrt{858}}{3432}$	0	$\frac{23\sqrt{858i}}{3432}$	0	0	$-\frac{8\sqrt{143}}{429}$
	$M_{5,2}^{(1,1;a)}(E_g, 4)$	0	$\frac{\sqrt{1430i}}{3432}$	0	$-\frac{\sqrt{1430}}{3432}$	0	0	0	0	0	$-\frac{\sqrt{858i}}{264}$	0	$-\frac{\sqrt{858}}{264}$	0	0
		$-\frac{\sqrt{1430i}}{3432}$	0	$-\frac{\sqrt{1430}}{3432}$	0	0	0	0	0	$\frac{\sqrt{858i}}{264}$	0	$-\frac{\sqrt{858}}{264}$	0	0	0
		$-\frac{2\sqrt{143}}{429}$	0	0	0	0	$\frac{23\sqrt{858}}{3432}$	0	$-\frac{\sqrt{858i}}{264}$	$\frac{2\sqrt{2145}}{429}$	0	0	0	0	$-\frac{5\sqrt{1430}}{1716}$
		0	$\frac{2\sqrt{143}}{429}$	0	0	$\frac{23\sqrt{858}}{3432}$	0	$\frac{\sqrt{858i}}{264}$	0	0	$-\frac{2\sqrt{2145}}{429}$	0	0	$-\frac{5\sqrt{1430}}{1716}$	0
		0	0	$-\frac{2\sqrt{143}}{429}$	0	0	$-\frac{23\sqrt{858i}}{3432}$	0	$-\frac{\sqrt{858}}{264}$	0	0	$-\frac{2\sqrt{2145}}{429}$	0	0	$-\frac{5\sqrt{1430i}}{1716}$
		0	0	0	$\frac{2\sqrt{143}}{429}$	$\frac{23\sqrt{858i}}{3432}$	0	$-\frac{\sqrt{858}}{264}$	0	0	0	0	$\frac{2\sqrt{2145}}{429}$	$\frac{5\sqrt{1430i}}{1716}$	0
		0	$\frac{\sqrt{858}}{286}$	0	$-\frac{\sqrt{858i}}{286}$	$\frac{8\sqrt{143}}{429}$	0	0	0	0	$-\frac{5\sqrt{1430}}{1716}$	0	$-\frac{5\sqrt{1430i}}{1716}$	0	0
		$\frac{\sqrt{858}}{286}$	0	$\frac{\sqrt{858i}}{286}$	0	0	$-\frac{8\sqrt{143}}{429}$	0	0	$-\frac{5\sqrt{1430}}{1716}$	0	$\frac{5\sqrt{1430i}}{1716}$	0	0	0