MSG No. 142.568 $I4'_1/a'cd'$ [Type III, tetragonal]

* symmetry operation

Table 1: Symmetry operations for 3d polar vector.

No.	tag	matrix (polar)	det	TR
1	$\{1\|0\}$	$\begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{bmatrix}$	1	1
2	$\{2_{001}\|0\frac{1}{2}0\}$	$\begin{bmatrix} -1 & 0 & 0 & 0 \\ 0 & -1 & 0 & \frac{1}{2} \\ 0 & 0 & 1 & 0 \end{bmatrix}$	1	1
3	$\{2_{110}\|\frac{3}{4}\frac{1}{4}\frac{1}{4}\}$	$\begin{bmatrix} 0 & 1 & 0 & \frac{3}{4} \\ 1 & 0 & 0 & \frac{1}{4} \\ 0 & 0 & -1 & \frac{1}{4} \end{bmatrix}$	1	1
4	$\{2_{1-10}\|\frac{1}{4}\frac{1}{4}\frac{1}{4}\}$	$\begin{bmatrix} 0 & -1 & 0 & \frac{1}{4} \\ -1 & 0 & 0 & \frac{1}{4} \\ 0 & 0 & -1 & \frac{1}{4} \end{bmatrix}$	1	1
5	$\{-4^+_{001}\|\frac{3}{4}\frac{1}{4}\frac{3}{4}\}$	$\begin{bmatrix} 0 & 1 & 0 & \frac{3}{4} \\ -1 & 0 & 0 & \frac{1}{4} \\ 0 & 0 & -1 & \frac{3}{4} \end{bmatrix}$	−1	1
6	$\{-4^-_{001}\|\frac{1}{4}\frac{1}{4}\frac{3}{4}\}$	$\begin{bmatrix} 0 & -1 & 0 & \frac{1}{4} \\ 1 & 0 & 0 & \frac{1}{4} \\ 0 & 0 & -1 & \frac{3}{4} \end{bmatrix}$	−1	1
7	$\{\mathrm{m}_{100}\|00\frac{1}{2}\}$	$\begin{bmatrix} -1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & \frac{1}{2} \end{bmatrix}$	−1	1
8	$\{\mathrm{m}_{010}\|0\frac{1}{2}\frac{1}{2}\}$	$\begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & -1 & 0 & \frac{1}{2} \\ 0 & 0 & 1 & \frac{1}{2} \end{bmatrix}$	−1	1
9	$\{4^+_{001}{}'\|\frac{1}{4}\frac{3}{4}\frac{1}{4}\}$	$\begin{bmatrix} 0 & -1 & 0 & \frac{1}{4} \\ 1 & 0 & 0 & \frac{3}{4} \\ 0 & 0 & 1 & \frac{1}{4} \end{bmatrix}$	1	−1
10	$\{4^-_{001}{}'\|\frac{3}{4}\frac{3}{4}\frac{1}{4}\}$	$\begin{bmatrix} 0 & 1 & 0 & \frac{3}{4} \\ -1 & 0 & 0 & \frac{3}{4} \\ 0 & 0 & 1 & \frac{1}{4} \end{bmatrix}$	1	−1
11	$\{2_{100}{}'\|\frac{1}{2}\frac{1}{2}0\}$	$\begin{bmatrix} 1 & 0 & 0 & \frac{1}{2} \\ 0 & -1 & 0 & \frac{1}{2} \\ 0 & 0 & -1 & 0 \end{bmatrix}$	1	−1
12	$\{2_{010}{}'\|\frac{1}{2}00\}$	$\begin{bmatrix} -1 & 0 & 0 & \frac{1}{2} \\ 0 & 1 & 0 & 0 \\ 0 & 0 & -1 & 0 \end{bmatrix}$	1	−1
13	$\{-1'\|0\}$	$\begin{bmatrix} -1 & 0 & 0 & 0 \\ 0 & -1 & 0 & 0 \\ 0 & 0 & -1 & 0 \end{bmatrix}$	−1	−1

continued ...

Table 1

No.	tag	matrix (polar)	det	TR
14	$\{\mathrm{m}_{001}'\|0\frac{1}{2}0\}$	$\begin{bmatrix}1&0&0&0\\0&1&0&\frac{1}{2}\\0&0&-1&0\end{bmatrix}$	-1	-1
15	$\{\mathrm{m}_{110}'\|\frac{3}{4}\frac{1}{4}\frac{1}{4}\}$	$\begin{bmatrix}0&-1&0&\frac{3}{4}\\-1&0&0&\frac{1}{4}\\0&0&1&\frac{1}{4}\end{bmatrix}$	-1	-1
16	$\{\mathrm{m}_{1-10}'\|\frac{1}{4}\frac{1}{4}\frac{1}{4}\}$	$\begin{bmatrix}0&1&0&\frac{1}{4}\\1&0&0&\frac{1}{4}\\0&0&1&\frac{1}{4}\end{bmatrix}$	-1	-1
17	$\{1\|\frac{1}{2}\frac{1}{2}\frac{1}{2}\}$	$\begin{bmatrix}1&0&0&\frac{1}{2}\\0&1&0&\frac{1}{2}\\0&0&1&\frac{1}{2}\end{bmatrix}$	1	1
18	$\{2_{001}\|\frac{1}{2}0\frac{1}{2}\}$	$\begin{bmatrix}-1&0&0&\frac{1}{2}\\0&-1&0&0\\0&0&1&\frac{1}{2}\end{bmatrix}$	1	1
19	$\{2_{110}\|\frac{1}{4}\frac{3}{4}\frac{3}{4}\}$	$\begin{bmatrix}0&1&0&\frac{1}{4}\\1&0&0&\frac{3}{4}\\0&0&-1&\frac{3}{4}\end{bmatrix}$	1	1
20	$\{2_{1-10}\|\frac{3}{4}\frac{3}{4}\frac{3}{4}\}$	$\begin{bmatrix}0&-1&0&\frac{3}{4}\\-1&0&0&\frac{3}{4}\\0&0&-1&\frac{3}{4}\end{bmatrix}$	1	1
21	$\{-4^{+}_{001}\|\frac{1}{4}\frac{3}{4}\frac{1}{4}\}$	$\begin{bmatrix}0&1&0&\frac{1}{4}\\-1&0&0&\frac{3}{4}\\0&0&-1&\frac{1}{4}\end{bmatrix}$	-1	1
22	$\{-4^{-}_{001}\|\frac{3}{4}\frac{3}{4}\frac{1}{4}\}$	$\begin{bmatrix}0&-1&0&\frac{3}{4}\\1&0&0&\frac{3}{4}\\0&0&-1&\frac{1}{4}\end{bmatrix}$	-1	1
23	$\{\mathrm{m}_{100}\|\frac{1}{2}\frac{1}{2}0\}$	$\begin{bmatrix}-1&0&0&\frac{1}{2}\\0&1&0&\frac{1}{2}\\0&0&1&0\end{bmatrix}$	-1	1
24	$\{\mathrm{m}_{010}\|\frac{1}{2}00\}$	$\begin{bmatrix}1&0&0&\frac{1}{2}\\0&-1&0&0\\0&0&1&0\end{bmatrix}$	-1	1
25	$\{4^{+}_{001}{}'\|\frac{3}{4}\frac{1}{4}\frac{3}{4}\}$	$\begin{bmatrix}0&-1&0&\frac{3}{4}\\1&0&0&\frac{1}{4}\\0&0&1&\frac{3}{4}\end{bmatrix}$	1	-1
26	$\{4^{-}_{001}{}'\|\frac{1}{4}\frac{1}{4}\frac{3}{4}\}$	$\begin{bmatrix}0&1&0&\frac{1}{4}\\-1&0&0&\frac{1}{4}\\0&0&1&\frac{3}{4}\end{bmatrix}$	1	-1
27	$\{2_{100}'\|00\frac{1}{2}\}$	$\begin{bmatrix}1&0&0&0\\0&-1&0&0\\0&0&-1&\frac{1}{2}\end{bmatrix}$	1	-1

continued ...

Table 1

No.	tag	matrix (polar)	det	TR
28	$\{2_{010}'\|0\frac{1}{2}\frac{1}{2}\}$	$\begin{bmatrix} -1 & 0 & 0 & 0 \\ 0 & 1 & 0 & \frac{1}{2} \\ 0 & 0 & -1 & \frac{1}{2} \end{bmatrix}$	1	-1
29	$\{-1'\|\frac{1}{2}\frac{1}{2}\frac{1}{2}\}$	$\begin{bmatrix} -1 & 0 & 0 & \frac{1}{2} \\ 0 & -1 & 0 & \frac{1}{2} \\ 0 & 0 & -1 & \frac{1}{2} \end{bmatrix}$	-1	-1
30	$\{\mathrm{m}_{001}'\|\frac{1}{2}0\frac{1}{2}\}$	$\begin{bmatrix} 1 & 0 & 0 & \frac{1}{2} \\ 0 & 1 & 0 & 0 \\ 0 & 0 & -1 & \frac{1}{2} \end{bmatrix}$	-1	-1
31	$\{\mathrm{m}_{110}'\|\frac{1}{4}\frac{3}{4}\frac{3}{4}\}$	$\begin{bmatrix} 0 & -1 & 0 & \frac{1}{4} \\ -1 & 0 & 0 & \frac{3}{4} \\ 0 & 0 & 1 & \frac{3}{4} \end{bmatrix}$	-1	-1
32	$\{\mathrm{m}_{1-10}'\|\frac{3}{4}\frac{3}{4}\frac{3}{4}\}$	$\begin{bmatrix} 0 & 1 & 0 & \frac{3}{4} \\ 1 & 0 & 0 & \frac{3}{4} \\ 0 & 0 & 1 & \frac{3}{4} \end{bmatrix}$	-1	-1