* Harmonics for rank 0
* Harmonics for rank 1
  $\vec{\mathbb{Q}}_1^{(1,0)}[g](B)$
  ** symmetry

   z

  ** expression

   $$\frac{\sqrt{2}G_x y}{2} - \frac{\sqrt{2}G_y x}{2}$$

  $\vec{\mathbb{Q}}_{1,1}^{(1,0)}[g](E),\ \vec{\mathbb{Q}}_{1,2}^{(1,0)}[g](E)$
  ** symmetry

   x

   y

  ** expression

   $$\frac{\sqrt{2}G_y z}{2} - \frac{\sqrt{2}G_z y}{2}$$

   $$-\frac{\sqrt{2}G_x z}{2} + \frac{\sqrt{2}G_z x}{2}$$

* Harmonics for rank 2
  $\vec{\mathbb{Q}}_2^{(1,0)}[g](A)$
  ** symmetry

   $$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$$

  ** expression

   $$\frac{\sqrt{6}G_x yz}{2} - \frac{\sqrt{6}G_y xz}{2}$$

  $\vec{\mathbb{Q}}_2^{(1,0)}[g](B,1)$
  ** symmetry

   $$\frac{\sqrt{3}\,(x-y)\,(x+y)}{2}$$

  ** expression

   $$\frac{\sqrt{2}G_x yz}{2} + \frac{\sqrt{2}G_y xz}{2} - \sqrt{2}G_z xy$$

  $\vec{\mathbb{Q}}_2^{(1,0)}[g](B,2)$
  ** symmetry

   $\sqrt{3}xy$

  ** expression

   $$-\frac{\sqrt{2}G_x xz}{2} + \frac{\sqrt{2}G_y yz}{2} + \frac{\sqrt{2}G_z\,(x-y)\,(x+y)}{2}$$

  $\vec{\mathbb{Q}}_{2,1}^{(1,0)}[g](E),\ \vec{\mathbb{Q}}_{2,2}^{(1,0)}[g](E)$
  ** symmetry

   $\sqrt{3}yz$

   $\sqrt{3}xz$

  ** expression

   $$\frac{\sqrt{2}G_x\,(y-z)\,(y+z)}{2} - \frac{\sqrt{2}G_y xy}{2} + \frac{\sqrt{2}G_z xz}{2}$$

   $$\frac{\sqrt{2}G_x xy}{2} - \frac{\sqrt{2}G_y\,(x-z)\,(x+z)}{2} - \frac{\sqrt{2}G_z yz}{2}$$

* Harmonics for rank 3
  $\vec{\mathbb{Q}}_3^{(1,0)}[g](A,1)$

** symmetry

$$\sqrt{15}xyz$$

** expression

$$\frac{\sqrt{5}G_x x\,(y-z)\,(y+z)}{2} - \frac{\sqrt{5}G_y y\,(x-z)\,(x+z)}{2} + \frac{\sqrt{5}G_z z\,(x-y)\,(x+y)}{2}$$

$\vec{\mathbb{Q}}_3^{(1,0)}[g](A,2)$
** symmetry

$$\frac{\sqrt{15}z\,(x-y)\,(x+y)}{2}$$

** expression

$$\frac{\sqrt{5}G_x y\,(x^2-y^2+2z^2)}{4} - \frac{\sqrt{5}G_y x\,(x^2-y^2-2z^2)}{4} - \sqrt{5}G_z xyz$$

$\vec{\mathbb{Q}}_3^{(1,0)}[g](B)$
** symmetry

$$-\frac{z\,(3x^2+3y^2-2z^2)}{2}$$

** expression

$$-\frac{\sqrt{3}G_x y\,(x^2+y^2-4z^2)}{4} + \frac{\sqrt{3}G_y x\,(x^2+y^2-4z^2)}{4}$$

$\vec{\mathbb{Q}}_{3,1}^{(1,0)}[g](E,1),\ \vec{\mathbb{Q}}_{3,2}^{(1,0)}[g](E,1)$
** symmetry

$$\frac{x\,(2x^2-3y^2-3z^2)}{2}$$

$$-\frac{y\,(3x^2-2y^2+3z^2)}{2}$$

** expression

$$\frac{\sqrt{3}G_y z\,(4x^2-y^2-z^2)}{4} - \frac{\sqrt{3}G_z y\,(4x^2-y^2-z^2)}{4}$$

$$\frac{\sqrt{3}G_x z\,(x^2-4y^2+z^2)}{4} - \frac{\sqrt{3}G_z x\,(x^2-4y^2+z^2)}{4}$$

$\vec{\mathbb{Q}}_{3,1}^{(1,0)}[g](E,2),\ \vec{\mathbb{Q}}_{3,2}^{(1,0)}[g](E,2)$
** symmetry

$$-\frac{\sqrt{15}y\,(x-z)\,(x+z)}{2}$$

$$\frac{\sqrt{15}x\,(y-z)\,(y+z)}{2}$$

** expression

$$\frac{\sqrt{5}G_x z\,(x^2+2y^2-z^2)}{4} - \sqrt{5}G_y xyz - \frac{\sqrt{5}G_z x\,(x^2-2y^2-z^2)}{4}$$

$$-\sqrt{5}G_x xyz + \frac{\sqrt{5}G_y z\,(2x^2+y^2-z^2)}{4} + \frac{\sqrt{5}G_z y\,(2x^2-y^2+z^2)}{4}$$

* Harmonics for rank 4
$\vec{\mathbb{Q}}_4^{(1,0)}[g](A,1)$
** symmetry

$$\frac{\sqrt{21}\,(x^4-3x^2y^2-3x^2z^2+y^4-3y^2z^2+z^4)}{6}$$

** expression

$$-\frac{\sqrt{105}G_x yz\,(y-z)\,(y+z)}{6} + \frac{\sqrt{105}G_y xz\,(x-z)\,(x+z)}{6} - \frac{\sqrt{105}G_z xy\,(x-y)\,(x+y)}{6}$$

$\vec{\mathbb{Q}}_4^{(1,0)}[g](A,2)$

** symmetry

$$-\frac{\sqrt{15}\left(x^4 - 12x^2y^2 + 6x^2z^2 + y^4 + 6y^2z^2 - 2z^4\right)}{12}$$

** expression

$$-\frac{\sqrt{3}G_xyz\left(9x^2 + 2y^2 - 5z^2\right)}{6} + \frac{\sqrt{3}G_yxz\left(2x^2 + 9y^2 - 5z^2\right)}{6} + \frac{7\sqrt{3}G_zxy\left(x - y\right)\left(x + y\right)}{6}$$

$\vec{\mathbb{Q}}_4^{(1,0)}[g](A,3)$
** symmetry

$$\frac{\sqrt{35}xy\left(x - y\right)\left(x + y\right)}{2}$$

** expression

$$-\frac{\sqrt{7}G_xxz\left(x^2 - 3y^2\right)}{4} + \frac{\sqrt{7}G_yyz\left(3x^2 - y^2\right)}{4} + \frac{\sqrt{7}G_z\left(x^2 - 2xy - y^2\right)\left(x^2 + 2xy - y^2\right)}{4}$$

$\vec{\mathbb{Q}}_4^{(1,0)}[g](B,1)$
** symmetry

$$\frac{\sqrt{5}\left(x - y\right)\left(x + y\right)\left(x^2 + y^2 - 6z^2\right)}{4}$$

** expression

$$-\frac{G_xyz\left(3x^2 - 4y^2 + 3z^2\right)}{2} + \frac{G_yxz\left(4x^2 - 3y^2 - 3z^2\right)}{2} - \frac{G_zxy\left(x^2 + y^2 - 6z^2\right)}{2}$$

$\vec{\mathbb{Q}}_4^{(1,0)}[g](B,2)$
** symmetry

$$-\frac{\sqrt{5}xy\left(x^2 + y^2 - 6z^2\right)}{2}$$

** expression

$$\frac{G_xxz\left(x^2 + 15y^2 - 6z^2\right)}{4} - \frac{G_yyz\left(15x^2 + y^2 - 6z^2\right)}{4} - \frac{G_z\left(x - y\right)\left(x + y\right)\left(x^2 + y^2 - 6z^2\right)}{4}$$

$\vec{\mathbb{Q}}_{4,1}^{(1,0)}[g](E,1)$, $\vec{\mathbb{Q}}_{4,2}^{(1,0)}[g](E,1)$
** symmetry

$$-\frac{\sqrt{35}xz\left(x - z\right)\left(x + z\right)}{2}$$

$$\frac{\sqrt{35}yz\left(y - z\right)\left(y + z\right)}{2}$$

** expression

$$-\frac{\sqrt{7}G_xxy\left(x^2 - 3z^2\right)}{4} + \frac{\sqrt{7}G_y\left(x^2 - 2xz - z^2\right)\left(x^2 + 2xz - z^2\right)}{4} + \frac{\sqrt{7}G_zyz\left(3x^2 - z^2\right)}{4}$$

$$\frac{\sqrt{7}G_x\left(y^2 - 2yz - z^2\right)\left(y^2 + 2yz - z^2\right)}{4} - \frac{\sqrt{7}G_yxy\left(y^2 - 3z^2\right)}{4} + \frac{\sqrt{7}G_zxz\left(3y^2 - z^2\right)}{4}$$

$\vec{\mathbb{Q}}_{4,1}^{(1,0)}[g](E,2)$, $\vec{\mathbb{Q}}_{4,2}^{(1,0)}[g](E,2)$
** symmetry

$$\frac{\sqrt{5}yz\left(6x^2 - y^2 - z^2\right)}{2}$$

$$-\frac{\sqrt{5}xz\left(x^2 - 6y^2 + z^2\right)}{2}$$

** expression

$$\frac{G_x\left(y - z\right)\left(y + z\right)\left(6x^2 - y^2 - z^2\right)}{4} - \frac{G_yxy\left(6x^2 - y^2 - 15z^2\right)}{4} + \frac{G_zxz\left(6x^2 - 15y^2 - z^2\right)}{4}$$

$$-\frac{G_xxy\left(x^2 - 6y^2 + 15z^2\right)}{4} + \frac{G_y\left(x - z\right)\left(x + z\right)\left(x^2 - 6y^2 + z^2\right)}{4} + \frac{G_zyz\left(15x^2 - 6y^2 + z^2\right)}{4}$$