PG No. 3 C_2 2 (b-axis setting) [monoclinic] (axial, internal polar quadrupole)

* Harmonics for rank 0
* Harmonics for rank 1

$\vec{\mathbb{G}}_1^{(2,1)}[q](A)$

** symmetry

y

** expression

$$\frac{3\sqrt{10}Q_u xz}{10} - \frac{\sqrt{30}Q_v xz}{10} - \frac{\sqrt{30}Q_{xy}yz}{10} + \frac{\sqrt{30}Q_{xz}\,(x-z)\,(x+z)}{10} + \frac{\sqrt{30}Q_{yz}xy}{10}$$

$\vec{\mathbb{G}}_1^{(2,1)}[q](B,1)$

** symmetry

x

** expression

$$-\frac{3\sqrt{10}Q_u yz}{10} - \frac{\sqrt{30}Q_v yz}{10} + \frac{\sqrt{30}Q_{xy}xz}{10} - \frac{\sqrt{30}Q_{xz}xy}{10} - \frac{\sqrt{30}Q_{yz}\,(y-z)\,(y+z)}{10}$$

$\vec{\mathbb{G}}_1^{(2,1)}[q](B,2)$

** symmetry

z

** expression

$$\frac{\sqrt{30}Q_v xy}{5} - \frac{\sqrt{30}Q_{xy}\,(x-y)\,(x+y)}{10} + \frac{\sqrt{30}Q_{xz}yz}{10} - \frac{\sqrt{30}Q_{yz}xz}{10}$$

* Harmonics for rank 2

$\vec{\mathbb{G}}_2^{(2,-1)}[q](A,1)$

** symmetry

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

** expression

$$\frac{\sqrt{2}Q_{xz}y}{2} - \frac{\sqrt{2}Q_{yz}x}{2}$$

$\vec{\mathbb{G}}_2^{(2,-1)}[q](A,2)$

** symmetry

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

** expression

$$\frac{\sqrt{6}Q_{xy}z}{3} - \frac{\sqrt{6}Q_{xz}y}{6} - \frac{\sqrt{6}Q_{yz}x}{6}$$

$\vec{\mathbb{G}}_2^{(2,-1)}[q](A,3)$

** symmetry

$\sqrt{3}xz$

** expression

$$-\frac{\sqrt{2}Q_u y}{2} + \frac{\sqrt{6}Q_v y}{6} - \frac{\sqrt{6}Q_{xy}x}{6} + \frac{\sqrt{6}Q_{yz}z}{6}$$

$\vec{\mathbb{G}}_2^{(2,1)}[q](A,1)$

** symmetry

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

** expression

$$\frac{5\sqrt{42}Q_v xyz}{14} - \frac{5\sqrt{42}Q_{xy}z\,(x-y)\,(x+y)}{28} - \frac{\sqrt{42}Q_{xz}y\,(x^2+y^2-4z^2)}{28} + \frac{\sqrt{42}Q_{yz}x\,(x^2+y^2-4z^2)}{28}$$

$\vec{\mathbb{G}}_2^{(2,1)}[q](A,2)$

** symmetry

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

** expression

$$-\frac{5\sqrt{42}Q_u xyz}{14} + \frac{\sqrt{14}Q_{xy}z\left(3x^2+3y^2-2z^2\right)}{28} - \frac{\sqrt{14}Q_{xz}y\left(9x^2-y^2-6z^2\right)}{28} + \frac{\sqrt{14}Q_{yz}x\left(x^2-9y^2+6z^2\right)}{28}$$

$\vec{\mathbb{G}}_2^{(2,1)}[q](A,3)$
** symmetry

$$\sqrt{3}xz$$

** expression

$$\frac{\sqrt{42}Q_u y\left(x^2+y^2-4z^2\right)}{28} + \frac{\sqrt{14}Q_v y\left(9x^2-y^2-6z^2\right)}{28} - \frac{\sqrt{14}Q_{xy}x\left(2x^2-3y^2-3z^2\right)}{14} - \frac{\sqrt{14}Q_{yz}z\left(3x^2+3y^2-2z^2\right)}{14}$$

$\vec{\mathbb{G}}_2^{(2,-1)}[q](B,1)$
** symmetry

$$\sqrt{3}yz$$

** expression

$$\frac{\sqrt{2}Q_u x}{2} + \frac{\sqrt{6}Q_v x}{6} + \frac{\sqrt{6}Q_{xy}y}{6} - \frac{\sqrt{6}Q_{xz}z}{6}$$

$\vec{\mathbb{G}}_2^{(2,-1)}[q](B,2)$
** symmetry

$$\sqrt{3}xy$$

** expression

$$-\frac{\sqrt{6}Q_v z}{3} + \frac{\sqrt{6}Q_{xz}x}{6} - \frac{\sqrt{6}Q_{yz}y}{6}$$

$\vec{\mathbb{G}}_2^{(2,1)}[q](B,1)$
** symmetry

$$\sqrt{3}yz$$

** expression

$$-\frac{\sqrt{42}Q_u x\left(x^2+y^2-4z^2\right)}{28} - \frac{\sqrt{14}Q_v x\left(x^2-9y^2+6z^2\right)}{28} - \frac{\sqrt{14}Q_{xy}y\left(3x^2-2y^2+3z^2\right)}{14} + \frac{\sqrt{14}Q_{xz}z\left(3x^2+3y^2-2z^2\right)}{14}$$

$\vec{\mathbb{G}}_2^{(2,1)}[q](B,2)$
** symmetry

$$\sqrt{3}xy$$

** expression

$$\frac{5\sqrt{42}Q_u z\left(x-y\right)\left(x+y\right)}{28} - \frac{\sqrt{14}Q_v z\left(3x^2+3y^2-2z^2\right)}{28} + \frac{\sqrt{14}Q_{xz}x\left(2x^2-3y^2-3z^2\right)}{14} + \frac{\sqrt{14}Q_{yz}y\left(3x^2-2y^2+3z^2\right)}{14}$$

* Harmonics for rank 3
$\vec{\mathbb{G}}_3^{(2,-1)}[q](A,1)$
** symmetry

$$\sqrt{15}xyz$$

** expression

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

$\vec{\mathbb{G}}_3^{(2,-1)}[q](A,2)$
** symmetry

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

** expression

$$-\frac{3\sqrt{10}Q_u xz}{20} + \frac{\sqrt{30}Q_v xz}{20} - \frac{\sqrt{30}Q_{xy}yz}{5} - \frac{\sqrt{30}Q_{xz}\left(x-z\right)\left(x+z\right)}{20} + \frac{\sqrt{30}Q_{yz}xy}{5}$$

$\vec{\mathbb{G}}_3^{(2,-1)}[q](A,3)$

** symmetry

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

** expression

$$\frac{\sqrt{6}Q_u xz}{4} + \frac{3\sqrt{2}Q_v xz}{4} - \frac{\sqrt{2}Q_{xz}\left(x^2 - 2y^2 + z^2\right)}{4}$$

$\vec{\mathbb{G}}_3^{(2,1)}[q](A,1)$
** symmetry

$$\sqrt{15}xyz$$

** expression

$$-\frac{\sqrt{3}Q_u\,(x-y)\,(x+y)\left(x^2 + y^2 - 6z^2\right)}{6} - \frac{Q_v\left(x^4 - 12x^2y^2 + 6x^2z^2 + y^4 + 6y^2z^2 - 2z^4\right)}{6}$$
$$-\frac{7Q_{xy}xy\,(x-y)\,(x+y)}{6} + \frac{7Q_{xz}xz\,(x-z)\,(x+z)}{6} - \frac{7Q_{yz}yz\,(y-z)\,(y+z)}{6}$$

$\vec{\mathbb{G}}_3^{(2,1)}[q](A,2)$
** symmetry

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

** expression

$$-\frac{\sqrt{5}Q_u xz\left(x^2 - 6y^2 + z^2\right)}{4} + \frac{\sqrt{15}Q_v xz\left(x^2 - 6y^2 + z^2\right)}{12} + \frac{\sqrt{15}Q_{xy}yz\left(3x^2 - 4y^2 + 3z^2\right)}{12}$$
$$-\frac{\sqrt{15}Q_{xz}\,(x-z)\,(x+z)\left(x^2 - 6y^2 + z^2\right)}{12} - \frac{\sqrt{15}Q_{yz}xy\left(3x^2 - 4y^2 + 3z^2\right)}{12}$$

$\vec{\mathbb{G}}_3^{(2,1)}[q](A,3)$
** symmetry

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

** expression

$$-\frac{\sqrt{3}Q_u xz\left(9x^2 - 12y^2 - 5z^2\right)}{12} + \frac{Q_v xz\left(x^2 + 36y^2 - 13z^2\right)}{12} - \frac{7Q_{xy}yz\left(3x^2 - 2y^2 + z^2\right)}{12}$$
$$-\frac{Q_{xz}\left(5x^4 - 12x^2y^2 - 18x^2z^2 + 4y^4 - 12y^2z^2 + 5z^4\right)}{12} - \frac{7Q_{yz}xy\left(x^2 - 2y^2 + 3z^2\right)}{12}$$

$\vec{\mathbb{G}}_3^{(2,-1)}[q](B,1)$
** symmetry

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

** expression

$$\frac{3\sqrt{10}Q_u yz}{20} + \frac{\sqrt{30}Q_v yz}{20} + \frac{\sqrt{30}Q_{xy}xz}{5} - \frac{\sqrt{30}Q_{xz}xy}{5} + \frac{\sqrt{30}Q_{yz}\,(y-z)\,(y+z)}{20}$$

$\vec{\mathbb{G}}_3^{(2,-1)}[q](B,2)$
** symmetry

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

** expression

$$-\frac{\sqrt{30}Q_v xy}{10} + \frac{\sqrt{30}Q_{xy}\,(x-y)\,(x+y)}{20} + \frac{\sqrt{30}Q_{xz}yz}{5} - \frac{\sqrt{30}Q_{yz}xz}{5}$$

$\vec{\mathbb{G}}_3^{(2,-1)}[q](B,3)$
** symmetry

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

** expression

$$\frac{\sqrt{6}Q_u yz}{4} - \frac{3\sqrt{2}Q_v yz}{4} + \frac{\sqrt{2}Q_{yz}\left(2x^2 - y^2 - z^2\right)}{4}$$

$\vec{\mathbb{G}}_3^{(2,-1)}[q](B,4)$

** symmetry

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

** expression

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

$\vec{\mathbb{G}}_3^{(2,1)}[q](B,1)$

** symmetry

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

** expression

$$-\frac{\sqrt{5}Q_u yz\left(6x^2-y^2-z^2\right)}{4}-\frac{\sqrt{15}Q_v yz\left(6x^2-y^2-z^2\right)}{12}+\frac{\sqrt{15}Q_{xy} xz\left(4x^2-3y^2-3z^2\right)}{12}$$
$$-\frac{\sqrt{15}Q_{xz} xy\left(4x^2-3y^2-3z^2\right)}{12}-\frac{\sqrt{15}Q_{yz}\,(y-z)\,(y+z)\left(6x^2-y^2-z^2\right)}{12}$$

$\vec{\mathbb{G}}_3^{(2,1)}[q](B,2)$

** symmetry

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

** expression

$$-\frac{\sqrt{15}Q_v xy\left(x^2+y^2-6z^2\right)}{6}+\frac{\sqrt{15}Q_{xy}\,(x-y)\,(x+y)\left(x^2+y^2-6z^2\right)}{12}-\frac{\sqrt{15}Q_{xz} yz\left(3x^2+3y^2-4z^2\right)}{12}+\frac{\sqrt{15}Q_{yz} xz\left(3x^2+3y^2-4z^2\right)}{12}$$

$\vec{\mathbb{G}}_3^{(2,1)}[q](B,3)$

** symmetry

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

** expression

$$\frac{\sqrt{3}Q_u yz\left(12x^2-9y^2+5z^2\right)}{12}-\frac{Q_v yz\left(36x^2+y^2-13z^2\right)}{12}+\frac{7Q_{xy} xz\left(2x^2-3y^2-z^2\right)}{12}$$
$$+\frac{7Q_{xz} xy\left(2x^2-y^2-3z^2\right)}{12}-\frac{Q_{yz}\left(4x^4-12x^2y^2-12x^2z^2+5y^4-18y^2z^2+5z^4\right)}{12}$$

$\vec{\mathbb{G}}_3^{(2,1)}[q](B,4)$

** symmetry

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

** expression

$$\frac{\sqrt{3}Q_u xy\left(x^2+y^2-6z^2\right)}{3}+\frac{7Q_v xy\,(x-y)\,(x+y)}{6}-\frac{Q_{xy}\left(5x^4-18x^2y^2-12x^2z^2+5y^4-12y^2z^2+4z^4\right)}{12}$$
$$-\frac{7Q_{xz} yz\left(3x^2+y^2-2z^2\right)}{12}-\frac{7Q_{yz} xz\left(x^2+3y^2-2z^2\right)}{12}$$

* Harmonics for rank 4

$\vec{\mathbb{G}}_4^{(2,-1)}[q](A,1)$

** symmetry

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

** expression

$$\frac{\sqrt{5}Q_{xy} z\,(x-y)\,(x+y)}{2}-\frac{\sqrt{5}Q_{xz} y\,(x-z)\,(x+z)}{2}+\frac{\sqrt{5}Q_{yz} x\,(y-z)\,(y+z)}{2}$$

$\vec{\mathbb{G}}_4^{(2,-1)}[q](A,2)$

** symmetry

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

** expression

$$-\frac{6\sqrt{7}Q_v xyz}{7}-\frac{\sqrt{7}Q_{xy} z\,(x-y)\,(x+y)}{14}+\frac{\sqrt{7}Q_{xz} y\left(4x^2-3y^2+5z^2\right)}{14}+\frac{\sqrt{7}Q_{yz} x\left(3x^2-4y^2-5z^2\right)}{14}$$

$\vec{\mathbb{G}}_4^{(2,-1)}[q](A,3)$

** symmetry

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

** expression

$$\frac{6\sqrt{7}Q_u xyz}{7}+\frac{\sqrt{21}Q_{xy}z\left(3x^2+3y^2-2z^2\right)}{14}-\frac{\sqrt{21}Q_{xz}y\left(2x^2-y^2+z^2\right)}{14}+\frac{\sqrt{21}Q_{yz}x\left(x^2-2y^2-z^2\right)}{14}$$

$\vec{\mathbb{G}}_4^{(2,-1)}[q](A,4)$

** symmetry

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

** expression

$$\frac{3Q_u y\,(x-z)\,(x+z)}{4}-\frac{\sqrt{3}Q_v y\,(x-z)\,(x+z)}{4}+\frac{\sqrt{3}Q_{xy}x\left(x^2-3z^2\right)}{4}+\sqrt{3}Q_{xz}xyz-\frac{\sqrt{3}Q_{yz}z\left(3x^2-z^2\right)}{4}$$

$\vec{\mathbb{G}}_4^{(2,-1)}[q](A,5)$

** symmetry

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

** expression

$$\frac{3\sqrt{7}Q_u y\left(5x^2-2y^2+z^2\right)}{28}+\frac{\sqrt{21}Q_v y\left(3x^2+2y^2-9z^2\right)}{28}+\frac{\sqrt{21}Q_{xy}x\left(x^2+2y^2-5z^2\right)}{28}+\frac{\sqrt{21}Q_{yz}z\left(5x^2-2y^2-z^2\right)}{28}$$

$\vec{\mathbb{G}}_4^{(2,1)}[q](A,1)$

** symmetry

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

** expression

$$-\frac{3\sqrt{2310}Q_u xyz\,(x-y)\,(x+y)}{44}-\frac{3\sqrt{770}Q_v xyz\left(x^2+y^2-2z^2\right)}{44}+\frac{\sqrt{770}Q_{xy}z\,(x-y)\,(x+y)\left(x^2+y^2-2z^2\right)}{22}$$
$$-\frac{\sqrt{770}Q_{xz}y\,(x-z)\,(x+z)\left(x^2-2y^2+z^2\right)}{22}-\frac{\sqrt{770}Q_{yz}x\,(y-z)\,(y+z)\left(2x^2-y^2-z^2\right)}{22}$$

$\vec{\mathbb{G}}_4^{(2,1)}[q](A,2)$

** symmetry

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

** expression

$$\frac{21\sqrt{66}Q_u xyz\,(x-y)\,(x+y)}{44}-\frac{21\sqrt{22}Q_v xyz\left(x^2+y^2-2z^2\right)}{44}+\frac{7\sqrt{22}Q_{xy}z\,(x-y)\,(x+y)\left(x^2+y^2-2z^2\right)}{44}$$
$$+\frac{\sqrt{22}Q_{xz}y\left(17x^4-22x^2y^2-36x^2z^2+3y^4-8y^2z^2+10z^4\right)}{44}-\frac{\sqrt{22}Q_{yz}x\left(3x^4-22x^2y^2-8x^2z^2+17y^4-36y^2z^2+10z^4\right)}{44}$$

$\vec{\mathbb{G}}_4^{(2,1)}[q](A,3)$

** symmetry

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

** expression

$$-\frac{21\sqrt{22}Q_u xyz\left(x^2+y^2-2z^2\right)}{44}-\frac{21\sqrt{66}Q_v xyz\,(x-y)\,(x+y)}{44}+\frac{\sqrt{66}Q_{xy}z\left(9x^4-24x^2y^2-10x^2z^2+9y^4-10y^2z^2+2z^4\right)}{44}$$
$$-\frac{\sqrt{66}Q_{xz}y\left(x^4+2x^2y^2-12x^2z^2+y^4-12y^2z^2+8z^4\right)}{44}-\frac{\sqrt{66}Q_{yz}x\left(x^4+2x^2y^2-12x^2z^2+y^4-12y^2z^2+8z^4\right)}{44}$$

$\vec{\mathbb{G}}_4^{(2,1)}[q](A,4)$

** symmetry

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

** expression

$$-\frac{3\sqrt{154}Q_u y\left(x^4+x^2y^2-9x^2z^2-y^2z^2+2z^4\right)}{88}-\frac{\sqrt{462}Q_v y\left(5x^4-x^2y^2-27x^2z^2+y^2z^2+4z^4\right)}{88}$$

$$+\frac{\sqrt{462}Q_{xy} x\left(x^4-2x^2y^2-8x^2z^2+6y^2z^2+3z^4\right)}{44}+\frac{\sqrt{462}Q_{xz} xyz\left(x^2-2y^2+z^2\right)}{44}+\frac{\sqrt{462}Q_{yz} z\left(3x^4+6x^2y^2-8x^2z^2-2y^2z^2+z^4\right)}{44}$$

$\vec{\mathbb{G}}_4^{(2,1)}[q](A,5)$

** symmetry

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

** expression

$$-\frac{3\sqrt{22}Q_u y\left(5x^4+3x^2y^2-39x^2z^2-2y^4+17y^2z^2-2z^4\right)}{88}-\frac{\sqrt{66}Q_v y\left(9x^4-31x^2y^2+39x^2z^2+2y^4+11y^2z^2-12z^4\right)}{88}$$

$$+\frac{\sqrt{66}Q_{xy} x\left(x^4-12x^2y^2+2x^2z^2+8y^4-12y^2z^2+z^4\right)}{44}+\frac{21\sqrt{66}Q_{xz} xyz\left(x-z\right)\left(x+z\right)}{44}-\frac{\sqrt{66}Q_{yz} z\left(x^4-12x^2y^2+2x^2z^2+8y^4-12y^2z^2+z^4\right)}{44}$$

$\vec{\mathbb{G}}_4^{(2,-1)}[q](B,1)$

** symmetry

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

** expression

$$\frac{3Q_u x\left(y-z\right)\left(y+z\right)}{4}+\frac{\sqrt{3}Q_v x\left(y-z\right)\left(y+z\right)}{4}+\frac{\sqrt{3}Q_{xy} y\left(y^2-3z^2\right)}{4}-\frac{\sqrt{3}Q_{xz} z\left(3y^2-z^2\right)}{4}+\sqrt{3}Q_{yz} xyz$$

$\vec{\mathbb{G}}_4^{(2,-1)}[q](B,2)$

** symmetry

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

** expression

$$-\frac{\sqrt{3}Q_v z\left(x-y\right)\left(x+y\right)}{2}+\sqrt{3}Q_{xy} xyz+\frac{\sqrt{3}Q_{xz} x\left(x^2-3y^2\right)}{4}-\frac{\sqrt{3}Q_{yz} y\left(3x^2-y^2\right)}{4}$$

$\vec{\mathbb{G}}_4^{(2,-1)}[q](B,3)$

** symmetry

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

** expression

$$\frac{3\sqrt{7}Q_u x\left(2x^2-5y^2-z^2\right)}{28}+\frac{\sqrt{21}Q_v x\left(2x^2+3y^2-9z^2\right)}{28}-\frac{\sqrt{21}Q_{xy} y\left(2x^2+y^2-5z^2\right)}{28}+\frac{\sqrt{21}Q_{xz} z\left(2x^2-5y^2+z^2\right)}{28}$$

$\vec{\mathbb{G}}_4^{(2,-1)}[q](B,4)$

** symmetry

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

** expression

$$\frac{3\sqrt{7}Q_u z\left(x-y\right)\left(x+y\right)}{7}+\frac{\sqrt{21}Q_v z\left(3x^2+3y^2-2z^2\right)}{14}-\frac{\sqrt{21}Q_{xz} x\left(x^2-5y^2+2z^2\right)}{28}-\frac{\sqrt{21}Q_{yz} y\left(5x^2-y^2-2z^2\right)}{28}$$

$\vec{\mathbb{G}}_4^{(2,1)}[q](B,1)$

** symmetry

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

** expression

$$-\frac{3\sqrt{154}Q_u x\left(x^2y^2-x^2z^2+y^4-9y^2z^2+2z^4\right)}{88}-\frac{\sqrt{462}Q_v x\left(x^2y^2-x^2z^2-5y^4+27y^2z^2-4z^4\right)}{88}$$

$$-\frac{\sqrt{462}Q_{xy} y\left(2x^2y^2-6x^2z^2-y^4+8y^2z^2-3z^4\right)}{44}+\frac{\sqrt{462}Q_{xz} z\left(6x^2y^2-2x^2z^2+3y^4-8y^2z^2+z^4\right)}{44}-\frac{\sqrt{462}Q_{yz} xyz\left(2x^2-y^2-z^2\right)}{44}$$

$\vec{\mathbb{G}}_4^{(2,1)}[q](B,2)$

** symmetry

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

** expression

$$\frac{9\sqrt{154}Q_u z\left(x^2-2xy-y^2\right)\left(x^2+2xy-y^2\right)}{88}-\frac{\sqrt{462}Q_v z\left(x-y\right)\left(x+y\right)\left(x^2+y^2-2z^2\right)}{88}+\frac{\sqrt{462}Q_{xy}xyz\left(x^2+y^2-2z^2\right)}{44}$$

$$+\frac{\sqrt{462}Q_{xz}x\left(x^4-8x^2y^2-2x^2z^2+3y^4+6y^2z^2\right)}{44}+\frac{\sqrt{462}Q_{yz}y\left(3x^4-8x^2y^2+6x^2z^2+y^4-2y^2z^2\right)}{44}$$

$\vec{\mathbb{G}}_4^{(2,1)}[q](B,3)$
** symmetry

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

** expression

$$-\frac{3\sqrt{22}Q_u x\left(2x^4-3x^2y^2-17x^2z^2-5y^4+39y^2z^2+2z^4\right)}{88}-\frac{\sqrt{66}Q_v x\left(2x^4-31x^2y^2+11x^2z^2+9y^4+39y^2z^2-12z^4\right)}{88}$$

$$-\frac{\sqrt{66}Q_{xy}y\left(8x^4-12x^2y^2-12x^2z^2+y^4+2y^2z^2+z^4\right)}{44}+\frac{\sqrt{66}Q_{xz}z\left(8x^4-12x^2y^2-12x^2z^2+y^4+2y^2z^2+z^4\right)}{44}-\frac{21\sqrt{66}Q_{yz}xyz\left(y-z\right)\left(y+z\right)}{44}$$

$\vec{\mathbb{G}}_4^{(2,1)}[q](B,4)$
** symmetry

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

** expression

$$-\frac{21\sqrt{22}Q_u z\left(x-y\right)\left(x+y\right)\left(x^2+y^2-2z^2\right)}{88}-\frac{\sqrt{66}Q_v z\left(3x^4-78x^2y^2+20x^2z^2+3y^4+20y^2z^2-4z^4\right)}{88}-\frac{21\sqrt{66}Q_{xy}xyz\left(x-y\right)\left(x+y\right)}{44}$$

$$-\frac{\sqrt{66}Q_{xz}x\left(x^4+2x^2y^2-12x^2z^2+y^4-12y^2z^2+8z^4\right)}{44}+\frac{\sqrt{66}Q_{yz}y\left(x^4+2x^2y^2-12x^2z^2+y^4-12y^2z^2+8z^4\right)}{44}$$