

$$\begin{aligned} \text{bra:} &= \langle \frac{1}{2}, \frac{1}{2}; s |, \langle \frac{1}{2}, -\frac{1}{2}; s | \\ \text{ket:} &= | \frac{1}{2}, \frac{1}{2}; s \rangle, | \frac{1}{2}, -\frac{1}{2}; s \rangle \end{aligned}$$

Table 1: (s,s) block.

No.	multipole	matrix
1	symmetry	1
	$\mathbb{Q}_0^{(a)}(A_g)$	$\begin{bmatrix} \frac{\sqrt{2}}{2} & 0 \\ 0 & \frac{\sqrt{2}}{2} \end{bmatrix}$
2	symmetry	$z$
	$\mathbb{M}_1^{(1,-1;a)}(A_g)$	$\begin{bmatrix} \frac{\sqrt{2}}{2} & 0 \\ 0 & -\frac{\sqrt{2}}{2} \end{bmatrix}$
3	symmetry	$x$
	$\mathbb{M}_{1,1}^{(1,-1;a)}(E_{1g})$	$\begin{bmatrix} 0 & \frac{\sqrt{2}}{2} \\ \frac{\sqrt{2}}{2} & 0 \end{bmatrix}$
4	symmetry	$y$
	$\mathbb{M}_{1,2}^{(1,-1;a)}(E_{1g})$	$\begin{bmatrix} 0 & -\frac{\sqrt{2}i}{2} \\ \frac{\sqrt{2}i}{2} & 0 \end{bmatrix}$

$$\begin{aligned} \text{bra:} &= \langle \frac{1}{2}, \frac{1}{2}; s |, \langle \frac{1}{2}, -\frac{1}{2}; s | \\ \text{ket:} &= | \frac{1}{2}, \frac{1}{2}; p \rangle, | \frac{1}{2}, -\frac{1}{2}; p \rangle, | \frac{3}{2}, \frac{3}{2}; p \rangle, | \frac{3}{2}, \frac{1}{2}; p \rangle, | \frac{3}{2}, -\frac{1}{2}; p \rangle, | \frac{3}{2}, -\frac{3}{2}; p \rangle \end{aligned}$$

Table 2: (s,p) block.

No.	multipole	matrix
5	symmetry	$z$
	$\mathbb{Q}_1^{(a)}(A_u)$	$\begin{bmatrix} -\frac{\sqrt{3}}{6} & 0 & 0 & \frac{\sqrt{6}}{6} & 0 & 0 \\ 0 & \frac{\sqrt{3}}{6} & 0 & 0 & \frac{\sqrt{6}}{6} & 0 \end{bmatrix}$
6	symmetry	$x$
	$\mathbb{Q}_{1,1}^{(a)}(E_{1u})$	$\begin{bmatrix} 0 & -\frac{\sqrt{3}}{6} & -\frac{\sqrt{2}}{4} & 0 & \frac{\sqrt{6}}{12} & 0 \\ -\frac{\sqrt{3}}{6} & 0 & 0 & -\frac{\sqrt{6}}{12} & 0 & \frac{\sqrt{2}}{4} \end{bmatrix}$

*continued ...*

Table 2

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

*continued ...*

Table 2

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

*continued ...*

Table 2

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

$$\text{bra:} = \langle \frac{1}{2}, \frac{1}{2}; s |, \langle \frac{1}{2}, -\frac{1}{2}; s |$$

$$\text{ket:} = | \frac{3}{2}, \frac{3}{2}; d \rangle, | \frac{3}{2}, \frac{1}{2}; d \rangle, | \frac{3}{2}, -\frac{1}{2}; d \rangle, | \frac{3}{2}, -\frac{3}{2}; d \rangle, | \frac{5}{2}, \frac{5}{2}; d \rangle, | \frac{5}{2}, \frac{3}{2}; d \rangle, | \frac{5}{2}, \frac{1}{2}; d \rangle, | \frac{5}{2}, -\frac{1}{2}; d \rangle, | \frac{5}{2}, -\frac{3}{2}; d \rangle, | \frac{5}{2}, -\frac{5}{2}; d \rangle$$

Table 3: (s,d) block.

No.	multipole	matrix
29	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$
	$\mathbb{Q}_2^{(a)}(A_g)$	$\begin{bmatrix} 0 & -\frac{\sqrt{10}}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{10} & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{10}}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{10} & 0 & 0 \end{bmatrix}$
30	symmetry	$\sqrt{3}yz$
	$\mathbb{Q}_{2,1}^{(a)}(E_{1g})$	$\begin{bmatrix} \frac{\sqrt{10}i}{20} & 0 & \frac{\sqrt{30}i}{20} & 0 & 0 & -\frac{\sqrt{10}i}{10} & 0 & -\frac{\sqrt{5}i}{10} & 0 & 0 \\ 0 & -\frac{\sqrt{30}i}{20} & 0 & -\frac{\sqrt{10}i}{20} & 0 & 0 & -\frac{\sqrt{5}i}{10} & 0 & -\frac{\sqrt{10}i}{10} & 0 \end{bmatrix}$
31	symmetry	$-\sqrt{3}xz$
	$\mathbb{Q}_{2,2}^{(a)}(E_{1g})$	$\begin{bmatrix} -\frac{\sqrt{10}}{20} & 0 & \frac{\sqrt{30}}{20} & 0 & 0 & \frac{\sqrt{10}}{10} & 0 & -\frac{\sqrt{5}}{10} & 0 & 0 \\ 0 & \frac{\sqrt{30}}{20} & 0 & -\frac{\sqrt{10}}{20} & 0 & 0 & \frac{\sqrt{5}}{10} & 0 & -\frac{\sqrt{10}}{10} & 0 \end{bmatrix}$
32	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$

continued ...

Table 3

No.	multipole	matrix
	$\mathbb{Q}_{2,1}^{(a)}(E_{2g})$	$\begin{bmatrix} 0 & 0 & 0 & -\frac{\sqrt{10}}{10} & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & \frac{\sqrt{10}}{20} & 0 \\ \frac{\sqrt{10}}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{20} & 0 & 0 & 0 & \frac{\sqrt{2}}{4} \end{bmatrix}$
33	symmetry	$-\sqrt{3}xy$
	$\mathbb{Q}_{2,2}^{(a)}(E_{2g})$	$\begin{bmatrix} 0 & 0 & 0 & -\frac{\sqrt{10}i}{10} & -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & \frac{\sqrt{10}i}{20} & 0 \\ -\frac{\sqrt{10}i}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}i}{20} & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} \end{bmatrix}$
34	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$
	$\mathbb{Q}_2^{(1,0;a)}(A_g)$	$\begin{bmatrix} 0 & \frac{\sqrt{15}}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{10} & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{15}}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{10} & 0 & 0 \end{bmatrix}$
35	symmetry	$\sqrt{3}yz$
	$\mathbb{Q}_{2,1}^{(1,0;a)}(E_{1g})$	$\begin{bmatrix} -\frac{\sqrt{15}i}{20} & 0 & -\frac{3\sqrt{5}i}{20} & 0 & 0 & -\frac{\sqrt{15}i}{15} & 0 & -\frac{\sqrt{30}i}{30} & 0 & 0 \\ 0 & \frac{3\sqrt{5}i}{20} & 0 & \frac{\sqrt{15}i}{20} & 0 & 0 & -\frac{\sqrt{30}i}{30} & 0 & -\frac{\sqrt{15}i}{15} & 0 \end{bmatrix}$
36	symmetry	$-\sqrt{3}xz$
	$\mathbb{Q}_{2,2}^{(1,0;a)}(E_{1g})$	$\begin{bmatrix} \frac{\sqrt{15}}{20} & 0 & -\frac{3\sqrt{5}}{20} & 0 & 0 & \frac{\sqrt{15}}{15} & 0 & -\frac{\sqrt{30}}{30} & 0 & 0 \\ 0 & -\frac{3\sqrt{5}}{20} & 0 & \frac{\sqrt{15}}{20} & 0 & 0 & \frac{\sqrt{30}}{30} & 0 & -\frac{\sqrt{15}}{15} & 0 \end{bmatrix}$
37	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$
	$\mathbb{Q}_{2,1}^{(1,0;a)}(E_{2g})$	$\begin{bmatrix} 0 & 0 & 0 & \frac{\sqrt{15}}{10} & \frac{\sqrt{3}}{6} & 0 & 0 & 0 & \frac{\sqrt{15}}{30} & 0 \\ -\frac{\sqrt{15}}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{30} & 0 & 0 & 0 & \frac{\sqrt{3}}{6} \end{bmatrix}$
38	symmetry	$-\sqrt{3}xy$
	$\mathbb{Q}_{2,2}^{(1,0;a)}(E_{2g})$	$\begin{bmatrix} 0 & 0 & 0 & \frac{\sqrt{15}i}{10} & -\frac{\sqrt{3}i}{6} & 0 & 0 & 0 & \frac{\sqrt{15}i}{30} & 0 \\ \frac{\sqrt{15}i}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}i}{30} & 0 & 0 & 0 & \frac{\sqrt{3}i}{6} \end{bmatrix}$
39	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$
	$\mathbb{G}_3^{(1,-1;a)}(A_g)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & \frac{i}{2} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{i}{2} & 0 & 0 \end{bmatrix}$
40	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$
	$\mathbb{G}_3^{(1,-1;a)}(B_g, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{1}{2} \\ 0 & 0 & 0 & 0 & -\frac{1}{2} & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
41	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$

continued ...

Table 3

No.	multipole	matrix
	$\mathbb{G}_3^{(1,-1;a)}(B_g, 2)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{i}{2} \\ 0 & 0 & 0 & 0 & \frac{i}{2} & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
42	symmetry	$-\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$
	$\mathbb{G}_{3,1}^{(1,-1;a)}(E_{1g})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{6} & 0 & \frac{\sqrt{6}i}{6} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{6} & 0 & -\frac{\sqrt{3}i}{6} & 0 \end{bmatrix}$
43	symmetry	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$
	$\mathbb{G}_{3,2}^{(1,-1;a)}(E_{1g})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{6} & 0 & \frac{\sqrt{6}}{6} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{6} & 0 & -\frac{\sqrt{3}}{6} & 0 \end{bmatrix}$
44	symmetry	$\sqrt{15}xyz$
	$\mathbb{G}_{3,1}^{(1,-1;a)}(E_{2g})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{12} & 0 & 0 & 0 & \frac{\sqrt{30}}{12} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{12} & 0 & 0 & 0 & -\frac{\sqrt{6}}{12} \end{bmatrix}$
45	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$
	$\mathbb{G}_{3,2}^{(1,-1;a)}(E_{2g})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{12} & 0 & 0 & 0 & \frac{\sqrt{30}i}{12} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}i}{12} & 0 & 0 & 0 & -\frac{\sqrt{6}i}{12} \end{bmatrix}$
46	symmetry	$z$
	$\mathbb{G}_1^{(1,1;a)}(A_g)$	$\begin{bmatrix} 0 & -\frac{i}{2} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{i}{2} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
47	symmetry	$x$
	$\mathbb{G}_{1,1}^{(1,1;a)}(E_{1g})$	$\begin{bmatrix} \frac{\sqrt{3}i}{4} & 0 & -\frac{i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{i}{4} & 0 & -\frac{\sqrt{3}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
48	symmetry	$y$
	$\mathbb{G}_{1,2}^{(1,1;a)}(E_{1g})$	$\begin{bmatrix} -\frac{\sqrt{3}}{4} & 0 & -\frac{1}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{1}{4} & 0 & -\frac{\sqrt{3}}{4} & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
49	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$
	$\mathbb{T}_2^{(a)}(A_g)$	$\begin{bmatrix} 0 & -\frac{\sqrt{10}i}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{10} & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{10}i}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{10} & 0 & 0 \end{bmatrix}$
50	symmetry	$\sqrt{3}yz$

continued ...

Table 3

No.	multipole	matrix
	$\mathbb{T}_{2,1}^{(a)}(E_{1g})$	$\begin{bmatrix} -\frac{\sqrt{10}}{20} & 0 & -\frac{\sqrt{30}}{20} & 0 & 0 & \frac{\sqrt{10}}{10} & 0 & \frac{\sqrt{5}}{10} & 0 & 0 \\ 0 & \frac{\sqrt{30}}{20} & 0 & \frac{\sqrt{10}}{20} & 0 & 0 & \frac{\sqrt{5}}{10} & 0 & \frac{\sqrt{10}}{10} & 0 \end{bmatrix}$
51	symmetry	$-\sqrt{3}xz$
	$\mathbb{T}_{2,2}^{(a)}(E_{1g})$	$\begin{bmatrix} -\frac{\sqrt{10}i}{20} & 0 & \frac{\sqrt{30}i}{20} & 0 & 0 & \frac{\sqrt{10}i}{10} & 0 & -\frac{\sqrt{5}i}{10} & 0 & 0 \\ 0 & \frac{\sqrt{30}i}{20} & 0 & -\frac{\sqrt{10}i}{20} & 0 & 0 & \frac{\sqrt{5}i}{10} & 0 & -\frac{\sqrt{10}i}{10} & 0 \end{bmatrix}$
52	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$
	$\mathbb{T}_{2,1}^{(a)}(E_{2g})$	$\begin{bmatrix} 0 & 0 & 0 & -\frac{\sqrt{10}i}{10} & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & \frac{\sqrt{10}i}{20} & 0 \\ \frac{\sqrt{10}i}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{20} & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} \end{bmatrix}$
53	symmetry	$-\sqrt{3}xy$
	$\mathbb{T}_{2,2}^{(a)}(E_{2g})$	$\begin{bmatrix} 0 & 0 & 0 & \frac{\sqrt{10}}{10} & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & -\frac{\sqrt{10}}{20} & 0 \\ \frac{\sqrt{10}}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{20} & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} \end{bmatrix}$
54	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$
	$\mathbb{T}_2^{(1,0;a)}(A_g)$	$\begin{bmatrix} 0 & -\frac{\sqrt{15}i}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}i}{10} & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{15}i}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}i}{10} & 0 & 0 \end{bmatrix}$
55	symmetry	$\sqrt{3}yz$
	$\mathbb{T}_{2,1}^{(1,0;a)}(E_{1g})$	$\begin{bmatrix} -\frac{\sqrt{15}}{20} & 0 & -\frac{3\sqrt{5}}{20} & 0 & 0 & -\frac{\sqrt{15}}{15} & 0 & -\frac{\sqrt{30}}{30} & 0 & 0 \\ 0 & \frac{3\sqrt{5}}{20} & 0 & \frac{\sqrt{15}}{20} & 0 & 0 & -\frac{\sqrt{30}}{30} & 0 & -\frac{\sqrt{15}}{15} & 0 \end{bmatrix}$
56	symmetry	$-\sqrt{3}xz$
	$\mathbb{T}_{2,2}^{(1,0;a)}(E_{1g})$	$\begin{bmatrix} -\frac{\sqrt{15}i}{20} & 0 & \frac{3\sqrt{5}i}{20} & 0 & 0 & -\frac{\sqrt{15}i}{15} & 0 & \frac{\sqrt{30}i}{30} & 0 & 0 \\ 0 & \frac{3\sqrt{5}i}{20} & 0 & -\frac{\sqrt{15}i}{20} & 0 & 0 & -\frac{\sqrt{30}i}{30} & 0 & \frac{\sqrt{15}i}{15} & 0 \end{bmatrix}$
57	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$
	$\mathbb{T}_{2,1}^{(1,0;a)}(E_{2g})$	$\begin{bmatrix} 0 & 0 & 0 & -\frac{\sqrt{15}i}{10} & -\frac{\sqrt{3}i}{6} & 0 & 0 & 0 & -\frac{\sqrt{15}i}{30} & 0 \\ \frac{\sqrt{15}i}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}i}{30} & 0 & 0 & 0 & -\frac{\sqrt{3}i}{6} \end{bmatrix}$
58	symmetry	$-\sqrt{3}xy$
	$\mathbb{T}_{2,2}^{(1,0;a)}(E_{2g})$	$\begin{bmatrix} 0 & 0 & 0 & \frac{\sqrt{15}}{10} & -\frac{\sqrt{3}}{6} & 0 & 0 & 0 & \frac{\sqrt{15}}{30} & 0 \\ \frac{\sqrt{15}}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{30} & 0 & 0 & 0 & \frac{\sqrt{3}}{6} \end{bmatrix}$
59	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$

continued ...

Table 3

No.	multipole	matrix
	$\mathbb{M}_3^{(1,-1;a)}(A_g)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & \frac{1}{2} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{1}{2} & 0 & 0 \end{bmatrix}$
60	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$
	$\mathbb{M}_3^{(1,-1;a)}(B_g, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{i}{2} \\ 0 & 0 & 0 & 0 & \frac{i}{2} & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
61	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$
	$\mathbb{M}_3^{(1,-1;a)}(B_g, 2)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{1}{2} \\ 0 & 0 & 0 & 0 & \frac{1}{2} & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
62	symmetry	$-\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$
	$\mathbb{M}_{3,1}^{(1,-1;a)}(E_{1g})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{6} & 0 & \frac{\sqrt{6}}{6} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{6} & 0 & -\frac{\sqrt{3}}{6} & 0 \end{bmatrix}$
63	symmetry	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$
	$\mathbb{M}_{3,2}^{(1,-1;a)}(E_{1g})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{6} & 0 & -\frac{\sqrt{6}i}{6} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{6} & 0 & \frac{\sqrt{3}i}{6} & 0 \end{bmatrix}$
64	symmetry	$\sqrt{15}xyz$
	$\mathbb{M}_{3,1}^{(1,-1;a)}(E_{2g})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{12} & 0 & 0 & 0 & -\frac{\sqrt{30}i}{12} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}i}{12} & 0 & 0 & 0 & \frac{\sqrt{6}i}{12} \end{bmatrix}$
65	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$
	$\mathbb{M}_{3,2}^{(1,-1;a)}(E_{2g})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{12} & 0 & 0 & 0 & \frac{\sqrt{30}}{12} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{12} & 0 & 0 & 0 & -\frac{\sqrt{6}}{12} \end{bmatrix}$
66	symmetry	$z$
	$\mathbb{M}_1^{(1,1;a)}(A_g)$	$\begin{bmatrix} 0 & -\frac{1}{2} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{1}{2} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
67	symmetry	$x$
	$\mathbb{M}_{1,1}^{(1,1;a)}(E_{1g})$	$\begin{bmatrix} \frac{\sqrt{3}}{4} & 0 & -\frac{1}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{1}{4} & 0 & -\frac{\sqrt{3}}{4} & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
68	symmetry	$y$

*continued ...*



Table 3

No.	multipole	matrix
	$\mathbb{M}_{1,2}^{(1,1;a)}(E_{1g})$	$\begin{bmatrix} \frac{\sqrt{3}i}{4} & 0 & \frac{i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{i}{4} & 0 & \frac{\sqrt{3}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$

$$\text{bra:} = \langle \frac{1}{2}, \frac{1}{2}; s |, \langle \frac{1}{2}, -\frac{1}{2}; s |$$

$$\text{ket:} = | \frac{5}{2}, \frac{5}{2}; f \rangle, | \frac{5}{2}, \frac{3}{2}; f \rangle, | \frac{5}{2}, \frac{1}{2}; f \rangle, | \frac{5}{2}, -\frac{1}{2}; f \rangle, | \frac{5}{2}, -\frac{3}{2}; f \rangle, | \frac{5}{2}, -\frac{5}{2}; f \rangle, | \frac{7}{2}, \frac{7}{2}; f \rangle, | \frac{7}{2}, \frac{5}{2}; f \rangle, | \frac{7}{2}, \frac{3}{2}; f \rangle, | \frac{7}{2}, \frac{1}{2}; f \rangle, | \frac{7}{2}, -\frac{1}{2}; f \rangle, | \frac{7}{2}, -\frac{3}{2}; f \rangle, | \frac{7}{2}, -\frac{5}{2}; f \rangle, | \frac{7}{2}, -\frac{7}{2}; f \rangle$$

Table 4: (s,f) block.

No.	multipole	matrix
69	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$
	$\mathbb{Q}_3^{(a)}(A_u)$	$\begin{bmatrix} 0 & 0 & -\frac{\sqrt{21}}{14} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{7} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{21}}{14} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{7} & 0 & 0 & 0 \end{bmatrix}$
70	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$
	$\mathbb{Q}_3^{(a)}(B_u, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}i}{14} & -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}i}{28} & 0 \\ -\frac{\sqrt{21}i}{14} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}i}{28} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} \end{bmatrix}$
71	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$
	$\mathbb{Q}_3^{(a)}(B_u, 2)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}}{14} & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}}{28} & 0 \\ -\frac{\sqrt{21}}{14} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}}{28} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} \end{bmatrix}$
72	symmetry	$-\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$
	$\mathbb{Q}_{3,1}^{(a)}(E_{1u})$	$\begin{bmatrix} 0 & \frac{\sqrt{7}}{14} & 0 & -\frac{\sqrt{14}}{14} & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}}{28} & 0 & \frac{\sqrt{42}}{28} & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{14}}{14} & 0 & \frac{\sqrt{7}}{14} & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}}{28} & 0 & \frac{\sqrt{70}}{28} & 0 & 0 \end{bmatrix}$
73	symmetry	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$
	$\mathbb{Q}_{3,2}^{(a)}(E_{1u})$	$\begin{bmatrix} 0 & \frac{\sqrt{7}i}{14} & 0 & \frac{\sqrt{14}i}{14} & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}i}{28} & 0 & -\frac{\sqrt{42}i}{28} & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{14}i}{14} & 0 & -\frac{\sqrt{7}i}{14} & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}i}{28} & 0 & -\frac{\sqrt{70}i}{28} & 0 & 0 \end{bmatrix}$
74	symmetry	$\sqrt{15}xyz$
	$\mathbb{Q}_{3,1}^{(a)}(E_{2u})$	$\begin{bmatrix} -\frac{\sqrt{14}i}{28} & 0 & 0 & 0 & \frac{\sqrt{70}i}{28} & 0 & 0 & \frac{\sqrt{21}i}{14} & 0 & 0 & 0 & -\frac{\sqrt{7}i}{14} & 0 & 0 \\ 0 & \frac{\sqrt{70}i}{28} & 0 & 0 & 0 & -\frac{\sqrt{14}i}{28} & 0 & 0 & \frac{\sqrt{7}i}{14} & 0 & 0 & 0 & -\frac{\sqrt{21}i}{14} & 0 \end{bmatrix}$
75	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$

continued ...

Table 4

No.	multipole	matrix
	$\mathbb{Q}_{3,2}^{(a)}(E_{2u})$	$\begin{bmatrix} -\frac{\sqrt{14}}{28} & 0 & 0 & 0 & -\frac{\sqrt{70}}{28} & 0 & 0 & \frac{\sqrt{21}}{14} & 0 & 0 & 0 & \frac{\sqrt{7}}{14} & 0 & 0 \\ 0 & \frac{\sqrt{70}}{28} & 0 & 0 & 0 & \frac{\sqrt{14}}{28} & 0 & 0 & \frac{\sqrt{7}}{14} & 0 & 0 & 0 & \frac{\sqrt{21}}{14} & 0 \end{bmatrix}$
76	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$
	$\mathbb{Q}_3^{(1,0;a)}(A_u)$	$\begin{bmatrix} 0 & 0 & \frac{\sqrt{7}}{7} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{14} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{7}}{7} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{14} & 0 & 0 & 0 \end{bmatrix}$
77	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$
	$\mathbb{Q}_3^{(1,0;a)}(B_u, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}i}{7} & -\frac{\sqrt{6}i}{8} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}i}{56} & 0 \\ \frac{\sqrt{7}i}{7} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}i}{56} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{8} \end{bmatrix}$
78	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$
	$\mathbb{Q}_3^{(1,0;a)}(B_u, 2)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{7} & -\frac{\sqrt{6}}{8} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}}{56} & 0 \\ \frac{\sqrt{7}}{7} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}}{56} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{8} \end{bmatrix}$
79	symmetry	$-\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$
	$\mathbb{Q}_{3,1}^{(1,0;a)}(E_{1u})$	$\begin{bmatrix} 0 & -\frac{\sqrt{21}}{21} & 0 & \frac{\sqrt{42}}{21} & 0 & 0 & 0 & 0 & -\frac{\sqrt{210}}{56} & 0 & \frac{3\sqrt{14}}{56} & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{42}}{21} & 0 & -\frac{\sqrt{21}}{21} & 0 & 0 & 0 & 0 & -\frac{3\sqrt{14}}{56} & 0 & \frac{\sqrt{210}}{56} & 0 & 0 \end{bmatrix}$
80	symmetry	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$
	$\mathbb{Q}_{3,2}^{(1,0;a)}(E_{1u})$	$\begin{bmatrix} 0 & -\frac{\sqrt{21}i}{21} & 0 & -\frac{\sqrt{42}i}{21} & 0 & 0 & 0 & 0 & -\frac{\sqrt{210}i}{56} & 0 & -\frac{3\sqrt{14}i}{56} & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{42}i}{21} & 0 & \frac{\sqrt{21}i}{21} & 0 & 0 & 0 & 0 & -\frac{3\sqrt{14}i}{56} & 0 & -\frac{\sqrt{210}i}{56} & 0 & 0 \end{bmatrix}$
81	symmetry	$\sqrt{15}xyz$
	$\mathbb{Q}_{3,1}^{(1,0;a)}(E_{2u})$	$\begin{bmatrix} \frac{\sqrt{42}i}{42} & 0 & 0 & 0 & -\frac{\sqrt{210}i}{42} & 0 & 0 & \frac{3\sqrt{7}i}{28} & 0 & 0 & 0 & -\frac{\sqrt{21}i}{28} & 0 & 0 \\ 0 & -\frac{\sqrt{210}i}{42} & 0 & 0 & 0 & \frac{\sqrt{42}i}{42} & 0 & 0 & \frac{\sqrt{21}i}{28} & 0 & 0 & 0 & -\frac{3\sqrt{7}i}{28} & 0 \end{bmatrix}$
82	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$
	$\mathbb{Q}_{3,2}^{(1,0;a)}(E_{2u})$	$\begin{bmatrix} \frac{\sqrt{42}}{42} & 0 & 0 & 0 & \frac{\sqrt{210}}{42} & 0 & 0 & \frac{3\sqrt{7}}{28} & 0 & 0 & 0 & \frac{\sqrt{21}}{28} & 0 & 0 \\ 0 & -\frac{\sqrt{210}}{42} & 0 & 0 & 0 & -\frac{\sqrt{42}}{42} & 0 & 0 & \frac{\sqrt{21}}{28} & 0 & 0 & 0 & \frac{3\sqrt{7}}{28} & 0 \end{bmatrix}$
83	symmetry	$\frac{3x^4}{8} + \frac{3x^2y^2}{4} - 3x^2z^2 + \frac{3y^4}{8} - 3y^2z^2 + z^4$
	$\mathbb{G}_4^{(1,-1;a)}(A_u)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{i}{2} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{i}{2} & 0 & 0 & 0 \end{bmatrix}$
84	symmetry	$\frac{\sqrt{70}xz(x^2-3y^2)}{4}$

continued ...

Table 4

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

continued ...

Table 4

No.	multipole	matrix
	$\mathbb{G}_{2,1}^{(1,1;a)}(E_{1u})$	$\begin{bmatrix} 0 & -\frac{\sqrt{6}}{6} & 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{3}}{6} & 0 & -\frac{\sqrt{6}}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
94	symmetry	$-\sqrt{3}xz$
	$\mathbb{G}_{2,2}^{(1,1;a)}(E_{1u})$	$\begin{bmatrix} 0 & -\frac{\sqrt{6}i}{6} & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{3}i}{6} & 0 & \frac{\sqrt{6}i}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
95	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$
	$\mathbb{G}_{2,1}^{(1,1;a)}(E_{2u})$	$\begin{bmatrix} -\frac{\sqrt{30}i}{12} & 0 & 0 & 0 & -\frac{\sqrt{6}i}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{6}i}{12} & 0 & 0 & 0 & -\frac{\sqrt{30}i}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
96	symmetry	$-\sqrt{3}xy$
	$\mathbb{G}_{2,2}^{(1,1;a)}(E_{2u})$	$\begin{bmatrix} -\frac{\sqrt{30}}{12} & 0 & 0 & 0 & \frac{\sqrt{6}}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{6}}{12} & 0 & 0 & 0 & \frac{\sqrt{30}}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
97	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$
	$\mathbb{T}_3^{(a)}(A_u)$	$\begin{bmatrix} 0 & 0 & -\frac{\sqrt{21}i}{14} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}i}{7} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{21}i}{14} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}i}{7} & 0 & 0 & 0 \end{bmatrix}$
98	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$
	$\mathbb{T}_3^{(a)}(B_u, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}}{14} & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}}{28} & 0 \\ \frac{\sqrt{21}}{14} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}}{28} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} \end{bmatrix}$
99	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$
	$\mathbb{T}_3^{(a)}(B_u, 2)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}i}{14} & -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}i}{28} & 0 \\ -\frac{\sqrt{21}i}{14} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}i}{28} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} \end{bmatrix}$
100	symmetry	$-\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$
	$\mathbb{T}_{3,1}^{(a)}(E_{1u})$	$\begin{bmatrix} 0 & \frac{\sqrt{7}i}{14} & 0 & -\frac{\sqrt{14}i}{14} & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}i}{28} & 0 & \frac{\sqrt{42}i}{28} & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{14}i}{14} & 0 & \frac{\sqrt{7}i}{14} & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}i}{28} & 0 & \frac{\sqrt{70}i}{28} & 0 & 0 \end{bmatrix}$
101	symmetry	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$
	$\mathbb{T}_{3,2}^{(a)}(E_{1u})$	$\begin{bmatrix} 0 & -\frac{\sqrt{7}}{14} & 0 & -\frac{\sqrt{14}}{14} & 0 & 0 & 0 & 0 & \frac{\sqrt{70}}{28} & 0 & \frac{\sqrt{42}}{28} & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{14}}{14} & 0 & \frac{\sqrt{7}}{14} & 0 & 0 & 0 & 0 & \frac{\sqrt{42}}{28} & 0 & \frac{\sqrt{70}}{28} & 0 & 0 \end{bmatrix}$
102	symmetry	$\sqrt{15}xyz$

continued ...

Table 4

No.	multipole	matrix
	$\mathbb{T}_{3,1}^{(a)}(E_{2u})$	$\begin{bmatrix} \frac{\sqrt{14}}{28} & 0 & 0 & 0 & -\frac{\sqrt{70}}{28} & 0 & 0 & -\frac{\sqrt{21}}{14} & 0 & 0 & 0 & \frac{\sqrt{7}}{14} & 0 & 0 \\ 0 & -\frac{\sqrt{70}}{28} & 0 & 0 & 0 & \frac{\sqrt{14}}{28} & 0 & 0 & -\frac{\sqrt{7}}{14} & 0 & 0 & 0 & \frac{\sqrt{21}}{14} & 0 \end{bmatrix}$
103	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$
	$\mathbb{T}_{3,2}^{(a)}(E_{2u})$	$\begin{bmatrix} -\frac{\sqrt{14}i}{28} & 0 & 0 & 0 & -\frac{\sqrt{70}i}{28} & 0 & 0 & \frac{\sqrt{21}i}{14} & 0 & 0 & 0 & \frac{\sqrt{7}i}{14} & 0 & 0 \\ 0 & \frac{\sqrt{70}i}{28} & 0 & 0 & 0 & \frac{\sqrt{14}i}{28} & 0 & 0 & \frac{\sqrt{7}i}{14} & 0 & 0 & 0 & \frac{\sqrt{21}i}{14} & 0 \end{bmatrix}$
104	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$
	$\mathbb{T}_3^{(1,0;a)}(A_u)$	$\begin{bmatrix} 0 & 0 & -\frac{\sqrt{7}i}{7} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}i}{14} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{7}i}{7} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}i}{14} & 0 & 0 & 0 \end{bmatrix}$
105	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$
	$\mathbb{T}_3^{(1,0;a)}(B_u, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}}{7} & -\frac{\sqrt{6}}{8} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}}{56} & 0 \\ \frac{\sqrt{7}}{7} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}}{56} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{8} \end{bmatrix}$
106	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$
	$\mathbb{T}_3^{(1,0;a)}(B_u, 2)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}i}{7} & \frac{\sqrt{6}i}{8} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}i}{56} & 0 \\ -\frac{\sqrt{7}i}{7} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}i}{56} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{8} \end{bmatrix}$
107	symmetry	$-\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$
	$\mathbb{T}_{3,1}^{(1,0;a)}(E_{1u})$	$\begin{bmatrix} 0 & \frac{\sqrt{21}i}{21} & 0 & -\frac{\sqrt{42}i}{21} & 0 & 0 & 0 & 0 & \frac{\sqrt{210}i}{56} & 0 & -\frac{3\sqrt{14}i}{56} & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{42}i}{21} & 0 & \frac{\sqrt{21}i}{21} & 0 & 0 & 0 & 0 & \frac{3\sqrt{14}i}{56} & 0 & -\frac{\sqrt{210}i}{56} & 0 & 0 \end{bmatrix}$
108	symmetry	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$
	$\mathbb{T}_{3,2}^{(1,0;a)}(E_{1u})$	$\begin{bmatrix} 0 & -\frac{\sqrt{21}}{21} & 0 & -\frac{\sqrt{42}}{21} & 0 & 0 & 0 & 0 & -\frac{\sqrt{210}}{56} & 0 & -\frac{3\sqrt{14}}{56} & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{42}}{21} & 0 & \frac{\sqrt{21}}{21} & 0 & 0 & 0 & 0 & -\frac{3\sqrt{14}}{56} & 0 & -\frac{\sqrt{210}}{56} & 0 & 0 \end{bmatrix}$
109	symmetry	$\sqrt{15}xyz$
	$\mathbb{T}_{3,1}^{(1,0;a)}(E_{2u})$	$\begin{bmatrix} \frac{\sqrt{42}}{42} & 0 & 0 & 0 & -\frac{\sqrt{210}}{42} & 0 & 0 & \frac{3\sqrt{7}}{28} & 0 & 0 & 0 & -\frac{\sqrt{21}}{28} & 0 & 0 \\ 0 & -\frac{\sqrt{210}}{42} & 0 & 0 & 0 & \frac{\sqrt{42}}{42} & 0 & 0 & \frac{\sqrt{21}}{28} & 0 & 0 & 0 & -\frac{3\sqrt{7}}{28} & 0 \end{bmatrix}$
110	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$
	$\mathbb{T}_{3,2}^{(1,0;a)}(E_{2u})$	$\begin{bmatrix} -\frac{\sqrt{42}i}{42} & 0 & 0 & 0 & -\frac{\sqrt{210}i}{42} & 0 & 0 & -\frac{3\sqrt{7}i}{28} & 0 & 0 & 0 & -\frac{\sqrt{21}i}{28} & 0 & 0 \\ 0 & \frac{\sqrt{210}i}{42} & 0 & 0 & 0 & \frac{\sqrt{42}i}{42} & 0 & 0 & -\frac{\sqrt{21}i}{28} & 0 & 0 & 0 & -\frac{3\sqrt{7}i}{28} & 0 \end{bmatrix}$
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
	$\mathbb{M}_4^{(1,-1;a)}(A_u)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{1}{2} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{1}{2} & 0 & 0 & 0 \end{bmatrix}$
112	symmetry	$\frac{\sqrt{70}xz(x^2-3y^2)}{4}$
	$\mathbb{M}_4^{(1,-1;a)}(B_u, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{8} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}}{8} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}}{8} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{8} \end{bmatrix}$
113	symmetry	$\frac{\sqrt{70}yz(3x^2-y^2)}{4}$
	$\mathbb{M}_4^{(1,-1;a)}(B_u, 2)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}i}{8} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}i}{8} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{8} \end{bmatrix}$
114	symmetry	$-\frac{\sqrt{10}yz(3x^2+3y^2-4z^2)}{4}$
	$\mathbb{M}_{4,1}^{(1,-1;a)}(E_{1u})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{8} & 0 & -\frac{\sqrt{10}i}{8} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{8} & 0 & \frac{\sqrt{6}i}{8} & 0 & 0 \end{bmatrix}$
115	symmetry	$\frac{\sqrt{10}xz(3x^2+3y^2-4z^2)}{4}$
	$\mathbb{M}_{4,2}^{(1,-1;a)}(E_{1u})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{8} & 0 & -\frac{\sqrt{10}}{8} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}}{8} & 0 & \frac{\sqrt{6}}{8} & 0 & 0 \end{bmatrix}$
116	symmetry	$\frac{\sqrt{35}(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$
	$\mathbb{M}_{4,1}^{(1,-1;a)}(E_{2u}, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{1}{2} \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{1}{2} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
117	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$
	$\mathbb{M}_{4,2}^{(1,-1;a)}(E_{2u}, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{i}{2} \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{i}{2} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
118	symmetry	$-\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$
	$\mathbb{M}_{4,1}^{(1,-1;a)}(E_{2u}, 2)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{1}{4} & 0 & 0 & 0 & \frac{\sqrt{3}}{4} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{4} & 0 & 0 & 0 & -\frac{1}{4} & 0 \end{bmatrix}$
119	symmetry	$\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$
	$\mathbb{M}_{4,2}^{(1,-1;a)}(E_{2u}, 2)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{i}{4} & 0 & 0 & 0 & \frac{\sqrt{3}i}{4} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}i}{4} & 0 & 0 & 0 & -\frac{i}{4} & 0 \end{bmatrix}$
120	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$

continued ...

Table 4

No.	multipole	matrix
	$\mathbb{M}_2^{(1,1;a)}(A_u)$	$\begin{bmatrix} 0 & 0 & -\frac{1}{2} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{1}{2} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
121	symmetry	$\sqrt{3}yz$
	$\mathbb{M}_{2,1}^{(1,1;a)}(E_{1u})$	$\begin{bmatrix} 0 & \frac{\sqrt{6}i}{6} & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{3}i}{6} & 0 & \frac{\sqrt{6}i}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
122	symmetry	$-\sqrt{3}xz$
	$\mathbb{M}_{2,2}^{(1,1;a)}(E_{1u})$	$\begin{bmatrix} 0 & -\frac{\sqrt{6}}{6} & 0 & \frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{3}}{6} & 0 & \frac{\sqrt{6}}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
123	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$
	$\mathbb{M}_{2,1}^{(1,1;a)}(E_{2u})$	$\begin{bmatrix} -\frac{\sqrt{30}}{12} & 0 & 0 & 0 & -\frac{\sqrt{6}}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{6}}{12} & 0 & 0 & 0 & -\frac{\sqrt{30}}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
124	symmetry	$-\sqrt{3}xy$
	$\mathbb{M}_{2,2}^{(1,1;a)}(E_{2u})$	$\begin{bmatrix} \frac{\sqrt{30}i}{12} & 0 & 0 & 0 & -\frac{\sqrt{6}i}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{6}i}{12} & 0 & 0 & 0 & -\frac{\sqrt{30}i}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$

$$\begin{aligned} \text{bra:} &= \langle \tfrac{1}{2}, \tfrac{1}{2}; p |, \langle \tfrac{1}{2}, -\tfrac{1}{2}; p |, \langle \tfrac{3}{2}, \tfrac{3}{2}; p |, \langle \tfrac{3}{2}, \tfrac{1}{2}; p |, \langle \tfrac{3}{2}, -\tfrac{1}{2}; p |, \langle \tfrac{3}{2}, -\tfrac{3}{2}; p | \\ \text{ket:} &= | \tfrac{1}{2}, \tfrac{1}{2}; p \rangle, | \tfrac{1}{2}, -\tfrac{1}{2}; p \rangle, | \tfrac{3}{2}, \tfrac{3}{2}; p \rangle, | \tfrac{3}{2}, \tfrac{1}{2}; p \rangle, | \tfrac{3}{2}, -\tfrac{1}{2}; p \rangle, | \tfrac{3}{2}, -\tfrac{3}{2}; p \rangle \end{aligned}$$

Table 5: (p,p) block.

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

continued ...

Table 5

No.	multipole	matrix
126	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$
	$\mathbb{Q}_2^{(a)}(A_g)$	$\begin{bmatrix} 0 & 0 & 0 & -\frac{\sqrt{6}}{6} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{6} & 0 \\ 0 & 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & 0 \\ -\frac{\sqrt{6}}{6} & 0 & 0 & \frac{\sqrt{3}}{6} & 0 & 0 \\ 0 & \frac{\sqrt{6}}{6} & 0 & 0 & \frac{\sqrt{3}}{6} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{6} \end{bmatrix}$
127	symmetry	$\sqrt{3}yz$
	$\mathbb{Q}_{2,1}^{(a)}(E_{1g})$	$\begin{bmatrix} 0 & 0 & \frac{\sqrt{6}i}{12} & 0 & \frac{\sqrt{2}i}{4} & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & -\frac{\sqrt{6}i}{12} \\ -\frac{\sqrt{6}i}{12} & 0 & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 \\ 0 & \frac{\sqrt{2}i}{4} & -\frac{\sqrt{3}i}{6} & 0 & 0 & 0 \\ -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{6} \\ 0 & \frac{\sqrt{6}i}{12} & 0 & 0 & \frac{\sqrt{3}i}{6} & 0 \end{bmatrix}$
128	symmetry	$-\sqrt{3}xz$
	$\mathbb{Q}_{2,2}^{(a)}(E_{1g})$	$\begin{bmatrix} 0 & 0 & -\frac{\sqrt{6}}{12} & 0 & \frac{\sqrt{2}}{4} & 0 \\ 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 & -\frac{\sqrt{6}}{12} \\ -\frac{\sqrt{6}}{12} & 0 & 0 & \frac{\sqrt{3}}{6} & 0 & 0 \\ 0 & \frac{\sqrt{2}}{4} & \frac{\sqrt{3}}{6} & 0 & 0 & 0 \\ \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{6} \\ 0 & -\frac{\sqrt{6}}{12} & 0 & 0 & -\frac{\sqrt{3}}{6} & 0 \end{bmatrix}$
129	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$
	$\mathbb{Q}_{2,1}^{(a)}(E_{2g})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{6} \\ 0 & 0 & \frac{\sqrt{6}}{6} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{6}}{6} & 0 & 0 & -\frac{\sqrt{3}}{6} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{6} \\ 0 & 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & 0 \\ -\frac{\sqrt{6}}{6} & 0 & 0 & -\frac{\sqrt{3}}{6} & 0 & 0 \end{bmatrix}$
130	symmetry	$-\sqrt{3}xy$

continued ...



Table 5

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

continued ...

Table 5

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

continued ...

Table 5

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

continued ...

Table 5

No.	multipole	matrix
	$\mathbb{T}_{2,2}^{(1,0;a)}(E_{1g})$	$\begin{bmatrix} 0 & 0 & \frac{i}{4} & 0 & -\frac{\sqrt{3}i}{4} & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{3}i}{4} & 0 & \frac{i}{4} \\ -\frac{i}{4} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{3}i}{4} & 0 & 0 & 0 & 0 \\ \frac{\sqrt{3}i}{4} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{i}{4} & 0 & 0 & 0 & 0 \end{bmatrix}$
143	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{i}{2} \\ 0 & 0 & -\frac{i}{2} & 0 & 0 & 0 \\ 0 & \frac{i}{2} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{i}{2} & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
144	symmetry	$-\sqrt{3}xy$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{1}{2} \\ 0 & 0 & -\frac{1}{2} & 0 & 0 & 0 \\ 0 & -\frac{1}{2} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{1}{2} & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
145	symmetry	$z$ $\begin{bmatrix} \frac{1}{3} & 0 & 0 & \frac{\sqrt{2}}{6} & 0 & 0 \\ 0 & -\frac{1}{3} & 0 & 0 & \frac{\sqrt{2}}{6} & 0 \\ 0 & 0 & \frac{1}{2} & 0 & 0 & 0 \\ \frac{\sqrt{2}}{6} & 0 & 0 & \frac{1}{6} & 0 & 0 \\ 0 & \frac{\sqrt{2}}{6} & 0 & 0 & -\frac{1}{6} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{1}{2} \end{bmatrix}$
146	symmetry	$x$

continued ...

Table 5

No.	multipole	matrix
	$\mathbb{M}_{1,1}^{(a)}(E_{1g})$	$\begin{bmatrix} 0 & \frac{1}{3} & -\frac{\sqrt{6}}{12} & 0 & \frac{\sqrt{2}}{12} & 0 \\ \frac{1}{3} & 0 & 0 & -\frac{\sqrt{2}}{12} & 0 & \frac{\sqrt{6}}{12} \\ -\frac{\sqrt{6}}{12} & 0 & 0 & \frac{\sqrt{3}}{6} & 0 & 0 \\ 0 & -\frac{\sqrt{2}}{12} & \frac{\sqrt{3}}{6} & 0 & \frac{1}{3} & 0 \\ \frac{\sqrt{2}}{12} & 0 & 0 & \frac{1}{3} & 0 & \frac{\sqrt{3}}{6} \\ 0 & \frac{\sqrt{6}}{12} & 0 & 0 & \frac{\sqrt{3}}{6} & 0 \end{bmatrix}$
147	symmetry	$\begin{matrix} y \\ \mathbb{M}_{1,2}^{(a)}(E_{1g}) \end{matrix}$ $\begin{bmatrix} 0 & -\frac{i}{3} & -\frac{\sqrt{6}i}{12} & 0 & -\frac{\sqrt{2}i}{12} & 0 \\ \frac{i}{3} & 0 & 0 & -\frac{\sqrt{2}i}{12} & 0 & -\frac{\sqrt{6}i}{12} \\ \frac{\sqrt{6}i}{12} & 0 & 0 & -\frac{\sqrt{3}i}{6} & 0 & 0 \\ 0 & \frac{\sqrt{2}i}{12} & \frac{\sqrt{3}i}{6} & 0 & -\frac{i}{3} & 0 \\ \frac{\sqrt{2}i}{12} & 0 & 0 & \frac{i}{3} & 0 & -\frac{\sqrt{3}i}{6} \\ 0 & \frac{\sqrt{6}i}{12} & 0 & 0 & \frac{\sqrt{3}i}{6} & 0 \end{bmatrix}$
148	symmetry	$\begin{matrix} z \\ \mathbb{M}_1^{(1,-1;a)}(A_g) \end{matrix}$ $\begin{bmatrix} -\frac{\sqrt{6}}{18} & 0 & 0 & -\frac{2\sqrt{3}}{9} & 0 & 0 \\ 0 & \frac{\sqrt{6}}{18} & 0 & 0 & -\frac{2\sqrt{3}}{9} & 0 \\ 0 & 0 & \frac{\sqrt{6}}{6} & 0 & 0 & 0 \\ -\frac{2\sqrt{3}}{9} & 0 & 0 & \frac{\sqrt{6}}{18} & 0 & 0 \\ 0 & -\frac{2\sqrt{3}}{9} & 0 & 0 & -\frac{\sqrt{6}}{18} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{6} \end{bmatrix}$
149	symmetry	$\begin{matrix} x \\ \mathbb{M}_{1,1}^{(1,-1;a)}(E_{1g}) \end{matrix}$ $\begin{bmatrix} 0 & -\frac{\sqrt{6}}{18} & \frac{1}{3} & 0 & -\frac{\sqrt{3}}{9} & 0 \\ -\frac{\sqrt{6}}{18} & 0 & 0 & \frac{\sqrt{3}}{9} & 0 & -\frac{1}{3} \\ \frac{1}{3} & 0 & 0 & \frac{\sqrt{2}}{6} & 0 & 0 \\ 0 & \frac{\sqrt{3}}{9} & \frac{\sqrt{2}}{6} & 0 & \frac{\sqrt{6}}{9} & 0 \\ -\frac{\sqrt{3}}{9} & 0 & 0 & \frac{\sqrt{6}}{9} & 0 & \frac{\sqrt{2}}{6} \\ 0 & -\frac{1}{3} & 0 & 0 & \frac{\sqrt{2}}{6} & 0 \end{bmatrix}$
150	symmetry	$\begin{matrix} y \end{matrix}$

continued ...

Table 5

No.	multipole	matrix
	$\mathbb{M}_{1,2}^{(1,-1;a)}(E_{1g})$	$\begin{bmatrix} 0 & \frac{\sqrt{6}i}{18} & \frac{i}{3} & 0 & \frac{\sqrt{3}i}{9} & 0 \\ -\frac{\sqrt{6}i}{18} & 0 & 0 & \frac{\sqrt{3}i}{9} & 0 & \frac{i}{3} \\ -\frac{i}{3} & 0 & 0 & -\frac{\sqrt{2}i}{6} & 0 & 0 \\ 0 & -\frac{\sqrt{3}i}{9} & \frac{\sqrt{2}i}{6} & 0 & -\frac{\sqrt{6}i}{9} & 0 \\ -\frac{\sqrt{3}i}{9} & 0 & 0 & \frac{\sqrt{6}i}{9} & 0 & -\frac{\sqrt{2}i}{6} \\ 0 & -\frac{i}{3} & 0 & 0 & \frac{\sqrt{2}i}{6} & 0 \end{bmatrix}$
151	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{5}}{10} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{3\sqrt{5}}{10} & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{3\sqrt{5}}{10} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{5}}{10} \end{bmatrix}$
152	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{2} \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{2}i}{2} & 0 & 0 & 0 \end{bmatrix}$
153	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{2} \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{2}}{2} & 0 & 0 & 0 \end{bmatrix}$
154	symmetry	$-\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$

continued ...

Table 5

No.	multipole	matrix
		$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{10}}{10} & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{10}}{10} & 0 & \frac{\sqrt{30}}{10} & 0 \\ 0 & 0 & 0 & \frac{\sqrt{30}}{10} & 0 & -\frac{\sqrt{10}}{10} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{10}}{10} & 0 \end{bmatrix}$
155	symmetry	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{10}i}{10} & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{10}i}{10} & 0 & -\frac{\sqrt{30}i}{10} & 0 \\ 0 & 0 & 0 & \frac{\sqrt{30}i}{10} & 0 & \frac{\sqrt{10}i}{10} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{10}i}{10} & 0 \end{bmatrix}$
156	symmetry	$\sqrt{15}xyz$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{i}{2} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{i}{2} \\ 0 & 0 & -\frac{i}{2} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{i}{2} & 0 & 0 \end{bmatrix}$
157	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{1}{2} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{1}{2} \\ 0 & 0 & -\frac{1}{2} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{1}{2} & 0 & 0 \end{bmatrix}$
158	symmetry	$z$

continued ...

Table 5

No.	multipole	matrix					
	$\mathbb{M}_1^{(1,1;a)}(A_g)$	$\frac{\sqrt{30}}{9}$	0	0	$-\frac{\sqrt{15}}{18}$	0	0
		0	$-\frac{\sqrt{30}}{9}$	0	0	$-\frac{\sqrt{15}}{18}$	0
		0	0	$-\frac{\sqrt{30}}{30}$	0	0	0
		$-\frac{\sqrt{15}}{18}$	0	0	$-\frac{\sqrt{30}}{90}$	0	0
		0	$-\frac{\sqrt{15}}{18}$	0	0	$\frac{\sqrt{30}}{90}$	0
		0	0	0	0	0	$\frac{\sqrt{30}}{30}$
159	symmetry	$x$					
	$\mathbb{M}_{1,1}^{(1,1;a)}(E_{1g})$	0	$\frac{\sqrt{30}}{9}$	$\frac{\sqrt{5}}{12}$	0	$-\frac{\sqrt{15}}{36}$	0
		$\frac{\sqrt{30}}{9}$	0	0	$\frac{\sqrt{15}}{36}$	0	$-\frac{\sqrt{5}}{12}$
		$\frac{\sqrt{5}}{12}$	0	0	$-\frac{\sqrt{10}}{30}$	0	0
		0	$\frac{\sqrt{15}}{36}$	$-\frac{\sqrt{10}}{30}$	0	$-\frac{\sqrt{30}}{45}$	0
		$-\frac{\sqrt{15}}{36}$	0	0	$-\frac{\sqrt{30}}{45}$	0	$-\frac{\sqrt{10}}{30}$
		0	$-\frac{\sqrt{5}}{12}$	0	0	$-\frac{\sqrt{10}}{30}$	0
160	symmetry	$y$					
	$\mathbb{M}_{1,2}^{(1,1;a)}(E_{1g})$	0	$-\frac{\sqrt{30}i}{9}$	$\frac{\sqrt{5}i}{12}$	0	$\frac{\sqrt{15}i}{36}$	0
		$\frac{\sqrt{30}i}{9}$	0	0	$\frac{\sqrt{15}i}{36}$	0	$\frac{\sqrt{5}i}{12}$
		$-\frac{\sqrt{5}i}{12}$	0	0	$\frac{\sqrt{10}i}{30}$	0	0
		0	$-\frac{\sqrt{15}i}{36}$	$-\frac{\sqrt{10}i}{30}$	0	$\frac{\sqrt{30}i}{45}$	0
		$-\frac{\sqrt{15}i}{36}$	0	0	$-\frac{\sqrt{30}i}{45}$	0	$\frac{\sqrt{10}i}{30}$
		0	$-\frac{\sqrt{5}i}{12}$	0	0	$-\frac{\sqrt{10}i}{30}$	0

$$\begin{aligned} \text{bra:} &= \langle \frac{1}{2}, \frac{1}{2}; p |, \langle \frac{1}{2}, -\frac{1}{2}; p |, \langle \frac{3}{2}, \frac{3}{2}; p |, \langle \frac{3}{2}, \frac{1}{2}; p |, \langle \frac{3}{2}, -\frac{1}{2}; p |, \langle \frac{3}{2}, -\frac{3}{2}; p | \\ \text{ket:} &= | \frac{3}{2}, \frac{3}{2}; d \rangle, | \frac{3}{2}, \frac{1}{2}; d \rangle, | \frac{3}{2}, -\frac{1}{2}; d \rangle, | \frac{3}{2}, -\frac{3}{2}; d \rangle, | \frac{5}{2}, \frac{5}{2}; d \rangle, | \frac{5}{2}, \frac{3}{2}; d \rangle, | \frac{5}{2}, \frac{1}{2}; d \rangle, | \frac{5}{2}, -\frac{1}{2}; d \rangle, | \frac{5}{2}, -\frac{3}{2}; d \rangle, | \frac{5}{2}, -\frac{5}{2}; d \rangle \end{aligned}$$

Table 6: (p,d) block.

No.	multipole	matrix
161	symmetry	$z$

continued ...



Table 6

No.	multipole	matrix
	$\mathbb{Q}_1^{(a)}(A_u)$	$\begin{bmatrix} 0 & \frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{6}}{20} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{10} & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{6}}{60} & 0 & 0 & 0 & 0 & \frac{3}{10} & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{6}}{60} & 0 & 0 & 0 & 0 & \frac{3}{10} & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{6}}{20} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{10} & 0 \end{bmatrix}$
162	symmetry	$\begin{matrix} x \\ \mathbb{Q}_{1,1}^{(a)}(E_{1u}) \end{matrix} \begin{bmatrix} -\frac{1}{4} & 0 & \frac{\sqrt{3}}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{3}}{12} & 0 & \frac{1}{4} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{2}}{20} & 0 & 0 & -\frac{\sqrt{30}}{20} & 0 & \frac{\sqrt{3}}{20} & 0 & 0 & 0 \\ -\frac{\sqrt{2}}{20} & 0 & -\frac{\sqrt{6}}{30} & 0 & 0 & -\frac{3\sqrt{2}}{20} & 0 & \frac{3}{20} & 0 & 0 \\ 0 & -\frac{\sqrt{6}}{30} & 0 & -\frac{\sqrt{2}}{20} & 0 & 0 & -\frac{3}{20} & 0 & \frac{3\sqrt{2}}{20} & 0 \\ 0 & 0 & -\frac{\sqrt{2}}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{20} & 0 & \frac{\sqrt{30}}{20} \end{bmatrix}$
163	symmetry	$\begin{matrix} y \\ \mathbb{Q}_{1,2}^{(a)}(E_{1u}) \end{matrix} \begin{bmatrix} -\frac{i}{4} & 0 & -\frac{\sqrt{3}i}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{3}i}{12} & 0 & -\frac{i}{4} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{2}i}{20} & 0 & 0 & -\frac{\sqrt{30}i}{20} & 0 & -\frac{\sqrt{3}i}{20} & 0 & 0 & 0 \\ -\frac{\sqrt{2}i}{20} & 0 & \frac{\sqrt{6}i}{30} & 0 & 0 & -\frac{3\sqrt{2}i}{20} & 0 & -\frac{3i}{20} & 0 & 0 \\ 0 & -\frac{\sqrt{6}i}{30} & 0 & \frac{\sqrt{2}i}{20} & 0 & 0 & -\frac{3i}{20} & 0 & -\frac{3\sqrt{2}i}{20} & 0 \\ 0 & 0 & -\frac{\sqrt{2}i}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{20} & 0 & -\frac{\sqrt{30}i}{20} \end{bmatrix}$
164	symmetry	$\begin{matrix} -\frac{z(3x^2+3y^2-2z^2)}{2} \\ \mathbb{Q}_3^{(a)}(A_u) \end{matrix} \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{6} & 0 & 0 \\ \frac{1}{10} & 0 & 0 & 0 & 0 & -\frac{1}{5} & 0 & 0 & 0 & 0 \\ 0 & -\frac{3}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{15} & 0 & 0 & 0 \\ 0 & 0 & \frac{3}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{15} & 0 & 0 \\ 0 & 0 & 0 & -\frac{1}{10} & 0 & 0 & 0 & 0 & -\frac{1}{5} & 0 \end{bmatrix}$
165	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$

continued ...

Table 6

No.	multipole	matrix
	$\mathbb{Q}_3^{(a)}(B_u, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}i}{6} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{6} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{10}i}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{20} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{12} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{12} & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{10}i}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{20} & 0 & 0 & 0 & 0 \end{bmatrix}$
166	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{6} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{10}}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}}{20} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{12} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{12} & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{10}}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{20} & 0 & 0 & 0 & 0 \end{bmatrix}$
167	symmetry	$-\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{1}{6} & 0 & -\frac{\sqrt{2}}{6} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{6} & 0 & \frac{1}{6} & 0 \\ 0 & \frac{\sqrt{2}}{10} & 0 & 0 & \frac{\sqrt{30}}{60} & 0 & -\frac{\sqrt{3}}{10} & 0 & 0 & 0 \\ \frac{\sqrt{2}}{10} & 0 & -\frac{\sqrt{6}}{10} & 0 & 0 & -\frac{7\sqrt{2}}{60} & 0 & \frac{1}{30} & 0 & 0 \\ 0 & -\frac{\sqrt{6}}{10} & 0 & \frac{\sqrt{2}}{10} & 0 & 0 & -\frac{1}{30} & 0 & \frac{7\sqrt{2}}{60} & 0 \\ 0 & 0 & \frac{\sqrt{2}}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{10} & 0 & -\frac{\sqrt{30}}{60} \end{bmatrix}$
168	symmetry	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{i}{6} & 0 & \frac{\sqrt{2}i}{6} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{6} & 0 & -\frac{i}{6} & 0 \\ 0 & -\frac{\sqrt{2}i}{10} & 0 & 0 & \frac{\sqrt{30}i}{60} & 0 & \frac{\sqrt{3}i}{10} & 0 & 0 & 0 \\ \frac{\sqrt{2}i}{10} & 0 & \frac{\sqrt{6}i}{10} & 0 & 0 & -\frac{7\sqrt{2}i}{60} & 0 & -\frac{i}{30} & 0 & 0 \\ 0 & -\frac{\sqrt{6}i}{10} & 0 & -\frac{\sqrt{2}i}{10} & 0 & 0 & -\frac{i}{30} & 0 & -\frac{7\sqrt{2}i}{60} & 0 \\ 0 & 0 & \frac{\sqrt{2}i}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{3}i}{10} & 0 & \frac{\sqrt{30}i}{60} \end{bmatrix}$
169	symmetry	$\sqrt{15}xyz$

continued ...

Table 6

No.	multipole	matrix
	$\mathbb{Q}_{3,1}^{(a)}(E_{2u})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{12} & 0 & 0 & 0 & \frac{\sqrt{10}i}{12} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{12} & 0 & 0 & 0 & -\frac{\sqrt{2}i}{12} \\ 0 & 0 & -\frac{\sqrt{5}i}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{30} & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{5}i}{10} & \frac{i}{6} & 0 & 0 & 0 & \frac{\sqrt{5}i}{30} & 0 \\ \frac{\sqrt{5}i}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{30} & 0 & 0 & 0 & -\frac{i}{6} \\ 0 & -\frac{\sqrt{5}i}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}i}{30} & 0 & 0 & 0 \end{bmatrix}$
170	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$ $\mathbb{Q}_{3,2}^{(a)}(E_{2u}) \begin{bmatrix} 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{12} & 0 & 0 & 0 & -\frac{\sqrt{10}}{12} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{12} & 0 & 0 & 0 & \frac{\sqrt{2}}{12} \\ 0 & 0 & \frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{30} & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{5}}{10} & \frac{1}{6} & 0 & 0 & 0 & -\frac{\sqrt{5}}{30} & 0 \\ \frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{30} & 0 & 0 & 0 & \frac{1}{6} \\ 0 & -\frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{30} & 0 & 0 & 0 \end{bmatrix}$
171	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$ $\mathbb{Q}_3^{(1,-1;a)}(A_u) \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{6} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{6} & 0 & 0 \\ \frac{\sqrt{6}}{60} & 0 & 0 & 0 & 0 & \frac{2\sqrt{6}}{15} & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{6}}{20} & 0 & 0 & 0 & 0 & -\frac{4}{15} & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{6}}{20} & 0 & 0 & 0 & 0 & -\frac{4}{15} & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{6}}{60} & 0 & 0 & 0 & 0 & \frac{2\sqrt{6}}{15} & 0 \end{bmatrix}$
172	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$ $\mathbb{Q}_3^{(1,-1;a)}(B_u, 1) \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{6} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{6} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{15}i}{30} & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}i}{15} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{i}{3} \\ 0 & 0 & 0 & 0 & -\frac{i}{3} & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{15}i}{30} & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}i}{15} & 0 & 0 & 0 & 0 \end{bmatrix}$
173	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$

continued ...

Table 6

No.	multipole	matrix
	$\mathbb{Q}_3^{(1,-1;a)}(B_u, 2)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{6} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{6} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{15}}{30} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{15} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{1}{3} \\ 0 & 0 & 0 & 0 & -\frac{1}{3} & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{15}}{30} & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{15} & 0 & 0 & 0 & 0 \end{bmatrix}$
174	symmetry	$-\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$ $\mathbb{Q}_{3,1}^{(1,-1;a)}(E_{1u}) \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{18} & 0 & -\frac{\sqrt{3}}{9} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{9} & 0 & \frac{\sqrt{6}}{18} & 0 \\ 0 & \frac{\sqrt{3}}{30} & 0 & 0 & -\frac{\sqrt{5}}{15} & 0 & \frac{\sqrt{2}}{5} & 0 & 0 & 0 \\ \frac{\sqrt{3}}{30} & 0 & -\frac{1}{10} & 0 & 0 & \frac{7\sqrt{3}}{45} & 0 & -\frac{\sqrt{6}}{45} & 0 & 0 \\ 0 & -\frac{1}{10} & 0 & \frac{\sqrt{3}}{30} & 0 & 0 & \frac{\sqrt{6}}{45} & 0 & -\frac{7\sqrt{3}}{45} & 0 \\ 0 & 0 & \frac{\sqrt{3}}{30} & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{5} & 0 & \frac{\sqrt{5}}{15} \end{bmatrix}$
175	symmetry	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$ $\mathbb{Q}_{3,2}^{(1,-1;a)}(E_{1u}) \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{18} & 0 & \frac{\sqrt{3}i}{9} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{9} & 0 & -\frac{\sqrt{6}i}{18} & 0 \\ 0 & -\frac{\sqrt{3}i}{30} & 0 & 0 & -\frac{\sqrt{5}i}{15} & 0 & -\frac{\sqrt{2}i}{5} & 0 & 0 & 0 \\ \frac{\sqrt{3}i}{30} & 0 & \frac{i}{10} & 0 & 0 & \frac{7\sqrt{3}i}{45} & 0 & \frac{\sqrt{6}i}{45} & 0 & 0 \\ 0 & -\frac{i}{10} & 0 & -\frac{\sqrt{3}i}{30} & 0 & 0 & \frac{\sqrt{6}i}{45} & 0 & \frac{7\sqrt{3}i}{45} & 0 \\ 0 & 0 & \frac{\sqrt{3}i}{30} & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{5} & 0 & -\frac{\sqrt{5}i}{15} \end{bmatrix}$
176	symmetry	$\sqrt{15}xyz$ $\mathbb{Q}_{3,1}^{(1,-1;a)}(E_{2u}) \begin{bmatrix} 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{18} & 0 & 0 & 0 & \frac{\sqrt{15}i}{18} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{18} & 0 & 0 & 0 & -\frac{\sqrt{3}i}{18} \\ 0 & 0 & -\frac{\sqrt{30}i}{60} & 0 & 0 & 0 & 0 & -\frac{2\sqrt{5}i}{15} & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{30}i}{60} & -\frac{\sqrt{6}i}{9} & 0 & 0 & 0 & -\frac{\sqrt{30}i}{45} & 0 \\ \frac{\sqrt{30}i}{60} & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{45} & 0 & 0 & 0 & \frac{\sqrt{6}i}{9} \\ 0 & -\frac{\sqrt{30}i}{60} & 0 & 0 & 0 & 0 & \frac{2\sqrt{5}i}{15} & 0 & 0 & 0 \end{bmatrix}$
177	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$

continued ...

Table 6

No.	multipole	matrix
	$\mathbb{Q}_{3,2}^{(1,-1;a)}(E_{2u})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{18} & 0 & 0 & 0 & -\frac{\sqrt{15}}{18} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{18} & 0 & 0 & 0 & \frac{\sqrt{3}}{18} \\ 0 & 0 & \frac{\sqrt{30}}{60} & 0 & 0 & 0 & 0 & \frac{2\sqrt{5}}{15} & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{30}}{60} & -\frac{\sqrt{6}}{9} & 0 & 0 & 0 & \frac{\sqrt{30}}{45} & 0 \\ \frac{\sqrt{30}}{60} & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{45} & 0 & 0 & 0 & -\frac{\sqrt{6}}{9} \\ 0 & -\frac{\sqrt{30}}{60} & 0 & 0 & 0 & 0 & \frac{2\sqrt{5}}{15} & 0 & 0 & 0 \end{bmatrix}$
178	symmetry	$\begin{matrix} z \\ \mathbb{Q}_1^{(1,0;a)}(A_u) \end{matrix} \begin{bmatrix} 0 & -\frac{\sqrt{6}}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{6}}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{3}}{5} & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{10} & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{3}}{15} & 0 & 0 & 0 & 0 & \frac{3\sqrt{2}}{20} & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{3}}{15} & 0 & 0 & 0 & 0 & \frac{3\sqrt{2}}{20} & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{3}}{5} & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{10} & 0 \end{bmatrix}$
179	symmetry	$\begin{matrix} x \\ \mathbb{Q}_{1,1}^{(1,0;a)}(E_{1u}) \end{matrix} \begin{bmatrix} \frac{\sqrt{2}}{8} & 0 & -\frac{\sqrt{6}}{24} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{6}}{24} & 0 & -\frac{\sqrt{2}}{8} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{1}{5} & 0 & 0 & -\frac{\sqrt{15}}{20} & 0 & \frac{\sqrt{6}}{40} & 0 & 0 & 0 \\ \frac{1}{5} & 0 & \frac{2\sqrt{3}}{15} & 0 & 0 & -\frac{3}{20} & 0 & \frac{3\sqrt{2}}{40} & 0 & 0 \\ 0 & \frac{2\sqrt{3}}{15} & 0 & \frac{1}{5} & 0 & 0 & -\frac{3\sqrt{2}}{40} & 0 & \frac{3}{20} & 0 \\ 0 & 0 & \frac{1}{5} & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{40} & 0 & \frac{\sqrt{15}}{20} \end{bmatrix}$
180	symmetry	$\begin{matrix} y \\ \mathbb{Q}_{1,2}^{(1,0;a)}(E_{1u}) \end{matrix} \begin{bmatrix} \frac{\sqrt{2}i}{8} & 0 & \frac{\sqrt{6}i}{24} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{6}i}{24} & 0 & \frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{i}{5} & 0 & 0 & -\frac{\sqrt{15}i}{20} & 0 & -\frac{\sqrt{6}i}{40} & 0 & 0 & 0 \\ \frac{i}{5} & 0 & -\frac{2\sqrt{3}i}{15} & 0 & 0 & -\frac{3i}{20} & 0 & -\frac{3\sqrt{2}i}{40} & 0 & 0 \\ 0 & \frac{2\sqrt{3}i}{15} & 0 & -\frac{i}{5} & 0 & 0 & -\frac{3\sqrt{2}i}{40} & 0 & -\frac{3i}{20} & 0 \\ 0 & 0 & \frac{i}{5} & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{40} & 0 & -\frac{\sqrt{15}i}{20} \end{bmatrix}$
181	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$

continued ...

Table 6

No.	multipole	matrix
	$\mathbb{Q}_3^{(1,0;a)}(A_u)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & -\frac{1}{3} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{1}{3} & 0 & 0 \\ -\frac{\sqrt{3}}{15} & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{30} & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{3}}{5} & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{30} & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{3}}{5} & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{30} & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{3}}{15} & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{30} & 0 \end{bmatrix}$
182	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$ $\mathbb{Q}_3^{(1,0;a)}(B_u, 1) \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{i}{3} \\ 0 & 0 & 0 & 0 & -\frac{i}{3} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{30}i}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{120} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{24} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{24} & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{30}i}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{120} & 0 & 0 & 0 & 0 \end{bmatrix}$
183	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$ $\mathbb{Q}_3^{(1,0;a)}(B_u, 2) \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{1}{3} \\ 0 & 0 & 0 & 0 & -\frac{1}{3} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{30}}{15} & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{120} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{24} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{24} & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{30}}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{120} & 0 & 0 & 0 & 0 \end{bmatrix}$
184	symmetry	$-\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$ $\mathbb{Q}_{3,1}^{(1,0;a)}(E_{1u}) \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{9} & 0 & -\frac{\sqrt{6}}{9} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{9} & 0 & \frac{\sqrt{3}}{9} & 0 \\ 0 & -\frac{\sqrt{6}}{15} & 0 & 0 & \frac{\sqrt{10}}{120} & 0 & -\frac{1}{20} & 0 & 0 & 0 \\ -\frac{\sqrt{6}}{15} & 0 & \frac{\sqrt{2}}{5} & 0 & 0 & -\frac{7\sqrt{6}}{360} & 0 & \frac{\sqrt{3}}{180} & 0 & 0 \\ 0 & \frac{\sqrt{2}}{5} & 0 & -\frac{\sqrt{6}}{15} & 0 & 0 & -\frac{\sqrt{3}}{180} & 0 & \frac{7\sqrt{6}}{360} & 0 \\ 0 & 0 & -\frac{\sqrt{6}}{15} & 0 & 0 & 0 & 0 & \frac{1}{20} & 0 & -\frac{\sqrt{10}}{120} \end{bmatrix}$
185	symmetry	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$

continued ...

Table 6

No.	multipole	matrix
	$\mathbb{Q}_{3,2}^{(1,0;a)}(E_{1u})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}i}{9} & 0 & \frac{\sqrt{6}i}{9} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{9} & 0 & -\frac{\sqrt{3}i}{9} & 0 \\ 0 & \frac{\sqrt{6}i}{15} & 0 & 0 & \frac{\sqrt{10}i}{120} & 0 & \frac{i}{20} & 0 & 0 & 0 \\ -\frac{\sqrt{6}i}{15} & 0 & -\frac{\sqrt{2}i}{5} & 0 & 0 & -\frac{7\sqrt{6}i}{360} & 0 & -\frac{\sqrt{3}i}{180} & 0 & 0 \\ 0 & \frac{\sqrt{2}i}{5} & 0 & \frac{\sqrt{6}i}{15} & 0 & 0 & -\frac{\sqrt{3}i}{180} & 0 & -\frac{7\sqrt{6}i}{360} & 0 \\ 0 & 0 & -\frac{\sqrt{6}i}{15} & 0 & 0 & 0 & 0 & \frac{i}{20} & 0 & \frac{\sqrt{10}i}{120} \end{bmatrix}$
186	symmetry	$\begin{array}{c} \sqrt{15}xyz \\ \mathbb{Q}_{3,1}^{(1,0;a)}(E_{2u}) \end{array} \begin{bmatrix} 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{18} & 0 & 0 & 0 & \frac{\sqrt{30}i}{18} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{18} & 0 & 0 & 0 & -\frac{\sqrt{6}i}{18} \\ 0 & 0 & \frac{\sqrt{15}i}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{60} & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{15}i}{15} & \frac{\sqrt{3}i}{36} & 0 & 0 & 0 & \frac{\sqrt{15}i}{180} & 0 \\ -\frac{\sqrt{15}i}{15} & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}i}{180} & 0 & 0 & 0 & -\frac{\sqrt{3}i}{36} \\ 0 & \frac{\sqrt{15}i}{15} & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}i}{60} & 0 & 0 & 0 \end{bmatrix}$
187	symmetry	$\begin{array}{c} \frac{\sqrt{15}z(x-y)(x+y)}{2} \\ \mathbb{Q}_{3,2}^{(1,0;a)}(E_{2u}) \end{array} \begin{bmatrix} 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{18} & 0 & 0 & 0 & -\frac{\sqrt{30}}{18} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{18} & 0 & 0 & 0 & \frac{\sqrt{6}}{18} \\ 0 & 0 & -\frac{\sqrt{15}}{15} & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}}{60} & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{15}}{15} & \frac{\sqrt{3}}{36} & 0 & 0 & 0 & -\frac{\sqrt{15}}{180} & 0 \\ -\frac{\sqrt{15}}{15} & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{180} & 0 & 0 & 0 & \frac{\sqrt{3}}{36} \\ 0 & \frac{\sqrt{15}}{15} & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}}{60} & 0 & 0 & 0 \end{bmatrix}$
188	symmetry	$\begin{array}{c} z \\ \mathbb{Q}_1^{(1,1;a)}(A_u) \end{array} \begin{bmatrix} 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{3}{10} & 0 & 0 & 0 & 0 & \frac{1}{10} & 0 & 0 & 0 & 0 \\ 0 & -\frac{1}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{20} & 0 & 0 & 0 \\ 0 & 0 & \frac{1}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{20} & 0 & 0 \\ 0 & 0 & 0 & \frac{3}{10} & 0 & 0 & 0 & 0 & \frac{1}{10} & 0 \end{bmatrix}$
189	symmetry	$x$

continued ...

Table 6

No.	multipole	matrix
	$\mathbb{Q}_{1,1}^{(1,1;a)}(E_{1u})$	$\begin{bmatrix} \frac{\sqrt{6}}{8} & 0 & -\frac{\sqrt{2}}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{2}}{8} & 0 & -\frac{\sqrt{6}}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{3}}{10} & 0 & 0 & -\frac{\sqrt{5}}{20} & 0 & \frac{\sqrt{2}}{40} & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{3}}{10} & 0 & -\frac{1}{5} & 0 & 0 & -\frac{\sqrt{3}}{20} & 0 & \frac{\sqrt{6}}{40} & 0 & 0 & 0 \\ 0 & -\frac{1}{5} & 0 & -\frac{\sqrt{3}}{10} & 0 & 0 & -\frac{\sqrt{6}}{40} & 0 & \frac{\sqrt{3}}{20} & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{3}}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{40} & 0 & \frac{\sqrt{5}}{20} & 0 \end{bmatrix}$
190	symmetry	$y$ $\mathbb{Q}_{1,2}^{(1,1;a)}(E_{1u}) \begin{bmatrix} \frac{\sqrt{6}i}{8} & 0 & \frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{2}i}{8} & 0 & \frac{\sqrt{6}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{3}i}{10} & 0 & 0 & -\frac{\sqrt{5}i}{20} & 0 & -\frac{\sqrt{2}i}{40} & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{3}i}{10} & 0 & \frac{i}{5} & 0 & 0 & -\frac{\sqrt{3}i}{20} & 0 & -\frac{\sqrt{6}i}{40} & 0 & 0 & 0 \\ 0 & -\frac{i}{5} & 0 & \frac{\sqrt{3}i}{10} & 0 & 0 & -\frac{\sqrt{6}i}{40} & 0 & -\frac{\sqrt{3}i}{20} & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{3}i}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{40} & 0 & -\frac{\sqrt{5}i}{20} & 0 \end{bmatrix}$
191	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$ $\mathbb{G}_2^{(a)}(A_u) \begin{bmatrix} 0 & \frac{\sqrt{5}i}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{30} & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{5}i}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{30} & 0 & 0 & 0 \\ -\frac{\sqrt{10}i}{20} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{10} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{10}i}{20} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{30} & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{10}i}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}i}{30} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{10}i}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}i}{10} & 0 & 0 \end{bmatrix}$
192	symmetry	$\sqrt{3}yz$ $\mathbb{G}_{2,1}^{(a)}(E_{1u}) \begin{bmatrix} \frac{\sqrt{5}}{20} & 0 & \frac{\sqrt{15}}{20} & 0 & 0 & \frac{\sqrt{5}}{15} & 0 & \frac{\sqrt{10}}{30} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{15}}{20} & 0 & -\frac{\sqrt{5}}{20} & 0 & 0 & \frac{\sqrt{10}}{30} & 0 & \frac{\sqrt{5}}{15} & 0 & 0 \\ 0 & -\frac{\sqrt{10}}{20} & 0 & 0 & \frac{\sqrt{6}}{12} & 0 & \frac{\sqrt{15}}{20} & 0 & 0 & 0 & 0 \\ \frac{\sqrt{10}}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}}{60} & 0 & \frac{\sqrt{5}}{12} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{10}}{20} & 0 & 0 & -\frac{\sqrt{5}}{12} & 0 & \frac{\sqrt{10}}{60} & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{10}}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{20} & 0 & -\frac{\sqrt{6}}{12} & 0 \end{bmatrix}$
193	symmetry	$-\sqrt{3}xz$

continued ...



Table 6

No.	multipole	matrix
	$\mathbb{G}_{2,2}^{(a)}(E_{1u})$	$\begin{bmatrix} \frac{\sqrt{5}i}{20} & 0 & -\frac{\sqrt{15}i}{20} & 0 & 0 & \frac{\sqrt{5}i}{15} & 0 & -\frac{\sqrt{10}i}{30} & 0 & 0 \\ 0 & -\frac{\sqrt{15}i}{20} & 0 & \frac{\sqrt{5}i}{20} & 0 & 0 & \frac{\sqrt{10}i}{30} & 0 & -\frac{\sqrt{5}i}{15} & 0 \\ 0 & \frac{\sqrt{10}i}{20} & 0 & 0 & \frac{\sqrt{6}i}{12} & 0 & -\frac{\sqrt{15}i}{20} & 0 & 0 & 0 \\ \frac{\sqrt{10}i}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}i}{60} & 0 & -\frac{\sqrt{5}i}{12} & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{10}i}{20} & 0 & 0 & -\frac{\sqrt{5}i}{12} & 0 & -\frac{\sqrt{10}i}{60} & 0 \\ 0 & 0 & -\frac{\sqrt{10}i}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}i}{20} & 0 & \frac{\sqrt{6}i}{12} \end{bmatrix}$
194	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$ $\mathbb{G}_{2,1}^{(a)}(E_{2u}) \begin{bmatrix} 0 & 0 & 0 & \frac{\sqrt{5}i}{10} & \frac{i}{6} & 0 & 0 & 0 & \frac{\sqrt{5}i}{30} & 0 \\ -\frac{\sqrt{5}i}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{5}i}{30} & 0 & 0 & 0 & \frac{i}{6} \\ 0 & 0 & -\frac{\sqrt{10}i}{20} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{30} & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{10}i}{20} & -\frac{\sqrt{2}i}{6} & 0 & 0 & 0 & \frac{\sqrt{10}i}{15} & 0 \\ -\frac{\sqrt{10}i}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}i}{15} & 0 & 0 & 0 & \frac{\sqrt{2}i}{6} \\ 0 & -\frac{\sqrt{10}i}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}i}{30} & 0 & 0 & 0 \end{bmatrix}$
195	symmetry	$-\sqrt{3}xy$ $\mathbb{G}_{2,2}^{(a)}(E_{2u}) \begin{bmatrix} 0 & 0 & 0 & -\frac{\sqrt{5}}{10} & \frac{1}{6} & 0 & 0 & 0 & -\frac{\sqrt{5}}{30} & 0 \\ -\frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{5}}{30} & 0 & 0 & 0 & -\frac{1}{6} \\ 0 & 0 & \frac{\sqrt{10}}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{30} & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{10}}{20} & -\frac{\sqrt{2}}{6} & 0 & 0 & 0 & -\frac{\sqrt{10}}{15} & 0 \\ -\frac{\sqrt{10}}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}}{15} & 0 & 0 & 0 & -\frac{\sqrt{2}}{6} \\ 0 & -\frac{\sqrt{10}}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{30} & 0 & 0 & 0 \end{bmatrix}$
196	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$ $\mathbb{G}_2^{(1,-1;a)}(A_u) \begin{bmatrix} 0 & -\frac{\sqrt{2}i}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{5} & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{2}i}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{5} & 0 & 0 \\ \frac{i}{10} & 0 & 0 & 0 & 0 & \frac{3i}{10} & 0 & 0 & 0 & 0 \\ 0 & -\frac{i}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{20} & 0 & 0 & 0 \\ 0 & 0 & -\frac{i}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{20} & 0 & 0 \\ 0 & 0 & 0 & \frac{i}{10} & 0 & 0 & 0 & 0 & -\frac{3i}{10} & 0 \end{bmatrix}$
197	symmetry	$\sqrt{3}yz$

continued ...

Table 6

No.	multipole	matrix
	$\mathbb{G}_{2,1}^{(1,-1;a)}(E_{1u})$	$\begin{bmatrix} -\frac{\sqrt{2}}{40} & 0 & -\frac{\sqrt{6}}{40} & 0 & 0 & -\frac{\sqrt{2}}{5} & 0 & -\frac{1}{5} & 0 & 0 \\ 0 & \frac{\sqrt{6}}{40} & 0 & \frac{\sqrt{2}}{40} & 0 & 0 & -\frac{1}{5} & 0 & -\frac{\sqrt{2}}{5} & 0 \\ 0 & \frac{1}{10} & 0 & 0 & \frac{\sqrt{15}}{20} & 0 & \frac{3\sqrt{6}}{40} & 0 & 0 & 0 \\ -\frac{1}{10} & 0 & 0 & 0 & 0 & -\frac{1}{20} & 0 & \frac{\sqrt{2}}{8} & 0 & 0 \\ 0 & 0 & 0 & -\frac{1}{10} & 0 & 0 & -\frac{\sqrt{2}}{8} & 0 & \frac{1}{20} & 0 \\ 0 & 0 & \frac{1}{10} & 0 & 0 & 0 & 0 & -\frac{3\sqrt{6}}{40} & 0 & -\frac{\sqrt{15}}{20} \end{bmatrix}$
198	symmetry	$-\sqrt{3}xz$ $\mathbb{G}_{2,2}^{(1,-1;a)}(E_{1u})$ $\begin{bmatrix} -\frac{\sqrt{2}i}{40} & 0 & \frac{\sqrt{6}i}{40} & 0 & 0 & -\frac{\sqrt{2}i}{5} & 0 & \frac{i}{5} & 0 & 0 \\ 0 & \frac{\sqrt{6}i}{40} & 0 & -\frac{\sqrt{2}i}{40} & 0 & 0 & -\frac{i}{5} & 0 & \frac{\sqrt{2}i}{5} & 0 \\ 0 & -\frac{i}{10} & 0 & 0 & \frac{\sqrt{15}i}{20} & 0 & -\frac{3\sqrt{6}i}{40} & 0 & 0 & 0 \\ -\frac{i}{10} & 0 & 0 & 0 & 0 & -\frac{i}{20} & 0 & -\frac{\sqrt{2}i}{8} & 0 & 0 \\ 0 & 0 & 0 & \frac{i}{10} & 0 & 0 & -\frac{\sqrt{2}i}{8} & 0 & -\frac{i}{20} & 0 \\ 0 & 0 & \frac{i}{10} & 0 & 0 & 0 & 0 & -\frac{3\sqrt{6}i}{40} & 0 & \frac{\sqrt{15}i}{20} \end{bmatrix}$
199	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$ $\mathbb{G}_{2,1}^{(1,-1;a)}(E_{2u})$ $\begin{bmatrix} 0 & 0 & 0 & -\frac{\sqrt{2}i}{20} & -\frac{\sqrt{10}i}{10} & 0 & 0 & 0 & -\frac{\sqrt{2}i}{10} & 0 \\ \frac{\sqrt{2}i}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{10} & 0 & 0 & 0 & -\frac{\sqrt{10}i}{10} \\ 0 & 0 & \frac{i}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{20} & 0 & 0 \\ 0 & 0 & 0 & \frac{i}{10} & -\frac{\sqrt{5}i}{10} & 0 & 0 & 0 & \frac{i}{5} & 0 \\ \frac{i}{10} & 0 & 0 & 0 & 0 & -\frac{i}{5} & 0 & 0 & 0 & \frac{\sqrt{5}i}{10} \\ 0 & \frac{i}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{20} & 0 & 0 & 0 \end{bmatrix}$
200	symmetry	$-\sqrt{3}xy$ $\mathbb{G}_{2,2}^{(1,-1;a)}(E_{2u})$ $\begin{bmatrix} 0 & 0 & 0 & \frac{\sqrt{2}}{20} & -\frac{\sqrt{10}}{10} & 0 & 0 & 0 & \frac{\sqrt{2}}{10} & 0 \\ \frac{\sqrt{2}}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{10} & 0 & 0 & 0 & \frac{\sqrt{10}}{10} \\ 0 & 0 & -\frac{1}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{20} & 0 & 0 \\ 0 & 0 & 0 & -\frac{1}{10} & -\frac{\sqrt{5}}{10} & 0 & 0 & 0 & -\frac{1}{5} & 0 \\ \frac{1}{10} & 0 & 0 & 0 & 0 & -\frac{1}{5} & 0 & 0 & 0 & -\frac{\sqrt{5}}{10} \\ 0 & \frac{1}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{20} & 0 & 0 & 0 \end{bmatrix}$
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
	$\mathbb{G}_4^{(1,-1;a)}(A_u)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}i}{14} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}i}{14} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}i}{14} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}i}{14} & 0 \end{bmatrix}$
202	symmetry	$\frac{\sqrt{70}xz(x^2-3y^2)}{4}$ $\mathbb{G}_4^{(1,-1;a)}(B_u, 1)$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}i}{8} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{8} & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}i}{8} & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
203	symmetry	$\frac{\sqrt{70}yz(3x^2-y^2)}{4}$ $\mathbb{G}_4^{(1,-1;a)}(B_u, 2)$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}}{8} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{8} & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{8} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{8} & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
204	symmetry	$-\frac{\sqrt{10}yz(3x^2+3y^2-4z^2)}{4}$ $\mathbb{G}_{4,1}^{(1,-1;a)}(E_{1u})$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{14}}{56} & 0 & -\frac{\sqrt{35}}{28} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{210}}{56} & 0 & \frac{\sqrt{105}}{28} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}}{28} & 0 & -\frac{\sqrt{210}}{56} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{35}}{28} & 0 & \frac{\sqrt{14}}{56} & 0 \end{bmatrix}$
205	symmetry	$\frac{\sqrt{10}xz(3x^2+3y^2-4z^2)}{4}$

continued ...

Table 6

No.	multipole	matrix
	$\mathbb{G}_{4,2}^{(1,-1;a)}(E_{1u})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{14}i}{56} & 0 & \frac{\sqrt{35}i}{28} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{210}i}{56} & 0 & -\frac{\sqrt{105}i}{28} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}i}{28} & 0 & \frac{\sqrt{210}i}{56} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{35}i}{28} & 0 & -\frac{\sqrt{14}i}{56} \end{bmatrix}$
206	symmetry	$\frac{\sqrt{35}(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$ $\mathbb{G}_{4,1}^{(1,-1;a)}(E_{2u}, 1)$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{i}{2} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{i}{2} & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
207	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$ $\mathbb{G}_{4,2}^{(1,-1;a)}(E_{2u}, 1)$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{1}{2} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{1}{2} & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
208	symmetry	$-\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$ $\mathbb{G}_{4,1}^{(1,-1;a)}(E_{2u}, 2)$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}i}{28} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{21}i}{28} & 0 & 0 & 0 & \frac{\sqrt{105}i}{28} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}i}{28} & 0 & 0 & 0 & -\frac{\sqrt{21}i}{28} \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{70}i}{28} & 0 & 0 & 0 \end{bmatrix}$
209	symmetry	$\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$

continued ...

Table 6

No.	multipole	matrix
	$\mathbb{G}_{4,2}^{(1,-1;a)}(E_{2u}, 2)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{70}}{28} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{28} & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}}{28} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}}{28} & 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{28} \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{70}}{28} & 0 & 0 & 0 & 0 \end{bmatrix}$
210	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$
	$\mathbb{G}_2^{(1,0;a)}(A_u)$	$\begin{bmatrix} 0 & \frac{\sqrt{30}i}{60} & 0 & 0 & 0 & 0 & -\frac{2\sqrt{5}i}{15} & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{30}i}{60} & 0 & 0 & 0 & 0 & -\frac{2\sqrt{5}i}{15} & 0 & 0 & 0 \\ -\frac{\sqrt{15}i}{15} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}i}{30} & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{15}i}{15} & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}i}{60} & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{15}i}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{60} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{15}i}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{30} & 0 & 0 \end{bmatrix}$
211	symmetry	$\sqrt{3}yz$
	$\mathbb{G}_{2,1}^{(1,0;a)}(E_{1u})$	$\begin{bmatrix} \frac{\sqrt{30}}{120} & 0 & \frac{\sqrt{10}}{40} & 0 & 0 & -\frac{2\sqrt{30}}{45} & 0 & -\frac{2\sqrt{15}}{45} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{10}}{40} & 0 & -\frac{\sqrt{30}}{120} & 0 & 0 & -\frac{2\sqrt{15}}{45} & 0 & -\frac{2\sqrt{30}}{45} & 0 & 0 \\ 0 & -\frac{\sqrt{15}}{15} & 0 & 0 & -\frac{1}{12} & 0 & -\frac{\sqrt{10}}{40} & 0 & 0 & 0 & 0 \\ \frac{\sqrt{15}}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{180} & 0 & -\frac{\sqrt{30}}{72} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{15}}{15} & 0 & 0 & \frac{\sqrt{30}}{72} & 0 & -\frac{\sqrt{15}}{180} & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{15}}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{40} & 0 & \frac{1}{12} & 0 \end{bmatrix}$
212	symmetry	$-\sqrt{3}xz$
	$\mathbb{G}_{2,2}^{(1,0;a)}(E_{1u})$	$\begin{bmatrix} \frac{\sqrt{30}i}{120} & 0 & -\frac{\sqrt{10}i}{40} & 0 & 0 & -\frac{2\sqrt{30}i}{45} & 0 & \frac{2\sqrt{15}i}{45} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{10}i}{40} & 0 & \frac{\sqrt{30}i}{120} & 0 & 0 & -\frac{2\sqrt{15}i}{45} & 0 & \frac{2\sqrt{30}i}{45} & 0 & 0 \\ 0 & \frac{\sqrt{15}i}{15} & 0 & 0 & -\frac{i}{12} & 0 & \frac{\sqrt{10}i}{40} & 0 & 0 & 0 & 0 \\ \frac{\sqrt{15}i}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{180} & 0 & \frac{\sqrt{30}i}{72} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{15}i}{15} & 0 & 0 & \frac{\sqrt{30}i}{72} & 0 & \frac{\sqrt{15}i}{180} & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{15}i}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{40} & 0 & -\frac{i}{12} & 0 \end{bmatrix}$
213	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$

continued ...

Table 6

No.	multipole	matrix
	$\mathbb{G}_{2,1}^{(1,0;a)}(E_{2u})$	$\begin{bmatrix} 0 & 0 & 0 & \frac{\sqrt{30}i}{60} & -\frac{\sqrt{6}i}{9} & 0 & 0 & 0 & -\frac{\sqrt{30}i}{45} & 0 \\ -\frac{\sqrt{30}i}{60} & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}i}{45} & 0 & 0 & 0 & -\frac{\sqrt{6}i}{9} \\ 0 & 0 & -\frac{\sqrt{15}i}{15} & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}i}{60} & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{15}i}{15} & \frac{\sqrt{3}i}{18} & 0 & 0 & 0 & -\frac{\sqrt{15}i}{45} & 0 \\ -\frac{\sqrt{15}i}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{45} & 0 & 0 & 0 & -\frac{\sqrt{3}i}{18} \\ 0 & -\frac{\sqrt{15}i}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{60} & 0 & 0 & 0 \end{bmatrix}$
214	symmetry	$-\sqrt{3}xy$ $\mathbb{G}_{2,2}^{(1,0;a)}(E_{2u}) \begin{bmatrix} 0 & 0 & 0 & -\frac{\sqrt{30}}{60} & -\frac{\sqrt{6}}{9} & 0 & 0 & 0 & \frac{\sqrt{30}}{45} & 0 \\ -\frac{\sqrt{30}}{60} & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{45} & 0 & 0 & 0 & \frac{\sqrt{6}}{9} \\ 0 & 0 & \frac{\sqrt{15}}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{60} & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{15}}{15} & \frac{\sqrt{3}}{18} & 0 & 0 & 0 & \frac{\sqrt{15}}{45} & 0 \\ -\frac{\sqrt{15}}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{45} & 0 & 0 & 0 & \frac{\sqrt{3}}{18} \\ 0 & -\frac{\sqrt{15}}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{60} & 0 & 0 & 0 \end{bmatrix}$
215	symmetry	$1$ $\mathbb{G}_0^{(1,1;a)}(A_u) \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
216	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$ $\mathbb{G}_2^{(1,1;a)}(A_u) \begin{bmatrix} 0 & \frac{\sqrt{42}i}{15} & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}i}{30} & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{42}i}{15} & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}i}{30} & 0 & 0 \\ \frac{\sqrt{21}i}{30} & 0 & 0 & 0 & 0 & -\frac{2\sqrt{21}i}{105} & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{21}i}{30} & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}i}{105} & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{21}i}{30} & 0 & 0 & 0 & 0 & \frac{\sqrt{14}i}{105} & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{21}i}{30} & 0 & 0 & 0 & 0 & \frac{2\sqrt{21}i}{105} & 0 \end{bmatrix}$
217	symmetry	$\sqrt{3}yz$

continued ...

Table 6

No.	multipole	matrix
	$\mathbb{G}_{2,1}^{(1,1;a)}(E_{1u})$	$\begin{bmatrix} \frac{\sqrt{42}}{30} & 0 & \frac{\sqrt{14}}{10} & 0 & 0 & -\frac{\sqrt{42}}{90} & 0 & -\frac{\sqrt{21}}{90} & 0 & 0 \\ 0 & -\frac{\sqrt{14}}{10} & 0 & -\frac{\sqrt{42}}{30} & 0 & 0 & -\frac{\sqrt{21}}{90} & 0 & -\frac{\sqrt{42}}{90} & 0 \\ 0 & \frac{\sqrt{21}}{30} & 0 & 0 & -\frac{\sqrt{35}}{105} & 0 & -\frac{\sqrt{14}}{70} & 0 & 0 & 0 \\ -\frac{\sqrt{21}}{30} & 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{315} & 0 & -\frac{\sqrt{42}}{126} & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{21}}{30} & 0 & 0 & \frac{\sqrt{42}}{126} & 0 & -\frac{\sqrt{21}}{315} & 0 \\ 0 & 0 & \frac{\sqrt{21}}{30} & 0 & 0 & 0 & 0 & \frac{\sqrt{14}}{70} & 0 & \frac{\sqrt{35}}{105} \end{bmatrix}$
218	symmetry	$-\sqrt{3}xz$ $\mathbb{G}_{2,2}^{(1,1;a)}(E_{1u}) \begin{bmatrix} \frac{\sqrt{42}i}{30} & 0 & -\frac{\sqrt{14}i}{10} & 0 & 0 & -\frac{\sqrt{42}i}{90} & 0 & \frac{\sqrt{21}i}{90} & 0 & 0 \\ 0 & -\frac{\sqrt{14}i}{10} & 0 & \frac{\sqrt{42}i}{30} & 0 & 0 & -\frac{\sqrt{21}i}{90} & 0 & \frac{\sqrt{42}i}{90} & 0 \\ 0 & -\frac{\sqrt{21}i}{30} & 0 & 0 & -\frac{\sqrt{35}i}{105} & 0 & \frac{\sqrt{14}i}{70} & 0 & 0 & 0 \\ -\frac{\sqrt{21}i}{30} & 0 & 0 & 0 & 0 & \frac{\sqrt{21}i}{315} & 0 & \frac{\sqrt{42}i}{126} & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{21}i}{30} & 0 & 0 & \frac{\sqrt{42}i}{126} & 0 & \frac{\sqrt{21}i}{315} & 0 \\ 0 & 0 & \frac{\sqrt{21}i}{30} & 0 & 0 & 0 & 0 & \frac{\sqrt{14}i}{70} & 0 & -\frac{\sqrt{35}i}{105} \end{bmatrix}$
219	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$ $\mathbb{G}_{2,1}^{(1,1;a)}(E_{2u}) \begin{bmatrix} 0 & 0 & 0 & \frac{\sqrt{42}i}{15} & -\frac{\sqrt{210}i}{180} & 0 & 0 & 0 & -\frac{\sqrt{42}i}{180} & 0 \\ -\frac{\sqrt{42}i}{15} & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}i}{180} & 0 & 0 & 0 & -\frac{\sqrt{210}i}{180} \\ 0 & 0 & \frac{\sqrt{21}i}{30} & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}i}{105} & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{21}i}{30} & \frac{2\sqrt{105}i}{315} & 0 & 0 & 0 & -\frac{4\sqrt{21}i}{315} & 0 \\ \frac{\sqrt{21}i}{30} & 0 & 0 & 0 & 0 & \frac{4\sqrt{21}i}{315} & 0 & 0 & 0 & -\frac{2\sqrt{105}i}{315} \\ 0 & \frac{\sqrt{21}i}{30} & 0 & 0 & 0 & 0 & \frac{\sqrt{14}i}{105} & 0 & 0 & 0 \end{bmatrix}$
220	symmetry	$-\sqrt{3}xy$ $\mathbb{G}_{2,2}^{(1,1;a)}(E_{2u}) \begin{bmatrix} 0 & 0 & 0 & -\frac{\sqrt{42}}{15} & -\frac{\sqrt{210}}{180} & 0 & 0 & 0 & \frac{\sqrt{42}}{180} & 0 \\ -\frac{\sqrt{42}}{15} & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}}{180} & 0 & 0 & 0 & \frac{\sqrt{210}}{180} \\ 0 & 0 & -\frac{\sqrt{21}}{30} & 0 & 0 & 0 & 0 & \frac{\sqrt{14}}{105} & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{21}}{30} & \frac{2\sqrt{105}}{315} & 0 & 0 & 0 & \frac{4\sqrt{21}}{315} & 0 \\ \frac{\sqrt{21}}{30} & 0 & 0 & 0 & 0 & \frac{4\sqrt{21}}{315} & 0 & 0 & 0 & \frac{2\sqrt{105}}{315} \\ 0 & \frac{\sqrt{21}}{30} & 0 & 0 & 0 & 0 & \frac{\sqrt{14}}{105} & 0 & 0 & 0 \end{bmatrix}$
221	symmetry	$z$

continued ...

Table 6

No.	multipole	matrix
	$\mathbb{T}_1^{(a)}(A_u)$	$\begin{bmatrix} 0 & \frac{\sqrt{3}i}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{6}i}{20} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{10} & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{6}i}{60} & 0 & 0 & 0 & 0 & \frac{3i}{10} & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{6}i}{60} & 0 & 0 & 0 & 0 & \frac{3i}{10} & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{6}i}{20} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{10} & 0 \end{bmatrix}$
222	symmetry	$x$ $\mathbb{T}_{1,1}^{(a)}(E_{1u}) \begin{bmatrix} -\frac{i}{4} & 0 & \frac{\sqrt{3}i}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{3}i}{12} & 0 & \frac{i}{4} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{2}i}{20} & 0 & 0 & -\frac{\sqrt{30}i}{20} & 0 & \frac{\sqrt{3}i}{20} & 0 & 0 & 0 \\ -\frac{\sqrt{2}i}{20} & 0 & -\frac{\sqrt{6}i}{30} & 0 & 0 & -\frac{3\sqrt{2}i}{20} & 0 & \frac{3i}{20} & 0 & 0 \\ 0 & -\frac{\sqrt{6}i}{30} & 0 & -\frac{\sqrt{2}i}{20} & 0 & 0 & -\frac{3i}{20} & 0 & \frac{3\sqrt{2}i}{20} & 0 \\ 0 & 0 & -\frac{\sqrt{2}i}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{20} & 0 & \frac{\sqrt{30}i}{20} \end{bmatrix}$
223	symmetry	$y$ $\mathbb{T}_{1,2}^{(a)}(E_{1u}) \begin{bmatrix} \frac{1}{4} & 0 & \frac{\sqrt{3}}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{3}}{12} & 0 & \frac{1}{4} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{2}}{20} & 0 & 0 & \frac{\sqrt{30}}{20} & 0 & \frac{\sqrt{3}}{20} & 0 & 0 & 0 \\ \frac{\sqrt{2}}{20} & 0 & -\frac{\sqrt{6}}{30} & 0 & 0 & \frac{3\sqrt{2}}{20} & 0 & \frac{3}{20} & 0 & 0 \\ 0 & \frac{\sqrt{6}}{30} & 0 & -\frac{\sqrt{2}}{20} & 0 & 0 & \frac{3}{20} & 0 & \frac{3\sqrt{2}}{20} & 0 \\ 0 & 0 & \frac{\sqrt{2}}{20} & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{20} & 0 & \frac{\sqrt{30}}{20} \end{bmatrix}$
224	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$ $\mathbb{T}_3^{(a)}(A_u) \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{6} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 \\ \frac{i}{10} & 0 & 0 & 0 & 0 & -\frac{i}{5} & 0 & 0 & 0 & 0 \\ 0 & -\frac{3i}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{15} & 0 & 0 & 0 \\ 0 & 0 & \frac{3i}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{15} & 0 & 0 \\ 0 & 0 & 0 & -\frac{i}{10} & 0 & 0 & 0 & 0 & -\frac{i}{5} & 0 \end{bmatrix}$
225	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$

continued ...



Table 6

No.	multipole	matrix
	$\mathbb{T}_3^{(a)}(B_u, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{6} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{10}}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}}{20} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{12} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{12} & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{10}}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}}{20} & 0 & 0 & 0 & 0 \end{bmatrix}$
226	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$ $\mathbb{T}_3^{(a)}(B_u, 2)$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{6} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{6} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{10}i}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}i}{20} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{12} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{12} & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{10}i}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{20} & 0 & 0 & 0 & 0 \end{bmatrix}$
227	symmetry	$-\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$ $\mathbb{T}_{3,1}^{(a)}(E_{1u})$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{i}{6} & 0 & -\frac{\sqrt{2}i}{6} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{6} & 0 & \frac{i}{6} & 0 \\ 0 & \frac{\sqrt{2}i}{10} & 0 & 0 & \frac{\sqrt{30}i}{60} & 0 & -\frac{\sqrt{3}i}{10} & 0 & 0 & 0 \\ \frac{\sqrt{2}i}{10} & 0 & -\frac{\sqrt{6}i}{10} & 0 & 0 & -\frac{7\sqrt{2}i}{60} & 0 & \frac{i}{30} & 0 & 0 \\ 0 & -\frac{\sqrt{6}i}{10} & 0 & \frac{\sqrt{2}i}{10} & 0 & 0 & -\frac{i}{30} & 0 & \frac{7\sqrt{2}i}{60} & 0 \\ 0 & 0 & \frac{\sqrt{2}i}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{3}i}{10} & 0 & -\frac{\sqrt{30}i}{60} \end{bmatrix}$
228	symmetry	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$ $\mathbb{T}_{3,2}^{(a)}(E_{1u})$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{1}{6} & 0 & -\frac{\sqrt{2}}{6} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{6} & 0 & \frac{1}{6} & 0 \\ 0 & \frac{\sqrt{2}}{10} & 0 & 0 & -\frac{\sqrt{30}}{60} & 0 & -\frac{\sqrt{3}}{10} & 0 & 0 & 0 \\ -\frac{\sqrt{2}}{10} & 0 & -\frac{\sqrt{6}}{10} & 0 & 0 & \frac{7\sqrt{2}}{60} & 0 & \frac{1}{30} & 0 & 0 \\ 0 & \frac{\sqrt{6}}{10} & 0 & \frac{\sqrt{2}}{10} & 0 & 0 & \frac{1}{30} & 0 & \frac{7\sqrt{2}}{60} & 0 \\ 0 & 0 & -\frac{\sqrt{2}}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{10} & 0 & -\frac{\sqrt{30}}{60} \end{bmatrix}$
229	symmetry	$\sqrt{15}xyz$

continued ...

Table 6

No.	multipole	matrix
	$\mathbb{T}_{3,1}^{(a)}(E_{2u})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{12} & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}}{12} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}}{12} & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{12} \\ 0 & 0 & \frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{30} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{5}}{10} & -\frac{1}{6} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{30} & 0 \\ -\frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{5}}{30} & 0 & 0 & 0 & 0 & \frac{1}{6} \\ 0 & \frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{30} & 0 & 0 & 0 & 0 \end{bmatrix}$
230	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$ $\mathbb{T}_{3,2}^{(a)}(E_{2u}) = \begin{bmatrix} 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{12} & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}i}{12} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{12} & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{12} \\ 0 & 0 & \frac{\sqrt{5}i}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}i}{30} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{5}i}{10} & \frac{i}{6} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{30} & 0 \\ \frac{\sqrt{5}i}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{30} & 0 & 0 & 0 & 0 & \frac{i}{6} \\ 0 & -\frac{\sqrt{5}i}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}i}{30} & 0 & 0 & 0 & 0 \end{bmatrix}$
231	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$ $\mathbb{T}_3^{(1,-1;a)}(A_u) = \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{6} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{6} & 0 & 0 & 0 \\ \frac{\sqrt{6}i}{60} & 0 & 0 & 0 & 0 & \frac{2\sqrt{6}i}{15} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{6}i}{20} & 0 & 0 & 0 & 0 & -\frac{4i}{15} & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{6}i}{20} & 0 & 0 & 0 & 0 & -\frac{4i}{15} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{6}i}{60} & 0 & 0 & 0 & 0 & \frac{2\sqrt{6}i}{15} & 0 & 0 \end{bmatrix}$
232	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$ $\mathbb{T}_3^{(1,-1;a)}(B_u, 1) = \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{6} & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{6} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{15}}{30} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{15} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{1}{3} & 0 \\ 0 & 0 & 0 & 0 & \frac{1}{3} & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{15}}{30} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{15} & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
233	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$

continued ...

Table 6

No.	multipole	matrix
	$\mathbb{T}_3^{(1,-1;a)}(B_u, 2)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{6} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{6} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{15}i}{30} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{15} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{i}{3} \\ 0 & 0 & 0 & 0 & -\frac{i}{3} & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{15}i}{30} & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}i}{15} & 0 & 0 & 0 & 0 \end{bmatrix}$
234	symmetry	$-\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$ $\mathbb{T}_{3,1}^{(1,-1;a)}(E_{1u}) \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{18} & 0 & -\frac{\sqrt{3}i}{9} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{9} & 0 & \frac{\sqrt{6}i}{18} & 0 \\ 0 & \frac{\sqrt{3}i}{30} & 0 & 0 & -\frac{\sqrt{5}i}{15} & 0 & \frac{\sqrt{2}i}{5} & 0 & 0 & 0 \\ \frac{\sqrt{3}i}{30} & 0 & -\frac{i}{10} & 0 & 0 & \frac{7\sqrt{3}i}{45} & 0 & -\frac{\sqrt{6}i}{45} & 0 & 0 \\ 0 & -\frac{i}{10} & 0 & \frac{\sqrt{3}i}{30} & 0 & 0 & \frac{\sqrt{6}i}{45} & 0 & -\frac{7\sqrt{3}i}{45} & 0 \\ 0 & 0 & \frac{\sqrt{3}i}{30} & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{5} & 0 & \frac{\sqrt{5}i}{15} \end{bmatrix}$
235	symmetry	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$ $\mathbb{T}_{3,2}^{(1,-1;a)}(E_{1u}) \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{18} & 0 & -\frac{\sqrt{3}}{9} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{9} & 0 & \frac{\sqrt{6}}{18} & 0 \\ 0 & \frac{\sqrt{3}}{30} & 0 & 0 & \frac{\sqrt{5}}{15} & 0 & \frac{\sqrt{2}}{5} & 0 & 0 & 0 \\ -\frac{\sqrt{3}}{30} & 0 & -\frac{1}{10} & 0 & 0 & -\frac{7\sqrt{3}}{45} & 0 & -\frac{\sqrt{6}}{45} & 0 & 0 \\ 0 & \frac{1}{10} & 0 & \frac{\sqrt{3}}{30} & 0 & 0 & -\frac{\sqrt{6}}{45} & 0 & -\frac{7\sqrt{3}}{45} & 0 \\ 0 & 0 & -\frac{\sqrt{3}}{30} & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{5} & 0 & \frac{\sqrt{5}}{15} \end{bmatrix}$
236	symmetry	$\sqrt{15}xyz$ $\mathbb{T}_{3,1}^{(1,-1;a)}(E_{2u}) \begin{bmatrix} 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{18} & 0 & 0 & 0 & -\frac{\sqrt{15}}{18} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{18} & 0 & 0 & 0 & \frac{\sqrt{3}}{18} \\ 0 & 0 & \frac{\sqrt{30}}{60} & 0 & 0 & 0 & 0 & \frac{2\sqrt{5}}{15} & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{30}}{60} & \frac{\sqrt{6}}{9} & 0 & 0 & 0 & \frac{\sqrt{30}}{45} & 0 \\ -\frac{\sqrt{30}}{60} & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{45} & 0 & 0 & 0 & -\frac{\sqrt{6}}{9} \\ 0 & \frac{\sqrt{30}}{60} & 0 & 0 & 0 & 0 & -\frac{2\sqrt{5}}{15} & 0 & 0 & 0 \end{bmatrix}$
237	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$

continued ...

Table 6

No.	multipole	matrix									
	$\mathbb{T}_{3,2}^{(1,-1;a)}(E_{2u})$	0	0	0	0	$-\frac{\sqrt{3}i}{18}$	0	0	0	$-\frac{\sqrt{15}i}{18}$	0
		0	0	0	0	0	$\frac{\sqrt{15}i}{18}$	0	0	0	$\frac{\sqrt{3}i}{18}$
		0	0	$\frac{\sqrt{30}i}{60}$	0	0	0	0	$\frac{2\sqrt{5}i}{15}$	0	0
		0	0	0	$-\frac{\sqrt{30}i}{60}$	$-\frac{\sqrt{6}i}{9}$	0	0	0	$\frac{\sqrt{30}i}{45}$	0
		$\frac{\sqrt{30}i}{60}$	0	0	0	0	$\frac{\sqrt{30}i}{45}$	0	0	0	$-\frac{\sqrt{6}i}{9}$
		0	$-\frac{\sqrt{30}i}{60}$	0	0	0	0	$\frac{2\sqrt{5}i}{15}$	0	0	0
238	symmetry	$z$									
	$\mathbb{T}_1^{(1,0;a)}(A_u)$	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
		$-\frac{\sqrt{3}i}{5}$	0	0	0	0	$-\frac{\sqrt{3}i}{10}$	0	0	0	0
		0	$-\frac{\sqrt{3}i}{15}$	0	0	0	0	$-\frac{3\sqrt{2}i}{20}$	0	0	0
		0	0	$\frac{\sqrt{3}i}{15}$	0	0	0	0	$-\frac{3\sqrt{2}i}{20}$	0	0
		0	0	0	$\frac{\sqrt{3}i}{5}$	0	0	0	0	$-\frac{\sqrt{3}i}{10}$	0
239	symmetry	$x$									
	$\mathbb{T}_{1,1}^{(1,0;a)}(E_{1u})$	$-\frac{\sqrt{2}i}{8}$	0	$\frac{\sqrt{6}i}{24}$	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{6}i}{24}$	0	$\frac{\sqrt{2}i}{8}$	0	0	0	0	0	0
		0	$-\frac{i}{5}$	0	0	$\frac{\sqrt{15}i}{20}$	0	$-\frac{\sqrt{6}i}{40}$	0	0	0
		$-\frac{i}{5}$	0	$-\frac{2\sqrt{3}i}{15}$	0	0	$\frac{3i}{20}$	0	$-\frac{3\sqrt{2}i}{40}$	0	0
		0	$-\frac{2\sqrt{3}i}{15}$	0	$-\frac{i}{5}$	0	0	$\frac{3\sqrt{2}i}{40}$	0	$-\frac{3i}{20}$	0
		0	0	$-\frac{i}{5}$	0	0	0	0	$\frac{\sqrt{6}i}{40}$	0	$-\frac{\sqrt{15}i}{20}$
240	symmetry	$y$									
	$\mathbb{T}_{1,2}^{(1,0;a)}(E_{1u})$	$\frac{\sqrt{2}}{8}$	0	$\frac{\sqrt{6}}{24}$	0	0	0	0	0	0	0
		0	$\frac{\sqrt{6}}{24}$	0	$\frac{\sqrt{2}}{8}$	0	0	0	0	0	0
		0	$-\frac{1}{5}$	0	0	$-\frac{\sqrt{15}}{20}$	0	$-\frac{\sqrt{6}}{40}$	0	0	0
		$\frac{1}{5}$	0	$-\frac{2\sqrt{3}}{15}$	0	0	$-\frac{3}{20}$	0	$-\frac{3\sqrt{2}}{40}$	0	0
		0	$\frac{2\sqrt{3}}{15}$	0	$-\frac{1}{5}$	0	0	$-\frac{3\sqrt{2}}{40}$	0	$-\frac{3}{20}$	0
		0	0	$\frac{1}{5}$	0	0	0	0	$-\frac{\sqrt{6}}{40}$	0	$-\frac{\sqrt{15}}{20}$
241	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$									

continued ...

Table 6

No.	multipole	matrix
	$\mathbb{T}_3^{(1,0;a)}(A_u)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & \frac{i}{3} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{i}{3} & 0 & 0 \\ \frac{\sqrt{3}i}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{3}i}{30} & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{3}i}{5} & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{30} & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{3}i}{5} & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{30} & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{3}i}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{3}i}{30} & 0 \end{bmatrix}$
242	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$ $\mathbb{T}_3^{(1,0;a)}(B_u, 1) \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{1}{3} \\ 0 & 0 & 0 & 0 & -\frac{1}{3} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{30}}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{120} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{24} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{24} & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{30}}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{120} & 0 & 0 & 0 & 0 \end{bmatrix}$
243	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$ $\mathbb{T}_3^{(1,0;a)}(B_u, 2) \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{i}{3} \\ 0 & 0 & 0 & 0 & \frac{i}{3} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{30}i}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{120} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{24} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{24} & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{30}i}{15} & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}i}{120} & 0 & 0 & 0 & 0 \end{bmatrix}$
244	symmetry	$-\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$ $\mathbb{T}_{3,1}^{(1,0;a)}(E_{1u}) \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{9} & 0 & \frac{\sqrt{6}i}{9} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{9} & 0 & -\frac{\sqrt{3}i}{9} & 0 \\ 0 & \frac{\sqrt{6}i}{15} & 0 & 0 & -\frac{\sqrt{10}i}{120} & 0 & \frac{i}{20} & 0 & 0 & 0 \\ \frac{\sqrt{6}i}{15} & 0 & -\frac{\sqrt{2}i}{5} & 0 & 0 & \frac{7\sqrt{6}i}{360} & 0 & -\frac{\sqrt{3}i}{180} & 0 & 0 \\ 0 & -\frac{\sqrt{2}i}{5} & 0 & \frac{\sqrt{6}i}{15} & 0 & 0 & \frac{\sqrt{3}i}{180} & 0 & -\frac{7\sqrt{6}i}{360} & 0 \\ 0 & 0 & \frac{\sqrt{6}i}{15} & 0 & 0 & 0 & 0 & -\frac{i}{20} & 0 & \frac{\sqrt{10}i}{120} \end{bmatrix}$
245	symmetry	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$

continued ...

Table 6

No.	multipole	matrix
	$\mathbb{T}_{3,2}^{(1,0;a)}(E_{1u})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{9} & 0 & \frac{\sqrt{6}}{9} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{9} & 0 & -\frac{\sqrt{3}}{9} & 0 \\ 0 & \frac{\sqrt{6}}{15} & 0 & 0 & \frac{\sqrt{10}}{120} & 0 & \frac{1}{20} & 0 & 0 & 0 \\ -\frac{\sqrt{6}}{15} & 0 & -\frac{\sqrt{2}}{5} & 0 & 0 & -\frac{7\sqrt{6}}{360} & 0 & -\frac{\sqrt{3}}{180} & 0 & 0 \\ 0 & \frac{\sqrt{2}}{5} & 0 & \frac{\sqrt{6}}{15} & 0 & 0 & -\frac{\sqrt{3}}{180} & 0 & -\frac{7\sqrt{6}}{360} & 0 \\ 0 & 0 & -\frac{\sqrt{6}}{15} & 0 & 0 & 0 & 0 & \frac{1}{20} & 0 & \frac{\sqrt{10}}{120} \end{bmatrix}$
246	symmetry	$\begin{array}{c} \sqrt{15}xyz \\ \mathbb{T}_{3,1}^{(1,0;a)}(E_{2u}) \end{array} \begin{bmatrix} 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{18} & 0 & 0 & 0 & \frac{\sqrt{30}}{18} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{18} & 0 & 0 & 0 & -\frac{\sqrt{6}}{18} \\ 0 & 0 & \frac{\sqrt{15}}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{60} & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{15}}{15} & \frac{\sqrt{3}}{36} & 0 & 0 & 0 & \frac{\sqrt{15}}{180} & 0 \\ -\frac{\sqrt{15}}{15} & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{180} & 0 & 0 & 0 & -\frac{\sqrt{3}}{36} \\ 0 & \frac{\sqrt{15}}{15} & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}}{60} & 0 & 0 & 0 \end{bmatrix}$
247	symmetry	$\begin{array}{c} \frac{\sqrt{15}z(x-y)(x+y)}{2} \\ \mathbb{T}_{3,2}^{(1,0;a)}(E_{2u}) \end{array} \begin{bmatrix} 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{18} & 0 & 0 & 0 & \frac{\sqrt{30}i}{18} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}i}{18} & 0 & 0 & 0 & -\frac{\sqrt{6}i}{18} \\ 0 & 0 & \frac{\sqrt{15}i}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{60} & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{15}i}{15} & -\frac{\sqrt{3}i}{36} & 0 & 0 & 0 & \frac{\sqrt{15}i}{180} & 0 \\ \frac{\sqrt{15}i}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{180} & 0 & 0 & 0 & -\frac{\sqrt{3}i}{36} \\ 0 & -\frac{\sqrt{15}i}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{60} & 0 & 0 & 0 \end{bmatrix}$
248	symmetry	$\begin{array}{c} z \\ \mathbb{T}_1^{(1,1;a)}(A_u) \end{array} \begin{bmatrix} 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{3i}{10} & 0 & 0 & 0 & 0 & \frac{i}{10} & 0 & 0 & 0 & 0 \\ 0 & -\frac{i}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{20} & 0 & 0 & 0 \\ 0 & 0 & \frac{i}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{20} & 0 & 0 \\ 0 & 0 & 0 & \frac{3i}{10} & 0 & 0 & 0 & 0 & \frac{i}{10} & 0 \end{bmatrix}$
249	symmetry	$x$

continued ...

Table 6

No.	multipole	matrix
	$\mathbb{T}_{1,1}^{(1,1;a)}(E_{1u})$	$\begin{bmatrix} \frac{\sqrt{6}i}{8} & 0 & -\frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{2}i}{8} & 0 & -\frac{\sqrt{6}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{3}i}{10} & 0 & 0 & -\frac{\sqrt{5}i}{20} & 0 & \frac{\sqrt{2}i}{40} & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{3}i}{10} & 0 & -\frac{i}{5} & 0 & 0 & -\frac{\sqrt{3}i}{20} & 0 & \frac{\sqrt{6}i}{40} & 0 & 0 & 0 \\ 0 & -\frac{i}{5} & 0 & -\frac{\sqrt{3}i}{10} & 0 & 0 & -\frac{\sqrt{6}i}{40} & 0 & \frac{\sqrt{3}i}{20} & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{3}i}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{40} & 0 & \frac{\sqrt{5}i}{20} & 0 \end{bmatrix}$
250	symmetry	$y$ $\begin{bmatrix} -\frac{\sqrt{6}}{8} & 0 & -\frac{\sqrt{2}}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{2}}{8} & 0 & -\frac{\sqrt{6}}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{3}}{10} & 0 & 0 & \frac{\sqrt{5}}{20} & 0 & \frac{\sqrt{2}}{40} & 0 & 0 & 0 & 0 \\ \frac{\sqrt{3}}{10} & 0 & -\frac{1}{5} & 0 & 0 & \frac{\sqrt{3}}{20} & 0 & \frac{\sqrt{6}}{40} & 0 & 0 & 0 \\ 0 & \frac{1}{5} & 0 & -\frac{\sqrt{3}}{10} & 0 & 0 & \frac{\sqrt{6}}{40} & 0 & \frac{\sqrt{3}}{20} & 0 & 0 \\ 0 & 0 & \frac{\sqrt{3}}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{40} & 0 & \frac{\sqrt{5}}{20} & 0 \end{bmatrix}$
251	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$ $\begin{bmatrix} 0 & \frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{30} & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{30} & 0 & 0 & 0 \\ -\frac{\sqrt{10}}{20} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{10} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{10}}{20} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{30} & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{10}}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{30} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{10}}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}}{10} & 0 & 0 \end{bmatrix}$
252	symmetry	$\sqrt{3}yz$ $\begin{bmatrix} -\frac{\sqrt{5}i}{20} & 0 & -\frac{\sqrt{15}i}{20} & 0 & 0 & -\frac{\sqrt{5}i}{15} & 0 & -\frac{\sqrt{10}i}{30} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{15}i}{20} & 0 & \frac{\sqrt{5}i}{20} & 0 & 0 & -\frac{\sqrt{10}i}{30} & 0 & -\frac{\sqrt{5}i}{15} & 0 & 0 \\ 0 & \frac{\sqrt{10}i}{20} & 0 & 0 & -\frac{\sqrt{6}i}{12} & 0 & -\frac{\sqrt{15}i}{20} & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{10}i}{20} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{60} & 0 & -\frac{\sqrt{5}i}{12} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{10}i}{20} & 0 & 0 & \frac{\sqrt{5}i}{12} & 0 & -\frac{\sqrt{10}i}{60} & 0 & 0 \\ 0 & 0 & \frac{\sqrt{10}i}{20} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{20} & 0 & \frac{\sqrt{6}i}{12} & 0 \end{bmatrix}$
253	symmetry	$-\sqrt{3}xz$

continued ...

Table 6

No.	multipole	matrix
	$\mathbb{M}_{2,2}^{(a)}(E_{1u})$	$\begin{bmatrix} \frac{\sqrt{5}}{20} & 0 & -\frac{\sqrt{15}}{20} & 0 & 0 & \frac{\sqrt{5}}{15} & 0 & -\frac{\sqrt{10}}{30} & 0 & 0 \\ 0 & -\frac{\sqrt{15}}{20} & 0 & \frac{\sqrt{5}}{20} & 0 & 0 & \frac{\sqrt{10}}{30} & 0 & -\frac{\sqrt{5}}{15} & 0 \\ 0 & \frac{\sqrt{10}}{20} & 0 & 0 & \frac{\sqrt{6}}{12} & 0 & -\frac{\sqrt{15}}{20} & 0 & 0 & 0 \\ \frac{\sqrt{10}}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}}{60} & 0 & -\frac{\sqrt{5}}{12} & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{10}}{20} & 0 & 0 & -\frac{\sqrt{5}}{12} & 0 & -\frac{\sqrt{10}}{60} & 0 \\ 0 & 0 & -\frac{\sqrt{10}}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{20} & 0 & \frac{\sqrt{6}}{12} \end{bmatrix}$
254	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$ $\begin{bmatrix} 0 & 0 & 0 & \frac{\sqrt{5}}{10} & \frac{1}{6} & 0 & 0 & 0 & \frac{\sqrt{5}}{30} & 0 \\ -\frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{5}}{30} & 0 & 0 & 0 & \frac{1}{6} \\ 0 & 0 & -\frac{\sqrt{10}}{20} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{30} & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{10}}{20} & -\frac{\sqrt{2}}{6} & 0 & 0 & 0 & \frac{\sqrt{10}}{15} & 0 \\ -\frac{\sqrt{10}}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}}{15} & 0 & 0 & 0 & \frac{\sqrt{2}}{6} \\ 0 & -\frac{\sqrt{10}}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{30} & 0 & 0 & 0 \end{bmatrix}$
255	symmetry	$-\sqrt{3}xy$ $\begin{bmatrix} 0 & 0 & 0 & \frac{\sqrt{5}i}{10} & -\frac{i}{6} & 0 & 0 & 0 & \frac{\sqrt{5}i}{30} & 0 \\ \frac{\sqrt{5}i}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{30} & 0 & 0 & 0 & \frac{i}{6} \\ 0 & 0 & -\frac{\sqrt{10}i}{20} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{30} & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{10}i}{20} & \frac{\sqrt{2}i}{6} & 0 & 0 & 0 & \frac{\sqrt{10}i}{15} & 0 \\ \frac{\sqrt{10}i}{20} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{15} & 0 & 0 & 0 & \frac{\sqrt{2}i}{6} \\ 0 & \frac{\sqrt{10}i}{20} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{30} & 0 & 0 & 0 \end{bmatrix}$
256	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$ $\begin{bmatrix} 0 & -\frac{\sqrt{2}}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{5} & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{2}}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{5} & 0 & 0 \\ \frac{1}{10} & 0 & 0 & 0 & 0 & \frac{3}{10} & 0 & 0 & 0 & 0 \\ 0 & -\frac{1}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{20} & 0 & 0 & 0 \\ 0 & 0 & -\frac{1}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{20} & 0 & 0 \\ 0 & 0 & 0 & \frac{1}{10} & 0 & 0 & 0 & 0 & -\frac{3}{10} & 0 \end{bmatrix}$
257	symmetry	$\sqrt{3}yz$

continued ...



Table 6

No.	multipole	matrix
	$\mathbb{M}_{2,1}^{(1,-1;a)}(E_{1u})$	$ \begin{bmatrix} \frac{\sqrt{2}i}{40} & 0 & \frac{\sqrt{6}i}{40} & 0 & 0 & \frac{\sqrt{2}i}{5} & 0 & \frac{i}{5} & 0 & 0 \\ 0 & -\frac{\sqrt{6}i}{40} & 0 & -\frac{\sqrt{2}i}{40} & 0 & 0 & \frac{i}{5} & 0 & \frac{\sqrt{2}i}{5} & 0 \\ 0 & -\frac{i}{10} & 0 & 0 & -\frac{\sqrt{15}i}{20} & 0 & -\frac{3\sqrt{6}i}{40} & 0 & 0 & 0 \\ \frac{i}{10} & 0 & 0 & 0 & 0 & \frac{i}{20} & 0 & -\frac{\sqrt{2}i}{8} & 0 & 0 \\ 0 & 0 & 0 & \frac{i}{10} & 0 & 0 & \frac{\sqrt{2}i}{8} & 0 & -\frac{i}{20} & 0 \\ 0 & 0 & -\frac{i}{10} & 0 & 0 & 0 & 0 & \frac{3\sqrt{6}i}{40} & 0 & \frac{\sqrt{15}i}{20} \end{bmatrix} $
258	symmetry	$ \begin{aligned} & -\sqrt{3}xz \\ & \mathbb{M}_{2,2}^{(1,-1;a)}(E_{1u}) \\ & \begin{bmatrix} -\frac{\sqrt{2}}{40} & 0 & \frac{\sqrt{6}}{40} & 0 & 0 & -\frac{\sqrt{2}}{5} & 0 & \frac{1}{5} & 0 & 0 \\ 0 & \frac{\sqrt{6}}{40} & 0 & -\frac{\sqrt{2}}{40} & 0 & 0 & -\frac{1}{5} & 0 & \frac{\sqrt{2}}{5} & 0 \\ 0 & -\frac{1}{10} & 0 & 0 & \frac{\sqrt{15}}{20} & 0 & -\frac{3\sqrt{6}}{40} & 0 & 0 & 0 \\ -\frac{1}{10} & 0 & 0 & 0 & 0 & -\frac{1}{20} & 0 & -\frac{\sqrt{2}}{8} & 0 & 0 \\ 0 & 0 & 0 & \frac{1}{10} & 0 & 0 & -\frac{\sqrt{2}}{8} & 0 & -\frac{1}{20} & 0 \\ 0 & 0 & \frac{1}{10} & 0 & 0 & 0 & 0 & -\frac{3\sqrt{6}}{40} & 0 & \frac{\sqrt{15}}{20} \end{bmatrix} \end{aligned} $
259	symmetry	$ \begin{aligned} & \frac{\sqrt{3}(x-y)(x+y)}{2} \\ & \mathbb{M}_{2,1}^{(1,-1;a)}(E_{2u}) \\ & \begin{bmatrix} 0 & 0 & 0 & -\frac{\sqrt{2}}{20} & -\frac{\sqrt{10}}{10} & 0 & 0 & 0 & -\frac{\sqrt{2}}{10} & 0 \\ \frac{\sqrt{2}}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{10} & 0 & 0 & 0 & -\frac{\sqrt{10}}{10} \\ 0 & 0 & \frac{1}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{20} & 0 & 0 \\ 0 & 0 & 0 & \frac{1}{10} & -\frac{\sqrt{5}}{10} & 0 & 0 & 0 & \frac{1}{5} & 0 \\ \frac{1}{10} & 0 & 0 & 0 & 0 & -\frac{1}{5} & 0 & 0 & 0 & \frac{\sqrt{5}}{10} \\ 0 & \frac{1}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{20} & 0 & 0 & 0 \end{bmatrix} \end{aligned} $
260	symmetry	$ \begin{aligned} & -\sqrt{3}xy \\ & \mathbb{M}_{2,2}^{(1,-1;a)}(E_{2u}) \\ & \begin{bmatrix} 0 & 0 & 0 & -\frac{\sqrt{2}i}{20} & \frac{\sqrt{10}i}{10} & 0 & 0 & 0 & -\frac{\sqrt{2}i}{10} & 0 \\ -\frac{\sqrt{2}i}{20} & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{10} & 0 & 0 & 0 & -\frac{\sqrt{10}i}{10} \\ 0 & 0 & \frac{i}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{20} & 0 & 0 \\ 0 & 0 & 0 & \frac{i}{10} & \frac{\sqrt{5}i}{10} & 0 & 0 & 0 & \frac{i}{5} & 0 \\ -\frac{i}{10} & 0 & 0 & 0 & 0 & \frac{i}{5} & 0 & 0 & 0 & \frac{\sqrt{5}i}{10} \\ 0 & -\frac{i}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{20} & 0 & 0 & 0 \end{bmatrix} \end{aligned} $
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
	$\mathbb{M}_4^{(1,-1;a)}(A_u)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}}{14} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}}{14} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}}{14} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{14} & 0 \end{bmatrix}$
262	symmetry	$\frac{\sqrt{70}xz(x^2-3y^2)}{4}$ $\mathbb{M}_4^{(1,-1;a)}(B_u, 1)$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}}{8} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{8} & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{8} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}}{8} & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
263	symmetry	$\frac{\sqrt{70}yz(3x^2-y^2)}{4}$ $\mathbb{M}_4^{(1,-1;a)}(B_u, 2)$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{8} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{8} & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}i}{8} & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
264	symmetry	$-\frac{\sqrt{10}yz(3x^2+3y^2-4z^2)}{4}$ $\mathbb{M}_{4,1}^{(1,-1;a)}(E_{1u})$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{14}i}{56} & 0 & \frac{\sqrt{35}i}{28} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{210}i}{56} & 0 & -\frac{\sqrt{105}i}{28} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{105}i}{28} & 0 & \frac{\sqrt{210}i}{56} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{35}i}{28} & 0 & -\frac{\sqrt{14}i}{56} & 0 \end{bmatrix}$
265	symmetry	$\frac{\sqrt{10}xz(3x^2+3y^2-4z^2)}{4}$

continued ...

Table 6

No.	multipole	matrix
	$\mathbb{M}_{4,2}^{(1,-1;a)}(E_{1u})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{14}}{56} & 0 & \frac{\sqrt{35}}{28} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{210}}{56} & 0 & -\frac{\sqrt{105}}{28} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}}{28} & 0 & \frac{\sqrt{210}}{56} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{35}}{28} & 0 & -\frac{\sqrt{14}}{56} & 0 \end{bmatrix}$
266	symmetry	$\frac{\sqrt{35}(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$ $\mathbb{M}_{4,1}^{(1,-1;a)}(E_{2u}, 1) \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{1}{2} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{1}{2} & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
267	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$ $\mathbb{M}_{4,2}^{(1,-1;a)}(E_{2u}, 1) \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{i}{2} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{i}{2} & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
268	symmetry	$-\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$ $\mathbb{M}_{4,1}^{(1,-1;a)}(E_{2u}, 2) \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}}{28} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{28} & 0 & 0 & 0 & \frac{\sqrt{105}}{28} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}}{28} & 0 & 0 & 0 & -\frac{\sqrt{21}}{28} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{70}}{28} & 0 & 0 & 0 & 0 \end{bmatrix}$
269	symmetry	$\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$

continued ...

Table 6

No.	multipole	matrix
	$\mathbb{M}_{4,2}^{(1,-1;a)}(E_{2u}, 2)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}i}{28} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{21}i}{28} & 0 & 0 & 0 & \frac{\sqrt{105}i}{28} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{105}i}{28} & 0 & 0 & 0 & -\frac{\sqrt{21}i}{28} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}i}{28} & 0 & 0 & 0 & 0 \end{bmatrix}$
270	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$
	$\mathbb{M}_2^{(1,0;a)}(A_u)$	$\begin{bmatrix} 0 & -\frac{\sqrt{30}}{60} & 0 & 0 & 0 & 0 & \frac{2\sqrt{5}}{15} & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{30}}{60} & 0 & 0 & 0 & 0 & \frac{2\sqrt{5}}{15} & 0 & 0 & 0 \\ \frac{\sqrt{15}}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{30} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{15}}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{60} & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{15}}{15} & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}}{60} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{15}}{15} & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{30} & 0 & 0 \end{bmatrix}$
271	symmetry	$\sqrt{3}yz$
	$\mathbb{M}_{2,1}^{(1,0;a)}(E_{1u})$	$\begin{bmatrix} \frac{\sqrt{30}i}{120} & 0 & \frac{\sqrt{10}i}{40} & 0 & 0 & -\frac{2\sqrt{30}i}{45} & 0 & -\frac{2\sqrt{15}i}{45} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{10}i}{40} & 0 & -\frac{\sqrt{30}i}{120} & 0 & 0 & -\frac{2\sqrt{15}i}{45} & 0 & -\frac{2\sqrt{30}i}{45} & 0 & 0 \\ 0 & -\frac{\sqrt{15}i}{15} & 0 & 0 & -\frac{i}{12} & 0 & -\frac{\sqrt{10}i}{40} & 0 & 0 & 0 & 0 \\ \frac{\sqrt{15}i}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{180} & 0 & -\frac{\sqrt{30}i}{72} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{15}i}{15} & 0 & 0 & \frac{\sqrt{30}i}{72} & 0 & -\frac{\sqrt{15}i}{180} & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{15}i}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{40} & 0 & \frac{i}{12} & 0 \end{bmatrix}$
272	symmetry	$-\sqrt{3}xz$
	$\mathbb{M}_{2,2}^{(1,0;a)}(E_{1u})$	$\begin{bmatrix} -\frac{\sqrt{30}}{120} & 0 & \frac{\sqrt{10}}{40} & 0 & 0 & \frac{2\sqrt{30}}{45} & 0 & -\frac{2\sqrt{15}}{45} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{10}}{40} & 0 & -\frac{\sqrt{30}}{120} & 0 & 0 & \frac{2\sqrt{15}}{45} & 0 & -\frac{2\sqrt{30}}{45} & 0 & 0 \\ 0 & -\frac{\sqrt{15}}{15} & 0 & 0 & \frac{1}{12} & 0 & -\frac{\sqrt{10}}{40} & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{15}}{15} & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{180} & 0 & -\frac{\sqrt{30}}{72} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{15}}{15} & 0 & 0 & -\frac{\sqrt{30}}{72} & 0 & -\frac{\sqrt{15}}{180} & 0 & 0 \\ 0 & 0 & \frac{\sqrt{15}}{15} & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}}{40} & 0 & \frac{1}{12} & 0 \end{bmatrix}$
273	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$

continued ...

Table 6

No.	multipole	matrix
	$\mathbb{M}_{2,1}^{(1,0;a)}(E_{2u})$	$\begin{bmatrix} 0 & 0 & 0 & -\frac{\sqrt{30}}{60} & \frac{\sqrt{6}}{9} & 0 & 0 & 0 & \frac{\sqrt{30}}{45} & 0 \\ \frac{\sqrt{30}}{60} & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{45} & 0 & 0 & 0 & \frac{\sqrt{6}}{9} \\ 0 & 0 & \frac{\sqrt{15}}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{60} & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{15}}{15} & -\frac{\sqrt{3}}{18} & 0 & 0 & 0 & \frac{\sqrt{15}}{45} & 0 \\ \frac{\sqrt{15}}{15} & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{45} & 0 & 0 & 0 & \frac{\sqrt{3}}{18} \\ 0 & \frac{\sqrt{15}}{15} & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}}{60} & 0 & 0 & 0 \end{bmatrix}$
274	symmetry	$-\sqrt{3}xy$ $\mathbb{M}_{2,2}^{(1,0;a)}(E_{2u}) \begin{bmatrix} 0 & 0 & 0 & -\frac{\sqrt{30}i}{60} & -\frac{\sqrt{6}i}{9} & 0 & 0 & 0 & \frac{\sqrt{30}i}{45} & 0 \\ -\frac{\sqrt{30}i}{60} & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}i}{45} & 0 & 0 & 0 & \frac{\sqrt{6}i}{9} \\ 0 & 0 & \frac{\sqrt{15}i}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{60} & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{15}i}{15} & \frac{\sqrt{3}i}{18} & 0 & 0 & 0 & \frac{\sqrt{15}i}{45} & 0 \\ -\frac{\sqrt{15}i}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{45} & 0 & 0 & 0 & \frac{\sqrt{3}i}{18} \\ 0 & -\frac{\sqrt{15}i}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{60} & 0 & 0 & 0 \end{bmatrix}$
275	symmetry	$1$ $\mathbb{M}_0^{(1,1;a)}(A_u) \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
276	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$ $\mathbb{M}_2^{(1,1;a)}(A_u) \begin{bmatrix} 0 & \frac{\sqrt{42}}{15} & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}}{30} & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{42}}{15} & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}}{30} & 0 & 0 \\ \frac{\sqrt{21}}{30} & 0 & 0 & 0 & 0 & -\frac{2\sqrt{21}}{105} & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{21}}{30} & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}}{105} & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{21}}{30} & 0 & 0 & 0 & 0 & \frac{\sqrt{14}}{105} & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{21}}{30} & 0 & 0 & 0 & 0 & \frac{2\sqrt{21}}{105} & 0 \end{bmatrix}$
277	symmetry	$\sqrt{3}yz$

continued ...

Table 6

No.	multipole	matrix									
	$\mathbb{M}_{2,1}^{(1,1;a)}(E_{1u})$	$-\frac{\sqrt{42}i}{30}$	0	$-\frac{\sqrt{14}i}{10}$	0	0	$\frac{\sqrt{42}i}{90}$	0	$\frac{\sqrt{21}i}{90}$	0	0
		0	$\frac{\sqrt{14}i}{10}$	0	$\frac{\sqrt{42}i}{30}$	0	0	$\frac{\sqrt{21}i}{90}$	0	$\frac{\sqrt{42}i}{90}$	0
		0	$-\frac{\sqrt{21}i}{30}$	0	0	$\frac{\sqrt{35}i}{105}$	0	$\frac{\sqrt{14}i}{70}$	0	0	0
		$\frac{\sqrt{21}i}{30}$	0	0	0	0	$-\frac{\sqrt{21}i}{315}$	0	$\frac{\sqrt{42}i}{126}$	0	0
		0	0	0	$\frac{\sqrt{21}i}{30}$	0	0	$-\frac{\sqrt{42}i}{126}$	0	$\frac{\sqrt{21}i}{315}$	0
		0	0	$-\frac{\sqrt{21}i}{30}$	0	0	0	0	$-\frac{\sqrt{14}i}{70}$	0	$-\frac{\sqrt{35}i}{105}$
278	symmetry	$-\sqrt{3}xz$									
	$\mathbb{M}_{2,2}^{(1,1;a)}(E_{1u})$	$\frac{\sqrt{42}}{30}$	0	$-\frac{\sqrt{14}}{10}$	0	0	$-\frac{\sqrt{42}}{90}$	0	$\frac{\sqrt{21}}{90}$	0	0
		0	$-\frac{\sqrt{14}}{10}$	0	$\frac{\sqrt{42}}{30}$	0	0	$-\frac{\sqrt{21}}{90}$	0	$\frac{\sqrt{42}}{90}$	0
		0	$-\frac{\sqrt{21}}{30}$	0	0	$-\frac{\sqrt{35}}{105}$	0	$\frac{\sqrt{14}}{70}$	0	0	0
		$-\frac{\sqrt{21}}{30}$	0	0	0	0	$\frac{\sqrt{21}}{315}$	0	$\frac{\sqrt{42}}{126}$	0	0
		0	0	0	$\frac{\sqrt{21}}{30}$	0	0	$\frac{\sqrt{42}}{126}$	0	$\frac{\sqrt{21}}{315}$	0
		0	0	$\frac{\sqrt{21}}{30}$	0	0	0	0	$\frac{\sqrt{14}}{70}$	0	$-\frac{\sqrt{35}}{105}$
279	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$									
	$\mathbb{M}_{2,1}^{(1,1;a)}(E_{2u})$	0	0	0	$\frac{\sqrt{42}}{15}$	$-\frac{\sqrt{210}}{180}$	0	0	0	$-\frac{\sqrt{42}}{180}$	0
		$-\frac{\sqrt{42}}{15}$	0	0	0	0	$-\frac{\sqrt{42}}{180}$	0	0	0	$-\frac{\sqrt{210}}{180}$
		0	0	$\frac{\sqrt{21}}{30}$	0	0	0	0	$-\frac{\sqrt{14}}{105}$	0	0
		0	0	0	$\frac{\sqrt{21}}{30}$	$\frac{2\sqrt{105}}{315}$	0	0	0	$-\frac{4\sqrt{21}}{315}$	0
		$\frac{\sqrt{21}}{30}$	0	0	0	0	$\frac{4\sqrt{21}}{315}$	0	0	0	$-\frac{2\sqrt{105}}{315}$
		0	$\frac{\sqrt{21}}{30}$	0	0	0	0	$\frac{\sqrt{14}}{105}$	0	0	0
280	symmetry	$-\sqrt{3}xy$									
	$\mathbb{M}_{2,2}^{(1,1;a)}(E_{2u})$	0	0	0	$\frac{\sqrt{42}i}{15}$	$\frac{\sqrt{210}i}{180}$	0	0	0	$-\frac{\sqrt{42}i}{180}$	0
		$\frac{\sqrt{42}i}{15}$	0	0	0	0	$\frac{\sqrt{42}i}{180}$	0	0	0	$-\frac{\sqrt{210}i}{180}$
		0	0	$\frac{\sqrt{21}i}{30}$	0	0	0	0	$-\frac{\sqrt{14}i}{105}$	0	0
		0	0	0	$\frac{\sqrt{21}i}{30}$	$-\frac{2\sqrt{105}i}{315}$	0	0	0	$-\frac{4\sqrt{21}i}{315}$	0
		$-\frac{\sqrt{21}i}{30}$	0	0	0	0	$-\frac{4\sqrt{21}i}{315}$	0	0	0	$-\frac{2\sqrt{105}i}{315}$
		0	$-\frac{\sqrt{21}i}{30}$	0	0	0	0	$-\frac{\sqrt{14}i}{105}$	0	0	0

$$\begin{aligned} \text{bra:} &= \langle \frac{1}{2}, \frac{1}{2}; p |, \langle \frac{1}{2}, -\frac{1}{2}; p |, \langle \frac{3}{2}, \frac{3}{2}; p |, \langle \frac{3}{2}, \frac{1}{2}; p |, \langle \frac{3}{2}, -\frac{1}{2}; p |, \langle \frac{3}{2}, -\frac{3}{2}; p | \\ \text{ket:} &= | \frac{5}{2}, \frac{5}{2}; f \rangle, | \frac{5}{2}, \frac{3}{2}; f \rangle, | \frac{5}{2}, \frac{1}{2}; f \rangle, | \frac{5}{2}, -\frac{1}{2}; f \rangle, | \frac{5}{2}, -\frac{3}{2}; f \rangle, | \frac{5}{2}, -\frac{5}{2}; f \rangle, | \frac{7}{2}, \frac{7}{2}; f \rangle, | \frac{7}{2}, \frac{5}{2}; f \rangle, | \frac{7}{2}, \frac{3}{2}; f \rangle, | \frac{7}{2}, \frac{1}{2}; f \rangle, | \frac{7}{2}, -\frac{1}{2}; f \rangle, | \frac{7}{2}, -\frac{3}{2}; f \rangle, | \frac{7}{2}, -\frac{5}{2}; f \rangle, | \frac{7}{2}, -\frac{7}{2}; f \rangle \end{aligned}$$

Table 7: (p,f) block.

No.	multipole	matrix
281	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$ $\mathbb{Q}_2^{(a)}(A_g)$ $\begin{bmatrix} 0 & 0 & \frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{1}{7} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{14} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{6}}{42} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{3\sqrt{2}}{14} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{6}}{42} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{3\sqrt{2}}{14} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{1}{7} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{14} & 0 & 0 \end{bmatrix}$
282	symmetry	$\sqrt{3}yz$ $\mathbb{Q}_{2,1}^{(a)}(E_{1g})$ $\begin{bmatrix} 0 & -\frac{\sqrt{2}i}{6} & 0 & -\frac{i}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{i}{6} & 0 & -\frac{\sqrt{2}i}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{15}i}{42} & 0 & \frac{\sqrt{6}i}{28} & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}i}{14} & 0 & -\frac{\sqrt{2}i}{14} & 0 & 0 & 0 & 0 \\ 0 & -\frac{i}{42} & 0 & \frac{5\sqrt{2}i}{84} & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}i}{14} & 0 & -\frac{\sqrt{6}i}{14} & 0 & 0 & 0 \\ 0 & 0 & -\frac{5\sqrt{2}i}{84} & 0 & \frac{i}{42} & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{14} & 0 & -\frac{\sqrt{10}i}{14} & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{6}i}{28} & 0 & -\frac{\sqrt{15}i}{42} & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{14} & 0 & -\frac{\sqrt{10}i}{14} & 0 \end{bmatrix}$
283	symmetry	$-\sqrt{3}xz$ $\mathbb{Q}_{2,2}^{(a)}(E_{1g})$ $\begin{bmatrix} 0 & \frac{\sqrt{2}}{6} & 0 & -\frac{1}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{1}{6} & 0 & -\frac{\sqrt{2}}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{15}}{42} & 0 & \frac{\sqrt{6}}{28} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{14} & 0 & -\frac{\sqrt{2}}{14} & 0 & 0 & 0 & 0 \\ 0 & \frac{1}{42} & 0 & \frac{5\sqrt{2}}{84} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{14} & 0 & -\frac{\sqrt{6}}{14} & 0 & 0 & 0 \\ 0 & 0 & \frac{5\sqrt{2}}{84} & 0 & \frac{1}{42} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{14} & 0 & -\frac{\sqrt{10}}{14} & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{6}}{28} & 0 & -\frac{\sqrt{15}}{42} & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{14} & 0 & -\frac{\sqrt{10}}{14} & 0 \end{bmatrix}$
284	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$

continued ...

Table 7

No.	multipole	matrix														
	$\mathbb{Q}_{2,1}^{(a)}(E_{2g})$	$\frac{\sqrt{10}}{12}$	0	0	0	$\frac{\sqrt{2}}{12}$	0	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{2}}{12}$	0	0	0	$\frac{\sqrt{10}}{12}$	0	0	0	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{6}}{42}$	0	0	$\frac{\sqrt{70}}{28}$	0	0	0	$\frac{\sqrt{2}}{28}$	0	0	0	0
		$\frac{\sqrt{5}}{21}$	0	0	0	$-\frac{2}{21}$	0	0	$\frac{\sqrt{30}}{28}$	0	0	0	$\frac{\sqrt{10}}{28}$	0	0	0
		0	$\frac{2}{21}$	0	0	0	$-\frac{\sqrt{5}}{21}$	0	0	$\frac{\sqrt{10}}{28}$	0	0	0	$\frac{\sqrt{30}}{28}$	0	0
		0	0	$\frac{\sqrt{6}}{42}$	0	0	0	0	0	0	$\frac{\sqrt{2}}{28}$	0	0	0	$\frac{\sqrt{70}}{28}$	0
285	symmetry	$-\sqrt{3}xy$														
	$\mathbb{Q}_{2,2}^{(a)}(E_{2g})$	$-\frac{\sqrt{10}i}{12}$	0	0	0	$\frac{\sqrt{2}i}{12}$	0	0	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{2}i}{12}$	0	0	0	$\frac{\sqrt{10}i}{12}$	0	0	0	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{6}i}{42}$	0	0	$-\frac{\sqrt{70}i}{28}$	0	0	0	$\frac{\sqrt{2}i}{28}$	0	0	0	0
		$-\frac{\sqrt{5}i}{21}$	0	0	0	$-\frac{2i}{21}$	0	0	$-\frac{\sqrt{30}i}{28}$	0	0	0	$\frac{\sqrt{10}i}{28}$	0	0	0
		0	$-\frac{2i}{21}$	0	0	0	$-\frac{\sqrt{5}i}{21}$	0	0	$-\frac{\sqrt{10}i}{28}$	0	0	0	$\frac{\sqrt{30}i}{28}$	0	0
		0	0	$-\frac{\sqrt{6}i}{42}$	0	0	0	0	0	0	$-\frac{\sqrt{2}i}{28}$	0	0	0	$\frac{\sqrt{70}i}{28}$	0
286	symmetry	$\frac{3x^4}{8} + \frac{3x^2y^2}{4} - 3x^2z^2 + \frac{3y^4}{8} - 3y^2z^2 + z^4$														
	$\mathbb{Q}_4^{(a)}(A_g)$	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	$\frac{\sqrt{3}}{14}$	0	0	0	0	0	0	$-\frac{\sqrt{30}}{28}$	0	0	0	0	0	0
		0	0	$-\frac{3\sqrt{2}}{14}$	0	0	0	0	0	0	$\frac{5\sqrt{6}}{84}$	0	0	0	0	0
		0	0	0	$\frac{3\sqrt{2}}{14}$	0	0	0	0	0	0	$\frac{5\sqrt{6}}{84}$	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{3}}{14}$	0	0	0	0	0	0	$-\frac{\sqrt{30}}{28}$	0	0	0
287	symmetry	$\frac{\sqrt{70}xz(x^2-3y^2)}{4}$														
	$\mathbb{Q}_4^{(a)}(B_g, 1)$	0	0	0	0	0	$\frac{\sqrt{6}}{24}$	0	0	0	0	0	$-\frac{\sqrt{42}}{24}$	0	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{42}}{24}$	0	0	0	0	0	$\frac{\sqrt{6}}{24}$	0	0
		0	0	0	0	$\frac{\sqrt{210}}{56}$	0	0	0	0	0	0	$-\frac{\sqrt{21}}{28}$	0	0	0
		0	0	0	0	$-\frac{3\sqrt{14}}{56}$	$-\frac{\sqrt{3}}{12}$	0	0	0	0	0	$-\frac{\sqrt{21}}{42}$	0	0	0
		$-\frac{3\sqrt{14}}{56}$	0	0	0	0	0	$\frac{\sqrt{21}}{42}$	0	0	0	0	0	0	$\frac{\sqrt{3}}{12}$	0
		0	$\frac{\sqrt{210}}{56}$	0	0	0	0	0	$\frac{\sqrt{21}}{28}$	0	0	0	0	0	0	0
288	symmetry	$\frac{\sqrt{70}yz(3x^2-y^2)}{4}$														

continued ...



Table 7

No.	multipole	matrix													
	$\mathbb{Q}_4^{(a)}(B_g, 2)$	0	0	0	0	0	0	$\frac{\sqrt{6}i}{24}$	0	0	0	0	$\frac{\sqrt{42}i}{24}$	0	
		0	0	0	0	0	0	0	$-\frac{\sqrt{42}i}{24}$	0	0	0	0	$-\frac{\sqrt{6}i}{24}$	
		0	0	0	0	$-\frac{\sqrt{210}i}{56}$	0	0	0	0	0	0	$\frac{\sqrt{21}i}{28}$	0	0
		0	0	0	0	0	$\frac{3\sqrt{14}i}{56}$	$-\frac{\sqrt{3}i}{12}$	0	0	0	0	$\frac{\sqrt{21}i}{42}$	0	
		$-\frac{3\sqrt{14}i}{56}$	0	0	0	0	0	0	$\frac{\sqrt{21}i}{42}$	0	0	0	0	0	$-\frac{\sqrt{3}i}{12}$
		0	$\frac{\sqrt{210}i}{56}$	0	0	0	0	0	0	$\frac{\sqrt{21}i}{28}$	0	0	0	0	0
289	symmetry	$-\frac{\sqrt{10}yz(3x^2+3y^2-4z^2)}{4}$													
	$\mathbb{Q}_{4,1}^{(a)}(E_{1g})$	0	0	0	0	0	0	0	0	$\frac{\sqrt{2}i}{8}$	0	$\frac{\sqrt{30}i}{24}$	0	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{30}i}{24}$	0	$-\frac{\sqrt{2}i}{8}$	0	0
		$-\frac{\sqrt{6}i}{56}$	0	$-\frac{\sqrt{15}i}{28}$	0	0	0	0	$\frac{3i}{28}$	0	$\frac{\sqrt{5}i}{14}$	0	0	0	0
		0	$\frac{3\sqrt{10}i}{56}$	0	$\frac{3\sqrt{5}i}{28}$	0	0	0	0	$-\frac{i}{7}$	0	$-\frac{\sqrt{15}i}{84}$	0	0	0
		0	0	$-\frac{3\sqrt{5}i}{28}$	0	$-\frac{3\sqrt{10}i}{56}$	0	0	0	0	$-\frac{\sqrt{15}i}{84}$	0	$-\frac{i}{7}$	0	0
		0	0	0	$\frac{\sqrt{15}i}{28}$	0	$\frac{\sqrt{6}i}{56}$	0	0	0	0	$\frac{\sqrt{5}i}{14}$	0	$\frac{3i}{28}$	0
290	symmetry	$\frac{\sqrt{10}xz(3x^2+3y^2-4z^2)}{4}$													
	$\mathbb{Q}_{4,2}^{(a)}(E_{1g})$	0	0	0	0	0	0	0	0	$-\frac{\sqrt{2}}{8}$	0	$\frac{\sqrt{30}}{24}$	0	0	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{30}}{24}$	0	$-\frac{\sqrt{2}}{8}$	0	0
		$\frac{\sqrt{6}}{56}$	0	$-\frac{\sqrt{15}}{28}$	0	0	0	0	$-\frac{3}{28}$	0	$\frac{\sqrt{5}}{14}$	0	0	0	0
		0	$-\frac{3\sqrt{10}}{56}$	0	$\frac{3\sqrt{5}}{28}$	0	0	0	0	$\frac{1}{7}$	0	$-\frac{\sqrt{15}}{84}$	0	0	0
		0	0	$\frac{3\sqrt{5}}{28}$	0	$-\frac{3\sqrt{10}}{56}$	0	0	0	0	$\frac{\sqrt{15}}{84}$	0	$-\frac{1}{7}$	0	0
		0	0	0	$-\frac{\sqrt{15}}{28}$	0	$\frac{\sqrt{6}}{56}$	0	0	0	0	$-\frac{\sqrt{5}}{14}$	0	$\frac{3}{28}$	0
291	symmetry	$\frac{\sqrt{35}(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$													
	$\mathbb{Q}_{4,1}^{(a)}(E_{2g}, 1)$	0	0	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	0	$\frac{\sqrt{21}}{14}$	0	0	0	0	0	$-\frac{\sqrt{14}}{28}$	0	
		0	0	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	
		$-\frac{\sqrt{21}}{14}$	0	0	0	0	0	0	$-\frac{\sqrt{14}}{28}$	0	0	0	0	0	
292	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$													

continued ...

Table 7

No.	multipole	matrix
	$\mathbb{Q}_{4,2}^{(a)}(E_{2g}, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}i}{6} \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}i}{14} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}i}{28} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{12} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{21}i}{14} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}i}{28} & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
293	symmetry	$-\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$
	$\mathbb{Q}_{4,1}^{(a)}(E_{2g}, 2)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{12} & 0 & 0 & 0 & -\frac{1}{4} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{1}{4} & 0 & 0 & 0 & \frac{\sqrt{3}}{12} & 0 \\ 0 & 0 & 0 & \frac{\sqrt{30}}{28} & 0 & 0 & -\frac{\sqrt{14}}{56} & 0 & 0 & 0 & -\frac{3\sqrt{10}}{56} & 0 & 0 & 0 \\ -\frac{3}{28} & 0 & 0 & 0 & -\frac{3\sqrt{5}}{28} & 0 & 0 & \frac{11\sqrt{6}}{168} & 0 & 0 & 0 & -\frac{\sqrt{2}}{56} & 0 & 0 \\ 0 & \frac{3\sqrt{5}}{28} & 0 & 0 & 0 & \frac{3}{28} & 0 & 0 & -\frac{\sqrt{2}}{56} & 0 & 0 & 0 & \frac{11\sqrt{6}}{168} & 0 \\ 0 & 0 & -\frac{\sqrt{30}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{3\sqrt{10}}{56} & 0 & 0 & 0 & -\frac{\sqrt{14}}{56} \end{bmatrix}$
294	symmetry	$\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$
	$\mathbb{Q}_{4,2}^{(a)}(E_{2g}, 2)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}i}{12} & 0 & 0 & 0 & -\frac{i}{4} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{i}{4} & 0 & 0 & 0 & \frac{\sqrt{3}i}{12} & 0 \\ 0 & 0 & 0 & \frac{\sqrt{30}i}{28} & 0 & 0 & \frac{\sqrt{14}i}{56} & 0 & 0 & 0 & -\frac{3\sqrt{10}i}{56} & 0 & 0 & 0 \\ \frac{3i}{28} & 0 & 0 & 0 & -\frac{3\sqrt{5}i}{28} & 0 & 0 & -\frac{11\sqrt{6}i}{168} & 0 & 0 & 0 & -\frac{\sqrt{2}i}{56} & 0 & 0 \\ 0 & -\frac{3\sqrt{5}i}{28} & 0 & 0 & 0 & \frac{3i}{28} & 0 & 0 & \frac{\sqrt{2}i}{56} & 0 & 0 & 0 & \frac{11\sqrt{6}i}{168} & 0 \\ 0 & 0 & \frac{\sqrt{30}i}{28} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{3\sqrt{10}i}{56} & 0 & 0 & 0 & -\frac{\sqrt{14}i}{56} \end{bmatrix}$
295	symmetry	$\frac{3x^4}{8} + \frac{3x^2y^2}{4} - 3x^2z^2 + \frac{3y^4}{8} - 3y^2z^2 + z^4$
	$\mathbb{Q}_4^{(1,-1;a)}(A_g)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{1}{4} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{1}{4} & 0 & 0 & 0 \\ 0 & \frac{1}{28} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{3\sqrt{10}}{28} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{6}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{5\sqrt{2}}{28} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{6}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{5\sqrt{2}}{28} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{1}{28} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{3\sqrt{10}}{28} & 0 & 0 \end{bmatrix}$
296	symmetry	$\frac{\sqrt{70}xz(x^2-3y^2)}{4}$

continued ...

Table 7

No.	multipole	matrix														
	$\mathbb{Q}_4^{(1,-1;a)}(B_g, 1)$	0	0	0	0	0	0	$\frac{\sqrt{2}}{16}$	0	0	0	0	0	$-\frac{\sqrt{14}}{16}$	0	
		0	0	0	0	0	0	0	$-\frac{\sqrt{14}}{16}$	0	0	0	0	0	$\frac{\sqrt{2}}{16}$	
		0	0	0	0	$\frac{\sqrt{70}}{112}$	0	0	0	0	0	0	$\frac{3\sqrt{7}}{28}$	0	0	
		0	0	0	0	0	$-\frac{\sqrt{42}}{112}$	$\frac{1}{4}$	0	0	0	0	0	$\frac{\sqrt{7}}{14}$	0	
		$-\frac{\sqrt{42}}{112}$	0	0	0	0	0	0	$-\frac{\sqrt{7}}{14}$	0	0	0	0	0	$-\frac{1}{4}$	
		0	$\frac{\sqrt{70}}{112}$	0	0	0	0	0	0	$-\frac{3\sqrt{7}}{28}$	0	0	0	0	0	
297	symmetry	$\frac{\sqrt{70}yz(3x^2-y^2)}{4}$														
	$\mathbb{Q}_4^{(1,-1;a)}(B_g, 2)$	0	0	0	0	0	0	$\frac{\sqrt{2}i}{16}$	0	0	0	0	0	$\frac{\sqrt{14}i}{16}$	0	
		0	0	0	0	0	0	0	$-\frac{\sqrt{14}i}{16}$	0	0	0	0	0	$-\frac{\sqrt{2}i}{16}$	
		0	0	0	0	$-\frac{\sqrt{70}i}{112}$	0	0	0	0	0	0	$-\frac{3\sqrt{7}i}{28}$	0	0	
		0	0	0	0	0	$\frac{\sqrt{42}i}{112}$	$\frac{i}{4}$	0	0	0	0	0	$-\frac{\sqrt{7}i}{14}$	0	
		$-\frac{\sqrt{42}i}{112}$	0	0	0	0	0	0	$-\frac{\sqrt{7}i}{14}$	0	0	0	0	0	$\frac{i}{4}$	
		0	$\frac{\sqrt{70}i}{112}$	0	0	0	0	0	0	$-\frac{3\sqrt{7}i}{28}$	0	0	0	0	0	
298	symmetry	$-\frac{\sqrt{10}yz(3x^2+3y^2-4z^2)}{4}$														
	$\mathbb{Q}_{4,1}^{(1,-1;a)}(E_{1g})$	0	0	0	0	0	0	0	$\frac{\sqrt{6}i}{16}$	0	0	$\frac{\sqrt{10}i}{16}$	0	0	0	
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{10}i}{16}$	0	0	$-\frac{\sqrt{6}i}{16}$	0	0	
		$-\frac{\sqrt{2}i}{112}$	0	$-\frac{\sqrt{5}i}{56}$	0	0	0	0	$-\frac{3\sqrt{3}i}{28}$	0	$-\frac{\sqrt{15}i}{14}$	0	0	0	0	
		0	$\frac{\sqrt{30}i}{112}$	0	$\frac{\sqrt{15}i}{56}$	0	0	0	0	$\frac{\sqrt{3}i}{7}$	0	$\frac{\sqrt{5}i}{28}$	0	0	0	
		0	0	$-\frac{\sqrt{15}i}{56}$	0	$-\frac{\sqrt{30}i}{112}$	0	0	0	0	$\frac{\sqrt{5}i}{28}$	0	$\frac{\sqrt{3}i}{7}$	0	0	
		0	0	0	$\frac{\sqrt{5}i}{56}$	0	$\frac{\sqrt{2}i}{112}$	0	0	0	0	$-\frac{\sqrt{15}i}{14}$	0	$-\frac{3\sqrt{3}i}{28}$	0	
299	symmetry	$\frac{\sqrt{10}xz(3x^2+3y^2-4z^2)}{4}$														
	$\mathbb{Q}_{4,2}^{(1,-1;a)}(E_{1g})$	0	0	0	0	0	0	0	$-\frac{\sqrt{6}}{16}$	0	0	$\frac{\sqrt{10}}{16}$	0	0	0	
		0	0	0	0	0	0	0	0	$\frac{\sqrt{10}}{16}$	0	$-\frac{\sqrt{6}}{16}$	0	0	0	
		$\frac{\sqrt{2}}{112}$	0	$-\frac{\sqrt{5}}{56}$	0	0	0	0	$\frac{3\sqrt{3}}{28}$	0	$-\frac{\sqrt{15}}{14}$	0	0	0	0	
		0	$-\frac{\sqrt{30}}{112}$	0	$\frac{\sqrt{15}}{56}$	0	0	0	0	$-\frac{\sqrt{3}}{7}$	0	$\frac{\sqrt{5}}{28}$	0	0	0	
		0	0	$\frac{\sqrt{15}}{56}$	0	$-\frac{\sqrt{30}}{112}$	0	0	0	0	$-\frac{\sqrt{5}}{28}$	0	$\frac{\sqrt{3}}{7}$	0	0	
		0	0	0	$-\frac{\sqrt{5}}{56}$	0	$\frac{\sqrt{2}}{112}$	0	0	0	0	$\frac{\sqrt{15}}{14}$	0	$-\frac{3\sqrt{3}}{28}$	0	
300	symmetry	$\frac{\sqrt{35}(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$														

continued ...

Table 7

No.	multipole	matrix
	$\mathbb{Q}_{4,1}^{(1,-1;a)}(E_{2g}, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{1}{4} \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{1}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}}{28} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{7}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}}{28} & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
301	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$ $\mathbb{Q}_{4,2}^{(1,-1;a)}(E_{2g}, 1) \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{i}{4} \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}i}{28} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}i}{28} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{7}i}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}i}{28} & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
302	symmetry	$-\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$ $\mathbb{Q}_{4,1}^{(1,-1;a)}(E_{2g}, 2) \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{1}{8} & 0 & 0 & 0 & -\frac{\sqrt{3}}{8} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{8} & 0 & 0 & 0 & \frac{1}{8} & 0 \\ 0 & 0 & 0 & \frac{\sqrt{10}}{56} & 0 & 0 & \frac{\sqrt{42}}{56} & 0 & 0 & 0 & \frac{3\sqrt{30}}{56} & 0 & 0 & 0 \\ -\frac{\sqrt{3}}{56} & 0 & 0 & 0 & -\frac{\sqrt{15}}{56} & 0 & 0 & -\frac{11\sqrt{2}}{56} & 0 & 0 & 0 & \frac{\sqrt{6}}{56} & 0 & 0 \\ 0 & \frac{\sqrt{15}}{56} & 0 & 0 & 0 & \frac{\sqrt{3}}{56} & 0 & 0 & \frac{\sqrt{6}}{56} & 0 & 0 & 0 & -\frac{11\sqrt{2}}{56} & 0 \\ 0 & 0 & -\frac{\sqrt{10}}{56} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{3\sqrt{30}}{56} & 0 & 0 & 0 & \frac{\sqrt{42}}{56} \end{bmatrix}$
303	symmetry	$\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$ $\mathbb{Q}_{4,2}^{(1,-1;a)}(E_{2g}, 2) \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{i}{8} & 0 & 0 & 0 & -\frac{\sqrt{3}i}{8} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{8} & 0 & 0 & 0 & \frac{i}{8} & 0 \\ 0 & 0 & 0 & \frac{\sqrt{10}i}{56} & 0 & 0 & -\frac{\sqrt{42}i}{56} & 0 & 0 & 0 & \frac{3\sqrt{30}i}{56} & 0 & 0 & 0 \\ \frac{\sqrt{3}i}{56} & 0 & 0 & 0 & -\frac{\sqrt{15}i}{56} & 0 & 0 & \frac{11\sqrt{2}i}{56} & 0 & 0 & 0 & \frac{\sqrt{6}i}{56} & 0 & 0 \\ 0 & -\frac{\sqrt{15}i}{56} & 0 & 0 & 0 & \frac{\sqrt{3}i}{56} & 0 & 0 & -\frac{\sqrt{6}i}{56} & 0 & 0 & 0 & -\frac{11\sqrt{2}i}{56} & 0 \\ 0 & 0 & \frac{\sqrt{10}i}{56} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{3\sqrt{30}i}{56} & 0 & 0 & 0 & \frac{\sqrt{42}i}{56} \end{bmatrix}$
304	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$

continued ...

Table 7

No.	multipole	matrix
	$\mathbb{Q}_2^{(1,0;a)}(A_g)$	$\begin{bmatrix} 0 & 0 & -\frac{\sqrt{2}}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{2}}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{5\sqrt{6}}{42} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{21} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{5}{42} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{7} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{5}{42} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{7} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{5\sqrt{6}}{42} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{21} & 0 & 0 & 0 \end{bmatrix}$
305	symmetry	$\sqrt{3}yz$ $\mathbb{Q}_{2,1}^{(1,0;a)}(E_{1g}) \begin{bmatrix} 0 & \frac{\sqrt{3}i}{9} & 0 & \frac{\sqrt{6}i}{18} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{6}i}{18} & 0 & \frac{\sqrt{3}i}{9} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{5\sqrt{10}i}{84} & 0 & -\frac{5i}{28} & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}i}{21} & 0 & -\frac{\sqrt{3}i}{21} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{5\sqrt{6}i}{252} & 0 & -\frac{25\sqrt{3}i}{252} & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}i}{21} & 0 & -\frac{i}{7} & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{25\sqrt{3}i}{252} & 0 & -\frac{5\sqrt{6}i}{252} & 0 & 0 & 0 & 0 & -\frac{i}{7} & 0 & -\frac{\sqrt{15}i}{21} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{5i}{28} & 0 & \frac{5\sqrt{10}i}{84} & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{21} & 0 & -\frac{\sqrt{15}i}{21} & 0 & 0 \end{bmatrix}$
306	symmetry	$-\sqrt{3}xz$ $\mathbb{Q}_{2,2}^{(1,0;a)}(E_{1g}) \begin{bmatrix} 0 & -\frac{\sqrt{3}}{9} & 0 & \frac{\sqrt{6}}{18} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{6}}{18} & 0 & \frac{\sqrt{3}}{9} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{5\sqrt{10}}{84} & 0 & -\frac{5}{28} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{21} & 0 & -\frac{\sqrt{3}}{21} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{5\sqrt{6}}{252} & 0 & -\frac{25\sqrt{3}}{252} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{21} & 0 & -\frac{1}{7} & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{25\sqrt{3}}{252} & 0 & -\frac{5\sqrt{6}}{252} & 0 & 0 & 0 & 0 & \frac{1}{7} & 0 & -\frac{\sqrt{15}}{21} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{5}{28} & 0 & \frac{5\sqrt{10}}{84} & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{21} & 0 & -\frac{\sqrt{15}}{21} & 0 & 0 \end{bmatrix}$
307	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$ $\mathbb{Q}_{2,1}^{(1,0;a)}(E_{2g}) \begin{bmatrix} -\frac{\sqrt{15}}{18} & 0 & 0 & 0 & -\frac{\sqrt{3}}{18} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{3}}{18} & 0 & 0 & 0 & -\frac{\sqrt{15}}{18} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{5}{42} & 0 & 0 & \frac{\sqrt{105}}{42} & 0 & 0 & 0 & \frac{\sqrt{3}}{42} & 0 & 0 & 0 & 0 \\ -\frac{5\sqrt{30}}{126} & 0 & 0 & 0 & \frac{5\sqrt{6}}{63} & 0 & 0 & \frac{\sqrt{5}}{14} & 0 & 0 & 0 & \frac{\sqrt{15}}{42} & 0 & 0 & 0 \\ 0 & -\frac{5\sqrt{6}}{63} & 0 & 0 & 0 & \frac{5\sqrt{30}}{126} & 0 & 0 & \frac{\sqrt{15}}{42} & 0 & 0 & 0 & \frac{\sqrt{5}}{14} & 0 & 0 \\ 0 & 0 & -\frac{5}{42} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{42} & 0 & 0 & 0 & \frac{\sqrt{105}}{42} & 0 \end{bmatrix}$
308	symmetry	$-\sqrt{3}xy$

continued ...

Table 7

No.	multipole	matrix														
	$\mathbb{Q}_{2,2}^{(1,0;a)}(E_{2g})$	$\frac{\sqrt{15}i}{18}$	0	0	0	$-\frac{\sqrt{3}i}{18}$	0	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{3}i}{18}$	0	0	0	$-\frac{\sqrt{15}i}{18}$	0	0	0	0	0	0	0	0	0
		0	0	0	$\frac{5i}{42}$	0	0	$-\frac{\sqrt{105}i}{42}$	0	0	0	$\frac{\sqrt{3}i}{42}$	0	0	0	0
		$\frac{5\sqrt{30}i}{126}$	0	0	0	$\frac{5\sqrt{6}i}{63}$	0	0	$-\frac{\sqrt{5}i}{14}$	0	0	0	$\frac{\sqrt{15}i}{42}$	0	0	0
		0	$\frac{5\sqrt{6}i}{63}$	0	0	0	$\frac{5\sqrt{30}i}{126}$	0	0	$-\frac{\sqrt{15}i}{42}$	0	0	0	$\frac{\sqrt{5}i}{14}$	0	0
		0	0	$\frac{5i}{42}$	0	0	0	0	0	$-\frac{\sqrt{3}i}{42}$	0	0	0	0	$\frac{\sqrt{105}i}{42}$	0
309	symmetry	$\frac{3x^4}{8} + \frac{3x^2y^2}{4} - 3x^2z^2 + \frac{3y^4}{8} - 3y^2z^2 + z^4$														
	$\mathbb{Q}_4^{(1,0;a)}(A_g)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{12} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{12} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{15}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{28} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{3\sqrt{10}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{84} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{3\sqrt{10}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{84} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{28} & 0 & 0 & 0 \end{bmatrix}$														
310	symmetry	$\frac{\sqrt{70}xz(x^2-3y^2)}{4}$														
	$\mathbb{Q}_4^{(1,0;a)}(B_g, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{48} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{210}}{48} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{210}}{48} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{48} \\ 0 & 0 & 0 & 0 & -\frac{5\sqrt{42}}{112} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}}{140} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{3\sqrt{70}}{112} & -\frac{\sqrt{15}}{60} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}}{210} & 0 \\ \frac{3\sqrt{70}}{112} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{105}}{210} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{60} \\ 0 & -\frac{5\sqrt{42}}{112} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{105}}{140} & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$														
311	symmetry	$\frac{\sqrt{70}yz(3x^2-y^2)}{4}$														
	$\mathbb{Q}_4^{(1,0;a)}(B_g, 2)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{48} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{210}i}{48} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{210}i}{48} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}i}{48} \\ 0 & 0 & 0 & 0 & \frac{5\sqrt{42}i}{112} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{105}i}{140} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{3\sqrt{70}i}{112} & -\frac{\sqrt{15}i}{60} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{105}i}{210} & 0 \\ \frac{3\sqrt{70}i}{112} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{105}i}{210} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}i}{60} \\ 0 & -\frac{5\sqrt{42}i}{112} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{105}i}{140} & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$														
312	symmetry	$-\frac{\sqrt{10}yz(3x^2+3y^2-4z^2)}{4}$														

continued ...

Table 7

No.	multipole	matrix														
	$\mathbb{Q}_{4,1}^{(1,0;a)}(E_{1g})$	0	0	0	0	0	0	0	0	$\frac{\sqrt{10}i}{16}$	0	$\frac{5\sqrt{6}i}{48}$	0	0	0	
		0	0	0	0	0	0	0	0	$-\frac{5\sqrt{6}i}{48}$	0	$-\frac{\sqrt{10}i}{16}$	0	0	0	
		$\frac{\sqrt{30}i}{112}$	0	$\frac{5\sqrt{3}i}{56}$	0	0	0	0	$\frac{3\sqrt{5}i}{140}$	0	$\frac{i}{14}$	0	0	0	0	
		0	$-\frac{15\sqrt{2}i}{112}$	0	$-\frac{15i}{56}$	0	0	0	0	$-\frac{\sqrt{5}i}{35}$	0	$-\frac{\sqrt{3}i}{84}$	0	0	0	
		0	0	$\frac{15i}{56}$	0	$\frac{15\sqrt{2}i}{112}$	0	0	0	0	$-\frac{\sqrt{3}i}{84}$	0	$-\frac{\sqrt{5}i}{35}$	0	0	
		0	0	0	$-\frac{5\sqrt{3}i}{56}$	0	$-\frac{\sqrt{30}i}{112}$	0	0	0	0	$\frac{i}{14}$	0	$\frac{3\sqrt{5}i}{140}$	0	
313	symmetry	$\frac{\sqrt{10}xz(3x^2+3y^2-4z^2)}{4}$														
	$\mathbb{Q}_{4,2}^{(1,0;a)}(E_{1g})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}}{16} & 0 & \frac{5\sqrt{6}}{48} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{5\sqrt{6}}{48} & 0 & -\frac{\sqrt{10}}{16} & 0 & 0 \\ -\frac{\sqrt{30}}{112} & 0 & \frac{5\sqrt{3}}{56} & 0 & 0 & 0 & 0 & -\frac{3\sqrt{5}}{140} & 0 & \frac{1}{14} & 0 & 0 & 0 & 0 \\ 0 & \frac{15\sqrt{2}}{112} & 0 & -\frac{15}{56} & 0 & 0 & 0 & 0 & \frac{\sqrt{5}}{35} & 0 & -\frac{\sqrt{3}}{84} & 0 & 0 & 0 \\ 0 & 0 & -\frac{15}{56} & 0 & \frac{15\sqrt{2}}{112} & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{84} & 0 & -\frac{\sqrt{5}}{35} & 0 & 0 \\ 0 & 0 & 0 & \frac{5\sqrt{3}}{56} & 0 & -\frac{\sqrt{30}}{112} & 0 & 0 & 0 & 0 & -\frac{1}{14} & 0 & \frac{3\sqrt{5}}{140} & 0 \end{bmatrix}$														
314	symmetry	$\frac{\sqrt{35}(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$														
	$\mathbb{Q}_{4,1}^{(1,0;a)}(E_{2g},1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{12} \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}}{140} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{60} \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{60} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{105}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}}{140} & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$														
315	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$														
	$\mathbb{Q}_{4,2}^{(1,0;a)}(E_{2g},1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{12} \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{105}i}{28} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{70}i}{140} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{60} \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}i}{60} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{105}i}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}i}{140} & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$														
316	symmetry	$-\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$														

continued ...

Table 7

No.	multipole	matrix													
	$\mathbb{Q}_{4,1}^{(1,0;a)}(E_{2g}, 2)$	0	0	0	0	0	0	0	$-\frac{\sqrt{15}}{24}$	0	0	0	$-\frac{\sqrt{5}}{8}$	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{5}}{8}$	0	0	0	$\frac{\sqrt{15}}{24}$	0
		0	0	0	$-\frac{5\sqrt{6}}{56}$	0	0	$-\frac{\sqrt{70}}{280}$	0	0	0	$-\frac{3\sqrt{2}}{56}$	0	0	0
		$\frac{3\sqrt{5}}{56}$	0	0	0	$\frac{15}{56}$	0	0	$\frac{11\sqrt{30}}{840}$	0	0	0	$-\frac{\sqrt{10}}{280}$	0	0
		0	$-\frac{15}{56}$	0	0	0	$-\frac{3\sqrt{5}}{56}$	0	0	$-\frac{\sqrt{10}}{280}$	0	0	0	$\frac{11\sqrt{30}}{840}$	0
		0	0	$\frac{5\sqrt{6}}{56}$	0	0	0	0	0	0	$-\frac{3\sqrt{2}}{56}$	0	0	0	$-\frac{\sqrt{70}}{280}$
317	symmetry	$\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$													
	$\mathbb{Q}_{4,2}^{(1,0;a)}(E_{2g}, 2)$	0	0	0	0	0	0	0	$\frac{\sqrt{15}i}{24}$	0	0	0	$-\frac{\sqrt{5}i}{8}$	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{5}i}{8}$	0	0	0	$\frac{\sqrt{15}i}{24}$	0
		0	0	0	$-\frac{5\sqrt{6}i}{56}$	0	0	$\frac{\sqrt{70}i}{280}$	0	0	0	$-\frac{3\sqrt{2}i}{56}$	0	0	0
		$-\frac{3\sqrt{5}i}{56}$	0	0	0	$\frac{15i}{56}$	0	0	$-\frac{11\sqrt{30}i}{840}$	0	0	0	$-\frac{\sqrt{10}i}{280}$	0	0
		0	$\frac{15i}{56}$	0	0	0	$-\frac{3\sqrt{5}i}{56}$	0	0	$\frac{\sqrt{10}i}{280}$	0	0	0	$\frac{11\sqrt{30}i}{840}$	0
		0	0	$-\frac{5\sqrt{6}i}{56}$	0	0	0	0	0	0	$\frac{3\sqrt{2}i}{56}$	0	0	0	$-\frac{\sqrt{70}i}{280}$
318	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$													
	$\mathbb{Q}_2^{(1,1;a)}(A_g)$	0	0	$-\frac{1}{3}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	$-\frac{1}{3}$	0	0	0	0	0	0	0	0	0	0
		0	$-\frac{4\sqrt{3}}{21}$	0	0	0	0	0	$\frac{\sqrt{30}}{84}$	0	0	0	0	0	0
		0	0	$-\frac{2\sqrt{2}}{21}$	0	0	0	0	0	$\frac{\sqrt{6}}{28}$	0	0	0	0	0
		0	0	0	$\frac{2\sqrt{2}}{21}$	0	0	0	0	0	$\frac{\sqrt{6}}{28}$	0	0	0	0
		0	0	0	0	$\frac{4\sqrt{3}}{21}$	0	0	0	0	0	$\frac{\sqrt{30}}{84}$	0	0	0
319	symmetry	$\sqrt{3}yz$													
	$\mathbb{Q}_{2,1}^{(1,1;a)}(E_{1g})$	0	$\frac{\sqrt{6}i}{9}$	0	$\frac{\sqrt{3}i}{9}$	0	0	0	0	0	0	0	0	0	0
		0	0	$\frac{\sqrt{3}i}{9}$	0	$\frac{\sqrt{6}i}{9}$	0	0	0	0	0	0	0	0	0
		$\frac{2\sqrt{5}i}{21}$	0	$\frac{\sqrt{2}i}{7}$	0	0	0	0	$-\frac{\sqrt{30}i}{84}$	0	$-\frac{\sqrt{6}i}{84}$	0	0	0	0
		0	$-\frac{2\sqrt{3}i}{63}$	0	$\frac{5\sqrt{6}i}{63}$	0	0	0	0	$-\frac{\sqrt{30}i}{84}$	0	$-\frac{\sqrt{2}i}{28}$	0	0	0
		0	0	$-\frac{5\sqrt{6}i}{63}$	0	$\frac{2\sqrt{3}i}{63}$	0	0	0	0	$-\frac{\sqrt{2}i}{28}$	0	$-\frac{\sqrt{30}i}{84}$	0	0
		0	0	0	$-\frac{\sqrt{2}i}{7}$	0	$-\frac{2\sqrt{5}i}{21}$	0	0	0	0	$-\frac{\sqrt{6}i}{84}$	0	$-\frac{\sqrt{30}i}{84}$	0
320	symmetry	$-\sqrt{3}xz$													

continued ...



Table 7

No.	multipole	matrix
	$\mathbb{Q}_{2,2}^{(1,1;a)}(E_{1g})$	$ \begin{bmatrix} 0 & -\frac{\sqrt{6}}{9} & 0 & \frac{\sqrt{3}}{9} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{3}}{9} & 0 & \frac{\sqrt{6}}{9} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{2\sqrt{5}}{21} & 0 & \frac{\sqrt{2}}{7} & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{84} & 0 & -\frac{\sqrt{6}}{84} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{2\sqrt{3}}{63} & 0 & \frac{5\sqrt{6}}{63} & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{84} & 0 & -\frac{\sqrt{2}}{28} & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{5\sqrt{6}}{63} & 0 & \frac{2\sqrt{3}}{63} & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{28} & 0 & -\frac{\sqrt{30}}{84} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{2}}{7} & 0 & -\frac{2\sqrt{5}}{21} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{84} & 0 & -\frac{\sqrt{30}}{84} & 0 & 0 \end{bmatrix} $
321	symmetry	$ \frac{\sqrt{3}(x-y)(x+y)}{2} $
	$\mathbb{Q}_{2,1}^{(1,1;a)}(E_{2g})$	$ \begin{bmatrix} -\frac{\sqrt{30}}{18} & 0 & 0 & 0 & -\frac{\sqrt{6}}{18} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{6}}{18} & 0 & 0 & 0 & -\frac{\sqrt{30}}{18} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{2\sqrt{2}}{21} & 0 & 0 & \frac{\sqrt{210}}{168} & 0 & 0 & 0 & \frac{\sqrt{6}}{168} & 0 & 0 & 0 & 0 \\ \frac{4\sqrt{15}}{63} & 0 & 0 & 0 & -\frac{8\sqrt{3}}{63} & 0 & 0 & \frac{\sqrt{10}}{56} & 0 & 0 & 0 & \frac{\sqrt{30}}{168} & 0 & 0 & 0 \\ 0 & \frac{8\sqrt{3}}{63} & 0 & 0 & 0 & -\frac{4\sqrt{15}}{63} & 0 & 0 & \frac{\sqrt{30}}{168} & 0 & 0 & 0 & \frac{\sqrt{10}}{56} & 0 & 0 \\ 0 & 0 & \frac{2\sqrt{2}}{21} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{168} & 0 & 0 & 0 & \frac{\sqrt{210}}{168} \end{bmatrix} $
322	symmetry	$ -\sqrt{3}xy $
	$\mathbb{Q}_{2,2}^{(1,1;a)}(E_{2g})$	$ \begin{bmatrix} \frac{\sqrt{30}i}{18} & 0 & 0 & 0 & -\frac{\sqrt{6}i}{18} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{6}i}{18} & 0 & 0 & 0 & -\frac{\sqrt{30}i}{18} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{2\sqrt{2}i}{21} & 0 & 0 & -\frac{\sqrt{210}i}{168} & 0 & 0 & 0 & \frac{\sqrt{6}i}{168} & 0 & 0 & 0 & 0 \\ -\frac{4\sqrt{15}i}{63} & 0 & 0 & 0 & -\frac{8\sqrt{3}i}{63} & 0 & 0 & -\frac{\sqrt{10}i}{56} & 0 & 0 & 0 & \frac{\sqrt{30}i}{168} & 0 & 0 & 0 \\ 0 & -\frac{8\sqrt{3}i}{63} & 0 & 0 & 0 & -\frac{4\sqrt{15}i}{63} & 0 & 0 & -\frac{\sqrt{30}i}{168} & 0 & 0 & 0 & \frac{\sqrt{10}i}{56} & 0 & 0 \\ 0 & 0 & -\frac{2\sqrt{2}i}{21} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{168} & 0 & 0 & 0 & 0 & \frac{\sqrt{210}i}{168} \end{bmatrix} $
323	symmetry	$ -\frac{z(3x^2+3y^2-2z^2)}{2} $
	$\mathbb{G}_3^{(a)}(A_g)$	$ \begin{bmatrix} 0 & 0 & \frac{\sqrt{21}i}{21} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}i}{14} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{21}i}{21} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}i}{14} & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{7}i}{14} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{70}i}{28} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{42}i}{42} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}i}{28} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{42}i}{42} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}i}{28} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{7}i}{14} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}i}{28} & 0 & 0 & 0 \end{bmatrix} $
324	symmetry	$ \frac{\sqrt{10}y(3x^2-y^2)}{4} $

continued ...

Table 7

No.	multipole	matrix
	$\mathbb{G}_3^{(a)}(B_g, 1)$	$ \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{21} & \frac{\sqrt{2}}{8} & 0 & 0 & 0 & 0 & \frac{\sqrt{14}}{56} & 0 \\ -\frac{\sqrt{21}}{21} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}}{56} & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{8} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{70}}{56} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{28} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{5\sqrt{42}}{168} & -\frac{1}{4} & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{14} & 0 \\ -\frac{5\sqrt{42}}{168} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}}{14} & 0 & 0 & 0 & 0 & \frac{1}{4} \\ 0 & -\frac{\sqrt{70}}{56} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}}{28} & 0 & 0 & 0 & 0 \end{bmatrix} $
325	symmetry	$ \frac{\sqrt{10}x(x^2-3y^2)}{4} $
	$\mathbb{G}_3^{(a)}(B_g, 2)$	$ \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}i}{21} & -\frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & \frac{\sqrt{14}i}{56} & 0 \\ \frac{\sqrt{21}i}{21} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}i}{56} & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{8} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{70}i}{56} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}i}{28} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{5\sqrt{42}i}{168} & \frac{i}{4} & 0 & 0 & 0 & 0 & \frac{\sqrt{7}i}{14} & 0 \\ \frac{5\sqrt{42}i}{168} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}i}{14} & 0 & 0 & 0 & 0 & \frac{i}{4} \\ 0 & \frac{\sqrt{70}i}{56} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}i}{28} & 0 & 0 & 0 & 0 \end{bmatrix} $
326	symmetry	$ -\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4} $
	$\mathbb{G}_{3,1}^{(a)}(E_{1g})$	$ \begin{bmatrix} 0 & -\frac{\sqrt{7}i}{21} & 0 & \frac{\sqrt{14}i}{21} & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}i}{56} & 0 & \frac{\sqrt{42}i}{56} & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{14}i}{21} & 0 & -\frac{\sqrt{7}i}{21} & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}i}{56} & 0 & \frac{\sqrt{70}i}{56} & 0 & 0 \\ \frac{\sqrt{210}i}{168} & 0 & -\frac{\sqrt{21}i}{28} & 0 & 0 & 0 & 0 & -\frac{\sqrt{35}i}{28} & 0 & \frac{\sqrt{7}i}{14} & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{14}i}{24} & 0 & \frac{\sqrt{7}i}{84} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}i}{28} & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{7}i}{84} & 0 & \frac{\sqrt{14}i}{24} & 0 & 0 & 0 & 0 & \frac{\sqrt{21}i}{28} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{21}i}{28} & 0 & -\frac{\sqrt{210}i}{168} & 0 & 0 & 0 & 0 & \frac{\sqrt{7}i}{14} & 0 & -\frac{\sqrt{35}i}{28} & 0 \end{bmatrix} $
327	symmetry	$ -\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4} $
	$\mathbb{G}_{3,2}^{(a)}(E_{1g})$	$ \begin{bmatrix} 0 & \frac{\sqrt{7}}{21} & 0 & \frac{\sqrt{14}}{21} & 0 & 0 & 0 & 0 & \frac{\sqrt{70}}{56} & 0 & \frac{\sqrt{42}}{56} & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{14}}{21} & 0 & -\frac{\sqrt{7}}{21} & 0 & 0 & 0 & 0 & \frac{\sqrt{42}}{56} & 0 & \frac{\sqrt{70}}{56} & 0 & 0 \\ -\frac{\sqrt{210}}{168} & 0 & -\frac{\sqrt{21}}{28} & 0 & 0 & 0 & 0 & \frac{\sqrt{35}}{28} & 0 & \frac{\sqrt{7}}{14} & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{14}}{24} & 0 & \frac{\sqrt{7}}{84} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{28} & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{7}}{84} & 0 & \frac{\sqrt{14}}{24} & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}}{28} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{21}}{28} & 0 & -\frac{\sqrt{210}}{168} & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}}{14} & 0 & -\frac{\sqrt{35}}{28} & 0 \end{bmatrix} $
328	symmetry	$ \sqrt{15}xyz $

continued ...

Table 7

No.	multipole	matrix													
	$\mathbb{G}_{3,1}^{(a)}(E_{2g})$	$-\frac{\sqrt{14}}{42}$	0	0	0	$\frac{\sqrt{70}}{42}$	0	0	$-\frac{\sqrt{21}}{28}$	0	0	0	$\frac{\sqrt{7}}{28}$	0	0
		0	$\frac{\sqrt{70}}{42}$	0	0	0	$-\frac{\sqrt{14}}{42}$	0	0	$-\frac{\sqrt{7}}{28}$	0	0	0	$\frac{\sqrt{21}}{28}$	0
		0	0	0	$-\frac{\sqrt{210}}{84}$	0	0	$-\frac{\sqrt{2}}{8}$	0	0	0	$\frac{\sqrt{70}}{56}$	0	0	0
		$-\frac{5\sqrt{7}}{84}$	0	0	0	$-\frac{\sqrt{35}}{84}$	0	0	$\frac{\sqrt{42}}{56}$	0	0	0	$\frac{3\sqrt{14}}{56}$	0	0
		0	$\frac{\sqrt{35}}{84}$	0	0	0	$\frac{5\sqrt{7}}{84}$	0	0	$\frac{3\sqrt{14}}{56}$	0	0	0	$\frac{\sqrt{42}}{56}$	0
		0	0	$\frac{\sqrt{210}}{84}$	0	0	0	0	0	$\frac{\sqrt{70}}{56}$	0	0	0	0	$-\frac{\sqrt{2}}{8}$
329	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$													
	$\mathbb{G}_{3,2}^{(a)}(E_{2g})$	$\frac{\sqrt{14}i}{42}$	0	0	0	$\frac{\sqrt{70}i}{42}$	0	0	$\frac{\sqrt{21}i}{28}$	0	0	0	$\frac{\sqrt{7}i}{28}$	0	0
		0	$-\frac{\sqrt{70}i}{42}$	0	0	0	$-\frac{\sqrt{14}i}{42}$	0	0	$\frac{\sqrt{7}i}{28}$	0	0	0	$\frac{\sqrt{21}i}{28}$	0
		0	0	0	$-\frac{\sqrt{210}i}{84}$	0	0	$\frac{\sqrt{2}i}{8}$	0	0	0	$\frac{\sqrt{70}i}{56}$	0	0	0
		$\frac{5\sqrt{7}i}{84}$	0	0	0	$-\frac{\sqrt{35}i}{84}$	0	0	$-\frac{\sqrt{42}i}{56}$	0	0	0	$\frac{3\sqrt{14}i}{56}$	0	0
		0	$-\frac{\sqrt{35}i}{84}$	0	0	0	$\frac{5\sqrt{7}i}{84}$	0	0	$-\frac{3\sqrt{14}i}{56}$	0	0	0	$\frac{\sqrt{42}i}{56}$	0
		0	0	$-\frac{\sqrt{210}i}{84}$	0	0	0	0	0	$-\frac{\sqrt{70}i}{56}$	0	0	0	0	$-\frac{\sqrt{2}i}{8}$
330	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$													
	$\mathbb{G}_3^{(1,-1;a)}(A_g)$	0	0	$-\frac{\sqrt{5}i}{42}$	0	0	0	0	0	$-\frac{2\sqrt{15}i}{21}$	0	0	0	0	0
		0	0	0	$\frac{\sqrt{5}i}{42}$	0	0	0	0	0	$-\frac{2\sqrt{15}i}{21}$	0	0	0	0
		0	$\frac{2\sqrt{15}i}{105}$	0	0	0	0	0	0	$\frac{5\sqrt{6}i}{42}$	0	0	0	0	0
		0	0	$-\frac{2\sqrt{10}i}{105}$	0	0	0	0	0	0	$\frac{\sqrt{30}i}{42}$	0	0	0	0
		0	0	0	$-\frac{2\sqrt{10}i}{105}$	0	0	0	0	0	0	$-\frac{\sqrt{30}i}{42}$	0	0	0
		0	0	0	0	$\frac{2\sqrt{15}i}{105}$	0	0	0	0	0	0	$-\frac{5\sqrt{6}i}{42}$	0	0
331	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$													
	$\mathbb{G}_3^{(1,-1;a)}(B_g, 1)$	0	0	0	0	0	$-\frac{\sqrt{5}}{42}$	$-\frac{\sqrt{210}}{42}$	0	0	0	0	$-\frac{\sqrt{30}}{42}$	0	0
		$\frac{\sqrt{5}}{42}$	0	0	0	0	0	0	$-\frac{\sqrt{30}}{42}$	0	0	0	0	$-\frac{\sqrt{210}}{42}$	0
		0	0	0	0	$\frac{\sqrt{6}}{42}$	0	0	0	0	0	$\frac{\sqrt{15}}{42}$	0	0	0
		0	0	0	0	0	$\frac{\sqrt{10}}{42}$	$-\frac{\sqrt{105}}{42}$	0	0	0	0	$\frac{\sqrt{15}}{21}$	0	0
		$\frac{\sqrt{10}}{42}$	0	0	0	0	0	0	$-\frac{\sqrt{15}}{21}$	0	0	0	0	0	$\frac{\sqrt{105}}{42}$
		0	$\frac{\sqrt{6}}{42}$	0	0	0	0	0	0	$-\frac{\sqrt{15}}{42}$	0	0	0	0	0
332	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$													

continued ...

Table 7

No.	multipole	matrix
	$\mathbb{G}_3^{(1,-1;a)}(B_g, 2)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{42} & \frac{\sqrt{210}i}{42} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}i}{42} & 0 \\ -\frac{\sqrt{5}i}{42} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{42} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{210}i}{42} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{42} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{42} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{42} & \frac{\sqrt{105}i}{42} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{21} & 0 \\ -\frac{\sqrt{10}i}{42} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{21} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{105}i}{42} \\ 0 & -\frac{\sqrt{6}i}{42} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{42} & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
333	symmetry	$-\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$
	$\mathbb{G}_{3,1}^{(1,-1;a)}(E_{1g})$	$\begin{bmatrix} 0 & \frac{\sqrt{15}i}{126} & 0 & -\frac{\sqrt{30}i}{126} & 0 & 0 & 0 & 0 & \frac{5\sqrt{6}i}{42} & 0 & -\frac{\sqrt{10}i}{14} & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{30}i}{126} & 0 & \frac{\sqrt{15}i}{126} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{14} & 0 & -\frac{5\sqrt{6}i}{42} & 0 & 0 \\ -\frac{\sqrt{2}i}{42} & 0 & \frac{\sqrt{5}i}{35} & 0 & 0 & 0 & 0 & -\frac{5\sqrt{3}i}{42} & 0 & \frac{\sqrt{15}i}{21} & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{30}i}{90} & 0 & -\frac{\sqrt{15}i}{315} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{5}i}{14} & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{15}i}{315} & 0 & -\frac{\sqrt{30}i}{90} & 0 & 0 & 0 & 0 & \frac{\sqrt{5}i}{14} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{5}i}{35} & 0 & \frac{\sqrt{2}i}{42} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{21} & 0 & -\frac{5\sqrt{3}i}{42} & 0 \end{bmatrix}$
334	symmetry	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$
	$\mathbb{G}_{3,2}^{(1,-1;a)}(E_{1g})$	$\begin{bmatrix} 0 & -\frac{\sqrt{15}}{126} & 0 & -\frac{\sqrt{30}}{126} & 0 & 0 & 0 & 0 & -\frac{5\sqrt{6}}{42} & 0 & -\frac{\sqrt{10}}{14} & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{30}}{126} & 0 & \frac{\sqrt{15}}{126} & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}}{14} & 0 & -\frac{5\sqrt{6}}{42} & 0 & 0 \\ \frac{\sqrt{2}}{42} & 0 & \frac{\sqrt{5}}{35} & 0 & 0 & 0 & 0 & \frac{5\sqrt{3}}{42} & 0 & \frac{\sqrt{15}}{21} & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{30}}{90} & 0 & -\frac{\sqrt{15}}{315} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{5}}{14} & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{15}}{315} & 0 & -\frac{\sqrt{30}}{90} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{14} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{5}}{35} & 0 & \frac{\sqrt{2}}{42} & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{21} & 0 & -\frac{5\sqrt{3}}{42} & 0 \end{bmatrix}$
335	symmetry	$\sqrt{15}xyz$
	$\mathbb{G}_{3,1}^{(1,-1;a)}(E_{2g})$	$\begin{bmatrix} \frac{\sqrt{30}}{252} & 0 & 0 & 0 & -\frac{5\sqrt{6}}{252} & 0 & 0 & \frac{\sqrt{5}}{7} & 0 & 0 & 0 & -\frac{\sqrt{15}}{21} & 0 & 0 \\ 0 & -\frac{5\sqrt{6}}{252} & 0 & 0 & 0 & \frac{\sqrt{30}}{252} & 0 & 0 & \frac{\sqrt{15}}{21} & 0 & 0 & 0 & -\frac{\sqrt{5}}{7} & 0 \\ 0 & 0 & 0 & \frac{\sqrt{2}}{21} & 0 & 0 & -\frac{\sqrt{210}}{84} & 0 & 0 & 0 & \frac{5\sqrt{6}}{84} & 0 & 0 & 0 \\ \frac{\sqrt{15}}{63} & 0 & 0 & 0 & \frac{\sqrt{3}}{63} & 0 & 0 & \frac{\sqrt{10}}{28} & 0 & 0 & 0 & \frac{\sqrt{30}}{28} & 0 & 0 \\ 0 & -\frac{\sqrt{3}}{63} & 0 & 0 & 0 & -\frac{\sqrt{15}}{63} & 0 & 0 & \frac{\sqrt{30}}{28} & 0 & 0 & 0 & \frac{\sqrt{10}}{28} & 0 \\ 0 & 0 & -\frac{\sqrt{2}}{21} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{5\sqrt{6}}{84} & 0 & 0 & 0 & -\frac{\sqrt{210}}{84} \end{bmatrix}$
336	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$

continued ...

Table 7

No.	multipole	matrix
	$\mathbb{G}_{3,2}^{(1,-1;a)}(E_{2g})$	$ \begin{bmatrix} -\frac{\sqrt{30}i}{252} & 0 & 0 & 0 & -\frac{5\sqrt{6}i}{252} & 0 & 0 & -\frac{\sqrt{5}i}{7} & 0 & 0 & 0 & -\frac{\sqrt{15}i}{21} & 0 & 0 \\ 0 & \frac{5\sqrt{6}i}{252} & 0 & 0 & 0 & \frac{\sqrt{30}i}{252} & 0 & 0 & -\frac{\sqrt{15}i}{21} & 0 & 0 & 0 & -\frac{\sqrt{5}i}{7} & 0 \\ 0 & 0 & 0 & \frac{\sqrt{2}i}{21} & 0 & 0 & \frac{\sqrt{210}i}{84} & 0 & 0 & 0 & \frac{5\sqrt{6}i}{84} & 0 & 0 & 0 \\ -\frac{\sqrt{15}i}{63} & 0 & 0 & 0 & \frac{\sqrt{3}i}{63} & 0 & 0 & -\frac{\sqrt{10}i}{28} & 0 & 0 & 0 & \frac{\sqrt{30}i}{28} & 0 & 0 \\ 0 & \frac{\sqrt{3}i}{63} & 0 & 0 & 0 & -\frac{\sqrt{15}i}{63} & 0 & 0 & -\frac{\sqrt{30}i}{28} & 0 & 0 & 0 & \frac{\sqrt{10}i}{28} & 0 \\ 0 & 0 & \frac{\sqrt{2}i}{21} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{5\sqrt{6}i}{84} & 0 & 0 & 0 & -\frac{\sqrt{210}i}{84} \end{bmatrix} $
337	symmetry	$ \frac{z(15x^4+30x^2y^2-40x^2z^2+15y^4-40y^2z^2+8z^4)}{8} $
	$\mathbb{G}_5^{(1,-1;a)}(A_g)$	$ \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 & -\frac{\sqrt{6}i}{12} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{12} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}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 \end{bmatrix} $
338	symmetry	$ -\frac{\sqrt{70}y(3x^2-y^2)(x^2+y^2-8z^2)}{16} $
	$\mathbb{G}_5^{(1,-1;a)}(B_g, 1)$	$ \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 & 0 & -\frac{\sqrt{105}}{30} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{30} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{105}}{30} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}}{30} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{30} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{105}}{30} & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} $
339	symmetry	$ -\frac{\sqrt{70}x(x^2-3y^2)(x^2+y^2-8z^2)}{16} $
	$\mathbb{G}_5^{(1,-1;a)}(B_g, 2)$	$ \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 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}i}{30} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}i}{30} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{105}i}{30} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{105}i}{30} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}i}{30} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}i}{30} & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} $
340	symmetry	$ \frac{3\sqrt{14}x(x^4-10x^2y^2+5y^4)}{16} $

continued ...

Table 7

No.	multipole	matrix
	$\mathbb{G}_{5,1}^{(1,-1;a)}(E_{1g}, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{i}{2} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{i}{2} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
341	symmetry	$-\frac{3\sqrt{14}y(5x^4-10x^2y^2+y^4)}{16}$ $\mathbb{G}_{5,2}^{(1,-1;a)}(E_{1g}, 1)$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{1}{2} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{1}{2} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
342	symmetry	$\frac{\sqrt{15}x(x^4+2x^2y^2-12x^2z^2+y^4-12y^2z^2+8z^4)}{8}$ $\mathbb{G}_{5,1}^{(1,-1;a)}(E_{1g}, 2)$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{60} & 0 & -\frac{\sqrt{6}i}{12} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}i}{20} & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} & 0 & -\frac{\sqrt{30}i}{20} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{12} & 0 & \frac{\sqrt{30}i}{60} & 0 & 0 & 0 \end{bmatrix}$
343	symmetry	$\frac{\sqrt{15}y(x^4+2x^2y^2-12x^2z^2+y^4-12y^2z^2+8z^4)}{8}$ $\mathbb{G}_{5,2}^{(1,-1;a)}(E_{1g}, 2)$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{60} & 0 & -\frac{\sqrt{6}}{12} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{20} & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 & -\frac{\sqrt{30}}{20} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{12} & 0 & \frac{\sqrt{30}}{60} & 0 & 0 \end{bmatrix}$
344	symmetry	$-\frac{3\sqrt{35}xyz(x-y)(x+y)}{2}$

continued ...

Table 7

No.	multipole	matrix
		$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{70}}{20} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{20} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{20} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{70}}{20} & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
345	symmetry	$\frac{3\sqrt{35}z(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}i}{20} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{20} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{70}i}{20} & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
346	symmetry	$-\frac{\sqrt{105}xyz(x^2+y^2-2z^2)}{2}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{120} & 0 & 0 & 0 & -\frac{\sqrt{42}}{24} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}}{40} & 0 & 0 & 0 & \frac{\sqrt{210}}{40} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{210}}{40} & 0 & 0 & 0 & -\frac{\sqrt{70}}{40} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}}{24} & 0 & 0 & 0 & \frac{\sqrt{30}}{120} \end{bmatrix}$
347	symmetry	$-\frac{\sqrt{105}z(x-y)(x+y)(x^2+y^2-2z^2)}{4}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}i}{120} & 0 & 0 & 0 & -\frac{\sqrt{42}i}{24} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{70}i}{40} & 0 & 0 & 0 & \frac{\sqrt{210}i}{40} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{210}i}{40} & 0 & 0 & 0 & -\frac{\sqrt{70}i}{40} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}i}{24} & 0 & 0 & 0 & \frac{\sqrt{30}i}{120} \end{bmatrix}$
348	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$

continued ...

Table 7

No.	multipole	matrix														
	$\mathbb{G}_3^{(1,0;a)}(A_g)$	0	0	$\frac{\sqrt{7}i}{21}$	0	0	0	0	0	$-\frac{5\sqrt{21}i}{84}$	0	0	0	0		
		0	0	0	$-\frac{\sqrt{7}i}{21}$	0	0	0	0	0	$-\frac{5\sqrt{21}i}{84}$	0	0	0		
		0	$-\frac{5\sqrt{21}i}{84}$	0	0	0	0	0	$-\frac{\sqrt{210}i}{84}$	0	0	0	0	0		
		0	0	$\frac{5\sqrt{14}i}{84}$	0	0	0	0	0	$-\frac{\sqrt{42}i}{84}$	0	0	0	0		
		0	0	0	$\frac{5\sqrt{14}i}{84}$	0	0	0	0	0	$\frac{\sqrt{42}i}{84}$	0	0	0		
		0	0	0	0	$-\frac{5\sqrt{21}i}{84}$	0	0	0	0	0	0	$\frac{\sqrt{210}i}{84}$	0	0	
349	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$														
	$\mathbb{G}_3^{(1,0;a)}(B_g, 1)$	0	0	0	0	0	$\frac{\sqrt{7}}{21}$	$-\frac{5\sqrt{6}}{48}$	0	0	0	0	0	$-\frac{5\sqrt{42}}{336}$	0	
		$-\frac{\sqrt{7}}{21}$	0	0	0	0	0	0	$-\frac{5\sqrt{42}}{336}$	0	0	0	0	0	$-\frac{5\sqrt{6}}{48}$	
		0	0	0	0	$-\frac{5\sqrt{210}}{336}$	0	0	0	0	0	0	$-\frac{\sqrt{21}}{84}$	0	0	
		0	0	0	0	0	$-\frac{25\sqrt{14}}{336}$	$\frac{\sqrt{3}}{12}$	0	0	0	0	0	$-\frac{\sqrt{21}}{42}$	0	
		$-\frac{25\sqrt{14}}{336}$	0	0	0	0	0	0	$\frac{\sqrt{21}}{42}$	0	0	0	0	0	$-\frac{\sqrt{3}}{12}$	
		0	$-\frac{5\sqrt{210}}{336}$	0	0	0	0	0	0	$\frac{\sqrt{21}}{84}$	0	0	0	0	0	
350	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$														
	$\mathbb{G}_3^{(1,0;a)}(B_g, 2)$	0	0	0	0	0	$\frac{\sqrt{7}i}{21}$	$\frac{5\sqrt{6}i}{48}$	0	0	0	0	0	$-\frac{5\sqrt{42}i}{336}$	0	
		$\frac{\sqrt{7}i}{21}$	0	0	0	0	0	0	$\frac{5\sqrt{42}i}{336}$	0	0	0	0	0	$-\frac{5\sqrt{6}i}{48}$	
		0	0	0	0	$-\frac{5\sqrt{210}i}{336}$	0	0	0	0	0	0	$-\frac{\sqrt{21}i}{84}$	0	0	
		0	0	0	0	0	$-\frac{25\sqrt{14}i}{336}$	$-\frac{\sqrt{3}i}{12}$	0	0	0	0	0	$-\frac{\sqrt{21}i}{42}$	0	
		$\frac{25\sqrt{14}i}{336}$	0	0	0	0	0	0	$-\frac{\sqrt{21}i}{42}$	0	0	0	0	0	$-\frac{\sqrt{3}i}{12}$	
		0	$\frac{5\sqrt{210}i}{336}$	0	0	0	0	0	0	$-\frac{\sqrt{21}i}{84}$	0	0	0	0	0	
351	symmetry	$-\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$														
	$\mathbb{G}_{3,1}^{(1,0;a)}(E_{1g})$	0	$-\frac{\sqrt{21}i}{63}$	0	$\frac{\sqrt{42}i}{63}$	0	0	0	0	$\frac{5\sqrt{210}i}{336}$	0	$-\frac{5\sqrt{14}i}{112}$	0	0	0	
		0	0	$\frac{\sqrt{42}i}{63}$	0	$-\frac{\sqrt{21}i}{63}$	0	0	0	0	$\frac{5\sqrt{14}i}{112}$	0	$-\frac{5\sqrt{210}i}{336}$	0	0	
		$\frac{5\sqrt{70}i}{336}$	0	$-\frac{5\sqrt{7}i}{56}$	0	0	0	0	$\frac{\sqrt{105}i}{84}$	0	$-\frac{\sqrt{21}i}{42}$	0	0	0	0	
		0	$-\frac{5\sqrt{42}i}{144}$	0	$\frac{5\sqrt{21}i}{504}$	0	0	0	0	0	0	$-\frac{\sqrt{7}i}{28}$	0	0	0	
		0	0	$-\frac{5\sqrt{21}i}{504}$	0	$\frac{5\sqrt{42}i}{144}$	0	0	0	0	$-\frac{\sqrt{7}i}{28}$	0	0	0	0	
		0	0	0	$\frac{5\sqrt{7}i}{56}$	0	$-\frac{5\sqrt{70}i}{336}$	0	0	0	0	$-\frac{\sqrt{21}i}{42}$	0	$\frac{\sqrt{105}i}{84}$	0	
352	symmetry	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$														

continued ...



Table 7

No.	multipole	matrix														
	$\mathbb{G}_{3,2}^{(1,0;a)}(E_{1g})$	0	$\frac{\sqrt{21}}{63}$	0	$\frac{\sqrt{42}}{63}$	0	0	0	0	$-\frac{5\sqrt{210}}{336}$	0	$-\frac{5\sqrt{14}}{112}$	0	0	0	
		0	0	$-\frac{\sqrt{42}}{63}$	0	$-\frac{\sqrt{21}}{63}$	0	0	0	0	$-\frac{5\sqrt{14}}{112}$	0	$-\frac{5\sqrt{210}}{336}$	0	0	
		$-\frac{5\sqrt{70}}{336}$	0	$-\frac{5\sqrt{7}}{56}$	0	0	0	0	$-\frac{\sqrt{105}}{84}$	0	$-\frac{\sqrt{21}}{42}$	0	0	0	0	
		0	$\frac{5\sqrt{42}}{144}$	0	$\frac{5\sqrt{21}}{504}$	0	0	0	0	0	0	$-\frac{\sqrt{7}}{28}$	0	0	0	
		0	0	$\frac{5\sqrt{21}}{504}$	0	$\frac{5\sqrt{42}}{144}$	0	0	0	0	$\frac{\sqrt{7}}{28}$	0	0	0	0	
		0	0	0	$-\frac{5\sqrt{7}}{56}$	0	$-\frac{5\sqrt{70}}{336}$	0	0	0	0	$\frac{\sqrt{21}}{42}$	0	$\frac{\sqrt{105}}{84}$	0	
353	symmetry	$\sqrt{15}xyz$														
	$\mathbb{G}_{3,1}^{(1,0;a)}(E_{2g})$	$-\frac{\sqrt{42}}{126}$	0	0	0	$\frac{\sqrt{210}}{126}$	0	0	$\frac{5\sqrt{7}}{56}$	0	0	0	$-\frac{5\sqrt{21}}{168}$	0	0	
		0	$\frac{\sqrt{210}}{126}$	0	0	0	$-\frac{\sqrt{42}}{126}$	0	0	$\frac{5\sqrt{21}}{168}$	0	0	0	$-\frac{5\sqrt{7}}{56}$	0	
		0	0	0	$-\frac{5\sqrt{70}}{168}$	0	0	$\frac{\sqrt{6}}{24}$	0	0	0	$-\frac{\sqrt{210}}{168}$	0	0	0	
		$-\frac{25\sqrt{21}}{504}$	0	0	0	$-\frac{5\sqrt{105}}{504}$	0	0	$-\frac{\sqrt{14}}{56}$	0	0	0	$-\frac{\sqrt{42}}{56}$	0	0	
		0	$\frac{5\sqrt{105}}{504}$	0	0	0	$\frac{25\sqrt{21}}{504}$	0	0	$-\frac{\sqrt{42}}{56}$	0	0	0	$-\frac{\sqrt{14}}{56}$	0	
		0	0	$\frac{5\sqrt{70}}{168}$	0	0	0	0	0	$-\frac{\sqrt{210}}{168}$	0	0	0	0	$\frac{\sqrt{6}}{24}$	
354	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$														
	$\mathbb{G}_{3,2}^{(1,0;a)}(E_{2g})$	$\frac{\sqrt{42}i}{126}$	0	0	0	$\frac{\sqrt{210}i}{126}$	0	0	$-\frac{5\sqrt{7}i}{56}$	0	0	0	$-\frac{5\sqrt{21}i}{168}$	0	0	
		0	$-\frac{\sqrt{210}i}{126}$	0	0	0	$-\frac{\sqrt{42}i}{126}$	0	0	$-\frac{5\sqrt{21}i}{168}$	0	0	0	$-\frac{5\sqrt{7}i}{56}$	0	
		0	0	0	$-\frac{5\sqrt{70}i}{168}$	0	0	$-\frac{\sqrt{6}i}{24}$	0	0	0	$-\frac{\sqrt{210}i}{168}$	0	0	0	
		$\frac{25\sqrt{21}i}{504}$	0	0	0	$-\frac{5\sqrt{105}i}{504}$	0	0	$\frac{\sqrt{14}i}{56}$	0	0	0	$-\frac{\sqrt{42}i}{56}$	0	0	
		0	$-\frac{5\sqrt{105}i}{504}$	0	0	0	$\frac{25\sqrt{21}i}{504}$	0	0	$\frac{\sqrt{42}i}{56}$	0	0	0	$-\frac{\sqrt{14}i}{56}$	0	
		0	0	$-\frac{5\sqrt{70}i}{168}$	0	0	0	0	0	0	$\frac{\sqrt{210}i}{168}$	0	0	0	$\frac{\sqrt{6}i}{24}$	
355	symmetry	$z$														
	$\mathbb{G}_1^{(1,1;a)}(A_g)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{10}i}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{15}i}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{15}i}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{10}i}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$														
356	symmetry	$x$														

continued ...

Table 7

No.	multipole	matrix															
	$\mathbb{G}_{1,1}^{(1,1;a)}(E_{1g})$	0	0	0	0	0	0	0	0	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	$-\frac{\sqrt{5}i}{20}$	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{30}i}{20}$	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	$-\frac{\sqrt{30}i}{20}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{5}i}{20}$	0	$-\frac{\sqrt{2}i}{4}$	0	0	0	0	0	0	0	0	0	0
357	symmetry	$y$															
	$\mathbb{G}_{1,2}^{(1,1;a)}(E_{1g})$	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{2}}{4}$	0	$-\frac{\sqrt{5}}{20}$	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{30}}{20}$	0	$-\frac{\sqrt{15}}{20}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{15}}{20}$	0	$-\frac{\sqrt{30}}{20}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{5}}{20}$	0	$-\frac{\sqrt{2}}{4}$	0	0	0	0	0	0	0	0	0	0
358	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$															
	$\mathbb{G}_3^{(1,1;a)}(A_g)$	0	0	$\frac{3i}{7}$	0	0	0	0	0	$-\frac{\sqrt{3}i}{28}$	0	0	0	0	0	0	0
		0	0	0	$-\frac{3i}{7}$	0	0	0	0	0	$-\frac{\sqrt{3}i}{28}$	0	0	0	0	0	0
		0	$\frac{3\sqrt{3}i}{28}$	0	0	0	0	0	$-\frac{\sqrt{30}i}{84}$	0	0	0	0	0	0	0	0
		0	0	$-\frac{3\sqrt{2}i}{28}$	0	0	0	0	0	$-\frac{\sqrt{6}i}{84}$	0	0	0	0	0	0	0
		0	0	0	$-\frac{3\sqrt{2}i}{28}$	0	0	0	0	0	$\frac{\sqrt{6}i}{84}$	0	0	0	0	0	0
		0	0	0	0	$\frac{3\sqrt{3}i}{28}$	0	0	0	0	0	0	$\frac{\sqrt{30}i}{84}$	0	0	0	0
359	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$															
	$\mathbb{G}_3^{(1,1;a)}(B_g, 1)$	0	0	0	0	0	$\frac{3}{7}$	$-\frac{\sqrt{42}}{112}$	0	0	0	0	0	$-\frac{\sqrt{6}}{112}$	0	0	0
		$-\frac{3}{7}$	0	0	0	0	0	0	$-\frac{\sqrt{6}}{112}$	0	0	0	0	0	$-\frac{\sqrt{42}}{112}$	0	0
		0	0	0	0	$\frac{3\sqrt{30}}{112}$	0	0	0	0	0	0	$-\frac{\sqrt{3}}{84}$	0	0	0	0
		0	0	0	0	0	$\frac{15\sqrt{2}}{112}$	$\frac{\sqrt{21}}{84}$	0	0	0	0	0	$-\frac{\sqrt{3}}{42}$	0	0	0
		$\frac{15\sqrt{2}}{112}$	0	0	0	0	0	0	$\frac{\sqrt{3}}{42}$	0	0	0	0	0	$-\frac{\sqrt{21}}{84}$	0	0
		0	$\frac{3\sqrt{30}}{112}$	0	0	0	0	0	0	$\frac{\sqrt{3}}{84}$	0	0	0	0	0	0	0
360	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$															

continued ...

Table 7

No.	multipole	matrix													
	$\mathbb{G}_3^{(1,1;a)}(B_g, 2)$	0	0	0	0	0	$\frac{3i}{7}$	$\frac{\sqrt{42}i}{112}$	0	0	0	0	0	$-\frac{\sqrt{6}i}{112}$	0
		$\frac{3i}{7}$	0	0	0	0	0	0	$\frac{\sqrt{6}i}{112}$	0	0	0	0	0	$-\frac{\sqrt{42}i}{112}$
		0	0	0	0	$\frac{3\sqrt{30}i}{112}$	0	0	0	0	0	0	$-\frac{\sqrt{3}i}{84}$	0	0
		0	0	0	0	0	$\frac{15\sqrt{2}i}{112}$	$-\frac{\sqrt{21}i}{84}$	0	0	0	0	0	$-\frac{\sqrt{3}i}{42}$	0
		$-\frac{15\sqrt{2}i}{112}$	0	0	0	0	0	0	$-\frac{\sqrt{3}i}{42}$	0	0	0	0	0	$-\frac{\sqrt{21}i}{84}$
		0	$-\frac{3\sqrt{30}i}{112}$	0	0	0	0	0	0	$-\frac{\sqrt{3}i}{84}$	0	0	0	0	0
361	symmetry	$-\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$													
	$\mathbb{G}_{3,1}^{(1,1;a)}(E_{1g})$	0	$-\frac{\sqrt{3}i}{7}$	0	$\frac{\sqrt{6}i}{7}$	0	0	0	0	$\frac{\sqrt{30}i}{112}$	0	$-\frac{3\sqrt{2}i}{112}$	0	0	0
		0	0	$\frac{\sqrt{6}i}{7}$	0	$-\frac{\sqrt{3}i}{7}$	0	0	0	0	$\frac{3\sqrt{2}i}{112}$	0	$-\frac{\sqrt{30}i}{112}$	0	0
		$-\frac{3\sqrt{10}i}{112}$	0	$\frac{9i}{56}$	0	0	0	0	$\frac{\sqrt{15}i}{84}$	0	$-\frac{\sqrt{3}i}{42}$	0	0	0	0
		0	$\frac{\sqrt{6}i}{16}$	0	$-\frac{\sqrt{3}i}{56}$	0	0	0	0	0	0	$-\frac{i}{28}$	0	0	0
		0	0	$\frac{\sqrt{3}i}{56}$	0	$-\frac{\sqrt{6}i}{16}$	0	0	0	0	$-\frac{i}{28}$	0	0	0	0
		0	0	0	$-\frac{9i}{56}$	0	$\frac{3\sqrt{10}i}{112}$	0	0	0	0	$-\frac{\sqrt{3}i}{42}$	0	$\frac{\sqrt{15}i}{84}$	0
362	symmetry	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$													
	$\mathbb{G}_{3,2}^{(1,1;a)}(E_{1g})$	0	$\frac{\sqrt{3}}{7}$	0	$\frac{\sqrt{6}}{7}$	0	0	0	0	$-\frac{\sqrt{30}}{112}$	0	$-\frac{3\sqrt{2}}{112}$	0	0	0
		0	0	$-\frac{\sqrt{6}}{7}$	0	$-\frac{\sqrt{3}}{7}$	0	0	0	0	$-\frac{3\sqrt{2}}{112}$	0	$-\frac{\sqrt{30}}{112}$	0	0
		$\frac{3\sqrt{10}}{112}$	0	$\frac{9}{56}$	0	0	0	0	$-\frac{\sqrt{15}}{84}$	0	$-\frac{\sqrt{3}}{42}$	0	0	0	0
		0	$-\frac{\sqrt{6}}{16}$	0	$-\frac{\sqrt{3}}{56}$	0	0	0	0	0	0	$-\frac{1}{28}$	0	0	0
		0	0	$-\frac{\sqrt{3}}{56}$	0	$-\frac{\sqrt{6}}{16}$	0	0	0	0	$\frac{1}{28}$	0	0	0	0
		0	0	0	$\frac{9}{56}$	0	$\frac{3\sqrt{10}}{112}$	0	0	0	0	$\frac{\sqrt{3}}{42}$	0	$\frac{\sqrt{15}}{84}$	0
363	symmetry	$\sqrt{15}xyz$													
	$\mathbb{G}_{3,1}^{(1,1;a)}(E_{2g})$	$-\frac{\sqrt{6}}{14}$	0	0	0	$\frac{\sqrt{30}}{14}$	0	0	$\frac{3}{56}$	0	0	0	$-\frac{\sqrt{3}}{56}$	0	0
		0	$\frac{\sqrt{30}}{14}$	0	0	0	$-\frac{\sqrt{6}}{14}$	0	0	$\frac{\sqrt{3}}{56}$	0	0	0	$-\frac{3}{56}$	0
		0	0	0	$\frac{3\sqrt{10}}{56}$	0	0	$\frac{\sqrt{42}}{168}$	0	0	0	$-\frac{\sqrt{30}}{168}$	0	0	0
		$\frac{5\sqrt{3}}{56}$	0	0	0	$\frac{\sqrt{15}}{56}$	0	0	$-\frac{\sqrt{2}}{56}$	0	0	0	$-\frac{\sqrt{6}}{56}$	0	0
		0	$-\frac{\sqrt{15}}{56}$	0	0	0	$-\frac{5\sqrt{3}}{56}$	0	0	$-\frac{\sqrt{6}}{56}$	0	0	0	$-\frac{\sqrt{2}}{56}$	0
		0	0	$-\frac{3\sqrt{10}}{56}$	0	0	0	0	0	$-\frac{\sqrt{30}}{168}$	0	0	0	0	$\frac{\sqrt{42}}{168}$
364	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$													

continued ...

Table 7

No.	multipole	matrix														
	$\mathbb{G}_{3,2}^{(1,1;a)}(E_{2g})$	$\frac{\sqrt{6}i}{14}$	0	0	0	$\frac{\sqrt{30}i}{14}$	0	0	$-\frac{3i}{56}$	0	0	0	$-\frac{\sqrt{3}i}{56}$	0	0	
		0	$-\frac{\sqrt{30}i}{14}$	0	0	0	$-\frac{\sqrt{6}i}{14}$	0	0	$-\frac{\sqrt{3}i}{56}$	0	0	0	$-\frac{3i}{56}$	0	
		0	0	0	$\frac{3\sqrt{10}i}{56}$	0	0	$-\frac{\sqrt{42}i}{168}$	0	0	0	$-\frac{\sqrt{30}i}{168}$	0	0	0	
		$-\frac{5\sqrt{3}i}{56}$	0	0	0	$\frac{\sqrt{15}i}{56}$	0	0	$\frac{\sqrt{2}i}{56}$	0	0	0	$-\frac{\sqrt{6}i}{56}$	0	0	
		0	$\frac{\sqrt{15}i}{56}$	0	0	0	$-\frac{5\sqrt{3}i}{56}$	0	0	$\frac{\sqrt{6}i}{56}$	0	0	0	$-\frac{\sqrt{2}i}{56}$	0	
		0	0	$\frac{3\sqrt{10}i}{56}$	0	0	0	0	0	$\frac{\sqrt{30}i}{168}$	0	0	0	$\frac{\sqrt{42}i}{168}$		
365	symmetry	$-\frac{x^2}{2}-\frac{y^2}{2}+z^2$														
	$\mathbb{T}_2^{(a)}(A_g)$	$\begin{bmatrix} 0 & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{i}{7} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{14} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{6}i}{42} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{3\sqrt{2}i}{14} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{6}i}{42} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{3\sqrt{2}i}{14} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{i}{7} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{14} & 0 & 0 & 0 \end{bmatrix}$														
366	symmetry	$\sqrt{3}yz$														
	$\mathbb{T}_{2,1}^{(a)}(E_{1g})$	$\begin{bmatrix} 0 & \frac{\sqrt{2}}{6} & 0 & \frac{1}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{1}{6} & 0 & \frac{\sqrt{2}}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{15}}{42} & 0 & -\frac{\sqrt{6}}{28} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{14} & 0 & \frac{\sqrt{2}}{14} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{1}{42} & 0 & -\frac{5\sqrt{2}}{84} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{14} & 0 & \frac{\sqrt{6}}{14} & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{5\sqrt{2}}{84} & 0 & -\frac{1}{42} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{14} & 0 & \frac{\sqrt{10}}{14} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{6}}{28} & 0 & \frac{\sqrt{15}}{42} & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{14} & 0 & \frac{\sqrt{10}}{14} & 0 & 0 \end{bmatrix}$														
367	symmetry	$-\sqrt{3}xz$														
	$\mathbb{T}_{2,2}^{(a)}(E_{1g})$	$\begin{bmatrix} 0 & \frac{\sqrt{2}i}{6} & 0 & -\frac{i}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{i}{6} & 0 & -\frac{\sqrt{2}i}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{15}i}{42} & 0 & \frac{\sqrt{6}i}{28} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{14} & 0 & -\frac{\sqrt{2}i}{14} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{i}{42} & 0 & \frac{5\sqrt{2}i}{84} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{14} & 0 & -\frac{\sqrt{6}i}{14} & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{5\sqrt{2}i}{84} & 0 & \frac{i}{42} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{14} & 0 & -\frac{\sqrt{10}i}{14} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{6}i}{28} & 0 & -\frac{\sqrt{15}i}{42} & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{14} & 0 & -\frac{\sqrt{10}i}{14} & 0 & 0 \end{bmatrix}$														
368	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$														

continued ...

Table 7

No.	multipole	matrix													
	$\mathbb{T}_{2,1}^{(a)}(E_{2g})$	$\frac{\sqrt{10}i}{12}$	0	0	0	$\frac{\sqrt{2}i}{12}$	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{2}i}{12}$	0	0	0	$\frac{\sqrt{10}i}{12}$	0	0	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{6}i}{42}$	0	0	$\frac{\sqrt{70}i}{28}$	0	0	0	$\frac{\sqrt{2}i}{28}$	0	0	0
		$\frac{\sqrt{5}i}{21}$	0	0	0	$-\frac{2i}{21}$	0	0	$\frac{\sqrt{30}i}{28}$	0	0	0	$\frac{\sqrt{10}i}{28}$	0	0
		0	$\frac{2i}{21}$	0	0	0	$-\frac{\sqrt{5}i}{21}$	0	0	$\frac{\sqrt{10}i}{28}$	0	0	0	$\frac{\sqrt{30}i}{28}$	0
		0	0	$\frac{\sqrt{6}i}{42}$	0	0	0	0	0	0	$\frac{\sqrt{2}i}{28}$	0	0	0	$\frac{\sqrt{70}i}{28}$
369	symmetry	$-\sqrt{3}xy$													
	$\mathbb{T}_{2,2}^{(a)}(E_{2g})$	$\frac{\sqrt{10}}{12}$	0	0	0	$-\frac{\sqrt{2}}{12}$	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{2}}{12}$	0	0	0	$-\frac{\sqrt{10}}{12}$	0	0	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{6}}{42}$	0	0	$\frac{\sqrt{70}}{28}$	0	0	0	$-\frac{\sqrt{2}}{28}$	0	0	0
		$\frac{\sqrt{5}}{21}$	0	0	0	$\frac{2}{21}$	0	0	$\frac{\sqrt{30}}{28}$	0	0	0	$-\frac{\sqrt{10}}{28}$	0	0
		0	$\frac{2}{21}$	0	0	0	$\frac{\sqrt{5}}{21}$	0	0	$\frac{\sqrt{10}}{28}$	0	0	0	$-\frac{\sqrt{30}}{28}$	0
		0	0	$\frac{\sqrt{6}}{42}$	0	0	0	0	0	$\frac{\sqrt{2}}{28}$	0	0	0	0	$-\frac{\sqrt{70}}{28}$
370	symmetry	$\frac{3x^4}{8} + \frac{3x^2y^2}{4} - 3x^2z^2 + \frac{3y^4}{8} - 3y^2z^2 + z^4$													
	$\mathbb{T}_4^{(a)}(A_g)$	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	$\frac{\sqrt{3}i}{14}$	0	0	0	0	0	0	$-\frac{\sqrt{30}i}{28}$	0	0	0	0	0
		0	0	$-\frac{3\sqrt{2}i}{14}$	0	0	0	0	0	0	$\frac{5\sqrt{6}i}{84}$	0	0	0	0
		0	0	0	$\frac{3\sqrt{2}i}{14}$	0	0	0	0	0	0	$\frac{5\sqrt{6}i}{84}$	0	0	0
		0	0	0	0	$-\frac{\sqrt{3}i}{14}$	0	0	0	0	0	0	$-\frac{\sqrt{30}i}{28}$	0	0
371	symmetry	$\frac{\sqrt{70}xz(x^2-3y^2)}{4}$													
	$\mathbb{T}_4^{(a)}(B_g, 1)$	0	0	0	0	0	$\frac{\sqrt{6}i}{24}$	0	0	0	0	0	$-\frac{\sqrt{42}i}{24}$	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{42}i}{24}$	0	0	0	0	0	$\frac{\sqrt{6}i}{24}$	0
		0	0	0	0	$\frac{\sqrt{210}i}{56}$	0	0	0	0	0	0	$-\frac{\sqrt{21}i}{28}$	0	0
		0	0	0	0	0	$-\frac{3\sqrt{14}i}{56}$	$-\frac{\sqrt{3}i}{12}$	0	0	0	0	0	$-\frac{\sqrt{21}i}{42}$	0
		$-\frac{3\sqrt{14}i}{56}$	0	0	0	0	0	0	$\frac{\sqrt{21}i}{42}$	0	0	0	0	0	$\frac{\sqrt{3}i}{12}$
		0	$\frac{\sqrt{210}i}{56}$	0	0	0	0	0	0	$\frac{\sqrt{21}i}{28}$	0	0	0	0	0
372	symmetry	$\frac{\sqrt{70}yz(3x^2-y^2)}{4}$													

continued ...

Table 7

No.	multipole	matrix
	$\mathbb{T}_4^{(a)}(B_g, 2)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{24} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}}{24} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}}{24} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{24} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{210}}{56} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}}{28} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{3\sqrt{14}}{56} & \frac{\sqrt{3}}{12} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}}{42} & 0 \\ \frac{3\sqrt{14}}{56} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}}{42} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{12} \\ 0 & -\frac{\sqrt{210}}{56} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}}{28} & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
373	symmetry	$-\frac{\sqrt{10}yz(3x^2+3y^2-4z^2)}{4}$
	$\mathbb{T}_{4,1}^{(a)}(E_{1g})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{8} & 0 & -\frac{\sqrt{30}}{24} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{24} & 0 & \frac{\sqrt{2}}{8} & 0 & 0 \\ \frac{\sqrt{6}}{56} & 0 & \frac{\sqrt{15}}{28} & 0 & 0 & 0 & 0 & -\frac{3}{28} & 0 & -\frac{\sqrt{5}}{14} & 0 & 0 & 0 & 0 \\ 0 & -\frac{3\sqrt{10}}{56} & 0 & -\frac{3\sqrt{5}}{28} & 0 & 0 & 0 & 0 & \frac{1}{7} & 0 & \frac{\sqrt{15}}{84} & 0 & 0 & 0 \\ 0 & 0 & \frac{3\sqrt{5}}{28} & 0 & \frac{3\sqrt{10}}{56} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{84} & 0 & \frac{1}{7} & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{15}}{28} & 0 & -\frac{\sqrt{6}}{56} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{14} & 0 & -\frac{3}{28} & 0 \end{bmatrix}$
374	symmetry	$\frac{\sqrt{10}xz(3x^2+3y^2-4z^2)}{4}$
	$\mathbb{T}_{4,2}^{(a)}(E_{1g})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{8} & 0 & \frac{\sqrt{30}i}{24} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{24} & 0 & -\frac{\sqrt{2}i}{8} & 0 & 0 \\ \frac{\sqrt{6}i}{56} & 0 & -\frac{\sqrt{15}i}{28} & 0 & 0 & 0 & 0 & -\frac{3i}{28} & 0 & \frac{\sqrt{5}i}{14} & 0 & 0 & 0 & 0 \\ 0 & -\frac{3\sqrt{10}i}{56} & 0 & \frac{3\sqrt{5}i}{28} & 0 & 0 & 0 & 0 & \frac{i}{7} & 0 & -\frac{\sqrt{15}i}{84} & 0 & 0 & 0 \\ 0 & 0 & \frac{3\sqrt{5}i}{28} & 0 & -\frac{3\sqrt{10}i}{56} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{84} & 0 & -\frac{i}{7} & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{15}i}{28} & 0 & \frac{\sqrt{6}i}{56} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{14} & 0 & \frac{3i}{28} & 0 \end{bmatrix}$
375	symmetry	$\frac{\sqrt{35}(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$
	$\mathbb{T}_{4,1}^{(a)}(E_{2g}, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{6} \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}i}{14} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}i}{28} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{12} \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{21}i}{14} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}i}{28} & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
376	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$

continued ...

Table 7

No.	multipole	matrix
	$\mathbb{T}_{4,2}^{(a)}(E_{2g}, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{6} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{14} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}}{28} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{12} \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{21}}{14} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}}{28} & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
377	symmetry	$-\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{12} & 0 & 0 & 0 & 0 & -\frac{i}{4} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{i}{4} & 0 & 0 & 0 & 0 & \frac{\sqrt{3}i}{12} & 0 \\ 0 & 0 & 0 & \frac{\sqrt{30}i}{28} & 0 & 0 & -\frac{\sqrt{14}i}{56} & 0 & 0 & 0 & -\frac{3\sqrt{10}i}{56} & 0 & 0 & 0 & 0 \\ -\frac{3i}{28} & 0 & 0 & 0 & -\frac{3\sqrt{5}i}{28} & 0 & 0 & \frac{11\sqrt{6}i}{168} & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{56} & 0 & 0 \\ 0 & \frac{3\sqrt{5}i}{28} & 0 & 0 & 0 & \frac{3i}{28} & 0 & 0 & -\frac{\sqrt{2}i}{56} & 0 & 0 & 0 & 0 & \frac{11\sqrt{6}i}{168} & 0 \\ 0 & 0 & -\frac{\sqrt{30}i}{28} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{3\sqrt{10}i}{56} & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}i}{56} \end{bmatrix}$
378	symmetry	$\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{12} & 0 & 0 & 0 & 0 & \frac{1}{4} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{1}{4} & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{12} & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{30}}{28} & 0 & 0 & -\frac{\sqrt{14}}{56} & 0 & 0 & 0 & \frac{3\sqrt{10}}{56} & 0 & 0 & 0 & 0 \\ -\frac{3}{28} & 0 & 0 & 0 & \frac{3\sqrt{5}}{28} & 0 & 0 & \frac{11\sqrt{6}}{168} & 0 & 0 & 0 & \frac{\sqrt{2}}{56} & 0 & 0 & 0 \\ 0 & \frac{3\sqrt{5}}{28} & 0 & 0 & 0 & -\frac{3}{28} & 0 & 0 & -\frac{\sqrt{2}}{56} & 0 & 0 & 0 & 0 & -\frac{11\sqrt{6}}{168} & 0 \\ 0 & 0 & -\frac{\sqrt{30}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{3\sqrt{10}}{56} & 0 & 0 & 0 & 0 & \frac{\sqrt{14}}{56} \end{bmatrix}$
379	symmetry	$\frac{3x^4}{8} + \frac{3x^2y^2}{4} - 3x^2z^2 + \frac{3y^4}{8} - 3y^2z^2 + z^4$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{i}{4} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{i}{4} & 0 & 0 & 0 & 0 \\ 0 & \frac{i}{28} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{3\sqrt{10}i}{28} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{6}i}{28} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{5\sqrt{2}i}{28} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{6}i}{28} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{5\sqrt{2}i}{28} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{i}{28} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{3\sqrt{10}i}{28} & 0 & 0 & 0 \end{bmatrix}$
380	symmetry	$\frac{\sqrt{70}xz(x^2-3y^2)}{4}$

continued ...

Table 7

No.	multipole	matrix
	$\mathbb{T}_4^{(1,-1;a)}(B_g, 1)$	$ \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{16} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}i}{16} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}i}{16} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{16} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{70}i}{112} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{3\sqrt{7}i}{28} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}i}{112} & \frac{i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}i}{14} & 0 \\ -\frac{\sqrt{42}i}{112} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}i}{14} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{i}{4} \\ 0 & \frac{\sqrt{70}i}{112} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{3\sqrt{7}i}{28} & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} $
381	symmetry	$ \frac{\sqrt{70}yz(3x^2-y^2)}{4} $ $ \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{16} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}}{16} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}}{16} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{16} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{70}}{112} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{3\sqrt{7}}{28} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}}{112} & -\frac{1}{4} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{14} & 0 \\ \frac{\sqrt{42}}{112} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{14} & 0 & 0 & 0 & 0 & 0 & -\frac{1}{4} \\ 0 & -\frac{\sqrt{70}}{112} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{3\sqrt{7}}{28} & 0 & 0 & 0 & 0 & 0 \end{bmatrix} $
382	symmetry	$ -\frac{\sqrt{10}yz(3x^2+3y^2-4z^2)}{4} $ $ \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{16} & 0 & -\frac{\sqrt{10}}{16} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{16} & 0 & \frac{\sqrt{6}}{16} & 0 & 0 \\ \frac{\sqrt{2}}{112} & 0 & \frac{\sqrt{5}}{56} & 0 & 0 & 0 & 0 & \frac{3\sqrt{3}}{28} & 0 & \frac{\sqrt{15}}{14} & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{30}}{112} & 0 & -\frac{\sqrt{15}}{56} & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{7} & 0 & -\frac{\sqrt{5}}{28} & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{15}}{56} & 0 & \frac{\sqrt{30}}{112} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{28} & 0 & -\frac{\sqrt{3}}{7} & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{5}}{56} & 0 & -\frac{\sqrt{2}}{112} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{14} & 0 & \frac{3\sqrt{3}}{28} & 0 \end{bmatrix} $
383	symmetry	$ \frac{\sqrt{10}xz(3x^2+3y^2-4z^2)}{4} $ $ \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{16} & 0 & \frac{\sqrt{10}i}{16} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{16} & 0 & -\frac{\sqrt{6}i}{16} & 0 & 0 \\ \frac{\sqrt{2}i}{112} & 0 & -\frac{\sqrt{5}i}{56} & 0 & 0 & 0 & 0 & \frac{3\sqrt{3}i}{28} & 0 & -\frac{\sqrt{15}i}{14} & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{30}i}{112} & 0 & \frac{\sqrt{15}i}{56} & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{7} & 0 & \frac{\sqrt{5}i}{28} & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{15}i}{56} & 0 & -\frac{\sqrt{30}i}{112} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{28} & 0 & \frac{\sqrt{3}i}{7} & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{5}i}{56} & 0 & \frac{\sqrt{2}i}{112} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{14} & 0 & -\frac{3\sqrt{3}i}{28} & 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
		$ \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{i}{4} \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}i}{28} & 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{2}i}{4} \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{7}i}{28} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}i}{28} & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} $
385	symmetry	$ \frac{\sqrt{35}xy(x-y)(x+y)}{2} $
		$ \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{1}{4} \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{1}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{28} & 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{2}}{4} \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{7}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}}{28} & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} $
386	symmetry	$ -\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4} $
		$ \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{i}{8} & 0 & 0 & 0 & -\frac{\sqrt{3}i}{8} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}i}{8} & 0 & 0 & 0 & \frac{i}{8} & 0 \\ 0 & 0 & 0 & \frac{\sqrt{10}i}{56} & 0 & 0 & \frac{\sqrt{42}i}{56} & 0 & 0 & 0 & \frac{3\sqrt{30}i}{56} & 0 & 0 & 0 \\ -\frac{\sqrt{3}i}{56} & 0 & 0 & 0 & -\frac{\sqrt{15}i}{56} & 0 & 0 & -\frac{11\sqrt{2}i}{56} & 0 & 0 & 0 & \frac{\sqrt{6}i}{56} & 0 & 0 \\ 0 & \frac{\sqrt{15}i}{56} & 0 & 0 & 0 & \frac{\sqrt{3}i}{56} & 0 & 0 & \frac{\sqrt{6}i}{56} & 0 & 0 & 0 & -\frac{11\sqrt{2}i}{56} & 0 \\ 0 & 0 & -\frac{\sqrt{10}i}{56} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{3\sqrt{30}i}{56} & 0 & 0 & 0 & \frac{\sqrt{42}i}{56} \end{bmatrix} $
387	symmetry	$ \frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2} $
		$ \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{1}{8} & 0 & 0 & 0 & \frac{\sqrt{3}}{8} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{8} & 0 & 0 & 0 & -\frac{1}{8} & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{10}}{56} & 0 & 0 & \frac{\sqrt{42}}{56} & 0 & 0 & 0 & -\frac{3\sqrt{30}}{56} & 0 & 0 & 0 \\ -\frac{\sqrt{3}}{56} & 0 & 0 & 0 & \frac{\sqrt{15}}{56} & 0 & 0 & -\frac{11\sqrt{2}}{56} & 0 & 0 & 0 & -\frac{\sqrt{6}}{56} & 0 & 0 \\ 0 & \frac{\sqrt{15}}{56} & 0 & 0 & 0 & -\frac{\sqrt{3}}{56} & 0 & 0 & \frac{\sqrt{6}}{56} & 0 & 0 & 0 & \frac{11\sqrt{2}}{56} & 0 \\ 0 & 0 & -\frac{\sqrt{10}}{56} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{3\sqrt{30}}{56} & 0 & 0 & 0 & -\frac{\sqrt{42}}{56} \end{bmatrix} $
388	symmetry	$ -\frac{x^2}{2} - \frac{y^2}{2} + z^2 $

continued ...

Table 7

No.	multipole	matrix													
	$\mathbb{T}_2^{(1,0;a)}(A_g)$	0	0	$\frac{\sqrt{2}i}{6}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{2}i}{6}$	0	0	0	0	0	0	0	0	0	0
		0	$-\frac{5\sqrt{6}i}{42}$	0	0	0	0	0	$-\frac{\sqrt{15}i}{21}$	0	0	0	0	0	0
		0	0	$-\frac{5i}{42}$	0	0	0	0	0	$-\frac{\sqrt{3}i}{7}$	0	0	0	0	0
		0	0	0	$\frac{5i}{42}$	0	0	0	0	0	$-\frac{\sqrt{3}i}{7}$	0	0	0	0
		0	0	0	0	$\frac{5\sqrt{6}i}{42}$	0	0	0	0	0	0	$-\frac{\sqrt{15}i}{21}$	0	0
389	symmetry	$\sqrt{3}yz$													
	$\mathbb{T}_{2,1}^{(1,0;a)}(E_{1g})$	0	$\frac{\sqrt{3}}{9}$	0	$\frac{\sqrt{6}}{18}$	0	0	0	0	0	0	0	0	0	0
		0	0	$\frac{\sqrt{6}}{18}$	0	$\frac{\sqrt{3}}{9}$	0	0	0	0	0	0	0	0	0
		$-\frac{5\sqrt{10}}{84}$	0	$-\frac{5}{28}$	0	0	0	0	$-\frac{\sqrt{15}}{21}$	0	$-\frac{\sqrt{3}}{21}$	0	0	0	0
		0	$\frac{5\sqrt{6}}{252}$	0	$-\frac{25\sqrt{3}}{252}$	0	0	0	0	$-\frac{\sqrt{15}}{21}$	0	$-\frac{1}{7}$	0	0	0
		0	0	$\frac{25\sqrt{3}}{252}$	0	$-\frac{5\sqrt{6}}{252}$	0	0	0	0	$-\frac{1}{7}$	0	$-\frac{\sqrt{15}}{21}$	0	0
		0	0	0	$\frac{5}{28}$	0	$\frac{5\sqrt{10}}{84}$	0	0	0	0	$-\frac{\sqrt{3}}{21}$	0	$-\frac{\sqrt{15}}{21}$	0
390	symmetry	$-\sqrt{3}xz$													
	$\mathbb{T}_{2,2}^{(1,0;a)}(E_{1g})$	0	$\frac{\sqrt{3}i}{9}$	0	$-\frac{\sqrt{6}i}{18}$	0	0	0	0	0	0	0	0	0	0
		0	0	$\frac{\sqrt{6}i}{18}$	0	$-\frac{\sqrt{3}i}{9}$	0	0	0	0	0	0	0	0	0
		$-\frac{5\sqrt{10}i}{84}$	0	$\frac{5i}{28}$	0	0	0	0	$-\frac{\sqrt{15}i}{21}$	0	$\frac{\sqrt{3}i}{21}$	0	0	0	0
		0	$\frac{5\sqrt{6}i}{252}$	0	$\frac{25\sqrt{3}i}{252}$	0	0	0	0	$-\frac{\sqrt{15}i}{21}$	0	$\frac{i}{7}$	0	0	0
		0	0	$\frac{25\sqrt{3}i}{252}$	0	$\frac{5\sqrt{6}i}{252}$	0	0	0	0	$-\frac{i}{7}$	0	$\frac{\sqrt{15}i}{21}$	0	0
		0	0	0	$\frac{5i}{28}$	0	$-\frac{5\sqrt{10}i}{84}$	0	0	0	0	$-\frac{\sqrt{3}i}{21}$	0	$\frac{\sqrt{15}i}{21}$	0
391	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$													
	$\mathbb{T}_{2,1}^{(1,0;a)}(E_{2g})$	$\frac{\sqrt{15}i}{18}$	0	0	0	$\frac{\sqrt{3}i}{18}$	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{3}i}{18}$	0	0	0	$\frac{\sqrt{15}i}{18}$	0	0	0	0	0	0	0	0
		0	0	0	$-\frac{5i}{42}$	0	0	$-\frac{\sqrt{105}i}{42}$	0	0	0	$-\frac{\sqrt{3}i}{42}$	0	0	0
		$\frac{5\sqrt{30}i}{126}$	0	0	0	$-\frac{5\sqrt{6}i}{63}$	0	0	$-\frac{\sqrt{5}i}{14}$	0	0	0	$-\frac{\sqrt{15}i}{42}$	0	0
		0	$\frac{5\sqrt{6}i}{63}$	0	0	0	$-\frac{5\sqrt{30}i}{126}$	0	0	$-\frac{\sqrt{15}i}{42}$	0	0	0	$-\frac{\sqrt{5}i}{14}$	0
		0	0	$\frac{5i}{42}$	0	0	0	0	0	$-\frac{\sqrt{3}i}{42}$	0	0	0	0	$-\frac{\sqrt{105}i}{42}$
392	symmetry	$-\sqrt{3}xy$													

continued ...

Table 7

No.	multipole	matrix													
	$\mathbb{T}_{2,2}^{(1,0;a)}(E_{2g})$	$\frac{\sqrt{15}}{18}$	0	0	0	$-\frac{\sqrt{3}}{18}$	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{3}}{18}$	0	0	0	$-\frac{\sqrt{15}}{18}$	0	0	0	0	0	0	0	0
		0	0	0	$\frac{5}{42}$	0	0	$-\frac{\sqrt{105}}{42}$	0	0	0	$\frac{\sqrt{3}}{42}$	0	0	0
		$\frac{5\sqrt{30}}{126}$	0	0	0	$\frac{5\sqrt{6}}{63}$	0	0	$-\frac{\sqrt{5}}{14}$	0	0	0	$\frac{\sqrt{15}}{42}$	0	0
		0	$\frac{5\sqrt{6}}{63}$	0	0	0	$\frac{5\sqrt{30}}{126}$	0	0	$-\frac{\sqrt{15}}{42}$	0	0	0	$\frac{\sqrt{5}}{14}$	0
		0	0	$\frac{5}{42}$	0	0	0	0	0	0	$-\frac{\sqrt{3}}{42}$	0	0	0	$\frac{\sqrt{105}}{42}$
393	symmetry	$\frac{3x^4}{8} + \frac{3x^2y^2}{4} - 3x^2z^2 + \frac{3y^4}{8} - 3y^2z^2 + z^4$													
	$\mathbb{T}_4^{(1,0;a)}(A_g)$	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	$\frac{\sqrt{15}i}{28}$	0	0	0	0	0	0	$\frac{\sqrt{6}i}{28}$	0	0	0	0	0
		0	0	$-\frac{3\sqrt{10}i}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{30}i}{84}$	0	0	0	0
		0	0	0	$\frac{3\sqrt{10}i}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{30}i}{84}$	0	0	0
		0	0	0	0	$-\frac{\sqrt{15}i}{28}$	0	0	0	0	0	0	$\frac{\sqrt{6}i}{28}$	0	0
394	symmetry	$\frac{\sqrt{70}xz(x^2-3y^2)}{4}$													
	$\mathbb{T}_4^{(1,0;a)}(B_g, 1)$	0	0	0	0	0	$-\frac{\sqrt{30}i}{48}$	0	0	0	0	0	$\frac{\sqrt{210}i}{48}$	0	0
		0	0	0	0	0	0	$\frac{\sqrt{210}i}{48}$	0	0	0	0	0	$-\frac{\sqrt{30}i}{48}$	0
		0	0	0	0	$\frac{5\sqrt{42}i}{112}$	0	0	0	0	0	$\frac{\sqrt{105}i}{140}$	0	0	0
		0	0	0	0	0	$-\frac{3\sqrt{70}i}{112}$	$\frac{\sqrt{15}i}{60}$	0	0	0	0	$\frac{\sqrt{105}i}{210}$	0	0
		$-\frac{3\sqrt{70}i}{112}$	0	0	0	0	0	0	$-\frac{\sqrt{105}i}{210}$	0	0	0	0	0	$-\frac{\sqrt{15}i}{60}$
		0	$\frac{5\sqrt{42}i}{112}$	0	0	0	0	0	$-\frac{\sqrt{105}i}{140}$	0	0	0	0	0	0
395	symmetry	$\frac{\sqrt{70}yz(3x^2-y^2)}{4}$													
	$\mathbb{T}_4^{(1,0;a)}(B_g, 2)$	0	0	0	0	0	$\frac{\sqrt{30}}{48}$	0	0	0	0	0	$\frac{\sqrt{210}}{48}$	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{210}}{48}$	0	0	0	0	0	$-\frac{\sqrt{30}}{48}$	0
		0	0	0	0	$\frac{5\sqrt{42}}{112}$	0	0	0	0	0	$\frac{\sqrt{105}}{140}$	0	0	0
		0	0	0	0	0	$-\frac{3\sqrt{70}}{112}$	$-\frac{\sqrt{15}}{60}$	0	0	0	0	$\frac{\sqrt{105}}{210}$	0	0
		$\frac{3\sqrt{70}}{112}$	0	0	0	0	0	0	$\frac{\sqrt{105}}{210}$	0	0	0	0	0	$-\frac{\sqrt{15}}{60}$
		0	$-\frac{5\sqrt{42}}{112}$	0	0	0	0	0	0	$\frac{\sqrt{105}}{140}$	0	0	0	0	0
396	symmetry	$-\frac{\sqrt{10}yz(3x^2+3y^2-4z^2)}{4}$													

continued ...

Table 7

No.	multipole	matrix													
	$\mathbb{T}_{4,1}^{(1,0;a)}(E_{1g})$	0	0	0	0	0	0	0	0	$\frac{\sqrt{10}}{16}$	0	$\frac{5\sqrt{6}}{48}$	0	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{5\sqrt{6}}{48}$	0	$-\frac{\sqrt{10}}{16}$	0	0
		$\frac{\sqrt{30}}{112}$	0	$\frac{5\sqrt{3}}{56}$	0	0	0	0	$\frac{3\sqrt{5}}{140}$	0	$\frac{1}{14}$	0	0	0	0
		0	$-\frac{15\sqrt{2}}{112}$	0	$-\frac{15}{56}$	0	0	0	0	$-\frac{\sqrt{5}}{35}$	0	$-\frac{\sqrt{3}}{84}$	0	0	0
		0	0	$\frac{15}{56}$	0	$\frac{15\sqrt{2}}{112}$	0	0	0	0	$-\frac{\sqrt{3}}{84}$	0	$-\frac{\sqrt{5}}{35}$	0	0
		0	0	0	$-\frac{5\sqrt{3}}{56}$	0	$-\frac{\sqrt{30}}{112}$	0	0	0	0	$\frac{1}{14}$	0	$\frac{3\sqrt{5}}{140}$	0
397	symmetry	$\frac{\sqrt{10}xz(3x^2+3y^2-4z^2)}{4}$													
	$\mathbb{T}_{4,2}^{(1,0;a)}(E_{1g})$	0	0	0	0	0	0	0	0	$\frac{\sqrt{10}i}{16}$	0	$-\frac{5\sqrt{6}i}{48}$	0	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{5\sqrt{6}i}{48}$	0	$\frac{\sqrt{10}i}{16}$	0	0
		$\frac{\sqrt{30}i}{112}$	0	$-\frac{5\sqrt{3}i}{56}$	0	0	0	0	$\frac{3\sqrt{5}i}{140}$	0	$-\frac{i}{14}$	0	0	0	0
		0	$-\frac{15\sqrt{2}i}{112}$	0	$\frac{15i}{56}$	0	0	0	0	$-\frac{\sqrt{5}i}{35}$	0	$\frac{\sqrt{3}i}{84}$	0	0	0
		0	0	$\frac{15i}{56}$	0	$-\frac{15\sqrt{2}i}{112}$	0	0	0	0	$-\frac{\sqrt{3}i}{84}$	0	$\frac{\sqrt{5}i}{35}$	0	0
		0	0	0	$-\frac{5\sqrt{3}i}{56}$	0	$\frac{\sqrt{30}i}{112}$	0	0	0	0	$\frac{i}{14}$	0	$-\frac{3\sqrt{5}i}{140}$	0
398	symmetry	$\frac{\sqrt{35}(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$													
	$\mathbb{T}_{4,1}^{(1,0;a)}(E_{2g}, 1)$	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{15}i}{12}$	0
		0	0	0	0	0	0	$-\frac{\sqrt{15}i}{12}$	0	0	0	0	0	0	0
		0	0	0	0	0	$\frac{\sqrt{105}i}{28}$	0	0	0	0	0	0	$\frac{\sqrt{70}i}{140}$	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	$\frac{\sqrt{30}i}{60}$	0	0	0	0	0	0	0
		$-\frac{\sqrt{105}i}{28}$	0	0	0	0	0	0	$\frac{\sqrt{70}i}{140}$	0	0	0	0	0	0
399	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$													
	$\mathbb{T}_{4,2}^{(1,0;a)}(E_{2g}, 1)$	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{15}}{12}$	0
		0	0	0	0	0	0	$\frac{\sqrt{15}}{12}$	0	0	0	0	0	0	0
		0	0	0	0	0	$\frac{\sqrt{105}}{28}$	0	0	0	0	0	0	$\frac{\sqrt{70}}{140}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{30}}{60}$	0
		0	0	0	0	0	0	$-\frac{\sqrt{30}}{60}$	0	0	0	0	0	0	0
		$\frac{\sqrt{105}}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{70}}{140}$	0	0	0	0	0	0
400	symmetry	$-\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$													

continued ...

Table 7

No.	multipole	matrix													
	$\mathbb{T}_{4,1}^{(1,0;a)}(E_{2g}, 2)$	0	0	0	0	0	0	0	$\frac{\sqrt{15}i}{24}$	0	0	0	$\frac{\sqrt{5}i}{8}$	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{5}i}{8}$	0	0	0	$-\frac{\sqrt{15}i}{24}$	0
		0	0	0	$\frac{5\sqrt{6}i}{56}$	0	0	$\frac{\sqrt{70}i}{280}$	0	0	0	$\frac{3\sqrt{2}i}{56}$	0	0	0
		$-\frac{3\sqrt{5}i}{56}$	0	0	0	$-\frac{15i}{56}$	0	0	$-\frac{11\sqrt{30}i}{840}$	0	0	0	$\frac{\sqrt{10}i}{280}$	0	0
		0	$\frac{15i}{56}$	0	0	0	$\frac{3\sqrt{5}i}{56}$	0	0	$\frac{\sqrt{10}i}{280}$	0	0	0	$-\frac{11\sqrt{30}i}{840}$	0
		0	0	$-\frac{5\sqrt{6}i}{56}$	0	0	0	0	0	0	$\frac{3\sqrt{2}i}{56}$	0	0	0	$\frac{\sqrt{70}i}{280}$
401	symmetry	$\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$													
	$\mathbb{T}_{4,2}^{(1,0;a)}(E_{2g}, 2)$	0	0	0	0	0	0	0	$\frac{\sqrt{15}}{24}$	0	0	0	$-\frac{\sqrt{5}}{8}$	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{5}}{8}$	0	0	0	$\frac{\sqrt{15}}{24}$	0
		0	0	0	$-\frac{5\sqrt{6}}{56}$	0	0	$\frac{\sqrt{70}}{280}$	0	0	0	$-\frac{3\sqrt{2}}{56}$	0	0	0
		$-\frac{3\sqrt{5}}{56}$	0	0	0	$\frac{15}{56}$	0	0	$-\frac{11\sqrt{30}}{840}$	0	0	0	$-\frac{\sqrt{10}}{280}$	0	0
		0	$\frac{15}{56}$	0	0	0	$-\frac{3\sqrt{5}}{56}$	0	0	$\frac{\sqrt{10}}{280}$	0	0	0	$\frac{11\sqrt{30}}{840}$	0
		0	0	$-\frac{5\sqrt{6}}{56}$	0	0	0	0	0	0	$\frac{3\sqrt{2}}{56}$	0	0	0	$-\frac{\sqrt{70}}{280}$
402	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$													
	$\mathbb{T}_2^{(1,1;a)}(A_g)$	0	0	$-\frac{i}{3}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	$-\frac{i}{3}$	0	0	0	0	0	0	0	0	0	0
		0	$-\frac{4\sqrt{3}i}{21}$	0	0	0	0	0	$\frac{\sqrt{30}i}{84}$	0	0	0	0	0	0
		0	0	$-\frac{2\sqrt{2}i}{21}$	0	0	0	0	0	$\frac{\sqrt{6}i}{28}$	0	0	0	0	0
		0	0	0	$\frac{2\sqrt{2}i}{21}$	0	0	0	0	0	$\frac{\sqrt{6}i}{28}$	0	0	0	0
		0	0	0	0	$\frac{4\sqrt{3}i}{21}$	0	0	0	0	0	$\frac{\sqrt{30}i}{84}$	0	0	0
403	symmetry	$\sqrt{3}yz$													
	$\mathbb{T}_{2,1}^{(1,1;a)}(E_{1g})$	0	$-\frac{\sqrt{6}}{9}$	0	$-\frac{\sqrt{3}}{9}$	0	0	0	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{3}}{9}$	0	$-\frac{\sqrt{6}}{9}$	0	0	0	0	0	0	0	0	0
		$-\frac{2\sqrt{5}}{21}$	0	$-\frac{\sqrt{2}}{7}$	0	0	0	0	$\frac{\sqrt{30}}{84}$	0	$\frac{\sqrt{6}}{84}$	0	0	0	0
		0	$\frac{2\sqrt{3}}{63}$	0	$-\frac{5\sqrt{6}}{63}$	0	0	0	0	$\frac{\sqrt{30}}{84}$	0	$\frac{\sqrt{2}}{28}$	0	0	0
		0	0	$\frac{5\sqrt{6}}{63}$	0	$-\frac{2\sqrt{3}}{63}$	0	0	0	0	$\frac{\sqrt{2}}{28}$	0	$\frac{\sqrt{30}}{84}$	0	0
		0	0	0	$\frac{\sqrt{2}}{7}$	0	$\frac{2\sqrt{5}}{21}$	0	0	0	0	$\frac{\sqrt{6}}{84}$	0	$\frac{\sqrt{30}}{84}$	0
404	symmetry	$-\sqrt{3}xz$													

continued ...

Table 7

No.	multipole	matrix
	$\mathbb{T}_{2,2}^{(1,1;a)}(E_{1g})$	$ \begin{bmatrix} 0 & -\frac{\sqrt{6}i}{9} & 0 & \frac{\sqrt{3}i}{9} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{3}i}{9} & 0 & \frac{\sqrt{6}i}{9} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{2\sqrt{5}i}{21} & 0 & \frac{\sqrt{2}i}{7} & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{84} & 0 & -\frac{\sqrt{6}i}{84} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{2\sqrt{3}i}{63} & 0 & \frac{5\sqrt{6}i}{63} & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{84} & 0 & -\frac{\sqrt{2}i}{28} & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{5\sqrt{6}i}{63} & 0 & \frac{2\sqrt{3}i}{63} & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{28} & 0 & -\frac{\sqrt{30}i}{84} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{2}i}{7} & 0 & -\frac{2\sqrt{5}i}{21} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{84} & 0 & -\frac{\sqrt{30}i}{84} & 0 \end{bmatrix} $
405	symmetry	$ \frac{\sqrt{3}(x-y)(x+y)}{2} $
	$\mathbb{T}_{2,1}^{(1,1;a)}(E_{2g})$	$ \begin{bmatrix} -\frac{\sqrt{30}i}{18} & 0 & 0 & 0 & -\frac{\sqrt{6}i}{18} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{6}i}{18} & 0 & 0 & 0 & -\frac{\sqrt{30}i}{18} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{2\sqrt{2}i}{21} & 0 & 0 & \frac{\sqrt{210}i}{168} & 0 & 0 & 0 & \frac{\sqrt{6}i}{168} & 0 & 0 & 0 & 0 \\ \frac{4\sqrt{15}i}{63} & 0 & 0 & 0 & -\frac{8\sqrt{3}i}{63} & 0 & 0 & \frac{\sqrt{10}i}{56} & 0 & 0 & 0 & \frac{\sqrt{30}i}{168} & 0 & 0 & 0 \\ 0 & \frac{8\sqrt{3}i}{63} & 0 & 0 & 0 & -\frac{4\sqrt{15}i}{63} & 0 & 0 & \frac{\sqrt{30}i}{168} & 0 & 0 & 0 & \frac{\sqrt{10}i}{56} & 0 & 0 \\ 0 & 0 & \frac{2\sqrt{2}i}{21} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{168} & 0 & 0 & 0 & \frac{\sqrt{210}i}{168} \end{bmatrix} $
406	symmetry	$ -\sqrt{3}xy $
	$\mathbb{T}_{2,2}^{(1,1;a)}(E_{2g})$	$ \begin{bmatrix} -\frac{\sqrt{30}}{18} & 0 & 0 & 0 & \frac{\sqrt{6}}{18} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{6}}{18} & 0 & 0 & 0 & \frac{\sqrt{30}}{18} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{2\sqrt{2}}{21} & 0 & 0 & \frac{\sqrt{210}}{168} & 0 & 0 & 0 & -\frac{\sqrt{6}}{168} & 0 & 0 & 0 & 0 \\ \frac{4\sqrt{15}}{63} & 0 & 0 & 0 & \frac{8\sqrt{3}}{63} & 0 & 0 & \frac{\sqrt{10}}{56} & 0 & 0 & 0 & -\frac{\sqrt{30}}{168} & 0 & 0 & 0 \\ 0 & \frac{8\sqrt{3}}{63} & 0 & 0 & 0 & \frac{4\sqrt{15}}{63} & 0 & 0 & \frac{\sqrt{30}}{168} & 0 & 0 & 0 & -\frac{\sqrt{10}}{56} & 0 & 0 \\ 0 & 0 & \frac{2\sqrt{2}}{21} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{168} & 0 & 0 & 0 & 0 & -\frac{\sqrt{210}}{168} \end{bmatrix} $
407	symmetry	$ -\frac{z(3x^2+3y^2-2z^2)}{2} $
	$\mathbb{M}_3^{(a)}(A_g)$	$ \begin{bmatrix} 0 & 0 & \frac{\sqrt{21}}{21} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{14} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{21}}{21} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{14} & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{7}}{14} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{70}}{28} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{42}}{42} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}}{28} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{42}}{42} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}}{28} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{7}}{14} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}}{28} & 0 & 0 & 0 \end{bmatrix} $
408	symmetry	$ \frac{\sqrt{10}y(3x^2-y^2)}{4} $

continued ...

Table 7

No.	multipole	matrix
	$\mathbb{M}_3^{(a)}(B_g, 1)$	$ \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}i}{21} & -\frac{\sqrt{2}i}{8} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}i}{56} & 0 \\ \frac{\sqrt{21}i}{21} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}i}{56} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{8} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{70}i}{56} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}i}{28} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{5\sqrt{42}i}{168} & \frac{i}{4} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}i}{14} & 0 \\ \frac{5\sqrt{42}i}{168} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}i}{14} & 0 & 0 & 0 & 0 & 0 & -\frac{i}{4} \\ 0 & \frac{\sqrt{70}i}{56} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}i}{28} & 0 & 0 & 0 & 0 & 0 \end{bmatrix} $
409	symmetry	$ \frac{\sqrt{10}x(x^2-3y^2)}{4} $ $ \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{21} & -\frac{\sqrt{2}}{8} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}}{56} & 0 \\ \frac{\sqrt{21}}{21} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}}{56} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{8} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{70}}{56} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{28} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{5\sqrt{42}}{168} & \frac{1}{4} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{14} & 0 \\ \frac{5\sqrt{42}}{168} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{14} & 0 & 0 & 0 & 0 & 0 & \frac{1}{4} \\ 0 & \frac{\sqrt{70}}{56} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{28} & 0 & 0 & 0 & 0 & 0 \end{bmatrix} $
410	symmetry	$ -\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4} $ $ \begin{bmatrix} 0 & -\frac{\sqrt{7}}{21} & 0 & \frac{\sqrt{14}}{21} & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}}{56} & 0 & \frac{\sqrt{42}}{56} & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{14}}{21} & 0 & -\frac{\sqrt{7}}{21} & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}}{56} & 0 & \frac{\sqrt{70}}{56} & 0 & 0 \\ \frac{\sqrt{210}}{168} & 0 & -\frac{\sqrt{21}}{28} & 0 & 0 & 0 & 0 & -\frac{\sqrt{35}}{28} & 0 & \frac{\sqrt{7}}{14} & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{14}}{24} & 0 & \frac{\sqrt{7}}{84} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{28} & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{7}}{84} & 0 & \frac{\sqrt{14}}{24} & 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{28} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{21}}{28} & 0 & -\frac{\sqrt{210}}{168} & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{14} & 0 & -\frac{\sqrt{35}}{28} & 0 \end{bmatrix} $
411	symmetry	$ -\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4} $ $ \begin{bmatrix} 0 & -\frac{\sqrt{7}i}{21} & 0 & -\frac{\sqrt{14}i}{21} & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}i}{56} & 0 & -\frac{\sqrt{42}i}{56} & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{14}i}{21} & 0 & \frac{\sqrt{7}i}{21} & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}i}{56} & 0 & -\frac{\sqrt{70}i}{56} & 0 & 0 \\ \frac{\sqrt{210}i}{168} & 0 & \frac{\sqrt{21}i}{28} & 0 & 0 & 0 & 0 & -\frac{\sqrt{35}i}{28} & 0 & -\frac{\sqrt{7}i}{14} & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{14}i}{24} & 0 & -\frac{\sqrt{7}i}{84} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}i}{28} & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{7}i}{84} & 0 & -\frac{\sqrt{14}i}{24} & 0 & 0 & 0 & 0 & \frac{\sqrt{21}i}{28} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{21}i}{28} & 0 & \frac{\sqrt{210}i}{168} & 0 & 0 & 0 & 0 & \frac{\sqrt{7}i}{14} & 0 & \frac{\sqrt{35}i}{28} & 0 \end{bmatrix} $
412	symmetry	$ \sqrt{15}xyz $

continued ...

Table 7

No.	multipole	matrix													
	$\mathbb{M}_{3,1}^{(a)}(E_{2g})$	$\frac{\sqrt{14}i}{42}$	0	0	0	$-\frac{\sqrt{70}i}{42}$	0	0	$\frac{\sqrt{21}i}{28}$	0	0	0	$-\frac{\sqrt{7}i}{28}$	0	0
		0	$-\frac{\sqrt{70}i}{42}$	0	0	0	$\frac{\sqrt{14}i}{42}$	0	0	$\frac{\sqrt{7}i}{28}$	0	0	0	$-\frac{\sqrt{21}i}{28}$	0
		0	0	0	$\frac{\sqrt{210}i}{84}$	0	0	$\frac{\sqrt{2}i}{8}$	0	0	0	$-\frac{\sqrt{70}i}{56}$	0	0	0
		$\frac{5\sqrt{7}i}{84}$	0	0	0	$\frac{\sqrt{35}i}{84}$	0	0	$-\frac{\sqrt{42}i}{56}$	0	0	0	$-\frac{3\sqrt{14}i}{56}$	0	0
		0	$-\frac{\sqrt{35}i}{84}$	0	0	0	$-\frac{5\sqrt{7}i}{84}$	0	0	$-\frac{3\sqrt{14}i}{56}$	0	0	0	$-\frac{\sqrt{42}i}{56}$	0
		0	0	$-\frac{\sqrt{210}i}{84}$	0	0	0	0	0	0	$-\frac{\sqrt{70}i}{56}$	0	0	0	$\frac{\sqrt{2}i}{8}$
413	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$													
	$\mathbb{M}_{3,2}^{(a)}(E_{2g})$	$\frac{\sqrt{14}}{42}$	0	0	0	$\frac{\sqrt{70}}{42}$	0	0	$\frac{\sqrt{21}}{28}$	0	0	0	$\frac{\sqrt{7}}{28}$	0	0
		0	$-\frac{\sqrt{70}}{42}$	0	0	0	$-\frac{\sqrt{14}}{42}$	0	0	$\frac{\sqrt{7}}{28}$	0	0	0	$\frac{\sqrt{21}}{28}$	0
		0	0	0	$-\frac{\sqrt{210}}{84}$	0	0	$\frac{\sqrt{2}}{8}$	0	0	0	$\frac{\sqrt{70}}{56}$	0	0	0
		$\frac{5\sqrt{7}}{84}$	0	0	0	$-\frac{\sqrt{35}}{84}$	0	0	$-\frac{\sqrt{42}}{56}$	0	0	0	$\frac{3\sqrt{14}}{56}$	0	0
		0	$-\frac{\sqrt{35}}{84}$	0	0	0	$\frac{5\sqrt{7}}{84}$	0	0	$-\frac{3\sqrt{14}}{56}$	0	0	0	$\frac{\sqrt{42}}{56}$	0
		0	0	$-\frac{\sqrt{210}}{84}$	0	0	0	0	0	0	$-\frac{\sqrt{70}}{56}$	0	0	0	$-\frac{\sqrt{2}}{8}$
414	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$													
	$\mathbb{M}_3^{(1,-1;a)}(A_g)$	0	0	$-\frac{\sqrt{5}}{42}$	0	0	0	0	0	$-\frac{2\sqrt{15}}{21}$	0	0	0	0	0
		0	0	0	$\frac{\sqrt{5}}{42}$	0	0	0	0	0	$-\frac{2\sqrt{15}}{21}$	0	0	0	0
		0	$\frac{2\sqrt{15}}{105}$	0	0	0	0	0	0	$\frac{5\sqrt{6}}{42}$	0	0	0	0	0
		0	0	$-\frac{2\sqrt{10}}{105}$	0	0	0	0	0	0	$\frac{\sqrt{30}}{42}$	0	0	0	0
		0	0	0	$-\frac{2\sqrt{10}}{105}$	0	0	0	0	0	0	$-\frac{\sqrt{30}}{42}$	0	0	0
		0	0	0	0	$\frac{2\sqrt{15}}{105}$	0	0	0	0	0	0	$-\frac{5\sqrt{6}}{42}$	0	0
415	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$													
	$\mathbb{M}_3^{(1,-1;a)}(B_g, 1)$	0	0	0	0	0	$\frac{\sqrt{5}i}{42}$	$\frac{\sqrt{210}i}{42}$	0	0	0	0	0	$\frac{\sqrt{30}i}{42}$	0
		$-\frac{\sqrt{5}i}{42}$	0	0	0	0	0	0	$\frac{\sqrt{30}i}{42}$	0	0	0	0	0	$\frac{\sqrt{210}i}{42}$
		0	0	0	0	$-\frac{\sqrt{6}i}{42}$	0	0	0	0	0	0	$-\frac{\sqrt{15}i}{42}$	0	0
		0	0	0	0	0	$-\frac{\sqrt{10}i}{42}$	$\frac{\sqrt{105}i}{42}$	0	0	0	0	0	$-\frac{\sqrt{15}i}{21}$	0
		$-\frac{\sqrt{10}i}{42}$	0	0	0	0	0	0	$\frac{\sqrt{15}i}{21}$	0	0	0	0	0	$-\frac{\sqrt{105}i}{42}$
		0	$-\frac{\sqrt{6}i}{42}$	0	0	0	0	0	0	$\frac{\sqrt{15}i}{42}$	0	0	0	0	0
416	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$													

continued ...



Table 7

No.	multipole	matrix													
	$\mathbb{M}_3^{(1,-1;a)}(B_g, 2)$	0	0	0	0	0	$-\frac{\sqrt{5}}{42}$	$\frac{\sqrt{210}}{42}$	0	0	0	0	0	$-\frac{\sqrt{30}}{42}$	0
		$-\frac{\sqrt{5}}{42}$	0	0	0	0	0	0	$\frac{\sqrt{30}}{42}$	0	0	0	0	0	$-\frac{\sqrt{210}}{42}$
		0	0	0	0	$\frac{\sqrt{6}}{42}$	0	0	0	0	0	$\frac{\sqrt{15}}{42}$	0	0	
		0	0	0	0	0	$\frac{\sqrt{10}}{42}$	$\frac{\sqrt{105}}{42}$	0	0	0	0	$\frac{\sqrt{15}}{21}$	0	
		$-\frac{\sqrt{10}}{42}$	0	0	0	0	0	0	$\frac{\sqrt{15}}{21}$	0	0	0	0	0	$\frac{\sqrt{105}}{42}$
		0	$-\frac{\sqrt{6}}{42}$	0	0	0	0	0	0	$\frac{\sqrt{15}}{42}$	0	0	0	0	0
417	symmetry	$-\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$													
	$\mathbb{M}_{3,1}^{(1,-1;a)}(E_{1g})$	0	$\frac{\sqrt{15}}{126}$	0	$-\frac{\sqrt{30}}{126}$	0	0	0	0	$\frac{5\sqrt{6}}{42}$	0	$-\frac{\sqrt{10}}{14}$	0	0	0
		0	0	$-\frac{\sqrt{30}}{126}$	0	$\frac{\sqrt{15}}{126}$	0	0	0	0	$\frac{\sqrt{10}}{14}$	0	$-\frac{5\sqrt{6}}{42}$	0	0
		$-\frac{\sqrt{2}}{42}$	0	$\frac{\sqrt{5}}{35}$	0	0	0	0	$-\frac{5\sqrt{3}}{42}$	0	$\frac{\sqrt{15}}{21}$	0	0	0	0
		0	$\frac{\sqrt{30}}{90}$	0	$-\frac{\sqrt{15}}{315}$	0	0	0	0	0	0	$\frac{\sqrt{5}}{14}$	0	0	0
		0	0	$\frac{\sqrt{15}}{315}$	0	$-\frac{\sqrt{30}}{90}$	0	0	0	0	$\frac{\sqrt{5}}{14}$	0	0	0	0
		0	0	0	$-\frac{\sqrt{5}}{35}$	0	$\frac{\sqrt{2}}{42}$	0	0	0	0	$\frac{\sqrt{15}}{21}$	0	$-\frac{5\sqrt{3}}{42}$	0
418	symmetry	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$													
	$\mathbb{M}_{3,2}^{(1,-1;a)}(E_{1g})$	0	$\frac{\sqrt{15}i}{126}$	0	$\frac{\sqrt{30}i}{126}$	0	0	0	0	$\frac{5\sqrt{6}i}{42}$	0	$\frac{\sqrt{10}i}{14}$	0	0	0
		0	0	$-\frac{\sqrt{30}i}{126}$	0	$-\frac{\sqrt{15}i}{126}$	0	0	0	0	$\frac{\sqrt{10}i}{14}$	0	$\frac{5\sqrt{6}i}{42}$	0	0
		$-\frac{\sqrt{2}i}{42}$	0	$-\frac{\sqrt{5}i}{35}$	0	0	0	0	$-\frac{5\sqrt{3}i}{42}$	0	$-\frac{\sqrt{15}i}{21}$	0	0	0	0
		0	$\frac{\sqrt{30}i}{90}$	0	$\frac{\sqrt{15}i}{315}$	0	0	0	0	0	0	$-\frac{\sqrt{5}i}{14}$	0	0	0
		0	0	$\frac{\sqrt{15}i}{315}$	0	$\frac{\sqrt{30}i}{90}$	0	0	0	0	$\frac{\sqrt{5}i}{14}$	0	0	0	0
		0	0	0	$-\frac{\sqrt{5}i}{35}$	0	$-\frac{\sqrt{2}i}{42}$	0	0	0	0	$\frac{\sqrt{15}i}{21}$	0	$\frac{5\sqrt{3}i}{42}$	0
419	symmetry	$\sqrt{15}xyz$													
	$\mathbb{M}_{3,1}^{(1,-1;a)}(E_{2g})$	$-\frac{\sqrt{30}i}{252}$	0	0	0	$\frac{5\sqrt{6}i}{252}$	0	0	$-\frac{\sqrt{5}i}{7}$	0	0	0	$\frac{\sqrt{15}i}{21}$	0	0
		0	$\frac{5\sqrt{6}i}{252}$	0	0	0	$-\frac{\sqrt{30}i}{252}$	0	0	$-\frac{\sqrt{15}i}{21}$	0	0	0	$\frac{\sqrt{5}i}{7}$	0
		0	0	0	$-\frac{\sqrt{2}i}{21}$	0	0	$\frac{\sqrt{210}i}{84}$	0	0	0	$-\frac{5\sqrt{6}i}{84}$	0	0	0
		$-\frac{\sqrt{15}i}{63}$	0	0	0	$-\frac{\sqrt{3}i}{63}$	0	0	$-\frac{\sqrt{10}i}{28}$	0	0	0	$-\frac{\sqrt{30}i}{28}$	0	0
		0	$\frac{\sqrt{3}i}{63}$	0	0	0	$\frac{\sqrt{15}i}{63}$	0	0	$-\frac{\sqrt{30}i}{28}$	0	0	0	$-\frac{\sqrt{10}i}{28}$	0
		0	0	$\frac{\sqrt{2}i}{21}$	0	0	0	0	0	0	$-\frac{5\sqrt{6}i}{84}$	0	0	0	$\frac{\sqrt{210}i}{84}$
420	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$													

continued ...

Table 7

No.	multipole	matrix
	$\mathbb{M}_{3,2}^{(1,-1;a)}(E_{2g})$	$ \begin{bmatrix} -\frac{\sqrt{30}}{252} & 0 & 0 & 0 & -\frac{5\sqrt{6}}{252} & 0 & 0 & -\frac{\sqrt{5}}{7} & 0 & 0 & 0 & -\frac{\sqrt{15}}{21} & 0 & 0 \\ 0 & \frac{5\sqrt{6}}{252} & 0 & 0 & 0 & \frac{\sqrt{30}}{252} & 0 & 0 & -\frac{\sqrt{15}}{21} & 0 & 0 & 0 & -\frac{\sqrt{5}}{7} & 0 \\ 0 & 0 & 0 & \frac{\sqrt{2}}{21} & 0 & 0 & \frac{\sqrt{210}}{84} & 0 & 0 & 0 & \frac{5\sqrt{6}}{84} & 0 & 0 & 0 \\ -\frac{\sqrt{15}}{63} & 0 & 0 & 0 & \frac{\sqrt{3}}{63} & 0 & 0 & -\frac{\sqrt{10}}{28} & 0 & 0 & 0 & \frac{\sqrt{30}}{28} & 0 & 0 \\ 0 & \frac{\sqrt{3}}{63} & 0 & 0 & 0 & -\frac{\sqrt{15}}{63} & 0 & 0 & -\frac{\sqrt{30}}{28} & 0 & 0 & 0 & \frac{\sqrt{10}}{28} & 0 \\ 0 & 0 & \frac{\sqrt{2}}{21} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{5\sqrt{6}}{84} & 0 & 0 & 0 & -\frac{\sqrt{210}}{84} \end{bmatrix} $
421	symmetry	$ \frac{z(15x^4+30x^2y^2-40x^2z^2+15y^4-40y^2z^2+8z^4)}{8} $
	$\mathbb{M}_5^{(1,-1;a)}(A_g)$	$ \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 & -\frac{\sqrt{6}}{12} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{12} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{12} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{12} & 0 & 0 \end{bmatrix} $
422	symmetry	$ -\frac{\sqrt{70}y(3x^2-y^2)(x^2+y^2-8z^2)}{16} $
	$\mathbb{M}_5^{(1,-1;a)}(B_g, 1)$	$ \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{105}i}{30} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}i}{30} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}i}{30} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{105}i}{30} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{30} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}i}{30} & 0 & 0 & 0 & 0 & 0 \end{bmatrix} $
423	symmetry	$ -\frac{\sqrt{70}x(x^2-3y^2)(x^2+y^2-8z^2)}{16} $
	$\mathbb{M}_5^{(1,-1;a)}(B_g, 2)$	$ \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 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}}{30} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{30} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{105}}{30} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{105}}{30} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{30} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}}{30} & 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
		$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{1}{2} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{1}{2} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
425	symmetry	$-\frac{3\sqrt{14}y(5x^4-10x^2y^2+y^4)}{16}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{i}{2} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{i}{2} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
426	symmetry	$\frac{\sqrt{15}x(x^4+2x^2y^2-12x^2z^2+y^4-12y^2z^2+8z^4)}{8}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{60} & 0 & -\frac{\sqrt{6}}{12} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{20} & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 & -\frac{\sqrt{30}}{20} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{12} & 0 & \frac{\sqrt{30}}{60} & 0 & 0 \end{bmatrix}$
427	symmetry	$\frac{\sqrt{15}y(x^4+2x^2y^2-12x^2z^2+y^4-12y^2z^2+8z^4)}{8}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{60} & 0 & \frac{\sqrt{6}i}{12} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}i}{20} & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} & 0 & \frac{\sqrt{30}i}{20} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{12} & 0 & -\frac{\sqrt{30}i}{60} & 0 & 0 \end{bmatrix}$
428	symmetry	$-\frac{3\sqrt{35}xyz(x-y)(x+y)}{2}$

continued ...

Table 7

No.	multipole	matrix
		$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}i}{20} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{20} \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
429	symmetry	$\frac{3\sqrt{35}z(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}}{20} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{20} \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{70}}{20} & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
430	symmetry	$-\frac{\sqrt{105}xyz(x^2+y^2-2z^2)}{2}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}i}{120} & 0 & 0 & 0 & \frac{\sqrt{42}i}{24} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{70}i}{40} & 0 & 0 & 0 & -\frac{\sqrt{210}i}{40} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{210}i}{40} & 0 & 0 & 0 & \frac{\sqrt{70}i}{40} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}i}{24} & 0 & 0 & 0 & -\frac{\sqrt{30}i}{120} \end{bmatrix}$
431	symmetry	$-\frac{\sqrt{105}z(x-y)(x+y)(x^2+y^2-2z^2)}{4}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{120} & 0 & 0 & 0 & -\frac{\sqrt{42}}{24} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{70}}{40} & 0 & 0 & 0 & \frac{\sqrt{210}}{40} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{210}}{40} & 0 & 0 & 0 & -\frac{\sqrt{70}}{40} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}}{24} & 0 & 0 & 0 & \frac{\sqrt{30}}{120} \end{bmatrix}$
432	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$

continued ...

Table 7

No.	multipole	matrix													
	$\mathbb{M}_3^{(1,0;a)}(A_g)$	0	0	$-\frac{\sqrt{7}}{21}$	0	0	0	0	0	$\frac{5\sqrt{21}}{84}$	0	0	0	0	
		0	0	0	$\frac{\sqrt{7}}{21}$	0	0	0	0	0	$\frac{5\sqrt{21}}{84}$	0	0	0	
		0	$\frac{5\sqrt{21}}{84}$	0	0	0	0	0	$\frac{\sqrt{210}}{84}$	0	0	0	0	0	
		0	0	$-\frac{5\sqrt{14}}{84}$	0	0	0	0	0	$\frac{\sqrt{42}}{84}$	0	0	0	0	
		0	0	0	$-\frac{5\sqrt{14}}{84}$	0	0	0	0	0	$-\frac{\sqrt{42}}{84}$	0	0	0	
		0	0	0	0	$\frac{5\sqrt{21}}{84}$	0	0	0	0	0	$-\frac{\sqrt{210}}{84}$	0	0	
433	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$													
	$\mathbb{M}_3^{(1,0;a)}(B_g, 1)$	0	0	0	0	0	$\frac{\sqrt{7}i}{21}$	$-\frac{5\sqrt{6}i}{48}$	0	0	0	0	$-\frac{5\sqrt{42}i}{336}$	0	
		$-\frac{\sqrt{7}i}{21}$	0	0	0	0	0	0	$-\frac{5\sqrt{42}i}{336}$	0	0	0	0	$-\frac{5\sqrt{6}i}{48}$	
		0	0	0	0	$-\frac{5\sqrt{210}i}{336}$	0	0	0	0	0	$-\frac{\sqrt{21}i}{84}$	0	0	
		0	0	0	0	0	$-\frac{25\sqrt{14}i}{336}$	$\frac{\sqrt{3}i}{12}$	0	0	0	0	$-\frac{\sqrt{21}i}{42}$	0	
		$-\frac{25\sqrt{14}i}{336}$	0	0	0	0	0	0	$\frac{\sqrt{21}i}{42}$	0	0	0	0	$-\frac{\sqrt{3}i}{12}$	
		0	$-\frac{5\sqrt{210}i}{336}$	0	0	0	0	0	0	$\frac{\sqrt{21}i}{84}$	0	0	0	0	
434	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$													
	$\mathbb{M}_3^{(1,0;a)}(B_g, 2)$	0	0	0	0	0	$-\frac{\sqrt{7}}{21}$	$-\frac{5\sqrt{6}}{48}$	0	0	0	0	$\frac{5\sqrt{42}}{336}$	0	
		$-\frac{\sqrt{7}}{21}$	0	0	0	0	0	0	$-\frac{5\sqrt{42}}{336}$	0	0	0	0	$\frac{5\sqrt{6}}{48}$	
		0	0	0	0	$\frac{5\sqrt{210}}{336}$	0	0	0	0	0	$\frac{\sqrt{21}}{84}$	0	0	
		0	0	0	0	0	$\frac{25\sqrt{14}}{336}$	$\frac{\sqrt{3}}{12}$	0	0	0	0	$\frac{\sqrt{21}}{42}$	0	
		$-\frac{25\sqrt{14}}{336}$	0	0	0	0	0	0	$\frac{\sqrt{21}}{42}$	0	0	0	0	$\frac{\sqrt{3}}{12}$	
		0	$-\frac{5\sqrt{210}}{336}$	0	0	0	0	0	0	$\frac{\sqrt{21}}{84}$	0	0	0	0	
435	symmetry	$-\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$													
	$\mathbb{M}_{3,1}^{(1,0;a)}(E_{1g})$	0	$\frac{\sqrt{21}}{63}$	0	$-\frac{\sqrt{42}}{63}$	0	0	0	0	$-\frac{5\sqrt{210}}{336}$	0	$\frac{5\sqrt{14}}{112}$	0	0	
		0	0	$-\frac{\sqrt{42}}{63}$	0	$\frac{\sqrt{21}}{63}$	0	0	0	0	$-\frac{5\sqrt{14}}{112}$	0	$\frac{5\sqrt{210}}{336}$	0	
		$-\frac{5\sqrt{70}}{336}$	0	$\frac{5\sqrt{7}}{56}$	0	0	0	0	$-\frac{\sqrt{105}}{84}$	0	$\frac{\sqrt{21}}{42}$	0	0	0	
		0	$\frac{5\sqrt{42}}{144}$	0	$-\frac{5\sqrt{21}}{504}$	0	0	0	0	0	0	$\frac{\sqrt{7}}{28}$	0	0	
		0	0	$\frac{5\sqrt{21}}{504}$	0	$-\frac{5\sqrt{42}}{144}$	0	0	0	0	$\frac{\sqrt{7}}{28}$	0	0	0	
		0	0	0	$-\frac{5\sqrt{7}}{56}$	0	$\frac{5\sqrt{70}}{336}$	0	0	0	0	$\frac{\sqrt{21}}{42}$	0	$-\frac{\sqrt{105}}{84}$	
436	symmetry	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$													

continued ...

Table 7

No.	multipole	matrix														
	$\mathbb{M}_{3,2}^{(1,0;a)}(E_{1g})$	0	$\frac{\sqrt{21}i}{63}$	0	$\frac{\sqrt{42}i}{63}$	0	0	0	0	$-\frac{5\sqrt{210}i}{336}$	0	$-\frac{5\sqrt{14}i}{112}$	0	0	0	
		0	0	$-\frac{\sqrt{42}i}{63}$	0	$-\frac{\sqrt{21}i}{63}$	0	0	0	0	$-\frac{5\sqrt{14}i}{112}$	0	$-\frac{5\sqrt{210}i}{336}$	0	0	
		$-\frac{5\sqrt{70}i}{336}$	0	$-\frac{5\sqrt{7}i}{56}$	0	0	0	0	$-\frac{\sqrt{105}i}{84}$	0	$-\frac{\sqrt{21}i}{42}$	0	0	0	0	
		0	$\frac{5\sqrt{42}i}{144}$	0	$\frac{5\sqrt{21}i}{504}$	0	0	0	0	0	0	$-\frac{\sqrt{7}i}{28}$	0	0	0	
		0	0	$\frac{5\sqrt{21}i}{504}$	0	$\frac{5\sqrt{42}i}{144}$	0	0	0	0	$\frac{\sqrt{7}i}{28}$	0	0	0	0	
		0	0	0	$-\frac{5\sqrt{7}i}{56}$	0	$-\frac{5\sqrt{70}i}{336}$	0	0	0	0	$\frac{\sqrt{21}i}{42}$	0	$\frac{\sqrt{105}i}{84}$	0	
437	symmetry	$\sqrt{15}xyz$														
	$\mathbb{M}_{3,1}^{(1,0;a)}(E_{2g})$	$-\frac{\sqrt{42}i}{126}$	0	0	0	$\frac{\sqrt{210}i}{126}$	0	0	$\frac{5\sqrt{7}i}{56}$	0	0	0	$-\frac{5\sqrt{21}i}{168}$	0	0	
		0	$\frac{\sqrt{210}i}{126}$	0	0	0	$-\frac{\sqrt{42}i}{126}$	0	0	$\frac{5\sqrt{21}i}{168}$	0	0	0	$-\frac{5\sqrt{7}i}{56}$	0	
		0	0	0	$-\frac{5\sqrt{70}i}{168}$	0	0	$\frac{\sqrt{6}i}{24}$	0	0	0	$-\frac{\sqrt{210}i}{168}$	0	0	0	
		$-\frac{25\sqrt{21}i}{504}$	0	0	0	$-\frac{5\sqrt{105}i}{504}$	0	0	$-\frac{\sqrt{14}i}{56}$	0	0	0	$-\frac{\sqrt{42}i}{56}$	0	0	
		0	$\frac{5\sqrt{105}i}{504}$	0	0	0	$\frac{25\sqrt{21}i}{504}$	0	0	$-\frac{\sqrt{42}i}{56}$	0	0	0	$-\frac{\sqrt{14}i}{56}$	0	
		0	0	$\frac{5\sqrt{70}i}{168}$	0	0	0	0	0	0	$-\frac{\sqrt{210}i}{168}$	0	0	0	$\frac{\sqrt{6}i}{24}$	
438	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$														
	$\mathbb{M}_{3,2}^{(1,0;a)}(E_{2g})$	$-\frac{\sqrt{42}}{126}$	0	0	0	$-\frac{\sqrt{210}}{126}$	0	0	$\frac{5\sqrt{7}}{56}$	0	0	0	$\frac{5\sqrt{21}}{168}$	0	0	
		0	$\frac{\sqrt{210}}{126}$	0	0	0	$\frac{\sqrt{42}}{126}$	0	0	$\frac{5\sqrt{21}}{168}$	0	0	0	$\frac{5\sqrt{7}}{56}$	0	
		0	0	0	$\frac{5\sqrt{70}}{168}$	0	0	$\frac{\sqrt{6}}{24}$	0	0	0	$\frac{\sqrt{210}}{168}$	0	0	0	
		$-\frac{25\sqrt{21}}{504}$	0	0	0	$\frac{5\sqrt{105}}{504}$	0	0	$-\frac{\sqrt{14}}{56}$	0	0	0	$\frac{\sqrt{42}}{56}$	0	0	
		0	$\frac{5\sqrt{105}}{504}$	0	0	0	$-\frac{25\sqrt{21}}{504}$	0	0	$-\frac{\sqrt{42}}{56}$	0	0	0	$\frac{\sqrt{14}}{56}$	0	
		0	0	$\frac{5\sqrt{70}}{168}$	0	0	0	0	0	0	$-\frac{\sqrt{210}}{168}$	0	0	0	$-\frac{\sqrt{6}}{24}$	
439	symmetry	$z$														
	$\mathbb{M}_1^{(1,1;a)}(A_g)$	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		0	$-\frac{\sqrt{10}}{10}$	0	0	0	0	0	0	0	0	0	0	0	0	
		0	0	$-\frac{\sqrt{15}}{10}$	0	0	0	0	0	0	0	0	0	0	0	
		0	0	0	$-\frac{\sqrt{15}}{10}$	0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	$-\frac{\sqrt{10}}{10}$	0	0	0	0	0	0	0	0	0	
440	symmetry	$x$														

continued ...

Table 7

No.	multipole	matrix
	$\mathbb{M}_{1,1}^{(1,1;a)}(E_{1g})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{2}}{4} & 0 & -\frac{\sqrt{5}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{30}}{20} & 0 & -\frac{\sqrt{15}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{15}}{20} & 0 & -\frac{\sqrt{30}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{5}}{20} & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
441	symmetry	$y \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{2}i}{4} & 0 & \frac{\sqrt{5}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{30}i}{20} & 0 & \frac{\sqrt{15}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{15}i}{20} & 0 & \frac{\sqrt{30}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{5}i}{20} & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
442	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2} \begin{bmatrix} 0 & 0 & \frac{3}{7} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{28} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{3}{7} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{28} & 0 & 0 & 0 \\ 0 & \frac{3\sqrt{3}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{84} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{3\sqrt{2}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{84} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{3\sqrt{2}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{84} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{3\sqrt{3}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{84} & 0 & 0 \end{bmatrix}$
443	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4} \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{3i}{7} & \frac{\sqrt{42}i}{112} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{112} & 0 \\ \frac{3i}{7} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{112} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}i}{112} \\ 0 & 0 & 0 & 0 & -\frac{3\sqrt{30}i}{112} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}i}{84} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{15\sqrt{2}i}{112} & -\frac{\sqrt{21}i}{84} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}i}{42} & 0 \\ -\frac{15\sqrt{2}i}{112} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{42} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}i}{84} \\ 0 & -\frac{3\sqrt{30}i}{112} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{84} & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
444	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$

continued ...

Table 7

No.	multipole	matrix
	$\mathbb{M}_3^{(1,1;a)}(B_g, 2)$	$ \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{3}{7} & \frac{\sqrt{42}}{112} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{112} & 0 \\ \frac{3}{7} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{112} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}}{112} \\ 0 & 0 & 0 & 0 & \frac{3\sqrt{30}}{112} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{84} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{15\sqrt{2}}{112} & -\frac{\sqrt{21}}{84} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{42} & 0 \\ -\frac{15\sqrt{2}}{112} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{42} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}}{84} \\ 0 & -\frac{3\sqrt{30}}{112} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{84} & 0 & 0 & 0 & 0 & 0 \end{bmatrix} $
445	symmetry	$ -\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4} $
	$\mathbb{M}_{3,1}^{(1,1;a)}(E_{1g})$	$ \begin{bmatrix} 0 & -\frac{\sqrt{3}}{7} & 0 & \frac{\sqrt{6}}{7} & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{112} & 0 & -\frac{3\sqrt{2}}{112} & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{6}}{7} & 0 & -\frac{\sqrt{3}}{7} & 0 & 0 & 0 & 0 & \frac{3\sqrt{2}}{112} & 0 & -\frac{\sqrt{30}}{112} & 0 & 0 \\ -\frac{3\sqrt{10}}{112} & 0 & \frac{9}{56} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{84} & 0 & -\frac{\sqrt{3}}{42} & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{6}}{16} & 0 & -\frac{\sqrt{3}}{56} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{1}{28} & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{3}}{56} & 0 & -\frac{\sqrt{6}}{16} & 0 & 0 & 0 & 0 & -\frac{1}{28} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{9}{56} & 0 & \frac{3\sqrt{10}}{112} & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{42} & 0 & \frac{\sqrt{15}}{84} & 0 \end{bmatrix} $
446	symmetry	$ -\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4} $
	$\mathbb{M}_{3,2}^{(1,1;a)}(E_{1g})$	$ \begin{bmatrix} 0 & -\frac{\sqrt{3}i}{7} & 0 & -\frac{\sqrt{6}i}{7} & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{112} & 0 & \frac{3\sqrt{2}i}{112} & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{6}i}{7} & 0 & \frac{\sqrt{3}i}{7} & 0 & 0 & 0 & 0 & \frac{3\sqrt{2}i}{112} & 0 & \frac{\sqrt{30}i}{112} & 0 & 0 \\ -\frac{3\sqrt{10}i}{112} & 0 & -\frac{9i}{56} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{84} & 0 & \frac{\sqrt{3}i}{42} & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{6}i}{16} & 0 & \frac{\sqrt{3}i}{56} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{i}{28} & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{3}i}{56} & 0 & \frac{\sqrt{6}i}{16} & 0 & 0 & 0 & 0 & -\frac{i}{28} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{9i}{56} & 0 & -\frac{3\sqrt{10}i}{112} & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{42} & 0 & -\frac{\sqrt{15}i}{84} & 0 \end{bmatrix} $
447	symmetry	$ \sqrt{15}xyz $
	$\mathbb{M}_{3,1}^{(1,1;a)}(E_{2g})$	$ \begin{bmatrix} \frac{\sqrt{6}i}{14} & 0 & 0 & 0 & -\frac{\sqrt{30}i}{14} & 0 & 0 & -\frac{3i}{56} & 0 & 0 & 0 & \frac{\sqrt{3}i}{56} & 0 & 0 \\ 0 & -\frac{\sqrt{30}i}{14} & 0 & 0 & 0 & \frac{\sqrt{6}i}{14} & 0 & 0 & -\frac{\sqrt{3}i}{56} & 0 & 0 & 0 & \frac{3i}{56} & 0 \\ 0 & 0 & 0 & -\frac{3\sqrt{10}i}{56} & 0 & 0 & -\frac{\sqrt{42}i}{168} & 0 & 0 & 0 & \frac{\sqrt{30}i}{168} & 0 & 0 & 0 \\ -\frac{5\sqrt{3}i}{56} & 0 & 0 & 0 & -\frac{\sqrt{15}i}{56} & 0 & 0 & \frac{\sqrt{2}i}{56} & 0 & 0 & 0 & \frac{\sqrt{6}i}{56} & 0 & 0 \\ 0 & \frac{\sqrt{15}i}{56} & 0 & 0 & 0 & \frac{5\sqrt{3}i}{56} & 0 & 0 & \frac{\sqrt{6}i}{56} & 0 & 0 & 0 & \frac{\sqrt{2}i}{56} & 0 \\ 0 & 0 & \frac{3\sqrt{10}i}{56} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{168} & 0 & 0 & 0 & -\frac{\sqrt{42}i}{168} \end{bmatrix} $
448	symmetry	$ \frac{\sqrt{15}z(x-y)(x+y)}{2} $

continued ...



Table 7

No.	multipole	matrix													
$\mathbb{M}_{3,2}^{(1,1;a)}(E_{2g})$		$\frac{\sqrt{6}}{14}$	0	0	0	$\frac{\sqrt{30}}{14}$	0	0	$-\frac{3}{56}$	0	0	0	$-\frac{\sqrt{3}}{56}$	0	0
		0	$-\frac{\sqrt{30}}{14}$	0	0	0	$-\frac{\sqrt{6}}{14}$	0	0	$-\frac{\sqrt{3}}{56}$	0	0	0	$-\frac{3}{56}$	0
		0	0	0	$\frac{3\sqrt{10}}{56}$	0	0	$-\frac{\sqrt{42}}{168}$	0	0	0	$-\frac{\sqrt{30}}{168}$	0	0	0
		$-\frac{5\sqrt{3}}{56}$	0	0	0	$\frac{\sqrt{15}}{56}$	0	0	$\frac{\sqrt{2}}{56}$	0	0	0	$-\frac{\sqrt{6}}{56}$	0	0
		0	$\frac{\sqrt{15}}{56}$	0	0	0	$-\frac{5\sqrt{3}}{56}$	0	0	$\frac{\sqrt{6}}{56}$	0	0	0	$-\frac{\sqrt{2}}{56}$	0
		0	0	$\frac{3\sqrt{10}}{56}$	0	0	0	0	0	0	$\frac{\sqrt{30}}{168}$	0	0	0	$\frac{\sqrt{42}}{168}$

$$\begin{aligned} \text{bra:} &= \langle \frac{3}{2}, \frac{3}{2}; d |, \langle \frac{3}{2}, \frac{1}{2}; d |, \langle \frac{3}{2}, -\frac{1}{2}; d |, \langle \frac{3}{2}, -\frac{3}{2}; d |, \langle \frac{5}{2}, \frac{5}{2}; d |, \langle \frac{5}{2}, \frac{3}{2}; d |, \langle \frac{5}{2}, \frac{1}{2}; d |, \langle \frac{5}{2}, -\frac{1}{2}; d |, \langle \frac{5}{2}, -\frac{3}{2}; d |, \langle \frac{5}{2}, -\frac{5}{2}; d | \\ \text{ket:} &= | \frac{3}{2}, \frac{3}{2}; d \rangle, | \frac{3}{2}, \frac{1}{2}; d \rangle, | \frac{3}{2}, -\frac{1}{2}; d \rangle, | \frac{3}{2}, -\frac{3}{2}; d \rangle, | \frac{5}{2}, \frac{5}{2}; d \rangle, | \frac{5}{2}, \frac{3}{2}; d \rangle, | \frac{5}{2}, \frac{1}{2}; d \rangle, | \frac{5}{2}, -\frac{1}{2}; d \rangle, | \frac{5}{2}, -\frac{3}{2}; d \rangle, | \frac{5}{2}, -\frac{5}{2}; d \rangle \end{aligned}$$

Table 8: (d,d) block.

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

continued ...

Table 8

No.	multipole	matrix									
	$\mathbb{Q}_2^{(a)}(A_g)$	$ \begin{bmatrix} -\frac{\sqrt{7}}{10} & 0 & 0 & 0 & 0 & -\frac{3\sqrt{7}}{35} & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{7}}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}}{70} & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{7}}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{42}}{70} & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{7}}{10} & 0 & 0 & 0 & 0 & \frac{3\sqrt{7}}{35} & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{7}}{7} & 0 & 0 & 0 & 0 & 0 \\ -\frac{3\sqrt{7}}{35} & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{35} & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{42}}{70} & 0 & 0 & 0 & 0 & \frac{4\sqrt{7}}{35} & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{42}}{70} & 0 & 0 & 0 & 0 & \frac{4\sqrt{7}}{35} & 0 & 0 \\ 0 & 0 & 0 & \frac{3\sqrt{7}}{35} & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{35} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}}{7} \end{bmatrix} $									
451	symmetry	$ \begin{matrix} \sqrt{3}yz \\ \mathbb{Q}_{2,1}^{(a)}(E_{1g}) \end{matrix} \begin{bmatrix} 0 & \frac{\sqrt{7}i}{10} & 0 & 0 & \frac{\sqrt{105}i}{70} & 0 & \frac{3\sqrt{42}i}{140} & 0 & 0 & 0 \\ -\frac{\sqrt{7}i}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}i}{70} & 0 & \frac{\sqrt{14}i}{28} & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{7}i}{10} & 0 & 0 & -\frac{\sqrt{14}i}{28} & 0 & \frac{\sqrt{7}i}{70} & 0 \\ 0 & 0 & \frac{\sqrt{7}i}{10} & 0 & 0 & 0 & 0 & -\frac{3\sqrt{42}i}{140} & 0 & -\frac{\sqrt{105}i}{70} \\ -\frac{\sqrt{105}i}{70} & 0 & 0 & 0 & 0 & \frac{\sqrt{105}i}{35} & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{7}i}{70} & 0 & 0 & -\frac{\sqrt{105}i}{35} & 0 & \frac{\sqrt{42}i}{35} & 0 & 0 & 0 \\ -\frac{3\sqrt{42}i}{140} & 0 & \frac{\sqrt{14}i}{28} & 0 & 0 & -\frac{\sqrt{42}i}{35} & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{14}i}{28} & 0 & \frac{3\sqrt{42}i}{140} & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}i}{35} & 0 \\ 0 & 0 & -\frac{\sqrt{7}i}{70} & 0 & 0 & 0 & 0 & \frac{\sqrt{42}i}{35} & 0 & -\frac{\sqrt{105}i}{35} \\ 0 & 0 & 0 & \frac{\sqrt{105}i}{70} & 0 & 0 & 0 & 0 & \frac{\sqrt{105}i}{35} & 0 \end{bmatrix} $									
452	symmetry	$-\sqrt{3}xz$									

continued ...

Table 8

No.	multipole	matrix									
	$\mathbb{Q}_{2,2}^{(a)}(E_{1g})$	0	$\frac{\sqrt{7}}{10}$	0	0	$-\frac{\sqrt{105}}{70}$	0	$\frac{3\sqrt{42}}{140}$	0	0	0
		$\frac{\sqrt{7}}{10}$	0	0	0	0	$\frac{\sqrt{7}}{70}$	0	$\frac{\sqrt{14}}{28}$	0	0
		0	0	0	$-\frac{\sqrt{7}}{10}$	0	0	$\frac{\sqrt{14}}{28}$	0	$\frac{\sqrt{7}}{70}$	0
		0	0	$-\frac{\sqrt{7}}{10}$	0	0	0	0	$\frac{3\sqrt{42}}{140}$	0	$-\frac{\sqrt{105}}{70}$
		$-\frac{\sqrt{105}}{70}$	0	0	0	0	$\frac{\sqrt{105}}{35}$	0	0	0	0
		0	$\frac{\sqrt{7}}{70}$	0	0	$\frac{\sqrt{105}}{35}$	0	$\frac{\sqrt{42}}{35}$	0	0	0
		$\frac{3\sqrt{42}}{140}$	0	$\frac{\sqrt{14}}{28}$	0	0	$\frac{\sqrt{42}}{35}$	0	0	0	0
		0	$\frac{\sqrt{14}}{28}$	0	$\frac{3\sqrt{42}}{140}$	0	0	0	0	$-\frac{\sqrt{42}}{35}$	0
		0	0	$\frac{\sqrt{7}}{70}$	0	0	0	0	$-\frac{\sqrt{42}}{35}$	0	$-\frac{\sqrt{105}}{35}$
		0	0	0	$-\frac{\sqrt{105}}{70}$	0	0	0	0	$-\frac{\sqrt{105}}{35}$	0
453	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$									
	$\mathbb{Q}_{2,1}^{(a)}(E_{2g})$	0	0	$-\frac{\sqrt{7}}{10}$	0	0	0	0	$-\frac{\sqrt{42}}{70}$	0	0
		0	0	0	$-\frac{\sqrt{7}}{10}$	$\frac{\sqrt{35}}{35}$	0	0	0	$-\frac{2\sqrt{7}}{35}$	0
		$-\frac{\sqrt{7}}{10}$	0	0	0	0	$\frac{2\sqrt{7}}{35}$	0	0	0	$-\frac{\sqrt{35}}{35}$
		0	$-\frac{\sqrt{7}}{10}$	0	0	0	0	$\frac{\sqrt{42}}{70}$	0	0	0
		0	$\frac{\sqrt{35}}{35}$	0	0	0	0	$-\frac{\sqrt{210}}{70}$	0	0	0
		0	0	$\frac{2\sqrt{7}}{35}$	0	0	0	0	$-\frac{3\sqrt{42}}{70}$	0	0
		0	0	0	$\frac{\sqrt{42}}{70}$	$-\frac{\sqrt{210}}{70}$	0	0	0	$-\frac{3\sqrt{42}}{70}$	0
		$-\frac{\sqrt{42}}{70}$	0	0	0	0	$-\frac{3\sqrt{42}}{70}$	0	0	0	$-\frac{\sqrt{210}}{70}$
		0	$-\frac{2\sqrt{7}}{35}$	0	0	0	0	$-\frac{3\sqrt{42}}{70}$	0	0	0
		0	0	$-\frac{\sqrt{35}}{35}$	0	0	0	0	$-\frac{\sqrt{210}}{70}$	0	0
454	symmetry	$-\sqrt{3}xy$									

continued ...

Table 8

No.	multipole	matrix									
	$\mathbb{Q}_{2,2}^{(a)}(E_{2g})$	0	0	$-\frac{\sqrt{7}i}{10}$	0	0	0	0	$-\frac{\sqrt{42}i}{70}$	0	0
		0	0	0	$-\frac{\sqrt{7}i}{10}$	$-\frac{\sqrt{35}i}{35}$	0	0	0	$-\frac{2\sqrt{7}i}{35}$	0
		$\frac{\sqrt{7}i}{10}$	0	0	0	0	$-\frac{2\sqrt{7}i}{35}$	0	0	0	$-\frac{\sqrt{35}i}{35}$
		0	$\frac{\sqrt{7}i}{10}$	0	0	0	0	$-\frac{\sqrt{42}i}{70}$	0	0	0
		0	$\frac{\sqrt{35}i}{35}$	0	0	0	0	$-\frac{\sqrt{210}i}{70}$	0	0	0
		0	0	$\frac{2\sqrt{7}i}{35}$	0	0	0	0	$-\frac{3\sqrt{42}i}{70}$	0	0
		0	0	0	$\frac{\sqrt{42}i}{70}$	$\frac{\sqrt{210}i}{70}$	0	0	0	$-\frac{3\sqrt{42}i}{70}$	0
		$\frac{\sqrt{42}i}{70}$	0	0	0	0	$\frac{3\sqrt{42}i}{70}$	0	0	0	$-\frac{\sqrt{210}i}{70}$
		0	$\frac{2\sqrt{7}i}{35}$	0	0	0	0	$\frac{3\sqrt{42}i}{70}$	0	0	0
		0	0	$\frac{\sqrt{35}i}{35}$	0	0	0	0	$\frac{\sqrt{210}i}{70}$	0	0
455	symmetry	$\frac{3x^4}{8} + \frac{3x^2y^2}{4} - 3x^2z^2 + \frac{3y^4}{8} - 3y^2z^2 + z^4$									
	$\mathbb{Q}_4^{(a)}(A_g)$	0	0	0	0	0	$\frac{\sqrt{35}}{35}$	0	0	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{210}}{35}$	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{210}}{35}$	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{35}}{35}$	0	0
		0	0	0	0	$\frac{\sqrt{35}}{70}$	0	0	0	0	0
		$\frac{\sqrt{35}}{35}$	0	0	0	0	$-\frac{3\sqrt{35}}{70}$	0	0	0	0
		0	$-\frac{\sqrt{210}}{35}$	0	0	0	0	$\frac{\sqrt{35}}{35}$	0	0	0
		0	0	$\frac{\sqrt{210}}{35}$	0	0	0	0	$\frac{\sqrt{35}}{35}$	0	0
		0	0	0	$-\frac{\sqrt{35}}{35}$	0	0	0	0	$-\frac{3\sqrt{35}}{70}$	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{35}}{70}$
456	symmetry	$\frac{\sqrt{70}xz(x^2-3y^2)}{4}$									

continued ...

Table 8

No.	multipole	matrix									
	$\mathbb{Q}_4^{(a)}(B_g, 1)$	$ \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{20} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{20} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{30}}{20} & 0 & 0 & 0 & 0 & \frac{\sqrt{5}}{10} & 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{5}}{10} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{30}}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{10} & 0 & 0 & 0 \end{bmatrix} $									
457	symmetry	$ \frac{\sqrt{70}yz(3x^2 - y^2)}{4} $ $ \begin{bmatrix} 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{30}i}{20} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{30}i}{20} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{30}i}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{10} & 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{5}i}{10} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{5}i}{10} & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{30}i}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{10} & 0 & 0 & 0 \end{bmatrix} $									
458	symmetry	$ -\frac{\sqrt{10}yz(3x^2 + 3y^2 - 4z^2)}{4} $									

continued ...

Table 8

No.	multipole	matrix									
	$\mathbb{Q}_{4,1}^{(a)}(E_{1g})$	0	0	0	0	$-\frac{\sqrt{70}i}{140}$	0	$-\frac{\sqrt{7}i}{14}$	0	0	0
		0	0	0	0	0	$\frac{\sqrt{42}i}{28}$	0	$\frac{\sqrt{21}i}{14}$	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{21}i}{14}$	0	$-\frac{\sqrt{42}i}{28}$	0
		0	0	0	0	0	0	0	$\frac{\sqrt{7}i}{14}$	0	$\frac{\sqrt{70}i}{140}$
		$\frac{\sqrt{70}i}{140}$	0	0	0	0	$-\frac{\sqrt{70}i}{70}$	0	0	0	0
		0	$-\frac{\sqrt{42}i}{28}$	0	0	$\frac{\sqrt{70}i}{70}$	0	$\frac{\sqrt{7}i}{14}$	0	0	0
		$\frac{\sqrt{7}i}{14}$	0	$\frac{\sqrt{21}i}{14}$	0	0	$-\frac{\sqrt{7}i}{14}$	0	0	0	0
		0	$-\frac{\sqrt{21}i}{14}$	0	$-\frac{\sqrt{7}i}{14}$	0	0	0	0	$-\frac{\sqrt{7}i}{14}$	0
		0	0	$\frac{\sqrt{42}i}{28}$	0	0	0	0	$\frac{\sqrt{7}i}{14}$	0	$\frac{\sqrt{70}i}{70}$
		0	0	0	$-\frac{\sqrt{70}i}{140}$	0	0	0	0	$-\frac{\sqrt{70}i}{70}$	0
459	symmetry	$\frac{\sqrt{10}xz(3x^2+3y^2-4z^2)}{4}$									
	$\mathbb{Q}_{4,2}^{(a)}(E_{1g})$	0	0	0	0	$\frac{\sqrt{70}}{140}$	0	$-\frac{\sqrt{7}}{14}$	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{42}}{28}$	0	$\frac{\sqrt{21}}{14}$	0	0
		0	0	0	0	0	0	$\frac{\sqrt{21}}{14}$	0	$-\frac{\sqrt{42}}{28}$	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{7}}{14}$	0	$\frac{\sqrt{70}}{140}$
		$\frac{\sqrt{70}}{140}$	0	0	0	0	$-\frac{\sqrt{70}}{70}$	0	0	0	0
		0	$-\frac{\sqrt{42}}{28}$	0	0	$-\frac{\sqrt{70}}{70}$	0	$\frac{\sqrt{7}}{14}$	0	0	0
		$-\frac{\sqrt{7}}{14}$	0	$\frac{\sqrt{21}}{14}$	0	0	$\frac{\sqrt{7}}{14}$	0	0	0	0
		0	$\frac{\sqrt{21}}{14}$	0	$-\frac{\sqrt{7}}{14}$	0	0	0	0	$-\frac{\sqrt{7}}{14}$	0
		0	0	$-\frac{\sqrt{42}}{28}$	0	0	0	0	$-\frac{\sqrt{7}}{14}$	0	$\frac{\sqrt{70}}{70}$
		0	0	0	$\frac{\sqrt{70}}{140}$	0	0	0	0	$\frac{\sqrt{70}}{70}$	0
460	symmetry	$\frac{\sqrt{35}(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$									

*continued ...*

Table 8

No.	multipole	matrix
	$\mathbb{Q}_{4,1}^{(a)}(E_{2g}, 1)$	$ \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{5}}{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 & -\frac{\sqrt{5}}{5} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{5}}{5} & 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 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{5}}{5} & 0 & 0 & 0 & 0 & \frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 \end{bmatrix} $
461	symmetry	$ \frac{\sqrt{35}xy(x-y)(x+y)}{2} $ $ \begin{bmatrix} 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 & -\frac{\sqrt{5}i}{5} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{5}i}{5} & 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 & \frac{\sqrt{5}i}{10} & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{5}i}{5} & 0 & 0 & 0 & 0 & \frac{\sqrt{5}i}{10} & 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									
	$\mathbb{Q}_{4,1}^{(a)}(E_{2g}, 2)$	0	0	0	0	0	0	0	$\frac{\sqrt{14}}{14}$	0	0
		0	0	0	0	$-\frac{\sqrt{105}}{70}$	0	0	0	$-\frac{\sqrt{21}}{14}$	0
		0	0	0	0	0	$\frac{\sqrt{21}}{14}$	0	0	0	$\frac{\sqrt{105}}{70}$
		0	0	0	0	0	0	$-\frac{\sqrt{14}}{14}$	0	0	0
		0	$-\frac{\sqrt{105}}{70}$	0	0	0	0	$\frac{3\sqrt{70}}{140}$	0	0	0
		0	0	$\frac{\sqrt{21}}{14}$	0	0	0	0	$-\frac{\sqrt{14}}{28}$	0	0
		0	0	0	$-\frac{\sqrt{14}}{14}$	$\frac{3\sqrt{70}}{140}$	0	0	0	$-\frac{\sqrt{14}}{28}$	0
		$\frac{\sqrt{14}}{14}$	0	0	0	0	$-\frac{\sqrt{14}}{28}$	0	0	0	$\frac{3\sqrt{70}}{140}$
		0	$-\frac{\sqrt{21}}{14}$	0	0	0	0	$-\frac{\sqrt{14}}{28}$	0	0	0
		0	0	$\frac{\sqrt{105}}{70}$	0	0	0	0	$\frac{3\sqrt{70}}{140}$	0	0
463	symmetry	$\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$									
	$\mathbb{Q}_{4,2}^{(a)}(E_{2g}, 2)$	0	0	0	0	0	0	0	$\frac{\sqrt{14}i}{14}$	0	0
		0	0	0	0	$\frac{\sqrt{105}i}{70}$	0	0	0	$-\frac{\sqrt{21}i}{14}$	0
		0	0	0	0	0	$-\frac{\sqrt{21}i}{14}$	0	0	0	$\frac{\sqrt{105}i}{70}$
		0	0	0	0	0	0	$\frac{\sqrt{14}i}{14}$	0	0	0
		0	$-\frac{\sqrt{105}i}{70}$	0	0	0	0	$\frac{3\sqrt{70}i}{140}$	0	0	0
		0	0	$\frac{\sqrt{21}i}{14}$	0	0	0	0	$-\frac{\sqrt{14}i}{28}$	0	0
		0	0	0	$-\frac{\sqrt{14}i}{14}$	$-\frac{3\sqrt{70}i}{140}$	0	0	0	$-\frac{\sqrt{14}i}{28}$	0
		$-\frac{\sqrt{14}i}{14}$	0	0	0	0	$\frac{\sqrt{14}i}{28}$	0	0	0	$\frac{3\sqrt{70}i}{140}$
		0	$\frac{\sqrt{21}i}{14}$	0	0	0	0	$\frac{\sqrt{14}i}{28}$	0	0	0
		0	0	$-\frac{\sqrt{105}i}{70}$	0	0	0	0	$-\frac{3\sqrt{70}i}{140}$	0	0
464	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$									

continued ...



Table 8

No.	multipole	matrix									
	$\mathbb{Q}_2^{(1,-1;a)}(A_g)$	$ \begin{bmatrix} -\frac{\sqrt{30}}{50} & 0 & 0 & 0 & 0 & -\frac{3\sqrt{30}}{50} & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{30}}{50} & 0 & 0 & 0 & 0 & -\frac{3\sqrt{5}}{50} & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{30}}{50} & 0 & 0 & 0 & 0 & \frac{3\sqrt{5}}{50} & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{30}}{50} & 0 & 0 & 0 & 0 & \frac{3\sqrt{30}}{50} & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{15} & 0 & 0 & 0 & 0 & 0 \\ -\frac{3\sqrt{30}}{50} & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{75} & 0 & 0 & 0 & 0 \\ 0 & -\frac{3\sqrt{5}}{50} & 0 & 0 & 0 & 0 & -\frac{4\sqrt{30}}{75} & 0 & 0 & 0 \\ 0 & 0 & \frac{3\sqrt{5}}{50} & 0 & 0 & 0 & 0 & -\frac{4\sqrt{30}}{75} & 0 & 0 \\ 0 & 0 & 0 & \frac{3\sqrt{30}}{50} & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{75} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{15} \end{bmatrix} $									
465	symmetry	$ \begin{matrix} \sqrt{3}yz \\ \begin{bmatrix} 0 & \frac{\sqrt{30}i}{50} & 0 & 0 & \frac{3\sqrt{2}i}{20} & 0 & \frac{9\sqrt{5}i}{100} & 0 & 0 & 0 \\ -\frac{\sqrt{30}i}{50} & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}i}{100} & 0 & \frac{\sqrt{15}i}{20} & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{30}i}{50} & 0 & 0 & -\frac{\sqrt{15}i}{20} & 0 & \frac{\sqrt{30}i}{100} & 0 \\ 0 & 0 & \frac{\sqrt{30}i}{50} & 0 & 0 & 0 & 0 & -\frac{9\sqrt{5}i}{100} & 0 & -\frac{3\sqrt{2}i}{20} \\ -\frac{3\sqrt{2}i}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{5} & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{30}i}{100} & 0 & 0 & \frac{\sqrt{2}i}{5} & 0 & -\frac{2\sqrt{5}i}{25} & 0 & 0 & 0 \\ -\frac{9\sqrt{5}i}{100} & 0 & \frac{\sqrt{15}i}{20} & 0 & 0 & \frac{2\sqrt{5}i}{25} & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{15}i}{20} & 0 & \frac{9\sqrt{5}i}{100} & 0 & 0 & 0 & 0 & \frac{2\sqrt{5}i}{25} & 0 \\ 0 & 0 & -\frac{\sqrt{30}i}{100} & 0 & 0 & 0 & 0 & -\frac{2\sqrt{5}i}{25} & 0 & \frac{\sqrt{2}i}{5} \\ 0 & 0 & 0 & \frac{3\sqrt{2}i}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{5} & 0 \end{bmatrix} \end{matrix} $									
466	symmetry	$ \begin{matrix} -\sqrt{3}xz \\ \end{matrix} $									

continued ...

Table 8

No.	multipole	matrix									
	$\mathbb{Q}_{2,2}^{(1,-1;a)}(E_{1g})$	0	$\frac{\sqrt{30}}{50}$	0	0	$-\frac{3\sqrt{2}}{20}$	0	$\frac{9\sqrt{5}}{100}$	0	0	0
		$\frac{\sqrt{30}}{50}$	0	0	0	0	$\frac{\sqrt{30}}{100}$	0	$\frac{\sqrt{15}}{20}$	0	0
		0	0	0	$-\frac{\sqrt{30}}{50}$	0	0	$\frac{\sqrt{15}}{20}$	0	$\frac{\sqrt{30}}{100}$	0
		0	0	$-\frac{\sqrt{30}}{50}$	0	0	0	0	$\frac{9\sqrt{5}}{100}$	0	$-\frac{3\sqrt{2}}{20}$
		$-\frac{3\sqrt{2}}{20}$	0	0	0	0	$-\frac{\sqrt{2}}{5}$	0	0	0	0
		0	$\frac{\sqrt{30}}{100}$	0	0	$-\frac{\sqrt{2}}{5}$	0	$-\frac{2\sqrt{5}}{25}$	0	0	0
		$\frac{9\sqrt{5}}{100}$	0	$\frac{\sqrt{15}}{20}$	0	0	$-\frac{2\sqrt{5}}{25}$	0	0	0	0
		0	$\frac{\sqrt{15}}{20}$	0	$\frac{9\sqrt{5}}{100}$	0	0	0	0	$\frac{2\sqrt{5}}{25}$	0
		0	0	$\frac{\sqrt{30}}{100}$	0	0	0	0	$\frac{2\sqrt{5}}{25}$	0	$\frac{\sqrt{2}}{5}$
		0	0	0	$-\frac{3\sqrt{2}}{20}$	0	0	0	0	$\frac{\sqrt{2}}{5}$	0
467	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$									
	$\mathbb{Q}_{2,1}^{(1,-1;a)}(E_{2g})$	0	0	$-\frac{\sqrt{30}}{50}$	0	0	0	0	$-\frac{3\sqrt{5}}{50}$	0	0
		0	0	0	$-\frac{\sqrt{30}}{50}$	$\frac{\sqrt{6}}{10}$	0	0	0	$-\frac{\sqrt{30}}{25}$	0
		$-\frac{\sqrt{30}}{50}$	0	0	0	0	$\frac{\sqrt{30}}{25}$	0	0	0	$-\frac{\sqrt{6}}{10}$
		0	$-\frac{\sqrt{30}}{50}$	0	0	0	0	$\frac{3\sqrt{5}}{50}$	0	0	0
		0	$\frac{\sqrt{6}}{10}$	0	0	0	0	$\frac{1}{5}$	0	0	0
		0	0	$\frac{\sqrt{30}}{25}$	0	0	0	0	$\frac{3\sqrt{5}}{25}$	0	0
		0	0	0	$\frac{3\sqrt{5}}{50}$	$\frac{1}{5}$	0	0	0	$\frac{3\sqrt{5}}{25}$	0
		$-\frac{3\sqrt{5}}{50}$	0	0	0	0	$\frac{3\sqrt{5}}{25}$	0	0	0	$\frac{1}{5}$
		0	$-\frac{\sqrt{30}}{25}$	0	0	0	0	$\frac{3\sqrt{5}}{25}$	0	0	0
		0	0	$-\frac{\sqrt{6}}{10}$	0	0	0	0	$\frac{1}{5}$	0	0
468	symmetry	$-\sqrt{3}xy$									

continued ...

Table 8

No.	multipole	matrix									
	$\mathbb{Q}_{2,2}^{(1,-1;a)}(E_{2g})$	0	0	$-\frac{\sqrt{30}i}{50}$	0	0	0	0	$-\frac{3\sqrt{5}i}{50}$	0	0
		0	0	0	$-\frac{\sqrt{30}i}{50}$	$-\frac{\sqrt{6}i}{10}$	0	0	0	$-\frac{\sqrt{30}i}{25}$	0
		$\frac{\sqrt{30}i}{50}$	0	0	0	0	$-\frac{\sqrt{30}i}{25}$	0	0	0	$-\frac{\sqrt{6}i}{10}$
		0	$\frac{\sqrt{30}i}{50}$	0	0	0	0	$-\frac{3\sqrt{5}i}{50}$	0	0	0
		0	$\frac{\sqrt{6}i}{10}$	0	0	0	0	$\frac{i}{5}$	0	0	0
		0	0	$\frac{\sqrt{30}i}{25}$	0	0	0	0	$\frac{3\sqrt{5}i}{25}$	0	0
		0	0	0	$\frac{3\sqrt{5}i}{50}$	$-\frac{i}{5}$	0	0	0	$\frac{3\sqrt{5}i}{25}$	0
		$\frac{3\sqrt{5}i}{50}$	0	0	0	0	$-\frac{3\sqrt{5}i}{25}$	0	0	0	$\frac{i}{5}$
		0	$\frac{\sqrt{30}i}{25}$	0	0	0	0	$-\frac{3\sqrt{5}i}{25}$	0	0	0
		0	0	$\frac{\sqrt{6}i}{10}$	0	0	0	0	$-\frac{i}{5}$	0	0
469	symmetry	$\frac{3x^4}{8} + \frac{3x^2y^2}{4} - 3x^2z^2 + \frac{3y^4}{8} - 3y^2z^2 + z^4$									
	$\mathbb{Q}_4^{(1,-1;a)}(A_g)$	0	0	0	0	0	$\frac{\sqrt{35}}{70}$	0	0	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{210}}{70}$	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{210}}{70}$	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{35}}{70}$	0	0
		0	0	0	0	$-\frac{\sqrt{35}}{35}$	0	0	0	0	0
		$\frac{\sqrt{35}}{70}$	0	0	0	0	$\frac{3\sqrt{35}}{35}$	0	0	0	0
		0	$-\frac{\sqrt{210}}{70}$	0	0	0	0	$-\frac{2\sqrt{35}}{35}$	0	0	0
		0	0	$\frac{\sqrt{210}}{70}$	0	0	0	0	$-\frac{2\sqrt{35}}{35}$	0	0
		0	0	0	$-\frac{\sqrt{35}}{70}$	0	0	0	0	$\frac{3\sqrt{35}}{35}$	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{35}}{35}$
470	symmetry	$\frac{\sqrt{70}xz(x^2-3y^2)}{4}$									

continued ...

Table 8

No.	multipole	matrix																																																																																																													
	$\mathbb{Q}_4^{(1,-1;a)}(B_g, 1)$	<table><tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td><math>\frac{\sqrt{2}}{8}</math></td><td>0</td></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td><math>-\frac{\sqrt{30}}{40}</math></td></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td><td><math>-\frac{\sqrt{30}}{40}</math></td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td><math>\frac{\sqrt{2}}{8}</math></td><td>0</td><td>0</td><td>0</td><td>0</td></tr><tr><td>0</td><td>0</td><td><math>-\frac{\sqrt{30}}{40}</math></td><td>0</td><td>0</td><td>0</td><td>0</td><td><math>-\frac{\sqrt{5}}{5}</math></td><td>0</td><td>0</td></tr><tr><td>0</td><td>0</td><td>0</td><td><math>\frac{\sqrt{2}}{8}</math></td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td><math>\frac{\sqrt{5}}{5}</math></td></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td><td><math>-\frac{\sqrt{5}}{5}</math></td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr><tr><td><math>\frac{\sqrt{2}}{8}</math></td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr><tr><td>0</td><td><math>-\frac{\sqrt{30}}{40}</math></td><td>0</td><td>0</td><td>0</td><td>0</td><td><math>\frac{\sqrt{5}}{5}</math></td><td>0</td><td>0</td><td>0</td></tr></table>										0	0	0	0	0	0	0	0	$\frac{\sqrt{2}}{8}$	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{30}}{40}$	0	0	0	0	$-\frac{\sqrt{30}}{40}$	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{2}}{8}$	0	0	0	0	0	0	$-\frac{\sqrt{30}}{40}$	0	0	0	0	$-\frac{\sqrt{5}}{5}$	0	0	0	0	0	$\frac{\sqrt{2}}{8}$	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{5}}{5}$	0	0	0	0	$-\frac{\sqrt{5}}{5}$	0	0	0	0	0	$\frac{\sqrt{2}}{8}$	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{30}}{40}$	0	0	0	0	$\frac{\sqrt{5}}{5}$	0	0	0
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471	symmetry	$\frac{\sqrt{70}yz(3x^2-y^2)}{4}$ <table><tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td><math>-\frac{\sqrt{2}i}{8}</math></td><td>0</td></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td><math>\frac{\sqrt{30}i}{40}</math></td></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td><td><math>-\frac{\sqrt{30}i}{40}</math></td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td><math>\frac{\sqrt{2}i}{8}</math></td><td>0</td><td>0</td><td>0</td><td>0</td></tr><tr><td>0</td><td>0</td><td><math>\frac{\sqrt{30}i}{40}</math></td><td>0</td><td>0</td><td>0</td><td>0</td><td><math>\frac{\sqrt{5}i}{5}</math></td><td>0</td><td>0</td></tr><tr><td>0</td><td>0</td><td>0</td><td><math>-\frac{\sqrt{2}i}{8}</math></td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td><math>-\frac{\sqrt{5}i}{5}</math></td></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td><td><math>-\frac{\sqrt{5}i}{5}</math></td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr><tr><td><math>\frac{\sqrt{2}i}{8}</math></td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr><tr><td>0</td><td><math>-\frac{\sqrt{30}i}{40}</math></td><td>0</td><td>0</td><td>0</td><td>0</td><td><math>\frac{\sqrt{5}i}{5}</math></td><td>0</td><td>0</td><td>0</td></tr></table>										0	0	0	0	0	0	0	0	$-\frac{\sqrt{2}i}{8}$	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{30}i}{40}$	0	0	0	0	$-\frac{\sqrt{30}i}{40}$	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{2}i}{8}$	0	0	0	0	0	0	$\frac{\sqrt{30}i}{40}$	0	0	0	0	$\frac{\sqrt{5}i}{5}$	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	$-\frac{\sqrt{5}i}{5}$	0	0	0	0	$-\frac{\sqrt{5}i}{5}$	0	0	0	0	0	$\frac{\sqrt{2}i}{8}$	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{30}i}{40}$	0	0	0	0	$\frac{\sqrt{5}i}{5}$	0	0	0
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$\frac{\sqrt{2}i}{8}$	0	0	0	0	0	0	0	0	0																																																																																																						
0	$-\frac{\sqrt{30}i}{40}$	0	0	0	0	$\frac{\sqrt{5}i}{5}$	0	0	0																																																																																																						
472	symmetry	$-\frac{\sqrt{10}yz(3x^2+3y^2-4z^2)}{4}$																																																																																																													

continued ...

Table 8

No.	multipole	matrix									
	$\mathbb{Q}_{4,1}^{(1,-1;a)}(E_{1g})$	0	0	0	0	$-\frac{\sqrt{70}i}{280}$	0	$-\frac{\sqrt{7}i}{28}$	0	0	0
		0	0	0	0	0	$\frac{\sqrt{42}i}{56}$	0	$\frac{\sqrt{21}i}{28}$	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{21}i}{28}$	0	$-\frac{\sqrt{42}i}{56}$	0
		0	0	0	0	0	0	0	$\frac{\sqrt{7}i}{28}$	0	$\frac{\sqrt{70}i}{280}$
		$\frac{\sqrt{70}i}{280}$	0	0	0	0	$\frac{\sqrt{70}i}{35}$	0	0	0	0
		0	$-\frac{\sqrt{42}i}{56}$	0	0	$-\frac{\sqrt{70}i}{35}$	0	$-\frac{\sqrt{7}i}{7}$	0	0	0
		$\frac{\sqrt{7}i}{28}$	0	$\frac{\sqrt{21}i}{28}$	0	0	$\frac{\sqrt{7}i}{7}$	0	0	0	0
		0	$-\frac{\sqrt{21}i}{28}$	0	$-\frac{\sqrt{7}i}{28}$	0	0	0	0	$\frac{\sqrt{7}i}{7}$	0
		0	0	$\frac{\sqrt{42}i}{56}$	0	0	0	0	$-\frac{\sqrt{7}i}{7}$	0	$-\frac{\sqrt{70}i}{35}$
		0	0	0	$-\frac{\sqrt{70}i}{280}$	0	0	0	0	$\frac{\sqrt{70}i}{35}$	0
473	symmetry	$\frac{\sqrt{10}xz(3x^2+3y^2-4z^2)}{4}$									
	$\mathbb{Q}_{4,2}^{(1,-1;a)}(E_{1g})$	0	0	0	0	$\frac{\sqrt{70}}{280}$	0	$-\frac{\sqrt{7}}{28}$	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{42}}{56}$	0	$\frac{\sqrt{21}}{28}$	0	0
		0	0	0	0	0	0	$\frac{\sqrt{21}}{28}$	0	$-\frac{\sqrt{42}}{56}$	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{7}}{28}$	0	$\frac{\sqrt{70}}{280}$
		$\frac{\sqrt{70}}{280}$	0	0	0	0	$\frac{\sqrt{70}}{35}$	0	0	0	0
		0	$-\frac{\sqrt{42}}{56}$	0	0	$\frac{\sqrt{70}}{35}$	0	$-\frac{\sqrt{7}}{7}$	0	0	0
		$-\frac{\sqrt{7}}{28}$	0	$\frac{\sqrt{21}}{28}$	0	0	$-\frac{\sqrt{7}}{7}$	0	0	0	0
		0	$\frac{\sqrt{21}}{28}$	0	$-\frac{\sqrt{7}}{28}$	0	0	0	0	$\frac{\sqrt{7}}{7}$	0
		0	0	$-\frac{\sqrt{42}}{56}$	0	0	0	0	$\frac{\sqrt{7}}{7}$	0	$-\frac{\sqrt{70}}{35}$
		0	0	0	$\frac{\sqrt{70}}{280}$	0	0	0	0	$-\frac{\sqrt{70}}{35}$	0
474	symmetry	$\frac{\sqrt{35}(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$									

continued ...

Table 8

No.	multipole	matrix
	$\mathbb{Q}_{4,1}^{(1,-1;a)}(E_{2g}, 1)$	$ \begin{bmatrix} 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 & -\frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{5} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{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 & -\frac{\sqrt{5}}{5} & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{5} & 0 & 0 & 0 & 0 \end{bmatrix} $
475	symmetry	$ \frac{\sqrt{35xy(x-y)(x+y)}}{2} $ $ \begin{bmatrix} 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 & -\frac{\sqrt{5}i}{10} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{5}i}{10} & 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 & -\frac{\sqrt{5}i}{5} & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{5}i}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{5} & 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									
	$\mathbb{Q}_{4,1}^{(1,-1;a)}(E_{2g}, 2)$	0	0	0	0	0	0	0	$\frac{\sqrt{14}}{28}$	0	0
		0	0	0	0	$-\frac{\sqrt{105}}{140}$	0	0	0	$-\frac{\sqrt{21}}{28}$	0
		0	0	0	0	0	$\frac{\sqrt{21}}{28}$	0	0	0	$\frac{\sqrt{105}}{140}$
		0	0	0	0	0	0	$-\frac{\sqrt{14}}{28}$	0	0	0
		0	$-\frac{\sqrt{105}}{140}$	0	0	0	0	$-\frac{3\sqrt{70}}{70}$	0	0	0
		0	0	$\frac{\sqrt{21}}{28}$	0	0	0	0	$\frac{\sqrt{14}}{14}$	0	0
		0	0	0	$-\frac{\sqrt{14}}{28}$	$-\frac{3\sqrt{70}}{70}$	0	0	0	$\frac{\sqrt{14}}{14}$	0
		$\frac{\sqrt{14}}{28}$	0	0	0	0	$\frac{\sqrt{14}}{14}$	0	0	0	$-\frac{3\sqrt{70}}{70}$
		0	$-\frac{\sqrt{21}}{28}$	0	0	0	0	$\frac{\sqrt{14}}{14}$	0	0	0
		0	0	$\frac{\sqrt{105}}{140}$	0	0	0	0	$-\frac{3\sqrt{70}}{70}$	0	0
477	symmetry	$\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$									
	$\mathbb{Q}_{4,2}^{(1,-1;a)}(E_{2g}, 2)$	0	0	0	0	0	0	0	$\frac{\sqrt{14}i}{28}$	0	0
		0	0	0	0	$\frac{\sqrt{105}i}{140}$	0	0	0	$-\frac{\sqrt{21}i}{28}$	0
		0	0	0	0	0	$-\frac{\sqrt{21}i}{28}$	0	0	0	$\frac{\sqrt{105}i}{140}$
		0	0	0	0	0	0	$\frac{\sqrt{14}i}{28}$	0	0	0
		0	$-\frac{\sqrt{105}i}{140}$	0	0	0	0	$-\frac{3\sqrt{70}i}{70}$	0	0	0
		0	0	$\frac{\sqrt{21}i}{28}$	0	0	0	0	$\frac{\sqrt{14}i}{14}$	0	0
		0	0	0	$-\frac{\sqrt{14}i}{28}$	$\frac{3\sqrt{70}i}{70}$	0	0	0	$\frac{\sqrt{14}i}{14}$	0
		$-\frac{\sqrt{14}i}{28}$	0	0	0	0	$-\frac{\sqrt{14}i}{14}$	0	0	0	$-\frac{3\sqrt{70}i}{70}$
		0	$\frac{\sqrt{21}i}{28}$	0	0	0	0	$-\frac{\sqrt{14}i}{14}$	0	0	0
		0	0	$-\frac{\sqrt{105}i}{140}$	0	0	0	0	$\frac{3\sqrt{70}i}{70}$	0	0
478	symmetry	1									

*continued ...*

Table 8

No.	multipole	matrix									
	$\mathbb{Q}_0^{(1,1;a)}(A_g)$	$ \begin{bmatrix} -\frac{\sqrt{15}}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{15}}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{15}}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{15}}{10} & 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 & \frac{\sqrt{15}}{15} & 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 & \frac{\sqrt{15}}{15} & 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 & \frac{\sqrt{15}}{15} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{15} \end{bmatrix} $									
479	symmetry	$ -\frac{x^2}{2} - \frac{y^2}{2} + z^2 $									
	$\mathbb{Q}_2^{(1,1;a)}(A_g)$	$ \begin{bmatrix} \frac{\sqrt{105}}{25} & 0 & 0 & 0 & 0 & -\frac{4\sqrt{105}}{175} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{105}}{25} & 0 & 0 & 0 & 0 & -\frac{2\sqrt{70}}{175} & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{105}}{25} & 0 & 0 & 0 & 0 & \frac{2\sqrt{70}}{175} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{105}}{25} & 0 & 0 & 0 & 0 & \frac{4\sqrt{105}}{175} & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{105}}{70} & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{4\sqrt{105}}{175} & 0 & 0 & 0 & 0 & \frac{\sqrt{105}}{350} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{2\sqrt{70}}{175} & 0 & 0 & 0 & 0 & \frac{2\sqrt{105}}{175} & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{2\sqrt{70}}{175} & 0 & 0 & 0 & 0 & \frac{2\sqrt{105}}{175} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{4\sqrt{105}}{175} & 0 & 0 & 0 & 0 & \frac{\sqrt{105}}{350} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}}{70} \end{bmatrix} $									
480	symmetry	$ \sqrt{3}yz $									

continued ...



Table 8

No.	multipole	matrix									
	$\mathbb{Q}_{2,1}^{(1,1;a)}(E_{1g})$	0	$-\frac{\sqrt{105}i}{25}$	0	0	$\frac{2\sqrt{7}i}{35}$	0	$\frac{3\sqrt{70}i}{175}$	0	0	0
		$\frac{\sqrt{105}i}{25}$	0	0	0	0	$-\frac{2\sqrt{105}i}{525}$	0	$\frac{\sqrt{210}i}{105}$	0	0
		0	0	0	$\frac{\sqrt{105}i}{25}$	0	0	$-\frac{\sqrt{210}i}{105}$	0	$\frac{2\sqrt{105}i}{525}$	0
		0	0	$-\frac{\sqrt{105}i}{25}$	0	0	0	0	$-\frac{3\sqrt{70}i}{175}$	0	$-\frac{2\sqrt{7}i}{35}$
		$-\frac{2\sqrt{7}i}{35}$	0	0	0	0	$\frac{3\sqrt{7}i}{70}$	0	0	0	0
		0	$\frac{2\sqrt{105}i}{525}$	0	0	$-\frac{3\sqrt{7}i}{70}$	0	$\frac{3\sqrt{70}i}{350}$	0	0	0
		$-\frac{3\sqrt{70}i}{175}$	0	$\frac{\sqrt{210}i}{105}$	0	0	$-\frac{3\sqrt{70}i}{350}$	0	0	0	0
		0	$-\frac{\sqrt{210}i}{105}$	0	$\frac{3\sqrt{70}i}{175}$	0	0	0	0	$-\frac{3\sqrt{70}i}{350}$	0
		0	0	$-\frac{2\sqrt{105}i}{525}$	0	0	0	0	$\frac{3\sqrt{70}i}{350}$	0	$-\frac{3\sqrt{7}i}{70}$
		0	0	0	$\frac{2\sqrt{7}i}{35}$	0	0	0	0	$\frac{3\sqrt{7}i}{70}$	0
481	symmetry	$-\sqrt{3}xz$									
	$\mathbb{Q}_{2,2}^{(1,1;a)}(E_{1g})$	0	$-\frac{\sqrt{105}}{25}$	0	0	$-\frac{2\sqrt{7}}{35}$	0	$\frac{3\sqrt{70}}{175}$	0	0	0
		$-\frac{\sqrt{105}}{25}$	0	0	0	0	$\frac{2\sqrt{105}}{525}$	0	$\frac{\sqrt{210}}{105}$	0	0
		0	0	0	$\frac{\sqrt{105}}{25}$	0	0	$\frac{\sqrt{210}}{105}$	0	$\frac{2\sqrt{105}}{525}$	0
		0	0	$\frac{\sqrt{105}}{25}$	0	0	0	0	$\frac{3\sqrt{70}}{175}$	0	$-\frac{2\sqrt{7}}{35}$
		$-\frac{2\sqrt{7}}{35}$	0	0	0	0	$\frac{3\sqrt{7}}{70}$	0	0	0	0
		0	$\frac{2\sqrt{105}}{525}$	0	0	$\frac{3\sqrt{7}}{70}$	0	$\frac{3\sqrt{70}}{350}$	0	0	0
		$\frac{3\sqrt{70}}{175}$	0	$\frac{\sqrt{210}}{105}$	0	0	$\frac{3\sqrt{70}}{350}$	0	0	0	0
		0	$\frac{\sqrt{210}}{105}$	0	$\frac{3\sqrt{70}}{175}$	0	0	0	0	$-\frac{3\sqrt{70}}{350}$	0
		0	0	$\frac{2\sqrt{105}}{525}$	0	0	0	0	$-\frac{3\sqrt{70}}{350}$	0	$-\frac{3\sqrt{7}}{70}$
		0	0	0	$-\frac{2\sqrt{7}}{35}$	0	0	0	0	$-\frac{3\sqrt{7}}{70}$	0
482	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$									

continued ...

Table 8

No.	multipole	matrix									
	$\mathbb{Q}_{2,1}^{(1,1;a)}(E_{2g})$	0	0	$\frac{\sqrt{105}}{25}$	0	0	0	0	$-\frac{2\sqrt{70}}{175}$	0	0
		0	0	0	$\frac{\sqrt{105}}{25}$	$\frac{4\sqrt{21}}{105}$	0	0	0	$-\frac{8\sqrt{105}}{525}$	0
		$\frac{\sqrt{105}}{25}$	0	0	0	0	$\frac{8\sqrt{105}}{525}$	0	0	0	$-\frac{4\sqrt{21}}{105}$
		0	$\frac{\sqrt{105}}{25}$	0	0	0	0	$\frac{2\sqrt{70}}{175}$	0	0	0
		0	$\frac{4\sqrt{21}}{105}$	0	0	0	0	$-\frac{3\sqrt{14}}{140}$	0	0	0
		0	0	$\frac{8\sqrt{105}}{525}$	0	0	0	0	$-\frac{9\sqrt{70}}{700}$	0	0
		0	0	0	$\frac{2\sqrt{70}}{175}$	$-\frac{3\sqrt{14}}{140}$	0	0	0	$-\frac{9\sqrt{70}}{700}$	0
		$-\frac{2\sqrt{70}}{175}$	0	0	0	0	$-\frac{9\sqrt{70}}{700}$	0	0	0	$-\frac{3\sqrt{14}}{140}$
		0	$-\frac{8\sqrt{105}}{525}$	0	0	0	0	$-\frac{9\sqrt{70}}{700}$	0	0	0
		0	0	$-\frac{4\sqrt{21}}{105}$	0	0	0	0	$-\frac{3\sqrt{14}}{140}$	0	0
483	symmetry	$-\sqrt{3}xy$									
	$\mathbb{Q}_{2,2}^{(1,1;a)}(E_{2g})$	0	0	$\frac{\sqrt{105}i}{25}$	0	0	0	0	$-\frac{2\sqrt{70}i}{175}$	0	0
		0	0	0	$\frac{\sqrt{105}i}{25}$	$-\frac{4\sqrt{21}i}{105}$	0	0	0	$-\frac{8\sqrt{105}i}{525}$	0
		$-\frac{\sqrt{105}i}{25}$	0	0	0	0	$-\frac{8\sqrt{105}i}{525}$	0	0	0	$-\frac{4\sqrt{21}i}{105}$
		0	$-\frac{\sqrt{105}i}{25}$	0	0	0	0	$-\frac{2\sqrt{70}i}{175}$	0	0	0
		0	$\frac{4\sqrt{21}i}{105}$	0	0	0	0	$-\frac{3\sqrt{14}i}{140}$	0	0	0
		0	0	$\frac{8\sqrt{105}i}{525}$	0	0	0	0	$-\frac{9\sqrt{70}i}{700}$	0	0
		0	0	0	$\frac{2\sqrt{70}i}{175}$	$\frac{3\sqrt{14}i}{140}$	0	0	0	$-\frac{9\sqrt{70}i}{700}$	0
		$\frac{2\sqrt{70}i}{175}$	0	0	0	0	$\frac{9\sqrt{70}i}{700}$	0	0	0	$-\frac{3\sqrt{14}i}{140}$
		0	$\frac{8\sqrt{105}i}{525}$	0	0	0	0	$\frac{9\sqrt{70}i}{700}$	0	0	0
		0	0	$\frac{4\sqrt{21}i}{105}$	0	0	0	0	$\frac{3\sqrt{14}i}{140}$	0	0
484	symmetry	$z$									

*continued ...*

Table 8

No.	multipole	matrix									
	$\mathbb{G}_1^{(1,0;a)}(A_g)$	0	0	0	0	0	$-\frac{\sqrt{10}i}{10}$	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	0	0	0	0	0	0	$-\frac{\sqrt{10}i}{10}$	0
		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	$\frac{\sqrt{15}i}{10}$	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	$\frac{\sqrt{10}i}{10}$	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0
485	symmetry	$x$									
	$\mathbb{G}_{1,1}^{(1,0;a)}(E_{1g})$	0	0	0	0	$\frac{\sqrt{2}i}{4}$	0	$-\frac{\sqrt{5}i}{20}$	0	0	0
		0	0	0	0	0	$\frac{\sqrt{30}i}{20}$	0	$-\frac{\sqrt{15}i}{20}$	0	0
		0	0	0	0	0	0	$\frac{\sqrt{15}i}{20}$	0	$-\frac{\sqrt{30}i}{20}$	0
		0	0	0	0	0	0	0	$\frac{\sqrt{5}i}{20}$	0	$-\frac{\sqrt{2}i}{4}$
		$-\frac{\sqrt{2}i}{4}$	0	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{30}i}{20}$	0	0	0	0	0	0	0	0
		$\frac{\sqrt{5}i}{20}$	0	$-\frac{\sqrt{15}i}{20}$	0	0	0	0	0	0	0
		0	$\frac{\sqrt{15}i}{20}$	0	$-\frac{\sqrt{5}i}{20}$	0	0	0	0	0	0
		0	0	$\frac{\sqrt{30}i}{20}$	0	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{2}i}{4}$	0	0	0	0	0	0
486	symmetry	$y$									

continued ...

Table 8

No.	multipole	matrix
	$\mathbb{G}_{1,2}^{(1,0;a)}(E_{1g})$	$ \begin{bmatrix} 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 & -\frac{\sqrt{5}}{20} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{20} & 0 & -\frac{\sqrt{15}}{20} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{20} & 0 & -\frac{\sqrt{30}}{20} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{20} & 0 & -\frac{\sqrt{2}}{4} \\ -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{30}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{5}}{20} & 0 & -\frac{\sqrt{15}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{15}}{20} & 0 & -\frac{\sqrt{5}}{20} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{30}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} $
487	symmetry	$ -\frac{z(3x^2+3y^2-2z^2)}{2} $ $ \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{10} & 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 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{10} & 0 \\ 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{10}i}{10} & 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{15}i}{10} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} $
488	symmetry	$ \frac{\sqrt{10}y(3x^2-y^2)}{4} $

continued ...

Table 8

No.	multipole	matrix
	$\mathbb{G}_3^{(1,0;a)}(B_g, 1)$	$ \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{8} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{8} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{8} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{8} & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{10}}{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 & 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{10}}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} $
489	symmetry	$ \begin{array}{c} \frac{\sqrt{10}x(x^2-3y^2)}{4} \\ \left[ \begin{array}{cccccccccc} 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{10}i}{8} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{10}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{10}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 & 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{10}i}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{array} \right] \end{array} $
490	symmetry	$ -\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4} $

continued ...

Table 8

No.	multipole	matrix									
	$\mathbb{G}_{3,1}^{(1,0;a)}(E_{1g})$	0	0	0	0	$-\frac{\sqrt{2}i}{8}$	0	$\frac{3\sqrt{5}i}{20}$	0	0	0
		0	0	0	0	0	$\frac{7\sqrt{30}i}{120}$	0	$-\frac{\sqrt{15}i}{60}$	0	0
		0	0	0	0	0	0	$\frac{\sqrt{15}i}{60}$	0	$-\frac{7\sqrt{30}i}{120}$	0
		0	0	0	0	0	0	0	$-\frac{3\sqrt{5}i}{20}$	0	$\frac{\sqrt{2}i}{8}$
		$\frac{\sqrt{2}i}{8}$	0	0	0	0	0	0	0	0	0
		0	$-\frac{7\sqrt{30}i}{120}$	0	0	0	0	0	0	0	0
		$-\frac{3\sqrt{5}i}{20}$	0	$-\frac{\sqrt{15}i}{60}$	0	0	0	0	0	0	0
		0	$\frac{\sqrt{15}i}{60}$	0	$\frac{3\sqrt{5}i}{20}$	0	0	0	0	0	0
		0	0	$\frac{7\sqrt{30}i}{120}$	0	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{2}i}{8}$	0	0	0	0	0	0
491	symmetry	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$									
	$\mathbb{G}_{3,2}^{(1,0;a)}(E_{1g})$	0	0	0	0	$\frac{\sqrt{2}}{8}$	0	$\frac{3\sqrt{5}}{20}$	0	0	0
		0	0	0	0	0	$-\frac{7\sqrt{30}}{120}$	0	$-\frac{\sqrt{15}}{60}$	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{15}}{60}$	0	$-\frac{7\sqrt{30}}{120}$	0
		0	0	0	0	0	0	0	$\frac{3\sqrt{5}}{20}$	0	$\frac{\sqrt{2}}{8}$
		$\frac{\sqrt{2}}{8}$	0	0	0	0	0	0	0	0	0
		0	$-\frac{7\sqrt{30}}{120}$	0	0	0	0	0	0	0	0
		$\frac{3\sqrt{5}}{20}$	0	$-\frac{\sqrt{15}}{60}$	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{15}}{60}$	0	$\frac{3\sqrt{5}}{20}$	0	0	0	0	0	0
		0	0	$-\frac{7\sqrt{30}}{120}$	0	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{2}}{8}$	0	0	0	0	0	0
492	symmetry	$\sqrt{15}xyz$									

continued ...

Table 8

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

continued ...

Table 8

No.	multipole	matrix									
	$\mathbb{T}_2^{(1,0;a)}(A_g)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}i}{14} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}i}{14} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}i}{14} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}i}{14} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{42}i}{14} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{7}i}{14} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{7}i}{14} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{42}i}{14} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$									
495	symmetry	$\begin{matrix} \sqrt{3}yz \\ \mathbb{T}_{2,1}^{(1,0;a)}(E_{1g}) \end{matrix} \begin{bmatrix} 0 & 0 & 0 & 0 & \frac{\sqrt{70}}{28} & 0 & \frac{3\sqrt{7}}{28} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}}{84} & 0 & \frac{5\sqrt{21}}{84} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{5\sqrt{21}}{84} & 0 & \frac{\sqrt{42}}{84} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{3\sqrt{7}}{28} & 0 & -\frac{\sqrt{70}}{28} \\ \frac{\sqrt{70}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{42}}{84} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{3\sqrt{7}}{28} & 0 & -\frac{5\sqrt{21}}{84} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{5\sqrt{21}}{84} & 0 & -\frac{3\sqrt{7}}{28} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{42}}{84} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{70}}{28} & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$									
496	symmetry	$-\sqrt{3}xz$									

*continued ...*



Table 8

No.	multipole	matrix									
	$\mathbb{T}_{2,2}^{(1,0;a)}(E_{1g})$	0	0	0	0	$\frac{\sqrt{70}i}{28}$	0	$-\frac{3\sqrt{7}i}{28}$	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{42}i}{84}$	0	$-\frac{5\sqrt{21}i}{84}$	0	0
		0	0	0	0	0	0	$-\frac{5\sqrt{21}i}{84}$	0	$-\frac{\sqrt{42}i}{84}$	0
		0	0	0	0	0	0	0	$-\frac{3\sqrt{7}i}{28}$	0	$\frac{\sqrt{70}i}{28}$
		$-\frac{\sqrt{70}i}{28}$	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{42}i}{84}$	0	0	0	0	0	0	0	0
		$\frac{3\sqrt{7}i}{28}$	0	$\frac{5\sqrt{21}i}{84}$	0	0	0	0	0	0	0
		0	$\frac{5\sqrt{21}i}{84}$	0	$\frac{3\sqrt{7}i}{28}$	0	0	0	0	0	0
		0	0	$\frac{\sqrt{42}i}{84}$	0	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{70}i}{28}$	0	0	0	0	0	0
497	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$									
	$\mathbb{T}_{2,1}^{(1,0;a)}(E_{2g})$	0	0	0	0	0	0	0	$\frac{\sqrt{7}i}{14}$	0	0
		0	0	0	0	$-\frac{\sqrt{210}i}{42}$	0	0	0	$\frac{\sqrt{42}i}{21}$	0
		0	0	0	0	0	$-\frac{\sqrt{42}i}{21}$	0	0	0	$\frac{\sqrt{210}i}{42}$
		0	0	0	0	0	0	$-\frac{\sqrt{7}i}{14}$	0	0	0
		0	$\frac{\sqrt{210}i}{42}$	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	$\frac{\sqrt{7}i}{14}$	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	$-\frac{\sqrt{210}i}{42}$	0	0	0	0	0	0	0
498	symmetry	$-\sqrt{3}xy$									

continued ...

Table 8

No.	multipole	matrix									
	$\mathbb{T}_{2,2}^{(1,0;a)}(E_{2g})$	0	0	0	0	0	0	0	$-\frac{\sqrt{7}}{14}$	0	0
		0	0	0	0	$-\frac{\sqrt{210}}{42}$	0	0	0	$-\frac{\sqrt{42}}{21}$	0
		0	0	0	0	0	$-\frac{\sqrt{42}}{21}$	0	0	0	$-\frac{\sqrt{210}}{42}$
		0	0	0	0	0	0	$-\frac{\sqrt{7}}{14}$	0	0	0
		0	$-\frac{\sqrt{210}}{42}$	0	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{42}}{21}$	0	0	0	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	$-\frac{\sqrt{42}}{21}$	0	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{210}}{42}$	0	0	0	0	0	0	0
499	symmetry	$\frac{3x^4}{8} + \frac{3x^2y^2}{4} - 3x^2z^2 + \frac{3y^4}{8} - 3y^2z^2 + z^4$									
	$\mathbb{T}_4^{(1,0;a)}(A_g)$	0	0	0	0	0	$-\frac{\sqrt{7}i}{14}$	0	0	0	0
		0	0	0	0	0	0	$\frac{\sqrt{42}i}{14}$	0	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{42}i}{14}$	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	$-\frac{\sqrt{42}i}{14}$	0	0	0	0	0	0	0	0
		0	0	$\frac{\sqrt{42}i}{14}$	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	0	0
500	symmetry	$\frac{\sqrt{70}xz(x^2-3y^2)}{4}$									

continued ...

Table 8

No.	multipole	matrix									
	$\mathbb{T}_4^{(1,0;a)}(B_g, 1)$	0	0	0	0	0	0	0	0	$-\frac{\sqrt{10}i}{8}$	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{6}i}{8}$
		0	0	0	0	$\frac{\sqrt{6}i}{8}$	0	0	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{10}i}{8}$	0	0	0	0
		0	0	$-\frac{\sqrt{6}i}{8}$	0	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{10}i}{8}$	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
		$\frac{\sqrt{10}i}{8}$	0	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{6}i}{8}$	0	0	0	0	0	0	0	0
501	symmetry	$\frac{\sqrt{70}yz(3x^2-y^2)}{4}$									
	$\mathbb{T}_4^{(1,0;a)}(B_g, 2)$	0	0	0	0	0	0	0	0	$-\frac{\sqrt{10}}{8}$	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{6}}{8}$
		0	0	0	0	$-\frac{\sqrt{6}}{8}$	0	0	0	0	0
		0	0	0	0	0	$\frac{\sqrt{10}}{8}$	0	0	0	0
		0	0	$-\frac{\sqrt{6}}{8}$	0	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{10}}{8}$	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
		$-\frac{\sqrt{10}}{8}$	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{6}}{8}$	0	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									
	$\mathbb{T}_{4,1}^{(1,0;a)}(E_{1g})$	0	0	0	0	$-\frac{\sqrt{14}}{56}$	0	$-\frac{\sqrt{35}}{28}$	0	0	0
		0	0	0	0	0	$\frac{\sqrt{210}}{56}$	0	$\frac{\sqrt{105}}{28}$	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{105}}{28}$	0	$-\frac{\sqrt{210}}{56}$	0
		0	0	0	0	0	0	0	$\frac{\sqrt{35}}{28}$	0	$\frac{\sqrt{14}}{56}$
		$-\frac{\sqrt{14}}{56}$	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{210}}{56}$	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{35}}{28}$	0	$-\frac{\sqrt{105}}{28}$	0	0	0	0	0	0	0
		0	$\frac{\sqrt{105}}{28}$	0	$\frac{\sqrt{35}}{28}$	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{210}}{56}$	0	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{14}}{56}$	0	0	0	0	0	0
503	symmetry	$\frac{\sqrt{10xz(3x^2+3y^2-4z^2)}}{4}$									
	$\mathbb{T}_{4,2}^{(1,0;a)}(E_{1g})$	0	0	0	0	$-\frac{\sqrt{14}i}{56}$	0	$\frac{\sqrt{35}i}{28}$	0	0	0
		0	0	0	0	0	$\frac{\sqrt{210}i}{56}$	0	$-\frac{\sqrt{105}i}{28}$	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{105}i}{28}$	0	$\frac{\sqrt{210}i}{56}$	0
		0	0	0	0	0	0	0	$\frac{\sqrt{35}i}{28}$	0	$-\frac{\sqrt{14}i}{56}$
		$\frac{\sqrt{14}i}{56}$	0	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{210}i}{56}$	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{35}i}{28}$	0	$\frac{\sqrt{105}i}{28}$	0	0	0	0	0	0	0
		0	$\frac{\sqrt{105}i}{28}$	0	$-\frac{\sqrt{35}i}{28}$	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{210}i}{56}$	0	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{14}i}{56}$	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
	$\mathbb{T}_{4,1}^{(1,0;a)}(E_{2g}, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{i}{2} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{i}{2} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{i}{2} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{i}{2} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
505	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{1}{2} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{1}{2} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{1}{2} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{1}{2} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
506	symmetry	$-\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$

continued ...

Table 8

No.	multipole	matrix									
	$\mathbb{T}_{4,1}^{(1,0;a)}(E_{2g}, 2)$	0	0	0	0	0	0	0	$-\frac{\sqrt{70}i}{28}$	0	0
		0	0	0	0	$\frac{\sqrt{21}i}{28}$	0	0	0	$\frac{\sqrt{105}i}{28}$	0
		0	0	0	0	0	$-\frac{\sqrt{105}i}{28}$	0	0	0	$-\frac{\sqrt{21}i}{28}$
		0	0	0	0	0	0	$\frac{\sqrt{70}i}{28}$	0	0	0
		0	$-\frac{\sqrt{21}i}{28}$	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	$-\frac{\sqrt{70}i}{28}$	0	0	0	0	0	0
		$\frac{\sqrt{70}i}{28}$	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	$\frac{\sqrt{21}i}{28}$	0	0	0	0	0	0	0
507	symmetry	$\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$									
	$\mathbb{T}_{4,2}^{(1,0;a)}(E_{2g}, 2)$	0	0	0	0	0	0	0	$\frac{\sqrt{70}}{28}$	0	0
		0	0	0	0	$\frac{\sqrt{21}}{28}$	0	0	0	$-\frac{\sqrt{105}}{28}$	0
		0	0	0	0	0	$-\frac{\sqrt{105}}{28}$	0	0	0	$\frac{\sqrt{21}}{28}$
		0	0	0	0	0	0	$\frac{\sqrt{70}}{28}$	0	0	0
		0	$\frac{\sqrt{21}}{28}$	0	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{105}}{28}$	0	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{70}}{28}$	0	0	0	0	0	0
		$\frac{\sqrt{70}}{28}$	0	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{105}}{28}$	0	0	0	0	0	0	0	0
		0	0	$\frac{\sqrt{21}}{28}$	0	0	0	0	0	0	0
508	symmetry	$z$									

continued ...

Table 8

No.	multipole	matrix									
	$\mathbb{M}_1^{(a)}(A_g)$	$ \begin{bmatrix} \frac{9\sqrt{5}}{50} & 0 & 0 & 0 & 0 & \frac{\sqrt{5}}{25} & 0 & 0 & 0 & 0 \\ 0 & \frac{3\sqrt{5}}{50} & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{50} & 0 & 0 & 0 \\ 0 & 0 & -\frac{3\sqrt{5}}{50} & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{50} & 0 & 0 \\ 0 & 0 & 0 & -\frac{9\sqrt{5}}{50} & 0 & 0 & 0 & 0 & \frac{\sqrt{5}}{25} & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{5}}{5} & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{5}}{25} & 0 & 0 & 0 & 0 & \frac{3\sqrt{5}}{25} & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{30}}{50} & 0 & 0 & 0 & 0 & \frac{\sqrt{5}}{25} & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{30}}{50} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{25} & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{5}}{25} & 0 & 0 & 0 & 0 & -\frac{3\sqrt{5}}{25} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{5} \end{bmatrix} $									
509	symmetry	$ \begin{matrix} & & & & & x \\ \mathbb{M}_{1,1}^{(a)}(E_{1g}) & \begin{bmatrix} 0 & \frac{3\sqrt{15}}{50} & 0 & 0 & -\frac{1}{10} & 0 & \frac{\sqrt{10}}{100} & 0 & 0 & 0 \\ \frac{3\sqrt{15}}{50} & 0 & \frac{3\sqrt{5}}{25} & 0 & 0 & -\frac{\sqrt{15}}{50} & 0 & \frac{\sqrt{30}}{100} & 0 & 0 \\ 0 & \frac{3\sqrt{5}}{25} & 0 & \frac{3\sqrt{15}}{50} & 0 & 0 & -\frac{\sqrt{30}}{100} & 0 & \frac{\sqrt{15}}{50} & 0 \\ 0 & 0 & \frac{3\sqrt{15}}{50} & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}}{100} & 0 & \frac{1}{10} \\ -\frac{1}{10} & 0 & 0 & 0 & 0 & \frac{1}{5} & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{15}}{50} & 0 & 0 & \frac{1}{5} & 0 & \frac{2\sqrt{10}}{25} & 0 & 0 & 0 \\ \frac{\sqrt{10}}{100} & 0 & -\frac{\sqrt{30}}{100} & 0 & 0 & \frac{2\sqrt{10}}{25} & 0 & \frac{3\sqrt{5}}{25} & 0 & 0 \\ 0 & \frac{\sqrt{30}}{100} & 0 & -\frac{\sqrt{10}}{100} & 0 & 0 & \frac{3\sqrt{5}}{25} & 0 & \frac{2\sqrt{10}}{25} & 0 \\ 0 & 0 & \frac{\sqrt{15}}{50} & 0 & 0 & 0 & 0 & \frac{2\sqrt{10}}{25} & 0 & \frac{1}{5} \\ 0 & 0 & 0 & \frac{1}{10} & 0 & 0 & 0 & 0 & \frac{1}{5} & 0 \end{bmatrix} \end{matrix} $									
510	symmetry	$ \begin{matrix} & & & & & y \\ \end{matrix} $									

*continued ...*

Table 8

No.	multipole	matrix									
	$\mathbb{M}_{1,2}^{(a)}(E_{1g})$	0	$-\frac{3\sqrt{15}i}{50}$	0	0	$-\frac{i}{10}$	0	$-\frac{\sqrt{10}i}{100}$	0	0	0
		$\frac{3\sqrt{15}i}{50}$	0	$-\frac{3\sqrt{5}i}{25}$	0	0	$-\frac{\sqrt{15}i}{50}$	0	$-\frac{\sqrt{30}i}{100}$	0	0
		0	$\frac{3\sqrt{5}i}{25}$	0	$-\frac{3\sqrt{15}i}{50}$	0	0	$-\frac{\sqrt{30}i}{100}$	0	$-\frac{\sqrt{15}i}{50}$	0
		0	0	$\frac{3\sqrt{15}i}{50}$	0	0	0	$-\frac{\sqrt{10}i}{100}$	0	$-\frac{i}{10}$	
		$\frac{i}{10}$	0	0	0	0	$-\frac{i}{5}$	0	0	0	0
		0	$\frac{\sqrt{15}i}{50}$	0	0	$\frac{i}{5}$	0	$-\frac{2\sqrt{10}i}{25}$	0	0	0
		$\frac{\sqrt{10}i}{100}$	0	$\frac{\sqrt{30}i}{100}$	0	0	$\frac{2\sqrt{10}i}{25}$	0	$-\frac{3\sqrt{5}i}{25}$	0	0
		0	$\frac{\sqrt{30}i}{100}$	0	$\frac{\sqrt{10}i}{100}$	0	0	$\frac{3\sqrt{5}i}{25}$	0	$-\frac{2\sqrt{10}i}{25}$	0
		0	0	$\frac{\sqrt{15}i}{50}$	0	0	0	0	$\frac{2\sqrt{10}i}{25}$	0	$-\frac{i}{5}$
		0	0	0	$\frac{i}{10}$	0	0	0	0	$\frac{i}{5}$	0
511	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$									
	$\mathbb{M}_3^{(a)}(A_g)$	$-\frac{\sqrt{5}}{25}$	0	0	0	0	$-\frac{3\sqrt{5}}{25}$	0	0	0	0
		0	$\frac{3\sqrt{5}}{25}$	0	0	0	0	$\frac{\sqrt{30}}{25}$	0	0	0
		0	0	$-\frac{3\sqrt{5}}{25}$	0	0	0	0	$\frac{\sqrt{30}}{25}$	0	0
		0	0	0	$\frac{\sqrt{5}}{25}$	0	0	0	0	$-\frac{3\sqrt{5}}{25}$	0
		0	0	0	0	$-\frac{\sqrt{5}}{10}$	0	0	0	0	0
		$-\frac{3\sqrt{5}}{25}$	0	0	0	0	$\frac{7\sqrt{5}}{50}$	0	0	0	0
		0	$\frac{\sqrt{30}}{25}$	0	0	0	0	$\frac{2\sqrt{5}}{25}$	0	0	0
		0	0	$\frac{\sqrt{30}}{25}$	0	0	0	0	$-\frac{2\sqrt{5}}{25}$	0	0
		0	0	0	$-\frac{3\sqrt{5}}{25}$	0	0	0	0	$-\frac{7\sqrt{5}}{50}$	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{5}}{10}$
512	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$									

continued ...



Table 8

No.	multipole	matrix									
	$\mathbb{M}_3^{(a)}(B_g, 1)$	0	0	0	$\frac{\sqrt{2}i}{5}$	0	0	0	0	$\frac{3\sqrt{2}i}{20}$	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{30}i}{20}$
		0	0	0	0	$\frac{\sqrt{30}i}{20}$	0	0	0	0	0
		$-\frac{\sqrt{2}i}{5}$	0	0	0	0	$\frac{3\sqrt{2}i}{20}$	0	0	0	0
		0	0	$-\frac{\sqrt{30}i}{20}$	0	0	0	0	$\frac{\sqrt{5}i}{10}$	0	0
		0	0	0	$-\frac{3\sqrt{2}i}{20}$	0	0	0	0	$\frac{\sqrt{2}i}{5}$	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{5}i}{10}$
		0	0	0	0	$-\frac{\sqrt{5}i}{10}$	0	0	0	0	0
		$-\frac{3\sqrt{2}i}{20}$	0	0	0	0	$-\frac{\sqrt{2}i}{5}$	0	0	0	0
		0	$-\frac{\sqrt{30}i}{20}$	0	0	0	0	$-\frac{\sqrt{5}i}{10}$	0	0	0
513	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$									
	$\mathbb{M}_3^{(a)}(B_g, 2)$	0	0	0	$-\frac{\sqrt{2}}{5}$	0	0	0	0	$-\frac{3\sqrt{2}}{20}$	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{30}}{20}$
		0	0	0	0	$\frac{\sqrt{30}}{20}$	0	0	0	0	0
		$-\frac{\sqrt{2}}{5}$	0	0	0	0	$\frac{3\sqrt{2}}{20}$	0	0	0	0
		0	0	$\frac{\sqrt{30}}{20}$	0	0	0	0	$-\frac{\sqrt{5}}{10}$	0	0
		0	0	0	$\frac{3\sqrt{2}}{20}$	0	0	0	0	$-\frac{\sqrt{2}}{5}$	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{5}}{10}$
		0	0	0	0	$-\frac{\sqrt{5}}{10}$	0	0	0	0	0
		$-\frac{3\sqrt{2}}{20}$	0	0	0	0	$-\frac{\sqrt{2}}{5}$	0	0	0	0
		0	$-\frac{\sqrt{30}}{20}$	0	0	0	0	$-\frac{\sqrt{5}}{10}$	0	0	0
514	symmetry	$-\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$									

continued ...

Table 8

No.	multipole	matrix									
	$\mathbb{M}_{3,1}^{(a)}(E_{1g})$	$ \begin{bmatrix} 0 & -\frac{\sqrt{10}}{25} & 0 & 0 & \frac{\sqrt{6}}{20} & 0 & -\frac{3\sqrt{15}}{50} & 0 & 0 & 0 \\ -\frac{\sqrt{10}}{25} & 0 & \frac{\sqrt{30}}{25} & 0 & 0 & -\frac{7\sqrt{10}}{100} & 0 & \frac{\sqrt{5}}{50} & 0 & 0 \\ 0 & \frac{\sqrt{30}}{25} & 0 & -\frac{\sqrt{10}}{25} & 0 & 0 & -\frac{\sqrt{5}}{50} & 0 & \frac{7\sqrt{10}}{100} & 0 \\ 0 & 0 & -\frac{\sqrt{10}}{25} & 0 & 0 & 0 & 0 & \frac{3\sqrt{15}}{50} & 0 & -\frac{\sqrt{6}}{20} \\ \frac{\sqrt{6}}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{10} & 0 & 0 & 0 & 0 \\ 0 & -\frac{7\sqrt{10}}{100} & 0 & 0 & -\frac{\sqrt{6}}{10} & 0 & \frac{\sqrt{15}}{50} & 0 & 0 & 0 \\ -\frac{3\sqrt{15}}{50} & 0 & -\frac{\sqrt{5}}{50} & 0 & 0 & \frac{\sqrt{15}}{50} & 0 & \frac{\sqrt{30}}{25} & 0 & 0 \\ 0 & \frac{\sqrt{5}}{50} & 0 & \frac{3\sqrt{15}}{50} & 0 & 0 & \frac{\sqrt{30}}{25} & 0 & \frac{\sqrt{15}}{50} & 0 \\ 0 & 0 & \frac{7\sqrt{10}}{100} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{50} & 0 & -\frac{\sqrt{6}}{10} \\ 0 & 0 & 0 & -\frac{\sqrt{6}}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{10} & 0 \end{bmatrix} $									
515	symmetry	$ -\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4} $									
	$\mathbb{M}_{3,2}^{(a)}(E_{1g})$	$ \begin{bmatrix} 0 & \frac{\sqrt{10}i}{25} & 0 & 0 & \frac{\sqrt{6}i}{20} & 0 & \frac{3\sqrt{15}i}{50} & 0 & 0 & 0 \\ -\frac{\sqrt{10}i}{25} & 0 & -\frac{\sqrt{30}i}{25} & 0 & 0 & -\frac{7\sqrt{10}i}{100} & 0 & -\frac{\sqrt{5}i}{50} & 0 & 0 \\ 0 & \frac{\sqrt{30}i}{25} & 0 & \frac{\sqrt{10}i}{25} & 0 & 0 & -\frac{\sqrt{5}i}{50} & 0 & -\frac{7\sqrt{10}i}{100} & 0 \\ 0 & 0 & -\frac{\sqrt{10}i}{25} & 0 & 0 & 0 & 0 & \frac{3\sqrt{15}i}{50} & 0 & \frac{\sqrt{6}i}{20} \\ -\frac{\sqrt{6}i}{20} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{10} & 0 & 0 & 0 & 0 \\ 0 & \frac{7\sqrt{10}i}{100} & 0 & 0 & -\frac{\sqrt{6}i}{10} & 0 & -\frac{\sqrt{15}i}{50} & 0 & 0 & 0 \\ -\frac{3\sqrt{15}i}{50} & 0 & \frac{\sqrt{5}i}{50} & 0 & 0 & \frac{\sqrt{15}i}{50} & 0 & -\frac{\sqrt{30}i}{25} & 0 & 0 \\ 0 & \frac{\sqrt{5}i}{50} & 0 & -\frac{3\sqrt{15}i}{50} & 0 & 0 & \frac{\sqrt{30}i}{25} & 0 & -\frac{\sqrt{15}i}{50} & 0 \\ 0 & 0 & \frac{7\sqrt{10}i}{100} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{50} & 0 & \frac{\sqrt{6}i}{10} \\ 0 & 0 & 0 & -\frac{\sqrt{6}i}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{10} & 0 \end{bmatrix} $									
516	symmetry	$ \sqrt{15}xyz $									

continued ...

Table 8

No.	multipole	matrix									
	$\mathbb{M}_{3,1}^{(a)}(E_{2g})$	0	0	$\frac{i}{5}$	0	0	0	0	$\frac{\sqrt{6}i}{10}$	0	0
		0	0	0	$-\frac{i}{5}$	$\frac{\sqrt{5}i}{10}$	0	0	0	$\frac{i}{10}$	0
		$-\frac{i}{5}$	0	0	0	0	$-\frac{i}{10}$	0	0	0	$-\frac{\sqrt{5}i}{10}$
		0	$\frac{i}{5}$	0	0	0	0	$-\frac{\sqrt{6}i}{10}$	0	0	0
		0	$-\frac{\sqrt{5}i}{10}$	0	0	0	0	$\frac{\sqrt{30}i}{20}$	0	0	0
		0	0	$\frac{i}{10}$	0	0	0	0	$\frac{\sqrt{6}i}{20}$	0	0
		0	0	0	$\frac{\sqrt{6}i}{10}$	$-\frac{\sqrt{30}i}{20}$	0	0	0	$-\frac{\sqrt{6}i}{20}$	0
		$-\frac{\sqrt{6}i}{10}$	0	0	0	0	$-\frac{\sqrt{6}i}{20}$	0	0	0	$-\frac{\sqrt{30}i}{20}$
		0	$-\frac{i}{10}$	0	0	0	0	$\frac{\sqrt{6}i}{20}$	0	0	0
		0	0	$\frac{\sqrt{5}i}{10}$	0	0	0	0	$\frac{\sqrt{30}i}{20}$	0	0
517	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$									
	$\mathbb{M}_{3,2}^{(a)}(E_{2g})$	0	0	$-\frac{1}{5}$	0	0	0	0	$-\frac{\sqrt{6}}{10}$	0	0
		0	0	0	$\frac{1}{5}$	$\frac{\sqrt{5}}{10}$	0	0	0	$-\frac{1}{10}$	0
		$-\frac{1}{5}$	0	0	0	0	$-\frac{1}{10}$	0	0	0	$\frac{\sqrt{5}}{10}$
		0	$\frac{1}{5}$	0	0	0	0	$-\frac{\sqrt{6}}{10}$	0	0	0
		0	$\frac{\sqrt{5}}{10}$	0	0	0	0	$-\frac{\sqrt{30}}{20}$	0	0	0
		0	0	$-\frac{1}{10}$	0	0	0	0	$-\frac{\sqrt{6}}{20}$	0	0
		0	0	0	$-\frac{\sqrt{6}}{10}$	$-\frac{\sqrt{30}}{20}$	0	0	0	$\frac{\sqrt{6}}{20}$	0
		$-\frac{\sqrt{6}}{10}$	0	0	0	0	$-\frac{\sqrt{6}}{20}$	0	0	0	$\frac{\sqrt{30}}{20}$
		0	$-\frac{1}{10}$	0	0	0	0	$\frac{\sqrt{6}}{20}$	0	0	0
		0	0	$\frac{\sqrt{5}}{10}$	0	0	0	0	$\frac{\sqrt{30}}{20}$	0	0
518	symmetry	$z$									

continued ...

Table 8

No.	multipole	matrix									
	$\mathbb{M}_1^{(1,-1;a)}(A_g)$	$-\frac{3\sqrt{10}}{50}$	0	0	0	0	$-\frac{2\sqrt{10}}{25}$	0	0	0	0
		0	$-\frac{\sqrt{10}}{50}$	0	0	0	0	$-\frac{2\sqrt{15}}{25}$	0	0	0
		0	0	$\frac{\sqrt{10}}{50}$	0	0	0	0	$-\frac{2\sqrt{15}}{25}$	0	0
		0	0	0	$\frac{3\sqrt{10}}{50}$	0	0	0	0	$-\frac{2\sqrt{10}}{25}$	0
		0	0	0	0	$\frac{\sqrt{10}}{10}$	0	0	0	0	0
		$-\frac{2\sqrt{10}}{25}$	0	0	0	0	$\frac{3\sqrt{10}}{50}$	0	0	0	0
		0	$-\frac{2\sqrt{15}}{25}$	0	0	0	0	$\frac{\sqrt{10}}{50}$	0	0	0
		0	0	$-\frac{2\sqrt{15}}{25}$	0	0	0	0	$-\frac{\sqrt{10}}{50}$	0	0
		0	0	0	$-\frac{2\sqrt{10}}{25}$	0	0	0	0	$-\frac{3\sqrt{10}}{50}$	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{10}}{10}$
519	symmetry	$x$									
	$\mathbb{M}_{1,1}^{(1,-1;a)}(E_{1g})$	0	$-\frac{\sqrt{30}}{50}$	0	0	$\frac{\sqrt{2}}{5}$	0	$-\frac{\sqrt{5}}{25}$	0	0	0
		$-\frac{\sqrt{30}}{50}$	0	$-\frac{\sqrt{10}}{25}$	0	0	$\frac{\sqrt{30}}{25}$	0	$-\frac{\sqrt{15}}{25}$	0	0
		0	$-\frac{\sqrt{10}}{25}$	0	$-\frac{\sqrt{30}}{50}$	0	0	$\frac{\sqrt{15}}{25}$	0	$-\frac{\sqrt{30}}{25}$	0
		0	0	$-\frac{\sqrt{30}}{50}$	0	0	0	0	$\frac{\sqrt{5}}{25}$	0	$-\frac{\sqrt{2}}{5}$
		$\frac{\sqrt{2}}{5}$	0	0	0	0	$\frac{\sqrt{2}}{10}$	0	0	0	0
		0	$\frac{\sqrt{30}}{25}$	0	0	$\frac{\sqrt{2}}{10}$	0	$\frac{2\sqrt{5}}{25}$	0	0	0
		$-\frac{\sqrt{5}}{25}$	0	$\frac{\sqrt{15}}{25}$	0	0	$\frac{2\sqrt{5}}{25}$	0	$\frac{3\sqrt{10}}{50}$	0	0
		0	$-\frac{\sqrt{15}}{25}$	0	$\frac{\sqrt{5}}{25}$	0	0	$\frac{3\sqrt{10}}{50}$	0	$\frac{2\sqrt{5}}{25}$	0
		0	0	$-\frac{\sqrt{30}}{25}$	0	0	0	0	$\frac{2\sqrt{5}}{25}$	0	$\frac{\sqrt{2}}{10}$
		0	0	0	$-\frac{\sqrt{2}}{5}$	0	0	0	0	$\frac{\sqrt{2}}{10}$	0
520	symmetry	$y$									

*continued ...*

Table 8

No.	multipole	matrix									
	$\mathbb{M}_{1,2}^{(1,-1;a)}(E_{1g})$	0	$\frac{\sqrt{30i}}{50}$	0	0	$\frac{\sqrt{2i}}{5}$	0	$\frac{\sqrt{5i}}{25}$	0	0	0
		$-\frac{\sqrt{30i}}{50}$	0	$\frac{\sqrt{10i}}{25}$	0	0	$\frac{\sqrt{30i}}{25}$	0	$\frac{\sqrt{15i}}{25}$	0	0
		0	$-\frac{\sqrt{10i}}{25}$	0	$\frac{\sqrt{30i}}{50}$	0	0	$\frac{\sqrt{15i}}{25}$	0	$\frac{\sqrt{30i}}{25}$	0
		0	0	$-\frac{\sqrt{30i}}{50}$	0	0	0	0	$\frac{\sqrt{5i}}{25}$	0	$\frac{\sqrt{2i}}{5}$
		$-\frac{\sqrt{2i}}{5}$	0	0	0	0	$-\frac{\sqrt{2i}}{10}$	0	0	0	0
		0	$-\frac{\sqrt{30i}}{25}$	0	0	$\frac{\sqrt{2i}}{10}$	0	$-\frac{2\sqrt{5i}}{25}$	0	0	0
		$-\frac{\sqrt{5i}}{25}$	0	$-\frac{\sqrt{15i}}{25}$	0	0	$\frac{2\sqrt{5i}}{25}$	0	$-\frac{3\sqrt{10i}}{50}$	0	0
		0	$-\frac{\sqrt{15i}}{25}$	0	$-\frac{\sqrt{5i}}{25}$	0	0	$\frac{3\sqrt{10i}}{50}$	0	$-\frac{2\sqrt{5i}}{25}$	0
		0	0	$-\frac{\sqrt{30i}}{25}$	0	0	0	0	$\frac{2\sqrt{5i}}{25}$	0	$-\frac{\sqrt{2i}}{10}$
		0	0	0	$-\frac{\sqrt{2i}}{5}$	0	0	0	0	$\frac{\sqrt{2i}}{10}$	0
521	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$									
	$\mathbb{M}_3^{(1,-1;a)}(A_g)$	$\frac{\sqrt{105}}{350}$	0	0	0	0	$\frac{4\sqrt{105}}{175}$	0	0	0	0
		0	$-\frac{3\sqrt{105}}{350}$	0	0	0	0	$-\frac{4\sqrt{70}}{175}$	0	0	0
		0	0	$\frac{3\sqrt{105}}{350}$	0	0	0	0	$-\frac{4\sqrt{70}}{175}$	0	0
		0	0	0	$-\frac{\sqrt{105}}{350}$	0	0	0	0	$\frac{4\sqrt{105}}{175}$	0
		0	0	0	0	$-\frac{\sqrt{105}}{35}$	0	0	0	0	0
		$\frac{4\sqrt{105}}{175}$	0	0	0	0	$\frac{\sqrt{105}}{25}$	0	0	0	0
		0	$-\frac{4\sqrt{70}}{175}$	0	0	0	0	$\frac{4\sqrt{105}}{175}$	0	0	0
		0	0	$-\frac{4\sqrt{70}}{175}$	0	0	0	0	$-\frac{4\sqrt{105}}{175}$	0	0
		0	0	0	$\frac{4\sqrt{105}}{175}$	0	0	0	0	$-\frac{\sqrt{105}}{25}$	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{105}}{35}$
522	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$									

continued ...

Table 8

No.	multipole	matrix									
	$\mathbb{M}_3^{(1,-1;a)}(B_g, 1)$	0	0	0	$-\frac{\sqrt{42}i}{70}$	0	0	0	0	$-\frac{\sqrt{42}i}{35}$	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{70}i}{35}$
		0	0	0	0	$-\frac{\sqrt{70}i}{35}$	0	0	0	0	0
		$\frac{\sqrt{42}i}{70}$	0	0	0	0	$-\frac{\sqrt{42}i}{35}$	0	0	0	0
		0	0	$\frac{\sqrt{70}i}{35}$	0	0	0	0	$\frac{\sqrt{105}i}{35}$	0	0
		0	0	0	$\frac{\sqrt{42}i}{35}$	0	0	0	0	$\frac{2\sqrt{42}i}{35}$	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{105}i}{35}$
		0	0	0	0	$-\frac{\sqrt{105}i}{35}$	0	0	0	0	0
		$\frac{\sqrt{42}i}{35}$	0	0	0	0	$-\frac{2\sqrt{42}i}{35}$	0	0	0	0
		0	$\frac{\sqrt{70}i}{35}$	0	0	0	0	$-\frac{\sqrt{105}i}{35}$	0	0	0
523	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$									
	$\mathbb{M}_3^{(1,-1;a)}(B_g, 2)$	0	0	0	$\frac{\sqrt{42}}{70}$	0	0	0	0	$\frac{\sqrt{42}}{35}$	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{70}}{35}$
		0	0	0	0	$-\frac{\sqrt{70}}{35}$	0	0	0	0	0
		$\frac{\sqrt{42}}{70}$	0	0	0	0	$-\frac{\sqrt{42}}{35}$	0	0	0	0
		0	0	$-\frac{\sqrt{70}}{35}$	0	0	0	0	$-\frac{\sqrt{105}}{35}$	0	0
		0	0	0	$-\frac{\sqrt{42}}{35}$	0	0	0	0	$-\frac{2\sqrt{42}}{35}$	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{105}}{35}$
		0	0	0	0	$-\frac{\sqrt{105}}{35}$	0	0	0	0	0
		$\frac{\sqrt{42}}{35}$	0	0	0	0	$-\frac{2\sqrt{42}}{35}$	0	0	0	0
		0	$\frac{\sqrt{70}}{35}$	0	0	0	0	$-\frac{\sqrt{105}}{35}$	0	0	0
524	symmetry	$-\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$									

continued ...

Table 8

No.	multipole	matrix									
	$\mathbb{M}_{3,1}^{(1,-1;a)}(E_{1g})$	0	$\frac{\sqrt{210}}{350}$	0	0	$-\frac{\sqrt{14}}{35}$	0	$\frac{6\sqrt{35}}{175}$	0	0	0
		$\frac{\sqrt{210}}{350}$	0	$-\frac{3\sqrt{70}}{350}$	0	0	$\frac{\sqrt{210}}{75}$	0	$-\frac{2\sqrt{105}}{525}$	0	0
		0	$-\frac{3\sqrt{70}}{350}$	0	$\frac{\sqrt{210}}{350}$	0	0	$\frac{2\sqrt{105}}{525}$	0	$-\frac{\sqrt{210}}{75}$	0
		0	0	$\frac{\sqrt{210}}{350}$	0	0	0	0	$-\frac{6\sqrt{35}}{175}$	0	$\frac{\sqrt{14}}{35}$
		$-\frac{\sqrt{14}}{35}$	0	0	0	0	$-\frac{3\sqrt{14}}{35}$	0	0	0	0
		0	$\frac{\sqrt{210}}{75}$	0	0	$-\frac{3\sqrt{14}}{35}$	0	$\frac{3\sqrt{35}}{175}$	0	0	0
		$\frac{6\sqrt{35}}{175}$	0	$\frac{2\sqrt{105}}{525}$	0	0	$\frac{3\sqrt{35}}{175}$	0	$\frac{6\sqrt{70}}{175}$	0	0
		0	$-\frac{2\sqrt{105}}{525}$	0	$-\frac{6\sqrt{35}}{175}$	0	0	$\frac{6\sqrt{70}}{175}$	0	$\frac{3\sqrt{35}}{175}$	0
		0	0	$-\frac{\sqrt{210}}{75}$	0	0	0	0	$\frac{3\sqrt{35}}{175}$	0	$-\frac{3\sqrt{14}}{35}$
		0	0	0	$\frac{\sqrt{14}}{35}$	0	0	0	0	$-\frac{3\sqrt{14}}{35}$	0
525	symmetry	$-\frac{\sqrt{6y(x^2+y^2-4z^2)}}{4}$									
	$\mathbb{M}_{3,2}^{(1,-1;a)}(E_{1g})$	0	$-\frac{\sqrt{210}i}{350}$	0	0	$-\frac{\sqrt{14}i}{35}$	0	$-\frac{6\sqrt{35}i}{175}$	0	0	0
		$\frac{\sqrt{210}i}{350}$	0	$\frac{3\sqrt{70}i}{350}$	0	0	$\frac{\sqrt{210}i}{75}$	0	$\frac{2\sqrt{105}i}{525}$	0	0
		0	$-\frac{3\sqrt{70}i}{350}$	0	$-\frac{\sqrt{210}i}{350}$	0	0	$\frac{2\sqrt{105}i}{525}$	0	$\frac{\sqrt{210}i}{75}$	0
		0	0	$\frac{\sqrt{210}i}{350}$	0	0	0	0	$-\frac{6\sqrt{35}i}{175}$	0	$-\frac{\sqrt{14}i}{35}$
		$\frac{\sqrt{14}i}{35}$	0	0	0	0	$\frac{3\sqrt{14}i}{35}$	0	0	0	0
		0	$-\frac{\sqrt{210}i}{75}$	0	0	$-\frac{3\sqrt{14}i}{35}$	0	$-\frac{3\sqrt{35}i}{175}$	0	0	0
		$\frac{6\sqrt{35}i}{175}$	0	$-\frac{2\sqrt{105}i}{525}$	0	0	$\frac{3\sqrt{35}i}{175}$	0	$-\frac{6\sqrt{70}i}{175}$	0	0
		0	$-\frac{2\sqrt{105}i}{525}$	0	$\frac{6\sqrt{35}i}{175}$	0	0	$\frac{6\sqrt{70}i}{175}$	0	$-\frac{3\sqrt{35}i}{175}$	0
		0	0	$-\frac{\sqrt{210}i}{75}$	0	0	0	0	$\frac{3\sqrt{35}i}{175}$	0	$\frac{3\sqrt{14}i}{35}$
		0	0	0	$\frac{\sqrt{14}i}{35}$	0	0	0	0	$-\frac{3\sqrt{14}i}{35}$	0
526	symmetry	$\sqrt{15}xyz$									

continued ...

Table 8

No.	multipole	matrix									
	$\mathbb{M}_{3,1}^{(1,-1;a)}(E_{2g})$	0	0	$-\frac{\sqrt{21}i}{70}$	0	0	0	0	$-\frac{2\sqrt{14}i}{35}$	0	0
		0	0	0	$\frac{\sqrt{21}i}{70}$	$-\frac{2\sqrt{105}i}{105}$	0	0	0	$-\frac{2\sqrt{21}i}{105}$	0
		$\frac{\sqrt{21}i}{70}$	0	0	0	0	$\frac{2\sqrt{21}i}{105}$	0	0	0	$\frac{2\sqrt{105}i}{105}$
		0	$-\frac{\sqrt{21}i}{70}$	0	0	0	0	$\frac{2\sqrt{14}i}{35}$	0	0	0
		0	$\frac{2\sqrt{105}i}{105}$	0	0	0	0	$\frac{3\sqrt{70}i}{70}$	0	0	0
		0	0	$-\frac{2\sqrt{21}i}{105}$	0	0	0	0	$\frac{3\sqrt{14}i}{70}$	0	0
		0	0	0	$-\frac{2\sqrt{14}i}{35}$	$-\frac{3\sqrt{70}i}{70}$	0	0	0	$-\frac{3\sqrt{14}i}{70}$	0
		$\frac{2\sqrt{14}i}{35}$	0	0	0	0	$-\frac{3\sqrt{14}i}{70}$	0	0	0	$-\frac{3\sqrt{70}i}{70}$
		0	$\frac{2\sqrt{21}i}{105}$	0	0	0	0	$\frac{3\sqrt{14}i}{70}$	0	0	0
		0	0	$-\frac{2\sqrt{105}i}{105}$	0	0	0	0	$\frac{3\sqrt{70}i}{70}$	0	0
527	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$									
	$\mathbb{M}_{3,2}^{(1,-1;a)}(E_{2g})$	0	0	$\frac{\sqrt{21}}{70}$	0	0	0	0	$\frac{2\sqrt{14}}{35}$	0	0
		0	0	0	$-\frac{\sqrt{21}}{70}$	$-\frac{2\sqrt{105}}{105}$	0	0	0	$\frac{2\sqrt{21}}{105}$	0
		$\frac{\sqrt{21}}{70}$	0	0	0	0	$\frac{2\sqrt{21}}{105}$	0	0	0	$-\frac{2\sqrt{105}}{105}$
		0	$-\frac{\sqrt{21}}{70}$	0	0	0	0	$\frac{2\sqrt{14}}{35}$	0	0	0
		0	$-\frac{2\sqrt{105}}{105}$	0	0	0	0	$-\frac{3\sqrt{70}}{70}$	0	0	0
		0	0	$\frac{2\sqrt{21}}{105}$	0	0	0	0	$-\frac{3\sqrt{14}}{70}$	0	0
		0	0	0	$\frac{2\sqrt{14}}{35}$	$-\frac{3\sqrt{70}}{70}$	0	0	0	$\frac{3\sqrt{14}}{70}$	0
		$\frac{2\sqrt{14}}{35}$	0	0	0	0	$-\frac{3\sqrt{14}}{70}$	0	0	0	$\frac{3\sqrt{70}}{70}$
		0	$\frac{2\sqrt{21}}{105}$	0	0	0	0	$\frac{3\sqrt{14}}{70}$	0	0	0
		0	0	$-\frac{2\sqrt{105}}{105}$	0	0	0	0	$\frac{3\sqrt{70}}{70}$	0	0
528	symmetry	$\frac{z(15x^4+30x^2y^2-40x^2z^2+15y^4-40y^2z^2+8z^4)}{8}$									

continued ...



Table 8

No.	multipole	matrix
	$\mathbb{M}_5^{(1,-1;a)}(A_g)$	$ \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 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{42} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{5\sqrt{7}}{42} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{5\sqrt{7}}{21} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{5\sqrt{7}}{21} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{5\sqrt{7}}{42} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}}{42} & 0 \end{bmatrix} $
529	symmetry	$ -\frac{\sqrt{70}y(3x^2-y^2)(x^2+y^2-8z^2)}{16} $ $ \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 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{i}{3} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{6} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{i}{3} & 0 \\ 0 & 0 & 0 & 0 & \frac{i}{3} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}i}{6} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{i}{3} & 0 & 0 & 0 & 0 \end{bmatrix} $
530	symmetry	$ -\frac{\sqrt{70}x(x^2-3y^2)(x^2+y^2-8z^2)}{16} $

continued ...

Table 8

No.	multipole	matrix
	$\mathbb{M}_5^{(1,-1;a)}(B_g, 2)$	$ \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 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{1}{3} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}}{6} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{1}{3} \\ 0 & 0 & 0 & 0 & \frac{1}{3} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}}{6} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{1}{3} & 0 & 0 & 0 \end{bmatrix} $
531	symmetry	$ \frac{3\sqrt{14}x(x^4-10x^2y^2+5y^4)}{16} $ $ \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 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{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 & \frac{\sqrt{2}}{2} & 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
		$ \begin{array}{cccccccccccc} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 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}{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 & -\frac{\sqrt{2}i}{2} & 0 & 0 & 0 & 0 & 0 & 0 \end{array} $
533	symmetry	$ \frac{\sqrt{15}x(x^4+2x^2y^2-12x^2z^2+y^4-12y^2z^2+8z^4)}{8} $ $ \begin{array}{cccccccccccc} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 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}}{42} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{42} & 0 & -\frac{\sqrt{210}}{42} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{210}}{42} & 0 & \frac{\sqrt{105}}{21} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{105}}{21} & 0 & -\frac{\sqrt{210}}{42} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{210}}{42} & 0 & \frac{\sqrt{21}}{42} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{42} & 0 & 0 & 0 \end{array} $
534	symmetry	$ \frac{\sqrt{15}y(x^4+2x^2y^2-12x^2z^2+y^4-12y^2z^2+8z^4)}{8} $

continued ...

Table 8

No.	multipole	matrix
	$\mathbb{M}_{5,2}^{(1,-1;a)}(E_{1g}, 2)$	$ \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 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}i}{42} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{21}i}{42} & 0 & \frac{\sqrt{210}i}{42} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{210}i}{42} & 0 & -\frac{\sqrt{105}i}{21} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{105}i}{21} & 0 & \frac{\sqrt{210}i}{42} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{210}i}{42} & 0 & -\frac{\sqrt{21}i}{42} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}i}{42} & 0 & 0 \end{bmatrix} $
535	symmetry	$ -\frac{3\sqrt{35}xyz(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 & 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 & 0 & 0 & 0 \\ 0 & 0 & 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 \end{bmatrix} $
536	symmetry	$ \frac{3\sqrt{35}z(x^2-2xy-y^2)(x^2+2xy-y^2)}{8} $

continued ...

Table 8

No.	multipole	matrix
	$\mathbb{M}_{5,2}^{(1,-1;a)}(E_{2g}, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{1}{2} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{1}{2} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{1}{2} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{1}{2} & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
537	symmetry	$-\frac{\sqrt{105}xyz(x^2+y^2-2z^2)}{2}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{12} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{12} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{12} & 0 & 0 & 0 & -\frac{\sqrt{30}i}{12} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}i}{12} & 0 & 0 & 0 & \frac{\sqrt{6}i}{12} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{12} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{12} & 0 & 0 & 0 \end{bmatrix}$
538	symmetry	$-\frac{\sqrt{105}z(x-y)(x+y)(x^2+y^2-2z^2)}{4}$

continued ...

Table 8

No.	multipole	matrix									
		0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0
	$\mathbb{M}_{5,2}^{(1,-1;a)}(E_{2g}, 2)$	0	0	0	0	0	$\frac{\sqrt{6}}{12}$	0	0	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{30}}{12}$	0	0	0
		0	0	0	0	$\frac{\sqrt{6}}{12}$	0	0	0	$\frac{\sqrt{30}}{12}$	0
		0	0	0	0	0	$-\frac{\sqrt{30}}{12}$	0	0	0	$-\frac{\sqrt{6}}{12}$
		0	0	0	0	0	$\frac{\sqrt{30}}{12}$	0	0	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{6}}{12}$	0	0	0
539	symmetry	$z$									
	$\mathbb{M}_1^{(1,1;a)}(A_g)$	$\frac{3\sqrt{70}}{50}$	0	0	0	0	$-\frac{\sqrt{70}}{50}$	0	0	0	0
		0	$\frac{\sqrt{70}}{50}$	0	0	0	0	$-\frac{\sqrt{105}}{50}$	0	0	0
		0	0	$-\frac{\sqrt{70}}{50}$	0	0	0	0	$-\frac{\sqrt{105}}{50}$	0	0
		0	0	0	$-\frac{3\sqrt{70}}{50}$	0	0	0	0	$-\frac{\sqrt{70}}{50}$	0
		0	0	0	0	$-\frac{\sqrt{70}}{35}$	0	0	0	0	0
		$-\frac{\sqrt{70}}{50}$	0	0	0	0	$-\frac{3\sqrt{70}}{175}$	0	0	0	0
		0	$-\frac{\sqrt{105}}{50}$	0	0	0	0	$-\frac{\sqrt{70}}{175}$	0	0	0
		0	0	$-\frac{\sqrt{105}}{50}$	0	0	0	0	$\frac{\sqrt{70}}{175}$	0	0
		0	0	0	$-\frac{\sqrt{70}}{50}$	0	0	0	0	$\frac{3\sqrt{70}}{175}$	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{70}}{35}$
540	symmetry	$x$									

*continued ...*

Table 8

No.	multipole	matrix									
	$\mathbb{M}_{1,1}^{(1,1;a)}(E_{1g})$	0	$\frac{\sqrt{210}}{50}$	0	0	$\frac{\sqrt{14}}{20}$	0	$-\frac{\sqrt{35}}{100}$	0	0	0
		$\frac{\sqrt{210}}{50}$	0	$\frac{\sqrt{70}}{25}$	0	0	$\frac{\sqrt{210}}{100}$	0	$-\frac{\sqrt{105}}{100}$	0	0
		0	$\frac{\sqrt{70}}{25}$	0	$\frac{\sqrt{210}}{50}$	0	0	$\frac{\sqrt{105}}{100}$	0	$-\frac{\sqrt{210}}{100}$	0
		0	0	$\frac{\sqrt{210}}{50}$	0	0	0	0	$\frac{\sqrt{35}}{100}$	0	$-\frac{\sqrt{14}}{20}$
		$\frac{\sqrt{14}}{20}$	0	0	0	0	$-\frac{\sqrt{14}}{35}$	0	0	0	0
		0	$\frac{\sqrt{210}}{100}$	0	0	$-\frac{\sqrt{14}}{35}$	0	$-\frac{4\sqrt{35}}{175}$	0	0	0
		$-\frac{\sqrt{35}}{100}$	0	$\frac{\sqrt{105}}{100}$	0	0	$-\frac{4\sqrt{35}}{175}$	0	$-\frac{3\sqrt{70}}{175}$	0	0
		0	$-\frac{\sqrt{105}}{100}$	0	$\frac{\sqrt{35}}{100}$	0	0	$-\frac{3\sqrt{70}}{175}$	0	$-\frac{4\sqrt{35}}{175}$	0
		0	0	$-\frac{\sqrt{210}}{100}$	0	0	0	0	$-\frac{4\sqrt{35}}{175}$	0	$-\frac{\sqrt{14}}{35}$
		0	0	0	$-\frac{\sqrt{14}}{20}$	0	0	0	0	$-\frac{\sqrt{14}}{35}$	0
541	symmetry	$y$									
	$\mathbb{M}_{1,2}^{(1,1;a)}(E_{1g})$	0	$-\frac{\sqrt{210i}}{50}$	0	0	$\frac{\sqrt{14i}}{20}$	0	$\frac{\sqrt{35i}}{100}$	0	0	0
		$\frac{\sqrt{210i}}{50}$	0	$-\frac{\sqrt{70i}}{25}$	0	0	$\frac{\sqrt{210i}}{100}$	0	$\frac{\sqrt{105i}}{100}$	0	0
		0	$\frac{\sqrt{70i}}{25}$	0	$-\frac{\sqrt{210i}}{50}$	0	0	$\frac{\sqrt{105i}}{100}$	0	$\frac{\sqrt{210i}}{100}$	0
		0	0	$\frac{\sqrt{210i}}{50}$	0	0	0	0	$\frac{\sqrt{35i}}{100}$	0	$\frac{\sqrt{14i}}{20}$
		$-\frac{\sqrt{14i}}{20}$	0	0	0	0	$\frac{\sqrt{14i}}{35}$	0	0	0	0
		0	$-\frac{\sqrt{210i}}{100}$	0	0	$-\frac{\sqrt{14i}}{35}$	0	$\frac{4\sqrt{35i}}{175}$	0	0	0
		$-\frac{\sqrt{35i}}{100}$	0	$-\frac{\sqrt{105i}}{100}$	0	0	$-\frac{4\sqrt{35i}}{175}$	0	$\frac{3\sqrt{70i}}{175}$	0	0
		0	$-\frac{\sqrt{105i}}{100}$	0	$-\frac{\sqrt{35i}}{100}$	0	0	$-\frac{3\sqrt{70i}}{175}$	0	$\frac{4\sqrt{35i}}{175}$	0
		0	0	$-\frac{\sqrt{210i}}{100}$	0	0	0	0	$-\frac{4\sqrt{35i}}{175}$	0	$\frac{\sqrt{14i}}{35}$
		0	0	0	$-\frac{\sqrt{14i}}{20}$	0	0	0	0	$-\frac{\sqrt{14i}}{35}$	0
542	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$									

continued ...

Table 8

No.	multipole	matrix									
	$\mathbb{M}_3^{(1,1;a)}(A_g)$	$-\frac{6\sqrt{35}}{175}$	0	0	0	0	$\frac{9\sqrt{35}}{350}$	0	0	0	0
		0	$\frac{18\sqrt{35}}{175}$	0	0	0	0	$-\frac{3\sqrt{210}}{350}$	0	0	0
		0	0	$-\frac{18\sqrt{35}}{175}$	0	0	0	0	$-\frac{3\sqrt{210}}{350}$	0	0
		0	0	0	$\frac{6\sqrt{35}}{175}$	0	0	0	0	$\frac{9\sqrt{35}}{350}$	0
		0	0	0	0	$\frac{\sqrt{35}}{105}$	0	0	0	0	0
		$\frac{9\sqrt{35}}{350}$	0	0	0	0	$-\frac{\sqrt{35}}{75}$	0	0	0	0
		0	$-\frac{3\sqrt{210}}{350}$	0	0	0	0	$-\frac{4\sqrt{35}}{525}$	0	0	0
		0	0	$-\frac{3\sqrt{210}}{350}$	0	0	0	0	$\frac{4\sqrt{35}}{525}$	0	0
		0	0	0	$\frac{9\sqrt{35}}{350}$	0	0	0	0	$\frac{\sqrt{35}}{75}$	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{35}}{105}$
543	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$									
	$\mathbb{M}_3^{(1,1;a)}(B_g, 1)$	0	0	0	$\frac{6\sqrt{14}i}{35}$	0	0	0	0	$-\frac{9\sqrt{14}i}{280}$	0
		0	0	0	0	0	0	0	0	0	$-\frac{3\sqrt{210}i}{280}$
		0	0	0	0	$-\frac{3\sqrt{210}i}{280}$	0	0	0	0	0
		$-\frac{6\sqrt{14}i}{35}$	0	0	0	0	$-\frac{9\sqrt{14}i}{280}$	0	0	0	0
		0	0	$\frac{3\sqrt{210}i}{280}$	0	0	0	0	$-\frac{\sqrt{35}i}{105}$	0	0
		0	0	0	$\frac{9\sqrt{14}i}{280}$	0	0	0	0	$-\frac{2\sqrt{14}i}{105}$	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{35}i}{105}$
		0	0	0	0	$\frac{\sqrt{35}i}{105}$	0	0	0	0	0
		$\frac{9\sqrt{14}i}{280}$	0	0	0	0	$\frac{2\sqrt{14}i}{105}$	0	0	0	0
		0	$\frac{3\sqrt{210}i}{280}$	0	0	0	0	$\frac{\sqrt{35}i}{105}$	0	0	0
544	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$									

continued ...



Table 8

No.	multipole	matrix									
	$\mathbb{M}_3^{(1,1;a)}(B_g, 2)$	0	0	0	$-\frac{6\sqrt{14}}{35}$	0	0	0	0	$\frac{9\sqrt{14}}{280}$	0
		0	0	0	0	0	0	0	0	0	$\frac{3\sqrt{210}}{280}$
		0	0	0	0	$-\frac{3\sqrt{210}}{280}$	0	0	0	0	0
		$-\frac{6\sqrt{14}}{35}$	0	0	0	0	$-\frac{9\sqrt{14}}{280}$	0	0	0	0
		0	0	$-\frac{3\sqrt{210}}{280}$	0	0	0	0	$\frac{\sqrt{35}}{105}$	0	0
		0	0	0	$-\frac{9\sqrt{14}}{280}$	0	0	0	0	$\frac{2\sqrt{14}}{105}$	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{35}}{105}$
		0	0	0	0	$\frac{\sqrt{35}}{105}$	0	0	0	0	0
		$\frac{9\sqrt{14}}{280}$	0	0	0	0	$\frac{2\sqrt{14}}{105}$	0	0	0	0
		0	$\frac{3\sqrt{210}}{280}$	0	0	0	0	$\frac{\sqrt{35}}{105}$	0	0	0
545	symmetry	$-\frac{\sqrt{6x(x^2+y^2-4z^2)}}{4}$									
	$\mathbb{M}_{3,1}^{(1,1;a)}(E_{1g})$	0	$-\frac{6\sqrt{70}}{175}$	0	0	$-\frac{3\sqrt{42}}{280}$	0	$\frac{9\sqrt{105}}{700}$	0	0	0
		$-\frac{6\sqrt{70}}{175}$	0	$\frac{6\sqrt{210}}{175}$	0	0	$\frac{3\sqrt{70}}{200}$	0	$-\frac{3\sqrt{35}}{700}$	0	0
		0	$\frac{6\sqrt{210}}{175}$	0	$-\frac{6\sqrt{70}}{175}$	0	0	$\frac{3\sqrt{35}}{700}$	0	$-\frac{3\sqrt{70}}{200}$	0
		0	0	$-\frac{6\sqrt{70}}{175}$	0	0	0	0	$-\frac{9\sqrt{105}}{700}$	0	$\frac{3\sqrt{42}}{280}$
		$-\frac{3\sqrt{42}}{280}$	0	0	0	0	$\frac{\sqrt{42}}{105}$	0	0	0	0
		0	$\frac{3\sqrt{70}}{200}$	0	0	$\frac{\sqrt{42}}{105}$	0	$-\frac{\sqrt{105}}{525}$	0	0	0
		$\frac{9\sqrt{105}}{700}$	0	$\frac{3\sqrt{35}}{700}$	0	0	$-\frac{\sqrt{105}}{525}$	0	$-\frac{2\sqrt{210}}{525}$	0	0
		0	$-\frac{3\sqrt{35}}{700}$	0	$-\frac{9\sqrt{105}}{700}$	0	0	$-\frac{2\sqrt{210}}{525}$	0	$-\frac{\sqrt{105}}{525}$	0
		0	0	$-\frac{3\sqrt{70}}{200}$	0	0	0	0	$-\frac{\sqrt{105}}{525}$	0	$\frac{\sqrt{42}}{105}$
		0	0	0	$\frac{3\sqrt{42}}{280}$	0	0	0	0	$\frac{\sqrt{42}}{105}$	0
546	symmetry	$-\frac{\sqrt{6y(x^2+y^2-4z^2)}}{4}$									

*continued ...*

Table 8

No.	multipole	matrix									
	$\mathbb{M}_{3,2}^{(1,1;a)}(E_{1g})$	0	$\frac{6\sqrt{70}i}{175}$	0	0	$-\frac{3\sqrt{42}i}{280}$	0	$-\frac{9\sqrt{105}i}{700}$	0	0	0
		$-\frac{6\sqrt{70}i}{175}$	0	$-\frac{6\sqrt{210}i}{175}$	0	0	$\frac{3\sqrt{70}i}{200}$	0	$\frac{3\sqrt{35}i}{700}$	0	0
		0	$\frac{6\sqrt{210}i}{175}$	0	$\frac{6\sqrt{70}i}{175}$	0	0	$\frac{3\sqrt{35}i}{700}$	0	$\frac{3\sqrt{70}i}{200}$	0
		0	0	$-\frac{6\sqrt{70}i}{175}$	0	0	0	0	$-\frac{9\sqrt{105}i}{700}$	0	$-\frac{3\sqrt{42}i}{280}$
		$\frac{3\sqrt{42}i}{280}$	0	0	0	0	$-\frac{\sqrt{42}i}{105}$	0	0	0	0
		0	$-\frac{3\sqrt{70}i}{200}$	0	0	$\frac{\sqrt{42}i}{105}$	0	$\frac{\sqrt{105}i}{525}$	0	0	0
		$\frac{9\sqrt{105}i}{700}$	0	$-\frac{3\sqrt{35}i}{700}$	0	0	$-\frac{\sqrt{105}i}{525}$	0	$\frac{2\sqrt{210}i}{525}$	0	0
		0	$-\frac{3\sqrt{35}i}{700}$	0	$\frac{9\sqrt{105}i}{700}$	0	0	$-\frac{2\sqrt{210}i}{525}$	0	$\frac{\sqrt{105}i}{525}$	0
		0	0	$-\frac{3\sqrt{70}i}{200}$	0	0	0	0	$-\frac{\sqrt{105}i}{525}$	0	$-\frac{\sqrt{42}i}{105}$
		0	0	0	$\frac{3\sqrt{42}i}{280}$	0	0	0	0	$\frac{\sqrt{42}i}{105}$	0
547	symmetry	$\sqrt{15}xyz$									
	$\mathbb{M}_{3,1}^{(1,1;a)}(E_{2g})$	0	0	$\frac{6\sqrt{7}i}{35}$	0	0	0	0	$-\frac{3\sqrt{42}i}{140}$	0	0
		0	0	0	$-\frac{6\sqrt{7}i}{35}$	$-\frac{3\sqrt{35}i}{140}$	0	0	0	$-\frac{3\sqrt{7}i}{140}$	0
		$-\frac{6\sqrt{7}i}{35}$	0	0	0	0	$\frac{3\sqrt{7}i}{140}$	0	0	0	$\frac{3\sqrt{35}i}{140}$
		0	$\frac{6\sqrt{7}i}{35}$	0	0	0	0	$\frac{3\sqrt{42}i}{140}$	0	0	0
		0	$\frac{3\sqrt{35}i}{140}$	0	0	0	0	$-\frac{\sqrt{210}i}{210}$	0	0	0
		0	0	$-\frac{3\sqrt{7}i}{140}$	0	0	0	0	$-\frac{\sqrt{42}i}{210}$	0	0
		0	0	0	$-\frac{3\sqrt{42}i}{140}$	$\frac{\sqrt{210}i}{210}$	0	0	0	$\frac{\sqrt{42}i}{210}$	0
		$\frac{3\sqrt{42}i}{140}$	0	0	0	0	$\frac{\sqrt{42}i}{210}$	0	0	0	$\frac{\sqrt{210}i}{210}$
		0	$\frac{3\sqrt{7}i}{140}$	0	0	0	0	$-\frac{\sqrt{42}i}{210}$	0	0	0
		0	0	$-\frac{3\sqrt{35}i}{140}$	0	0	0	0	$-\frac{\sqrt{210}i}{210}$	0	0
548	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$									

continued ...

Table 8

No.	multipole	matrix									
$\mathbb{M}_{3,2}^{(1,1;a)}(E_{2g})$		0	0	$-\frac{6\sqrt{7}}{35}$	0	0	0	0	$\frac{3\sqrt{42}}{140}$	0	0
		0	0	0	$\frac{6\sqrt{7}}{35}$	$-\frac{3\sqrt{35}}{140}$	0	0	0	$\frac{3\sqrt{7}}{140}$	0
		$-\frac{6\sqrt{7}}{35}$	0	0	0	0	$\frac{3\sqrt{7}}{140}$	0	0	0	$-\frac{3\sqrt{35}}{140}$
		0	$\frac{6\sqrt{7}}{35}$	0	0	0	0	$\frac{3\sqrt{42}}{140}$	0	0	0
		0	$-\frac{3\sqrt{35}}{140}$	0	0	0	0	$\frac{\sqrt{210}}{210}$	0	0	0
		0	0	$\frac{3\sqrt{7}}{140}$	0	0	0	0	$\frac{\sqrt{42}}{210}$	0	0
		0	0	0	$\frac{3\sqrt{42}}{140}$	$\frac{\sqrt{210}}{210}$	0	0	0	$-\frac{\sqrt{42}}{210}$	0
		$\frac{3\sqrt{42}}{140}$	0	0	0	0	$\frac{\sqrt{42}}{210}$	0	0	0	$-\frac{\sqrt{210}}{210}$
		0	$\frac{3\sqrt{7}}{140}$	0	0	0	0	$-\frac{\sqrt{42}}{210}$	0	0	0
		0	0	$-\frac{3\sqrt{35}}{140}$	0	0	0	0	$-\frac{\sqrt{210}}{210}$	0	0

$$\begin{aligned} \text{bra:} &= \langle \frac{3}{2}, \frac{3}{2}; d |, \langle \frac{3}{2}, \frac{1}{2}; d |, \langle \frac{3}{2}, -\frac{1}{2}; d |, \langle \frac{3}{2}, -\frac{3}{2}; d |, \langle \frac{5}{2}, \frac{5}{2}; d |, \langle \frac{5}{2}, \frac{3}{2}; d |, \langle \frac{5}{2}, \frac{1}{2}; d |, \langle \frac{5}{2}, -\frac{1}{2}; d |, \langle \frac{5}{2}, -\frac{3}{2}; d |, \langle \frac{5}{2}, -\frac{5}{2}; d | \\ \text{ket:} &= | \frac{5}{2}, \frac{5}{2}; f \rangle, | \frac{5}{2}, \frac{3}{2}; f \rangle, | \frac{5}{2}, \frac{1}{2}; f \rangle, | \frac{5}{2}, -\frac{1}{2}; f \rangle, | \frac{5}{2}, -\frac{3}{2}; f \rangle, | \frac{5}{2}, -\frac{5}{2}; f \rangle, | \frac{7}{2}, \frac{7}{2}; f \rangle, | \frac{7}{2}, \frac{5}{2}; f \rangle, | \frac{7}{2}, \frac{3}{2}; f \rangle, | \frac{7}{2}, \frac{1}{2}; f \rangle, | \frac{7}{2}, -\frac{1}{2}; f \rangle, | \frac{7}{2}, -\frac{3}{2}; f \rangle, | \frac{7}{2}, -\frac{5}{2}; f \rangle, | \frac{7}{2}, -\frac{7}{2}; f \rangle \end{aligned}$$

Table 9: (d,f) block.

No.	multipole	matrix													
549	symmetry	$z$													
$\mathbb{Q}_1^{(a)}(A_u)$		$\begin{bmatrix} 0 & \frac{1}{5} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{6}}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{6}}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{1}{5} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{1}{14} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{14} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{3}{70} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{14} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{1}{70} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{7} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{1}{70} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{7} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{3}{70} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{14} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{1}{14} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{14} & 0 & 0 \end{bmatrix}$													

continued ...

Table 9

No.	multipole	matrix
550	symmetry	$ \begin{array}{c} x \\ \mathbb{Q}_{1,1}^{(a)}(E_{1u}) \end{array} \left[ \begin{array}{cccccccccccccccc} -\frac{\sqrt{5}}{10} & 0 & \frac{\sqrt{2}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{3}}{10} & 0 & \frac{\sqrt{6}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{6}}{20} & 0 & \frac{\sqrt{3}}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{2}}{20} & 0 & \frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{5}}{70} & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}}{28} & 0 & \frac{\sqrt{2}}{28} & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{5}}{70} & 0 & -\frac{\sqrt{2}}{35} & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{28} & 0 & \frac{\sqrt{6}}{28} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{2}}{35} & 0 & -\frac{3}{70} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{14} & 0 & \frac{\sqrt{3}}{14} & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{3}{70} & 0 & -\frac{\sqrt{2}}{35} & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{14} & 0 & \frac{\sqrt{5}}{14} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{2}}{35} & 0 & -\frac{\sqrt{5}}{70} & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{28} & 0 & \frac{\sqrt{30}}{28} & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{70} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{28} & 0 & \frac{\sqrt{42}}{28} & 0 \end{array} \right] $
551	symmetry	$ \begin{array}{c} y \\ \mathbb{Q}_{1,2}^{(a)}(E_{1u}) \end{array} \left[ \begin{array}{cccccccccccccccc} -\frac{\sqrt{5}i}{10} & 0 & -\frac{\sqrt{2}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{3}i}{10} & 0 & -\frac{\sqrt{6}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{6}i}{20} & 0 & -\frac{\sqrt{3}i}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{2}i}{20} & 0 & -\frac{\sqrt{5}i}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{5}i}{70} & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}i}{28} & 0 & -\frac{\sqrt{2}i}{28} & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{5}i}{70} & 0 & \frac{\sqrt{2}i}{35} & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}i}{28} & 0 & -\frac{\sqrt{6}i}{28} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{2}i}{35} & 0 & \frac{3i}{70} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{14} & 0 & -\frac{\sqrt{3}i}{14} & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{3i}{70} & 0 & \frac{\sqrt{2}i}{35} & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{14} & 0 & -\frac{\sqrt{5}i}{14} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{2}i}{35} & 0 & \frac{\sqrt{5}i}{70} & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{28} & 0 & -\frac{\sqrt{30}i}{28} & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{70} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{28} & 0 & -\frac{\sqrt{42}i}{28} & 0 \end{array} \right] $
552	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{Q}_3^{(a)}(A_u)$	0	$-\frac{3\sqrt{21}}{70}$	0	0	0	0	0	$-\frac{\sqrt{210}}{84}$	0	0	0	0	0	
		0	0	$\frac{3\sqrt{14}}{70}$	0	0	0	0	0	$-\frac{\sqrt{42}}{84}$	0	0	0	0	
		0	0	0	$\frac{3\sqrt{14}}{70}$	0	0	0	0	0	$\frac{\sqrt{42}}{84}$	0	0	0	
		0	0	0	0	$-\frac{3\sqrt{21}}{70}$	0	0	0	0	0	$\frac{\sqrt{210}}{84}$	0	0	
		$\frac{\sqrt{21}}{42}$	0	0	0	0	0	$-\frac{\sqrt{14}}{14}$	0	0	0	0	0	0	
		0	$-\frac{\sqrt{21}}{30}$	0	0	0	0	0	0	0	0	0	0	0	
		0	0	$-\frac{2\sqrt{21}}{105}$	0	0	0	0	0	$\frac{\sqrt{7}}{14}$	0	0	0	0	
		0	0	0	$\frac{2\sqrt{21}}{105}$	0	0	0	0	0	$\frac{\sqrt{7}}{14}$	0	0	0	
		0	0	0	0	$\frac{\sqrt{21}}{30}$	0	0	0	0	0	0	0	0	
		0	0	0	0	0	$-\frac{\sqrt{21}}{42}$	0	0	0	0	0	$-\frac{\sqrt{14}}{14}$	0	
553	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$													
	$\mathbb{Q}_3^{(a)}(B_u, 1)$	0	0	0	0	$\frac{3\sqrt{210}i}{280}$	0	0	0	0	0	$\frac{\sqrt{21}i}{84}$	0	0	
		0	0	0	0	0	$\frac{3\sqrt{14}i}{56}$	$-\frac{\sqrt{3}i}{12}$	0	0	0	0	$\frac{\sqrt{21}i}{42}$	0	
		$\frac{3\sqrt{14}i}{56}$	0	0	0	0	0	0	$-\frac{\sqrt{21}i}{42}$	0	0	0	0	$\frac{\sqrt{3}i}{12}$	
		0	$\frac{3\sqrt{210}i}{280}$	0	0	0	0	0	0	$-\frac{\sqrt{21}i}{84}$	0	0	0	0	
		0	0	0	$-\frac{\sqrt{21}i}{42}$	0	0	0	0	0	$\frac{\sqrt{7}i}{28}$	0	0	0	
		0	0	0	0	$-\frac{\sqrt{210}i}{105}$	0	0	0	0	0	$\frac{\sqrt{21}i}{28}$	0	0	
		0	0	0	0	0	$-\frac{\sqrt{21}i}{42}$	$\frac{\sqrt{2}i}{8}$	0	0	0	0	$\frac{3\sqrt{14}i}{56}$	0	
		$\frac{\sqrt{21}i}{42}$	0	0	0	0	0	0	$\frac{3\sqrt{14}i}{56}$	0	0	0	0	$\frac{\sqrt{2}i}{8}$	
		0	$\frac{\sqrt{210}i}{105}$	0	0	0	0	0	0	$\frac{\sqrt{21}i}{28}$	0	0	0	0	
		0	0	$\frac{\sqrt{21}i}{42}$	0	0	0	0	0	0	$\frac{\sqrt{7}i}{28}$	0	0	0	
554	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{Q}_3^{(a)}(B_u, 2)$	0	0	0	0	$-\frac{3\sqrt{210}}{280}$	0	0	0	0	0	0	$-\frac{\sqrt{21}}{84}$	0	0
		0	0	0	0	0	$-\frac{3\sqrt{14}}{56}$	$-\frac{\sqrt{3}}{12}$	0	0	0	0	0	$-\frac{\sqrt{21}}{42}$	0
		$\frac{3\sqrt{14}}{56}$	0	0	0	0	0	0	$-\frac{\sqrt{21}}{42}$	0	0	0	0	0	$-\frac{\sqrt{3}}{12}$
		0	$\frac{3\sqrt{210}}{280}$	0	0	0	0	0	0	$-\frac{\sqrt{21}}{84}$	0	0	0	0	0
		0	0	0	$\frac{\sqrt{21}}{42}$	0	0	0	0	0	0	$-\frac{\sqrt{7}}{28}$	0	0	0
		0	0	0	0	$\frac{\sqrt{210}}{105}$	0	0	0	0	0	0	$-\frac{\sqrt{21}}{28}$	0	0
		0	0	0	0	0	$\frac{\sqrt{21}}{42}$	$\frac{\sqrt{2}}{8}$	0	0	0	0	0	$-\frac{3\sqrt{14}}{56}$	0
		$\frac{\sqrt{21}}{42}$	0	0	0	0	0	0	$\frac{3\sqrt{14}}{56}$	0	0	0	0	0	$-\frac{\sqrt{2}}{8}$
		0	$\frac{\sqrt{210}}{105}$	0	0	0	0	0	0	$\frac{\sqrt{21}}{28}$	0	0	0	0	0
		0	0	$\frac{\sqrt{21}}{42}$	0	0	0	0	0	$\frac{\sqrt{7}}{28}$	0	0	0	0	0
555	symmetry	$-\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$													
	$\mathbb{Q}_{3,1}^{(a)}(E_{1u})$	$\frac{3\sqrt{70}}{280}$	0	$-\frac{9\sqrt{7}}{140}$	0	0	0	0	$\frac{\sqrt{105}}{84}$	0	$-\frac{\sqrt{21}}{42}$	0	0	0	0
		0	$-\frac{\sqrt{42}}{40}$	0	$\frac{\sqrt{21}}{140}$	0	0	0	0	0	0	$-\frac{\sqrt{7}}{28}$	0	0	0
		0	0	$-\frac{\sqrt{21}}{140}$	0	$\frac{\sqrt{42}}{40}$	0	0	0	0	$-\frac{\sqrt{7}}{28}$	0	0	0	0
		0	0	0	$\frac{9\sqrt{7}}{140}$	0	$-\frac{3\sqrt{70}}{280}$	0	0	0	0	$-\frac{\sqrt{21}}{42}$	0	$\frac{\sqrt{105}}{84}$	0
		0	$\frac{\sqrt{70}}{70}$	0	0	0	0	$\frac{\sqrt{3}}{12}$	0	$-\frac{\sqrt{7}}{14}$	0	0	0	0	0
		$\frac{\sqrt{70}}{70}$	0	$-\frac{\sqrt{7}}{70}$	0	0	0	0	$-\frac{\sqrt{105}}{84}$	0	$-\frac{\sqrt{21}}{42}$	0	0	0	0
		0	$-\frac{\sqrt{7}}{70}$	0	$-\frac{\sqrt{14}}{35}$	0	0	0	0	$-\frac{\sqrt{70}}{56}$	0	$\frac{\sqrt{42}}{168}$	0	0	0
		0	0	$-\frac{\sqrt{14}}{35}$	0	$-\frac{\sqrt{7}}{70}$	0	0	0	0	$-\frac{\sqrt{42}}{168}$	0	$\frac{\sqrt{70}}{56}$	0	0
		0	0	0	$-\frac{\sqrt{7}}{70}$	0	$\frac{\sqrt{70}}{70}$	0	0	0	0	$\frac{\sqrt{21}}{42}$	0	$\frac{\sqrt{105}}{84}$	0
		0	0	0	0	$\frac{\sqrt{70}}{70}$	0	0	0	0	0	0	$\frac{\sqrt{7}}{14}$	0	$-\frac{\sqrt{3}}{12}$
556	symmetry	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$													

continued ...

Table 9

No.	multipole	matrix															
	$\mathbb{Q}_{3,2}^{(a)}(E_{1u})$	$\frac{3\sqrt{70}i}{280}$	0	$\frac{9\sqrt{7}i}{140}$	0	0	0	0	$\frac{\sqrt{105}i}{84}$	0	$\frac{\sqrt{21}i}{42}$	0	0	0	0		
		0	$-\frac{\sqrt{42}i}{40}$	0	$-\frac{\sqrt{21}i}{140}$	0	0	0	0	0	0	$\frac{\sqrt{7}i}{28}$	0	0	0	0	
		0	0	$-\frac{\sqrt{21}i}{140}$	0	$-\frac{\sqrt{42}i}{40}$	0	0	0	0	$-\frac{\sqrt{7}i}{28}$	0	0	0	0	0	
		0	0	0	$\frac{9\sqrt{7}i}{140}$	0	$\frac{3\sqrt{70}i}{280}$	0	0	0	0	$-\frac{\sqrt{21}i}{42}$	0	$-\frac{\sqrt{105}i}{84}$	0	0	
		0	$-\frac{\sqrt{70}i}{70}$	0	0	0	0	$\frac{\sqrt{3}i}{12}$	0	$\frac{\sqrt{7}i}{14}$	0	0	0	0	0	0	
		$\frac{\sqrt{70}i}{70}$	0	$\frac{\sqrt{7}i}{70}$	0	0	0	0	$-\frac{\sqrt{105}i}{84}$	0	$\frac{\sqrt{21}i}{42}$	0	0	0	0	0	
		0	$-\frac{\sqrt{7}i}{70}$	0	$\frac{\sqrt{14}i}{35}$	0	0	0	0	$-\frac{\sqrt{70}i}{56}$	0	$-\frac{\sqrt{42}i}{168}$	0	0	0	0	
		0	0	$-\frac{\sqrt{14}i}{35}$	0	$\frac{\sqrt{7}i}{70}$	0	0	0	0	$-\frac{\sqrt{42}i}{168}$	0	$-\frac{\sqrt{70}i}{56}$	0	0	0	
		0	0	0	$-\frac{\sqrt{7}i}{70}$	0	$-\frac{\sqrt{70}i}{70}$	0	0	0	0	$\frac{\sqrt{21}i}{42}$	0	$-\frac{\sqrt{105}i}{84}$	0	0	
		0	0	0	0	$\frac{\sqrt{70}i}{70}$	0	0	0	0	0	0	$\frac{\sqrt{7}i}{14}$	0	$\frac{\sqrt{3}i}{12}$	0	
557	symmetry	$\sqrt{15}xyz$															
	$\mathbb{Q}_{3,1}^{(a)}(E_{2u})$	0	0	0	$\frac{3\sqrt{70}i}{140}$	0	0	$-\frac{\sqrt{6}i}{24}$	0	0	0	$\frac{\sqrt{210}i}{168}$	0	0	0	0	
		$\frac{\sqrt{21}i}{28}$	0	0	0	$\frac{\sqrt{105}i}{140}$	0	0	$\frac{\sqrt{14}i}{56}$	0	0	0	$\frac{\sqrt{42}i}{56}$	0	0	0	0
		0	$-\frac{\sqrt{105}i}{140}$	0	0	0	$-\frac{\sqrt{21}i}{28}$	0	0	$\frac{\sqrt{42}i}{56}$	0	0	0	$\frac{\sqrt{14}i}{56}$	0	0	0
		0	0	$-\frac{3\sqrt{70}i}{140}$	0	0	0	0	0	0	$\frac{\sqrt{210}i}{168}$	0	0	0	$-\frac{\sqrt{6}i}{24}$	0	0
		0	0	$-\frac{\sqrt{14}i}{28}$	0	0	0	0	0	0	$\frac{\sqrt{42}i}{42}$	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{70}i}{140}$	0	0	$\frac{\sqrt{6}i}{12}$	0	0	0	$\frac{\sqrt{210}i}{84}$	0	0	0	0	0
		$\frac{\sqrt{14}i}{28}$	0	0	0	$\frac{\sqrt{70}i}{140}$	0	0	$\frac{\sqrt{21}i}{84}$	0	0	0	$\frac{\sqrt{7}i}{28}$	0	0	0	0
		0	$\frac{\sqrt{70}i}{140}$	0	0	0	$\frac{\sqrt{14}i}{28}$	0	0	$-\frac{\sqrt{7}i}{28}$	0	0	0	$-\frac{\sqrt{21}i}{84}$	0	0	0
		0	0	$-\frac{\sqrt{70}i}{140}$	0	0	0	0	0	0	$-\frac{\sqrt{210}i}{84}$	0	0	0	0	$-\frac{\sqrt{6}i}{12}$	0
		0	0	0	$-\frac{\sqrt{14}i}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{42}i}{42}$	0	0	0	0	0
558	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$															

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{Q}_{3,2}^{(a)}(E_{2u})$	0	0	0	$-\frac{3\sqrt{70}}{140}$	0	0	$-\frac{\sqrt{6}}{24}$	0	0	0	$-\frac{\sqrt{210}}{168}$	0	0	0
		$\frac{\sqrt{21}}{28}$	0	0	0	$-\frac{\sqrt{105}}{140}$	0	0	$\frac{\sqrt{14}}{56}$	0	0	0	$-\frac{\sqrt{42}}{56}$	0	0
		0	$-\frac{\sqrt{105}}{140}$	0	0	0	$\frac{\sqrt{21}}{28}$	0	0	$\frac{\sqrt{42}}{56}$	0	0	0	$-\frac{\sqrt{14}}{56}$	0
		0	0	$-\frac{3\sqrt{70}}{140}$	0	0	0	0	0	0	$\frac{\sqrt{210}}{168}$	0	0	0	$\frac{\sqrt{6}}{24}$
		0	0	$\frac{\sqrt{14}}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{42}}{42}$	0	0	0	0
		0	0	0	$\frac{\sqrt{70}}{140}$	0	0	$\frac{\sqrt{6}}{12}$	0	0	0	$-\frac{\sqrt{210}}{84}$	0	0	0
		$\frac{\sqrt{14}}{28}$	0	0	0	$-\frac{\sqrt{70}}{140}$	0	0	$\frac{\sqrt{21}}{84}$	0	0	0	$-\frac{\sqrt{7}}{28}$	0	0
		0	$\frac{\sqrt{70}}{140}$	0	0	0	$-\frac{\sqrt{14}}{28}$	0	0	$-\frac{\sqrt{7}}{28}$	0	0	0	$\frac{\sqrt{21}}{84}$	0
		0	0	$-\frac{\sqrt{70}}{140}$	0	0	0	0	0	0	$-\frac{\sqrt{210}}{84}$	0	0	0	$\frac{\sqrt{6}}{12}$
		0	0	0	$-\frac{\sqrt{14}}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{42}}{42}$	0	0	0
559	symmetry	$\frac{z(15x^4+30x^2y^2-40x^2z^2+15y^4-40y^2z^2+8z^4)}{8}$													
	$\mathbb{Q}_5^{(a)}(A_u)$	0	0	0	0	0	0	0	$\frac{\sqrt{15}}{30}$	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	$-\frac{\sqrt{15}}{30}$	0	0	0
		$-\frac{\sqrt{6}}{84}$	0	0	0	0	0	0	$\frac{1}{14}$	0	0	0	0	0	0
		0	$\frac{5\sqrt{6}}{84}$	0	0	0	0	0	$-\frac{3\sqrt{15}}{70}$	0	0	0	0	0	0
		0	0	$-\frac{5\sqrt{6}}{42}$	0	0	0	0	0	$\frac{\sqrt{2}}{14}$	0	0	0	0	0
		0	0	0	$\frac{5\sqrt{6}}{42}$	0	0	0	0	0	$\frac{\sqrt{2}}{14}$	0	0	0	0
		0	0	0	0	$-\frac{5\sqrt{6}}{84}$	0	0	0	0	0	$-\frac{3\sqrt{15}}{70}$	0	0	0
		0	0	0	0	0	$\frac{\sqrt{6}}{84}$	0	0	0	0	0	0	$\frac{1}{14}$	0
560	symmetry	$-\frac{\sqrt{70}y(3x^2-y^2)(x^2+y^2-8z^2)}{16}$													

continued ...



Table 9

No.	multipole	matrix														
	$\mathbb{Q}_5^{(a)}(B_u, 1)$	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{42}i}{30}$	0	0		
		0	0	0	0	0	$\frac{\sqrt{6}i}{30}$	0	0	0	0	0	$\frac{\sqrt{42}i}{30}$	0		
		0	0	0	0	0	0	$-\frac{\sqrt{42}i}{30}$	0	0	0	0	0	$-\frac{\sqrt{6}i}{30}$		
		0	0	0	0	0	0	0	$\frac{\sqrt{42}i}{30}$	0	0	0	0	0		
		0	0	0	$\frac{\sqrt{42}i}{42}$	0	0	0	0	0	$-\frac{\sqrt{14}i}{28}$	0	0	0		
		0	0	0	0	$-\frac{\sqrt{105}i}{42}$	0	0	0	0	0	$\frac{\sqrt{42}i}{140}$	0	0		
		0	0	0	0	0	$\frac{\sqrt{42}i}{42}$	$-\frac{i}{10}$	0	0	0	0	$\frac{3\sqrt{7}i}{70}$	0		
		$-\frac{\sqrt{42}i}{42}$	0	0	0	0	0	$\frac{3\sqrt{7}i}{70}$	0	0	0	0	0	$-\frac{i}{10}$		
		0	$\frac{\sqrt{105}i}{42}$	0	0	0	0	0	$\frac{\sqrt{42}i}{140}$	0	0	0	0	0		
		0	0	$-\frac{\sqrt{42}i}{42}$	0	0	0	0	0	$-\frac{\sqrt{14}i}{28}$	0	0	0	0		
561	symmetry	$-\frac{\sqrt{70}x\left(x^2-3y^2\right)\left(x^2+y^2-8z^2\right)}{16}$														
	$\mathbb{Q}_5^{(a)}(B_u, 2)$	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{42}}{30}$	0	0		
		0	0	0	0	0	$\frac{\sqrt{6}}{30}$	0	0	0	0	0	$-\frac{\sqrt{42}}{30}$	0		
		0	0	0	0	0	0	$-\frac{\sqrt{42}}{30}$	0	0	0	0	0	$\frac{\sqrt{6}}{30}$		
		0	0	0	0	0	0	0	$\frac{\sqrt{42}}{30}$	0	0	0	0	0		
		0	0	0	$-\frac{\sqrt{42}}{42}$	0	0	0	0	0	$\frac{\sqrt{14}}{28}$	0	0	0		
		0	0	0	0	$\frac{\sqrt{105}}{42}$	0	0	0	0	0	$-\frac{\sqrt{42}}{140}$	0	0		
		0	0	0	0	0	$-\frac{\sqrt{42}}{42}$	$-\frac{1}{10}$	0	0	0	0	$-\frac{3\sqrt{7}}{70}$	0		
		$-\frac{\sqrt{42}}{42}$	0	0	0	0	0	$\frac{3\sqrt{7}}{70}$	0	0	0	0	0	$\frac{1}{10}$		
		0	$\frac{\sqrt{105}}{42}$	0	0	0	0	0	$\frac{\sqrt{42}}{140}$	0	0	0	0	0		
		0	0	$-\frac{\sqrt{42}}{42}$	0	0	0	0	0	$-\frac{\sqrt{14}}{28}$	0	0	0	0		
562	symmetry	$\frac{3\sqrt{14}x\left(x^4-10x^2y^2+5y^4\right)}{16}$														

*continued ...*

Table 9

No.	multipole	matrix													
	$\mathbb{Q}_{5,1}^{(a)}(E_{1u}, 1)$	0	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	0	0	0	
		0	0	0	0	0	0	0	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	0	$-\frac{\sqrt{21}}{14}$	0	0	0	0	0	$\frac{\sqrt{14}}{28}$	0		
		0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{10}}{20}$	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	$-\frac{\sqrt{10}}{20}$	0	0	0	0	0	0	0	
		$-\frac{\sqrt{21}}{14}$	0	0	0	0	0	$-\frac{\sqrt{14}}{28}$	0	0	0	0	0	0	
563	symmetry	$-\frac{3\sqrt{14}y(5x^4-10x^2y^2+y^4)}{16}$													
	$\mathbb{Q}_{5,2}^{(a)}(E_{1u}, 1)$	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	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	$-\frac{\sqrt{10}i}{10}$	0	0	0	0	0	0	0	
		0	0	0	0	$-\frac{\sqrt{21}i}{14}$	0	0	0	0	0	$\frac{\sqrt{14}i}{28}$	0		
		0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{10}i}{20}$	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	$\frac{\sqrt{10}i}{20}$	0	0	0	0	0	0	0	
		$\frac{\sqrt{21}i}{14}$	0	0	0	0	0	$\frac{\sqrt{14}i}{28}$	0	0	0	0	0	0	
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												
	$\mathbb{Q}_{5,1}^{(a)}(E_{1u}, 2)$	0	0	0	0	0	0	0	$-\frac{\sqrt{3}}{30}$	0	$\frac{\sqrt{15}}{30}$	0	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{3}}{10}$	0	$-\frac{\sqrt{5}}{10}$	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{5}}{10}$	0	$\frac{\sqrt{3}}{10}$	0
		0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{15}}{30}$	0	$-\frac{\sqrt{3}}{30}$
		0	$-\frac{\sqrt{2}}{28}$	0	0	0	0	$-\frac{\sqrt{105}}{420}$	0	$\frac{\sqrt{5}}{28}$	0	0	0	0
		$-\frac{\sqrt{2}}{28}$	0	$\frac{\sqrt{5}}{14}$	0	0	0	0	$\frac{23\sqrt{3}}{420}$	0	$-\frac{13\sqrt{15}}{420}$	0	0	0
		0	$\frac{\sqrt{5}}{14}$	0	$-\frac{\sqrt{10}}{14}$	0	0	0	0	$-\frac{11\sqrt{2}}{140}$	0	$\frac{\sqrt{30}}{420}$	0	0
		0	0	$-\frac{\sqrt{10}}{14}$	0	$\frac{\sqrt{5}}{14}$	0	0	0	0	$-\frac{\sqrt{30}}{420}$	0	$\frac{11\sqrt{2}}{140}$	0
		0	0	0	$\frac{\sqrt{5}}{14}$	0	$-\frac{\sqrt{2}}{28}$	0	0	0	0	$\frac{13\sqrt{15}}{420}$	0	$-\frac{23\sqrt{3}}{420}$
		0	0	0	0	$-\frac{\sqrt{2}}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{5}}{28}$	$\frac{\sqrt{105}}{420}$
565	symmetry	$\frac{\sqrt{15}y(x^4+2x^2y^2-12x^2z^2+y^4-12y^2z^2+8z^4)}{8}$												
	$\mathbb{Q}_{5,2}^{(a)}(E_{1u}, 2)$	0	0	0	0	0	0	0	$-\frac{\sqrt{3}i}{30}$	0	$-\frac{\sqrt{15}i}{30}$	0	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{3}i}{10}$	0	$\frac{\sqrt{5}i}{10}$	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{5}i}{10}$	0	$-\frac{\sqrt{3}i}{10}$	0
		0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{15}i}{30}$	0	$\frac{\sqrt{3}i}{30}$
		0	$\frac{\sqrt{2}i}{28}$	0	0	0	0	$-\frac{\sqrt{105}i}{420}$	0	$-\frac{\sqrt{5}i}{28}$	0	0	0	0
		$-\frac{\sqrt{2}i}{28}$	0	$-\frac{\sqrt{5}i}{14}$	0	0	0	0	$\frac{23\sqrt{3}i}{420}$	0	$\frac{13\sqrt{15}i}{420}$	0	0	0
		0	$\frac{\sqrt{5}i}{14}$	0	$\frac{\sqrt{10}i}{14}$	0	0	0	0	$-\frac{11\sqrt{2}i}{140}$	0	$-\frac{\sqrt{30}i}{420}$	0	0
		0	0	$-\frac{\sqrt{10}i}{14}$	0	$-\frac{\sqrt{5}i}{14}$	0	0	0	0	$-\frac{\sqrt{30}i}{420}$	0	$-\frac{11\sqrt{2}i}{140}$	0
		0	0	0	$\frac{\sqrt{5}i}{14}$	0	$\frac{\sqrt{2}i}{28}$	0	0	0	0	$\frac{13\sqrt{15}i}{420}$	0	$\frac{23\sqrt{3}i}{420}$
		0	0	0	0	$-\frac{\sqrt{2}i}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{5}i}{28}$	$-\frac{\sqrt{105}i}{420}$
566	symmetry	$-\frac{3\sqrt{35}xyz(x-y)(x+y)}{2}$												

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{Q}_{5,1}^{(a)}(E_{2u}, 1)$	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{7}i}{10}$	0	
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{3}i}{10}$	
		0	0	0	0	0	$-\frac{\sqrt{3}i}{10}$	0	0	0	0	0	0	0	
		0	0	0	0	0	0	$\frac{\sqrt{7}i}{10}$	0	0	0	0	0	0	
		0	0	0	0	$-\frac{\sqrt{42}i}{28}$	0	0	0	0	0	$\frac{\sqrt{105}i}{70}$	0	0	
		0	0	0	0	0	$\frac{\sqrt{42}i}{28}$	0	0	0	0	0	$\frac{\sqrt{7}i}{70}$	0	
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{2}i}{10}$	
		0	0	0	0	0	$\frac{\sqrt{2}i}{10}$	0	0	0	0	0	0	0	
		$\frac{\sqrt{42}i}{28}$	0	0	0	0	0	$-\frac{\sqrt{7}i}{70}$	0	0	0	0	0	0	
		0	$-\frac{\sqrt{42}i}{28}$	0	0	0	0	0	$-\frac{\sqrt{105}i}{70}$	0	0	0	0	0	
567	symmetry	$\frac{3\sqrt{35}z(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$													
	$\mathbb{Q}_{5,2}^{(a)}(E_{2u}, 1)$	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{7}}{10}$	0	
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{3}}{10}$	
		0	0	0	0	0	$\frac{\sqrt{3}}{10}$	0	0	0	0	0	0	0	
		0	0	0	0	0	0	$-\frac{\sqrt{7}}{10}$	0	0	0	0	0	0	
		0	0	0	0	$-\frac{\sqrt{42}}{28}$	0	0	0	0	0	$\frac{\sqrt{105}}{70}$	0	0	
		0	0	0	0	0	$\frac{\sqrt{42}}{28}$	0	0	0	0	0	$\frac{\sqrt{7}}{70}$	0	
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{2}}{10}$	
		0	0	0	0	0	$-\frac{\sqrt{2}}{10}$	0	0	0	0	0	0	0	
		$-\frac{\sqrt{42}}{28}$	0	0	0	0	0	$\frac{\sqrt{7}}{70}$	0	0	0	0	0	0	
		0	$\frac{\sqrt{42}}{28}$	0	0	0	0	0	$\frac{\sqrt{105}}{70}$	0	0	0	0	0	
568	symmetry	$-\frac{\sqrt{105}xyz(x^2+y^2-2z^2)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{Q}_{5,1}^{(a)}(E_{2u}, 2)$	0	0	0	0	0	0	$\frac{\sqrt{3}i}{60}$	0	0	0	$-\frac{\sqrt{105}i}{60}$	0	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{7}i}{20}$	0	0	0	$\frac{\sqrt{21}i}{20}$	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{21}i}{20}$	0	0	0	$-\frac{\sqrt{7}i}{20}$	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{105}i}{60}$	0	0	0	$\frac{\sqrt{3}i}{60}$
		0	0	$\frac{\sqrt{7}i}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{21}i}{42}$	0	0	0	0
		0	0	0	$-\frac{\sqrt{35}i}{28}$	0	0	$-\frac{\sqrt{3}i}{30}$	0	0	0	$\frac{\sqrt{105}i}{105}$	0	0	0
		$-\frac{\sqrt{7}i}{28}$	0	0	0	$\frac{\sqrt{35}i}{28}$	0	0	$\frac{2\sqrt{42}i}{105}$	0	0	0	$\frac{\sqrt{14}i}{70}$	0	0
		0	$\frac{\sqrt{35}i}{28}$	0	0	0	$-\frac{\sqrt{7}i}{28}$	0	0	$-\frac{\sqrt{14}i}{70}$	0	0	0	$-\frac{2\sqrt{42}i}{105}$	0
		0	0	$-\frac{\sqrt{35}i}{28}$	0	0	0	0	0	$-\frac{\sqrt{105}i}{105}$	0	0	0	$\frac{\sqrt{3}i}{30}$	
		0	0	0	$\frac{\sqrt{7}i}{28}$	0	0	0	0	0	0	$\frac{\sqrt{21}i}{42}$	0	0	0
569	symmetry	$-\frac{\sqrt{105}z(x-y)(x+y)(x^2+y^2-2z^2)}{4}$													
	$\mathbb{Q}_{5,2}^{(a)}(E_{2u}, 2)$	0	0	0	0	0	0	$\frac{\sqrt{3}}{60}$	0	0	0	$\frac{\sqrt{105}}{60}$	0	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{7}}{20}$	0	0	0	$-\frac{\sqrt{21}}{20}$	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{21}}{20}$	0	0	0	$\frac{\sqrt{7}}{20}$	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{105}}{60}$	0	0	0	$-\frac{\sqrt{3}}{60}$
		0	0	$-\frac{\sqrt{7}}{28}$	0	0	0	0	0	0	$\frac{\sqrt{21}}{42}$	0	0	0	0
		0	0	0	$\frac{\sqrt{35}}{28}$	0	0	$-\frac{\sqrt{3}}{30}$	0	0	0	$-\frac{\sqrt{105}}{105}$	0	0	0
		$-\frac{\sqrt{7}}{28}$	0	0	0	$-\frac{\sqrt{35}}{28}$	0	0	$\frac{2\sqrt{42}}{105}$	0	0	0	$-\frac{\sqrt{14}}{70}$	0	0
		0	$\frac{\sqrt{35}}{28}$	0	0	0	$\frac{\sqrt{7}}{28}$	0	0	$-\frac{\sqrt{14}}{70}$	0	0	0	$\frac{2\sqrt{42}}{105}$	0
		0	0	$-\frac{\sqrt{35}}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{105}}{105}$	0	0	0	$-\frac{\sqrt{3}}{30}$
		0	0	0	$\frac{\sqrt{7}}{28}$	0	0	0	0	0	0	$\frac{\sqrt{21}}{42}$	0	0	0
570	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{Q}_3^{(1,-1;a)}(A_u)$	0	$-\frac{\sqrt{6}}{35}$	0	0	0	0	0	0	$-\frac{\sqrt{15}}{14}$	0	0	0	0	0
		0	0	$\frac{2}{35}$	0	0	0	0	0	0	$-\frac{\sqrt{3}}{14}$	0	0	0	0
		0	0	0	$\frac{2}{35}$	0	0	0	0	0	0	$\frac{\sqrt{3}}{14}$	0	0	0
		0	0	0	0	$-\frac{\sqrt{6}}{35}$	0	0	0	0	0	0	$\frac{\sqrt{15}}{14}$	0	0
		$\frac{\sqrt{6}}{28}$	0	0	0	0	0	0	$\frac{2}{7}$	0	0	0	0	0	0
		0	$-\frac{\sqrt{6}}{20}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{6}}{35}$	0	0	0	0	0	$-\frac{\sqrt{2}}{7}$	0	0	0	0	0
		0	0	0	$\frac{\sqrt{6}}{35}$	0	0	0	0	0	$-\frac{\sqrt{2}}{7}$	0	0	0	0
		0	0	0	0	$\frac{\sqrt{6}}{20}$	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{6}}{28}$	0	0	0	0	0	0	$\frac{2}{7}$	0
571	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$													
	$\mathbb{Q}_3^{(1,-1;a)}(B_u,1)$	0	0	0	0	$\frac{\sqrt{15}i}{70}$	0	0	0	0	0	$\frac{\sqrt{6}i}{28}$	0	0	0
		0	0	0	0	0	$\frac{i}{14}$	$-\frac{\sqrt{42}i}{28}$	0	0	0	0	0	$\frac{\sqrt{6}i}{14}$	0
		$\frac{i}{14}$	0	0	0	0	0	0	$-\frac{\sqrt{6}i}{14}$	0	0	0	0	0	$\frac{\sqrt{42}i}{28}$
		0	$\frac{\sqrt{15}i}{70}$	0	0	0	0	0	0	$-\frac{\sqrt{6}i}{28}$	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{6}i}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{2}i}{14}$	0	0	0
		0	0	0	0	$-\frac{\sqrt{15}i}{35}$	0	0	0	0	0	0	$-\frac{\sqrt{6}i}{14}$	0	0
		0	0	0	0	0	$-\frac{\sqrt{6}i}{28}$	$-\frac{\sqrt{7}i}{14}$	0	0	0	0	0	$-\frac{3i}{14}$	0
		$\frac{\sqrt{6}i}{28}$	0	0	0	0	0	0	$-\frac{3i}{14}$	0	0	0	0	0	$-\frac{\sqrt{7}i}{14}$
		0	$\frac{\sqrt{15}i}{35}$	0	0	0	0	0	0	$-\frac{\sqrt{6}i}{14}$	0	0	0	0	0
		0	0	$\frac{\sqrt{6}i}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{2}i}{14}$	0	0	0	0
572	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$													

continued ...

Table 9

No.	multipole	matrix														
	$\mathbb{Q}_3^{(1,-1;a)}(B_u, 2)$	0	0	0	0	$-\frac{\sqrt{15}}{70}$	0	0	0	0	0	0	$-\frac{\sqrt{6}}{28}$	0	0	
		0	0	0	0	0	$-\frac{1}{14}$	$-\frac{\sqrt{42}}{28}$	0	0	0	0	0	$-\frac{\sqrt{6}}{14}$	0	
		$\frac{1}{14}$	0	0	0	0	0	0	$-\frac{\sqrt{6}}{14}$	0	0	0	0	0	$-\frac{\sqrt{42}}{28}$	
		0	$\frac{\sqrt{15}}{70}$	0	0	0	0	0	0	$-\frac{\sqrt{6}}{28}$	0	0	0	0	0	
		0	0	0	$\frac{\sqrt{6}}{28}$	0	0	0	0	0	0	$\frac{\sqrt{2}}{14}$	0	0	0	
		0	0	0	0	$\frac{\sqrt{15}}{35}$	0	0	0	0	0	0	$\frac{\sqrt{6}}{14}$	0	0	
		0	0	0	0	0	$\frac{\sqrt{6}}{28}$	$-\frac{\sqrt{7}}{14}$	0	0	0	0	0	$\frac{3}{14}$	0	
		$\frac{\sqrt{6}}{28}$	0	0	0	0	0	0	$-\frac{3}{14}$	0	0	0	0	0	$\frac{\sqrt{7}}{14}$	
		0	$\frac{\sqrt{15}}{35}$	0	0	0	0	0	0	$-\frac{\sqrt{6}}{14}$	0	0	0	0	0	
		0	0	$\frac{\sqrt{6}}{28}$	0	0	0	0	0	$-\frac{\sqrt{2}}{14}$	0	0	0	0	0	
573	symmetry	$-\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$														
	$\mathbb{Q}_{3,1}^{(1,-1;a)}(E_{1u})$	$\frac{\sqrt{5}}{70}$	0	$-\frac{3\sqrt{2}}{70}$	0	0	0	0	$\frac{\sqrt{30}}{28}$	0	$-\frac{\sqrt{6}}{14}$	0	0	0	0	
		0	$-\frac{\sqrt{3}}{30}$	0	$\frac{\sqrt{6}}{210}$	0	0	0	0	0	0	$-\frac{3\sqrt{2}}{28}$	0	0	0	
		0	0	$-\frac{\sqrt{6}}{210}$	0	$\frac{\sqrt{3}}{30}$	0	0	0	0	$-\frac{3\sqrt{2}}{28}$	0	0	0	0	
		0	0	0	$\frac{3\sqrt{2}}{70}$	0	$-\frac{\sqrt{5}}{70}$	0	0	0	0	$-\frac{\sqrt{6}}{14}$	0	$\frac{\sqrt{30}}{28}$	0	
		0	$\frac{3\sqrt{5}}{70}$	0	0	0	0	$-\frac{\sqrt{42}}{42}$	0	$\frac{\sqrt{2}}{7}$	0	0	0	0	0	
		$\frac{3\sqrt{5}}{70}$	0	$-\frac{3\sqrt{2}}{140}$	0	0	0	0	$\frac{\sqrt{30}}{42}$	0	$\frac{\sqrt{6}}{21}$	0	0	0	0	
		0	$-\frac{3\sqrt{2}}{140}$	0	$-\frac{3}{35}$	0	0	0	0	$\frac{\sqrt{5}}{14}$	0	$-\frac{\sqrt{3}}{42}$	0	0	0	
		0	0	$-\frac{3}{35}$	0	$-\frac{3\sqrt{2}}{140}$	0	0	0	0	$\frac{\sqrt{3}}{42}$	0	$-\frac{\sqrt{5}}{14}$	0	0	
		0	0	0	$-\frac{3\sqrt{2}}{140}$	0	$\frac{3\sqrt{5}}{70}$	0	0	0	0	$-\frac{\sqrt{6}}{21}$	0	$-\frac{\sqrt{30}}{42}$	0	
		0	0	0	0	$\frac{3\sqrt{5}}{70}$	0	0	0	0	0	0	$-\frac{\sqrt{2}}{7}$	0	$\frac{\sqrt{42}}{42}$	
574	symmetry	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$														

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{Q}_{3,2}^{(1,-1;a)}(E_{1u})$	$\frac{\sqrt{5}i}{70}$	0	$\frac{3\sqrt{2}i}{70}$	0	0	0	0	$\frac{\sqrt{30}i}{28}$	0	$\frac{\sqrt{6}i}{14}$	0	0	0	0
		0	$-\frac{\sqrt{3}i}{30}$	0	$-\frac{\sqrt{6}i}{210}$	0	0	0	0	0	0	$\frac{3\sqrt{2}i}{28}$	0	0	0
		0	0	$-\frac{\sqrt{6}i}{210}$	0	$-\frac{\sqrt{3}i}{30}$	0	0	0	0	$-\frac{3\sqrt{2}i}{28}$	0	0	0	0
		0	0	0	$\frac{3\sqrt{2}i}{70}$	0	$\frac{\sqrt{5}i}{70}$	0	0	0	0	$-\frac{\sqrt{6}i}{14}$	0	$-\frac{\sqrt{30}i}{28}$	0
		0	$-\frac{3\sqrt{5}i}{70}$	0	0	0	0	$-\frac{\sqrt{42}i}{42}$	0	$-\frac{\sqrt{2}i}{7}$	0	0	0	0	0
		$\frac{3\sqrt{5}i}{70}$	0	$\frac{3\sqrt{2}i}{140}$	0	0	0	0	$\frac{\sqrt{30}i}{42}$	0	$-\frac{\sqrt{6}i}{21}$	0	0	0	0
		0	$-\frac{3\sqrt{2}i}{140}$	0	$\frac{3i}{35}$	0	0	0	0	$\frac{\sqrt{5}i}{14}$	0	$\frac{\sqrt{3}i}{42}$	0	0	0
		0	0	$-\frac{3i}{35}$	0	$\frac{3\sqrt{2}i}{140}$	0	0	0	0	$\frac{\sqrt{3}i}{42}$	0	$\frac{\sqrt{5}i}{14}$	0	0
		0	0	0	$-\frac{3\sqrt{2}i}{140}$	0	$-\frac{3\sqrt{5}i}{70}$	0	0	0	0	$-\frac{\sqrt{6}i}{21}$	0	$\frac{\sqrt{30}i}{42}$	0
		0	0	0	0	$\frac{3\sqrt{5}i}{70}$	0	0	0	0	0	0	$-\frac{\sqrt{2}i}{7}$	0	$-\frac{\sqrt{42}i}{42}$
575	symmetry	$\sqrt{15}xyz$													
	$\mathbb{Q}_{3,1}^{(1,-1;a)}(E_{2u})$	0	0	0	$\frac{\sqrt{5}i}{35}$	0	0	$-\frac{\sqrt{21}i}{28}$	0	0	0	$\frac{\sqrt{15}i}{28}$	0	0	0
		$\frac{\sqrt{6}i}{42}$	0	0	0	$\frac{\sqrt{30}i}{210}$	0	0	$\frac{3i}{28}$	0	0	0	$\frac{3\sqrt{3}i}{28}$	0	0
		0	$-\frac{\sqrt{30}i}{210}$	0	0	0	$-\frac{\sqrt{6}i}{42}$	0	0	$\frac{3\sqrt{3}i}{28}$	0	0	0	$\frac{3i}{28}$	0
		0	0	$-\frac{\sqrt{5}i}{35}$	0	0	0	0	0	0	$\frac{\sqrt{15}i}{28}$	0	0	0	$-\frac{\sqrt{21}i}{28}$
		0	0	$-\frac{3i}{28}$	0	0	0	0	0	0	$-\frac{2\sqrt{3}i}{21}$	0	0	0	0
		0	0	0	$-\frac{3\sqrt{5}i}{140}$	0	0	$-\frac{\sqrt{21}i}{21}$	0	0	0	$-\frac{\sqrt{15}i}{21}$	0	0	0
		$\frac{3i}{28}$	0	0	0	$\frac{3\sqrt{5}i}{140}$	0	0	$-\frac{\sqrt{6}i}{42}$	0	0	0	$-\frac{\sqrt{2}i}{14}$	0	0
		0	$\frac{3\sqrt{5}i}{140}$	0	0	0	$\frac{3i}{28}$	0	0	$\frac{\sqrt{2}i}{14}$	0	0	0	$\frac{\sqrt{6}i}{42}$	0
		0	0	$-\frac{3\sqrt{5}i}{140}$	0	0	0	0	0	0	$\frac{\sqrt{15}i}{21}$	0	0	0	$\frac{\sqrt{21}i}{21}$
		0	0	0	$-\frac{3i}{28}$	0	0	0	0	0	0	$\frac{2\sqrt{3}i}{21}$	0	0	0
576	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$													

continued ...



Table 9

No.	multipole	matrix													
	$\mathbb{Q}_{3,2}^{(1,-1;a)}(E_{2u})$	0	0	0	$-\frac{\sqrt{5}}{35}$	0	0	$-\frac{\sqrt{21}}{28}$	0	0	0	$-\frac{\sqrt{15}}{28}$	0	0	0
		$\frac{\sqrt{6}}{42}$	0	0	0	$-\frac{\sqrt{30}}{210}$	0	0	$\frac{3}{28}$	0	0	0	$-\frac{3\sqrt{3}}{28}$	0	0
		0	$-\frac{\sqrt{30}}{210}$	0	0	0	$\frac{\sqrt{6}}{42}$	0	0	$\frac{3\sqrt{3}}{28}$	0	0	0	$-\frac{3}{28}$	0
		0	0	$-\frac{\sqrt{5}}{35}$	0	0	0	0	0	$\frac{\sqrt{15}}{28}$	0	0	0	0	$\frac{\sqrt{21}}{28}$
		0	0	$\frac{3}{28}$	0	0	0	0	0	$\frac{2\sqrt{3}}{21}$	0	0	0	0	0
		0	0	0	$\frac{3\sqrt{5}}{140}$	0	0	$-\frac{\sqrt{21}}{21}$	0	0	0	$\frac{\sqrt{15}}{21}$	0	0	0
		$\frac{3}{28}$	0	0	0	$-\frac{3\sqrt{5}}{140}$	0	0	$-\frac{\sqrt{6}}{42}$	0	0	0	$\frac{\sqrt{2}}{14}$	0	0
		0	$\frac{3\sqrt{5}}{140}$	0	0	0	$-\frac{3}{28}$	0	0	$\frac{\sqrt{2}}{14}$	0	0	0	$-\frac{\sqrt{6}}{42}$	0
		0	0	$-\frac{3\sqrt{5}}{140}$	0	0	0	0	0	$\frac{\sqrt{15}}{21}$	0	0	0	0	$-\frac{\sqrt{21}}{21}$
		0	0	0	$-\frac{3}{28}$	0	0	0	0	0	$\frac{2\sqrt{3}}{21}$	0	0	0	0
577	symmetry	$\frac{z(15x^4+30x^2y^2-40x^2z^2+15y^4-40y^2z^2+8z^4)}{8}$													
	$\mathbb{Q}_5^{(1,-1;a)}(A_u)$	0	0	0	0	0	0	0	$\frac{\sqrt{2}}{20}$	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{10}}{20}$	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{10}}{20}$	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{2}}{20}$	0	0	0
		$-\frac{\sqrt{5}}{210}$	0	0	0	0	0	$-\frac{\sqrt{30}}{35}$	0	0	0	0	0	0	0
		0	$\frac{\sqrt{5}}{42}$	0	0	0	0	0	$\frac{9\sqrt{2}}{35}$	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{5}}{21}$	0	0	0	0	0	$-\frac{2\sqrt{15}}{35}$	0	0	0	0	0
		0	0	0	$\frac{\sqrt{5}}{21}$	0	0	0	0	0	$-\frac{2\sqrt{15}}{35}$	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{5}}{42}$	0	0	0	0	0	$\frac{9\sqrt{2}}{35}$	0	0	0
		0	0	0	0	0	$\frac{\sqrt{5}}{210}$	0	0	0	0	0	0	$-\frac{\sqrt{30}}{35}$	0
578	symmetry	$-\frac{\sqrt{70}y(3x^2-y^2)(x^2+y^2-8z^2)}{16}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{Q}_5^{(1,-1;a)}(B_u, 1)$	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{35}i}{50}$	0	0
		0	0	0	0	0	$\frac{\sqrt{5}i}{50}$	0	0	0	0	0	0	$\frac{\sqrt{35}i}{50}$	0
		0	0	0	0	0	0	$-\frac{\sqrt{35}i}{50}$	0	0	0	0	0	0	$-\frac{\sqrt{5}i}{50}$
		0	0	0	0	0	0	0	$\frac{\sqrt{35}i}{50}$	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{35}i}{105}$	0	0	0	0	0	0	$\frac{\sqrt{105}i}{35}$	0	0	0
		0	0	0	0	$-\frac{\sqrt{14}i}{42}$	0	0	0	0	0	0	$-\frac{3\sqrt{35}i}{175}$	0	0
		0	0	0	0	0	$\frac{\sqrt{35}i}{105}$	$\frac{\sqrt{30}i}{25}$	0	0	0	0	0	$-\frac{3\sqrt{210}i}{175}$	0
		$-\frac{\sqrt{35}i}{105}$	0	0	0	0	0	0	$-\frac{3\sqrt{210}i}{175}$	0	0	0	0	0	$\frac{\sqrt{30}i}{25}$
		0	$\frac{\sqrt{14}i}{42}$	0	0	0	0	0	0	$-\frac{3\sqrt{35}i}{175}$	0	0	0	0	0
		0	0	$-\frac{\sqrt{35}i}{105}$	0	0	0	0	0	0	$\frac{\sqrt{105}i}{35}$	0	0	0	0
579	symmetry	$-\frac{\sqrt{70}x(x^2-3y^2)(x^2+y^2-8z^2)}{16}$													
	$\mathbb{Q}_5^{(1,-1;a)}(B_u, 2)$	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{35}}{50}$	0	0
		0	0	0	0	0	0	$\frac{\sqrt{5}}{50}$	0	0	0	0	0	$-\frac{\sqrt{35}}{50}$	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{35}}{50}$	0	0	0	0	0	$\frac{\sqrt{5}}{50}$
		0	0	0	0	0	0	0	0	$\frac{\sqrt{35}}{50}$	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{35}}{105}$	0	0	0	0	0	0	$-\frac{\sqrt{105}}{35}$	0	0	0
		0	0	0	0	$\frac{\sqrt{14}}{42}$	0	0	0	0	0	0	$\frac{3\sqrt{35}}{175}$	0	0
		0	0	0	0	0	$-\frac{\sqrt{35}}{105}$	$\frac{\sqrt{30}}{25}$	0	0	0	0	0	$\frac{3\sqrt{210}}{175}$	0
		$-\frac{\sqrt{35}}{105}$	0	0	0	0	0	0	$-\frac{3\sqrt{210}}{175}$	0	0	0	0	0	$-\frac{\sqrt{30}}{25}$
		0	$\frac{\sqrt{14}}{42}$	0	0	0	0	0	0	$-\frac{3\sqrt{35}}{175}$	0	0	0	0	0
		0	0	$-\frac{\sqrt{35}}{105}$	0	0	0	0	0	0	$\frac{\sqrt{105}}{35}$	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													
	$\mathbb{Q}_{5,1}^{(1,-1;a)}(E_{1u}, 1)$	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{3}}{10}$	
		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	$\frac{\sqrt{3}}{10}$	0	0	0	0	0	0	0	
		0	0	0	0	0	$-\frac{\sqrt{70}}{70}$	0	0	0	0	0	$-\frac{\sqrt{105}}{35}$	0	
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{3}}{5}$	
		0	0	0	0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	$\frac{\sqrt{3}}{5}$	0	0	0	0	0	0	0	
		$-\frac{\sqrt{70}}{70}$	0	0	0	0	0	0	$\frac{\sqrt{105}}{35}$	0	0	0	0	0	
581	symmetry	$-\frac{3\sqrt{14}y(5x^4-10x^2y^2+y^4)}{16}$													
	$\mathbb{Q}_{5,2}^{(1,-1;a)}(E_{1u}, 1)$	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{3}i}{10}$	
		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	0	0	0	0	$-\frac{\sqrt{3}i}{10}$	0	0	0	0	0	0	0	
		0	0	0	0	0	$-\frac{\sqrt{70}i}{70}$	0	0	0	0	0	$-\frac{\sqrt{105}i}{35}$	0	
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{3}i}{5}$	
		0	0	0	0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	$-\frac{\sqrt{3}i}{5}$	0	0	0	0	0	0	0	
		$\frac{\sqrt{70}i}{70}$	0	0	0	0	0	0	$-\frac{\sqrt{105}i}{35}$	0	0	0	0	0	
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													
	$\mathbb{Q}_{5,1}^{(1,-1;a)}(E_{1u}, 2)$	0	0	0	0	0	0	0	$-\frac{\sqrt{10}}{100}$	0	$\frac{\sqrt{2}}{20}$	0	0	0	0
		0	0	0	0	0	0	0	0	$\frac{3\sqrt{10}}{100}$	0	$-\frac{\sqrt{6}}{20}$	0	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{6}}{20}$	0	$\frac{3\sqrt{10}}{100}$	0	0
		0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{2}}{20}$	0	$-\frac{\sqrt{10}}{100}$	0
		0	$-\frac{\sqrt{15}}{210}$	0	0	0	0	$\frac{\sqrt{14}}{70}$	0	$-\frac{\sqrt{6}}{14}$	0	0	0	0	0
		$-\frac{\sqrt{15}}{210}$	0	$\frac{\sqrt{6}}{42}$	0	0	0	0	$-\frac{23\sqrt{10}}{350}$	0	$\frac{13\sqrt{2}}{70}$	0	0	0	0
		0	$\frac{\sqrt{6}}{42}$	0	$-\frac{\sqrt{3}}{21}$	0	0	0	0	$\frac{11\sqrt{15}}{175}$	0	$-\frac{1}{35}$	0	0	0
		0	0	$-\frac{\sqrt{3}}{21}$	0	$\frac{\sqrt{6}}{42}$	0	0	0	0	$\frac{1}{35}$	0	$-\frac{11\sqrt{15}}{175}$	0	0
		0	0	0	$\frac{\sqrt{6}}{42}$	0	$-\frac{\sqrt{15}}{210}$	0	0	0	0	$-\frac{13\sqrt{2}}{70}$	0	$\frac{23\sqrt{10}}{350}$	0
		0	0	0	0	$-\frac{\sqrt{15}}{210}$	0	0	0	0	0	0	$\frac{\sqrt{6}}{14}$	0	$-\frac{\sqrt{14}}{70}$
583	symmetry	$\frac{\sqrt{15}y(x^4+2x^2y^2-12x^2z^2+y^4-12y^2z^2+8z^4)}{8}$													
	$\mathbb{Q}_{5,2}^{(1,-1;a)}(E_{1u}, 2)$	0	0	0	0	0	0	0	$-\frac{\sqrt{10}i}{100}$	0	$-\frac{\sqrt{2}i}{20}$	0	0	0	0
		0	0	0	0	0	0	0	0	$\frac{3\sqrt{10}i}{100}$	0	$\frac{\sqrt{6}i}{20}$	0	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{6}i}{20}$	0	$-\frac{3\sqrt{10}i}{100}$	0	0
		0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{2}i}{20}$	0	$\frac{\sqrt{10}i}{100}$	0
		0	$\frac{\sqrt{15}i}{210}$	0	0	0	0	$\frac{\sqrt{14}i}{70}$	0	$\frac{\sqrt{6}i}{14}$	0	0	0	0	0
		$-\frac{\sqrt{15}i}{210}$	0	$-\frac{\sqrt{6}i}{42}$	0	0	0	0	$-\frac{23\sqrt{10}i}{350}$	0	$-\frac{13\sqrt{2}i}{70}$	0	0	0	0
		0	$\frac{\sqrt{6}i}{42}$	0	$\frac{\sqrt{3}i}{21}$	0	0	0	0	$\frac{11\sqrt{15}i}{175}$	0	$\frac{i}{35}$	0	0	0
		0	0	$-\frac{\sqrt{3}i}{21}$	0	$-\frac{\sqrt{6}i}{42}$	0	0	0	0	$\frac{i}{35}$	0	$\frac{11\sqrt{15}i}{175}$	0	0
		0	0	0	$\frac{\sqrt{6}i}{42}$	0	$\frac{\sqrt{15}i}{210}$	0	0	0	0	$-\frac{13\sqrt{2}i}{70}$	0	$-\frac{23\sqrt{10}i}{350}$	0
		0	0	0	0	$-\frac{\sqrt{15}i}{210}$	0	0	0	0	0	0	$\frac{\sqrt{6}i}{14}$	0	$\frac{\sqrt{14}i}{70}$
584	symmetry	$-\frac{3\sqrt{35}xyz(x-y)(x+y)}{2}$													

continued ...

Table 9

No.	multipole	matrix												
	$\mathbb{Q}_{5,1}^{(1,-1;a)}(E_{2u},1)$	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{210}i}{100}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{3\sqrt{10}i}{100}$
		0	0	0	0	0	$-\frac{3\sqrt{10}i}{100}$	0	0	0	0	0	0	0
		0	0	0	0	0	0	$\frac{\sqrt{210}i}{100}$	0	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{35}i}{70}$	0	0	0	0	0	$-\frac{3\sqrt{14}i}{35}$	0	0
		0	0	0	0	0	$\frac{\sqrt{35}i}{70}$	0	0	0	0	0	$-\frac{\sqrt{210}i}{175}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	$\frac{2\sqrt{15}i}{25}$
		0	0	0	0	0	$-\frac{2\sqrt{15}i}{25}$	0	0	0	0	0	0	0
		$\frac{\sqrt{35}i}{70}$	0	0	0	0	0	0	$\frac{\sqrt{210}i}{175}$	0	0	0	0	0
		0	$-\frac{\sqrt{35}i}{70}$	0	0	0	0	0	$\frac{3\sqrt{14}i}{35}$	0	0	0	0	0
585	symmetry	$\frac{3\sqrt{35}z(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$												
	$\mathbb{Q}_{5,2}^{(1,-1;a)}(E_{2u},1)$	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{210}}{100}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{3\sqrt{10}}{100}$
		0	0	0	0	0	$\frac{3\sqrt{10}}{100}$	0	0	0	0	0	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{210}}{100}$	0	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{35}}{70}$	0	0	0	0	0	$-\frac{3\sqrt{14}}{35}$	0	0
		0	0	0	0	0	$\frac{\sqrt{35}}{70}$	0	0	0	0	0	$-\frac{\sqrt{210}}{175}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	$\frac{2\sqrt{15}}{25}$
		0	0	0	0	0	$\frac{2\sqrt{15}}{25}$	0	0	0	0	0	0	0
		$-\frac{\sqrt{35}}{70}$	0	0	0	0	0	$-\frac{\sqrt{210}}{175}$	0	0	0	0	0	0
		0	$\frac{\sqrt{35}}{70}$	0	0	0	0	0	$-\frac{3\sqrt{14}}{35}$	0	0	0	0	0
586	symmetry	$-\frac{\sqrt{105}xyz(x^2+y^2-2z^2)}{2}$												

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{Q}_{5,1}^{(1,-1;a)}(E_{2u}, 2)$	0	0	0	0	0	0	$\frac{\sqrt{10}i}{200}$	0	0	0	$-\frac{\sqrt{14}i}{40}$	0	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{210}i}{200}$	0	0	0	$\frac{3\sqrt{70}i}{200}$	0	0	0
		0	0	0	0	0	0	0	$\frac{3\sqrt{70}i}{200}$	0	0	0	$-\frac{\sqrt{210}i}{200}$	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{14}i}{40}$	0	0	0	$\frac{\sqrt{10}i}{200}$	0
		0	0	$\frac{\sqrt{210}i}{420}$	0	0	0	0	0	$\frac{\sqrt{70}i}{35}$	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{42}i}{84}$	0	0	$\frac{\sqrt{10}i}{25}$	0	0	0	$-\frac{2\sqrt{14}i}{35}$	0	0	0
		$-\frac{\sqrt{210}i}{420}$	0	0	0	$\frac{\sqrt{42}i}{84}$	0	0	$-\frac{8\sqrt{35}i}{175}$	0	0	0	$-\frac{2\sqrt{105}i}{175}$	0	0
		0	$\frac{\sqrt{42}i}{84}$	0	0	0	$-\frac{\sqrt{210}i}{420}$	0	0	$\frac{2\sqrt{105}i}{175}$	0	0	0	$\frac{8\sqrt{35}i}{175}$	0
		0	0	$-\frac{\sqrt{42}i}{84}$	0	0	0	0	0	$\frac{2\sqrt{14}i}{35}$	0	0	0	0	$-\frac{\sqrt{10}i}{25}$
		0	0	0	$\frac{\sqrt{210}i}{420}$	0	0	0	0	0	$-\frac{\sqrt{70}i}{35}$	0	0	0	0
587	symmetry	$-\frac{\sqrt{105}z(x-y)(x+y)(x^2+y^2-2z^2)}{4}$													
	$\mathbb{Q}_{5,2}^{(1,-1;a)}(E_{2u}, 2)$	0	0	0	0	0	0	$\frac{\sqrt{10}}{200}$	0	0	0	$\frac{\sqrt{14}}{40}$	0	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{210}}{200}$	0	0	0	$-\frac{3\sqrt{70}}{200}$	0	0	0
		0	0	0	0	0	0	0	$\frac{3\sqrt{70}}{200}$	0	0	0	$\frac{\sqrt{210}}{200}$	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{14}}{40}$	0	0	0	$-\frac{\sqrt{10}}{200}$	0
		0	0	$-\frac{\sqrt{210}}{420}$	0	0	0	0	0	$-\frac{\sqrt{70}}{35}$	0	0	0	0	0
		0	0	0	$\frac{\sqrt{42}}{84}$	0	0	$\frac{\sqrt{10}}{25}$	0	0	0	$\frac{2\sqrt{14}}{35}$	0	0	0
		$-\frac{\sqrt{210}}{420}$	0	0	0	$-\frac{\sqrt{42}}{84}$	0	0	$-\frac{8\sqrt{35}}{175}$	0	0	0	$\frac{2\sqrt{105}}{175}$	0	0
		0	$\frac{\sqrt{42}}{84}$	0	0	0	$\frac{\sqrt{210}}{420}$	0	0	$\frac{2\sqrt{105}}{175}$	0	0	0	$-\frac{8\sqrt{35}}{175}$	0
		0	0	$-\frac{\sqrt{42}}{84}$	0	0	0	0	0	$\frac{2\sqrt{14}}{35}$	0	0	0	0	$\frac{\sqrt{10}}{25}$
		0	0	0	$\frac{\sqrt{210}}{420}$	0	0	0	0	0	$-\frac{\sqrt{70}}{35}$	0	0	0	0
588	symmetry	$z$													

continued ...

Table 9

No.	multipole	matrix														
	$\mathbb{Q}_1^{(1,0;a)}(A_u)$	0	$-\frac{\sqrt{2}}{10}$	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{3}}{10}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{3}}{10}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{2}}{10}$	0	0	0	0	0	0	0	0	0	0
		$\frac{3\sqrt{2}}{14}$	0	0	0	0	0	0	$\frac{\sqrt{3}}{14}$	0	0	0	0	0	0	0
		0	$\frac{9\sqrt{2}}{70}$	0	0	0	0	0	0	$\frac{\sqrt{5}}{14}$	0	0	0	0	0	0
		0	0	$\frac{3\sqrt{2}}{70}$	0	0	0	0	0	$\frac{\sqrt{6}}{14}$	0	0	0	0	0	0
		0	0	0	$-\frac{3\sqrt{2}}{70}$	0	0	0	0	0	$\frac{\sqrt{6}}{14}$	0	0	0	0	0
		0	0	0	0	$-\frac{9\sqrt{2}}{70}$	0	0	0	0	0	$\frac{\sqrt{5}}{14}$	0	0	0	0
		0	0	0	0	0	$-\frac{3\sqrt{2}}{14}$	0	0	0	0	0	0	$\frac{\sqrt{3}}{14}$	0	0
589	symmetry	$x$														
	$\mathbb{Q}_{1,1}^{(1,0;a)}(E_{1u})$	$\frac{\sqrt{10}}{20}$	0	$-\frac{1}{20}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{6}}{20}$	0	$-\frac{\sqrt{3}}{20}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	$\frac{\sqrt{3}}{20}$	0	$-\frac{\sqrt{6}}{20}$	0	0	0	0	0	0	0	0	0	0
		0	0	0	$\frac{1}{20}$	0	$-\frac{\sqrt{10}}{20}$	0	0	0	0	0	0	0	0	0
		0	$\frac{3\sqrt{10}}{70}$	0	0	0	0	$-\frac{\sqrt{21}}{28}$	0	$\frac{1}{28}$	0	0	0	0	0	0
		$\frac{3\sqrt{10}}{70}$	0	$\frac{6}{35}$	0	0	0	0	$-\frac{\sqrt{15}}{28}$	0	$\frac{\sqrt{3}}{28}$	0	0	0	0	0
		0	$\frac{6}{35}$	0	$\frac{9\sqrt{2}}{70}$	0	0	0	0	$-\frac{\sqrt{10}}{28}$	0	$\frac{\sqrt{6}}{28}$	0	0	0	0
		0	0	$\frac{9\sqrt{2}}{70}$	0	$\frac{6}{35}$	0	0	0	0	$-\frac{\sqrt{6}}{28}$	0	$\frac{\sqrt{10}}{28}$	0	0	0
		0	0	0	$\frac{6}{35}$	0	$\frac{3\sqrt{10}}{70}$	0	0	0	0	$-\frac{\sqrt{3}}{28}$	0	$\frac{\sqrt{15}}{28}$	0	0
		0	0	0	0	$\frac{3\sqrt{10}}{70}$	0	0	0	0	0	0	$-\frac{1}{28}$	0	$\frac{\sqrt{21}}{28}$	0
590	symmetry	$y$														

*continued ...*

Table 9

No.	multipole	matrix													
	$\mathbb{Q}_{1,2}^{(1,0;a)}(E_{1u})$	$\frac{\sqrt{10}i}{20}$	0	$\frac{i}{20}$	0	0	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{6}i}{20}$	0	$\frac{\sqrt{3}i}{20}$	0	0	0	0	0	0	0	0	0	0
		0	0	$\frac{\sqrt{3}i}{20}$	0	$\frac{\sqrt{6}i}{20}$	0	0	0	0	0	0	0	0	0
		0	0	0	$\frac{i}{20}$	0	$\frac{\sqrt{10}i}{20}$	0	0	0	0	0	0	0	0
		0	$-\frac{3\sqrt{10}i}{70}$	0	0	0	0	$-\frac{\sqrt{21}i}{28}$	0	$-\frac{i}{28}$	0	0	0	0	0
		$\frac{3\sqrt{10}i}{70}$	0	$-\frac{6i}{35}$	0	0	0	0	$-\frac{\sqrt{15}i}{28}$	0	$-\frac{\sqrt{3}i}{28}$	0	0	0	0
		0	$\frac{6i}{35}$	0	$-\frac{9\sqrt{2}i}{70}$	0	0	0	0	$-\frac{\sqrt{10}i}{28}$	0	$-\frac{\sqrt{6}i}{28}$	0	0	0
		0	0	$\frac{9\sqrt{2}i}{70}$	0	$-\frac{6i}{35}$	0	0	0	0	$-\frac{\sqrt{6}i}{28}$	0	$-\frac{\sqrt{10}i}{28}$	0	0
		0	0	0	$\frac{6i}{35}$	0	$-\frac{3\sqrt{10}i}{70}$	0	0	0	0	$-\frac{\sqrt{3}i}{28}$	0	$-\frac{\sqrt{15}i}{28}$	0
		0	0	0	0	$\frac{3\sqrt{10}i}{70}$	0	0	0	0	0	$-\frac{i}{28}$	0	$-\frac{\sqrt{21}i}{28}$	0
591	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$													
	$\mathbb{Q}_3^{(1,0;a)}(A_u)$	0	$\frac{3\sqrt{7}}{140}$	0	0	0	0	0	0	$-\frac{\sqrt{70}}{28}$	0	0	0	0	0
		0	0	$-\frac{\sqrt{42}}{140}$	0	0	0	0	0	0	$-\frac{\sqrt{14}}{28}$	0	0	0	0
		0	0	0	$-\frac{\sqrt{42}}{140}$	0	0	0	0	0	0	$\frac{\sqrt{14}}{28}$	0	0	0
		0	0	0	0	$\frac{3\sqrt{7}}{140}$	0	0	0	0	0	0	$\frac{\sqrt{70}}{28}$	0	0
		$-\frac{\sqrt{7}}{14}$	0	0	0	0	0	0	$-\frac{\sqrt{42}}{84}$	0	0	0	0	0	0
		0	$\frac{\sqrt{7}}{10}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	$\frac{2\sqrt{7}}{35}$	0	0	0	0	0	0	$\frac{\sqrt{21}}{84}$	0	0	0	0
		0	0	0	$-\frac{2\sqrt{7}}{35}$	0	0	0	0	0	0	$\frac{\sqrt{21}}{84}$	0	0	0
		0	0	0	0	$-\frac{\sqrt{7}}{10}$	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	$\frac{\sqrt{7}}{14}$	0	0	0	0	0	0	$-\frac{\sqrt{42}}{84}$	0
592	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$													

continued ...



Table 9

No.	multipole	matrix													
	$\mathbb{Q}_3^{(1,0;a)}(B_u, 1)$	0	0	0	0	$-\frac{3\sqrt{70}i}{560}$	0	0	0	0	0	0	$\frac{\sqrt{7}i}{28}$	0	0
		0	0	0	0	0	$-\frac{\sqrt{42}i}{112}$	$-\frac{i}{4}$	0	0	0	0	0	$\frac{\sqrt{7}i}{14}$	0
		$-\frac{\sqrt{42}i}{112}$	0	0	0	0	0	0	$-\frac{\sqrt{7}i}{14}$	0	0	0	0	0	$\frac{i}{4}$
		0	$-\frac{3\sqrt{70}i}{560}$	0	0	0	0	0	0	$-\frac{\sqrt{7}i}{28}$	0	0	0	0	0
		0	0	0	$\frac{\sqrt{7}i}{14}$	0	0	0	0	0	0	$\frac{\sqrt{21}i}{168}$	0	0	0
		0	0	0	0	$\frac{\sqrt{70}i}{35}$	0	0	0	0	0	0	$\frac{\sqrt{7}i}{56}$	0	0
		0	0	0	0	0	$\frac{\sqrt{7}i}{14}$	$\frac{\sqrt{6}i}{48}$	0	0	0	0	0	$\frac{\sqrt{42}i}{112}$	0
		$-\frac{\sqrt{7}i}{14}$	0	0	0	0	0	0	$\frac{\sqrt{42}i}{112}$	0	0	0	0	0	$\frac{\sqrt{6}i}{48}$
		0	$-\frac{\sqrt{70}i}{35}$	0	0	0	0	0	0	$\frac{\sqrt{7}i}{56}$	0	0	0	0	0
		0	0	$-\frac{\sqrt{7}i}{14}$	0	0	0	0	0	0	$\frac{\sqrt{21}i}{168}$	0	0	0	0
593	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$													
	$\mathbb{Q}_3^{(1,0;a)}(B_u, 2)$	0	0	0	0	$\frac{3\sqrt{70}}{560}$	0	0	0	0	0	0	$-\frac{\sqrt{7}}{28}$	0	0
		0	0	0	0	0	$\frac{\sqrt{42}}{112}$	$-\frac{1}{4}$	0	0	0	0	0	$-\frac{\sqrt{7}}{14}$	0
		$-\frac{\sqrt{42}}{112}$	0	0	0	0	0	0	$-\frac{\sqrt{7}}{14}$	0	0	0	0	0	$-\frac{1}{4}$
		0	$-\frac{3\sqrt{70}}{560}$	0	0	0	0	0	0	$-\frac{\sqrt{7}}{28}$	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{7}}{14}$	0	0	0	0	0	0	$-\frac{\sqrt{21}}{168}$	0	0	0
		0	0	0	0	$-\frac{\sqrt{70}}{35}$	0	0	0	0	0	0	$-\frac{\sqrt{7}}{56}$	0	0
		0	0	0	0	0	$-\frac{\sqrt{7}}{14}$	$\frac{\sqrt{6}}{48}$	0	0	0	0	0	$-\frac{\sqrt{42}}{112}$	0
		$-\frac{\sqrt{7}}{14}$	0	0	0	0	0	0	$\frac{\sqrt{42}}{112}$	0	0	0	0	0	$-\frac{\sqrt{6}}{48}$
		0	$-\frac{\sqrt{70}}{35}$	0	0	0	0	0	0	$\frac{\sqrt{7}}{56}$	0	0	0	0	0
		0	0	$-\frac{\sqrt{7}}{14}$	0	0	0	0	0	0	$\frac{\sqrt{21}}{168}$	0	0	0	0
594	symmetry	$-\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{Q}_{3,1}^{(1,0;a)}(E_{1u})$	$-\frac{\sqrt{210}}{560}$	0	$\frac{3\sqrt{21}}{280}$	0	0	0	0	$\frac{\sqrt{35}}{28}$	0	$-\frac{\sqrt{7}}{14}$	0	0	0	0
		0	$\frac{\sqrt{14}}{80}$	0	$-\frac{\sqrt{7}}{280}$	0	0	0	0	0	0	$-\frac{\sqrt{21}}{28}$	0	0	0
		0	0	$\frac{\sqrt{7}}{280}$	0	$-\frac{\sqrt{14}}{80}$	0	0	0	0	$-\frac{\sqrt{21}}{28}$	0	0	0	0
		0	0	0	$-\frac{3\sqrt{21}}{280}$	0	$\frac{\sqrt{210}}{560}$	0	0	0	0	$-\frac{\sqrt{7}}{14}$	0	$\frac{\sqrt{35}}{28}$	0
		0	$-\frac{\sqrt{210}}{70}$	0	0	0	0	$\frac{1}{24}$	0	$-\frac{\sqrt{21}}{84}$	0	0	0	0	0
		$-\frac{\sqrt{210}}{70}$	0	$\frac{\sqrt{21}}{70}$	0	0	0	0	$-\frac{\sqrt{35}}{168}$	0	$-\frac{\sqrt{7}}{84}$	0	0	0	0
		0	$\frac{\sqrt{21}}{70}$	0	$\frac{\sqrt{42}}{35}$	0	0	0	0	$-\frac{\sqrt{210}}{336}$	0	$\frac{\sqrt{14}}{336}$	0	0	0
		0	0	$\frac{\sqrt{42}}{35}$	0	$\frac{\sqrt{21}}{70}$	0	0	0	0	$-\frac{\sqrt{14}}{336}$	0	$\frac{\sqrt{210}}{336}$	0	0
		0	0	0	$\frac{\sqrt{21}}{70}$	0	$-\frac{\sqrt{210}}{70}$	0	0	0	0	$\frac{\sqrt{7}}{84}$	0	$\frac{\sqrt{35}}{168}$	0
		0	0	0	0	$-\frac{\sqrt{210}}{70}$	0	0	0	0	0	0	$\frac{\sqrt{21}}{84}$	0	$-\frac{1}{24}$
595	symmetry	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$													
	$\mathbb{Q}_{3,2}^{(1,0;a)}(E_{1u})$	$-\frac{\sqrt{210}i}{560}$	0	$-\frac{3\sqrt{21}i}{280}$	0	0	0	0	$\frac{\sqrt{35}i}{28}$	0	$\frac{\sqrt{7}i}{14}$	0	0	0	0
		0	$\frac{\sqrt{14}i}{80}$	0	$\frac{\sqrt{7}i}{280}$	0	0	0	0	0	0	$\frac{\sqrt{21}i}{28}$	0	0	0
		0	0	$\frac{\sqrt{7}i}{280}$	0	$\frac{\sqrt{14}i}{80}$	0	0	0	0	$-\frac{\sqrt{21}i}{28}$	0	0	0	0
		0	0	0	$-\frac{3\sqrt{21}i}{280}$	0	$-\frac{\sqrt{210}i}{560}$	0	0	0	0	$-\frac{\sqrt{7}i}{14}$	0	$-\frac{\sqrt{35}i}{28}$	0
		0	$\frac{\sqrt{210}i}{70}$	0	0	0	0	$\frac{i}{24}$	0	$\frac{\sqrt{21}i}{84}$	0	0	0	0	0
		$-\frac{\sqrt{210}i}{70}$	0	$-\frac{\sqrt{21}i}{70}$	0	0	0	0	$-\frac{\sqrt{35}i}{168}$	0	$\frac{\sqrt{7}i}{84}$	0	0	0	0
		0	$\frac{\sqrt{21}i}{70}$	0	$-\frac{\sqrt{42}i}{35}$	0	0	0	0	$-\frac{\sqrt{210}i}{336}$	0	$-\frac{\sqrt{14}i}{336}$	0	0	0
		0	0	$\frac{\sqrt{42}i}{35}$	0	$-\frac{\sqrt{21}i}{70}$	0	0	0	0	$-\frac{\sqrt{14}i}{336}$	0	$-\frac{\sqrt{210}i}{336}$	0	0
		0	0	0	$\frac{\sqrt{21}i}{70}$	0	$\frac{\sqrt{210}i}{70}$	0	0	0	0	$\frac{\sqrt{7}i}{84}$	0	$-\frac{\sqrt{35}i}{168}$	0
		0	0	0	0	$-\frac{\sqrt{210}i}{70}$	0	0	0	0	0	0	$\frac{\sqrt{21}i}{84}$	0	$\frac{i}{24}$
596	symmetry	$\sqrt{15}xyz$													

*continued ...*

Table 9

No.	multipole	matrix													
	$\mathbb{Q}_{3,1}^{(1,0;a)}(E_{2u})$	0	0	0	$-\frac{\sqrt{210}i}{280}$	0	0	$-\frac{\sqrt{2}i}{8}$	0	0	0	$\frac{\sqrt{70}i}{56}$	0	0	0
		$-\frac{\sqrt{7}i}{56}$	0	0	0	$-\frac{\sqrt{35}i}{280}$	0	0	$\frac{\sqrt{42}i}{56}$	0	0	0	$\frac{3\sqrt{14}i}{56}$	0	0
		0	$\frac{\sqrt{35}i}{280}$	0	0	0	$\frac{\sqrt{7}i}{56}$	0	0	$\frac{3\sqrt{14}i}{56}$	0	0	0	$\frac{\sqrt{42}i}{56}$	0
		0	0	$\frac{\sqrt{210}i}{280}$	0	0	0	0	0	0	$\frac{\sqrt{70}i}{56}$	0	0	0	$-\frac{\sqrt{2}i}{8}$
		0	0	$\frac{\sqrt{42}i}{28}$	0	0	0	0	0	0	$\frac{\sqrt{14}i}{84}$	0	0	0	0
		0	0	0	$\frac{\sqrt{210}i}{140}$	0	0	$\frac{\sqrt{2}i}{24}$	0	0	0	$\frac{\sqrt{70}i}{168}$	0	0	0
		$-\frac{\sqrt{42}i}{28}$	0	0	0	$-\frac{\sqrt{210}i}{140}$	0	0	$\frac{\sqrt{7}i}{168}$	0	0	0	$\frac{\sqrt{21}i}{168}$	0	0
		0	$-\frac{\sqrt{210}i}{140}$	0	0	0	$-\frac{\sqrt{42}i}{28}$	0	0	$-\frac{\sqrt{21}i}{168}$	0	0	0	$-\frac{\sqrt{7}i}{168}$	0
		0	0	$\frac{\sqrt{210}i}{140}$	0	0	0	0	0	0	$-\frac{\sqrt{70}i}{168}$	0	0	0	$-\frac{\sqrt{2}i}{24}$
		0	0	0	$\frac{\sqrt{42}i}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{14}i}{84}$	0	0	0
597	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$													
	$\mathbb{Q}_{3,2}^{(1,0;a)}(E_{2u})$	0	0	0	$\frac{\sqrt{210}}{280}$	0	0	$-\frac{\sqrt{2}}{8}$	0	0	0	$-\frac{\sqrt{70}}{56}$	0	0	0
		$-\frac{\sqrt{7}}{56}$	0	0	0	$\frac{\sqrt{35}}{280}$	0	0	$\frac{\sqrt{42}}{56}$	0	0	0	$-\frac{3\sqrt{14}}{56}$	0	0
		0	$\frac{\sqrt{35}}{280}$	0	0	0	$-\frac{\sqrt{7}}{56}$	0	0	$\frac{3\sqrt{14}}{56}$	0	0	0	$-\frac{\sqrt{42}}{56}$	0
		0	0	$\frac{\sqrt{210}}{280}$	0	0	0	0	0	0	$\frac{\sqrt{70}}{56}$	0	0	0	$\frac{\sqrt{2}}{8}$
		0	0	$-\frac{\sqrt{42}}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{14}}{84}$	0	0	0	0
		0	0	0	$-\frac{\sqrt{210}}{140}$	0	0	$\frac{\sqrt{2}}{24}$	0	0	0	$-\frac{\sqrt{70}}{168}$	0	0	0
		$-\frac{\sqrt{42}}{28}$	0	0	0	$\frac{\sqrt{210}}{140}$	0	0	$\frac{\sqrt{7}}{168}$	0	0	0	$-\frac{\sqrt{21}}{168}$	0	0
		0	$-\frac{\sqrt{210}}{140}$	0	0	0	$\frac{\sqrt{42}}{28}$	0	0	$-\frac{\sqrt{21}}{168}$	0	0	0	$\frac{\sqrt{7}}{168}$	0
		0	0	$\frac{\sqrt{210}}{140}$	0	0	0	0	0	0	$-\frac{\sqrt{70}}{168}$	0	0	0	$\frac{\sqrt{2}}{24}$
		0	0	0	$\frac{\sqrt{42}}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{14}}{84}$	0	0	0
598	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													
	$\mathbb{Q}_5^{(1,0;a)}(A_u)$	0	0	0	0	0	0	0	0	$\frac{\sqrt{2}}{10}$	0	0	0	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	0	0	0	0	$\frac{\sqrt{10}}{10}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{2}}{10}$	0	0
		$\frac{\sqrt{5}}{70}$	0	0	0	0	0	0	$\frac{\sqrt{30}}{420}$	0	0	0	0	0	0
		0	$-\frac{\sqrt{5}}{14}$	0	0	0	0	0	0	$-\frac{3\sqrt{2}}{140}$	0	0	0	0	0
		0	0	$\frac{\sqrt{5}}{7}$	0	0	0	0	0	0	$\frac{\sqrt{15}}{210}$	0	0	0	0
		0	0	0	$-\frac{\sqrt{5}}{7}$	0	0	0	0	0	0	$\frac{\sqrt{15}}{210}$	0	0	0
		0	0	0	0	$\frac{\sqrt{5}}{14}$	0	0	0	0	0	0	$-\frac{3\sqrt{2}}{140}$	0	0
		0	0	0	0	0	$-\frac{\sqrt{5}}{70}$	0	0	0	0	0	0	$\frac{\sqrt{30}}{420}$	0
599	symmetry	$-\frac{\sqrt{70}y(3x^2-y^2)(x^2+y^2-8z^2)}{16}$													
	$\mathbb{Q}_5^{(1,0;a)}(B_u, 1)$	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{35}i}{25}$	0	0	0
		0	0	0	0	0	0	$\frac{\sqrt{5}i}{25}$	0	0	0	0	0	$\frac{\sqrt{35}i}{25}$	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{35}i}{25}$	0	0	0	0	0	$-\frac{\sqrt{5}i}{25}$
		0	0	0	0	0	0	0	0	$\frac{\sqrt{35}i}{25}$	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{35}i}{35}$	0	0	0	0	0	0	$-\frac{\sqrt{105}i}{420}$	0	0	0
		0	0	0	0	$\frac{\sqrt{14}i}{14}$	0	0	0	0	0	0	$\frac{\sqrt{35}i}{700}$	0	0
		0	0	0	0	0	$-\frac{\sqrt{35}i}{35}$	$-\frac{\sqrt{30}i}{300}$	0	0	0	0	0	$\frac{\sqrt{210}i}{700}$	0
		$\frac{\sqrt{35}i}{35}$	0	0	0	0	0	0	$\frac{\sqrt{210}i}{700}$	0	0	0	0	0	$-\frac{\sqrt{30}i}{300}$
		0	$-\frac{\sqrt{14}i}{14}$	0	0	0	0	0	0	$\frac{\sqrt{35}i}{700}$	0	0	0	0	0
		0	0	$\frac{\sqrt{35}i}{35}$	0	0	0	0	0	0	$-\frac{\sqrt{105}i}{420}$	0	0	0	0
600	symmetry	$-\frac{\sqrt{70}x(x^2-3y^2)(x^2+y^2-8z^2)}{16}$													

*continued ...*

Table 9

No.	multipole	matrix													
	$\mathbb{Q}_5^{(1,0;a)}(B_u, 2)$	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{35}}{25}$	0	0	
		0	0	0	0	0	0	$\frac{\sqrt{5}}{25}$	0	0	0	0	$-\frac{\sqrt{35}}{25}$	0	
		0	0	0	0	0	0	0	$-\frac{\sqrt{35}}{25}$	0	0	0	0	$\frac{\sqrt{5}}{25}$	
		0	0	0	0	0	0	0	0	$\frac{\sqrt{35}}{25}$	0	0	0	0	
		0	0	0	$\frac{\sqrt{35}}{35}$	0	0	0	0	0	0	$\frac{\sqrt{105}}{420}$	0	0	
		0	0	0	0	$-\frac{\sqrt{14}}{14}$	0	0	0	0	0	0	$-\frac{\sqrt{35}}{700}$	0	
		0	0	0	0	0	$\frac{\sqrt{35}}{35}$	$-\frac{\sqrt{30}}{300}$	0	0	0	0	0	$-\frac{\sqrt{210}}{700}$	
		$\frac{\sqrt{35}}{35}$	0	0	0	0	0	0	$\frac{\sqrt{210}}{700}$	0	0	0	0	$\frac{\sqrt{30}}{300}$	
		0	$-\frac{\sqrt{14}}{14}$	0	0	0	0	0	0	$\frac{\sqrt{35}}{700}$	0	0	0	0	
		0	0	$\frac{\sqrt{35}}{35}$	0	0	0	0	0	0	$-\frac{\sqrt{105}}{420}$	0	0	0	
601	symmetry	$\frac{3\sqrt{14}x(x^4-10x^2y^2+5y^4)}{16}$													
	$\mathbb{Q}_{5,1}^{(1,0;a)}(E_{1u}, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{5} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{5} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{3\sqrt{70}}{70} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{105}}{420} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{60} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{60} & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{3\sqrt{70}}{70} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}}{420} & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$													
602	symmetry	$-\frac{3\sqrt{14}y(5x^4-10x^2y^2+y^4)}{16}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{Q}_{5,2}^{(1,0;a)}(E_{1u}, 1)$	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{3}i}{5}$	
		0	0	0	0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	$-\frac{\sqrt{3}i}{5}$	0	0	0	0	0	0	0	
		0	0	0	0	0	$\frac{3\sqrt{70}i}{70}$	0	0	0	0	0	$\frac{\sqrt{105}i}{420}$	0	
		0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{3}i}{60}$	
		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	$\frac{\sqrt{3}i}{60}$	0	0	0	0	0	0	0	
		$-\frac{3\sqrt{70}i}{70}$	0	0	0	0	0	$\frac{\sqrt{105}i}{420}$	0	0	0	0	0	0	
603	symmetry	$\frac{\sqrt{15}x(x^4+2x^2y^2-12x^2z^2+y^4-12y^2z^2+8z^4)}{8}$													
	$\mathbb{Q}_{5,1}^{(1,0;a)}(E_{1u}, 2)$	0	0	0	0	0	0	$-\frac{\sqrt{10}}{50}$	0	$\frac{\sqrt{2}}{10}$	0	0	0	0	
		0	0	0	0	0	0	0	$\frac{3\sqrt{10}}{50}$	0	$-\frac{\sqrt{6}}{10}$	0	0	0	
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{6}}{10}$	0	$\frac{3\sqrt{10}}{50}$	0	0	
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{2}}{10}$	0	$-\frac{\sqrt{10}}{50}$	0	
		0	$\frac{\sqrt{15}}{70}$	0	0	0	0	$-\frac{\sqrt{14}}{840}$	0	$\frac{\sqrt{6}}{168}$	0	0	0	0	
		$\frac{\sqrt{15}}{70}$	0	$-\frac{\sqrt{6}}{14}$	0	0	0	$\frac{23\sqrt{10}}{4200}$	0	$-\frac{13\sqrt{2}}{840}$	0	0	0	0	
		0	$-\frac{\sqrt{6}}{14}$	0	$\frac{\sqrt{3}}{7}$	0	0	0	$-\frac{11\sqrt{15}}{2100}$	0	$\frac{1}{420}$	0	0	0	
		0	0	$\frac{\sqrt{3}}{7}$	0	$-\frac{\sqrt{6}}{14}$	0	0	0	$-\frac{1}{420}$	0	$\frac{11\sqrt{15}}{2100}$	0	0	
		0	0	0	$-\frac{\sqrt{6}}{14}$	0	$\frac{\sqrt{15}}{70}$	0	0	0	0	$\frac{13\sqrt{2}}{840}$	0	$-\frac{23\sqrt{10}}{4200}$	
		0	0	0	0	$\frac{\sqrt{15}}{70}$	0	0	0	0	0	$-\frac{\sqrt{6}}{168}$	0	$\frac{\sqrt{14}}{840}$	
604	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														
	$\mathbb{Q}_{5,2}^{(1,0;a)}(E_{1u}, 2)$	0	0	0	0	0	0	0	$-\frac{\sqrt{10}i}{50}$	0	$-\frac{\sqrt{2}i}{10}$	0	0	0	0	
		0	0	0	0	0	0	0	0	$\frac{3\sqrt{10}i}{50}$	0	$\frac{\sqrt{6}i}{10}$	0	0	0	
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{6}i}{10}$	0	$-\frac{3\sqrt{10}i}{50}$	0	0	
		0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{2}i}{10}$	0	$\frac{\sqrt{10}i}{50}$	0	
		0	$-\frac{\sqrt{15}i}{70}$	0	0	0	0	$-\frac{\sqrt{14}i}{840}$	0	$-\frac{\sqrt{6}i}{168}$	0	0	0	0	0	
		$\frac{\sqrt{15}i}{70}$	0	$\frac{\sqrt{6}i}{14}$	0	0	0	0	$\frac{23\sqrt{10}i}{4200}$	0	$\frac{13\sqrt{2}i}{840}$	0	0	0	0	
		0	$-\frac{\sqrt{6}i}{14}$	0	$-\frac{\sqrt{3}i}{7}$	0	0	0	0	$-\frac{11\sqrt{15}i}{2100}$	0	$-\frac{i}{420}$	0	0	0	
		0	0	$\frac{\sqrt{3}i}{7}$	0	$\frac{\sqrt{6}i}{14}$	0	0	0	0	$-\frac{i}{420}$	0	$-\frac{11\sqrt{15}i}{2100}$	0	0	
		0	0	0	$-\frac{\sqrt{6}i}{14}$	0	$-\frac{\sqrt{15}i}{70}$	0	0	0	0	$\frac{13\sqrt{2}i}{840}$	0	$\frac{23\sqrt{10}i}{4200}$	0	
		0	0	0	0	$\frac{\sqrt{15}i}{70}$	0	0	0	0	0	0	$-\frac{\sqrt{6}i}{168}$	0	$-\frac{\sqrt{14}i}{840}$	
605	symmetry	$-\frac{3\sqrt{35}xyz(x-y)(x+y)}{2}$														
	$\mathbb{Q}_{5,1}^{(1,0;a)}(E_{2u}, 1)$	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{210}i}{50}$	0		
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{3\sqrt{10}i}{50}$		
		0	0	0	0	0	0	$-\frac{3\sqrt{10}i}{50}$	0	0	0	0	0	0		
		0	0	0	0	0	0	0	$\frac{\sqrt{210}i}{50}$	0	0	0	0	0		
		0	0	0	0	$\frac{3\sqrt{35}i}{70}$	0	0	0	0	0	$\frac{\sqrt{14}i}{140}$	0	0		
		0	0	0	0	0	$-\frac{3\sqrt{35}i}{70}$	0	0	0	0	0	$\frac{\sqrt{210}i}{2100}$	0		
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{15}i}{150}$		
		0	0	0	0	0	0	$\frac{\sqrt{15}i}{150}$	0	0	0	0	0	0		
		$-\frac{3\sqrt{35}i}{70}$	0	0	0	0	0	0	$-\frac{\sqrt{210}i}{2100}$	0	0	0	0	0		
		0	$\frac{3\sqrt{35}i}{70}$	0	0	0	0	0	0	$-\frac{\sqrt{14}i}{140}$	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													
	$\mathbb{Q}_{5,2}^{(1,0;a)}(E_{2u},1)$	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{210}}{50}$	0	
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{3\sqrt{10}}{50}$	
		0	0	0	0	0	$\frac{3\sqrt{10}}{50}$	0	0	0	0	0	0	0	
		0	0	0	0	0	0	$-\frac{\sqrt{210}}{50}$	0	0	0	0	0	0	
		0	0	0	0	$\frac{3\sqrt{35}}{70}$	0	0	0	0	0	$\frac{\sqrt{14}}{140}$	0	0	
		0	0	0	0	0	$-\frac{3\sqrt{35}}{70}$	0	0	0	0	0	$\frac{\sqrt{210}}{2100}$	0	
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{15}}{150}$	
		0	0	0	0	0	$-\frac{\sqrt{15}}{150}$	0	0	0	0	0	0	0	
		$\frac{3\sqrt{35}}{70}$	0	0	0	0	0	$\frac{\sqrt{210}}{2100}$	0	0	0	0	0	0	
		0	$-\frac{3\sqrt{35}}{70}$	0	0	0	0	0	$\frac{\sqrt{14}}{140}$	0	0	0	0	0	
607	symmetry	$-\frac{\sqrt{105}xyz(x^2+y^2-2z^2)}{2}$													
	$\mathbb{Q}_{5,1}^{(1,0;a)}(E_{2u},2)$	0	0	0	0	0	$\frac{\sqrt{10}i}{100}$	0	0	0	$-\frac{\sqrt{14}i}{20}$	0	0	0	
		0	0	0	0	0	0	$-\frac{\sqrt{210}i}{100}$	0	0	0	$\frac{3\sqrt{70}i}{100}$	0	0	
		0	0	0	0	0	0	0	$\frac{3\sqrt{70}i}{100}$	0	0	0	$-\frac{\sqrt{210}i}{100}$	0	
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{14}i}{20}$	0	0	0	$\frac{\sqrt{10}i}{100}$	
		0	0	$-\frac{\sqrt{210}i}{140}$	0	0	0	0	0	$-\frac{\sqrt{70}i}{420}$	0	0	0	0	
		0	0	0	$\frac{\sqrt{42}i}{28}$	0	$-\frac{\sqrt{10}i}{300}$	0	0	0	$\frac{\sqrt{14}i}{210}$	0	0	0	
		$\frac{\sqrt{210}i}{140}$	0	0	0	$-\frac{\sqrt{42}i}{28}$	0	0	$\frac{2\sqrt{35}i}{525}$	0	0	0	$\frac{\sqrt{105}i}{1050}$	0	
		0	$-\frac{\sqrt{42}i}{28}$	0	0	0	$\frac{\sqrt{210}i}{140}$	0	0	$-\frac{\sqrt{105}i}{1050}$	0	0	0	$-\frac{2\sqrt{35}i}{525}$	
		0	0	$\frac{\sqrt{42}i}{28}$	0	0	0	0	0	$-\frac{\sqrt{14}i}{210}$	0	0	0	$\frac{\sqrt{10}i}{300}$	
		0	0	0	$-\frac{\sqrt{210}i}{140}$	0	0	0	0	0	$\frac{\sqrt{70}i}{420}$	0	0	0	
608	symmetry	$-\frac{\sqrt{105}z(x-y)(x+y)(x^2+y^2-2z^2)}{4}$													

continued ...



Table 9

No.	multipole	matrix													
	$\mathbb{Q}_{5,2}^{(1,0;a)}(E_{2u}, 2)$	0	0	0	0	0	0	$\frac{\sqrt{10}}{100}$	0	0	0	$\frac{\sqrt{14}}{20}$	0	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{210}}{100}$	0	0	0	$-\frac{3\sqrt{70}}{100}$	0	0	0
		0	0	0	0	0	0	0	$\frac{3\sqrt{70}}{100}$	0	0	0	$\frac{\sqrt{210}}{100}$	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{14}}{20}$	0	0	0	$-\frac{\sqrt{10}}{100}$	0
		0	0	$\frac{\sqrt{210}}{140}$	0	0	0	0	0	$\frac{\sqrt{70}}{420}$	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{42}}{28}$	0	0	$-\frac{\sqrt{10}}{300}$	0	0	0	$-\frac{\sqrt{14}}{210}$	0	0	0
		$\frac{\sqrt{210}}{140}$	0	0	0	$\frac{\sqrt{42}}{28}$	0	0	$\frac{2\sqrt{35}}{525}$	0	0	0	$-\frac{\sqrt{105}}{1050}$	0	0
		0	$-\frac{\sqrt{42}}{28}$	0	0	0	$-\frac{\sqrt{210}}{140}$	0	0	$-\frac{\sqrt{105}}{1050}$	0	0	0	$\frac{2\sqrt{35}}{525}$	0
		0	0	$\frac{\sqrt{42}}{28}$	0	0	0	0	0	$-\frac{\sqrt{14}}{210}$	0	0	0	0	$-\frac{\sqrt{10}}{300}$
		0	0	0	$-\frac{\sqrt{210}}{140}$	0	0	0	0	0	$\frac{\sqrt{70}}{420}$	0	0	0	0
609	symmetry	$z$													
	$\mathbb{Q}_1^{(1,1;a)}(A_u)$	0	$-\frac{1}{5}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{6}}{10}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{6}}{10}$	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	$-\frac{1}{5}$	0	0	0	0	0	0	0	0	0
		$-\frac{2}{7}$	0	0	0	0	0	0	$\frac{\sqrt{6}}{28}$	0	0	0	0	0	0
		0	$-\frac{6}{35}$	0	0	0	0	0	0	$\frac{\sqrt{10}}{28}$	0	0	0	0	0
		0	0	$-\frac{2}{35}$	0	0	0	0	0	0	$\frac{\sqrt{3}}{14}$	0	0	0	0
		0	0	0	$\frac{2}{35}$	0	0	0	0	0	0	$\frac{\sqrt{3}}{14}$	0	0	0
		0	0	0	0	$\frac{6}{35}$	0	0	0	0	0	0	$\frac{\sqrt{10}}{28}$	0	0
		0	0	0	0	0	$\frac{2}{7}$	0	0	0	0	0	0	$\frac{\sqrt{6}}{28}$	0
610	symmetry	$x$													

*continued ...*

Table 9

No.	multipole	matrix													
	$\mathbb{Q}_{1,1}^{(1,1;a)}(E_{1u})$	$\frac{\sqrt{5}}{10}$	0	$-\frac{\sqrt{2}}{20}$	0	0	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{3}}{10}$	0	$-\frac{\sqrt{6}}{20}$	0	0	0	0	0	0	0	0	0	0
		0	0	$\frac{\sqrt{6}}{20}$	0	$-\frac{\sqrt{3}}{10}$	0	0	0	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{2}}{20}$	0	$-\frac{\sqrt{5}}{10}$	0	0	0	0	0	0	0	0
		0	$-\frac{2\sqrt{5}}{35}$	0	0	0	0	$-\frac{\sqrt{42}}{56}$	0	$\frac{\sqrt{2}}{56}$	0	0	0	0	0
		$-\frac{2\sqrt{5}}{35}$	0	$-\frac{4\sqrt{2}}{35}$	0	0	0	$-\frac{\sqrt{30}}{56}$	0	$\frac{\sqrt{6}}{56}$	0	0	0	0	0
		0	$-\frac{4\sqrt{2}}{35}$	0	$-\frac{6}{35}$	0	0	0	$-\frac{\sqrt{5}}{28}$	0	$\frac{\sqrt{3}}{28}$	0	0	0	0
		0	0	$-\frac{6}{35}$	0	$-\frac{4\sqrt{2}}{35}$	0	0	0	$-\frac{\sqrt{3}}{28}$	0	$\frac{\sqrt{5}}{28}$	0	0	0
		0	0	0	$-\frac{4\sqrt{2}}{35}$	0	$-\frac{2\sqrt{5}}{35}$	0	0	0	0	$-\frac{\sqrt{6}}{56}$	0	$\frac{\sqrt{30}}{56}$	0
		0	0	0	0	$-\frac{2\sqrt{5}}{35}$	0	0	0	0	0	$-\frac{\sqrt{2}}{56}$	0	$\frac{\sqrt{42}}{56}$	0
611	symmetry	$y$													
	$\mathbb{Q}_{1,2}^{(1,1;a)}(E_{1u})$	$\frac{\sqrt{5}i}{10}$	0	$\frac{\sqrt{2}i}{20}$	0	0	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{3}i}{10}$	0	$\frac{\sqrt{6}i}{20}$	0	0	0	0	0	0	0	0	0	0
		0	0	$\frac{\sqrt{6}i}{20}$	0	$\frac{\sqrt{3}i}{10}$	0	0	0	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{2}i}{20}$	0	$\frac{\sqrt{5}i}{10}$	0	0	0	0	0	0	0	0
		0	$\frac{2\sqrt{5}i}{35}$	0	0	0	0	$-\frac{\sqrt{42}i}{56}$	0	$-\frac{\sqrt{2}i}{56}$	0	0	0	0	0
		$-\frac{2\sqrt{5}i}{35}$	0	$\frac{4\sqrt{2}i}{35}$	0	0	0	$-\frac{\sqrt{30}i}{56}$	0	$-\frac{\sqrt{6}i}{56}$	0	0	0	0	0
		0	$-\frac{4\sqrt{2}i}{35}$	0	$\frac{6i}{35}$	0	0	0	$-\frac{\sqrt{5}i}{28}$	0	$-\frac{\sqrt{3}i}{28}$	0	0	0	0
		0	0	$-\frac{6i}{35}$	0	$\frac{4\sqrt{2}i}{35}$	0	0	0	$-\frac{\sqrt{3}i}{28}$	0	$-\frac{\sqrt{5}i}{28}$	0	0	0
		0	0	0	$-\frac{4\sqrt{2}i}{35}$	0	$\frac{2\sqrt{5}i}{35}$	0	0	0	0	$-\frac{\sqrt{6}i}{56}$	0	$-\frac{\sqrt{30}i}{56}$	0
		0	0	0	0	$-\frac{2\sqrt{5}i}{35}$	0	0	0	0	0	$-\frac{\sqrt{2}i}{56}$	0	$-\frac{\sqrt{42}i}{56}$	0
612	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$													

continued ...

Table 9

No.	multipole	matrix														
	$\mathbb{Q}_3^{(1,1;a)}(A_u)$	0	$\frac{9}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{10}}{28}$	0	0	0	0	0	0
		0	0	$-\frac{3\sqrt{6}}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{2}}{28}$	0	0	0	0	0
		0	0	0	$-\frac{3\sqrt{6}}{28}$	0	0	0	0	0	0	$\frac{\sqrt{2}}{28}$	0	0	0	0
		0	0	0	0	$\frac{9}{28}$	0	0	0	0	0	0	$\frac{\sqrt{10}}{28}$	0	0	0
		$\frac{5}{42}$	0	0	0	0	0	0	$-\frac{\sqrt{6}}{28}$	0	0	0	0	0	0	0
		0	$-\frac{1}{6}$	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	$-\frac{2}{21}$	0	0	0	0	0	0	$\frac{\sqrt{3}}{28}$	0	0	0	0	0
		0	0	0	$\frac{2}{21}$	0	0	0	0	0	0	$\frac{\sqrt{3}}{28}$	0	0	0	0
		0	0	0	0	$\frac{1}{6}$	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	$-\frac{5}{42}$	0	0	0	0	0	0	0	$-\frac{\sqrt{6}}{28}$	0
613	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$														
	$\mathbb{Q}_3^{(1,1;a)}(B_u, 1)$	0	0	0	0	$-\frac{9\sqrt{10}i}{112}$	0	0	0	0	0	0	$\frac{i}{28}$	0	0	0
		0	0	0	0	0	$-\frac{15\sqrt{6}i}{112}$	$-\frac{\sqrt{7}i}{28}$	0	0	0	0	0	$\frac{i}{14}$	0	0
		$-\frac{15\sqrt{6}i}{112}$	0	0	0	0	0	0	$-\frac{i}{14}$	0	0	0	0	0	$\frac{\sqrt{7}i}{28}$	0
		0	$-\frac{9\sqrt{10}i}{112}$	0	0	0	0	0	0	$-\frac{i}{28}$	0	0	0	0	0	0
		0	0	0	$-\frac{5i}{42}$	0	0	0	0	0	0	$\frac{\sqrt{3}i}{56}$	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{10}i}{21}$	0	0	0	0	0	0	$\frac{3i}{56}$	0	0	0
		0	0	0	0	0	$-\frac{5i}{42}$	$\frac{\sqrt{42}i}{112}$	0	0	0	0	0	$\frac{3\sqrt{6}i}{112}$	0	0
		$\frac{5i}{42}$	0	0	0	0	0	0	$\frac{3\sqrt{6}i}{112}$	0	0	0	0	0	0	$\frac{\sqrt{42}i}{112}$
		0	$\frac{\sqrt{10}i}{21}$	0	0	0	0	0	0	$\frac{3i}{56}$	0	0	0	0	0	0
		0	0	$\frac{5i}{42}$	0	0	0	0	0	0	$\frac{\sqrt{3}i}{56}$	0	0	0	0	0
614	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$														

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{Q}_3^{(1,1;a)}(B_u, 2)$	0	0	0	0	$\frac{9\sqrt{10}}{112}$	0	0	0	0	0	0	$-\frac{1}{28}$	0	0
		0	0	0	0	0	$\frac{15\sqrt{6}}{112}$	$-\frac{\sqrt{7}}{28}$	0	0	0	0	0	$-\frac{1}{14}$	0
		$-\frac{15\sqrt{6}}{112}$	0	0	0	0	0	0	$-\frac{1}{14}$	0	0	0	0	0	$-\frac{\sqrt{7}}{28}$
		0	$-\frac{9\sqrt{10}}{112}$	0	0	0	0	0	0	$-\frac{1}{28}$	0	0	0	0	0
		0	0	0	$\frac{5}{42}$	0	0	0	0	0	0	$-\frac{\sqrt{3}}{56}$	0	0	0
		0	0	0	0	$\frac{\sqrt{10}}{21}$	0	0	0	0	0	0	$-\frac{3}{56}$	0	0
		0	0	0	0	0	$\frac{5}{42}$	$\frac{\sqrt{42}}{112}$	0	0	0	0	0	$-\frac{3\sqrt{6}}{112}$	0
		$\frac{5}{42}$	0	0	0	0	0	0	$\frac{3\sqrt{6}}{112}$	0	0	0	0	0	$-\frac{\sqrt{42}}{112}$
		0	$\frac{\sqrt{10}}{21}$	0	0	0	0	0	0	$\frac{3}{56}$	0	0	0	0	0
		0	0	$\frac{5}{42}$	0	0	0	0	0	0	$\frac{\sqrt{3}}{56}$	0	0	0	0
615	symmetry	$-\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$													
	$\mathbb{Q}_{3,1}^{(1,1;a)}(E_{1u})$	$-\frac{3\sqrt{30}}{112}$	0	$\frac{9\sqrt{3}}{56}$	0	0	0	0	$\frac{\sqrt{5}}{28}$	0	$-\frac{1}{14}$	0	0	0	0
		0	$\frac{3\sqrt{2}}{16}$	0	$-\frac{3}{56}$	0	0	0	0	0	0	$-\frac{\sqrt{3}}{28}$	0	0	0
		0	0	$\frac{3}{56}$	0	$-\frac{3\sqrt{2}}{16}$	0	0	0	0	$-\frac{\sqrt{3}}{28}$	0	0	0	0
		0	0	0	$-\frac{9\sqrt{3}}{56}$	0	$\frac{3\sqrt{30}}{112}$	0	0	0	0	$-\frac{1}{14}$	0	$\frac{\sqrt{5}}{28}$	0
		0	$\frac{\sqrt{30}}{42}$	0	0	0	0	$\frac{\sqrt{7}}{56}$	0	$-\frac{\sqrt{3}}{28}$	0	0	0	0	0
		$\frac{\sqrt{30}}{42}$	0	$-\frac{\sqrt{3}}{42}$	0	0	0	0	$-\frac{\sqrt{5}}{56}$	0	$-\frac{1}{28}$	0	0	0	0
		0	$-\frac{\sqrt{3}}{42}$	0	$-\frac{\sqrt{6}}{21}$	0	0	0	0	$-\frac{\sqrt{30}}{112}$	0	$\frac{\sqrt{2}}{112}$	0	0	0
		0	0	$-\frac{\sqrt{6}}{21}$	0	$-\frac{\sqrt{3}}{42}$	0	0	0	0	$-\frac{\sqrt{2}}{112}$	0	$\frac{\sqrt{30}}{112}$	0	0
		0	0	0	$-\frac{\sqrt{3}}{42}$	0	$\frac{\sqrt{30}}{42}$	0	0	0	0	$\frac{1}{28}$	0	$\frac{\sqrt{5}}{56}$	0
		0	0	0	0	$\frac{\sqrt{30}}{42}$	0	0	0	0	0	0	$\frac{\sqrt{3}}{28}$	0	$-\frac{\sqrt{7}}{56}$
616	symmetry	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{Q}_{3,2}^{(1,1;a)}(E_{1u})$	$-\frac{3\sqrt{30}i}{112}$	0	$-\frac{9\sqrt{3}i}{56}$	0	0	0	0	$\frac{\sqrt{5}i}{28}$	0	$\frac{i}{14}$	0	0	0	0
		0	$\frac{3\sqrt{2}i}{16}$	0	$\frac{3i}{56}$	0	0	0	0	0	0	$\frac{\sqrt{3}i}{28}$	0	0	0
		0	0	$\frac{3i}{56}$	0	$\frac{3\sqrt{2}i}{16}$	0	0	0	0	$-\frac{\sqrt{3}i}{28}$	0	0	0	0
		0	0	0	$-\frac{9\sqrt{3}i}{56}$	0	$-\frac{3\sqrt{30}i}{112}$	0	0	0	0	$-\frac{i}{14}$	0	$-\frac{\sqrt{5}i}{28}$	0
		0	$-\frac{\sqrt{30}i}{42}$	0	0	0	0	$\frac{\sqrt{7}i}{56}$	0	$\frac{\sqrt{3}i}{28}$	0	0	0	0	0
		$\frac{\sqrt{30}i}{42}$	0	$\frac{\sqrt{3}i}{42}$	0	0	0	$-\frac{\sqrt{5}i}{56}$	0	$\frac{i}{28}$	0	0	0	0	0
		0	$-\frac{\sqrt{3}i}{42}$	0	$\frac{\sqrt{6}i}{21}$	0	0	0	0	$-\frac{\sqrt{30}i}{112}$	0	$-\frac{\sqrt{2}i}{112}$	0	0	0
		0	0	$-\frac{\sqrt{6}i}{21}$	0	$\frac{\sqrt{3}i}{42}$	0	0	0	$-\frac{\sqrt{2}i}{112}$	0	$-\frac{\sqrt{30}i}{112}$	0	0	0
		0	0	0	$-\frac{\sqrt{3}i}{42}$	0	$-\frac{\sqrt{30}i}{42}$	0	0	0	$\frac{i}{28}$	0	$-\frac{\sqrt{5}i}{56}$	0	0
		0	0	0	0	$\frac{\sqrt{30}i}{42}$	0	0	0	0	0	$\frac{\sqrt{3}i}{28}$	0	$\frac{\sqrt{7}i}{56}$	0
617	symmetry	$\sqrt{15}xyz$													
	$\mathbb{Q}_{3,1}^{(1,1;a)}(E_{2u})$	0	0	0	$-\frac{3\sqrt{30}i}{56}$	0	0	$-\frac{\sqrt{14}i}{56}$	0	0	0	$\frac{\sqrt{10}i}{56}$	0	0	0
		$-\frac{15i}{56}$	0	0	0	$-\frac{3\sqrt{5}i}{56}$	0	0	$\frac{\sqrt{6}i}{56}$	0	0	0	$\frac{3\sqrt{2}i}{56}$	0	0
		0	$\frac{3\sqrt{5}i}{56}$	0	0	0	$\frac{15i}{56}$	0	0	$\frac{3\sqrt{2}i}{56}$	0	0	0	$\frac{\sqrt{6}i}{56}$	0
		0	0	$\frac{3\sqrt{30}i}{56}$	0	0	0	0	0	0	$\frac{\sqrt{10}i}{56}$	0	0	0	$-\frac{\sqrt{14}i}{56}$
		0	0	$-\frac{5\sqrt{6}i}{84}$	0	0	0	0	0	0	$\frac{\sqrt{2}i}{28}$	0	0	0	0
		0	0	0	$-\frac{\sqrt{30}i}{84}$	0	0	$\frac{\sqrt{14}i}{56}$	0	0	0	$\frac{\sqrt{10}i}{56}$	0	0	0
		$\frac{5\sqrt{6}i}{84}$	0	0	0	$\frac{\sqrt{30}i}{84}$	0	0	$\frac{i}{56}$	0	0	0	$\frac{\sqrt{3}i}{56}$	0	0
		0	$\frac{\sqrt{30}i}{84}$	0	0	0	$\frac{5\sqrt{6}i}{84}$	0	0	$-\frac{\sqrt{3}i}{56}$	0	0	0	$-\frac{i}{56}$	0
		0	0	$-\frac{\sqrt{30}i}{84}$	0	0	0	0	0	0	$-\frac{\sqrt{10}i}{56}$	0	0	0	$-\frac{\sqrt{14}i}{56}$
		0	0	0	$-\frac{5\sqrt{6}i}{84}$	0	0	0	0	0	0	$-\frac{\sqrt{2}i}{28}$	0	0	0
618	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{Q}_{3,2}^{(1,1;a)}(E_{2u})$	0	0	0	$\frac{3\sqrt{30}}{56}$	0	0	$-\frac{\sqrt{14}}{56}$	0	0	0	$-\frac{\sqrt{10}}{56}$	0	0	0
		$-\frac{15}{56}$	0	0	0	$\frac{3\sqrt{5}}{56}$	0	0	$\frac{\sqrt{6}}{56}$	0	0	0	$-\frac{3\sqrt{2}}{56}$	0	0
		0	$\frac{3\sqrt{5}}{56}$	0	0	0	$-\frac{15}{56}$	0	0	$\frac{3\sqrt{2}}{56}$	0	0	0	$-\frac{\sqrt{6}}{56}$	0
		0	0	$\frac{3\sqrt{30}}{56}$	0	0	0	0	0	0	$\frac{\sqrt{10}}{56}$	0	0	0	$\frac{\sqrt{14}}{56}$
		0	0	$\frac{5\sqrt{6}}{84}$	0	0	0	0	0	0	$-\frac{\sqrt{2}}{28}$	0	0	0	0
		0	0	0	$\frac{\sqrt{30}}{84}$	0	0	$\frac{\sqrt{14}}{56}$	0	0	0	$-\frac{\sqrt{10}}{56}$	0	0	0
		$\frac{5\sqrt{6}}{84}$	0	0	0	$-\frac{\sqrt{30}}{84}$	0	0	$\frac{1}{56}$	0	0	0	$-\frac{\sqrt{3}}{56}$	0	0
		0	$\frac{\sqrt{30}}{84}$	0	0	0	$-\frac{5\sqrt{6}}{84}$	0	0	$-\frac{\sqrt{3}}{56}$	0	0	0	$\frac{1}{56}$	0
		0	0	$-\frac{\sqrt{30}}{84}$	0	0	0	0	0	0	$-\frac{\sqrt{10}}{56}$	0	0	0	$\frac{\sqrt{14}}{56}$
		0	0	0	$-\frac{5\sqrt{6}}{84}$	0	0	0	0	0	0	$-\frac{\sqrt{2}}{28}$	0	0	0
619	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$													
	$\mathbb{G}_2^{(a)}(A_u)$	0	$\frac{3\sqrt{10}i}{35}$	0	0	0	0	0	0	$\frac{i}{14}$	0	0	0	0	0
		0	0	$\frac{\sqrt{15}i}{35}$	0	0	0	0	0	0	$\frac{3\sqrt{5}i}{70}$	0	0	0	0
		0	0	0	$-\frac{\sqrt{15}i}{35}$	0	0	0	0	0	0	$\frac{3\sqrt{5}i}{70}$	0	0	0
		0	0	0	0	$-\frac{3\sqrt{10}i}{35}$	0	0	0	0	0	0	$\frac{i}{14}$	0	0
		$-\frac{\sqrt{10}i}{28}$	0	0	0	0	0	0	$\frac{\sqrt{15}i}{14}$	0	0	0	0	0	0
		0	$\frac{\sqrt{10}i}{140}$	0	0	0	0	0	0	$\frac{3i}{14}$	0	0	0	0	0
		0	0	$\frac{\sqrt{10}i}{35}$	0	0	0	0	0	0	$\frac{\sqrt{30}i}{70}$	0	0	0	0
		0	0	0	$\frac{\sqrt{10}i}{35}$	0	0	0	0	0	0	$-\frac{\sqrt{30}i}{70}$	0	0	0
		0	0	0	0	$\frac{\sqrt{10}i}{140}$	0	0	0	0	0	0	$-\frac{3i}{14}$	0	0
		0	0	0	0	0	$-\frac{\sqrt{10}i}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{15}i}{14}$	0
620	symmetry	$\sqrt{3}yz$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{G}_{2,1}^{(a)}(E_{1u})$	$\frac{\sqrt{6}}{14}$	0	$\frac{3\sqrt{15}}{70}$	0	0	0	0	$\frac{1}{14}$	0	$\frac{\sqrt{5}}{70}$	0	0	0	0
		0	$-\frac{\sqrt{10}}{70}$	0	$\frac{\sqrt{5}}{14}$	0	0	0	0	$\frac{1}{14}$	0	$\frac{\sqrt{15}}{70}$	0	0	0
		0	0	$-\frac{\sqrt{5}}{14}$	0	$\frac{\sqrt{10}}{70}$	0	0	0	0	$\frac{\sqrt{15}}{70}$	0	$\frac{1}{14}$	0	0
		0	0	0	$-\frac{3\sqrt{15}}{70}$	0	$-\frac{\sqrt{6}}{14}$	0	0	0	0	$\frac{\sqrt{5}}{70}$	0	$\frac{1}{14}$	0
		0	$-\frac{\sqrt{6}}{28}$	0	0	0	0	$\frac{\sqrt{35}}{28}$	0	$\frac{\sqrt{15}}{28}$	0	0	0	0	0
		$\frac{\sqrt{6}}{28}$	0	$-\frac{\sqrt{15}}{70}$	0	0	0	0	$\frac{1}{28}$	0	$\frac{11\sqrt{5}}{140}$	0	0	0	0
		0	$\frac{\sqrt{15}}{70}$	0	0	0	0	0	0	$-\frac{\sqrt{6}}{28}$	0	$\frac{\sqrt{10}}{20}$	0	0	0
		0	0	0	0	$\frac{\sqrt{15}}{70}$	0	0	0	0	$-\frac{\sqrt{10}}{20}$	0	$\frac{\sqrt{6}}{28}$	0	0
		0	0	0	$-\frac{\sqrt{15}}{70}$	0	$\frac{\sqrt{6}}{28}$	0	0	0	0	$-\frac{11\sqrt{5}}{140}$	0	$-\frac{1}{28}$	0
		0	0	0	0	$-\frac{\sqrt{6}}{28}$	0	0	0	0	0	$-\frac{\sqrt{15}}{28}$	0	$-\frac{\sqrt{35}}{28}$	0
621	symmetry	$-\sqrt{3}xz$													
	$\mathbb{G}_{2,2}^{(a)}(E_{1u})$	$\frac{\sqrt{6}i}{14}$	0	$-\frac{3\sqrt{15}i}{70}$	0	0	0	0	$\frac{i}{14}$	0	$-\frac{\sqrt{5}i}{70}$	0	0	0	0
		0	$-\frac{\sqrt{10}i}{70}$	0	$-\frac{\sqrt{5}i}{14}$	0	0	0	0	$\frac{i}{14}$	0	$-\frac{\sqrt{15}i}{70}$	0	0	0
		0	0	$-\frac{\sqrt{5}i}{14}$	0	$-\frac{\sqrt{10}i}{70}$	0	0	0	0	$\frac{\sqrt{15}i}{70}$	0	$-\frac{i}{14}$	0	0
		0	0	0	$-\frac{3\sqrt{15}i}{70}$	0	$\frac{\sqrt{6}i}{14}$	0	0	0	0	$\frac{\sqrt{5}i}{70}$	0	$-\frac{i}{14}$	0
		0	$\frac{\sqrt{6}i}{28}$	0	0	0	0	$\frac{\sqrt{35}i}{28}$	0	$-\frac{\sqrt{15}i}{28}$	0	0	0	0	0
		$\frac{\sqrt{6}i}{28}$	0	$\frac{\sqrt{15}i}{70}$	0	0	0	0	$\frac{i}{28}$	0	$-\frac{11\sqrt{5}i}{140}$	0	0	0	0
		0	$\frac{\sqrt{15}i}{70}$	0	0	0	0	0	0	$-\frac{\sqrt{6}i}{28}$	0	$-\frac{\sqrt{10}i}{20}$	0	0	0
		0	0	0	0	$-\frac{\sqrt{15}i}{70}$	0	0	0	0	$-\frac{\sqrt{10}i}{20}$	0	$-\frac{\sqrt{6}i}{28}$	0	0
		0	0	0	$-\frac{\sqrt{15}i}{70}$	0	$-\frac{\sqrt{6}i}{28}$	0	0	0	0	$-\frac{11\sqrt{5}i}{140}$	0	$\frac{i}{28}$	0
		0	0	0	0	$-\frac{\sqrt{6}i}{28}$	0	0	0	0	0	$-\frac{\sqrt{15}i}{28}$	0	$\frac{\sqrt{35}i}{28}$	0
622	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{G}_{2,1}^{(a)}(E_{2u})$	0	0	0	$\frac{\sqrt{15}i}{35}$	0	0	$\frac{\sqrt{7}i}{28}$	0	0	0	$\frac{\sqrt{5}i}{140}$	0	0	0
		$-\frac{\sqrt{2}i}{7}$	0	0	0	$\frac{2\sqrt{10}i}{35}$	0	0	$\frac{\sqrt{3}i}{28}$	0	0	0	$\frac{i}{28}$	0	0
		0	$-\frac{2\sqrt{10}i}{35}$	0	0	0	$\frac{\sqrt{2}i}{7}$	0	0	$\frac{i}{28}$	0	0	0	$\frac{\sqrt{3}i}{28}$	0
		0	0	$-\frac{\sqrt{15}i}{35}$	0	0	0	0	0	0	$\frac{\sqrt{5}i}{140}$	0	0	0	$\frac{\sqrt{7}i}{28}$
		0	0	$-\frac{\sqrt{3}i}{28}$	0	0	0	0	0	0	$\frac{i}{14}$	0	0	0	0
		0	0	0	$-\frac{3\sqrt{15}i}{140}$	0	0	$-\frac{\sqrt{7}i}{14}$	0	0	0	$\frac{2\sqrt{5}i}{35}$	0	0	0
		$-\frac{\sqrt{3}i}{28}$	0	0	0	$-\frac{3\sqrt{15}i}{140}$	0	0	$-\frac{\sqrt{2}i}{7}$	0	0	0	$\frac{\sqrt{6}i}{14}$	0	0
		0	$-\frac{3\sqrt{15}i}{140}$	0	0	0	$-\frac{\sqrt{3}i}{28}$	0	0	$-\frac{\sqrt{6}i}{14}$	0	0	0	$\frac{\sqrt{2}i}{7}$	0
		0	0	$-\frac{3\sqrt{15}i}{140}$	0	0	0	0	0	0	$-\frac{2\sqrt{5}i}{35}$	0	0	0	$\frac{\sqrt{7}i}{14}$
		0	0	0	$-\frac{\sqrt{3}i}{28}$	0	0	0	0	0	0	$-\frac{i}{14}$	0	0	0
623	symmetry	$-\sqrt{3}xy$													
	$\mathbb{G}_{2,2}^{(a)}(E_{2u})$	0	0	0	$-\frac{\sqrt{15}}{35}$	0	0	$\frac{\sqrt{7}}{28}$	0	0	0	$-\frac{\sqrt{5}}{140}$	0	0	0
		$-\frac{\sqrt{2}}{7}$	0	0	0	$-\frac{2\sqrt{10}}{35}$	0	0	$\frac{\sqrt{3}}{28}$	0	0	0	$-\frac{1}{28}$	0	0
		0	$-\frac{2\sqrt{10}}{35}$	0	0	0	$-\frac{\sqrt{2}}{7}$	0	0	$\frac{1}{28}$	0	0	0	$-\frac{\sqrt{3}}{28}$	0
		0	0	$-\frac{\sqrt{15}}{35}$	0	0	0	0	0	0	$\frac{\sqrt{5}}{140}$	0	0	0	$-\frac{\sqrt{7}}{28}$
		0	0	$\frac{\sqrt{3}}{28}$	0	0	0	0	0	0	$-\frac{1}{14}$	0	0	0	0
		0	0	0	$\frac{3\sqrt{15}}{140}$	0	0	$-\frac{\sqrt{7}}{14}$	0	0	0	$-\frac{2\sqrt{5}}{35}$	0	0	0
		$-\frac{\sqrt{3}}{28}$	0	0	0	$\frac{3\sqrt{15}}{140}$	0	0	$-\frac{\sqrt{2}}{7}$	0	0	0	$-\frac{\sqrt{6}}{14}$	0	0
		0	$-\frac{3\sqrt{15}}{140}$	0	0	0	$\frac{\sqrt{3}}{28}$	0	0	$-\frac{\sqrt{6}}{14}$	0	0	0	$-\frac{\sqrt{2}}{7}$	0
		0	0	$-\frac{3\sqrt{15}}{140}$	0	0	0	0	0	0	$-\frac{2\sqrt{5}}{35}$	0	0	0	$-\frac{\sqrt{7}}{14}$
		0	0	0	$-\frac{\sqrt{3}}{28}$	0	0	0	0	0	0	$-\frac{1}{14}$	0	0	0
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														
	$\mathbb{G}_4^{(a)}(A_u)$	0	$-\frac{i}{14}$	0	0	0	0	0	$-\frac{9\sqrt{10}i}{140}$	0	0	0	0	0	0	0
		0	0	$\frac{\sqrt{6}i}{14}$	0	0	0	0	0	$\frac{3\sqrt{2}i}{28}$	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{6}i}{14}$	0	0	0	0	0	$\frac{3\sqrt{2}i}{28}$	0	0	0	0	0
		0	0	0	0	$\frac{i}{14}$	0	0	0	0	0	$-\frac{9\sqrt{10}i}{140}$	0	0	0	0
		$\frac{i}{14}$	0	0	0	0	0	$-\frac{\sqrt{6}i}{14}$	0	0	0	0	0	0	0	0
		0	$-\frac{3i}{14}$	0	0	0	0	0	$\frac{2\sqrt{10}i}{35}$	0	0	0	0	0	0	0
		0	0	$\frac{i}{7}$	0	0	0	0	0	$\frac{\sqrt{3}i}{14}$	0	0	0	0	0	0
		0	0	0	$\frac{i}{7}$	0	0	0	0	0	$-\frac{\sqrt{3}i}{14}$	0	0	0	0	0
		0	0	0	0	$-\frac{3i}{14}$	0	0	0	0	0	$-\frac{2\sqrt{10}i}{35}$	0	0	0	0
		0	0	0	0	0	$\frac{i}{14}$	0	0	0	0	0	0	$\frac{\sqrt{6}i}{14}$	0	0
625	symmetry	$\frac{\sqrt{70}xz(x^2-3y^2)}{4}$														
	$\mathbb{G}_4^{(a)}(B_u, 1)$	0	0	0	0	$-\frac{\sqrt{70}i}{56}$	0	0	0	0	0	$-\frac{9\sqrt{7}i}{140}$	0	0	0	0
		0	0	0	0	0	$\frac{\sqrt{42}i}{56}$	$-\frac{3i}{20}$	0	0	0	0	$-\frac{3\sqrt{7}i}{70}$	0	0	0
		$\frac{\sqrt{42}i}{56}$	0	0	0	0	0	$\frac{3\sqrt{7}i}{70}$	0	0	0	0	0	0	$\frac{3i}{20}$	0
		0	$-\frac{\sqrt{70}i}{56}$	0	0	0	0	0	$\frac{9\sqrt{7}i}{140}$	0	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{7}i}{14}$	0	0	0	0	0	$-\frac{\sqrt{21}i}{28}$	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{7}i}{20}$	0	0	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{7}i}{14}$	$\frac{3\sqrt{6}i}{40}$	0	0	0	0	0	$\frac{\sqrt{42}i}{280}$	0	0
		$\frac{\sqrt{7}i}{14}$	0	0	0	0	0	$\frac{\sqrt{42}i}{280}$	0	0	0	0	0	0	$\frac{3\sqrt{6}i}{40}$	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{7}i}{20}$	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{7}i}{14}$	0	0	0	0	0	$-\frac{\sqrt{21}i}{28}$	0	0	0	0	0	0
626	symmetry	$\frac{\sqrt{70}yz(3x^2-y^2)}{4}$														

continued ...

Table 9

No.	multipole	matrix														
	$\mathbb{G}_4^{(a)}(B_u, 2)$	0	0	0	0	$-\frac{\sqrt{70}}{56}$	0	0	0	0	0	0	$-\frac{9\sqrt{7}}{140}$	0	0	
		0	0	0	0	0	$\frac{\sqrt{42}}{56}$	$\frac{3}{20}$	0	0	0	0	0	$-\frac{3\sqrt{7}}{70}$	0	
		$-\frac{\sqrt{42}}{56}$	0	0	0	0	0	0	$-\frac{3\sqrt{7}}{70}$	0	0	0	0	0	$\frac{3}{20}$	
		0	$\frac{\sqrt{70}}{56}$	0	0	0	0	0	0	$-\frac{9\sqrt{7}}{140}$	0	0	0	0	0	
		0	0	0	$\frac{\sqrt{7}}{14}$	0	0	0	0	0	0	$-\frac{\sqrt{21}}{28}$	0	0	0	
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{7}}{20}$	0	0	
		0	0	0	0	0	$-\frac{\sqrt{7}}{14}$	$-\frac{3\sqrt{6}}{40}$	0	0	0	0	0	$\frac{\sqrt{42}}{280}$	0	
		$-\frac{\sqrt{7}}{14}$	0	0	0	0	0	0	$-\frac{\sqrt{42}}{280}$	0	0	0	0	0	$\frac{3\sqrt{6}}{40}$	
		0	0	0	0	0	0	0	0	$\frac{\sqrt{7}}{20}$	0	0	0	0	0	
		0	0	$\frac{\sqrt{7}}{14}$	0	0	0	0	0	0	$\frac{\sqrt{21}}{28}$	0	0	0	0	
627	symmetry	$-\frac{\sqrt{10}yz(3x^2+3y^2-4z^2)}{4}$														
	$\mathbb{G}_{4,1}^{(a)}(E_{1u})$	$-\frac{\sqrt{2}}{56}$	0	$-\frac{\sqrt{5}}{28}$	0	0	0	0	$-\frac{9\sqrt{3}}{140}$	0	$-\frac{3\sqrt{15}}{70}$	0	0	0	0	
		0	$\frac{\sqrt{30}}{56}$	0	$\frac{\sqrt{15}}{28}$	0	0	0	0	$\frac{3\sqrt{3}}{35}$	0	$\frac{3\sqrt{5}}{140}$	0	0	0	
		0	0	$-\frac{\sqrt{15}}{28}$	0	$-\frac{\sqrt{30}}{56}$	0	0	0	0	$\frac{3\sqrt{5}}{140}$	0	$\frac{3\sqrt{3}}{35}$	0	0	
		0	0	0	$\frac{\sqrt{5}}{28}$	0	$\frac{\sqrt{2}}{56}$	0	0	0	0	$-\frac{3\sqrt{15}}{70}$	0	$-\frac{9\sqrt{3}}{140}$	0	
		0	$\frac{\sqrt{2}}{14}$	0	0	0	0	$-\frac{\sqrt{105}}{140}$	0	$-\frac{\sqrt{5}}{14}$	0	0	0	0	0	
		$-\frac{\sqrt{2}}{14}$	0	$-\frac{\sqrt{5}}{14}$	0	0	0	0	$\frac{13\sqrt{3}}{140}$	0	$\frac{\sqrt{15}}{70}$	0	0	0	0	
		0	$\frac{\sqrt{5}}{14}$	0	0	0	0	0	0	$-\frac{\sqrt{2}}{280}$	0	$\frac{\sqrt{30}}{40}$	0	0	0	
		0	0	0	0	$\frac{\sqrt{5}}{14}$	0	0	0	0	$-\frac{\sqrt{30}}{40}$	0	$\frac{\sqrt{2}}{280}$	0	0	
		0	0	0	$-\frac{\sqrt{5}}{14}$	0	$-\frac{\sqrt{2}}{14}$	0	0	0	0	$-\frac{\sqrt{15}}{70}$	0	$-\frac{13\sqrt{3}}{140}$	0	
		0	0	0	0	$\frac{\sqrt{2}}{14}$	0	0	0	0	0	0	$\frac{\sqrt{5}}{14}$	0	$\frac{\sqrt{105}}{140}$	
628	symmetry	$\frac{\sqrt{10}xz(3x^2+3y^2-4z^2)}{4}$														

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{G}_{4,2}^{(a)}(E_{1u})$	$-\frac{\sqrt{2}i}{56}$	0	$\frac{\sqrt{5}i}{28}$	0	0	0	0	$-\frac{9\sqrt{3}i}{140}$	0	$\frac{3\sqrt{15}i}{70}$	0	0	0	0
		0	$\frac{\sqrt{30}i}{56}$	0	$-\frac{\sqrt{15}i}{28}$	0	0	0	0	$\frac{3\sqrt{3}i}{35}$	0	$-\frac{3\sqrt{5}i}{140}$	0	0	0
		0	0	$-\frac{\sqrt{15}i}{28}$	0	$\frac{\sqrt{30}i}{56}$	0	0	0	0	$\frac{3\sqrt{5}i}{140}$	0	$-\frac{3\sqrt{3}i}{35}$	0	0
		0	0	0	$\frac{\sqrt{5}i}{28}$	0	$-\frac{\sqrt{2}i}{56}$	0	0	0	0	$-\frac{3\sqrt{15}i}{70}$	0	$\frac{9\sqrt{3}i}{140}$	0
		0	$-\frac{\sqrt{2}i}{14}$	0	0	0	0	$-\frac{\sqrt{105}i}{140}$	0	$\frac{\sqrt{5}i}{14}$	0	0	0	0	0
		$-\frac{\sqrt{2}i}{14}$	0	$\frac{\sqrt{5}i}{14}$	0	0	0	0	$\frac{13\sqrt{3}i}{140}$	0	$-\frac{\sqrt{15}i}{70}$	0	0	0	0
		0	$\frac{\sqrt{5}i}{14}$	0	0	0	0	0	0	$-\frac{\sqrt{2}i}{280}$	0	$-\frac{\sqrt{30}i}{40}$	0	0	0
		0	0	0	0	$-\frac{\sqrt{5}i}{14}$	0	0	0	0	$-\frac{\sqrt{30}i}{40}$	0	$-\frac{\sqrt{2}i}{280}$	0	0
		0	0	0	$-\frac{\sqrt{5}i}{14}$	0	$\frac{\sqrt{2}i}{14}$	0	0	0	0	$-\frac{\sqrt{15}i}{70}$	0	$\frac{13\sqrt{3}i}{140}$	0
		0	0	0	0	$\frac{\sqrt{2}i}{14}$	0	0	0	0	0	0	$\frac{\sqrt{5}i}{14}$	0	$-\frac{\sqrt{105}i}{140}$
629	symmetry	$\frac{\sqrt{35}(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$													
	$\mathbb{G}_{4,1}^{(a)}(E_{2u}, 1)$	0	0	0	0	0	$-\frac{\sqrt{7}i}{14}$	0	0	0	0	0	$-\frac{3\sqrt{42}i}{140}$	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{3\sqrt{2}i}{20}$	0
		0	0	0	0	0	0	$-\frac{3\sqrt{2}i}{20}$	0	0	0	0	0	0	0
		$\frac{\sqrt{7}i}{14}$	0	0	0	0	0	0	$-\frac{3\sqrt{42}i}{140}$	0	0	0	0	0	0
		0	0	0	0	$\frac{\sqrt{7}i}{14}$	0	0	0	0	0	$-\frac{\sqrt{70}i}{70}$	0	0	0
		0	0	0	0	0	$\frac{\sqrt{7}i}{14}$	0	0	0	0	0	$-\frac{\sqrt{42}i}{35}$	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{3}i}{10}$	0
		0	0	0	0	0	0	$\frac{\sqrt{3}i}{10}$	0	0	0	0	0	0	0
		$\frac{\sqrt{7}i}{14}$	0	0	0	0	0	0	$\frac{\sqrt{42}i}{35}$	0	0	0	0	0	0
		0	$\frac{\sqrt{7}i}{14}$	0	0	0	0	0	0	$\frac{\sqrt{70}i}{70}$	0	0	0	0	0
630	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{G}_{4,2}^{(a)}(E_{2u}, 1)$	0	0	0	0	0	$-\frac{\sqrt{7}}{14}$	0	0	0	0	0	0	$-\frac{3\sqrt{42}}{140}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{3\sqrt{2}}{20}$
		0	0	0	0	0	0	$\frac{3\sqrt{2}}{20}$	0	0	0	0	0	0	0
		$-\frac{\sqrt{7}}{14}$	0	0	0	0	0	0	$\frac{3\sqrt{42}}{140}$	0	0	0	0	0	0
		0	0	0	0	$\frac{\sqrt{7}}{14}$	0	0	0	0	0	0	$-\frac{\sqrt{70}}{70}$	0	0
		0	0	0	0	0	$\frac{\sqrt{7}}{14}$	0	0	0	0	0	0	$-\frac{\sqrt{42}}{35}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{3}}{10}$
		0	0	0	0	0	0	$-\frac{\sqrt{3}}{10}$	0	0	0	0	0	0	0
		$-\frac{\sqrt{7}}{14}$	0	0	0	0	0	0	$-\frac{\sqrt{42}}{35}$	0	0	0	0	0	0
		0	$-\frac{\sqrt{7}}{14}$	0	0	0	0	0	0	$-\frac{\sqrt{70}}{70}$	0	0	0	0	0
631	symmetry	$-\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$													
	$\mathbb{G}_{4,1}^{(a)}(E_{2u}, 2)$	0	0	0	$-\frac{\sqrt{10}i}{28}$	0	0	$-\frac{3\sqrt{42}i}{280}$	0	0	0	$-\frac{9\sqrt{30}i}{280}$	0	0	0
		$\frac{\sqrt{3}i}{28}$	0	0	0	$\frac{\sqrt{15}i}{28}$	0	0	$\frac{33\sqrt{2}i}{280}$	0	0	0	$-\frac{3\sqrt{6}i}{280}$	0	0
		0	$-\frac{\sqrt{15}i}{28}$	0	0	0	$-\frac{\sqrt{3}i}{28}$	0	0	$-\frac{3\sqrt{6}i}{280}$	0	0	0	$\frac{33\sqrt{2}i}{280}$	0
		0	0	$\frac{\sqrt{10}i}{28}$	0	0	0	0	0	0	$-\frac{9\sqrt{30}i}{280}$	0	0	0	$-\frac{3\sqrt{42}i}{280}$
		0	0	$\frac{3\sqrt{2}i}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{6}i}{14}$	0	0	0	0
		0	0	0	$-\frac{\sqrt{10}i}{28}$	0	0	$\frac{3\sqrt{42}i}{140}$	0	0	0	$-\frac{\sqrt{30}i}{140}$	0	0	0
		$\frac{3\sqrt{2}i}{28}$	0	0	0	$-\frac{\sqrt{10}i}{28}$	0	0	$-\frac{9\sqrt{3}i}{140}$	0	0	0	$\frac{17i}{140}$	0	0
		0	$-\frac{\sqrt{10}i}{28}$	0	0	0	$\frac{3\sqrt{2}i}{28}$	0	0	$-\frac{17i}{140}$	0	0	0	$\frac{9\sqrt{3}i}{140}$	0
		0	0	$-\frac{\sqrt{10}i}{28}$	0	0	0	0	0	0	$\frac{\sqrt{30}i}{140}$	0	0	0	$-\frac{3\sqrt{42}i}{140}$
		0	0	0	$\frac{3\sqrt{2}i}{28}$	0	0	0	0	0	0	$\frac{\sqrt{6}i}{14}$	0	0	0
632	symmetry	$\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{G}_{4,2}^{(a)}(E_{2u}, 2)$	0	0	0	$\frac{\sqrt{10}}{28}$	0	0	$-\frac{3\sqrt{42}}{280}$	0	0	0	$\frac{9\sqrt{30}}{280}$	0	0	0
		$\frac{\sqrt{3}}{28}$	0	0	0	$-\frac{\sqrt{15}}{28}$	0	0	$\frac{33\sqrt{2}}{280}$	0	0	0	$\frac{3\sqrt{6}}{280}$	0	0
		0	$-\frac{\sqrt{15}}{28}$	0	0	0	$\frac{\sqrt{3}}{28}$	0	0	$-\frac{3\sqrt{6}}{280}$	0	0	0	$-\frac{33\sqrt{2}}{280}$	0
		0	0	$\frac{\sqrt{10}}{28}$	0	0	0	0	0	$-\frac{9\sqrt{30}}{280}$	0	0	0	0	$\frac{3\sqrt{42}}{280}$
		0	0	$-\frac{3\sqrt{2}}{28}$	0	0	0	0	0	$\frac{\sqrt{6}}{14}$	0	0	0	0	0
		0	0	0	$\frac{\sqrt{10}}{28}$	0	0	$\frac{3\sqrt{42}}{140}$	0	0	0	$\frac{\sqrt{30}}{140}$	0	0	0
		$\frac{3\sqrt{2}}{28}$	0	0	0	$\frac{\sqrt{10}}{28}$	0	0	$-\frac{9\sqrt{3}}{140}$	0	0	0	$-\frac{17}{140}$	0	0
		0	$-\frac{\sqrt{10}}{28}$	0	0	0	$-\frac{3\sqrt{2}}{28}$	0	0	$-\frac{17}{140}$	0	0	0	$-\frac{9\sqrt{3}}{140}$	0
		0	0	$-\frac{\sqrt{10}}{28}$	0	0	0	0	0	$\frac{\sqrt{30}}{140}$	0	0	0	0	$\frac{3\sqrt{42}}{140}$
		0	0	0	$\frac{3\sqrt{2}}{28}$	0	0	0	0	0	$\frac{\sqrt{6}}{14}$	0	0	0	0
633	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$													
	$\mathbb{G}_2^{(1,-1;a)}(A_u)$	0	$-\frac{3\sqrt{6}i}{70}$	0	0	0	0	0	$-\frac{2\sqrt{15}i}{35}$	0	0	0	0	0	0
		0	0	$-\frac{3i}{70}$	0	0	0	0	0	$-\frac{6\sqrt{3}i}{35}$	0	0	0	0	0
		0	0	0	$\frac{3i}{70}$	0	0	0	0	0	$-\frac{6\sqrt{3}i}{35}$	0	0	0	0
		0	0	0	0	$\frac{3\sqrt{6}i}{70}$	0	0	0	0	0	$-\frac{2\sqrt{15}i}{35}$	0	0	0
		$\frac{\sqrt{6}i}{21}$	0	0	0	0	0	0	$\frac{3i}{14}$	0	0	0	0	0	0
		0	$-\frac{\sqrt{6}i}{105}$	0	0	0	0	0	$\frac{3\sqrt{15}i}{70}$	0	0	0	0	0	0
		0	0	$-\frac{4\sqrt{6}i}{105}$	0	0	0	0	0	$\frac{3\sqrt{2}i}{70}$	0	0	0	0	0
		0	0	0	$-\frac{4\sqrt{6}i}{105}$	0	0	0	0	0	$-\frac{3\sqrt{2}i}{70}$	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{6}i}{105}$	0	0	0	0	0	$-\frac{3\sqrt{15}i}{70}$	0	0	0
		0	0	0	0	0	$\frac{\sqrt{6}i}{21}$	0	0	0	0	0	0	$-\frac{3i}{14}$	0
634	symmetry	$\sqrt{3}yz$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{G}_{2,1}^{(1,-1;a)}(E_{1u})$	$-\frac{3\sqrt{10}}{140}$	0	$-\frac{9}{140}$	0	0	0	0	$-\frac{2\sqrt{15}}{35}$	0	$-\frac{2\sqrt{3}}{35}$	0	0	0	0
		0	$\frac{\sqrt{6}}{140}$	0	$-\frac{\sqrt{3}}{28}$	0	0	0	0	$-\frac{2\sqrt{15}}{35}$	0	$-\frac{6}{35}$	0	0	0
		0	0	$\frac{\sqrt{3}}{28}$	0	$-\frac{\sqrt{6}}{140}$	0	0	0	0	$-\frac{6}{35}$	0	$-\frac{2\sqrt{15}}{35}$	0	0
		0	0	0	$\frac{9}{140}$	0	$\frac{3\sqrt{10}}{140}$	0	0	0	0	$-\frac{2\sqrt{3}}{35}$	0	$-\frac{2\sqrt{15}}{35}$	0
		0	$\frac{\sqrt{10}}{35}$	0	0	0	0	$\frac{\sqrt{21}}{28}$	0	$\frac{3}{28}$	0	0	0	0	0
		$-\frac{\sqrt{10}}{35}$	0	$\frac{2}{35}$	0	0	0	0	$\frac{\sqrt{15}}{140}$	0	$\frac{11\sqrt{3}}{140}$	0	0	0	0
		0	$-\frac{2}{35}$	0	0	0	0	0	0	$-\frac{3\sqrt{10}}{140}$	0	$\frac{\sqrt{6}}{20}$	0	0	0
		0	0	0	0	$-\frac{2}{35}$	0	0	0	0	$-\frac{\sqrt{6}}{20}$	0	$\frac{3\sqrt{10}}{140}$	0	0
		0	0	0	$\frac{2}{35}$	0	$-\frac{\sqrt{10}}{35}$	0	0	0	0	$-\frac{11\sqrt{3}}{140}$	0	$-\frac{\sqrt{15}}{140}$	0
		0	0	0	0	$\frac{\sqrt{10}}{35}$	0	0	0	0	0	0	$-\frac{3}{28}$	0	$-\frac{\sqrt{21}}{28}$
635	symmetry	$-\sqrt{3}xz$													
	$\mathbb{G}_{2,2}^{(1,-1;a)}(E_{1u})$	$-\frac{3\sqrt{10}i}{140}$	0	$\frac{9i}{140}$	0	0	0	0	$-\frac{2\sqrt{15}i}{35}$	0	$\frac{2\sqrt{3}i}{35}$	0	0	0	0
		0	$\frac{\sqrt{6}i}{140}$	0	$\frac{\sqrt{3}i}{28}$	0	0	0	0	$-\frac{2\sqrt{15}i}{35}$	0	$\frac{6i}{35}$	0	0	0
		0	0	$\frac{\sqrt{3}i}{28}$	0	$\frac{\sqrt{6}i}{140}$	0	0	0	0	$-\frac{6i}{35}$	0	$\frac{2\sqrt{15}i}{35}$	0	0
		0	0	0	$\frac{9i}{140}$	0	$-\frac{3\sqrt{10}i}{140}$	0	0	0	0	$-\frac{2\sqrt{3}i}{35}$	0	$\frac{2\sqrt{15}i}{35}$	0
		0	$-\frac{\sqrt{10}i}{35}$	0	0	0	0	$\frac{\sqrt{21}i}{28}$	0	$-\frac{3i}{28}$	0	0	0	0	0
		$-\frac{\sqrt{10}i}{35}$	0	$-\frac{2i}{35}$	0	0	0	0	$\frac{\sqrt{15}i}{140}$	0	$-\frac{11\sqrt{3}i}{140}$	0	0	0	0
		0	$-\frac{2i}{35}$	0	0	0	0	0	0	$-\frac{3\sqrt{10}i}{140}$	0	$-\frac{\sqrt{6}i}{20}$	0	0	0
		0	0	0	0	$\frac{2i}{35}$	0	0	0	0	$-\frac{\sqrt{6}i}{20}$	0	$-\frac{3\sqrt{10}i}{140}$	0	0
		0	0	0	$\frac{2i}{35}$	0	$\frac{\sqrt{10}i}{35}$	0	0	0	0	$-\frac{11\sqrt{3}i}{140}$	0	$\frac{\sqrt{15}i}{140}$	0
		0	0	0	0	$\frac{\sqrt{10}i}{35}$	0	0	0	0	0	0	$-\frac{3i}{28}$	0	$\frac{\sqrt{21}i}{28}$
636	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{G}_{2,1}^{(1,-1;a)}(E_{2u})$	0	0	0	$-\frac{3i}{70}$	0	0	$-\frac{\sqrt{105}i}{35}$	0	0	0	$-\frac{\sqrt{3}i}{35}$	0	0	0
		$\frac{\sqrt{30}i}{70}$	0	0	0	$-\frac{\sqrt{6}i}{35}$	0	0	$-\frac{3\sqrt{5}i}{35}$	0	0	0	$-\frac{\sqrt{15}i}{35}$	0	0
		0	$\frac{\sqrt{6}i}{35}$	0	0	0	$-\frac{\sqrt{30}i}{70}$	0	0	$-\frac{\sqrt{15}i}{35}$	0	0	0	$-\frac{3\sqrt{5}i}{35}$	0
		0	0	$\frac{3i}{70}$	0	0	0	0	0	$-\frac{\sqrt{3}i}{35}$	0	0	0	0	$-\frac{\sqrt{105}i}{35}$
		0	0	$\frac{\sqrt{5}i}{35}$	0	0	0	0	0	$\frac{\sqrt{15}i}{70}$	0	0	0	0	0
		0	0	0	$\frac{3i}{35}$	0	0	$-\frac{\sqrt{105}i}{70}$	0	0	0	$\frac{2\sqrt{3}i}{35}$	0	0	0
		$\frac{\sqrt{5}i}{35}$	0	0	0	$\frac{3i}{35}$	0	0	$-\frac{\sqrt{30}i}{35}$	0	0	0	$\frac{3\sqrt{10}i}{70}$	0	0
		0	$\frac{3i}{35}$	0	0	0	$\frac{\sqrt{5}i}{35}$	0	0	$-\frac{3\sqrt{10}i}{70}$	0	0	0	$\frac{\sqrt{30}i}{35}$	0
		0	0	$\frac{3i}{35}$	0	0	0	0	0	$-\frac{2\sqrt{3}i}{35}$	0	0	0	0	$\frac{\sqrt{105}i}{70}$
		0	0	0	$\frac{\sqrt{5}i}{35}$	0	0	0	0	0	$-\frac{\sqrt{15}i}{70}$	0	0	0	0
637	symmetry	$-\sqrt{3}xy$													
	$\mathbb{G}_{2,2}^{(1,-1;a)}(E_{2u})$	0	0	0	$\frac{3}{70}$	0	0	$-\frac{\sqrt{105}}{35}$	0	0	0	$\frac{\sqrt{3}}{35}$	0	0	0
		$\frac{\sqrt{30}}{70}$	0	0	0	$\frac{\sqrt{6}}{35}$	0	0	$-\frac{3\sqrt{5}}{35}$	0	0	0	$\frac{\sqrt{15}}{35}$	0	0
		0	$\frac{\sqrt{6}}{35}$	0	0	0	$\frac{\sqrt{30}}{70}$	0	0	$-\frac{\sqrt{15}}{35}$	0	0	0	$\frac{3\sqrt{5}}{35}$	0
		0	0	$\frac{3}{70}$	0	0	0	0	0	$-\frac{\sqrt{3}}{35}$	0	0	0	0	$\frac{\sqrt{105}}{35}$
		0	0	$-\frac{\sqrt{5}}{35}$	0	0	0	0	0	$-\frac{\sqrt{15}}{70}$	0	0	0	0	0
		0	0	0	$-\frac{3}{35}$	0	0	$-\frac{\sqrt{105}}{70}$	0	0	0	$-\frac{2\sqrt{3}}{35}$	0	0	0
		$\frac{\sqrt{5}}{35}$	0	0	0	$-\frac{3}{35}$	0	0	$-\frac{\sqrt{30}}{35}$	0	0	0	$-\frac{3\sqrt{10}}{70}$	0	0
		0	$\frac{3}{35}$	0	0	0	$-\frac{\sqrt{5}}{35}$	0	0	$-\frac{3\sqrt{10}}{70}$	0	0	0	$-\frac{\sqrt{30}}{35}$	0
		0	0	$\frac{3}{35}$	0	0	0	0	0	$-\frac{2\sqrt{3}}{35}$	0	0	0	0	$-\frac{\sqrt{105}}{70}$
		0	0	0	$\frac{\sqrt{5}}{35}$	0	0	0	0	0	$-\frac{\sqrt{15}}{70}$	0	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													
	$\mathbb{G}_4^{(1,-1;a)}(A_u)$	0	$\frac{\sqrt{3}i}{84}$	0	0	0	0	0	$\frac{\sqrt{30}i}{28}$	0	0	0	0	0	
		0	0	$-\frac{\sqrt{2}i}{28}$	0	0	0	0	0	$-\frac{5\sqrt{6}i}{84}$	0	0	0	0	
		0	0	0	$\frac{\sqrt{2}i}{28}$	0	0	0	0	0	$-\frac{5\sqrt{6}i}{84}$	0	0	0	
		0	0	0	0	$-\frac{\sqrt{3}i}{84}$	0	0	0	0	0	$\frac{\sqrt{30}i}{28}$	0	0	
		$-\frac{\sqrt{3}i}{42}$	0	0	0	0	0	$-\frac{5\sqrt{2}i}{28}$	0	0	0	0	0	0	
		0	$\frac{\sqrt{3}i}{14}$	0	0	0	0	0	$\frac{\sqrt{30}i}{21}$	0	0	0	0	0	
		0	0	$-\frac{\sqrt{3}i}{21}$	0	0	0	0	0	$\frac{5i}{28}$	0	0	0	0	
		0	0	0	$-\frac{\sqrt{3}i}{21}$	0	0	0	0	0	$-\frac{5i}{28}$	0	0	0	
		0	0	0	0	$\frac{\sqrt{3}i}{14}$	0	0	0	0	0	$-\frac{\sqrt{30}i}{21}$	0	0	
		0	0	0	0	0	$-\frac{\sqrt{3}i}{42}$	0	0	0	0	0	$\frac{5\sqrt{2}i}{28}$	0	
639	symmetry	$\frac{\sqrt{70}xz(x^2-3y^2)}{4}$													
	$\mathbb{G}_4^{(1,-1;a)}(B_u, 1)$	0	0	0	0	$\frac{\sqrt{210}i}{336}$	0	0	0	0	0	$\frac{\sqrt{21}i}{28}$	0	0	
		0	0	0	0	0	$-\frac{\sqrt{14}i}{112}$	$\frac{\sqrt{3}i}{12}$	0	0	0	0	$\frac{\sqrt{21}i}{42}$	0	
		$-\frac{\sqrt{14}i}{112}$	0	0	0	0	0	$-\frac{\sqrt{21}i}{42}$	0	0	0	0	0	$-\frac{\sqrt{3}i}{12}$	
		0	$\frac{\sqrt{210}i}{336}$	0	0	0	0	0	$-\frac{\sqrt{21}i}{28}$	0	0	0	0	0	
		0	0	0	$-\frac{\sqrt{21}i}{42}$	0	0	0	0	0	$-\frac{5\sqrt{7}i}{56}$	0	0	0	
		0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{21}i}{24}$	0	0	
		0	0	0	0	0	$\frac{\sqrt{21}i}{42}$	$\frac{3\sqrt{2}i}{16}$	0	0	0	0	$\frac{\sqrt{14}i}{112}$	0	
		$-\frac{\sqrt{21}i}{42}$	0	0	0	0	0	0	$\frac{\sqrt{14}i}{112}$	0	0	0	0	$\frac{3\sqrt{2}i}{16}$	
		0	0	0	0	0	0	0	$-\frac{\sqrt{21}i}{24}$	0	0	0	0	0	
		0	0	$\frac{\sqrt{21}i}{42}$	0	0	0	0	0	$-\frac{5\sqrt{7}i}{56}$	0	0	0	0	
640	symmetry	$\frac{\sqrt{70}yz(3x^2-y^2)}{4}$													

continued ...



Table 9

No.	multipole	matrix													
	$\mathbb{G}_4^{(1,-1;a)}(B_u, 2)$	0	0	0	0	$\frac{\sqrt{210}}{336}$	0	0	0	0	0	0	$\frac{\sqrt{21}}{28}$	0	0
		0	0	0	0	0	$-\frac{\sqrt{14}}{112}$	$-\frac{\sqrt{3}}{12}$	0	0	0	0	0	$\frac{\sqrt{21}}{42}$	0
		$\frac{\sqrt{14}}{112}$	0	0	0	0	0	0	$\frac{\sqrt{21}}{42}$	0	0	0	0	0	$-\frac{\sqrt{3}}{12}$
		0	$-\frac{\sqrt{210}}{336}$	0	0	0	0	0	0	$\frac{\sqrt{21}}{28}$	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{21}}{42}$	0	0	0	0	0	0	$-\frac{5\sqrt{7}}{56}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{21}}{24}$	0	0
		0	0	0	0	0	$\frac{\sqrt{21}}{42}$	$-\frac{3\sqrt{2}}{16}$	0	0	0	0	0	$\frac{\sqrt{14}}{112}$	0
		$\frac{\sqrt{21}}{42}$	0	0	0	0	0	0	$-\frac{\sqrt{14}}{112}$	0	0	0	0	0	$\frac{3\sqrt{2}}{16}$
		0	0	0	0	0	0	0	0	$\frac{\sqrt{21}}{24}$	0	0	0	0	0
		0	0	$-\frac{\sqrt{21}}{42}$	0	0	0	0	0	0	$\frac{5\sqrt{7}}{56}$	0	0	0	0
641	symmetry	$-\frac{\sqrt{10}yz(3x^2+3y^2-4z^2)}{4}$													
	$\mathbb{G}_{4,1}^{(1,-1;a)}(E_{1u})$	$\frac{\sqrt{6}}{336}$	0	$\frac{\sqrt{15}}{168}$	0	0	0	0	$\frac{3}{28}$	0	$\frac{\sqrt{5}}{14}$	0	0	0	0
		0	$-\frac{\sqrt{10}}{112}$	0	$-\frac{\sqrt{5}}{56}$	0	0	0	0	$-\frac{1}{7}$	0	$-\frac{\sqrt{15}}{84}$	0	0	0
		0	0	$\frac{\sqrt{5}}{56}$	0	$\frac{\sqrt{10}}{112}$	0	0	0	0	$-\frac{\sqrt{15}}{84}$	0	$-\frac{1}{7}$	0	0
		0	0	0	$-\frac{\sqrt{15}}{168}$	0	$-\frac{\sqrt{6}}{336}$	0	0	0	0	$\frac{\sqrt{5}}{14}$	0	$\frac{3}{28}$	0
		0	$-\frac{\sqrt{6}}{42}$	0	0	0	0	$-\frac{\sqrt{35}}{56}$	0	$-\frac{5\sqrt{15}}{84}$	0	0	0	0	0
		$\frac{\sqrt{6}}{42}$	0	$\frac{\sqrt{15}}{42}$	0	0	0	0	$\frac{13}{56}$	0	$\frac{\sqrt{5}}{28}$	0	0	0	0
		0	$-\frac{\sqrt{15}}{42}$	0	0	0	0	0	0	$-\frac{\sqrt{6}}{336}$	0	$\frac{\sqrt{10}}{16}$	0	0	0
		0	0	0	0	$-\frac{\sqrt{15}}{42}$	0	0	0	0	$-\frac{\sqrt{10}}{16}$	0	$\frac{\sqrt{6}}{336}$	0	0
		0	0	0	$\frac{\sqrt{15}}{42}$	0	$\frac{\sqrt{6}}{42}$	0	0	0	0	$-\frac{\sqrt{5}}{28}$	0	$-\frac{13}{56}$	0
		0	0	0	0	$-\frac{\sqrt{6}}{42}$	0	0	0	0	0	0	$\frac{5\sqrt{15}}{84}$	0	$\frac{\sqrt{35}}{56}$
642	symmetry	$\frac{\sqrt{10}xz(3x^2+3y^2-4z^2)}{4}$													

*continued ...*

Table 9

No.	multipole	matrix													
	$\mathbb{G}_{4,2}^{(1,-1;a)}(E_{1u})$	$\frac{\sqrt{6}i}{336}$	0	$-\frac{\sqrt{15}i}{168}$	0	0	0	0	$\frac{3i}{28}$	0	$-\frac{\sqrt{5}i}{14}$	0	0	0	0
		0	$-\frac{\sqrt{10}i}{112}$	0	$\frac{\sqrt{5}i}{56}$	0	0	0	0	$-\frac{i}{7}$	0	$\frac{\sqrt{15}i}{84}$	0	0	0
		0	0	$\frac{\sqrt{5}i}{56}$	0	$-\frac{\sqrt{10}i}{112}$	0	0	0	0	$-\frac{\sqrt{15}i}{84}$	0	$\frac{i}{7}$	0	0
		0	0	0	$-\frac{\sqrt{15}i}{168}$	0	$\frac{\sqrt{6}i}{336}$	0	0	0	0	$\frac{\sqrt{5}i}{14}$	0	$-\frac{3i}{28}$	0
		0	$\frac{\sqrt{6}i}{42}$	0	0	0	0	$-\frac{\sqrt{35}i}{56}$	0	$\frac{5\sqrt{15}i}{84}$	0	0	0	0	0
		$\frac{\sqrt{6}i}{42}$	0	$-\frac{\sqrt{15}i}{42}$	0	0	0	0	$\frac{13i}{56}$	0	$-\frac{\sqrt{5}i}{28}$	0	0	0	0
		0	$-\frac{\sqrt{15}i}{42}$	0	0	0	0	0	$-\frac{\sqrt{6}i}{336}$	0	$-\frac{\sqrt{10}i}{16}$	0	0	0	0
		0	0	0	0	$\frac{\sqrt{15}i}{42}$	0	0	0	0	$-\frac{\sqrt{10}i}{16}$	0	$-\frac{\sqrt{6}i}{336}$	0	0
		0	0	0	$\frac{\sqrt{15}i}{42}$	0	$-\frac{\sqrt{6}i}{42}$	0	0	0	0	$-\frac{\sqrt{5}i}{28}$	0	$\frac{13i}{56}$	0
		0	0	0	0	$-\frac{\sqrt{6}i}{42}$	0	0	0	0	0	0	$\frac{5\sqrt{15}i}{84}$	0	$-\frac{\sqrt{35}i}{56}$
643	symmetry	$\frac{\sqrt{35}(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$													
	$\mathbb{G}_{4,1}^{(1,-1;a)}(E_{2u}, 1)$	0	0	0	0	0	$\frac{\sqrt{21}i}{84}$	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	$\frac{\sqrt{6}i}{12}$
		0	0	0	0	0	0	$\frac{\sqrt{6}i}{12}$	0	0	0	0	0	0	0
		$-\frac{\sqrt{21}i}{84}$	0	0	0	0	0	0	$\frac{\sqrt{14}i}{28}$	0	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{21}i}{42}$	0	0	0	0	0	0	$-\frac{\sqrt{210}i}{84}$	0	0
		0	0	0	0	0	$-\frac{\sqrt{21}i}{42}$	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	$-\frac{i}{4}$
		0	0	0	0	0	0	$\frac{i}{4}$	0	0	0	0	0	0	0
		$-\frac{\sqrt{21}i}{42}$	0	0	0	0	0	0	$\frac{\sqrt{14}i}{14}$	0	0	0	0	0	0
		0	$-\frac{\sqrt{21}i}{42}$	0	0	0	0	0	0	$\frac{\sqrt{210}i}{84}$	0	0	0	0	0
644	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
$\mathbb{G}_{4,2}^{(1,-1;a)}(E_{2u}, 1)$		0	0	0	0	0	$\frac{\sqrt{21}}{84}$	0	0	0	0	0	0	$\frac{\sqrt{14}}{28}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{6}}{12}$
		0	0	0	0	0	0	$-\frac{\sqrt{6}}{12}$	0	0	0	0	0	0	0
		$\frac{\sqrt{21}}{84}$	0	0	0	0	0	0	$-\frac{\sqrt{14}}{28}$	0	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{21}}{42}$	0	0	0	0	0	0	$-\frac{\sqrt{210}}{84}$	0	0
		0	0	0	0	0	$-\frac{\sqrt{21}}{42}$	0	0	0	0	0	0	$-\frac{\sqrt{14}}{14}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{1}{4}$
		0	0	0	0	0	0	$-\frac{1}{4}$	0	0	0	0	0	0	0
		$\frac{\sqrt{21}}{42}$	0	0	0	0	0	0	$-\frac{\sqrt{14}}{14}$	0	0	0	0	0	0
		0	$\frac{\sqrt{21}}{42}$	0	0	0	0	0	0	$-\frac{\sqrt{210}}{84}$	0	0	0	0	0
645	symmetry	$-\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$													
$\mathbb{G}_{4,1}^{(1,-1;a)}(E_{2u}, 2)$		0	0	0	$\frac{\sqrt{30i}}{168}$	0	0	$\frac{\sqrt{14i}}{56}$	0	0	0	$\frac{3\sqrt{10i}}{56}$	0	0	0
		$-\frac{i}{56}$	0	0	0	$-\frac{\sqrt{5i}}{56}$	0	0	$-\frac{11\sqrt{6i}}{168}$	0	0	0	$\frac{\sqrt{2i}}{56}$	0	0
		0	$\frac{\sqrt{5i}}{56}$	0	0	0	$\frac{i}{56}$	0	0	$\frac{\sqrt{2i}}{56}$	0	0	0	$-\frac{11\sqrt{6i}}{168}$	0
		0	0	$-\frac{\sqrt{30i}}{168}$	0	0	0	0	0	0	$\frac{3\sqrt{10i}}{56}$	0	0	0	$\frac{\sqrt{14i}}{56}$
		0	0	$-\frac{\sqrt{6i}}{28}$	0	0	0	0	0	0	$-\frac{5\sqrt{2i}}{28}$	0	0	0	0
		0	0	0	$\frac{\sqrt{30i}}{84}$	0	0	$\frac{3\sqrt{14i}}{56}$	0	0	0	$-\frac{\sqrt{10i}}{56}$	0	0	0
		$-\frac{\sqrt{6i}}{28}$	0	0	0	$\frac{\sqrt{30i}}{84}$	0	0	$-\frac{9i}{56}$	0	0	0	$\frac{17\sqrt{3i}}{168}$	0	0
		0	$\frac{\sqrt{30i}}{84}$	0	0	0	$-\frac{\sqrt{6i}}{28}$	0	0	$-\frac{17\sqrt{3i}}{168}$	0	0	0	$\frac{9i}{56}$	0
		0	0	$\frac{\sqrt{30i}}{84}$	0	0	0	0	0	0	$\frac{\sqrt{10i}}{56}$	0	0	0	$-\frac{3\sqrt{14i}}{56}$
		0	0	0	$-\frac{\sqrt{6i}}{28}$	0	0	0	0	0	0	$\frac{5\sqrt{2i}}{28}$	0	0	0
646	symmetry	$\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{G}_{4,2}^{(1,-1;a)}(E_{2u}, 2)$	0	0	0	$-\frac{\sqrt{30}}{168}$	0	0	$\frac{\sqrt{14}}{56}$	0	0	0	$-\frac{3\sqrt{10}}{56}$	0	0	0
		$-\frac{1}{56}$	0	0	0	$\frac{\sqrt{5}}{56}$	0	0	$-\frac{11\sqrt{6}}{168}$	0	0	0	$-\frac{\sqrt{2}}{56}$	0	0
		0	$\frac{\sqrt{5}}{56}$	0	0	0	$-\frac{1}{56}$	0	0	$\frac{\sqrt{2}}{56}$	0	0	0	$\frac{11\sqrt{6}}{168}$	0
		0	0	$-\frac{\sqrt{30}}{168}$	0	0	0	0	0	0	$\frac{3\sqrt{10}}{56}$	0	0	0	$-\frac{\sqrt{14}}{56}$
		0	0	$\frac{\sqrt{6}}{28}$	0	0	0	0	0	0	$\frac{5\sqrt{2}}{28}$	0	0	0	0
		0	0	0	$-\frac{\sqrt{30}}{84}$	0	0	$\frac{3\sqrt{14}}{56}$	0	0	0	$\frac{\sqrt{10}}{56}$	0	0	0
		$-\frac{\sqrt{6}}{28}$	0	0	0	$-\frac{\sqrt{30}}{84}$	0	0	$-\frac{9}{56}$	0	0	0	$-\frac{17\sqrt{3}}{168}$	0	0
		0	$\frac{\sqrt{30}}{84}$	0	0	0	$\frac{\sqrt{6}}{28}$	0	0	$-\frac{17\sqrt{3}}{168}$	0	0	0	$-\frac{9}{56}$	0
		0	0	$\frac{\sqrt{30}}{84}$	0	0	0	0	0	0	$\frac{\sqrt{10}}{56}$	0	0	0	$\frac{3\sqrt{14}}{56}$
		0	0	0	$-\frac{\sqrt{6}}{28}$	0	0	0	0	0	0	$\frac{5\sqrt{2}}{28}$	0	0	0
647	symmetry	$-\frac{5x^6}{16} - \frac{15x^4y^2}{16} + \frac{45x^4z^2}{8} - \frac{15x^2y^4}{16} + \frac{45x^2y^2z^2}{4} - \frac{15x^2z^4}{2} - \frac{5y^6}{16} + \frac{45y^4z^2}{8} - \frac{15y^2z^4}{2} + z^6$													
	$\mathbb{G}_6^{(1,-1;a)}(A_u, 1)$	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	$\frac{\sqrt{66}i}{132}$	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{110}i}{44}$	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	$\frac{5\sqrt{33}i}{66}$	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{5\sqrt{33}i}{66}$	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{110}i}{44}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{66}i}{132}$	0	0
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
	$\mathbb{G}_6^{(1,-1;a)}(A_u, 2)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{i}{2} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{i}{2} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
649	symmetry	$\frac{\sqrt{462}xy(x^2-3y^2)(3x^2-y^2)}{16}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{1}{2} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{1}{2} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
650	symmetry	$-\frac{\sqrt{210}xz(x^2-3y^2)(3x^2+3y^2-8z^2)}{16}$

*continued ...*

Table 9

No.	multipole	matrix
	$\mathbb{G}_6^{(1,-1;a)}(B_u, 1)$	$ \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 & 0 & 0 & 0 & 0 & 0 \\ 0 & 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{77}i}{44} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{231}i}{44} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{22}i}{44} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{154}i}{44} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{154}i}{44} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{22}i}{44} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{231}i}{44} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{77}i}{44} & 0 & 0 & 0 & 0 & 0 \end{bmatrix} $
651	symmetry	$ -\frac{\sqrt{210}yz(3x^2-y^2)(3x^2+3y^2-8z^2)}{16} $ $ \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 & 0 & 0 & 0 & 0 & 0 \\ 0 & 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{77}}{44} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{231}}{44} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{22}}{44} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{154}}{44} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{154}}{44} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{22}}{44} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{231}}{44} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{77}}{44} & 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
	$\mathbb{G}_{6,1}^{(1,-1;a)}(E_{1u}, 1)$	$ \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 & 0 & 0 \\ 0 & 0 & 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}}{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 & 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}}{12} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}}{12} & 0 & 0 & 0 & 0 & 0 \end{bmatrix} $
653	symmetry	$ \frac{3\sqrt{154}xz(x^4-10x^2y^2+5y^4)}{16} $ $ \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 & 0 & 0 \\ 0 & 0 & 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}{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 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 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}{12} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}i}{12} & 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													
	$\mathbb{G}_{6,1}^{(1,-1;a)}(E_{1u}, 2)$	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	$\frac{\sqrt{22}}{264}$	0	$\frac{\sqrt{462}}{264}$	0	0	0	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{770}}{264}$	0	$-\frac{5\sqrt{154}}{264}$	0	0	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{1155}}{132}$	0	$\frac{5\sqrt{77}}{132}$	0	0	0	0
		0	0	0	0	0	0	0	0	$-\frac{5\sqrt{77}}{132}$	0	$-\frac{\sqrt{1155}}{132}$	0	0	0
		0	0	0	0	0	0	0	0	0	$\frac{5\sqrt{154}}{264}$	0	$\frac{\sqrt{770}}{264}$	0	0
		0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{462}}{264}$	0	$-\frac{\sqrt{22}}{264}$	0
655	symmetry	$-\frac{\sqrt{21}xz(5x^4+10x^2y^2-20x^2z^2+5y^4-20y^2z^2+8z^4)}{8}$													
	$\mathbb{G}_{6,2}^{(1,-1;a)}(E_{1u}, 2)$	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	$\frac{\sqrt{22}i}{264}$	0	$-\frac{\sqrt{462}i}{264}$	0	0	0	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{770}i}{264}$	0	$\frac{5\sqrt{154}i}{264}$	0	0	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{1155}i}{132}$	0	$-\frac{5\sqrt{77}i}{132}$	0	0	0	0
		0	0	0	0	0	0	0	0	$-\frac{5\sqrt{77}i}{132}$	0	$\frac{\sqrt{1155}i}{132}$	0	0	0
		0	0	0	0	0	0	0	0	0	$\frac{5\sqrt{154}i}{264}$	0	$-\frac{\sqrt{770}i}{264}$	0	0
		0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{462}i}{264}$	0	$\frac{\sqrt{22}i}{264}$	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
	$\mathbb{G}_{6,1}^{(1,-1;a)}(E_{2u}, 1)$	$ \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 & 0 & 0 \\ 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{154}i}{44} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2310}i}{132} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{165}i}{66} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{165}i}{66} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2310}i}{132} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{154}i}{44} & 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 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 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{154}}{44} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2310}}{132} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{165}}{66} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{165}}{66} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2310}}{132} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{154}}{44} & 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
	$\mathbb{G}_{6,1}^{(1,-1;a)}(E_{2u}, 2)$	$ \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 & 0 & 0 & 0 & 0 & 0 \\ 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{77}i}{66} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{11}i}{66} & 0 & 0 & 0 & -\frac{\sqrt{385}i}{66} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{154}i}{66} & 0 & 0 & 0 & \frac{\sqrt{462}i}{66} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{462}i}{66} & 0 & 0 & 0 & -\frac{\sqrt{154}i}{66} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{385}i}{66} & 0 & 0 & 0 & 0 & \frac{\sqrt{11}i}{66} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{77}i}{66} & 0 & 0 & 0 & 0 \end{bmatrix} $
659	symmetry	$ -\frac{\sqrt{210}xy(x^4+2x^2y^2-16x^2z^2+y^4-16y^2z^2+16z^4)}{16} $
	$\mathbb{G}_{6,2}^{(1,-1;a)}(E_{2u}, 2)$	$ \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 & 0 & 0 & 0 & 0 & 0 \\ 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{77}}{66} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{11}}{66} & 0 & 0 & 0 & \frac{\sqrt{385}}{66} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{154}}{66} & 0 & 0 & 0 & -\frac{\sqrt{462}}{66} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{462}}{66} & 0 & 0 & 0 & \frac{\sqrt{154}}{66} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{385}}{66} & 0 & 0 & 0 & 0 & -\frac{\sqrt{11}}{66} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{77}}{66} & 0 & 0 & 0 & 0 \end{bmatrix} $
660	symmetry	$ -\frac{x^2}{2} - \frac{y^2}{2} + z^2 $

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{G}_2^{(1,0;a)}(A_u)$	0	$\frac{\sqrt{15}i}{35}$	0	0	0	0	0	$-\frac{\sqrt{6}i}{14}$	0	0	0	0	0	
		0	0	$\frac{\sqrt{10}i}{70}$	0	0	0	0	0	$-\frac{3\sqrt{30}i}{70}$	0	0	0	0	
		0	0	0	$-\frac{\sqrt{10}i}{70}$	0	0	0	0	0	$-\frac{3\sqrt{30}i}{70}$	0	0	0	
		0	0	0	0	$-\frac{\sqrt{15}i}{35}$	0	0	0	0	0	$-\frac{\sqrt{6}i}{14}$	0	0	
		$-\frac{\sqrt{15}i}{14}$	0	0	0	0	0	0	$-\frac{\sqrt{10}i}{28}$	0	0	0	0	0	
		0	$\frac{\sqrt{15}i}{70}$	0	0	0	0	0	$-\frac{\sqrt{6}i}{28}$	0	0	0	0	0	
		0	0	$\frac{2\sqrt{15}i}{35}$	0	0	0	0	0	$-\frac{\sqrt{5}i}{70}$	0	0	0	0	
		0	0	0	$\frac{2\sqrt{15}i}{35}$	0	0	0	0	0	$\frac{\sqrt{5}i}{70}$	0	0	0	
		0	0	0	0	$\frac{\sqrt{15}i}{70}$	0	0	0	0	0	$\frac{\sqrt{6}i}{28}$	0	0	
		0	0	0	0	0	$-\frac{\sqrt{15}i}{14}$	0	0	0	0	0	$\frac{\sqrt{10}i}{28}$	0	
661	symmetry	$\sqrt{3}yz$													
	$\mathbb{G}_{2,1}^{(1,0;a)}(E_{1u})$	$\frac{1}{14}$	0	$\frac{3\sqrt{10}}{140}$	0	0	0	0	$-\frac{\sqrt{6}}{14}$	0	$-\frac{\sqrt{30}}{70}$	0	0	0	
		0	$-\frac{\sqrt{15}}{210}$	0	$\frac{\sqrt{30}}{84}$	0	0	0	0	$-\frac{\sqrt{6}}{14}$	0	$-\frac{3\sqrt{10}}{70}$	0	0	
		0	0	$-\frac{\sqrt{30}}{84}$	0	$\frac{\sqrt{15}}{210}$	0	0	0	$-\frac{3\sqrt{10}}{70}$	0	$-\frac{\sqrt{6}}{14}$	0	0	
		0	0	0	$-\frac{3\sqrt{10}}{140}$	0	$-\frac{1}{14}$	0	0	0	$-\frac{\sqrt{30}}{70}$	0	$-\frac{\sqrt{6}}{14}$	0	
		0	$-\frac{3}{14}$	0	0	0	0	$-\frac{\sqrt{210}}{168}$	0	$-\frac{\sqrt{10}}{56}$	0	0	0	0	
		$\frac{3}{14}$	0	$-\frac{3\sqrt{10}}{70}$	0	0	0	0	$-\frac{\sqrt{6}}{168}$	0	$-\frac{11\sqrt{30}}{840}$	0	0	0	
		0	$\frac{3\sqrt{10}}{70}$	0	0	0	0	0	0	$\frac{1}{28}$	0	$-\frac{\sqrt{15}}{60}$	0	0	
		0	0	0	0	$\frac{3\sqrt{10}}{70}$	0	0	0	0	$\frac{\sqrt{15}}{60}$	0	$-\frac{1}{28}$	0	
		0	0	0	$-\frac{3\sqrt{10}}{70}$	0	$\frac{3}{14}$	0	0	0	0	$\frac{11\sqrt{30}}{840}$	0	$\frac{\sqrt{6}}{168}$	
		0	0	0	0	$-\frac{3}{14}$	0	0	0	0	0	0	$\frac{\sqrt{10}}{56}$	$\frac{\sqrt{210}}{168}$	
662	symmetry	$-\sqrt{3}xz$													

*continued ...*

Table 9

No.	multipole	matrix													
	$\mathbb{G}_{2,2}^{(1,0;a)}(E_{1u})$	$\frac{i}{14}$	0	$-\frac{3\sqrt{10}i}{140}$	0	0	0	0	$-\frac{\sqrt{6}i}{14}$	0	$\frac{\sqrt{30}i}{70}$	0	0	0	0
		0	$-\frac{\sqrt{15}i}{210}$	0	$-\frac{\sqrt{30}i}{84}$	0	0	0	0	$-\frac{\sqrt{6}i}{14}$	0	$\frac{3\sqrt{10}i}{70}$	0	0	0
		0	0	$-\frac{\sqrt{30}i}{84}$	0	$-\frac{\sqrt{15}i}{210}$	0	0	0	0	$-\frac{3\sqrt{10}i}{70}$	0	$\frac{\sqrt{6}i}{14}$	0	0
		0	0	0	$-\frac{3\sqrt{10}i}{140}$	0	$\frac{i}{14}$	0	0	0	0	$-\frac{\sqrt{30}i}{70}$	0	$\frac{\sqrt{6}i}{14}$	0
		0	$\frac{3i}{14}$	0	0	0	0	$-\frac{\sqrt{210}i}{168}$	0	$\frac{\sqrt{10}i}{56}$	0	0	0	0	0
		$\frac{3i}{14}$	0	$\frac{3\sqrt{10}i}{70}$	0	0	0	0	$-\frac{\sqrt{6}i}{168}$	0	$\frac{11\sqrt{30}i}{840}$	0	0	0	0
		0	$\frac{3\sqrt{10}i}{70}$	0	0	0	0	0	0	$\frac{i}{28}$	0	$\frac{\sqrt{15}i}{60}$	0	0	0
		0	0	0	0	$-\frac{3\sqrt{10}i}{70}$	0	0	0	0	$\frac{\sqrt{15}i}{60}$	0	$\frac{i}{28}$	0	0
		0	0	0	$-\frac{3\sqrt{10}i}{70}$	0	$-\frac{3i}{14}$	0	0	0	0	$\frac{11\sqrt{30}i}{840}$	0	$-\frac{\sqrt{6}i}{168}$	0
		0	0	0	0	$-\frac{3i}{14}$	0	0	0	0	0	0	$\frac{\sqrt{10}i}{56}$	0	$-\frac{\sqrt{210}i}{168}$
663	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$													
	$\mathbb{G}_{2,1}^{(1,0;a)}(E_{2u})$	0	0	0	$\frac{\sqrt{10}i}{70}$	0	0	$-\frac{\sqrt{42}i}{28}$	0	0	0	$-\frac{\sqrt{30}i}{140}$	0	0	0
		$-\frac{\sqrt{3}i}{21}$	0	0	0	$\frac{2\sqrt{15}i}{105}$	0	0	$-\frac{3\sqrt{2}i}{28}$	0	0	0	$-\frac{\sqrt{6}i}{28}$	0	0
		0	$-\frac{2\sqrt{15}i}{105}$	0	0	0	$\frac{\sqrt{3}i}{21}$	0	0	$-\frac{\sqrt{6}i}{28}$	0	0	0	$-\frac{3\sqrt{2}i}{28}$	0
		0	0	$-\frac{\sqrt{10}i}{70}$	0	0	0	0	0	0	$-\frac{\sqrt{30}i}{140}$	0	0	0	$-\frac{\sqrt{42}i}{28}$
		0	0	$-\frac{3\sqrt{2}i}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{6}i}{84}$	0	0	0	0
		0	0	0	$-\frac{9\sqrt{10}i}{140}$	0	0	$\frac{\sqrt{42}i}{84}$	0	0	0	$-\frac{\sqrt{30}i}{105}$	0	0	0
		$-\frac{3\sqrt{2}i}{28}$	0	0	0	$-\frac{9\sqrt{10}i}{140}$	0	0	$\frac{\sqrt{3}i}{21}$	0	0	0	$-\frac{i}{14}$	0	0
		0	$-\frac{9\sqrt{10}i}{140}$	0	0	0	$-\frac{3\sqrt{2}i}{28}$	0	0	$\frac{i}{14}$	0	0	0	$-\frac{\sqrt{3}i}{21}$	0
		0	0	$-\frac{9\sqrt{10}i}{140}$	0	0	0	0	0	0	$\frac{\sqrt{30}i}{105}$	0	0	0	$-\frac{\sqrt{42}i}{84}$
		0	0	0	$-\frac{3\sqrt{2}i}{28}$	0	0	0	0	0	0	$\frac{\sqrt{6}i}{84}$	0	0	0
664	symmetry	$-\sqrt{3}xy$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{G}_{2,2}^{(1,0;a)}(E_{2u})$	0	0	0	$-\frac{\sqrt{10}}{70}$	0	0	$-\frac{\sqrt{42}}{28}$	0	0	0	$\frac{\sqrt{30}}{140}$	0	0	0
		$-\frac{\sqrt{3}}{21}$	0	0	0	$-\frac{2\sqrt{15}}{105}$	0	0	$-\frac{3\sqrt{2}}{28}$	0	0	0	$\frac{\sqrt{6}}{28}$	0	0
		0	$-\frac{2\sqrt{15}}{105}$	0	0	0	$-\frac{\sqrt{3}}{21}$	0	0	$-\frac{\sqrt{6}}{28}$	0	0	0	$\frac{3\sqrt{2}}{28}$	0
		0	0	$-\frac{\sqrt{10}}{70}$	0	0	0	0	0	0	$-\frac{\sqrt{30}}{140}$	0	0	0	$\frac{\sqrt{42}}{28}$
		0	0	$\frac{3\sqrt{2}}{28}$	0	0	0	0	0	0	$\frac{\sqrt{6}}{84}$	0	0	0	0
		0	0	0	$\frac{9\sqrt{10}}{140}$	0	0	$\frac{\sqrt{42}}{84}$	0	0	0	$\frac{\sqrt{30}}{105}$	0	0	0
		$-\frac{3\sqrt{2}}{28}$	0	0	0	$\frac{9\sqrt{10}}{140}$	0	0	$\frac{\sqrt{3}}{21}$	0	0	0	$\frac{1}{14}$	0	0
		0	$-\frac{9\sqrt{10}}{140}$	0	0	0	$\frac{3\sqrt{2}}{28}$	0	0	$\frac{1}{14}$	0	0	0	$\frac{\sqrt{3}}{21}$	0
		0	0	$-\frac{9\sqrt{10}}{140}$	0	0	0	0	0	0	$\frac{\sqrt{30}}{105}$	0	0	0	$\frac{\sqrt{42}}{84}$
		0	0	0	$-\frac{3\sqrt{2}}{28}$	0	0	0	0	0	0	$\frac{\sqrt{6}}{84}$	0	0	0
665	symmetry	$\frac{3x^4}{8} + \frac{3x^2y^2}{4} - 3x^2z^2 + \frac{3y^4}{8} - 3y^2z^2 + z^4$													
	$\mathbb{G}_4^{(1,0;a)}(A_u)$	0	$-\frac{\sqrt{5}i}{140}$	0	0	0	0	0	$\frac{27\sqrt{2}i}{140}$	0	0	0	0	0	0
		0	0	$\frac{\sqrt{30}i}{140}$	0	0	0	0	0	$-\frac{9\sqrt{10}i}{140}$	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{30}i}{140}$	0	0	0	0	0	$-\frac{9\sqrt{10}i}{140}$	0	0	0	0
		0	0	0	0	$\frac{\sqrt{5}i}{140}$	0	0	0	0	0	$\frac{27\sqrt{2}i}{140}$	0	0	0
		$\frac{3\sqrt{5}i}{70}$	0	0	0	0	0	0	$\frac{\sqrt{30}i}{140}$	0	0	0	0	0	0
		0	$-\frac{9\sqrt{5}i}{70}$	0	0	0	0	0	$-\frac{\sqrt{2}i}{35}$	0	0	0	0	0	0
		0	0	$\frac{3\sqrt{5}i}{35}$	0	0	0	0	0	$-\frac{\sqrt{15}i}{140}$	0	0	0	0	0
		0	0	0	$\frac{3\sqrt{5}i}{35}$	0	0	0	0	0	$\frac{\sqrt{15}i}{140}$	0	0	0	0
		0	0	0	0	$-\frac{9\sqrt{5}i}{70}$	0	0	0	0	0	$\frac{\sqrt{2}i}{35}$	0	0	0
		0	0	0	0	0	$\frac{3\sqrt{5}i}{70}$	0	0	0	0	0	0	$-\frac{\sqrt{30}i}{140}$	0
666	symmetry	$\frac{\sqrt{70}xz(x^2-3y^2)}{4}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{G}_4^{(1,0;a)}(B_u, 1)$	0	0	0	0	$-\frac{\sqrt{14}i}{112}$	0	0	0	0	0	0	$\frac{27\sqrt{35}i}{700}$	0	0
		0	0	0	0	0	$\frac{\sqrt{210}i}{560}$	$\frac{9\sqrt{5}i}{100}$	0	0	0	0	0	$\frac{9\sqrt{35}i}{350}$	0
		$\frac{\sqrt{210}i}{560}$	0	0	0	0	0	0	$-\frac{9\sqrt{35}i}{350}$	0	0	0	0	0	$-\frac{9\sqrt{5}i}{100}$
		0	$-\frac{\sqrt{14}i}{112}$	0	0	0	0	0	0	$-\frac{27\sqrt{35}i}{700}$	0	0	0	0	0
		0	0	0	$\frac{3\sqrt{35}i}{70}$	0	0	0	0	0	0	$\frac{\sqrt{105}i}{280}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{35}i}{200}$	0	0
		0	0	0	0	0	$-\frac{3\sqrt{35}i}{70}$	$-\frac{3\sqrt{30}i}{400}$	0	0	0	0	0	$-\frac{\sqrt{210}i}{2800}$	0
		$\frac{3\sqrt{35}i}{70}$	0	0	0	0	0	0	$-\frac{\sqrt{210}i}{2800}$	0	0	0	0	0	$-\frac{3\sqrt{30}i}{400}$
		0	0	0	0	0	0	0	0	$\frac{\sqrt{35}i}{200}$	0	0	0	0	0
		0	0	$-\frac{3\sqrt{35}i}{70}$	0	0	0	0	0	0	$\frac{\sqrt{105}i}{280}$	0	0	0	0
667	symmetry	$\frac{\sqrt{70}yz(3x^2-y^2)}{4}$													
	$\mathbb{G}_4^{(1,0;a)}(B_u, 2)$	0	0	0	0	$-\frac{\sqrt{14}}{112}$	0	0	0	0	0	0	$\frac{27\sqrt{35}}{700}$	0	0
		0	0	0	0	0	$\frac{\sqrt{210}}{560}$	$-\frac{9\sqrt{5}}{100}$	0	0	0	0	0	$\frac{9\sqrt{35}}{350}$	0
		$-\frac{\sqrt{210}}{560}$	0	0	0	0	0	0	$\frac{9\sqrt{35}}{350}$	0	0	0	0	0	$-\frac{9\sqrt{5}}{100}$
		0	$\frac{\sqrt{14}}{112}$	0	0	0	0	0	0	$\frac{27\sqrt{35}}{700}$	0	0	0	0	0
		0	0	0	$\frac{3\sqrt{35}}{70}$	0	0	0	0	0	0	$\frac{\sqrt{105}}{280}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{35}}{200}$	0	0
		0	0	0	0	0	$-\frac{3\sqrt{35}}{70}$	$\frac{3\sqrt{30}}{400}$	0	0	0	0	0	$-\frac{\sqrt{210}}{2800}$	0
		$-\frac{3\sqrt{35}}{70}$	0	0	0	0	0	0	$\frac{\sqrt{210}}{2800}$	0	0	0	0	0	$-\frac{3\sqrt{30}}{400}$
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{35}}{200}$	0	0	0	0	0
		0	0	$\frac{3\sqrt{35}}{70}$	0	0	0	0	0	0	$-\frac{\sqrt{105}}{280}$	0	0	0	0
668	symmetry	$-\frac{\sqrt{10}yz(3x^2+3y^2-4z^2)}{4}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{G}_{4,1}^{(1,0;a)}(E_{1u})$	$-\frac{\sqrt{10}}{560}$	0	$-\frac{1}{56}$	0	0	0	0	$\frac{27\sqrt{15}}{700}$	0	$\frac{9\sqrt{3}}{70}$	0	0	0	0
		0	$\frac{\sqrt{6}}{112}$	0	$\frac{\sqrt{3}}{56}$	0	0	0	0	$-\frac{9\sqrt{15}}{175}$	0	$-\frac{9}{140}$	0	0	0
		0	0	$-\frac{\sqrt{3}}{56}$	0	$-\frac{\sqrt{6}}{112}$	0	0	0	0	$-\frac{9}{140}$	0	$-\frac{9\sqrt{15}}{175}$	0	0
		0	0	0	$\frac{1}{56}$	0	$\frac{\sqrt{10}}{560}$	0	0	0	0	$\frac{9\sqrt{3}}{70}$	0	$\frac{27\sqrt{15}}{700}$	0
		0	$\frac{3\sqrt{10}}{70}$	0	0	0	0	$\frac{\sqrt{21}}{280}$	0	$\frac{1}{28}$	0	0	0	0	0
		$-\frac{3\sqrt{10}}{70}$	0	$-\frac{3}{14}$	0	0	0	0	$-\frac{13\sqrt{15}}{1400}$	0	$-\frac{\sqrt{3}}{140}$	0	0	0	0
		0	$\frac{3}{14}$	0	0	0	0	0	0	$\frac{\sqrt{10}}{2800}$	0	$-\frac{\sqrt{6}}{80}$	0	0	0
		0	0	0	0	$\frac{3}{14}$	0	0	0	0	$\frac{\sqrt{6}}{80}$	0	$-\frac{\sqrt{10}}{2800}$	0	0
		0	0	0	$-\frac{3}{14}$	0	$-\frac{3\sqrt{10}}{70}$	0	0	0	0	$\frac{\sqrt{3}}{140}$	0	$\frac{13\sqrt{15}}{1400}$	0
		0	0	0	0	$\frac{3\sqrt{10}}{70}$	0	0	0	0	0	0	$-\frac{1}{28}$	0	$-\frac{\sqrt{21}}{280}$
669	symmetry	$\frac{\sqrt{10}xz(3x^2+3y^2-4z^2)}{4}$													
	$\mathbb{G}_{4,2}^{(1,0;a)}(E_{1u})$	$-\frac{\sqrt{10}i}{560}$	0	$\frac{i}{56}$	0	0	0	0	$\frac{27\sqrt{15}i}{700}$	0	$-\frac{9\sqrt{3}i}{70}$	0	0	0	0
		0	$\frac{\sqrt{6}i}{112}$	0	$-\frac{\sqrt{3}i}{56}$	0	0	0	0	$-\frac{9\sqrt{15}i}{175}$	0	$\frac{9i}{140}$	0	0	0
		0	0	$-\frac{\sqrt{3}i}{56}$	0	$\frac{\sqrt{6}i}{112}$	0	0	0	0	$-\frac{9i}{140}$	0	$\frac{9\sqrt{15}i}{175}$	0	0
		0	0	0	$\frac{i}{56}$	0	$-\frac{\sqrt{10}i}{560}$	0	0	0	0	$\frac{9\sqrt{3}i}{70}$	0	$-\frac{27\sqrt{15}i}{700}$	0
		0	$-\frac{3\sqrt{10}i}{70}$	0	0	0	0	$\frac{\sqrt{21}i}{280}$	0	$-\frac{i}{28}$	0	0	0	0	0
		$-\frac{3\sqrt{10}i}{70}$	0	$\frac{3i}{14}$	0	0	0	0	$-\frac{13\sqrt{15}i}{1400}$	0	$\frac{\sqrt{3}i}{140}$	0	0	0	0
		0	$\frac{3i}{14}$	0	0	0	0	0	0	$\frac{\sqrt{10}i}{2800}$	0	$\frac{\sqrt{6}i}{80}$	0	0	0
		0	0	0	0	$-\frac{3i}{14}$	0	0	0	0	$\frac{\sqrt{6}i}{80}$	0	$\frac{\sqrt{10}i}{2800}$	0	0
		0	0	0	$-\frac{3i}{14}$	0	$\frac{3\sqrt{10}i}{70}$	0	0	0	0	$\frac{\sqrt{3}i}{140}$	0	$-\frac{13\sqrt{15}i}{1400}$	0
		0	0	0	0	$\frac{3\sqrt{10}i}{70}$	0	0	0	0	0	0	$-\frac{i}{28}$	0	$\frac{\sqrt{21}i}{280}$
670	symmetry	$\frac{\sqrt{35}(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{G}_{4,1}^{(1,0;a)}(E_{2u}, 1)$	0	0	0	0	0	$-\frac{\sqrt{35}i}{140}$	0	0	0	0	0	0	$\frac{9\sqrt{210}i}{700}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{9\sqrt{10}i}{100}$
		0	0	0	0	0	0	$\frac{9\sqrt{10}i}{100}$	0	0	0	0	0	0	0
		$\frac{\sqrt{35}i}{140}$	0	0	0	0	0	0	$\frac{9\sqrt{210}i}{700}$	0	0	0	0	0	0
		0	0	0	0	$\frac{3\sqrt{35}i}{70}$	0	0	0	0	0	0	$\frac{\sqrt{14}i}{140}$	0	0
		0	0	0	0	0	$\frac{3\sqrt{35}i}{70}$	0	0	0	0	0	0	$\frac{\sqrt{210}i}{350}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{15}i}{100}$
		0	0	0	0	0	0	$-\frac{\sqrt{15}i}{100}$	0	0	0	0	0	0	0
		$\frac{3\sqrt{35}i}{70}$	0	0	0	0	0	0	$-\frac{\sqrt{210}i}{350}$	0	0	0	0	0	0
		0	$\frac{3\sqrt{35}i}{70}$	0	0	0	0	0	0	$-\frac{\sqrt{14}i}{140}$	0	0	0	0	0
671	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$													
	$\mathbb{G}_{4,2}^{(1,0;a)}(E_{2u}, 1)$	0	0	0	0	0	$-\frac{\sqrt{35}}{140}$	0	0	0	0	0	0	$\frac{9\sqrt{210}}{700}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{9\sqrt{10}}{100}$
		0	0	0	0	0	0	$-\frac{9\sqrt{10}}{100}$	0	0	0	0	0	0	0
		$-\frac{\sqrt{35}}{140}$	0	0	0	0	0	0	$-\frac{9\sqrt{210}}{700}$	0	0	0	0	0	0
		0	0	0	0	$\frac{3\sqrt{35}}{70}$	0	0	0	0	0	0	$\frac{\sqrt{14}}{140}$	0	0
		0	0	0	0	0	$\frac{3\sqrt{35}}{70}$	0	0	0	0	0	0	$\frac{\sqrt{210}}{350}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{15}}{100}$
		0	0	0	0	0	0	$\frac{\sqrt{15}}{100}$	0	0	0	0	0	0	0
		$-\frac{3\sqrt{35}}{70}$	0	0	0	0	0	0	$\frac{\sqrt{210}}{350}$	0	0	0	0	0	0
		0	$-\frac{3\sqrt{35}}{70}$	0	0	0	0	0	0	$\frac{\sqrt{14}}{140}$	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													
	$\mathbb{G}_{4,1}^{(1,0;a)}(E_{2u}, 2)$	0	0	0	$-\frac{\sqrt{2}i}{56}$	0	0	$\frac{9\sqrt{210}i}{1400}$	0	0	0	$\frac{27\sqrt{6}i}{280}$	0	0	0
		$\frac{\sqrt{15}i}{280}$	0	0	0	$\frac{\sqrt{3}i}{56}$	0	0	$-\frac{99\sqrt{10}i}{1400}$	0	0	0	$\frac{9\sqrt{30}i}{1400}$	0	0
		0	$-\frac{\sqrt{3}i}{56}$	0	0	0	$-\frac{\sqrt{15}i}{280}$	0	0	$\frac{9\sqrt{30}i}{1400}$	0	0	0	$-\frac{99\sqrt{10}i}{1400}$	0
		0	0	$\frac{\sqrt{2}i}{56}$	0	0	0	0	0	$\frac{27\sqrt{6}i}{280}$	0	0	0	0	$\frac{9\sqrt{210}i}{1400}$
		0	0	$\frac{9\sqrt{10}i}{140}$	0	0	0	0	0	$\frac{\sqrt{30}i}{140}$	0	0	0	0	0
		0	0	0	$-\frac{3\sqrt{2}i}{28}$	0	0	$-\frac{3\sqrt{210}i}{1400}$	0	0	0	$\frac{\sqrt{6}i}{280}$	0	0	0
		$\frac{9\sqrt{10}i}{140}$	0	0	0	$-\frac{3\sqrt{2}i}{28}$	0	0	$\frac{9\sqrt{15}i}{1400}$	0	0	0	$-\frac{17\sqrt{5}i}{1400}$	0	0
		0	$-\frac{3\sqrt{2}i}{28}$	0	0	0	$\frac{9\sqrt{10}i}{140}$	0	0	$\frac{17\sqrt{5}i}{1400}$	0	0	0	$-\frac{9\sqrt{15}i}{1400}$	0
		0	0	$-\frac{3\sqrt{2}i}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{6}i}{280}$	0	0	0	$\frac{3\sqrt{210}i}{1400}$
		0	0	0	$\frac{9\sqrt{10}i}{140}$	0	0	0	0	0	0	$-\frac{\sqrt{30}i}{140}$	0	0	0
673	symmetry	$\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$													
	$\mathbb{G}_{4,2}^{(1,0;a)}(E_{2u}, 2)$	0	0	0	$\frac{\sqrt{2}}{56}$	0	0	$\frac{9\sqrt{210}}{1400}$	0	0	0	$-\frac{27\sqrt{6}}{280}$	0	0	0
		$\frac{\sqrt{15}}{280}$	0	0	0	$-\frac{\sqrt{3}}{56}$	0	0	$-\frac{99\sqrt{10}}{1400}$	0	0	0	$-\frac{9\sqrt{30}}{1400}$	0	0
		0	$-\frac{\sqrt{3}}{56}$	0	0	0	$\frac{\sqrt{15}}{280}$	0	0	$\frac{9\sqrt{30}}{1400}$	0	0	0	$\frac{99\sqrt{10}}{1400}$	0
		0	0	$\frac{\sqrt{2}}{56}$	0	0	0	0	0	0	$\frac{27\sqrt{6}}{280}$	0	0	0	$-\frac{9\sqrt{210}}{1400}$
		0	0	$-\frac{9\sqrt{10}}{140}$	0	0	0	0	0	0	$-\frac{\sqrt{30}}{140}$	0	0	0	0
		0	0	0	$\frac{3\sqrt{2}}{28}$	0	0	$-\frac{3\sqrt{210}}{1400}$	0	0	0	$-\frac{\sqrt{6}}{280}$	0	0	0
		$\frac{9\sqrt{10}}{140}$	0	0	0	$\frac{3\sqrt{2}}{28}$	0	0	$\frac{9\sqrt{15}}{1400}$	0	0	0	$\frac{17\sqrt{5}}{1400}$	0	0
		0	$-\frac{3\sqrt{2}}{28}$	0	0	0	$-\frac{9\sqrt{10}}{140}$	0	0	$\frac{17\sqrt{5}}{1400}$	0	0	0	$\frac{9\sqrt{15}}{1400}$	0
		0	0	$-\frac{3\sqrt{2}}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{6}}{280}$	0	0	0	$-\frac{3\sqrt{210}}{1400}$
		0	0	0	$\frac{9\sqrt{10}}{140}$	0	0	0	0	0	0	$-\frac{\sqrt{30}}{140}$	0	0	0
674	symmetry	1													

continued ...

Table 9

No.	multipole	matrix														
	$\mathbb{G}_0^{(1,1;a)}(A_u)$	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	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
		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	$-\frac{\sqrt{3}i}{6}$	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	$-\frac{\sqrt{3}i}{6}$	0	0	0	0	0	0	0	0	0
675	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$														
	$\mathbb{G}_2^{(1,1;a)}(A_u)$	0	$\frac{12i}{35}$	0	0	0	0	0	$-\frac{3\sqrt{10}i}{140}$	0	0	0	0	0	0	0
		0	0	$\frac{2\sqrt{6}i}{35}$	0	0	0	0	0	$-\frac{9\sqrt{2}i}{140}$	0	0	0	0	0	0
		0	0	0	$-\frac{2\sqrt{6}i}{35}$	0	0	0	0	0	$-\frac{9\sqrt{2}i}{140}$	0	0	0	0	0
		0	0	0	0	$-\frac{12i}{35}$	0	0	0	0	0	$-\frac{3\sqrt{10}i}{140}$	0	0	0	0
		$\frac{3i}{14}$	0	0	0	0	0	$-\frac{\sqrt{6}i}{21}$	0	0	0	0	0	0	0	0
		0	$-\frac{3i}{70}$	0	0	0	0	0	$-\frac{\sqrt{10}i}{35}$	0	0	0	0	0	0	0
		0	0	$-\frac{6i}{35}$	0	0	0	0	0	$-\frac{2\sqrt{3}i}{105}$	0	0	0	0	0	0
		0	0	0	$-\frac{6i}{35}$	0	0	0	0	0	$\frac{2\sqrt{3}i}{105}$	0	0	0	0	0
		0	0	0	0	$-\frac{3i}{70}$	0	0	0	0	0	$\frac{\sqrt{10}i}{35}$	0	0	0	0
		0	0	0	0	0	$\frac{3i}{14}$	0	0	0	0	0	0	$\frac{\sqrt{6}i}{21}$	0	0
676	symmetry	$\sqrt{3}yz$														

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{G}_{2,1}^{(1,1;a)}(E_{1u})$	$\frac{2\sqrt{15}}{35}$	0	$\frac{3\sqrt{6}}{35}$	0	0	0	0	$-\frac{3\sqrt{10}}{140}$	0	$-\frac{3\sqrt{2}}{140}$	0	0	0	0
		0	$-\frac{2}{35}$	0	$\frac{\sqrt{2}}{7}$	0	0	0	0	$-\frac{3\sqrt{10}}{140}$	0	$-\frac{3\sqrt{6}}{140}$	0	0	0
		0	0	$-\frac{\sqrt{2}}{7}$	0	$\frac{2}{35}$	0	0	0	0	$-\frac{3\sqrt{6}}{140}$	0	$-\frac{3\sqrt{10}}{140}$	0	0
		0	0	0	$-\frac{3\sqrt{6}}{35}$	0	$-\frac{2\sqrt{15}}{35}$	0	0	0	0	$-\frac{3\sqrt{2}}{140}$	0	$-\frac{3\sqrt{10}}{140}$	0
		0	$\frac{3\sqrt{15}}{70}$	0	0	0	0	$-\frac{\sqrt{14}}{42}$	0	$-\frac{\sqrt{6}}{42}$	0	0	0	0	0
		$-\frac{3\sqrt{15}}{70}$	0	$\frac{3\sqrt{6}}{70}$	0	0	0	0	$-\frac{\sqrt{10}}{210}$	0	$-\frac{11\sqrt{2}}{210}$	0	0	0	0
		0	$-\frac{3\sqrt{6}}{70}$	0	0	0	0	0	0	$\frac{\sqrt{15}}{105}$	0	$-\frac{1}{15}$	0	0	0
		0	0	0	0	$-\frac{3\sqrt{6}}{70}$	0	0	0	0	$\frac{1}{15}$	0	$-\frac{\sqrt{15}}{105}$	0	0
		0	0	0	$\frac{3\sqrt{6}}{70}$	0	$-\frac{3\sqrt{15}}{70}$	0	0	0	0	$\frac{11\sqrt{2}}{210}$	0	$\frac{\sqrt{10}}{210}$	0
		0	0	0	0	$\frac{3\sqrt{15}}{70}$	0	0	0	0	0	0	$\frac{\sqrt{6}}{42}$	0	$\frac{\sqrt{14}}{42}$
677	symmetry	$-\sqrt{3}xz$													
	$\mathbb{G}_{2,2}^{(1,1;a)}(E_{1u})$	$\frac{2\sqrt{15}i}{35}$	0	$-\frac{3\sqrt{6}i}{35}$	0	0	0	0	$-\frac{3\sqrt{10}i}{140}$	0	$\frac{3\sqrt{2}i}{140}$	0	0	0	0
		0	$-\frac{2i}{35}$	0	$-\frac{\sqrt{2}i}{7}$	0	0	0	0	$-\frac{3\sqrt{10}i}{140}$	0	$\frac{3\sqrt{6}i}{140}$	0	0	0
		0	0	$-\frac{\sqrt{2}i}{7}$	0	$-\frac{2i}{35}$	0	0	0	0	$-\frac{3\sqrt{6}i}{140}$	0	$\frac{3\sqrt{10}i}{140}$	0	0
		0	0	0	$-\frac{3\sqrt{6}i}{35}$	0	$\frac{2\sqrt{15}i}{35}$	0	0	0	0	$-\frac{3\sqrt{2}i}{140}$	0	$\frac{3\sqrt{10}i}{140}$	0
		0	$-\frac{3\sqrt{15}i}{70}$	0	0	0	0	$-\frac{\sqrt{14}i}{42}$	0	$\frac{\sqrt{6}i}{42}$	0	0	0	0	0
		$-\frac{3\sqrt{15}i}{70}$	0	$-\frac{3\sqrt{6}i}{70}$	0	0	0	0	$-\frac{\sqrt{10}i}{210}$	0	$\frac{11\sqrt{2}i}{210}$	0	0	0	0
		0	$-\frac{3\sqrt{6}i}{70}$	0	0	0	0	0	0	$\frac{\sqrt{15}i}{105}$	0	$\frac{i}{15}$	0	0	0
		0	0	0	0	$\frac{3\sqrt{6}i}{70}$	0	0	0	0	$\frac{i}{15}$	0	$\frac{\sqrt{15}i}{105}$	0	0
		0	0	0	$\frac{3\sqrt{6}i}{70}$	0	$\frac{3\sqrt{15}i}{70}$	0	0	0	0	$\frac{11\sqrt{2}i}{210}$	0	$-\frac{\sqrt{10}i}{210}$	0
		0	0	0	0	$\frac{3\sqrt{15}i}{70}$	0	0	0	0	0	0	$\frac{\sqrt{6}i}{42}$	0	$-\frac{\sqrt{14}i}{42}$
678	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{G}_{2,1}^{(1,1;a)}(E_{2u})$	0	0	0	$\frac{2\sqrt{6}i}{35}$	0	0	$-\frac{3\sqrt{70}i}{280}$	0	0	0	$-\frac{3\sqrt{2}i}{280}$	0	0	0
		$-\frac{4\sqrt{5}i}{35}$	0	0	0	$\frac{8i}{35}$	0	0	$-\frac{3\sqrt{30}i}{280}$	0	0	0	$-\frac{3\sqrt{10}i}{280}$	0	0
		0	$-\frac{8i}{35}$	0	0	0	$\frac{4\sqrt{5}i}{35}$	0	0	$-\frac{3\sqrt{10}i}{280}$	0	0	0	$-\frac{3\sqrt{30}i}{280}$	0
		0	0	$-\frac{2\sqrt{6}i}{35}$	0	0	0	0	0	$-\frac{3\sqrt{2}i}{280}$	0	0	0	0	$-\frac{3\sqrt{70}i}{280}$
		0	0	$\frac{3\sqrt{30}i}{140}$	0	0	0	0	0	$-\frac{\sqrt{10}i}{105}$	0	0	0	0	0
		0	0	0	$\frac{9\sqrt{6}i}{140}$	0	0	$\frac{\sqrt{70}i}{105}$	0	0	0	$-\frac{4\sqrt{2}i}{105}$	0	0	0
		$\frac{3\sqrt{30}i}{140}$	0	0	0	$\frac{9\sqrt{6}i}{140}$	0	0	$\frac{4\sqrt{5}i}{105}$	0	0	0	$-\frac{2\sqrt{15}i}{105}$	0	0
		0	$\frac{9\sqrt{6}i}{140}$	0	0	0	$\frac{3\sqrt{30}i}{140}$	0	0	$\frac{2\sqrt{15}i}{105}$	0	0	0	$-\frac{4\sqrt{5}i}{105}$	0
		0	0	$\frac{9\sqrt{6}i}{140}$	0	0	0	0	0	$\frac{4\sqrt{2}i}{105}$	0	0	0	0	$-\frac{\sqrt{70}i}{105}$
		0	0	0	$\frac{3\sqrt{30}i}{140}$	0	0	0	0	0	$\frac{\sqrt{10}i}{105}$	0	0	0	0
679	symmetry	$-\sqrt{3}xy$													
	$\mathbb{G}_{2,2}^{(1,1;a)}(E_{2u})$	0	0	0	$-\frac{2\sqrt{6}}{35}$	0	0	$-\frac{3\sqrt{70}}{280}$	0	0	0	$\frac{3\sqrt{2}}{280}$	0	0	0
		$-\frac{4\sqrt{5}}{35}$	0	0	0	$-\frac{8}{35}$	0	0	$-\frac{3\sqrt{30}}{280}$	0	0	0	$\frac{3\sqrt{10}}{280}$	0	0
		0	$-\frac{8}{35}$	0	0	0	$-\frac{4\sqrt{5}}{35}$	0	0	$-\frac{3\sqrt{10}}{280}$	0	0	0	$\frac{3\sqrt{30}}{280}$	0
		0	0	$-\frac{2\sqrt{6}}{35}$	0	0	0	0	0	$-\frac{3\sqrt{2}}{280}$	0	0	0	0	$\frac{3\sqrt{70}}{280}$
		0	0	$-\frac{3\sqrt{30}}{140}$	0	0	0	0	0	$\frac{\sqrt{10}}{105}$	0	0	0	0	0
		0	0	0	$-\frac{9\sqrt{6}}{140}$	0	0	$\frac{\sqrt{70}}{105}$	0	0	0	$\frac{4\sqrt{2}}{105}$	0	0	0
		$\frac{3\sqrt{30}}{140}$	0	0	0	$-\frac{9\sqrt{6}}{140}$	0	0	$\frac{4\sqrt{5}}{105}$	0	0	0	$\frac{2\sqrt{15}}{105}$	0	0
		0	$\frac{9\sqrt{6}}{140}$	0	0	0	$-\frac{3\sqrt{30}}{140}$	0	0	$\frac{2\sqrt{15}}{105}$	0	0	0	$\frac{4\sqrt{5}}{105}$	0
		0	0	$\frac{9\sqrt{6}}{140}$	0	0	0	0	0	$\frac{4\sqrt{2}}{105}$	0	0	0	0	$\frac{\sqrt{70}}{105}$
		0	0	0	$\frac{3\sqrt{30}}{140}$	0	0	0	0	0	$\frac{\sqrt{10}}{105}$	0	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													
	$\mathbb{G}_4^{(1,1;a)}(A_u)$	0	$-\frac{\sqrt{330i}}{105}$	0	0	0	0	0	0	$\frac{\sqrt{33i}}{70}$	0	0	0	0	0
		0	0	$\frac{2\sqrt{55i}}{35}$	0	0	0	0	0	0	$-\frac{\sqrt{165i}}{210}$	0	0	0	0
		0	0	0	$-\frac{2\sqrt{55i}}{35}$	0	0	0	0	0	0	$-\frac{\sqrt{165i}}{210}$	0	0	0
		0	0	0	0	$\frac{\sqrt{330i}}{105}$	0	0	0	0	0	0	$\frac{\sqrt{33i}}{70}$	0	0
		$-\frac{\sqrt{330i}}{420}$	0	0	0	0	0	0	$\frac{2\sqrt{55i}}{385}$	0	0	0	0	0	0
		0	$\frac{\sqrt{330i}}{140}$	0	0	0	0	0	0	$-\frac{8\sqrt{33i}}{1155}$	0	0	0	0	0
		0	0	$-\frac{\sqrt{330i}}{210}$	0	0	0	0	0	0	$-\frac{\sqrt{110i}}{385}$	0	0	0	0
		0	0	0	$-\frac{\sqrt{330i}}{210}$	0	0	0	0	0	0	$\frac{\sqrt{110i}}{385}$	0	0	0
		0	0	0	0	$\frac{\sqrt{330i}}{140}$	0	0	0	0	0	0	$\frac{8\sqrt{33i}}{1155}$	0	0
		0	0	0	0	0	$-\frac{\sqrt{330i}}{420}$	0	0	0	0	0	0	$-\frac{2\sqrt{55i}}{385}$	0
681	symmetry	$\frac{\sqrt{70}xz(x^2-3y^2)}{4}$													
	$\mathbb{G}_4^{(1,1;a)}(B_u, 1)$	0	0	0	0	$-\frac{\sqrt{231i}}{42}$	0	0	0	0	0	0	$\frac{\sqrt{2310i}}{700}$	0	0
		0	0	0	0	0	$\frac{\sqrt{385i}}{70}$	$\frac{\sqrt{330i}}{300}$	0	0	0	0	0	$\frac{\sqrt{2310i}}{1050}$	0
		$\frac{\sqrt{385i}}{70}$	0	0	0	0	0	0	$-\frac{\sqrt{2310i}}{1050}$	0	0	0	0	0	$-\frac{\sqrt{330i}}{300}$
		0	$-\frac{\sqrt{231i}}{42}$	0	0	0	0	0	0	$-\frac{\sqrt{2310i}}{700}$	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{2310i}}{420}$	0	0	0	0	0	0	$\frac{\sqrt{770i}}{770}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{2310i}}{1650}$	0	0
		0	0	0	0	0	$\frac{\sqrt{2310i}}{420}$	$-\frac{3\sqrt{55i}}{550}$	0	0	0	0	0	$-\frac{\sqrt{385i}}{3850}$	0
		$-\frac{\sqrt{2310i}}{420}$	0	0	0	0	0	0	$-\frac{\sqrt{385i}}{3850}$	0	0	0	0	0	$-\frac{3\sqrt{55i}}{550}$
		0	0	0	0	0	0	0	0	$\frac{\sqrt{2310i}}{1650}$	0	0	0	0	0
		0	0	$\frac{\sqrt{2310i}}{420}$	0	0	0	0	0	0	$\frac{\sqrt{770i}}{770}$	0	0	0	0
682	symmetry	$\frac{\sqrt{70}yz(3x^2-y^2)}{4}$													

continued ...

Table 9

No.	multipole	matrix													
$\mathbb{G}_4^{(1,1;a)}(B_u, 2)$	0	0	0	0	$-\frac{\sqrt{231}}{42}$	0	0	0	0	0	0	$\frac{\sqrt{2310}}{700}$	0	0	
	0	0	0	0	0	$\frac{\sqrt{385}}{70}$	$-\frac{\sqrt{330}}{300}$	0	0	0	0	0	$\frac{\sqrt{2310}}{1050}$	0	
	$-\frac{\sqrt{385}}{70}$	0	0	0	0	0	0	$\frac{\sqrt{2310}}{1050}$	0	0	0	0	0	$-\frac{\sqrt{330}}{300}$	
	0	$\frac{\sqrt{231}}{42}$	0	0	0	0	0	0	$\frac{\sqrt{2310}}{700}$	0	0	0	0	0	
	0	0	0	$-\frac{\sqrt{2310}}{420}$	0	0	0	0	0	0	$\frac{\sqrt{770}}{770}$	0	0	0	
	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{2310}}{1650}$	0	0	
	0	0	0	0	0	$\frac{\sqrt{2310}}{420}$	$\frac{3\sqrt{55}}{550}$	0	0	0	0	0	$-\frac{\sqrt{385}}{3850}$	0	
	$\frac{\sqrt{2310}}{420}$	0	0	0	0	0	0	$\frac{\sqrt{385}}{3850}$	0	0	0	0	0	$-\frac{3\sqrt{55}}{550}$	
	0	0	0	0	0	0	0	0	$-\frac{\sqrt{2310}}{1650}$	0	0	0	0	0	
	0	0	$-\frac{\sqrt{2310}}{420}$	0	0	0	0	0	0	$-\frac{\sqrt{770}}{770}$	0	0	0	0	
683	symmetry	$-\frac{\sqrt{10}yz(3x^2+3y^2-4z^2)}{4}$													
$\mathbb{G}_{4,1}^{(1,1;a)}(E_{1u})$	$-\frac{\sqrt{165}}{210}$	0	$-\frac{\sqrt{66}}{42}$	0	0	0	0	$\frac{3\sqrt{110}}{700}$	0	$\frac{\sqrt{22}}{70}$	0	0	0	0	
	0	$\frac{\sqrt{11}}{14}$	0	$\frac{\sqrt{22}}{14}$	0	0	0	0	$-\frac{\sqrt{110}}{175}$	0	$-\frac{\sqrt{66}}{420}$	0	0	0	
	0	0	$-\frac{\sqrt{22}}{14}$	0	$-\frac{\sqrt{11}}{14}$	0	0	0	0	$-\frac{\sqrt{66}}{420}$	0	$-\frac{\sqrt{110}}{175}$	0	0	
	0	0	0	$\frac{\sqrt{66}}{42}$	0	$\frac{\sqrt{165}}{210}$	0	0	0	0	$\frac{\sqrt{22}}{70}$	0	$\frac{3\sqrt{110}}{700}$	0	
	0	$-\frac{\sqrt{165}}{210}$	0	0	0	0	$\frac{\sqrt{154}}{770}$	0	$\frac{\sqrt{66}}{231}$	0	0	0	0	0	
	$\frac{\sqrt{165}}{210}$	0	$\frac{\sqrt{66}}{84}$	0	0	0	0	$-\frac{13\sqrt{110}}{3850}$	0	$-\frac{\sqrt{22}}{385}$	0	0	0	0	
	0	$-\frac{\sqrt{66}}{84}$	0	0	0	0	0	0	$\frac{\sqrt{165}}{11550}$	0	$-\frac{\sqrt{11}}{110}$	0	0	0	
	0	0	0	0	$-\frac{\sqrt{66}}{84}$	0	0	0	0	$\frac{\sqrt{11}}{110}$	0	$-\frac{\sqrt{165}}{11550}$	0	0	
	0	0	0	$\frac{\sqrt{66}}{84}$	0	$\frac{\sqrt{165}}{210}$	0	0	0	0	$\frac{\sqrt{22}}{385}$	0	$\frac{13\sqrt{110}}{3850}$	0	
	0	0	0	0	$-\frac{\sqrt{165}}{210}$	0	0	0	0	0	0	$-\frac{\sqrt{66}}{231}$	0	$-\frac{\sqrt{154}}{770}$	
684	symmetry	$\frac{\sqrt{10}xz(3x^2+3y^2-4z^2)}{4}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{G}_{4,2}^{(1,1;a)}(E_{1u})$	$-\frac{\sqrt{165}i}{210}$	0	$\frac{\sqrt{66}i}{42}$	0	0	0	0	$\frac{3\sqrt{110}i}{700}$	0	$-\frac{\sqrt{22}i}{70}$	0	0	0	0
		0	$\frac{\sqrt{11}i}{14}$	0	$-\frac{\sqrt{22}i}{14}$	0	0	0	0	$-\frac{\sqrt{110}i}{175}$	0	$\frac{\sqrt{66}i}{420}$	0	0	0
		0	0	$-\frac{\sqrt{22}i}{14}$	0	$\frac{\sqrt{11}i}{14}$	0	0	0	0	$-\frac{\sqrt{66}i}{420}$	0	$\frac{\sqrt{110}i}{175}$	0	0
		0	0	0	$\frac{\sqrt{66}i}{42}$	0	$-\frac{\sqrt{165}i}{210}$	0	0	0	0	$\frac{\sqrt{22}i}{70}$	0	$-\frac{3\sqrt{110}i}{700}$	0
		0	$\frac{\sqrt{165}i}{210}$	0	0	0	0	$\frac{\sqrt{154}i}{770}$	0	$-\frac{\sqrt{66}i}{231}$	0	0	0	0	0
		$\frac{\sqrt{165}i}{210}$	0	$-\frac{\sqrt{66}i}{84}$	0	0	0	0	$-\frac{13\sqrt{110}i}{3850}$	0	$\frac{\sqrt{22}i}{385}$	0	0	0	0
		0	$-\frac{\sqrt{66}i}{84}$	0	0	0	0	0	0	$\frac{\sqrt{165}i}{11550}$	0	$\frac{\sqrt{11}i}{110}$	0	0	0
		0	0	0	0	$\frac{\sqrt{66}i}{84}$	0	0	0	0	$\frac{\sqrt{11}i}{110}$	0	$\frac{\sqrt{165}i}{11550}$	0	0
		0	0	0	$\frac{\sqrt{66}i}{84}$	0	$-\frac{\sqrt{165}i}{210}$	0	0	0	0	$\frac{\sqrt{22}i}{385}$	0	$-\frac{13\sqrt{110}i}{3850}$	0
		0	0	0	0	$-\frac{\sqrt{165}i}{210}$	0	0	0	0	0	0	$-\frac{\sqrt{66}i}{231}$	0	$\frac{\sqrt{154}i}{770}$
685	symmetry	$\frac{\sqrt{35}(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$													
	$\mathbb{G}_{4,1}^{(1,1;a)}(E_{2u}, 1)$	0	0	0	0	0	$-\frac{\sqrt{2310}i}{105}$	0	0	0	0	0	0	$\frac{\sqrt{385}i}{350}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{165}i}{150}$
		0	0	0	0	0	0	$\frac{\sqrt{165}i}{150}$	0	0	0	0	0	0	0
		$\frac{\sqrt{2310}i}{105}$	0	0	0	0	0	0	$\frac{\sqrt{385}i}{350}$	0	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{2310}i}{420}$	0	0	0	0	0	0	$\frac{2\sqrt{231}i}{1155}$	0	0
		0	0	0	0	0	$-\frac{\sqrt{2310}i}{420}$	0	0	0	0	0	0	$\frac{4\sqrt{385}i}{1925}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{110}i}{275}$
		0	0	0	0	0	0	$-\frac{\sqrt{110}i}{275}$	0	0	0	0	0	0	0
		$-\frac{\sqrt{2310}i}{420}$	0	0	0	0	0	0	$-\frac{4\sqrt{385}i}{1925}$	0	0	0	0	0	0
		0	$-\frac{\sqrt{2310}i}{420}$	0	0	0	0	0	0	$-\frac{2\sqrt{231}i}{1155}$	0	0	0	0	0
686	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{G}_{4,2}^{(1,1;a)}(E_{2u},1)$	0	0	0	0	0	$-\frac{\sqrt{2310}}{105}$	0	0	0	0	0	0	$\frac{\sqrt{385}}{350}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{165}}{150}$
		0	0	0	0	0	0	$-\frac{\sqrt{165}}{150}$	0	0	0	0	0	0	0
		$-\frac{\sqrt{2310}}{105}$	0	0	0	0	0	0	$-\frac{\sqrt{385}}{350}$	0	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{2310}}{420}$	0	0	0	0	0	0	$\frac{2\sqrt{231}}{1155}$	0	0
		0	0	0	0	0	$-\frac{\sqrt{2310}}{420}$	0	0	0	0	0	0	$\frac{4\sqrt{385}}{1925}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{110}}{275}$
		0	0	0	0	0	0	$\frac{\sqrt{110}}{275}$	0	0	0	0	0	0	0
		$\frac{\sqrt{2310}}{420}$	0	0	0	0	0	0	$\frac{4\sqrt{385}}{1925}$	0	0	0	0	0	0
		0	$\frac{\sqrt{2310}}{420}$	0	0	0	0	0	0	$\frac{2\sqrt{231}}{1155}$	0	0	0	0	0
687	symmetry	$-\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$													
	$\mathbb{G}_{4,1}^{(1,1;a)}(E_{2u},2)$	0	0	0	$-\frac{\sqrt{33i}}{21}$	0	0	$\frac{\sqrt{385i}}{700}$	0	0	0	$\frac{3\sqrt{11i}}{140}$	0	0	0
		$\frac{\sqrt{110i}}{70}$	0	0	0	$\frac{\sqrt{22i}}{14}$	0	0	$-\frac{11\sqrt{165i}}{2100}$	0	0	0	$\frac{\sqrt{55i}}{700}$	0	0
		0	$-\frac{\sqrt{22i}}{14}$	0	0	0	$-\frac{\sqrt{110i}}{70}$	0	0	$\frac{\sqrt{55i}}{700}$	0	0	0	$-\frac{11\sqrt{165i}}{2100}$	0
		0	0	$\frac{\sqrt{33i}}{21}$	0	0	0	0	0	0	$\frac{3\sqrt{11i}}{140}$	0	0	0	$\frac{\sqrt{385i}}{700}$
		0	0	$-\frac{\sqrt{165i}}{140}$	0	0	0	0	0	0	$\frac{2\sqrt{55i}}{385}$	0	0	0	0
		0	0	0	$\frac{\sqrt{33i}}{84}$	0	0	$-\frac{3\sqrt{385i}}{1925}$	0	0	0	$\frac{\sqrt{11i}}{385}$	0	0	0
		$-\frac{\sqrt{165i}}{140}$	0	0	0	$\frac{\sqrt{33i}}{84}$	0	0	$\frac{9\sqrt{110i}}{3850}$	0	0	0	$-\frac{17\sqrt{330i}}{11550}$	0	0
		0	$\frac{\sqrt{33i}}{84}$	0	0	0	$-\frac{\sqrt{165i}}{140}$	0	0	$\frac{17\sqrt{330i}}{11550}$	0	0	0	$-\frac{9\sqrt{110i}}{3850}$	0
		0	0	$\frac{\sqrt{33i}}{84}$	0	0	0	0	0	0	$-\frac{\sqrt{11i}}{385}$	0	0	0	$\frac{3\sqrt{385i}}{1925}$
		0	0	0	$-\frac{\sqrt{165i}}{140}$	0	0	0	0	0	0	$-\frac{2\sqrt{55i}}{385}$	0	0	0
688	symmetry	$\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$													

continued ...



Table 9

No.	multipole	matrix													
	$\mathbb{G}_{4,2}^{(1,1;a)}(E_{2u},2)$	0	0	0	$\frac{\sqrt{33}}{21}$	0	0	$\frac{\sqrt{385}}{700}$	0	0	0	$-\frac{3\sqrt{11}}{140}$	0	0	0
		$\frac{\sqrt{110}}{70}$	0	0	0	$-\frac{\sqrt{22}}{14}$	0	0	$-\frac{11\sqrt{165}}{2100}$	0	0	0	$-\frac{\sqrt{55}}{700}$	0	0
		0	$-\frac{\sqrt{22}}{14}$	0	0	0	$\frac{\sqrt{110}}{70}$	0	0	$\frac{\sqrt{55}}{700}$	0	0	0	$\frac{11\sqrt{165}}{2100}$	0
		0	0	$\frac{\sqrt{33}}{21}$	0	0	0	0	0	0	$\frac{3\sqrt{11}}{140}$	0	0	0	$-\frac{\sqrt{385}}{700}$
		0	0	$\frac{\sqrt{165}}{140}$	0	0	0	0	0	0	$-\frac{2\sqrt{55}}{385}$	0	0	0	0
		0	0	0	$-\frac{\sqrt{33}}{84}$	0	0	$-\frac{3\sqrt{385}}{1925}$	0	0	0	$-\frac{\sqrt{11}}{385}$	0	0	0
		$-\frac{\sqrt{165}}{140}$	0	0	0	$-\frac{\sqrt{33}}{84}$	0	0	$\frac{9\sqrt{110}}{3850}$	0	0	0	$\frac{17\sqrt{330}}{11550}$	0	0
		0	$\frac{\sqrt{33}}{84}$	0	0	0	$\frac{\sqrt{165}}{140}$	0	0	$\frac{17\sqrt{330}}{11550}$	0	0	0	$\frac{9\sqrt{110}}{3850}$	0
		0	0	$\frac{\sqrt{33}}{84}$	0	0	0	0	0	0	$-\frac{\sqrt{11}}{385}$	0	0	0	$-\frac{3\sqrt{385}}{1925}$
		0	0	0	$-\frac{\sqrt{165}}{140}$	0	0	0	0	0	0	$-\frac{2\sqrt{55}}{385}$	0	0	0
689	symmetry	$z \begin{bmatrix} 0 & \frac{i}{5} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{6}i}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{6}i}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{i}{5} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{i}{14} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{14} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{3i}{70} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{14} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{i}{70} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}i}{7} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{i}{70} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}i}{7} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{3i}{70} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{14} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{i}{14} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{14} & 0 & 0 \end{bmatrix}$													
690	symmetry	$x$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{T}_{1,1}^{(a)}(E_{1u})$	$-\frac{\sqrt{5}i}{10}$	0	$\frac{\sqrt{2}i}{20}$	0	0	0	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{3}i}{10}$	0	$\frac{\sqrt{6}i}{20}$	0	0	0	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{6}i}{20}$	0	$\frac{\sqrt{3}i}{10}$	0	0	0	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{2}i}{20}$	0	$\frac{\sqrt{5}i}{10}$	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{5}i}{70}$	0	0	0	0	$-\frac{\sqrt{42}i}{28}$	0	$\frac{\sqrt{2}i}{28}$	0	0	0	0	0
		$-\frac{\sqrt{5}i}{70}$	0	$-\frac{\sqrt{2}i}{35}$	0	0	0	0	$-\frac{\sqrt{30}i}{28}$	0	$\frac{\sqrt{6}i}{28}$	0	0	0	0
		0	$-\frac{\sqrt{2}i}{35}$	0	$-\frac{3i}{70}$	0	0	0	0	$-\frac{\sqrt{5}i}{14}$	0	$\frac{\sqrt{3}i}{14}$	0	0	0
		0	0	$-\frac{3i}{70}$	0	$-\frac{\sqrt{2}i}{35}$	0	0	0	0	$-\frac{\sqrt{3}i}{14}$	0	$\frac{\sqrt{5}i}{14}$	0	0
		0	0	0	$-\frac{\sqrt{2}i}{35}$	0	$-\frac{\sqrt{5}i}{70}$	0	0	0	0	$-\frac{\sqrt{6}i}{28}$	0	$\frac{\sqrt{30}i}{28}$	0
		0	0	0	0	$-\frac{\sqrt{5}i}{70}$	0	0	0	0	0	0	$-\frac{\sqrt{2}i}{28}$	0	$\frac{\sqrt{42}i}{28}$
691	symmetry	$y$													
	$\mathbb{T}_{1,2}^{(a)}(E_{1u})$	$\frac{\sqrt{5}}{10}$	0	$\frac{\sqrt{2}}{20}$	0	0	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{3}}{10}$	0	$\frac{\sqrt{6}}{20}$	0	0	0	0	0	0	0	0	0	0
		0	0	$\frac{\sqrt{6}}{20}$	0	$\frac{\sqrt{3}}{10}$	0	0	0	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{2}}{20}$	0	$\frac{\sqrt{5}}{10}$	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{5}}{70}$	0	0	0	0	$\frac{\sqrt{42}}{28}$	0	$\frac{\sqrt{2}}{28}$	0	0	0	0	0
		$\frac{\sqrt{5}}{70}$	0	$-\frac{\sqrt{2}}{35}$	0	0	0	0	$\frac{\sqrt{30}}{28}$	0	$\frac{\sqrt{6}}{28}$	0	0	0	0
		0	$\frac{\sqrt{2}}{35}$	0	$-\frac{3}{70}$	0	0	0	0	$\frac{\sqrt{5}}{14}$	0	$\frac{\sqrt{3}}{14}$	0	0	0
		0	0	$\frac{3}{70}$	0	$-\frac{\sqrt{2}}{35}$	0	0	0	0	$\frac{\sqrt{3}}{14}$	0	$\frac{\sqrt{5}}{14}$	0	0
		0	0	0	$\frac{\sqrt{2}}{35}$	0	$-\frac{\sqrt{5}}{70}$	0	0	0	0	$\frac{\sqrt{6}}{28}$	0	$\frac{\sqrt{30}}{28}$	0
		0	0	0	0	$\frac{\sqrt{5}}{70}$	0	0	0	0	0	0	$\frac{\sqrt{2}}{28}$	0	$\frac{\sqrt{42}}{28}$
692	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$													

*continued ...*

Table 9

No.	multipole	matrix													
	$\mathbb{T}_3^{(a)}(A_u)$	0	$-\frac{3\sqrt{21}i}{70}$	0	0	0	0	0	0	$-\frac{\sqrt{210}i}{84}$	0	0	0	0	0
		0	0	$\frac{3\sqrt{14}i}{70}$	0	0	0	0	0	$-\frac{\sqrt{42}i}{84}$	0	0	0	0	0
		0	0	0	$\frac{3\sqrt{14}i}{70}$	0	0	0	0	0	$\frac{\sqrt{42}i}{84}$	0	0	0	0
		0	0	0	0	$-\frac{3\sqrt{21}i}{70}$	0	0	0	0	0	$\frac{\sqrt{210}i}{84}$	0	0	0
		$\frac{\sqrt{21}i}{42}$	0	0	0	0	0	$-\frac{\sqrt{14}i}{14}$	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{21}i}{30}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	$-\frac{2\sqrt{21}i}{105}$	0	0	0	0	0	$\frac{\sqrt{7}i}{14}$	0	0	0	0	0
		0	0	0	$\frac{2\sqrt{21}i}{105}$	0	0	0	0	0	$\frac{\sqrt{7}i}{14}$	0	0	0	0
		0	0	0	0	$\frac{\sqrt{21}i}{30}$	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{21}i}{42}$	0	0	0	0	0	0	$-\frac{\sqrt{14}i}{14}$	0
693	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$													
	$\mathbb{T}_3^{(v)}(B_u, 1)$	0	0	0	0	$-\frac{3\sqrt{210}}{280}$	0	0	0	0	0	0	$-\frac{\sqrt{21}}{84}$	0	0
		0	0	0	0	0	$-\frac{3\sqrt{14}}{56}$	$\frac{\sqrt{3}}{12}$	0	0	0	0	0	$-\frac{\sqrt{21}}{42}$	0
		$-\frac{3\sqrt{14}}{56}$	0	0	0	0	0	0	$\frac{\sqrt{21}}{42}$	0	0	0	0	0	$-\frac{\sqrt{3}}{12}$
		0	$-\frac{3\sqrt{210}}{280}$	0	0	0	0	0	0	$\frac{\sqrt{21}}{84}$	0	0	0	0	0
		0	0	0	$\frac{\sqrt{21}}{42}$	0	0	0	0	0	0	$-\frac{\sqrt{7}}{28}$	0	0	0
		0	0	0	0	$\frac{\sqrt{210}}{105}$	0	0	0	0	0	0	$-\frac{\sqrt{21}}{28}$	0	0
		0	0	0	0	0	$\frac{\sqrt{21}}{42}$	$-\frac{\sqrt{2}}{8}$	0	0	0	0	0	$-\frac{3\sqrt{14}}{56}$	0
		$-\frac{\sqrt{21}}{42}$	0	0	0	0	0	0	$-\frac{3\sqrt{14}}{56}$	0	0	0	0	0	$-\frac{\sqrt{2}}{8}$
		0	$-\frac{\sqrt{210}}{105}$	0	0	0	0	0	0	$-\frac{\sqrt{21}}{28}$	0	0	0	0	0
		0	0	$-\frac{\sqrt{21}}{42}$	0	0	0	0	0	0	$-\frac{\sqrt{7}}{28}$	0	0	0	0
694	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$													

*continued ...*

Table 9

No.	multipole	matrix													
	$\mathbb{T}_3^{(a)}(B_u, 2)$	0	0	0	0	$-\frac{3\sqrt{210}i}{280}$	0	0	0	0	0	0	$-\frac{\sqrt{21}i}{84}$	0	0
		0	0	0	0	0	$-\frac{3\sqrt{14}i}{56}$	$-\frac{\sqrt{3}i}{12}$	0	0	0	0	0	$-\frac{\sqrt{21}i}{42}$	0
		$\frac{3\sqrt{14}i}{56}$	0	0	0	0	0	0	$-\frac{\sqrt{21}i}{42}$	0	0	0	0	0	$-\frac{\sqrt{3}i}{12}$
		0	$\frac{3\sqrt{210}i}{280}$	0	0	0	0	0	0	$-\frac{\sqrt{21}i}{84}$	0	0	0	0	0
		0	0	0	$\frac{\sqrt{21}i}{42}$	0	0	0	0	0	0	$-\frac{\sqrt{7}i}{28}$	0	0	0
		0	0	0	0	$\frac{\sqrt{210}i}{105}$	0	0	0	0	0	0	$-\frac{\sqrt{21}i}{28}$	0	0
		0	0	0	0	0	$\frac{\sqrt{21}i}{42}$	$\frac{\sqrt{2}i}{8}$	0	0	0	0	0	$-\frac{3\sqrt{14}i}{56}$	0
		$\frac{\sqrt{21}i}{42}$	0	0	0	0	0	0	$\frac{3\sqrt{14}i}{56}$	0	0	0	0	0	$-\frac{\sqrt{2}i}{8}$
		0	$\frac{\sqrt{210}i}{105}$	0	0	0	0	0	0	$\frac{\sqrt{21}i}{28}$	0	0	0	0	0
		0	0	$\frac{\sqrt{21}i}{42}$	0	0	0	0	0	0	$\frac{\sqrt{7}i}{28}$	0	0	0	0
695	symmetry	$-\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$													
	$\mathbb{T}_{3,1}^{(a)}(E_{1u})$	$\frac{3\sqrt{70}i}{280}$	0	$-\frac{9\sqrt{7}i}{140}$	0	0	0	0	$\frac{\sqrt{105}i}{84}$	0	$-\frac{\sqrt{21}i}{42}$	0	0	0	0
		0	$-\frac{\sqrt{42}i}{40}$	0	$\frac{\sqrt{21}i}{140}$	0	0	0	0	0	0	$-\frac{\sqrt{7}i}{28}$	0	0	0
		0	0	$-\frac{\sqrt{21}i}{140}$	0	$\frac{\sqrt{42}i}{40}$	0	0	0	0	$-\frac{\sqrt{7}i}{28}$	0	0	0	0
		0	0	0	$\frac{9\sqrt{7}i}{140}$	0	$-\frac{3\sqrt{70}i}{280}$	0	0	0	0	$-\frac{\sqrt{21}i}{42}$	0	$\frac{\sqrt{105}i}{84}$	0
		0	$\frac{\sqrt{70}i}{70}$	0	0	0	0	$\frac{\sqrt{3}i}{12}$	0	$-\frac{\sqrt{7}i}{14}$	0	0	0	0	0
		$\frac{\sqrt{70}i}{70}$	0	$-\frac{\sqrt{7}i}{70}$	0	0	0	0	$-\frac{\sqrt{105}i}{84}$	0	$-\frac{\sqrt{21}i}{42}$	0	0	0	0
		0	$-\frac{\sqrt{7}i}{70}$	0	$-\frac{\sqrt{14}i}{35}$	0	0	0	0	$-\frac{\sqrt{70}i}{56}$	0	$\frac{\sqrt{42}i}{168}$	0	0	0
		0	0	$-\frac{\sqrt{14}i}{35}$	0	$-\frac{\sqrt{7}i}{70}$	0	0	0	0	$-\frac{\sqrt{42}i}{168}$	0	$\frac{\sqrt{70}i}{56}$	0	0
		0	0	0	$-\frac{\sqrt{7}i}{70}$	0	$\frac{\sqrt{70}i}{70}$	0	0	0	0	$\frac{\sqrt{21}i}{42}$	0	$\frac{\sqrt{105}i}{84}$	0
		0	0	0	0	$\frac{\sqrt{70}i}{70}$	0	0	0	0	0	0	$\frac{\sqrt{7}i}{14}$	0	$-\frac{\sqrt{3}i}{12}$
696	symmetry	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{T}_{3,2}^{(a)}(E_{1u})$	$-\frac{3\sqrt{70}}{280}$	0	$-\frac{9\sqrt{7}}{140}$	0	0	0	0	$-\frac{\sqrt{105}}{84}$	0	$-\frac{\sqrt{21}}{42}$	0	0	0	0
		0	$\frac{\sqrt{42}}{40}$	0	$\frac{\sqrt{21}}{140}$	0	0	0	0	0	0	$-\frac{\sqrt{7}}{28}$	0	0	0
		0	0	$\frac{\sqrt{21}}{140}$	0	$\frac{\sqrt{42}}{40}$	0	0	0	0	$\frac{\sqrt{7}}{28}$	0	0	0	0
		0	0	0	$-\frac{9\sqrt{7}}{140}$	0	$-\frac{3\sqrt{70}}{280}$	0	0	0	0	$\frac{\sqrt{21}}{42}$	0	$\frac{\sqrt{105}}{84}$	0
		0	$\frac{\sqrt{70}}{70}$	0	0	0	0	$-\frac{\sqrt{3}}{12}$	0	$-\frac{\sqrt{7}}{14}$	0	0	0	0	0
		$-\frac{\sqrt{70}}{70}$	0	$-\frac{\sqrt{7}}{70}$	0	0	0	0	$\frac{\sqrt{105}}{84}$	0	$-\frac{\sqrt{21}}{42}$	0	0	0	0
		0	$\frac{\sqrt{7}}{70}$	0	$-\frac{\sqrt{14}}{35}$	0	0	0	0	$\frac{\sqrt{70}}{56}$	0	$\frac{\sqrt{42}}{168}$	0	0	0
		0	0	$\frac{\sqrt{14}}{35}$	0	$-\frac{\sqrt{7}}{70}$	0	0	0	0	$\frac{\sqrt{42}}{168}$	0	$\frac{\sqrt{70}}{56}$	0	0
		0	0	0	$\frac{\sqrt{7}}{70}$	0	$\frac{\sqrt{70}}{70}$	0	0	0	0	$-\frac{\sqrt{21}}{42}$	0	$\frac{\sqrt{105}}{84}$	0
		0	0	0	0	$-\frac{\sqrt{70}}{70}$	0	0	0	0	0	0	$-\frac{\sqrt{7}}{14}$	0	$-\frac{\sqrt{3}}{12}$
697	symmetry	$\sqrt{15}xyz$													
	$\mathbb{T}_{3,1}^{(a)}(E_{2u})$	0	0	0	$-\frac{3\sqrt{70}}{140}$	0	0	$\frac{\sqrt{6}}{24}$	0	0	0	$-\frac{\sqrt{210}}{168}$	0	0	0
		$-\frac{\sqrt{21}}{28}$	0	0	0	$-\frac{\sqrt{105}}{140}$	0	0	$-\frac{\sqrt{14}}{56}$	0	0	0	$-\frac{\sqrt{42}}{56}$	0	0
		0	$\frac{\sqrt{105}}{140}$	0	0	0	$\frac{\sqrt{21}}{28}$	0	0	$-\frac{\sqrt{42}}{56}$	0	0	0	$-\frac{\sqrt{14}}{56}$	0
		0	0	$\frac{3\sqrt{70}}{140}$	0	0	0	0	0	0	$-\frac{\sqrt{210}}{168}$	0	0	0	$\frac{\sqrt{6}}{24}$
		0	0	$\frac{\sqrt{14}}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{42}}{42}$	0	0	0	0
		0	0	0	$\frac{\sqrt{70}}{140}$	0	0	$-\frac{\sqrt{6}}{12}$	0	0	0	$-\frac{\sqrt{210}}{84}$	0	0	0
		$-\frac{\sqrt{14}}{28}$	0	0	0	$-\frac{\sqrt{70}}{140}$	0	0	$-\frac{\sqrt{21}}{84}$	0	0	0	$-\frac{\sqrt{7}}{28}$	0	0
		0	$-\frac{\sqrt{70}}{140}$	0	0	0	$-\frac{\sqrt{14}}{28}$	0	0	$\frac{\sqrt{7}}{28}$	0	0	0	$\frac{\sqrt{21}}{84}$	0
		0	0	$\frac{\sqrt{70}}{140}$	0	0	0	0	0	0	$\frac{\sqrt{210}}{84}$	0	0	0	$\frac{\sqrt{6}}{12}$
		0	0	0	$\frac{\sqrt{14}}{28}$	0	0	0	0	0	0	$\frac{\sqrt{42}}{42}$	0	0	0
698	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$													

*continued ...*

Table 9

No.	multipole	matrix													
	$\mathbb{T}_{3,2}^{(a)}(E_{2u})$	0	0	0	$-\frac{3\sqrt{70}i}{140}$	0	0	$-\frac{\sqrt{6}i}{24}$	0	0	0	$-\frac{\sqrt{210}i}{168}$	0	0	0
		$\frac{\sqrt{21}i}{28}$	0	0	0	$-\frac{\sqrt{105}i}{140}$	0	0	$\frac{\sqrt{14}i}{56}$	0	0	0	$-\frac{\sqrt{42}i}{56}$	0	0
		0	$-\frac{\sqrt{105}i}{140}$	0	0	0	$\frac{\sqrt{21}i}{28}$	0	0	$\frac{\sqrt{42}i}{56}$	0	0	0	$-\frac{\sqrt{14}i}{56}$	0
		0	0	$-\frac{3\sqrt{70}i}{140}$	0	0	0	0	0	0	$\frac{\sqrt{210}i}{168}$	0	0	0	$\frac{\sqrt{6}i}{24}$
		0	0	$\frac{\sqrt{14}i}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{42}i}{42}$	0	0	0	0
		0	0	0	$\frac{\sqrt{70}i}{140}$	0	0	$\frac{\sqrt{6}i}{12}$	0	0	0	$-\frac{\sqrt{210}i}{84}$	0	0	0
		$\frac{\sqrt{14}i}{28}$	0	0	0	$-\frac{\sqrt{70}i}{140}$	0	0	$\frac{\sqrt{21}i}{84}$	0	0	0	$-\frac{\sqrt{7}i}{28}$	0	0
		0	$\frac{\sqrt{70}i}{140}$	0	0	0	$-\frac{\sqrt{14}i}{28}$	0	0	$-\frac{\sqrt{7}i}{28}$	0	0	0	$\frac{\sqrt{21}i}{84}$	0
		0	0	$-\frac{\sqrt{70}i}{140}$	0	0	0	0	0	0	$-\frac{\sqrt{210}i}{84}$	0	0	0	$\frac{\sqrt{6}i}{12}$
		0	0	0	$-\frac{\sqrt{14}i}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{42}i}{42}$	0	0	0
699	symmetry	$\frac{z(15x^4+30x^2y^2-40x^2z^2+15y^4-40y^2z^2+8z^4)}{8}$													
	$\mathbb{T}_5^{(a)}(A_u)$	0	0	0	0	0	0	0	$\frac{\sqrt{15}i}{30}$	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	$-\frac{\sqrt{15}i}{30}$	0	0	0
		$-\frac{\sqrt{6}i}{84}$	0	0	0	0	0	0	$\frac{i}{14}$	0	0	0	0	0	0
		0	$\frac{5\sqrt{6}i}{84}$	0	0	0	0	0	0	$-\frac{3\sqrt{15}i}{70}$	0	0	0	0	0
		0	0	$-\frac{5\sqrt{6}i}{42}$	0	0	0	0	0	$\frac{\sqrt{2}i}{14}$	0	0	0	0	0
		0	0	0	$\frac{5\sqrt{6}i}{42}$	0	0	0	0	0	$\frac{\sqrt{2}i}{14}$	0	0	0	0
		0	0	0	0	$-\frac{5\sqrt{6}i}{84}$	0	0	0	0	0	$-\frac{3\sqrt{15}i}{70}$	0	0	0
		0	0	0	0	0	$\frac{\sqrt{6}i}{84}$	0	0	0	0	0	0	$\frac{i}{14}$	0
700	symmetry	$-\frac{\sqrt{70}y(3x^2-y^2)(x^2+y^2-8z^2)}{16}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{T}_5^{(a)}(B_u, 1)$	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{42}}{30}$	0	0	
		0	0	0	0	0	$-\frac{\sqrt{6}}{30}$	0	0	0	0	0	$-\frac{\sqrt{42}}{30}$	0	
		0	0	0	0	0	0	$\frac{\sqrt{42}}{30}$	0	0	0	0	0	$\frac{\sqrt{6}}{30}$	
		0	0	0	0	0	0	0	$-\frac{\sqrt{42}}{30}$	0	0	0	0	0	
		0	0	0	$-\frac{\sqrt{42}}{42}$	0	0	0	0	0	$\frac{\sqrt{14}}{28}$	0	0	0	
		0	0	0	0	$\frac{\sqrt{105}}{42}$	0	0	0	0	0	$-\frac{\sqrt{42}}{140}$	0	0	
		0	0	0	0	$-\frac{\sqrt{42}}{42}$	$\frac{1}{10}$	0	0	0	0	0	$-\frac{3\sqrt{7}}{70}$	0	
		$\frac{\sqrt{42}}{42}$	0	0	0	0	0	$-\frac{3\sqrt{7}}{70}$	0	0	0	0	0	$\frac{1}{10}$	
		0	$-\frac{\sqrt{105}}{42}$	0	0	0	0	0	$-\frac{\sqrt{42}}{140}$	0	0	0	0	0	
		0	0	$\frac{\sqrt{42}}{42}$	0	0	0	0	0	$\frac{\sqrt{14}}{28}$	0	0	0	0	
701	symmetry	$-\frac{\sqrt{70}x(x^2-3y^2)(x^2+y^2-8z^2)}{16}$													
	$\mathbb{T}_5^{(a)}(B_u, 2)$	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{42}i}{30}$	0	0	
		0	0	0	0	0	$\frac{\sqrt{6}i}{30}$	0	0	0	0	0	$-\frac{\sqrt{42}i}{30}$	0	
		0	0	0	0	0	0	$-\frac{\sqrt{42}i}{30}$	0	0	0	0	0	$\frac{\sqrt{6}i}{30}$	
		0	0	0	0	0	0	0	$\frac{\sqrt{42}i}{30}$	0	0	0	0	0	
		0	0	0	$-\frac{\sqrt{42}i}{42}$	0	0	0	0	0	$\frac{\sqrt{14}i}{28}$	0	0	0	
		0	0	0	0	$\frac{\sqrt{105}i}{42}$	0	0	0	0	0	$-\frac{\sqrt{42}i}{140}$	0	0	
		0	0	0	0	$-\frac{\sqrt{42}i}{42}$	$-\frac{i}{10}$	0	0	0	0	0	$-\frac{3\sqrt{7}i}{70}$	0	
		$-\frac{\sqrt{42}i}{42}$	0	0	0	0	0	$\frac{3\sqrt{7}i}{70}$	0	0	0	0	0	$\frac{i}{10}$	
		0	$\frac{\sqrt{105}i}{42}$	0	0	0	0	0	$\frac{\sqrt{42}i}{140}$	0	0	0	0	0	
		0	0	$-\frac{\sqrt{42}i}{42}$	0	0	0	0	0	$-\frac{\sqrt{14}i}{28}$	0	0	0	0	
702	symmetry	$\frac{3\sqrt{14}x(x^4-10x^2y^2+5y^4)}{16}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{T}_{5,1}^{(a)}(E_{1u}, 1)$	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	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	$\frac{\sqrt{10}i}{10}$	0	0	0	0	0	0	0	
		0	0	0	0	0	$-\frac{\sqrt{21}i}{14}$	0	0	0	0	0	$\frac{\sqrt{14}i}{28}$	0	
		0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{10}i}{20}$	
		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	$-\frac{\sqrt{10}i}{20}$	0	0	0	0	0	0	0	
		$-\frac{\sqrt{21}i}{14}$	0	0	0	0	0	$-\frac{\sqrt{14}i}{28}$	0	0	0	0	0	0	
703	symmetry	$-\frac{3\sqrt{14}y(5x^4-10x^2y^2+y^4)}{16}$													
	$\mathbb{T}_{5,2}^{(a)}(E_{1u}, 1)$	0	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	0	0	0	
		0	0	0	0	0	0	0	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	0	0	$\frac{\sqrt{21}}{14}$	0	0	0	0	0	$-\frac{\sqrt{14}}{28}$	0	
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{10}}{20}$	
		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	$-\frac{\sqrt{10}}{20}$	0	0	0	0	0	0	0	
		$-\frac{\sqrt{21}}{14}$	0	0	0	0	0	$-\frac{\sqrt{14}}{28}$	0	0	0	0	0	0	
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													
	$\mathbb{T}_{5,1}^{(a)}(E_{1u}, 2)$	0	0	0	0	0	0	0	$-\frac{\sqrt{3}i}{30}$	0	$\frac{\sqrt{15}i}{30}$	0	0	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{3}i}{10}$	0	$-\frac{\sqrt{5}i}{10}$	0	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{5}i}{10}$	0	$\frac{\sqrt{3}i}{10}$	0	0
		0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{15}i}{30}$	0	$-\frac{\sqrt{3}i}{30}$	0
		0	$-\frac{\sqrt{2}i}{28}$	0	0	0	0	$-\frac{\sqrt{105}i}{420}$	0	$\frac{\sqrt{5}i}{28}$	0	0	0	0	0
		$-\frac{\sqrt{2}i}{28}$	0	$\frac{\sqrt{5}i}{14}$	0	0	0	0	$\frac{23\sqrt{3}i}{420}$	0	$-\frac{13\sqrt{15}i}{420}$	0	0	0	0
		0	$\frac{\sqrt{5}i}{14}$	0	$-\frac{\sqrt{10}i}{14}$	0	0	0	0	$-\frac{11\sqrt{2}i}{140}$	0	$\frac{\sqrt{30}i}{420}$	0	0	0
		0	0	$-\frac{\sqrt{10}i}{14}$	0	$\frac{\sqrt{5}i}{14}$	0	0	0	0	$-\frac{\sqrt{30}i}{420}$	0	$\frac{11\sqrt{2}i}{140}$	0	0
		0	0	0	$\frac{\sqrt{5}i}{14}$	0	$-\frac{\sqrt{2}i}{28}$	0	0	0	0	$\frac{13\sqrt{15}i}{420}$	0	$-\frac{23\sqrt{3}i}{420}$	0
		0	0	0	0	$-\frac{\sqrt{2}i}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{5}i}{28}$	0	$\frac{\sqrt{105}i}{420}$
705	symmetry	$\frac{\sqrt{15}y(x^4+2x^2y^2-12x^2z^2+y^4-12y^2z^2+8z^4)}{8}$													
	$\mathbb{T}_{5,2}^{(a)}(E_{1u}, 2)$	0	0	0	0	0	0	0	$\frac{\sqrt{3}}{30}$	0	$\frac{\sqrt{15}}{30}$	0	0	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{3}}{10}$	0	$-\frac{\sqrt{5}}{10}$	0	0	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{5}}{10}$	0	$\frac{\sqrt{3}}{10}$	0	0
		0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{15}}{30}$	0	$-\frac{\sqrt{3}}{30}$	0
		0	$-\frac{\sqrt{2}}{28}$	0	0	0	0	$\frac{\sqrt{105}}{420}$	0	$\frac{\sqrt{5}}{28}$	0	0	0	0	0
		$\frac{\sqrt{2}}{28}$	0	$\frac{\sqrt{5}}{14}$	0	0	0	0	$-\frac{23\sqrt{3}}{420}$	0	$-\frac{13\sqrt{15}}{420}$	0	0	0	0
		0	$-\frac{\sqrt{5}}{14}$	0	$-\frac{\sqrt{10}}{14}$	0	0	0	0	$\frac{11\sqrt{2}}{140}$	0	$\frac{\sqrt{30}}{420}$	0	0	0
		0	0	$\frac{\sqrt{10}}{14}$	0	$\frac{\sqrt{5}}{14}$	0	0	0	0	$\frac{\sqrt{30}}{420}$	0	$\frac{11\sqrt{2}}{140}$	0	0
		0	0	0	$-\frac{\sqrt{5}}{14}$	0	$-\frac{\sqrt{2}}{28}$	0	0	0	0	$-\frac{13\sqrt{15}}{420}$	0	$-\frac{23\sqrt{3}}{420}$	0
		0	0	0	0	$\frac{\sqrt{2}}{28}$	0	0	0	0	0	0	$\frac{\sqrt{5}}{28}$	0	$\frac{\sqrt{105}}{420}$
706	symmetry	$-\frac{3\sqrt{35}xyz(x-y)(x+y)}{2}$													

continued ...

Table 9

No.	multipole	matrix														
	$\mathbb{T}_{5,1}^{(a)}(E_{2u}, 1)$	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{7}}{10}$	0		
		0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{3}}{10}$		
		0	0	0	0	0	$\frac{\sqrt{3}}{10}$	0	0	0	0	0	0	0		
		0	0	0	0	0	0	$-\frac{\sqrt{7}}{10}$	0	0	0	0	0	0		
		0	0	0	0	$\frac{\sqrt{42}}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{105}}{70}$	0		
		0	0	0	0	0	$-\frac{\sqrt{42}}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{7}}{70}$		
		0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{2}}{10}$		
		0	0	0	0	0	$-\frac{\sqrt{2}}{10}$	0	0	0	0	0	0	0		
		$-\frac{\sqrt{42}}{28}$	0	0	0	0	0	$\frac{\sqrt{7}}{70}$	0	0	0	0	0	0		
		0	$\frac{\sqrt{42}}{28}$	0	0	0	0	0	$\frac{\sqrt{105}}{70}$	0	0	0	0	0		
707	symmetry	$\frac{3\sqrt{35}z(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$														
	$\mathbb{T}_{5,2}^{(a)}(E_{2u}, 1)$	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{7}i}{10}$	0		
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{3}i}{10}$		
		0	0	0	0	0	$\frac{\sqrt{3}i}{10}$	0	0	0	0	0	0	0		
		0	0	0	0	0	0	$-\frac{\sqrt{7}i}{10}$	0	0	0	0	0	0		
		0	0	0	0	$-\frac{\sqrt{42}i}{28}$	0	0	0	0	0	0	$\frac{\sqrt{105}i}{70}$	0		
		0	0	0	0	0	$\frac{\sqrt{42}i}{28}$	0	0	0	0	0	0	$\frac{\sqrt{7}i}{70}$		
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{2}i}{10}$		
		0	0	0	0	0	$-\frac{\sqrt{2}i}{10}$	0	0	0	0	0	0	0		
		$-\frac{\sqrt{42}i}{28}$	0	0	0	0	0	$\frac{\sqrt{7}i}{70}$	0	0	0	0	0	0		
		0	$\frac{\sqrt{42}i}{28}$	0	0	0	0	0	$\frac{\sqrt{105}i}{70}$	0	0	0	0	0		
708	symmetry	$-\frac{\sqrt{105}xyz(x^2+y^2-2z^2)}{2}$														

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{T}_{5,1}^{(a)}(E_{2u}, 2)$	0	0	0	0	0	0	$-\frac{\sqrt{3}}{60}$	0	0	0	$\frac{\sqrt{105}}{60}$	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{7}}{20}$	0	0	0	$-\frac{\sqrt{21}}{20}$	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{21}}{20}$	0	0	0	$\frac{\sqrt{7}}{20}$	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{105}}{60}$	0	0	0	$-\frac{\sqrt{3}}{60}$
		0	0	$-\frac{\sqrt{7}}{28}$	0	0	0	0	0	0	$\frac{\sqrt{21}}{42}$	0	0	0	0
		0	0	0	$\frac{\sqrt{35}}{28}$	0	0	$\frac{\sqrt{3}}{30}$	0	0	0	$-\frac{\sqrt{105}}{105}$	0	0	0
		$\frac{\sqrt{7}}{28}$	0	0	0	$-\frac{\sqrt{35}}{28}$	0	0	$-\frac{2\sqrt{42}}{105}$	0	0	0	$-\frac{\sqrt{14}}{70}$	0	0
		0	$-\frac{\sqrt{35}}{28}$	0	0	0	$\frac{\sqrt{7}}{28}$	0	0	$\frac{\sqrt{14}}{70}$	0	0	0	$\frac{2\sqrt{42}}{105}$	0
		0	0	$\frac{\sqrt{35}}{28}$	0	0	0	0	0	0	$\frac{\sqrt{105}}{105}$	0	0	0	$-\frac{\sqrt{3}}{30}$
		0	0	0	$-\frac{\sqrt{7}}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{21}}{42}$	0	0	0
709	symmetry	$-\frac{\sqrt{105}z(x-y)(x+y)(x^2+y^2-2z^2)}{4}$													
	$\mathbb{T}_{5,2}^{(a)}(E_{2u}, 2)$	0	0	0	0	0	0	$\frac{\sqrt{3}i}{60}$	0	0	0	$\frac{\sqrt{105}i}{60}$	0	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{7}i}{20}$	0	0	0	$-\frac{\sqrt{21}i}{20}$	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{21}i}{20}$	0	0	0	$\frac{\sqrt{7}i}{20}$	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{105}i}{60}$	0	0	0	$-\frac{\sqrt{3}i}{60}$
		0	0	$-\frac{\sqrt{7}i}{28}$	0	0	0	0	0	0	$\frac{\sqrt{21}i}{42}$	0	0	0	0
		0	0	0	$\frac{\sqrt{35}i}{28}$	0	0	$-\frac{\sqrt{3}i}{30}$	0	0	0	$-\frac{\sqrt{105}i}{105}$	0	0	0
		$-\frac{\sqrt{7}i}{28}$	0	0	0	$-\frac{\sqrt{35}i}{28}$	0	0	$\frac{2\sqrt{42}i}{105}$	0	0	0	$-\frac{\sqrt{14}i}{70}$	0	0
		0	$\frac{\sqrt{35}i}{28}$	0	0	0	$\frac{\sqrt{7}i}{28}$	0	0	$-\frac{\sqrt{14}i}{70}$	0	0	0	$\frac{2\sqrt{42}i}{105}$	0
		0	0	$-\frac{\sqrt{35}i}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{105}i}{105}$	0	0	0	$-\frac{\sqrt{3}i}{30}$
		0	0	0	$\frac{\sqrt{7}i}{28}$	0	0	0	0	0	0	$\frac{\sqrt{21}i}{42}$	0	0	0
710	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{T}_3^{(1,-1;a)}(A_u)$	0	$-\frac{\sqrt{6}i}{35}$	0	0	0	0	0	0	$-\frac{\sqrt{15}i}{14}$	0	0	0	0	0
		0	0	$\frac{2i}{35}$	0	0	0	0	0	$-\frac{\sqrt{3}i}{14}$	0	0	0	0	0
		0	0	0	$\frac{2i}{35}$	0	0	0	0	0	$\frac{\sqrt{3}i}{14}$	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{6}i}{35}$	0	0	0	0	0	$\frac{\sqrt{15}i}{14}$	0	0	0
		$\frac{\sqrt{6}i}{28}$	0	0	0	0	0	0	$\frac{2i}{7}$	0	0	0	0	0	0
		0	$-\frac{\sqrt{6}i}{20}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{6}i}{35}$	0	0	0	0	0	$-\frac{\sqrt{2}i}{7}$	0	0	0	0	0
		0	0	0	$\frac{\sqrt{6}i}{35}$	0	0	0	0	0	$-\frac{\sqrt{2}i}{7}$	0	0	0	0
		0	0	0	0	$\frac{\sqrt{6}i}{20}$	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{6}i}{28}$	0	0	0	0	0	0	$\frac{2i}{7}$	0
711	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$													
	$\mathbb{T}_3^{(1,-1;a)}(B_u, 1)$	0	0	0	0	$-\frac{\sqrt{15}}{70}$	0	0	0	0	0	$-\frac{\sqrt{6}}{28}$	0	0	0
		0	0	0	0	0	$-\frac{1}{14}$	$\frac{\sqrt{42}}{28}$	0	0	0	0	$-\frac{\sqrt{6}}{14}$	0	0
		$-\frac{1}{14}$	0	0	0	0	0	0	$\frac{\sqrt{6}}{14}$	0	0	0	0	$-\frac{\sqrt{42}}{28}$	0
		0	$-\frac{\sqrt{15}}{70}$	0	0	0	0	0	0	$\frac{\sqrt{6}}{28}$	0	0	0	0	0
		0	0	0	$\frac{\sqrt{6}}{28}$	0	0	0	0	0	$\frac{\sqrt{2}}{14}$	0	0	0	0
		0	0	0	0	$\frac{\sqrt{15}}{35}$	0	0	0	0	0	$\frac{\sqrt{6}}{14}$	0	0	0
		0	0	0	0	0	$\frac{\sqrt{6}}{28}$	$\frac{\sqrt{7}}{14}$	0	0	0	0	$\frac{3}{14}$	0	0
		$-\frac{\sqrt{6}}{28}$	0	0	0	0	0	0	$\frac{3}{14}$	0	0	0	0	$\frac{\sqrt{7}}{14}$	0
		0	$-\frac{\sqrt{15}}{35}$	0	0	0	0	0	0	$\frac{\sqrt{6}}{14}$	0	0	0	0	0
		0	0	$-\frac{\sqrt{6}}{28}$	0	0	0	0	0	$\frac{\sqrt{2}}{14}$	0	0	0	0	0
712	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{T}_3^{(1,-1;a)}(B_u, 2)$	0	0	0	0	$-\frac{\sqrt{15}i}{70}$	0	0	0	0	0	$-\frac{\sqrt{6}i}{28}$	0	0	
		0	0	0	0	0	$-\frac{i}{14}$	$-\frac{\sqrt{42}i}{28}$	0	0	0	0	$-\frac{\sqrt{6}i}{14}$	0	
		$\frac{i}{14}$	0	0	0	0	0	0	$-\frac{\sqrt{6}i}{14}$	0	0	0	0	$-\frac{\sqrt{42}i}{28}$	
		0	$\frac{\sqrt{15}i}{70}$	0	0	0	0	0	0	$-\frac{\sqrt{6}i}{28}$	0	0	0	0	
		0	0	0	$\frac{\sqrt{6}i}{28}$	0	0	0	0	0	0	$\frac{\sqrt{2}i}{14}$	0	0	
		0	0	0	0	$\frac{\sqrt{15}i}{35}$	0	0	0	0	0	0	$\frac{\sqrt{6}i}{14}$	0	
		0	0	0	0	0	$\frac{\sqrt{6}i}{28}$	$-\frac{\sqrt{7}i}{14}$	0	0	0	0	0	$\frac{3i}{14}$	
		$\frac{\sqrt{6}i}{28}$	0	0	0	0	0	0	$-\frac{3i}{14}$	0	0	0	0	$\frac{\sqrt{7}i}{14}$	
		0	$\frac{\sqrt{15}i}{35}$	0	0	0	0	0	0	$-\frac{\sqrt{6}i}{14}$	0	0	0	0	
		0	0	$\frac{\sqrt{6}i}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{2}i}{14}$	0	0	0	
713	symmetry	$-\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$													
	$\mathbb{T}_{3,1}^{(1,-1;a)}(E_{1u})$	$\frac{\sqrt{5}i}{70}$	0	$-\frac{3\sqrt{2}i}{70}$	0	0	0	0	$\frac{\sqrt{30}i}{28}$	0	$-\frac{\sqrt{6}i}{14}$	0	0	0	
		0	$-\frac{\sqrt{3}i}{30}$	0	$\frac{\sqrt{6}i}{210}$	0	0	0	0	0	0	$-\frac{3\sqrt{2}i}{28}$	0	0	
		0	0	$-\frac{\sqrt{6}i}{210}$	0	$\frac{\sqrt{3}i}{30}$	0	0	0	0	$-\frac{3\sqrt{2}i}{28}$	0	0	0	
		0	0	0	$\frac{3\sqrt{2}i}{70}$	0	$-\frac{\sqrt{5}i}{70}$	0	0	0	0	$-\frac{\sqrt{6}i}{14}$	0	$\frac{\sqrt{30}i}{28}$	
		0	$\frac{3\sqrt{5}i}{70}$	0	0	0	0	$-\frac{\sqrt{42}i}{42}$	0	$\frac{\sqrt{2}i}{7}$	0	0	0	0	
		$\frac{3\sqrt{5}i}{70}$	0	$-\frac{3\sqrt{2}i}{140}$	0	0	0	0	$\frac{\sqrt{30}i}{42}$	0	$\frac{\sqrt{6}i}{21}$	0	0	0	
		0	$-\frac{3\sqrt{2}i}{140}$	0	$-\frac{3i}{35}$	0	0	0	0	$\frac{\sqrt{5}i}{14}$	0	$-\frac{\sqrt{3}i}{42}$	0	0	
		0	0	$-\frac{3i}{35}$	0	$-\frac{3\sqrt{2}i}{140}$	0	0	0	0	$\frac{\sqrt{3}i}{42}$	0	$-\frac{\sqrt{5}i}{14}$	0	
		0	0	0	$-\frac{3\sqrt{2}i}{140}$	0	$\frac{3\sqrt{5}i}{70}$	0	0	0	0	$-\frac{\sqrt{6}i}{21}$	0	$-\frac{\sqrt{30}i}{42}$	
		0	0	0	0	$\frac{3\sqrt{5}i}{70}$	0	0	0	0	0	0	$-\frac{\sqrt{2}i}{7}$	$\frac{\sqrt{42}i}{42}$	
714	symmetry	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{T}_{3,2}^{(1,-1;a)}(E_{1u})$	$-\frac{\sqrt{5}}{70}$	0	$-\frac{3\sqrt{2}}{70}$	0	0	0	0	$-\frac{\sqrt{30}}{28}$	0	$-\frac{\sqrt{6}}{14}$	0	0	0	0
		0	$\frac{\sqrt{3}}{30}$	0	$\frac{\sqrt{6}}{210}$	0	0	0	0	0	0	$-\frac{3\sqrt{2}}{28}$	0	0	0
		0	0	$\frac{\sqrt{6}}{210}$	0	$\frac{\sqrt{3}}{30}$	0	0	0	0	$\frac{3\sqrt{2}}{28}$	0	0	0	0
		0	0	0	$-\frac{3\sqrt{2}}{70}$	0	$-\frac{\sqrt{5}}{70}$	0	0	0	0	$\frac{\sqrt{6}}{14}$	0	$\frac{\sqrt{30}}{28}$	0
		0	$\frac{3\sqrt{5}}{70}$	0	0	0	0	$\frac{\sqrt{42}}{42}$	0	$\frac{\sqrt{2}}{7}$	0	0	0	0	0
		$-\frac{3\sqrt{5}}{70}$	0	$-\frac{3\sqrt{2}}{140}$	0	0	0	0	$-\frac{\sqrt{30}}{42}$	0	$\frac{\sqrt{6}}{21}$	0	0	0	0
		0	$\frac{3\sqrt{2}}{140}$	0	$-\frac{3}{35}$	0	0	0	0	$-\frac{\sqrt{5}}{14}$	0	$-\frac{\sqrt{3}}{42}$	0	0	0
		0	0	$\frac{3}{35}$	0	$-\frac{3\sqrt{2}}{140}$	0	0	0	0	$-\frac{\sqrt{3}}{42}$	0	$-\frac{\sqrt{5}}{14}$	0	0
		0	0	0	$\frac{3\sqrt{2}}{140}$	0	$\frac{3\sqrt{5}}{70}$	0	0	0	0	$\frac{\sqrt{6}}{21}$	0	$-\frac{\sqrt{30}}{42}$	0
		0	0	0	0	$-\frac{3\sqrt{5}}{70}$	0	0	0	0	0	0	$\frac{\sqrt{2}}{7}$	0	$\frac{\sqrt{42}}{42}$
715	symmetry	$\sqrt{15}xyz$													
	$\mathbb{T}_{3,1}^{(1,-1;a)}(E_{2u})$	0	0	0	$-\frac{\sqrt{5}}{35}$	0	0	$\frac{\sqrt{21}}{28}$	0	0	0	$-\frac{\sqrt{15}}{28}$	0	0	0
		$-\frac{\sqrt{6}}{42}$	0	0	0	$-\frac{\sqrt{30}}{210}$	0	0	$-\frac{3}{28}$	0	0	0	$-\frac{3\sqrt{3}}{28}$	0	0
		0	$\frac{\sqrt{30}}{210}$	0	0	0	$\frac{\sqrt{6}}{42}$	0	0	$-\frac{3\sqrt{3}}{28}$	0	0	0	$-\frac{3}{28}$	0
		0	0	$\frac{\sqrt{5}}{35}$	0	0	0	0	0	0	$-\frac{\sqrt{15}}{28}$	0	0	0	$\frac{\sqrt{21}}{28}$
		0	0	$\frac{3}{28}$	0	0	0	0	0	0	$\frac{2\sqrt{3}}{21}$	0	0	0	0
		0	0	0	$\frac{3\sqrt{5}}{140}$	0	0	$\frac{\sqrt{21}}{21}$	0	0	0	$\frac{\sqrt{15}}{21}$	0	0	0
		$-\frac{3}{28}$	0	0	0	$-\frac{3\sqrt{5}}{140}$	0	0	$\frac{\sqrt{6}}{42}$	0	0	0	$\frac{\sqrt{2}}{14}$	0	0
		0	$-\frac{3\sqrt{5}}{140}$	0	0	0	$-\frac{3}{28}$	0	0	$-\frac{\sqrt{2}}{14}$	0	0	0	$-\frac{\sqrt{6}}{42}$	0
		0	0	$\frac{3\sqrt{5}}{140}$	0	0	0	0	0	0	$-\frac{\sqrt{15}}{21}$	0	0	0	$-\frac{\sqrt{21}}{21}$
		0	0	0	$\frac{3}{28}$	0	0	0	0	0	0	$-\frac{2\sqrt{3}}{21}$	0	0	0
716	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$													

*continued ...*

Table 9

No.	multipole	matrix													
	$\mathbb{T}_{3,2}^{(1,-1;a)}(E_{2u})$	0	0	0	$-\frac{\sqrt{5}i}{35}$	0	0	$-\frac{\sqrt{21}i}{28}$	0	0	0	$-\frac{\sqrt{15}i}{28}$	0	0	0
		$\frac{\sqrt{6}i}{42}$	0	0	0	$-\frac{\sqrt{30}i}{210}$	0	0	$\frac{3i}{28}$	0	0	0	$-\frac{3\sqrt{3}i}{28}$	0	0
		0	$-\frac{\sqrt{30}i}{210}$	0	0	0	$\frac{\sqrt{6}i}{42}$	0	0	$\frac{3\sqrt{3}i}{28}$	0	0	0	$-\frac{3i}{28}$	0
		0	0	$-\frac{\sqrt{5}i}{35}$	0	0	0	0	0	$\frac{\sqrt{15}i}{28}$	0	0	0	0	$\frac{\sqrt{21}i}{28}$
		0	0	$\frac{3i}{28}$	0	0	0	0	0	$\frac{2\sqrt{3}i}{21}$	0	0	0	0	0
		0	0	0	$\frac{3\sqrt{5}i}{140}$	0	0	$-\frac{\sqrt{21}i}{21}$	0	0	0	$\frac{\sqrt{15}i}{21}$	0	0	0
		$\frac{3i}{28}$	0	0	0	$-\frac{3\sqrt{5}i}{140}$	0	0	$-\frac{\sqrt{6}i}{42}$	0	0	0	$\frac{\sqrt{2}i}{14}$	0	0
		0	$\frac{3\sqrt{5}i}{140}$	0	0	0	$-\frac{3i}{28}$	0	0	$\frac{\sqrt{2}i}{14}$	0	0	0	$-\frac{\sqrt{6}i}{42}$	0
		0	0	$-\frac{3\sqrt{5}i}{140}$	0	0	0	0	0	$\frac{\sqrt{15}i}{21}$	0	0	0	0	$-\frac{\sqrt{21}i}{21}$
		0	0	0	$-\frac{3i}{28}$	0	0	0	0	0	$\frac{2\sqrt{3}i}{21}$	0	0	0	0
717	symmetry	$\frac{z(15x^4+30x^2y^2-40x^2z^2+15y^4-40y^2z^2+8z^4)}{8}$													
	$\mathbb{T}_5^{(1,-1;a)}(A_u)$	0	0	0	0	0	0	0	$\frac{\sqrt{2}i}{20}$	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{10}i}{20}$	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{10}i}{20}$	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{2}i}{20}$	0	0	0
		$-\frac{\sqrt{5}i}{210}$	0	0	0	0	0	$-\frac{\sqrt{30}i}{35}$	0	0	0	0	0	0	0
		0	$\frac{\sqrt{5}i}{42}$	0	0	0	0	0	$\frac{9\sqrt{2}i}{35}$	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{5}i}{21}$	0	0	0	0	0	$-\frac{2\sqrt{15}i}{35}$	0	0	0	0	0
		0	0	0	$\frac{\sqrt{5}i}{21}$	0	0	0	0	0	$-\frac{2\sqrt{15}i}{35}$	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{5}i}{42}$	0	0	0	0	0	$\frac{9\sqrt{2}i}{35}$	0	0	0
		0	0	0	0	0	$\frac{\sqrt{5}i}{210}$	0	0	0	0	0	0	$-\frac{\sqrt{30}i}{35}$	0
718	symmetry	$-\frac{\sqrt{70}y(3x^2-y^2)(x^2+y^2-8z^2)}{16}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{T}_5^{(1,-1;a)}(B_u, 1)$	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{35}}{50}$	0	0
		0	0	0	0	0	$-\frac{\sqrt{5}}{50}$	0	0	0	0	0	0	$-\frac{\sqrt{35}}{50}$	0
		0	0	0	0	0	0	$\frac{\sqrt{35}}{50}$	0	0	0	0	0	0	$\frac{\sqrt{5}}{50}$
		0	0	0	0	0	0	0	$-\frac{\sqrt{35}}{50}$	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{35}}{105}$	0	0	0	0	0	0	$-\frac{\sqrt{105}}{35}$	0	0	0
		0	0	0	0	$\frac{\sqrt{14}}{42}$	0	0	0	0	0	0	$\frac{3\sqrt{35}}{175}$	0	0
		0	0	0	0	0	$-\frac{\sqrt{35}}{105}$	$-\frac{\sqrt{30}}{25}$	0	0	0	0	0	$\frac{3\sqrt{210}}{175}$	0
		$\frac{\sqrt{35}}{105}$	0	0	0	0	0	$\frac{3\sqrt{210}}{175}$	0	0	0	0	0	0	$-\frac{\sqrt{30}}{25}$
		0	$-\frac{\sqrt{14}}{42}$	0	0	0	0	0	$\frac{3\sqrt{35}}{175}$	0	0	0	0	0	0
		0	0	$\frac{\sqrt{35}}{105}$	0	0	0	0	0	$-\frac{\sqrt{105}}{35}$	0	0	0	0	0
719	symmetry	$-\frac{\sqrt{70}x(x^2-3y^2)(x^2+y^2-8z^2)}{16}$													
	$\mathbb{T}_5^{(1,-1;a)}(B_u, 2)$	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{35}i}{50}$	0	0
		0	0	0	0	0	$\frac{\sqrt{5}i}{50}$	0	0	0	0	0	0	$-\frac{\sqrt{35}i}{50}$	0
		0	0	0	0	0	0	$-\frac{\sqrt{35}i}{50}$	0	0	0	0	0	0	$\frac{\sqrt{5}i}{50}$
		0	0	0	0	0	0	0	$\frac{\sqrt{35}i}{50}$	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{35}i}{105}$	0	0	0	0	0	0	$-\frac{\sqrt{105}i}{35}$	0	0	0
		0	0	0	0	$\frac{\sqrt{14}i}{42}$	0	0	0	0	0	0	$\frac{3\sqrt{35}i}{175}$	0	0
		0	0	0	0	0	$-\frac{\sqrt{35}i}{105}$	$\frac{\sqrt{30}i}{25}$	0	0	0	0	0	$\frac{3\sqrt{210}i}{175}$	0
		$-\frac{\sqrt{35}i}{105}$	0	0	0	0	0	$-\frac{3\sqrt{210}i}{175}$	0	0	0	0	0	0	$-\frac{\sqrt{30}i}{25}$
		0	$\frac{\sqrt{14}i}{42}$	0	0	0	0	0	$-\frac{3\sqrt{35}i}{175}$	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{35}i}{105}$	0	0	0	0	0	$\frac{\sqrt{105}i}{35}$	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													
	$\mathbb{T}_{5,1}^{(1,-1;a)}(E_{1u}, 1)$	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{3}i}{10}$	
		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	0	0	0	0	$\frac{\sqrt{3}i}{10}$	0	0	0	0	0	0	0	
		0	0	0	0	0	$-\frac{\sqrt{70}i}{70}$	0	0	0	0	0	$-\frac{\sqrt{105}i}{35}$	0	
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{3}i}{5}$	
		0	0	0	0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	$\frac{\sqrt{3}i}{5}$	0	0	0	0	0	0	0	
		$-\frac{\sqrt{70}i}{70}$	0	0	0	0	0	$\frac{\sqrt{105}i}{35}$	0	0	0	0	0	0	
721	symmetry	$-\frac{3\sqrt{14}y(5x^4-10x^2y^2+y^4)}{16}$													
	$\mathbb{T}_{5,2}^{(1,-1;a)}(E_{1u}, 1)$	0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{3}}{10}$	
		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	$\frac{\sqrt{3}}{10}$	0	0	0	0	0	0	0	
		0	0	0	0	0	$\frac{\sqrt{70}}{70}$	0	0	0	0	0	$\frac{\sqrt{105}}{35}$	0	
		0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{3}}{5}$	
		0	0	0	0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	$\frac{\sqrt{3}}{5}$	0	0	0	0	0	0	0	
		$-\frac{\sqrt{70}}{70}$	0	0	0	0	0	$\frac{\sqrt{105}}{35}$	0	0	0	0	0	0	
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													
	$\mathbb{T}_{5,1}^{(1,-1;a)}(E_{1u}, 2)$	0	0	0	0	0	0	0	$-\frac{\sqrt{10}i}{100}$	0	$\frac{\sqrt{2}i}{20}$	0	0	0	0
		0	0	0	0	0	0	0	0	$\frac{3\sqrt{10}i}{100}$	0	$-\frac{\sqrt{6}i}{20}$	0	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{6}i}{20}$	0	$\frac{3\sqrt{10}i}{100}$	0	0
		0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{2}i}{20}$	0	$-\frac{\sqrt{10}i}{100}$	0
		0	$-\frac{\sqrt{15}i}{210}$	0	0	0	0	$\frac{\sqrt{14}i}{70}$	0	$-\frac{\sqrt{6}i}{14}$	0	0	0	0	0
		$-\frac{\sqrt{15}i}{210}$	0	$\frac{\sqrt{6}i}{42}$	0	0	0	0	$-\frac{23\sqrt{10}i}{350}$	0	$\frac{13\sqrt{2}i}{70}$	0	0	0	0
		0	$\frac{\sqrt{6}i}{42}$	0	$-\frac{\sqrt{3}i}{21}$	0	0	0	0	$\frac{11\sqrt{15}i}{175}$	0	$-\frac{i}{35}$	0	0	0
		0	0	$-\frac{\sqrt{3}i}{21}$	0	$\frac{\sqrt{6}i}{42}$	0	0	0	0	$\frac{i}{35}$	0	$-\frac{11\sqrt{15}i}{175}$	0	0
		0	0	0	$\frac{\sqrt{6}i}{42}$	0	$-\frac{\sqrt{15}i}{210}$	0	0	0	0	$-\frac{13\sqrt{2}i}{70}$	0	$\frac{23\sqrt{10}i}{350}$	0
		0	0	0	0	$-\frac{\sqrt{15}i}{210}$	0	0	0	0	0	0	$\frac{\sqrt{6}i}{14}$	0	$-\frac{\sqrt{14}i}{70}$
723	symmetry	$\frac{\sqrt{15}y(x^4+2x^2y^2-12x^2z^2+y^4-12y^2z^2+8z^4)}{8}$													
	$\mathbb{T}_{5,2}^{(1,-1;a)}(E_{1u}, 2)$	0	0	0	0	0	0	0	$\frac{\sqrt{10}}{100}$	0	$\frac{\sqrt{2}}{20}$	0	0	0	0
		0	0	0	0	0	0	0	0	$-\frac{3\sqrt{10}}{100}$	0	$-\frac{\sqrt{6}}{20}$	0	0	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{6}}{20}$	0	$\frac{3\sqrt{10}}{100}$	0	0
		0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{2}}{20}$	0	$-\frac{\sqrt{10}}{100}$	0
		0	$-\frac{\sqrt{15}}{210}$	0	0	0	0	$-\frac{\sqrt{14}}{70}$	0	$-\frac{\sqrt{6}}{14}$	0	0	0	0	0
		$\frac{\sqrt{15}}{210}$	0	$\frac{\sqrt{6}}{42}$	0	0	0	0	$\frac{23\sqrt{10}}{350}$	0	$\frac{13\sqrt{2}}{70}$	0	0	0	0
		0	$-\frac{\sqrt{6}}{42}$	0	$-\frac{\sqrt{3}}{21}$	0	0	0	0	$-\frac{11\sqrt{15}}{175}$	0	$-\frac{1}{35}$	0	0	0
		0	0	$\frac{\sqrt{3}}{21}$	0	$\frac{\sqrt{6}}{42}$	0	0	0	0	$-\frac{1}{35}$	0	$-\frac{11\sqrt{15}}{175}$	0	0
		0	0	0	$-\frac{\sqrt{6}}{42}$	0	$-\frac{\sqrt{15}}{210}$	0	0	0	0	$\frac{13\sqrt{2}}{70}$	0	$\frac{23\sqrt{10}}{350}$	0
		0	0	0	0	$\frac{\sqrt{15}}{210}$	0	0	0	0	0	0	$-\frac{\sqrt{6}}{14}$	0	$-\frac{\sqrt{14}}{70}$
724	symmetry	$-\frac{3\sqrt{35}xyz(x-y)(x+y)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{T}_{5,1}^{(1,-1;a)}(E_{2u}, 1)$	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{210}}{100}$	0	
		0	0	0	0	0	0	0	0	0	0	0	0	$\frac{3\sqrt{10}}{100}$	
		0	0	0	0	0	0	$\frac{3\sqrt{10}}{100}$	0	0	0	0	0	0	
		0	0	0	0	0	0	0	$-\frac{\sqrt{210}}{100}$	0	0	0	0	0	
		0	0	0	0	$\frac{\sqrt{35}}{70}$	0	0	0	0	0	0	$\frac{3\sqrt{14}}{35}$	0	
		0	0	0	0	0	$-\frac{\sqrt{35}}{70}$	0	0	0	0	0	0	$\frac{\sqrt{210}}{175}$	
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{2\sqrt{15}}{25}$	
		0	0	0	0	0	0	$\frac{2\sqrt{15}}{25}$	0	0	0	0	0	0	
		$-\frac{\sqrt{35}}{70}$	0	0	0	0	0	0	$-\frac{\sqrt{210}}{175}$	0	0	0	0	0	0
		0	$\frac{\sqrt{35}}{70}$	0	0	0	0	0	0	$-\frac{3\sqrt{14}}{35}$	0	0	0	0	0
725	symmetry	$\frac{3\sqrt{35}z(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$													
	$\mathbb{T}_{5,2}^{(1,-1;a)}(E_{2u}, 1)$	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{210}i}{100}$	0	
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{3\sqrt{10}i}{100}$	
		0	0	0	0	0	0	$\frac{3\sqrt{10}i}{100}$	0	0	0	0	0	0	
		0	0	0	0	0	0	0	$-\frac{\sqrt{210}i}{100}$	0	0	0	0	0	
		0	0	0	0	$-\frac{\sqrt{35}i}{70}$	0	0	0	0	0	0	$-\frac{3\sqrt{14}i}{35}$	0	
		0	0	0	0	0	$\frac{\sqrt{35}i}{70}$	0	0	0	0	0	0	$-\frac{\sqrt{210}i}{175}$	
		0	0	0	0	0	0	0	0	0	0	0	0	$\frac{2\sqrt{15}i}{25}$	
		0	0	0	0	0	0	$\frac{2\sqrt{15}i}{25}$	0	0	0	0	0	0	
		$-\frac{\sqrt{35}i}{70}$	0	0	0	0	0	0	$-\frac{\sqrt{210}i}{175}$	0	0	0	0	0	0
		0	$\frac{\sqrt{35}i}{70}$	0	0	0	0	0	0	$-\frac{3\sqrt{14}i}{35}$	0	0	0	0	0
726	symmetry	$-\frac{\sqrt{105}xyz(x^2+y^2-2z^2)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{T}_{5,1}^{(1,-1;a)}(E_{2u}, 2)$	0	0	0	0	0	0	$-\frac{\sqrt{10}}{200}$	0	0	0	$\frac{\sqrt{14}}{40}$	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{210}}{200}$	0	0	0	$-\frac{3\sqrt{70}}{200}$	0	0
		0	0	0	0	0	0	0	0	$-\frac{3\sqrt{70}}{200}$	0	0	0	$\frac{\sqrt{210}}{200}$	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{14}}{40}$	0	0	0	$-\frac{\sqrt{10}}{200}$
		0	0	$-\frac{\sqrt{210}}{420}$	0	0	0	0	0	0	$-\frac{\sqrt{70}}{35}$	0	0	0	0
		0	0	0	$\frac{\sqrt{42}}{84}$	0	0	$-\frac{\sqrt{10}}{25}$	0	0	0	$\frac{2\sqrt{14}}{35}$	0	0	0
		$\frac{\sqrt{210}}{420}$	0	0	0	$-\frac{\sqrt{42}}{84}$	0	0	$\frac{8\sqrt{35}}{175}$	0	0	0	$\frac{2\sqrt{105}}{175}$	0	0
		0	$-\frac{\sqrt{42}}{84}$	0	0	0	$\frac{\sqrt{210}}{420}$	0	0	$-\frac{2\sqrt{105}}{175}$	0	0	0	$-\frac{8\sqrt{35}}{175}$	0
		0	0	$\frac{\sqrt{42}}{84}$	0	0	0	0	0	0	$-\frac{2\sqrt{14}}{35}$	0	0	0	$\frac{\sqrt{10}}{25}$
		0	0	0	$-\frac{\sqrt{210}}{420}$	0	0	0	0	0	0	$\frac{\sqrt{70}}{35}$	0	0	0
727	symmetry	$-\frac{\sqrt{105}z(x-y)(x+y)(x^2+y^2-2z^2)}{4}$													
	$\mathbb{T}_{5,2}^{(1,-1;a)}(E_{2u}, 2)$	0	0	0	0	0	0	$\frac{\sqrt{10}i}{200}$	0	0	0	$\frac{\sqrt{14}i}{40}$	0	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{210}i}{200}$	0	0	0	$-\frac{3\sqrt{70}i}{200}$	0	0
		0	0	0	0	0	0	0	0	$\frac{3\sqrt{70}i}{200}$	0	0	0	$\frac{\sqrt{210}i}{200}$	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{14}i}{40}$	0	0	0	$-\frac{\sqrt{10}i}{200}$
		0	0	$-\frac{\sqrt{210}i}{420}$	0	0	0	0	0	0	$-\frac{\sqrt{70}i}{35}$	0	0	0	0
		0	0	0	$\frac{\sqrt{42}i}{84}$	0	0	$\frac{\sqrt{10}i}{25}$	0	0	0	$\frac{2\sqrt{14}i}{35}$	0	0	0
		$-\frac{\sqrt{210}i}{420}$	0	0	0	$-\frac{\sqrt{42}i}{84}$	0	0	$-\frac{8\sqrt{35}i}{175}$	0	0	0	$\frac{2\sqrt{105}i}{175}$	0	0
		0	$\frac{\sqrt{42}i}{84}$	0	0	0	$\frac{\sqrt{210}i}{420}$	0	0	$\frac{2\sqrt{105}i}{175}$	0	0	0	$-\frac{8\sqrt{35}i}{175}$	0
		0	0	$-\frac{\sqrt{42}i}{84}$	0	0	0	0	0	0	$\frac{2\sqrt{14}i}{35}$	0	0	0	$\frac{\sqrt{10}i}{25}$
		0	0	0	$\frac{\sqrt{210}i}{420}$	0	0	0	0	0	0	$-\frac{\sqrt{70}i}{35}$	0	0	0
728	symmetry	$z$													

*continued ...*

Table 9

No.	multipole	matrix													
	$\mathbb{T}_1^{(1,0;a)}(A_u)$	0	$\frac{\sqrt{2}i}{10}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	$\frac{\sqrt{3}i}{10}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{3}i}{10}$	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	$\frac{\sqrt{2}i}{10}$	0	0	0	0	0	0	0	0	0
		$-\frac{3\sqrt{2}i}{14}$	0	0	0	0	0	$-\frac{\sqrt{3}i}{14}$	0	0	0	0	0	0	0
		0	$-\frac{9\sqrt{2}i}{70}$	0	0	0	0	0	$-\frac{\sqrt{5}i}{14}$	0	0	0	0	0	0
		0	0	$-\frac{3\sqrt{2}i}{70}$	0	0	0	0	0	$-\frac{\sqrt{6}i}{14}$	0	0	0	0	0
		0	0	0	$\frac{3\sqrt{2}i}{70}$	0	0	0	0	0	$-\frac{\sqrt{6}i}{14}$	0	0	0	0
		0	0	0	0	$\frac{9\sqrt{2}i}{70}$	0	0	0	0	0	$-\frac{\sqrt{5}i}{14}$	0	0	0
		0	0	0	0	0	$\frac{3\sqrt{2}i}{14}$	0	0	0	0	0	$-\frac{\sqrt{3}i}{14}$	0	0
729	symmetry	$x$													
	$\mathbb{T}_{1,1}^{(1,0;a)}(E_{1u})$	$-\frac{\sqrt{10}i}{20}$	0	$\frac{i}{20}$	0	0	0	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{6}i}{20}$	0	$\frac{\sqrt{3}i}{20}$	0	0	0	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{3}i}{20}$	0	$\frac{\sqrt{6}i}{20}$	0	0	0	0	0	0	0	0	0
		0	0	0	$-\frac{i}{20}$	0	$\frac{\sqrt{10}i}{20}$	0	0	0	0	0	0	0	0
		0	$-\frac{3\sqrt{10}i}{70}$	0	0	0	0	$\frac{\sqrt{21}i}{28}$	0	$-\frac{i}{28}$	0	0	0	0	0
		$-\frac{3\sqrt{10}i}{70}$	0	$-\frac{6i}{35}$	0	0	0	$\frac{\sqrt{15}i}{28}$	0	$-\frac{\sqrt{3}i}{28}$	0	0	0	0	0
		0	$-\frac{6i}{35}$	0	$-\frac{9\sqrt{2}i}{70}$	0	0	0	$\frac{\sqrt{10}i}{28}$	0	$-\frac{\sqrt{6}i}{28}$	0	0	0	0
		0	0	$-\frac{9\sqrt{2}i}{70}$	0	$-\frac{6i}{35}$	0	0	0	$\frac{\sqrt{6}i}{28}$	0	$-\frac{\sqrt{10}i}{28}$	0	0	0
		0	0	0	$-\frac{6i}{35}$	0	$-\frac{3\sqrt{10}i}{70}$	0	0	0	$\frac{\sqrt{3}i}{28}$	0	$-\frac{\sqrt{15}i}{28}$	0	0
		0	0	0	0	$-\frac{3\sqrt{10}i}{70}$	0	0	0	0	0	$\frac{i}{28}$	0	$-\frac{\sqrt{21}i}{28}$	0
730	symmetry	$y$													

*continued ...*

Table 9

No.	multipole	matrix													
	$\mathbb{T}_{1,2}^{(1,0;a)}(E_{1u})$	$\frac{\sqrt{10}}{20}$	0	$\frac{1}{20}$	0	0	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{6}}{20}$	0	$\frac{\sqrt{3}}{20}$	0	0	0	0	0	0	0	0	0	0
		0	0	$\frac{\sqrt{3}}{20}$	0	$\frac{\sqrt{6}}{20}$	0	0	0	0	0	0	0	0	0
		0	0	0	$\frac{1}{20}$	0	$\frac{\sqrt{10}}{20}$	0	0	0	0	0	0	0	0
		0	$-\frac{3\sqrt{10}}{70}$	0	0	0	0	$-\frac{\sqrt{21}}{28}$	0	$-\frac{1}{28}$	0	0	0	0	0
		$\frac{3\sqrt{10}}{70}$	0	$-\frac{6}{35}$	0	0	0	$-\frac{\sqrt{15}}{28}$	0	$-\frac{\sqrt{3}}{28}$	0	0	0	0	0
		0	$\frac{6}{35}$	0	$-\frac{9\sqrt{2}}{70}$	0	0	0	$-\frac{\sqrt{10}}{28}$	0	$-\frac{\sqrt{6}}{28}$	0	0	0	0
		0	0	$\frac{9\sqrt{2}}{70}$	0	$-\frac{6}{35}$	0	0	0	$-\frac{\sqrt{6}}{28}$	0	$-\frac{\sqrt{10}}{28}$	0	0	0
		0	0	0	$\frac{6}{35}$	0	$-\frac{3\sqrt{10}}{70}$	0	0	0	$-\frac{\sqrt{3}}{28}$	0	$-\frac{\sqrt{15}}{28}$	0	0
		0	0	0	0	$\frac{3\sqrt{10}}{70}$	0	0	0	0	0	$-\frac{1}{28}$	0	$-\frac{\sqrt{21}}{28}$	0
731	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$													
	$\mathbb{T}_3^{(1,0;a)}(A_u)$	0	$-\frac{3\sqrt{7}i}{140}$	0	0	0	0	0	$\frac{\sqrt{70}i}{28}$	0	0	0	0	0	0
		0	0	$\frac{\sqrt{42}i}{140}$	0	0	0	0	0	$\frac{\sqrt{14}i}{28}$	0	0	0	0	0
		0	0	0	$\frac{\sqrt{42}i}{140}$	0	0	0	0	0	$-\frac{\sqrt{14}i}{28}$	0	0	0	0
		0	0	0	0	$-\frac{3\sqrt{7}i}{140}$	0	0	0	0	0	$-\frac{\sqrt{70}i}{28}$	0	0	0
		$\frac{\sqrt{7}i}{14}$	0	0	0	0	0	$\frac{\sqrt{42}i}{84}$	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{7}i}{10}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	$-\frac{2\sqrt{7}i}{35}$	0	0	0	0	0	$-\frac{\sqrt{21}i}{84}$	0	0	0	0	0
		0	0	0	$\frac{2\sqrt{7}i}{35}$	0	0	0	0	0	$-\frac{\sqrt{21}i}{84}$	0	0	0	0
		0	0	0	0	$\frac{\sqrt{7}i}{10}$	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	$\frac{\sqrt{42}i}{84}$	0
732	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{T}_3^{(1,0;a)}(B_u, 1)$	0	0	0	0	$-\frac{3\sqrt{70}}{560}$	0	0	0	0	0	0	$\frac{\sqrt{7}}{28}$	0	0
		0	0	0	0	0	$-\frac{\sqrt{42}}{112}$	$-\frac{1}{4}$	0	0	0	0	0	$\frac{\sqrt{7}}{14}$	0
		$-\frac{\sqrt{42}}{112}$	0	0	0	0	0	0	$-\frac{\sqrt{7}}{14}$	0	0	0	0	0	$\frac{1}{4}$
		0	$-\frac{3\sqrt{70}}{560}$	0	0	0	0	0	0	$-\frac{\sqrt{7}}{28}$	0	0	0	0	0
		0	0	0	$\frac{\sqrt{7}}{14}$	0	0	0	0	0	0	$\frac{\sqrt{21}}{168}$	0	0	0
		0	0	0	0	$\frac{\sqrt{70}}{35}$	0	0	0	0	0	0	$\frac{\sqrt{7}}{56}$	0	0
		0	0	0	0	0	$\frac{\sqrt{7}}{14}$	$\frac{\sqrt{6}}{48}$	0	0	0	0	0	$\frac{\sqrt{42}}{112}$	0
		$-\frac{\sqrt{7}}{14}$	0	0	0	0	0	0	$\frac{\sqrt{42}}{112}$	0	0	0	0	0	$\frac{\sqrt{6}}{48}$
		0	$-\frac{\sqrt{70}}{35}$	0	0	0	0	0	0	$\frac{\sqrt{7}}{56}$	0	0	0	0	0
		0	0	$-\frac{\sqrt{7}}{14}$	0	0	0	0	0	0	$\frac{\sqrt{21}}{168}$	0	0	0	0
733	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$													
	$\mathbb{T}_3^{(1,0;a)}(B_u, 2)$	0	0	0	0	$-\frac{3\sqrt{70}i}{560}$	0	0	0	0	0	0	$\frac{\sqrt{7}i}{28}$	0	0
		0	0	0	0	0	$-\frac{\sqrt{42}i}{112}$	$\frac{i}{4}$	0	0	0	0	0	$\frac{\sqrt{7}i}{14}$	0
		$\frac{\sqrt{42}i}{112}$	0	0	0	0	0	0	$\frac{\sqrt{7}i}{14}$	0	0	0	0	0	$\frac{i}{4}$
		0	$\frac{3\sqrt{70}i}{560}$	0	0	0	0	0	0	$\frac{\sqrt{7}i}{28}$	0	0	0	0	0
		0	0	0	$\frac{\sqrt{7}i}{14}$	0	0	0	0	0	0	$\frac{\sqrt{21}i}{168}$	0	0	0
		0	0	0	0	$\frac{\sqrt{70}i}{35}$	0	0	0	0	0	0	$\frac{\sqrt{7}i}{56}$	0	0
		0	0	0	0	0	$\frac{\sqrt{7}i}{14}$	$-\frac{\sqrt{6}i}{48}$	0	0	0	0	0	$\frac{\sqrt{42}i}{112}$	0
		$\frac{\sqrt{7}i}{14}$	0	0	0	0	0	0	$-\frac{\sqrt{42}i}{112}$	0	0	0	0	0	$\frac{\sqrt{6}i}{48}$
		0	$\frac{\sqrt{70}i}{35}$	0	0	0	0	0	0	$-\frac{\sqrt{7}i}{56}$	0	0	0	0	0
		0	0	$\frac{\sqrt{7}i}{14}$	0	0	0	0	0	0	$-\frac{\sqrt{21}i}{168}$	0	0	0	0
734	symmetry	$-\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$													

continued ...

Table 9

No.	multipole	matrix													
	$T_{3,1}^{(1,0;a)}(E_{1u})$	$\frac{\sqrt{210}i}{560}$	0	$-\frac{3\sqrt{21}i}{280}$	0	0	0	0	$-\frac{\sqrt{35}i}{28}$	0	$\frac{\sqrt{7}i}{14}$	0	0	0	0
		0	$-\frac{\sqrt{14}i}{80}$	0	$\frac{\sqrt{7}i}{280}$	0	0	0	0	0	0	$\frac{\sqrt{21}i}{28}$	0	0	0
		0	0	$-\frac{\sqrt{7}i}{280}$	0	$\frac{\sqrt{14}i}{80}$	0	0	0	0	$\frac{\sqrt{21}i}{28}$	0	0	0	0
		0	0	0	$\frac{3\sqrt{21}i}{280}$	0	$-\frac{\sqrt{210}i}{560}$	0	0	0	0	$\frac{\sqrt{7}i}{14}$	0	$-\frac{\sqrt{35}i}{28}$	0
		0	$\frac{\sqrt{210}i}{70}$	0	0	0	0	$-\frac{i}{24}$	0	$\frac{\sqrt{21}i}{84}$	0	0	0	0	0
		$\frac{\sqrt{210}i}{70}$	0	$-\frac{\sqrt{21}i}{70}$	0	0	0	0	$\frac{\sqrt{35}i}{168}$	0	$\frac{\sqrt{7}i}{84}$	0	0	0	0
		0	$-\frac{\sqrt{21}i}{70}$	0	$-\frac{\sqrt{42}i}{35}$	0	0	0	0	$\frac{\sqrt{210}i}{336}$	0	$-\frac{\sqrt{14}i}{336}$	0	0	0
		0	0	$-\frac{\sqrt{42}i}{35}$	0	$-\frac{\sqrt{21}i}{70}$	0	0	0	0	$\frac{\sqrt{14}i}{336}$	0	$-\frac{\sqrt{210}i}{336}$	0	0
		0	0	0	$-\frac{\sqrt{21}i}{70}$	0	$\frac{\sqrt{210}i}{70}$	0	0	0	0	$-\frac{\sqrt{7}i}{84}$	0	$-\frac{\sqrt{35}i}{168}$	0
		0	0	0	0	$\frac{\sqrt{210}i}{70}$	0	0	0	0	0	0	$-\frac{\sqrt{21}i}{84}$	0	$\frac{i}{24}$
735	symmetry	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$													
	$T_{3,2}^{(1,0;a)}(E_{1u})$	$-\frac{\sqrt{210}}{560}$	0	$-\frac{3\sqrt{21}}{280}$	0	0	0	0	$\frac{\sqrt{35}}{28}$	0	$\frac{\sqrt{7}}{14}$	0	0	0	0
		0	$\frac{\sqrt{14}}{80}$	0	$\frac{\sqrt{7}}{280}$	0	0	0	0	0	0	$\frac{\sqrt{21}}{28}$	0	0	0
		0	0	$\frac{\sqrt{7}}{280}$	0	$\frac{\sqrt{14}}{80}$	0	0	0	0	$-\frac{\sqrt{21}}{28}$	0	0	0	0
		0	0	0	$-\frac{3\sqrt{21}}{280}$	0	$-\frac{\sqrt{210}}{560}$	0	0	0	0	$-\frac{\sqrt{7}}{14}$	0	$-\frac{\sqrt{35}}{28}$	0
		0	$\frac{\sqrt{210}}{70}$	0	0	0	0	$\frac{1}{24}$	0	$\frac{\sqrt{21}}{84}$	0	0	0	0	0
		$-\frac{\sqrt{210}}{70}$	0	$-\frac{\sqrt{21}}{70}$	0	0	0	0	$-\frac{\sqrt{35}}{168}$	0	$\frac{\sqrt{7}}{84}$	0	0	0	0
		0	$\frac{\sqrt{21}}{70}$	0	$-\frac{\sqrt{42}}{35}$	0	0	0	0	$-\frac{\sqrt{210}}{336}$	0	$-\frac{\sqrt{14}}{336}$	0	0	0
		0	0	$\frac{\sqrt{42}}{35}$	0	$-\frac{\sqrt{21}}{70}$	0	0	0	0	$-\frac{\sqrt{14}}{336}$	0	$-\frac{\sqrt{210}}{336}$	0	0
		0	0	0	$\frac{\sqrt{21}}{70}$	0	$\frac{\sqrt{210}}{70}$	0	0	0	0	$\frac{\sqrt{7}}{84}$	0	$-\frac{\sqrt{35}}{168}$	0
		0	0	0	0	$-\frac{\sqrt{210}}{70}$	0	0	0	0	0	0	$\frac{\sqrt{21}}{84}$	0	$\frac{1}{24}$
736	symmetry	$\sqrt{15}xyz$													

continued ...



Table 9

No.	multipole	matrix													
	$T_{3,1}^{(1,0;a)}(E_{2u})$	0	0	0	$-\frac{\sqrt{210}}{280}$	0	0	$-\frac{\sqrt{2}}{8}$	0	0	0	$\frac{\sqrt{70}}{56}$	0	0	0
		$-\frac{\sqrt{7}}{56}$	0	0	0	$-\frac{\sqrt{35}}{280}$	0	0	$\frac{\sqrt{42}}{56}$	0	0	0	$\frac{3\sqrt{14}}{56}$	0	0
		0	$\frac{\sqrt{35}}{280}$	0	0	0	$\frac{\sqrt{7}}{56}$	0	0	$\frac{3\sqrt{14}}{56}$	0	0	0	$\frac{\sqrt{42}}{56}$	0
		0	0	$\frac{\sqrt{210}}{280}$	0	0	0	0	0	0	$\frac{\sqrt{70}}{56}$	0	0	0	$-\frac{\sqrt{2}}{8}$
		0	0	$\frac{\sqrt{42}}{28}$	0	0	0	0	0	0	$\frac{\sqrt{14}}{84}$	0	0	0	0
		0	0	0	$\frac{\sqrt{210}}{140}$	0	0	$\frac{\sqrt{2}}{24}$	0	0	0	$\frac{\sqrt{70}}{168}$	0	0	0
		$-\frac{\sqrt{42}}{28}$	0	0	0	$-\frac{\sqrt{210}}{140}$	0	0	$\frac{\sqrt{7}}{168}$	0	0	0	$\frac{\sqrt{21}}{168}$	0	0
		0	$-\frac{\sqrt{210}}{140}$	0	0	0	$-\frac{\sqrt{42}}{28}$	0	0	$-\frac{\sqrt{21}}{168}$	0	0	0	$-\frac{\sqrt{7}}{168}$	0
		0	0	$\frac{\sqrt{210}}{140}$	0	0	0	0	0	0	$-\frac{\sqrt{70}}{168}$	0	0	0	$-\frac{\sqrt{2}}{24}$
		0	0	0	$\frac{\sqrt{42}}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{14}}{84}$	0	0	0
737	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$													
	$T_{3,2}^{(1,0;a)}(E_{2u})$	0	0	0	$-\frac{\sqrt{210i}}{280}$	0	0	$\frac{\sqrt{2i}}{8}$	0	0	0	$\frac{\sqrt{70i}}{56}$	0	0	0
		$\frac{\sqrt{7i}}{56}$	0	0	0	$-\frac{\sqrt{35i}}{280}$	0	0	$-\frac{\sqrt{42i}}{56}$	0	0	0	$\frac{3\sqrt{14i}}{56}$	0	0
		0	$-\frac{\sqrt{35i}}{280}$	0	0	0	$\frac{\sqrt{7i}}{56}$	0	0	$-\frac{3\sqrt{14i}}{56}$	0	0	0	$\frac{\sqrt{42i}}{56}$	0
		0	0	$-\frac{\sqrt{210i}}{280}$	0	0	0	0	0	0	$-\frac{\sqrt{70i}}{56}$	0	0	0	$-\frac{\sqrt{2i}}{8}$
		0	0	$\frac{\sqrt{42i}}{28}$	0	0	0	0	0	0	$\frac{\sqrt{14i}}{84}$	0	0	0	0
		0	0	0	$\frac{\sqrt{210i}}{140}$	0	0	$-\frac{\sqrt{2i}}{24}$	0	0	0	$\frac{\sqrt{70i}}{168}$	0	0	0
		$\frac{\sqrt{42i}}{28}$	0	0	0	$-\frac{\sqrt{210i}}{140}$	0	0	$-\frac{\sqrt{7i}}{168}$	0	0	0	$\frac{\sqrt{21i}}{168}$	0	0
		0	$\frac{\sqrt{210i}}{140}$	0	0	0	$-\frac{\sqrt{42i}}{28}$	0	0	$\frac{\sqrt{21i}}{168}$	0	0	0	$-\frac{\sqrt{7i}}{168}$	0
		0	0	$-\frac{\sqrt{210i}}{140}$	0	0	0	0	0	0	$\frac{\sqrt{70i}}{168}$	0	0	0	$-\frac{\sqrt{2i}}{24}$
		0	0	0	$-\frac{\sqrt{42i}}{28}$	0	0	0	0	0	0	$\frac{\sqrt{14i}}{84}$	0	0	0
738	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													
	$\mathbb{T}_5^{(1,0;a)}(A_u)$	0	0	0	0	0	0	0	0	$-\frac{\sqrt{2}i}{10}$	0	0	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	0	0	0	0	0	0	$-\frac{\sqrt{10}i}{10}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{2}i}{10}$	0	0
		$-\frac{\sqrt{5}i}{70}$	0	0	0	0	0	0	$-\frac{\sqrt{30}i}{420}$	0	0	0	0	0	0
		0	$\frac{\sqrt{5}i}{14}$	0	0	0	0	0	0	$\frac{3\sqrt{2}i}{140}$	0	0	0	0	0
		0	0	$-\frac{\sqrt{5}i}{7}$	0	0	0	0	0	0	$-\frac{\sqrt{15}i}{210}$	0	0	0	0
		0	0	0	$\frac{\sqrt{5}i}{7}$	0	0	0	0	0	0	$-\frac{\sqrt{15}i}{210}$	0	0	0
		0	0	0	0	$-\frac{\sqrt{5}i}{14}$	0	0	0	0	0	0	$\frac{3\sqrt{2}i}{140}$	0	0
		0	0	0	0	0	$\frac{\sqrt{5}i}{70}$	0	0	0	0	0	0	$-\frac{\sqrt{30}i}{420}$	0
739	symmetry	$-\frac{\sqrt{70}y(3x^2-y^2)(x^2+y^2-8z^2)}{16}$													
	$\mathbb{T}_5^{(1,0;a)}(B_u, 1)$	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{35}}{25}$	0	0	0
		0	0	0	0	0	0	$\frac{\sqrt{5}}{25}$	0	0	0	0	0	$\frac{\sqrt{35}}{25}$	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{35}}{25}$	0	0	0	0	0	$-\frac{\sqrt{5}}{25}$
		0	0	0	0	0	0	0	0	$\frac{\sqrt{35}}{25}$	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{35}}{35}$	0	0	0	0	0	0	$-\frac{\sqrt{105}}{420}$	0	0	0
		0	0	0	0	$\frac{\sqrt{14}}{14}$	0	0	0	0	0	0	$\frac{\sqrt{35}}{700}$	0	0
		0	0	0	0	0	$-\frac{\sqrt{35}}{35}$	$-\frac{\sqrt{30}}{300}$	0	0	0	0	0	$\frac{\sqrt{210}}{700}$	0
		$\frac{\sqrt{35}}{35}$	0	0	0	0	0	0	$\frac{\sqrt{210}}{700}$	0	0	0	0	0	$-\frac{\sqrt{30}}{300}$
		0	$-\frac{\sqrt{14}}{14}$	0	0	0	0	0	0	$\frac{\sqrt{35}}{700}$	0	0	0	0	0
		0	0	$\frac{\sqrt{35}}{35}$	0	0	0	0	0	0	$-\frac{\sqrt{105}}{420}$	0	0	0	0
740	symmetry	$-\frac{\sqrt{70}x(x^2-3y^2)(x^2+y^2-8z^2)}{16}$													

*continued ...*

Table 9

No.	multipole	matrix													
	$\mathbb{T}_5^{(1,0;a)}(B_u, 2)$	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{35}i}{25}$	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{5}i}{25}$	0	0	0	0	0	$\frac{\sqrt{35}i}{25}$	0
		0	0	0	0	0	0	0	$\frac{\sqrt{35}i}{25}$	0	0	0	0	0	$-\frac{\sqrt{5}i}{25}$
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{35}i}{25}$	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{35}i}{35}$	0	0	0	0	0	0	$-\frac{\sqrt{105}i}{420}$	0	0	0
		0	0	0	0	$\frac{\sqrt{14}i}{14}$	0	0	0	0	0	0	$\frac{\sqrt{35}i}{700}$	0	0
		0	0	0	0	0	$-\frac{\sqrt{35}i}{35}$	$\frac{\sqrt{30}i}{300}$	0	0	0	0	0	$\frac{\sqrt{210}i}{700}$	0
		$-\frac{\sqrt{35}i}{35}$	0	0	0	0	0	0	$-\frac{\sqrt{210}i}{700}$	0	0	0	0	0	$-\frac{\sqrt{30}i}{300}$
		0	$\frac{\sqrt{14}i}{14}$	0	0	0	0	0	0	$-\frac{\sqrt{35}i}{700}$	0	0	0	0	0
		0	0	$-\frac{\sqrt{35}i}{35}$	0	0	0	0	0	0	$\frac{\sqrt{105}i}{420}$	0	0	0	0
741	symmetry	$\frac{3\sqrt{14}x(x^4-10x^2y^2+5y^4)}{16}$													
	$\mathbb{T}_{5,1}^{(1,0;a)}(E_{1u}, 1)$	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{3}i}{5}$		
		0	0	0	0	0	0	0	0	0	0	0	0		
		0	0	0	0	0	0	0	0	0	0	0	0		
		0	0	0	0	0	$-\frac{\sqrt{3}i}{5}$	0	0	0	0	0	0		
		0	0	0	0	0	$-\frac{3\sqrt{70}i}{70}$	0	0	0	0	0	$-\frac{\sqrt{105}i}{420}$	0	
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{3}i}{60}$		
		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	$\frac{\sqrt{3}i}{60}$	0	0	0	0	0	0		
		$-\frac{3\sqrt{70}i}{70}$	0	0	0	0	0	0	$\frac{\sqrt{105}i}{420}$	0	0	0	0	0	
742	symmetry	$-\frac{3\sqrt{14}y(5x^4-10x^2y^2+y^4)}{16}$													

continued ...

Table 9

No.	multipole	matrix																																																																																																																																																																				
	$\mathbb{T}_{5,2}^{(1,0;a)}(E_{1u},1)$	<table><tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td><math>\frac{\sqrt{3}}{5}</math></td></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td><math>-\frac{\sqrt{3}}{5}</math></td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td><math>\frac{3\sqrt{70}}{70}</math></td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td><math>\frac{\sqrt{105}}{420}</math></td><td>0</td></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td><math>\frac{\sqrt{3}}{60}</math></td></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td><math>\frac{\sqrt{3}}{60}</math></td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr><tr><td><math>-\frac{3\sqrt{70}}{70}</math></td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td><math>\frac{\sqrt{105}}{420}</math></td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr></table>															0	0	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{3}}{5}$	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{3}}{5}$	0	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{3\sqrt{70}}{70}$	0	0	0	0	0	0	$\frac{\sqrt{105}}{420}$	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{3}}{60}$	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	$\frac{\sqrt{3}}{60}$	0	0	0	0	0	0	0	$-\frac{3\sqrt{70}}{70}$	0	0	0	0	0	0	0	$\frac{\sqrt{105}}{420}$	0	0	0	0	0	0
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743	symmetry	$\frac{\sqrt{15}x(x^4+2x^2y^2-12x^2z^2+y^4-12y^2z^2+8z^4)}{8}$ <table><tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td><math>\frac{\sqrt{10}i}{50}</math></td><td>0</td><td><math>-\frac{\sqrt{2}i}{10}</math></td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td><math>-\frac{3\sqrt{10}i}{50}</math></td><td>0</td><td><math>\frac{\sqrt{6}i}{10}</math></td><td>0</td><td>0</td><td>0</td><td>0</td></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td><math>\frac{\sqrt{6}i}{10}</math></td><td>0</td><td><math>-\frac{3\sqrt{10}i}{50}</math></td><td>0</td><td>0</td><td>0</td></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td><math>-\frac{\sqrt{2}i}{10}</math></td><td>0</td><td><math>\frac{\sqrt{10}i}{50}</math></td><td>0</td><td>0</td></tr><tr><td>0</td><td><math>-\frac{\sqrt{15}i}{70}</math></td><td>0</td><td>0</td><td>0</td><td>0</td><td><math>\frac{\sqrt{14}i}{840}</math></td><td>0</td><td><math>-\frac{\sqrt{6}i}{168}</math></td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr><tr><td><math>-\frac{\sqrt{15}i}{70}</math></td><td>0</td><td><math>\frac{\sqrt{6}i}{14}</math></td><td>0</td><td>0</td><td>0</td><td>0</td><td><math>-\frac{23\sqrt{10}i}{4200}</math></td><td>0</td><td><math>\frac{13\sqrt{2}i}{840}</math></td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr><tr><td>0</td><td><math>\frac{\sqrt{6}i}{14}</math></td><td>0</td><td><math>-\frac{\sqrt{3}i}{7}</math></td><td>0</td><td>0</td><td>0</td><td>0</td><td><math>\frac{11\sqrt{15}i}{2100}</math></td><td>0</td><td><math>-\frac{i}{420}</math></td><td>0</td><td>0</td><td>0</td><td>0</td></tr><tr><td>0</td><td>0</td><td><math>-\frac{\sqrt{3}i}{7}</math></td><td>0</td><td><math>\frac{\sqrt{6}i}{14}</math></td><td>0</td><td>0</td><td>0</td><td>0</td><td><math>\frac{i}{420}</math></td><td>0</td><td><math>-\frac{11\sqrt{15}i}{2100}</math></td><td>0</td><td>0</td><td>0</td></tr><tr><td>0</td><td>0</td><td>0</td><td><math>\frac{\sqrt{6}i}{14}</math></td><td>0</td><td><math>-\frac{\sqrt{15}i}{70}</math></td><td>0</td><td>0</td><td>0</td><td>0</td><td><math>-\frac{13\sqrt{2}i}{840}</math></td><td>0</td><td><math>\frac{23\sqrt{10}i}{4200}</math></td><td>0</td><td>0</td></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td><td><math>-\frac{\sqrt{15}i}{70}</math></td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td><math>\frac{\sqrt{6}i}{168}</math></td><td>0</td><td><math>-\frac{\sqrt{14}i}{840}</math></td><td>0</td></tr></table>															0	0	0	0	0	0	0	$\frac{\sqrt{10}i}{50}$	0	$-\frac{\sqrt{2}i}{10}$	0	0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{3\sqrt{10}i}{50}$	0	$\frac{\sqrt{6}i}{10}$	0	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{6}i}{10}$	0	$-\frac{3\sqrt{10}i}{50}$	0	0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{2}i}{10}$	0	$\frac{\sqrt{10}i}{50}$	0	0	0	$-\frac{\sqrt{15}i}{70}$	0	0	0	0	$\frac{\sqrt{14}i}{840}$	0	$-\frac{\sqrt{6}i}{168}$	0	0	0	0	0	0	$-\frac{\sqrt{15}i}{70}$	0	$\frac{\sqrt{6}i}{14}$	0	0	0	0	$-\frac{23\sqrt{10}i}{4200}$	0	$\frac{13\sqrt{2}i}{840}$	0	0	0	0	0	0	$\frac{\sqrt{6}i}{14}$	0	$-\frac{\sqrt{3}i}{7}$	0	0	0	0	$\frac{11\sqrt{15}i}{2100}$	0	$-\frac{i}{420}$	0	0	0	0	0	0	$-\frac{\sqrt{3}i}{7}$	0	$\frac{\sqrt{6}i}{14}$	0	0	0	0	$\frac{i}{420}$	0	$-\frac{11\sqrt{15}i}{2100}$	0	0	0	0	0	0	$\frac{\sqrt{6}i}{14}$	0	$-\frac{\sqrt{15}i}{70}$	0	0	0	0	$-\frac{13\sqrt{2}i}{840}$	0	$\frac{23\sqrt{10}i}{4200}$	0	0	0	0	0	0	$-\frac{\sqrt{15}i}{70}$	0	0	0	0	0	0	$\frac{\sqrt{6}i}{168}$	0	$-\frac{\sqrt{14}i}{840}$	0
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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													
	$\mathbb{T}_{5,2}^{(1,0;a)}(E_{1u}, 2)$	0	0	0	0	0	0	0	$-\frac{\sqrt{10}}{50}$	0	$-\frac{\sqrt{2}}{10}$	0	0	0	0
		0	0	0	0	0	0	0	0	$\frac{3\sqrt{10}}{50}$	0	$\frac{\sqrt{6}}{10}$	0	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{6}}{10}$	0	$-\frac{3\sqrt{10}}{50}$	0	0
		0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{2}}{10}$	0	$\frac{\sqrt{10}}{50}$	0
		0	$-\frac{\sqrt{15}}{70}$	0	0	0	0	$-\frac{\sqrt{14}}{840}$	0	$-\frac{\sqrt{6}}{168}$	0	0	0	0	0
		$\frac{\sqrt{15}}{70}$	0	$\frac{\sqrt{6}}{14}$	0	0	0	0	$\frac{23\sqrt{10}}{4200}$	0	$\frac{13\sqrt{2}}{840}$	0	0	0	0
		0	$-\frac{\sqrt{6}}{14}$	0	$-\frac{\sqrt{3}}{7}$	0	0	0	0	$-\frac{11\sqrt{15}}{2100}$	0	$-\frac{1}{420}$	0	0	0
		0	0	$\frac{\sqrt{3}}{7}$	0	$\frac{\sqrt{6}}{14}$	0	0	0	0	$-\frac{1}{420}$	0	$-\frac{11\sqrt{15}}{2100}$	0	0
		0	0	0	$-\frac{\sqrt{6}}{14}$	0	$-\frac{\sqrt{15}}{70}$	0	0	0	0	$\frac{13\sqrt{2}}{840}$	0	$\frac{23\sqrt{10}}{4200}$	0
		0	0	0	0	$\frac{\sqrt{15}}{70}$	0	0	0	0	0	0	$-\frac{\sqrt{6}}{168}$	0	$-\frac{\sqrt{14}}{840}$
745	symmetry	$-\frac{3\sqrt{35}xyz(x-y)(x+y)}{2}$													
	$\mathbb{T}_{5,1}^{(1,0;a)}(E_{2u}, 1)$	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{210}}{50}$	0	
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{3\sqrt{10}}{50}$	
		0	0	0	0	0	0	$-\frac{3\sqrt{10}}{50}$	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{210}}{50}$	0	0	0	0	0	0
		0	0	0	0	$\frac{3\sqrt{35}}{70}$	0	0	0	0	0	0	$\frac{\sqrt{14}}{140}$	0	0
		0	0	0	0	0	$-\frac{3\sqrt{35}}{70}$	0	0	0	0	0	0	$\frac{\sqrt{210}}{2100}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{15}}{150}$
		0	0	0	0	0	0	$\frac{\sqrt{15}}{150}$	0	0	0	0	0	0	0
		$-\frac{3\sqrt{35}}{70}$	0	0	0	0	0	0	$-\frac{\sqrt{210}}{2100}$	0	0	0	0	0	0
		0	$\frac{3\sqrt{35}}{70}$	0	0	0	0	0	0	$-\frac{\sqrt{14}}{140}$	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												
	$\mathbb{T}_{5,2}^{(1,0;a)}(E_{2u}, 1)$	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{210}i}{50}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	$\frac{3\sqrt{10}i}{50}$
		0	0	0	0	0	$-\frac{3\sqrt{10}i}{50}$	0	0	0	0	0	0	0
		0	0	0	0	0	0	$\frac{\sqrt{210}i}{50}$	0	0	0	0	0	0
		0	0	0	0	$-\frac{3\sqrt{35}i}{70}$	0	0	0	0	0	$-\frac{\sqrt{14}i}{140}$	0	0
		0	0	0	0	0	$\frac{3\sqrt{35}i}{70}$	0	0	0	0	0	$-\frac{\sqrt{210}i}{2100}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{15}i}{150}$
		0	0	0	0	0	$\frac{\sqrt{15}i}{150}$	0	0	0	0	0	0	0
		$-\frac{3\sqrt{35}i}{70}$	0	0	0	0	0	$-\frac{\sqrt{210}i}{2100}$	0	0	0	0	0	0
		0	$\frac{3\sqrt{35}i}{70}$	0	0	0	0	0	$-\frac{\sqrt{14}i}{140}$	0	0	0	0	0
747	symmetry	$-\frac{\sqrt{105}xyz(x^2+y^2-2z^2)}{2}$												
	$\mathbb{T}_{5,1}^{(1,0;a)}(E_{2u}, 2)$	0	0	0	0	0	$\frac{\sqrt{10}}{100}$	0	0	0	$-\frac{\sqrt{14}}{20}$	0	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{210}}{100}$	0	0	0	$\frac{3\sqrt{70}}{100}$	0	0
		0	0	0	0	0	0	0	$\frac{3\sqrt{70}}{100}$	0	0	0	$-\frac{\sqrt{210}}{100}$	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{14}}{20}$	0	0	0	$\frac{\sqrt{10}}{100}$
		0	0	$-\frac{\sqrt{210}}{140}$	0	0	0	0	0	$-\frac{\sqrt{70}}{420}$	0	0	0	0
		0	0	0	$\frac{\sqrt{42}}{28}$	0	0	$-\frac{\sqrt{10}}{300}$	0	0	0	$\frac{\sqrt{14}}{210}$	0	0
		$\frac{\sqrt{210}}{140}$	0	0	0	$-\frac{\sqrt{42}}{28}$	0	0	$\frac{2\sqrt{35}}{525}$	0	0	0	$\frac{\sqrt{105}}{1050}$	0
		0	$-\frac{\sqrt{42}}{28}$	0	0	0	$\frac{\sqrt{210}}{140}$	0	0	$-\frac{\sqrt{105}}{1050}$	0	0	0	$-\frac{2\sqrt{35}}{525}$
		0	0	$\frac{\sqrt{42}}{28}$	0	0	0	0	0	$-\frac{\sqrt{14}}{210}$	0	0	0	$\frac{\sqrt{10}}{300}$
		0	0	0	$-\frac{\sqrt{210}}{140}$	0	0	0	0	0	$\frac{\sqrt{70}}{420}$	0	0	0
748	symmetry	$-\frac{\sqrt{105}z(x-y)(x+y)(x^2+y^2-2z^2)}{4}$												

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{T}_{5,2}^{(1,0;a)}(E_{2u}, 2)$	0	0	0	0	0	0	$-\frac{\sqrt{10}i}{100}$	0	0	0	$-\frac{\sqrt{14}i}{20}$	0	0	0
		0	0	0	0	0	0	$\frac{\sqrt{210}i}{100}$	0	0	0	$\frac{3\sqrt{70}i}{100}$	0	0	0
		0	0	0	0	0	0	0	$-\frac{3\sqrt{70}i}{100}$	0	0	0	$-\frac{\sqrt{210}i}{100}$	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{14}i}{20}$	0	0	0	$\frac{\sqrt{10}i}{100}$	0
		0	0	$-\frac{\sqrt{210}i}{140}$	0	0	0	0	0	$-\frac{\sqrt{70}i}{420}$	0	0	0	0	0
		0	0	0	$\frac{\sqrt{42}i}{28}$	0	0	$\frac{\sqrt{10}i}{300}$	0	0	0	$\frac{\sqrt{14}i}{210}$	0	0	0
		$-\frac{\sqrt{210}i}{140}$	0	0	0	$-\frac{\sqrt{42}i}{28}$	0	0	$-\frac{2\sqrt{35}i}{525}$	0	0	0	$\frac{\sqrt{105}i}{1050}$	0	0
		0	$\frac{\sqrt{42}i}{28}$	0	0	0	$\frac{\sqrt{210}i}{140}$	0	0	$\frac{\sqrt{105}i}{1050}$	0	0	0	$-\frac{2\sqrt{35}i}{525}$	0
		0	0	$-\frac{\sqrt{42}i}{28}$	0	0	0	0	0	$\frac{\sqrt{14}i}{210}$	0	0	0	0	$\frac{\sqrt{10}i}{300}$
		0	0	0	$\frac{\sqrt{210}i}{140}$	0	0	0	0	0	$-\frac{\sqrt{70}i}{420}$	0	0	0	0
749	symmetry	$z$													
	$\mathbb{T}_1^{(1,1;a)}(A_u)$	0	$-\frac{i}{5}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{6}i}{10}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{6}i}{10}$	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	$-\frac{i}{5}$	0	0	0	0	0	0	0	0	0
		$-\frac{2i}{7}$	0	0	0	0	0	$\frac{\sqrt{6}i}{28}$	0	0	0	0	0	0	0
		0	$-\frac{6i}{35}$	0	0	0	0	0	$\frac{\sqrt{10}i}{28}$	0	0	0	0	0	0
		0	0	$-\frac{2i}{35}$	0	0	0	0	0	$\frac{\sqrt{3}i}{14}$	0	0	0	0	0
		0	0	0	$\frac{2i}{35}$	0	0	0	0	0	$\frac{\sqrt{3}i}{14}$	0	0	0	0
		0	0	0	0	$\frac{6i}{35}$	0	0	0	0	0	$\frac{\sqrt{10}i}{28}$	0	0	0
		0	0	0	0	0	$\frac{2i}{7}$	0	0	0	0	0	$\frac{\sqrt{6}i}{28}$	0	0
750	symmetry	$x$													

continued ...

Table 9

No.	multipole	matrix													
	$T_{1,1}^{(1,1;a)}(E_{1u})$	$\frac{\sqrt{5}i}{10}$	0	$-\frac{\sqrt{2}i}{20}$	0	0	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{3}i}{10}$	0	$-\frac{\sqrt{6}i}{20}$	0	0	0	0	0	0	0	0	0	0
		0	0	$\frac{\sqrt{6}i}{20}$	0	$-\frac{\sqrt{3}i}{10}$	0	0	0	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{2}i}{20}$	0	$-\frac{\sqrt{5}i}{10}$	0	0	0	0	0	0	0	0
		0	$-\frac{2\sqrt{5}i}{35}$	0	0	0	0	$-\frac{\sqrt{42}i}{56}$	0	$\frac{\sqrt{2}i}{56}$	0	0	0	0	0
		$-\frac{2\sqrt{5}i}{35}$	0	$-\frac{4\sqrt{2}i}{35}$	0	0	0	0	$-\frac{\sqrt{30}i}{56}$	0	$\frac{\sqrt{6}i}{56}$	0	0	0	0
		0	$-\frac{4\sqrt{2}i}{35}$	0	$-\frac{6i}{35}$	0	0	0	0	$-\frac{\sqrt{5}i}{28}$	0	$\frac{\sqrt{3}i}{28}$	0	0	0
		0	0	$-\frac{6i}{35}$	0	$-\frac{4\sqrt{2}i}{35}$	0	0	0	0	$-\frac{\sqrt{3}i}{28}$	0	$\frac{\sqrt{5}i}{28}$	0	0
		0	0	0	$-\frac{4\sqrt{2}i}{35}$	0	$-\frac{2\sqrt{5}i}{35}$	0	0	0	0	$-\frac{\sqrt{6}i}{56}$	0	$\frac{\sqrt{30}i}{56}$	0
		0	0	0	0	$-\frac{2\sqrt{5}i}{35}$	0	0	0	0	0	0	$-\frac{\sqrt{2}i}{56}$	0	$\frac{\sqrt{42}i}{56}$
751	symmetry	$y$													
	$T_{1,2}^{(1,1;a)}(E_{1u})$	$-\frac{\sqrt{5}}{10}$	0	$-\frac{\sqrt{2}}{20}$	0	0	0	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{3}}{10}$	0	$-\frac{\sqrt{6}}{20}$	0	0	0	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{6}}{20}$	0	$-\frac{\sqrt{3}}{10}$	0	0	0	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{2}}{20}$	0	$-\frac{\sqrt{5}}{10}$	0	0	0	0	0	0	0	0
		0	$-\frac{2\sqrt{5}}{35}$	0	0	0	0	$\frac{\sqrt{42}}{56}$	0	$\frac{\sqrt{2}}{56}$	0	0	0	0	0
		$\frac{2\sqrt{5}}{35}$	0	$-\frac{4\sqrt{2}}{35}$	0	0	0	0	$\frac{\sqrt{30}}{56}$	0	$\frac{\sqrt{6}}{56}$	0	0	0	0
		0	$\frac{4\sqrt{2}}{35}$	0	$-\frac{6}{35}$	0	0	0	0	$\frac{\sqrt{5}}{28}$	0	$\frac{\sqrt{3}}{28}$	0	0	0
		0	0	$\frac{6}{35}$	0	$-\frac{4\sqrt{2}}{35}$	0	0	0	0	$\frac{\sqrt{3}}{28}$	0	$\frac{\sqrt{5}}{28}$	0	0
		0	0	0	$\frac{4\sqrt{2}}{35}$	0	$-\frac{2\sqrt{5}}{35}$	0	0	0	0	$\frac{\sqrt{6}}{56}$	0	$\frac{\sqrt{30}}{56}$	0
		0	0	0	0	$\frac{2\sqrt{5}}{35}$	0	0	0	0	0	0	$\frac{\sqrt{2}}{56}$	0	$\frac{\sqrt{42}}{56}$
752	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$													

continued ...



Table 9

No.	multipole	matrix													
	$\mathbb{T}_3^{(1,1;a)}(A_u)$	0	$\frac{9i}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{10}i}{28}$	0	0	0	0	0
		0	0	$-\frac{3\sqrt{6}i}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{2}i}{28}$	0	0	0	0
		0	0	0	$-\frac{3\sqrt{6}i}{28}$	0	0	0	0	0	0	$\frac{\sqrt{2}i}{28}$	0	0	0
		0	0	0	0	$\frac{9i}{28}$	0	0	0	0	0	0	$\frac{\sqrt{10}i}{28}$	0	0
		$\frac{5i}{42}$	0	0	0	0	0	0	$-\frac{\sqrt{6}i}{28}$	0	0	0	0	0	0
		0	$-\frac{i}{6}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	$-\frac{2i}{21}$	0	0	0	0	0	0	$\frac{\sqrt{3}i}{28}$	0	0	0	0
		0	0	0	$\frac{2i}{21}$	0	0	0	0	0	0	$\frac{\sqrt{3}i}{28}$	0	0	0
		0	0	0	0	$\frac{i}{6}$	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	$-\frac{5i}{42}$	0	0	0	0	0	0	$-\frac{\sqrt{6}i}{28}$	0
753	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$													
	$\mathbb{T}_3^{(1,1;a)}(B_u, 1)$	0	0	0	0	$\frac{9\sqrt{10}}{112}$	0	0	0	0	0	$-\frac{1}{28}$	0	0	0
		0	0	0	0	0	$\frac{15\sqrt{6}}{112}$	$\frac{\sqrt{7}}{28}$	0	0	0	0	$-\frac{1}{14}$	0	0
		$\frac{15\sqrt{6}}{112}$	0	0	0	0	0	0	$\frac{1}{14}$	0	0	0	0	0	$-\frac{\sqrt{7}}{28}$
		0	$\frac{9\sqrt{10}}{112}$	0	0	0	0	0	0	$\frac{1}{28}$	0	0	0	0	0
		0	0	0	$\frac{5}{42}$	0	0	0	0	0	0	$-\frac{\sqrt{3}}{56}$	0	0	0
		0	0	0	0	$\frac{\sqrt{10}}{21}$	0	0	0	0	0	0	$-\frac{3}{56}$	0	0
		0	0	0	0	0	$\frac{5}{42}$	$-\frac{\sqrt{42}}{112}$	0	0	0	0	0	$-\frac{3\sqrt{6}}{112}$	0
		$-\frac{5}{42}$	0	0	0	0	0	0	$-\frac{3\sqrt{6}}{112}$	0	0	0	0	0	$-\frac{\sqrt{42}}{112}$
		0	$-\frac{\sqrt{10}}{21}$	0	0	0	0	0	0	$-\frac{3}{56}$	0	0	0	0	0
		0	0	$-\frac{5}{42}$	0	0	0	0	0	0	$-\frac{\sqrt{3}}{56}$	0	0	0	0
754	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{T}_3^{(1,1;a)}(B_u, 2)$	0	0	0	0	$\frac{9\sqrt{10}i}{112}$	0	0	0	0	0	0	$-\frac{i}{28}$	0	0
		0	0	0	0	0	$\frac{15\sqrt{6}i}{112}$	$-\frac{\sqrt{7}i}{28}$	0	0	0	0	0	$-\frac{i}{14}$	0
		$-\frac{15\sqrt{6}i}{112}$	0	0	0	0	0	0	$-\frac{i}{14}$	0	0	0	0	0	$-\frac{\sqrt{7}i}{28}$
		0	$-\frac{9\sqrt{10}i}{112}$	0	0	0	0	0	0	$-\frac{i}{28}$	0	0	0	0	0
		0	0	0	$\frac{5i}{42}$	0	0	0	0	0	0	$-\frac{\sqrt{3}i}{56}$	0	0	0
		0	0	0	0	$\frac{\sqrt{10}i}{21}$	0	0	0	0	0	0	$-\frac{3i}{56}$	0	0
		0	0	0	0	0	$\frac{5i}{42}$	$\frac{\sqrt{42}i}{112}$	0	0	0	0	0	$-\frac{3\sqrt{6}i}{112}$	0
		$\frac{5i}{42}$	0	0	0	0	0	0	$\frac{3\sqrt{6}i}{112}$	0	0	0	0	0	$-\frac{\sqrt{42}i}{112}$
		0	$\frac{\sqrt{10}i}{21}$	0	0	0	0	0	0	$\frac{3i}{56}$	0	0	0	0	0
		0	0	$\frac{5i}{42}$	0	0	0	0	0	0	$\frac{\sqrt{3}i}{56}$	0	0	0	0
755	symmetry	$-\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$													
	$\mathbb{T}_{3,1}^{(1,1;a)}(E_{1u})$	$-\frac{3\sqrt{30}i}{112}$	0	$\frac{9\sqrt{3}i}{56}$	0	0	0	0	$\frac{\sqrt{5}i}{28}$	0	$-\frac{i}{14}$	0	0	0	0
		0	$\frac{3\sqrt{2}i}{16}$	0	$-\frac{3i}{56}$	0	0	0	0	0	0	$-\frac{\sqrt{3}i}{28}$	0	0	0
		0	0	$\frac{3i}{56}$	0	$-\frac{3\sqrt{2}i}{16}$	0	0	0	0	$-\frac{\sqrt{3}i}{28}$	0	0	0	0
		0	0	0	$-\frac{9\sqrt{3}i}{56}$	0	$\frac{3\sqrt{30}i}{112}$	0	0	0	0	$-\frac{i}{14}$	0	$\frac{\sqrt{5}i}{28}$	0
		0	$\frac{\sqrt{30}i}{42}$	0	0	0	0	$\frac{\sqrt{7}i}{56}$	0	$-\frac{\sqrt{3}i}{28}$	0	0	0	0	0
		$\frac{\sqrt{30}i}{42}$	0	$-\frac{\sqrt{3}i}{42}$	0	0	0	0	$-\frac{\sqrt{5}i}{56}$	0	$-\frac{i}{28}$	0	0	0	0
		0	$-\frac{\sqrt{3}i}{42}$	0	$-\frac{\sqrt{6}i}{21}$	0	0	0	0	$-\frac{\sqrt{30}i}{112}$	0	$\frac{\sqrt{2}i}{112}$	0	0	0
		0	0	$-\frac{\sqrt{6}i}{21}$	0	$-\frac{\sqrt{3}i}{42}$	0	0	0	0	$-\frac{\sqrt{2}i}{112}$	0	$\frac{\sqrt{30}i}{112}$	0	0
		0	0	0	$-\frac{\sqrt{3}i}{42}$	0	$\frac{\sqrt{30}i}{42}$	0	0	0	0	$\frac{i}{28}$	0	$\frac{\sqrt{5}i}{56}$	0
		0	0	0	0	$\frac{\sqrt{30}i}{42}$	0	0	0	0	0	0	$\frac{\sqrt{3}i}{28}$	0	$-\frac{\sqrt{7}i}{56}$
756	symmetry	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$													

continued ...

Table 9

No.	multipole	matrix													
	$T_{3,2}^{(1,1;a)}(E_{1u})$	$ \begin{bmatrix} \frac{3\sqrt{30}}{112} & 0 & \frac{9\sqrt{3}}{56} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{28} & 0 & -\frac{1}{14} & 0 & 0 & 0 & 0 \\ 0 & -\frac{3\sqrt{2}}{16} & 0 & -\frac{3}{56} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{28} & 0 & 0 & 0 \\ 0 & 0 & -\frac{3}{56} & 0 & -\frac{3\sqrt{2}}{16} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{28} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{9\sqrt{3}}{56} & 0 & \frac{3\sqrt{30}}{112} & 0 & 0 & 0 & 0 & 0 & \frac{1}{14} & 0 & \frac{\sqrt{5}}{28} & 0 \\ 0 & \frac{\sqrt{30}}{42} & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}}{56} & 0 & -\frac{\sqrt{3}}{28} & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{30}}{42} & 0 & -\frac{\sqrt{3}}{42} & 0 & 0 & 0 & 0 & \frac{\sqrt{5}}{56} & 0 & -\frac{1}{28} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{3}}{42} & 0 & -\frac{\sqrt{6}}{21} & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{112} & 0 & \frac{\sqrt{2}}{112} & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{6}}{21} & 0 & -\frac{\sqrt{3}}{42} & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{112} & 0 & \frac{\sqrt{30}}{112} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{3}}{42} & 0 & \frac{\sqrt{30}}{42} & 0 & 0 & 0 & 0 & -\frac{1}{28} & 0 & \frac{\sqrt{5}}{56} & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{42} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{28} & 0 & -\frac{\sqrt{7}}{56} & 0 \end{bmatrix} $													
757	symmetry	$ \begin{bmatrix} 0 & 0 & 0 & \frac{3\sqrt{30}}{56} & 0 & 0 & \frac{\sqrt{14}}{56} & 0 & 0 & 0 & -\frac{\sqrt{10}}{56} & 0 & 0 & 0 & 0 \\ \frac{15}{56} & 0 & 0 & 0 & \frac{3\sqrt{5}}{56} & 0 & 0 & -\frac{\sqrt{6}}{56} & 0 & 0 & 0 & -\frac{3\sqrt{2}}{56} & 0 & 0 & 0 \\ 0 & -\frac{3\sqrt{5}}{56} & 0 & 0 & 0 & -\frac{15}{56} & 0 & 0 & -\frac{3\sqrt{2}}{56} & 0 & 0 & 0 & -\frac{\sqrt{6}}{56} & 0 & 0 \\ 0 & 0 & -\frac{3\sqrt{30}}{56} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}}{56} & 0 & 0 & 0 & \frac{\sqrt{14}}{56} & 0 \\ 0 & 0 & \frac{5\sqrt{6}}{84} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{28} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{30}}{84} & 0 & 0 & -\frac{\sqrt{14}}{56} & 0 & 0 & 0 & -\frac{\sqrt{10}}{56} & 0 & 0 & 0 & 0 \\ -\frac{5\sqrt{6}}{84} & 0 & 0 & 0 & -\frac{\sqrt{30}}{84} & 0 & 0 & -\frac{1}{56} & 0 & 0 & 0 & -\frac{\sqrt{3}}{56} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{30}}{84} & 0 & 0 & 0 & -\frac{5\sqrt{6}}{84} & 0 & 0 & \frac{\sqrt{3}}{56} & 0 & 0 & 0 & \frac{1}{56} & 0 & 0 \\ 0 & 0 & \frac{\sqrt{30}}{84} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{56} & 0 & 0 & 0 & \frac{\sqrt{14}}{56} & 0 \\ 0 & 0 & 0 & \frac{5\sqrt{6}}{84} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{28} & 0 & 0 & 0 & 0 \end{bmatrix} $													
758	symmetry	$ \frac{\sqrt{15}z(x-y)(x+y)}{2} $													

continued ...

Table 9

No.	multipole	matrix														
	$T_{3,2}^{(1,1;a)}(E_{2u})$	0	0	0	$\frac{3\sqrt{30}i}{56}$	0	0	$-\frac{\sqrt{14}i}{56}$	0	0	0	$-\frac{\sqrt{10}i}{56}$	0	0	0	
		$-\frac{15i}{56}$	0	0	0	$\frac{3\sqrt{5}i}{56}$	0	0	$\frac{\sqrt{6}i}{56}$	0	0	0	$-\frac{3\sqrt{2}i}{56}$	0	0	
		0	$\frac{3\sqrt{5}i}{56}$	0	0	0	$-\frac{15i}{56}$	0	0	$\frac{3\sqrt{2}i}{56}$	0	0	0	$-\frac{\sqrt{6}i}{56}$	0	
		0	0	$\frac{3\sqrt{30}i}{56}$	0	0	0	0	0	0	$\frac{\sqrt{10}i}{56}$	0	0	0	$\frac{\sqrt{14}i}{56}$	
		0	0	$\frac{5\sqrt{6}i}{84}$	0	0	0	0	0	0	$-\frac{\sqrt{2}i}{28}$	0	0	0	0	
		0	0	0	$\frac{\sqrt{30}i}{84}$	0	0	$\frac{\sqrt{14}i}{56}$	0	0	0	$-\frac{\sqrt{10}i}{56}$	0	0	0	
		$\frac{5\sqrt{6}i}{84}$	0	0	0	$-\frac{\sqrt{30}i}{84}$	0	0	$\frac{i}{56}$	0	0	0	$-\frac{\sqrt{3}i}{56}$	0	0	
		0	$\frac{\sqrt{30}i}{84}$	0	0	0	$-\frac{5\sqrt{6}i}{84}$	0	0	$-\frac{\sqrt{3}i}{56}$	0	0	0	$\frac{i}{56}$	0	
		0	0	$-\frac{\sqrt{30}i}{84}$	0	0	0	0	0	0	$-\frac{\sqrt{10}i}{56}$	0	0	0	$\frac{\sqrt{14}i}{56}$	
		0	0	0	$-\frac{5\sqrt{6}i}{84}$	0	0	0	0	0	0	$-\frac{\sqrt{2}i}{28}$	0	0	0	
759	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$														
	$M_2^{(a)}(A_u)$	0	$\frac{3\sqrt{10}}{35}$	0	0	0	0	0	0	$\frac{1}{14}$	0	0	0	0	0	
		0	0	$\frac{\sqrt{15}}{35}$	0	0	0	0	0	0	$\frac{3\sqrt{5}}{70}$	0	0	0	0	
		0	0	0	$-\frac{\sqrt{15}}{35}$	0	0	0	0	0	0	$\frac{3\sqrt{5}}{70}$	0	0	0	
		0	0	0	0	$-\frac{3\sqrt{10}}{35}$	0	0	0	0	0	0	$\frac{1}{14}$	0	0	
		$-\frac{\sqrt{10}}{28}$	0	0	0	0	0	0	$\frac{\sqrt{15}}{14}$	0	0	0	0	0	0	
		0	$\frac{\sqrt{10}}{140}$	0	0	0	0	0	0	$\frac{3}{14}$	0	0	0	0	0	
		0	0	$\frac{\sqrt{10}}{35}$	0	0	0	0	0	0	$\frac{\sqrt{30}}{70}$	0	0	0	0	
		0	0	0	$\frac{\sqrt{10}}{35}$	0	0	0	0	0	0	$-\frac{\sqrt{30}}{70}$	0	0	0	
		0	0	0	0	$\frac{\sqrt{10}}{140}$	0	0	0	0	0	0	$-\frac{3}{14}$	0	0	
		0	0	0	0	0	$-\frac{\sqrt{10}}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{15}}{14}$	0	
760	symmetry	$\sqrt{3}yz$														

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{M}_{2,1}^{(a)}(E_{1u})$	$-\frac{\sqrt{6}i}{14}$	0	$-\frac{3\sqrt{15}i}{70}$	0	0	0	0	$-\frac{i}{14}$	0	$-\frac{\sqrt{5}i}{70}$	0	0	0	0
		0	$\frac{\sqrt{10}i}{70}$	0	$-\frac{\sqrt{5}i}{14}$	0	0	0	0	$-\frac{i}{14}$	0	$-\frac{\sqrt{15}i}{70}$	0	0	0
		0	0	$\frac{\sqrt{5}i}{14}$	0	$-\frac{\sqrt{10}i}{70}$	0	0	0	0	$-\frac{\sqrt{15}i}{70}$	0	$-\frac{i}{14}$	0	0
		0	0	0	$\frac{3\sqrt{15}i}{70}$	0	$\frac{\sqrt{6}i}{14}$	0	0	0	0	$-\frac{\sqrt{5}i}{70}$	0	$-\frac{i}{14}$	0
		0	$\frac{\sqrt{6}i}{28}$	0	0	0	0	$-\frac{\sqrt{35}i}{28}$	0	$-\frac{\sqrt{15}i}{28}$	0	0	0	0	0
		$-\frac{\sqrt{6}i}{28}$	0	$\frac{\sqrt{15}i}{70}$	0	0	0	0	$-\frac{i}{28}$	0	$-\frac{11\sqrt{5}i}{140}$	0	0	0	0
		0	$-\frac{\sqrt{15}i}{70}$	0	0	0	0	0	0	$\frac{\sqrt{6}i}{28}$	0	$-\frac{\sqrt{10}i}{20}$	0	0	0
		0	0	0	0	$-\frac{\sqrt{15}i}{70}$	0	0	0	0	$\frac{\sqrt{10}i}{20}$	0	$-\frac{\sqrt{6}i}{28}$	0	0
		0	0	0	$\frac{\sqrt{15}i}{70}$	0	$-\frac{\sqrt{6}i}{28}$	0	0	0	0	$\frac{11\sqrt{5}i}{140}$	0	$\frac{i}{28}$	0
		0	0	0	0	$\frac{\sqrt{6}i}{28}$	0	0	0	0	0	0	$\frac{\sqrt{15}i}{28}$	0	$\frac{\sqrt{35}i}{28}$
761	symmetry	$-\sqrt{3}xz$													
	$\mathbb{M}_{2,2}^{(a)}(E_{1u})$	$\frac{\sqrt{6}}{14}$	0	$-\frac{3\sqrt{15}}{70}$	0	0	0	0	$\frac{1}{14}$	0	$-\frac{\sqrt{5}}{70}$	0	0	0	0
		0	$-\frac{\sqrt{10}}{70}$	0	$-\frac{\sqrt{5}}{14}$	0	0	0	0	$\frac{1}{14}$	0	$-\frac{\sqrt{15}}{70}$	0	0	0
		0	0	$-\frac{\sqrt{5}}{14}$	0	$-\frac{\sqrt{10}}{70}$	0	0	0	0	$\frac{\sqrt{15}}{70}$	0	$-\frac{1}{14}$	0	0
		0	0	0	$-\frac{3\sqrt{15}}{70}$	0	$\frac{\sqrt{6}}{14}$	0	0	0	0	$\frac{\sqrt{5}}{70}$	0	$-\frac{1}{14}$	0
		0	$\frac{\sqrt{6}}{28}$	0	0	0	0	$\frac{\sqrt{35}}{28}$	0	$-\frac{\sqrt{15}}{28}$	0	0	0	0	0
		$\frac{\sqrt{6}}{28}$	0	$\frac{\sqrt{15}}{70}$	0	0	0	0	$\frac{1}{28}$	0	$-\frac{11\sqrt{5}}{140}$	0	0	0	0
		0	$\frac{\sqrt{15}}{70}$	0	0	0	0	0	0	$-\frac{\sqrt{6}}{28}$	0	$-\frac{\sqrt{10}}{20}$	0	0	0
		0	0	0	0	$-\frac{\sqrt{15}}{70}$	0	0	0	0	$-\frac{\sqrt{10}}{20}$	0	$-\frac{\sqrt{6}}{28}$	0	0
		0	0	0	$-\frac{\sqrt{15}}{70}$	0	$-\frac{\sqrt{6}}{28}$	0	0	0	0	$-\frac{11\sqrt{5}}{140}$	0	$\frac{1}{28}$	0
		0	0	0	0	$-\frac{\sqrt{6}}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{15}}{28}$	0	$\frac{\sqrt{35}}{28}$
762	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{M}_{2,1}^{(a)}(E_{2u})$	0	0	0	$\frac{\sqrt{15}}{35}$	0	0	$\frac{\sqrt{7}}{28}$	0	0	0	$\frac{\sqrt{5}}{140}$	0	0	0
		$-\frac{\sqrt{2}}{7}$	0	0	0	$\frac{2\sqrt{10}}{35}$	0	0	$\frac{\sqrt{3}}{28}$	0	0	0	$\frac{1}{28}$	0	0
		0	$-\frac{2\sqrt{10}}{35}$	0	0	0	$\frac{\sqrt{2}}{7}$	0	0	$\frac{1}{28}$	0	0	0	$\frac{\sqrt{3}}{28}$	0
		0	0	$-\frac{\sqrt{15}}{35}$	0	0	0	0	0	0	$\frac{\sqrt{5}}{140}$	0	0	0	$\frac{\sqrt{7}}{28}$
		0	0	$-\frac{\sqrt{3}}{28}$	0	0	0	0	0	0	$\frac{1}{14}$	0	0	0	0
		0	0	0	$-\frac{3\sqrt{15}}{140}$	0	0	$-\frac{\sqrt{7}}{14}$	0	0	0	$\frac{2\sqrt{5}}{35}$	0	0	0
		$-\frac{\sqrt{3}}{28}$	0	0	0	$-\frac{3\sqrt{15}}{140}$	0	0	$-\frac{\sqrt{2}}{7}$	0	0	0	$\frac{\sqrt{6}}{14}$	0	0
		0	$-\frac{3\sqrt{15}}{140}$	0	0	0	$-\frac{\sqrt{3}}{28}$	0	0	$-\frac{\sqrt{6}}{14}$	0	0	0	$\frac{\sqrt{2}}{7}$	0
		0	0	$-\frac{3\sqrt{15}}{140}$	0	0	0	0	0	0	$-\frac{2\sqrt{5}}{35}$	0	0	0	$\frac{\sqrt{7}}{14}$
		0	0	0	$-\frac{\sqrt{3}}{28}$	0	0	0	0	0	0	$-\frac{1}{14}$	0	0	0
763	symmetry	$-\sqrt{3}xy$													
	$\mathbb{M}_{2,2}^{(a)}(E_{2u})$	0	0	0	$\frac{\sqrt{15}i}{35}$	0	0	$-\frac{\sqrt{7}i}{28}$	0	0	0	$\frac{\sqrt{5}i}{140}$	0	0	0
		$\frac{\sqrt{2}i}{7}$	0	0	0	$\frac{2\sqrt{10}i}{35}$	0	0	$-\frac{\sqrt{3}i}{28}$	0	0	0	$\frac{i}{28}$	0	0
		0	$\frac{2\sqrt{10}i}{35}$	0	0	0	$\frac{\sqrt{2}i}{7}$	0	0	$-\frac{i}{28}$	0	0	0	$\frac{\sqrt{3}i}{28}$	0
		0	0	$\frac{\sqrt{15}i}{35}$	0	0	0	0	0	0	$-\frac{\sqrt{5}i}{140}$	0	0	0	$\frac{\sqrt{7}i}{28}$
		0	0	$-\frac{\sqrt{3}i}{28}$	0	0	0	0	0	0	$\frac{i}{14}$	0	0	0	0
		0	0	0	$-\frac{3\sqrt{15}i}{140}$	0	0	$\frac{\sqrt{7}i}{14}$	0	0	0	$\frac{2\sqrt{5}i}{35}$	0	0	0
		$\frac{\sqrt{3}i}{28}$	0	0	0	$-\frac{3\sqrt{15}i}{140}$	0	0	$\frac{\sqrt{2}i}{7}$	0	0	0	$\frac{\sqrt{6}i}{14}$	0	0
		0	$\frac{3\sqrt{15}i}{140}$	0	0	0	$-\frac{\sqrt{3}i}{28}$	0	0	$\frac{\sqrt{6}i}{14}$	0	0	0	$\frac{\sqrt{2}i}{7}$	0
		0	0	$\frac{3\sqrt{15}i}{140}$	0	0	0	0	0	0	$\frac{2\sqrt{5}i}{35}$	0	0	0	$\frac{\sqrt{7}i}{14}$
		0	0	0	$\frac{\sqrt{3}i}{28}$	0	0	0	0	0	0	$\frac{i}{14}$	0	0	0
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													
	$\mathbb{M}_4^{(a)}(A_u)$	0	$-\frac{1}{14}$	0	0	0	0	0	$-\frac{9\sqrt{10}}{140}$	0	0	0	0	0	0
		0	0	$\frac{\sqrt{6}}{14}$	0	0	0	0	0	$\frac{3\sqrt{2}}{28}$	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{6}}{14}$	0	0	0	0	0	$\frac{3\sqrt{2}}{28}$	0	0	0	0
		0	0	0	0	$\frac{1}{14}$	0	0	0	0	0	$-\frac{9\sqrt{10}}{140}$	0	0	0
		$\frac{1}{14}$	0	0	0	0	0	$-\frac{\sqrt{6}}{14}$	0	0	0	0	0	0	0
		0	$-\frac{3}{14}$	0	0	0	0	0	$\frac{2\sqrt{10}}{35}$	0	0	0	0	0	0
		0	0	$\frac{1}{7}$	0	0	0	0	0	$\frac{\sqrt{3}}{14}$	0	0	0	0	0
		0	0	0	$\frac{1}{7}$	0	0	0	0	0	$-\frac{\sqrt{3}}{14}$	0	0	0	0
		0	0	0	0	$-\frac{3}{14}$	0	0	0	0	0	$-\frac{2\sqrt{10}}{35}$	0	0	0
		0	0	0	0	0	$\frac{1}{14}$	0	0	0	0	0	$\frac{\sqrt{6}}{14}$	0	0
765	symmetry	$\frac{\sqrt{70}xz(x^2-3y^2)}{4}$													
	$\mathbb{M}_4^{(a)}(B_u, 1)$	0	0	0	0	$-\frac{\sqrt{70}}{56}$	0	0	0	0	0	$-\frac{9\sqrt{7}}{140}$	0	0	0
		0	0	0	0	0	$\frac{\sqrt{42}}{56}$	$-\frac{3}{20}$	0	0	0	0	$-\frac{3\sqrt{7}}{70}$	0	0
		$\frac{\sqrt{42}}{56}$	0	0	0	0	0	0	$\frac{3\sqrt{7}}{70}$	0	0	0	0	0	$\frac{3}{20}$
		0	$-\frac{\sqrt{70}}{56}$	0	0	0	0	0	0	$\frac{9\sqrt{7}}{140}$	0	0	0	0	0
		0	0	0	$\frac{\sqrt{7}}{14}$	0	0	0	0	0	$-\frac{\sqrt{21}}{28}$	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{7}}{20}$	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{7}}{14}$	$\frac{3\sqrt{6}}{40}$	0	0	0	0	0	$\frac{\sqrt{42}}{280}$	0
		$\frac{\sqrt{7}}{14}$	0	0	0	0	0	0	$\frac{\sqrt{42}}{280}$	0	0	0	0	0	$\frac{3\sqrt{6}}{40}$
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{7}}{20}$	0	0	0	0	0
		0	0	$-\frac{\sqrt{7}}{14}$	0	0	0	0	0	0	$-\frac{\sqrt{21}}{28}$	0	0	0	0
766	symmetry	$\frac{\sqrt{70}yz(3x^2-y^2)}{4}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{M}_4^{(a)}(B_u, 2)$	0	0	0	0	$\frac{\sqrt{70}i}{56}$	0	0	0	0	0	$\frac{9\sqrt{7}i}{140}$	0	0	
		0	0	0	0	0	$-\frac{\sqrt{42}i}{56}$	$-\frac{3i}{20}$	0	0	0	0	$\frac{3\sqrt{7}i}{70}$	0	
		$\frac{\sqrt{42}i}{56}$	0	0	0	0	0	0	$\frac{3\sqrt{7}i}{70}$	0	0	0	0	$-\frac{3i}{20}$	
		0	$-\frac{\sqrt{70}i}{56}$	0	0	0	0	0	0	$\frac{9\sqrt{7}i}{140}$	0	0	0	0	
		0	0	0	$-\frac{\sqrt{7}i}{14}$	0	0	0	0	0	$\frac{\sqrt{21}i}{28}$	0	0	0	
		0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{7}i}{20}$	0	0	
		0	0	0	0	0	$\frac{\sqrt{7}i}{14}$	$\frac{3\sqrt{6}i}{40}$	0	0	0	0	$-\frac{\sqrt{42}i}{280}$	0	
		$\frac{\sqrt{7}i}{14}$	0	0	0	0	0	0	$\frac{\sqrt{42}i}{280}$	0	0	0	0	$-\frac{3\sqrt{6}i}{40}$	
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{7}i}{20}$	0	0	0	0	
		0	0	$-\frac{\sqrt{7}i}{14}$	0	0	0	0	0	$-\frac{\sqrt{21}i}{28}$	0	0	0	0	
767	symmetry	$-\frac{\sqrt{10}yz(3x^2+3y^2-4z^2)}{4}$													
	$\mathbb{M}_{4,1}^{(a)}(E_{1u})$	$\frac{\sqrt{2}i}{56}$	0	$\frac{\sqrt{5}i}{28}$	0	0	0	0	$\frac{9\sqrt{3}i}{140}$	0	$\frac{3\sqrt{15}i}{70}$	0	0	0	
		0	$-\frac{\sqrt{30}i}{56}$	0	$-\frac{\sqrt{15}i}{28}$	0	0	0	0	$-\frac{3\sqrt{3}i}{35}$	0	$-\frac{3\sqrt{5}i}{140}$	0	0	
		0	0	$\frac{\sqrt{15}i}{28}$	0	$\frac{\sqrt{30}i}{56}$	0	0	0	0	$-\frac{3\sqrt{5}i}{140}$	0	$-\frac{3\sqrt{3}i}{35}$	0	
		0	0	0	$-\frac{\sqrt{5}i}{28}$	0	$-\frac{\sqrt{2}i}{56}$	0	0	0	0	$\frac{3\sqrt{15}i}{70}$	0	$\frac{9\sqrt{3}i}{140}$	
		0	$-\frac{\sqrt{2}i}{14}$	0	0	0	0	$\frac{\sqrt{105}i}{140}$	0	$\frac{\sqrt{5}i}{14}$	0	0	0	0	
		$\frac{\sqrt{2}i}{14}$	0	$\frac{\sqrt{5}i}{14}$	0	0	0	0	$-\frac{13\sqrt{3}i}{140}$	0	$-\frac{\sqrt{15}i}{70}$	0	0	0	
		0	$-\frac{\sqrt{5}i}{14}$	0	0	0	0	0	0	$\frac{\sqrt{2}i}{280}$	0	$-\frac{\sqrt{30}i}{40}$	0	0	
		0	0	0	0	$-\frac{\sqrt{5}i}{14}$	0	0	0	0	$\frac{\sqrt{30}i}{40}$	0	$-\frac{\sqrt{2}i}{280}$	0	
		0	0	0	$\frac{\sqrt{5}i}{14}$	0	$\frac{\sqrt{2}i}{14}$	0	0	0	0	$\frac{\sqrt{15}i}{70}$	0	$\frac{13\sqrt{3}i}{140}$	
		0	0	0	0	$-\frac{\sqrt{2}i}{14}$	0	0	0	0	0	0	$-\frac{\sqrt{5}i}{14}$	$-\frac{\sqrt{105}i}{140}$	
768	symmetry	$\frac{\sqrt{10}xz(3x^2+3y^2-4z^2)}{4}$													

continued ...



Table 9

No.	multipole	matrix													
	$\mathbb{M}_{4,2}^{(a)}(E_{1u})$	$-\frac{\sqrt{2}}{56}$	0	$\frac{\sqrt{5}}{28}$	0	0	0	0	$-\frac{9\sqrt{3}}{140}$	0	$\frac{3\sqrt{15}}{70}$	0	0	0	0
		0	$\frac{\sqrt{30}}{56}$	0	$-\frac{\sqrt{15}}{28}$	0	0	0	0	$\frac{3\sqrt{3}}{35}$	0	$-\frac{3\sqrt{5}}{140}$	0	0	0
		0	0	$-\frac{\sqrt{15}}{28}$	0	$\frac{\sqrt{30}}{56}$	0	0	0	0	$\frac{3\sqrt{5}}{140}$	0	$-\frac{3\sqrt{3}}{35}$	0	0
		0	0	0	$\frac{\sqrt{5}}{28}$	0	$-\frac{\sqrt{2}}{56}$	0	0	0	0	$-\frac{3\sqrt{15}}{70}$	0	$\frac{9\sqrt{3}}{140}$	0
		0	$-\frac{\sqrt{2}}{14}$	0	0	0	0	$-\frac{\sqrt{105}}{140}$	0	$\frac{\sqrt{5}}{14}$	0	0	0	0	0
		$-\frac{\sqrt{2}}{14}$	0	$\frac{\sqrt{5}}{14}$	0	0	0	0	$\frac{13\sqrt{3}}{140}$	0	$-\frac{\sqrt{15}}{70}$	0	0	0	0
		0	$\frac{\sqrt{5}}{14}$	0	0	0	0	0	$-\frac{\sqrt{2}}{280}$	0	$-\frac{\sqrt{30}}{40}$	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{5}}{14}$	0	0	0	$-\frac{\sqrt{30}}{40}$	0	$-\frac{\sqrt{2}}{280}$	0	0	0
		0	0	0	$-\frac{\sqrt{5}}{14}$	0	$\frac{\sqrt{2}}{14}$	0	0	0	0	$-\frac{\sqrt{15}}{70}$	0	$\frac{13\sqrt{3}}{140}$	0
		0	0	0	0	$\frac{\sqrt{2}}{14}$	0	0	0	0	0	0	$\frac{\sqrt{5}}{14}$	0	$-\frac{\sqrt{105}}{140}$
769	symmetry	$\frac{\sqrt{35}(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$													
	$\mathbb{M}_{4,1}^{(a)}(E_{2u}, 1)$	0	0	0	0	0	$-\frac{\sqrt{7}}{14}$	0	0	0	0	0	$-\frac{3\sqrt{42}}{140}$	0	
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{3\sqrt{2}}{20}$	
		0	0	0	0	0	0	$-\frac{3\sqrt{2}}{20}$	0	0	0	0	0	0	
		$\frac{\sqrt{7}}{14}$	0	0	0	0	0	0	$-\frac{3\sqrt{42}}{140}$	0	0	0	0	0	
		0	0	0	0	$\frac{\sqrt{7}}{14}$	0	0	0	0	0	$-\frac{\sqrt{70}}{70}$	0	0	
		0	0	0	0	0	$\frac{\sqrt{7}}{14}$	0	0	0	0	0	$-\frac{\sqrt{42}}{35}$	0	
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{3}}{10}$	
		0	0	0	0	0	0	$\frac{\sqrt{3}}{10}$	0	0	0	0	0	0	
		$\frac{\sqrt{7}}{14}$	0	0	0	0	0	0	$\frac{\sqrt{42}}{35}$	0	0	0	0	0	
		0	$\frac{\sqrt{7}}{14}$	0	0	0	0	0	0	$\frac{\sqrt{70}}{70}$	0	0	0	0	
770	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{M}_{4,2}^{(a)}(E_{2u}, 1)$	0	0	0	0	0	$\frac{\sqrt{7}i}{14}$	0	0	0	0	0	0	$\frac{3\sqrt{42}i}{140}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{3\sqrt{2}i}{20}$
		0	0	0	0	0	0	$-\frac{3\sqrt{2}i}{20}$	0	0	0	0	0	0	0
		$\frac{\sqrt{7}i}{14}$	0	0	0	0	0	0	$-\frac{3\sqrt{42}i}{140}$	0	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{7}i}{14}$	0	0	0	0	0	0	$\frac{\sqrt{70}i}{70}$	0	0
		0	0	0	0	0	$-\frac{\sqrt{7}i}{14}$	0	0	0	0	0	0	$\frac{\sqrt{42}i}{35}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{3}i}{10}$
		0	0	0	0	0	0	$\frac{\sqrt{3}i}{10}$	0	0	0	0	0	0	0
		$\frac{\sqrt{7}i}{14}$	0	0	0	0	0	0	$\frac{\sqrt{42}i}{35}$	0	0	0	0	0	0
		0	$\frac{\sqrt{7}i}{14}$	0	0	0	0	0	0	$\frac{\sqrt{70}i}{70}$	0	0	0	0	0
771	symmetry	$-\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$													
	$\mathbb{M}_{4,1}^{(a)}(E_{2u}, 2)$	0	0	0	$-\frac{\sqrt{10}}{28}$	0	0	$-\frac{3\sqrt{42}}{280}$	0	0	0	$-\frac{9\sqrt{30}}{280}$	0	0	0
		$\frac{\sqrt{3}}{28}$	0	0	0	$\frac{\sqrt{15}}{28}$	0	0	$\frac{33\sqrt{2}}{280}$	0	0	0	$-\frac{3\sqrt{6}}{280}$	0	0
		0	$-\frac{\sqrt{15}}{28}$	0	0	0	$-\frac{\sqrt{3}}{28}$	0	0	$-\frac{3\sqrt{6}}{280}$	0	0	0	$\frac{33\sqrt{2}}{280}$	0
		0	0	$\frac{\sqrt{10}}{28}$	0	0	0	0	0	$-\frac{9\sqrt{30}}{280}$	0	0	0	0	$-\frac{3\sqrt{42}}{280}$
		0	0	$\frac{3\sqrt{2}}{28}$	0	0	0	0	0	$-\frac{\sqrt{6}}{14}$	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{10}}{28}$	0	0	$\frac{3\sqrt{42}}{140}$	0	0	0	$-\frac{\sqrt{30}}{140}$	0	0	0
		$\frac{3\sqrt{2}}{28}$	0	0	0	$-\frac{\sqrt{10}}{28}$	0	0	$-\frac{9\sqrt{3}}{140}$	0	0	0	$\frac{17}{140}$	0	0
		0	$-\frac{\sqrt{10}}{28}$	0	0	0	$\frac{3\sqrt{2}}{28}$	0	0	$-\frac{17}{140}$	0	0	0	$\frac{9\sqrt{3}}{140}$	0
		0	0	$-\frac{\sqrt{10}}{28}$	0	0	0	0	0	0	$\frac{\sqrt{30}}{140}$	0	0	0	$-\frac{3\sqrt{42}}{140}$
		0	0	0	$\frac{3\sqrt{2}}{28}$	0	0	0	0	0	0	$\frac{\sqrt{6}}{14}$	0	0	0
772	symmetry	$\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$M_{4,2}^{(a)}(E_{2u}, 2)$	0	0	0	$-\frac{\sqrt{10}i}{28}$	0	0	$\frac{3\sqrt{42}i}{280}$	0	0	0	$-\frac{9\sqrt{30}i}{280}$	0	0	0
		$-\frac{\sqrt{3}i}{28}$	0	0	0	$\frac{\sqrt{15}i}{28}$	0	0	$-\frac{33\sqrt{2}i}{280}$	0	0	0	$-\frac{3\sqrt{6}i}{280}$	0	0
		0	$\frac{\sqrt{15}i}{28}$	0	0	0	$-\frac{\sqrt{3}i}{28}$	0	0	$\frac{3\sqrt{6}i}{280}$	0	0	0	$\frac{33\sqrt{2}i}{280}$	0
		0	0	$-\frac{\sqrt{10}i}{28}$	0	0	0	0	0	0	$\frac{9\sqrt{30}i}{280}$	0	0	0	$-\frac{3\sqrt{42}i}{280}$
		0	0	$\frac{3\sqrt{2}i}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{6}i}{14}$	0	0	0	0
		0	0	0	$-\frac{\sqrt{10}i}{28}$	0	0	$-\frac{3\sqrt{42}i}{140}$	0	0	0	$-\frac{\sqrt{30}i}{140}$	0	0	0
		$-\frac{3\sqrt{2}i}{28}$	0	0	0	$-\frac{\sqrt{10}i}{28}$	0	0	$\frac{9\sqrt{3}i}{140}$	0	0	0	$\frac{17i}{140}$	0	0
		0	$\frac{\sqrt{10}i}{28}$	0	0	0	$\frac{3\sqrt{2}i}{28}$	0	0	$\frac{17i}{140}$	0	0	0	$\frac{9\sqrt{3}i}{140}$	0
		0	0	$\frac{\sqrt{10}i}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{30}i}{140}$	0	0	0	$-\frac{3\sqrt{42}i}{140}$
		0	0	0	$-\frac{3\sqrt{2}i}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{6}i}{14}$	0	0	0
773	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$													
	$M_2^{(1,-1;a)}(A_u)$	0	$-\frac{3\sqrt{6}}{70}$	0	0	0	0	0	$-\frac{2\sqrt{15}}{35}$	0	0	0	0	0	0
		0	0	$-\frac{3}{70}$	0	0	0	0	0	$-\frac{6\sqrt{3}}{35}$	0	0	0	0	0
		0	0	0	$\frac{3}{70}$	0	0	0	0	0	$-\frac{6\sqrt{3}}{35}$	0	0	0	0
		0	0	0	0	$\frac{3\sqrt{6}}{70}$	0	0	0	0	0	$-\frac{2\sqrt{15}}{35}$	0	0	0
		$\frac{\sqrt{6}}{21}$	0	0	0	0	0	0	$\frac{3}{14}$	0	0	0	0	0	0
		0	$-\frac{\sqrt{6}}{105}$	0	0	0	0	0	$\frac{3\sqrt{15}}{70}$	0	0	0	0	0	0
		0	0	$-\frac{4\sqrt{6}}{105}$	0	0	0	0	0	$\frac{3\sqrt{2}}{70}$	0	0	0	0	0
		0	0	0	$-\frac{4\sqrt{6}}{105}$	0	0	0	0	0	$-\frac{3\sqrt{2}}{70}$	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{6}}{105}$	0	0	0	0	0	$-\frac{3\sqrt{15}}{70}$	0	0	0
		0	0	0	0	0	$\frac{\sqrt{6}}{21}$	0	0	0	0	0	0	$-\frac{3}{14}$	0
774	symmetry	$\sqrt{3}yz$													

continued ...

Table 9

No.	multipole	matrix													
	$M_{2,1}^{(1,-1;a)}(E_{1u})$	$\frac{3\sqrt{10}i}{140}$	0	$\frac{9i}{140}$	0	0	0	0	$\frac{2\sqrt{15}i}{35}$	0	$\frac{2\sqrt{3}i}{35}$	0	0	0	0
		0	$-\frac{\sqrt{6}i}{140}$	0	$\frac{\sqrt{3}i}{28}$	0	0	0	0	$\frac{2\sqrt{15}i}{35}$	0	$\frac{6i}{35}$	0	0	0
		0	0	$-\frac{\sqrt{3}i}{28}$	0	$\frac{\sqrt{6}i}{140}$	0	0	0	0	$\frac{6i}{35}$	0	$\frac{2\sqrt{15}i}{35}$	0	0
		0	0	0	$-\frac{9i}{140}$	0	$-\frac{3\sqrt{10}i}{140}$	0	0	0	0	$\frac{2\sqrt{3}i}{35}$	0	$\frac{2\sqrt{15}i}{35}$	0
		0	$-\frac{\sqrt{10}i}{35}$	0	0	0	0	$-\frac{\sqrt{21}i}{28}$	0	$-\frac{3i}{28}$	0	0	0	0	0
		$\frac{\sqrt{10}i}{35}$	0	$-\frac{2i}{35}$	0	0	0	0	$-\frac{\sqrt{15}i}{140}$	0	$-\frac{11\sqrt{3}i}{140}$	0	0	0	0
		0	$\frac{2i}{35}$	0	0	0	0	0	0	$\frac{3\sqrt{10}i}{140}$	0	$-\frac{\sqrt{6}i}{20}$	0	0	0
		0	0	0	0	$\frac{2i}{35}$	0	0	0	0	$\frac{\sqrt{6}i}{20}$	0	$-\frac{3\sqrt{10}i}{140}$	0	0
		0	0	0	$-\frac{2i}{35}$	0	$\frac{\sqrt{10}i}{35}$	0	0	0	0	$\frac{11\sqrt{3}i}{140}$	0	$\frac{\sqrt{15}i}{140}$	0
		0	0	0	0	$-\frac{\sqrt{10}i}{35}$	0	0	0	0	0	0	$\frac{3i}{28}$	0	$\frac{\sqrt{21}i}{28}$
775	symmetry	$-\sqrt{3}xz$													
	$M_{2,2}^{(1,-1;a)}(E_{1u})$	$-\frac{3\sqrt{10}}{140}$	0	$\frac{9}{140}$	0	0	0	0	$-\frac{2\sqrt{15}}{35}$	0	$\frac{2\sqrt{3}}{35}$	0	0	0	0
		0	$\frac{\sqrt{6}}{140}$	0	$\frac{\sqrt{3}}{28}$	0	0	0	0	$-\frac{2\sqrt{15}}{35}$	0	$\frac{6}{35}$	0	0	0
		0	0	$\frac{\sqrt{3}}{28}$	0	$\frac{\sqrt{6}}{140}$	0	0	0	0	$-\frac{6}{35}$	0	$\frac{2\sqrt{15}}{35}$	0	0
		0	0	0	$\frac{9}{140}$	0	$-\frac{3\sqrt{10}}{140}$	0	0	0	0	$-\frac{2\sqrt{3}}{35}$	0	$\frac{2\sqrt{15}}{35}$	0
		0	$-\frac{\sqrt{10}}{35}$	0	0	0	0	$\frac{\sqrt{21}}{28}$	0	$-\frac{3}{28}$	0	0	0	0	0
		$-\frac{\sqrt{10}}{35}$	0	$-\frac{2}{35}$	0	0	0	0	$\frac{\sqrt{15}}{140}$	0	$-\frac{11\sqrt{3}}{140}$	0	0	0	0
		0	$-\frac{2}{35}$	0	0	0	0	0	0	$-\frac{3\sqrt{10}}{140}$	0	$-\frac{\sqrt{6}}{20}$	0	0	0
		0	0	0	0	$\frac{2}{35}$	0	0	0	0	$-\frac{\sqrt{6}}{20}$	0	$-\frac{3\sqrt{10}}{140}$	0	0
		0	0	0	$\frac{2}{35}$	0	$\frac{\sqrt{10}}{35}$	0	0	0	0	$-\frac{11\sqrt{3}}{140}$	0	$\frac{\sqrt{15}}{140}$	0
		0	0	0	0	$\frac{\sqrt{10}}{35}$	0	0	0	0	0	0	$-\frac{3}{28}$	0	$\frac{\sqrt{21}}{28}$
776	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$M_{2,1}^{(1,-1;a)}(E_{2u})$	0	0	0	$-\frac{3}{70}$	0	0	$-\frac{\sqrt{105}}{35}$	0	0	0	$-\frac{\sqrt{3}}{35}$	0	0	0
		$\frac{\sqrt{30}}{70}$	0	0	0	$-\frac{\sqrt{6}}{35}$	0	0	$-\frac{3\sqrt{5}}{35}$	0	0	0	$-\frac{\sqrt{15}}{35}$	0	0
		0	$\frac{\sqrt{6}}{35}$	0	0	0	$-\frac{\sqrt{30}}{70}$	0	0	$-\frac{\sqrt{15}}{35}$	0	0	0	$-\frac{3\sqrt{5}}{35}$	0
		0	0	$\frac{3}{70}$	0	0	0	0	0	0	$-\frac{\sqrt{3}}{35}$	0	0	0	$-\frac{\sqrt{105}}{35}$
		0	0	$\frac{\sqrt{5}}{35}$	0	0	0	0	0	0	$\frac{\sqrt{15}}{70}$	0	0	0	0
		0	0	0	$\frac{3}{35}$	0	0	$-\frac{\sqrt{105}}{70}$	0	0	0	$\frac{2\sqrt{3}}{35}$	0	0	0
		$\frac{\sqrt{5}}{35}$	0	0	0	$\frac{3}{35}$	0	0	$-\frac{\sqrt{30}}{35}$	0	0	0	$\frac{3\sqrt{10}}{70}$	0	0
		0	$\frac{3}{35}$	0	0	0	$\frac{\sqrt{5}}{35}$	0	0	$-\frac{3\sqrt{10}}{70}$	0	0	0	$\frac{\sqrt{30}}{35}$	0
		0	0	$\frac{3}{35}$	0	0	0	0	0	0	$-\frac{2\sqrt{3}}{35}$	0	0	0	$\frac{\sqrt{105}}{70}$
		0	0	0	$\frac{\sqrt{5}}{35}$	0	0	0	0	0	0	$-\frac{\sqrt{15}}{70}$	0	0	0
777	symmetry	$-\sqrt{3}xy$													
	$M_{2,2}^{(1,-1;a)}(E_{2u})$	0	0	0	$-\frac{3i}{70}$	0	0	$\frac{\sqrt{105}i}{35}$	0	0	0	$-\frac{\sqrt{3}i}{35}$	0	0	0
		$-\frac{\sqrt{30}i}{70}$	0	0	0	$-\frac{\sqrt{6}i}{35}$	0	0	$\frac{3\sqrt{5}i}{35}$	0	0	0	$-\frac{\sqrt{15}i}{35}$	0	0
		0	$-\frac{\sqrt{6}i}{35}$	0	0	0	$-\frac{\sqrt{30}i}{70}$	0	0	$\frac{\sqrt{15}i}{35}$	0	0	0	$-\frac{3\sqrt{5}i}{35}$	0
		0	0	$-\frac{3i}{70}$	0	0	0	0	0	0	$\frac{\sqrt{3}i}{35}$	0	0	0	$-\frac{\sqrt{105}i}{35}$
		0	0	$\frac{\sqrt{5}i}{35}$	0	0	0	0	0	0	$\frac{\sqrt{15}i}{70}$	0	0	0	0
		0	0	0	$\frac{3i}{35}$	0	0	$\frac{\sqrt{105}i}{70}$	0	0	0	$\frac{2\sqrt{3}i}{35}$	0	0	0
		$-\frac{\sqrt{5}i}{35}$	0	0	0	$\frac{3i}{35}$	0	0	$\frac{\sqrt{30}i}{35}$	0	0	0	$\frac{3\sqrt{10}i}{70}$	0	0
		0	$-\frac{3i}{35}$	0	0	0	$\frac{\sqrt{5}i}{35}$	0	0	$\frac{3\sqrt{10}i}{70}$	0	0	0	$\frac{\sqrt{30}i}{35}$	0
		0	0	$-\frac{3i}{35}$	0	0	0	0	0	0	$\frac{2\sqrt{3}i}{35}$	0	0	0	$\frac{\sqrt{105}i}{70}$
		0	0	0	$-\frac{\sqrt{5}i}{35}$	0	0	0	0	0	0	$\frac{\sqrt{15}i}{70}$	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														
	$\mathbb{M}_4^{(1,-1;a)}(A_u)$	0	$\frac{\sqrt{3}}{84}$	0	0	0	0	0	0	$\frac{\sqrt{30}}{28}$	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{2}}{28}$	0	0	0	0	0	0	$-\frac{5\sqrt{6}}{84}$	0	0	0	0	0
		0	0	0	$\frac{\sqrt{2}}{28}$	0	0	0	0	0	0	$-\frac{5\sqrt{6}}{84}$	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{3}}{84}$	0	0	0	0	0	0	$\frac{\sqrt{30}}{28}$	0	0	0
		$-\frac{\sqrt{3}}{42}$	0	0	0	0	0	0	$-\frac{5\sqrt{2}}{28}$	0	0	0	0	0	0	0
		0	$\frac{\sqrt{3}}{14}$	0	0	0	0	0	0	$\frac{\sqrt{30}}{21}$	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{3}}{21}$	0	0	0	0	0	0	$\frac{5}{28}$	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{3}}{21}$	0	0	0	0	0	0	$-\frac{5}{28}$	0	0	0	0
		0	0	0	0	$\frac{\sqrt{3}}{14}$	0	0	0	0	0	0	$-\frac{\sqrt{30}}{21}$	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{3}}{42}$	0	0	0	0	0	0	$\frac{5\sqrt{2}}{28}$	0	0
779	symmetry	$\frac{\sqrt{70}xz(x^2-3y^2)}{4}$														
	$\mathbb{M}_4^{(1,-1;a)}(B_u, 1)$	0	0	0	0	$\frac{\sqrt{210}}{336}$	0	0	0	0	0	0	$\frac{\sqrt{21}}{28}$	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{14}}{112}$	$\frac{\sqrt{3}}{12}$	0	0	0	0	0	$\frac{\sqrt{21}}{42}$	0	0
		$-\frac{\sqrt{14}}{112}$	0	0	0	0	0	0	$-\frac{\sqrt{21}}{42}$	0	0	0	0	0	$-\frac{\sqrt{3}}{12}$	0
		0	$\frac{\sqrt{210}}{336}$	0	0	0	0	0	0	$-\frac{\sqrt{21}}{28}$	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{21}}{42}$	0	0	0	0	0	0	$-\frac{5\sqrt{7}}{56}$	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{21}}{24}$	0	0	0
		0	0	0	0	0	$\frac{\sqrt{21}}{42}$	$\frac{3\sqrt{2}}{16}$	0	0	0	0	0	$\frac{\sqrt{14}}{112}$	0	0
		$-\frac{\sqrt{21}}{42}$	0	0	0	0	0	0	$\frac{\sqrt{14}}{112}$	0	0	0	0	0	$\frac{3\sqrt{2}}{16}$	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{21}}{24}$	0	0	0	0	0	0
		0	0	$\frac{\sqrt{21}}{42}$	0	0	0	0	0	0	$-\frac{5\sqrt{7}}{56}$	0	0	0	0	0
780	symmetry	$\frac{\sqrt{70}yz(3x^2-y^2)}{4}$														

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{M}_4^{(1,-1;a)}(B_u, 2)$	0	0	0	0	$-\frac{\sqrt{210}i}{336}$	0	0	0	0	0	0	$-\frac{\sqrt{21}i}{28}$	0	0
		0	0	0	0	0	$\frac{\sqrt{14}i}{112}$	$\frac{\sqrt{3}i}{12}$	0	0	0	0	0	$-\frac{\sqrt{21}i}{42}$	0
		$-\frac{\sqrt{14}i}{112}$	0	0	0	0	0	0	$-\frac{\sqrt{21}i}{42}$	0	0	0	0	0	$\frac{\sqrt{3}i}{12}$
		0	$\frac{\sqrt{210}i}{336}$	0	0	0	0	0	0	$-\frac{\sqrt{21}i}{28}$	0	0	0	0	0
		0	0	0	$\frac{\sqrt{21}i}{42}$	0	0	0	0	0	0	$\frac{5\sqrt{7}i}{56}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{21}i}{24}$	0	0
		0	0	0	0	0	$-\frac{\sqrt{21}i}{42}$	$\frac{3\sqrt{2}i}{16}$	0	0	0	0	0	$-\frac{\sqrt{14}i}{112}$	0
		$-\frac{\sqrt{21}i}{42}$	0	0	0	0	0	0	$\frac{\sqrt{14}i}{112}$	0	0	0	0	0	$-\frac{3\sqrt{2}i}{16}$
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{21}i}{24}$	0	0	0	0	0
		0	0	$\frac{\sqrt{21}i}{42}$	0	0	0	0	0	$-\frac{5\sqrt{7}i}{56}$	0	0	0	0	0
781	symmetry	$-\frac{\sqrt{10}yz(3x^2+3y^2-4z^2)}{4}$													
	$\mathbb{M}_{4,1}^{(1,-1;a)}(E_{1u})$	$-\frac{\sqrt{6}i}{336}$	0	$-\frac{\sqrt{15}i}{168}$	0	0	0	0	$-\frac{3i}{28}$	0	$-\frac{\sqrt{5}i}{14}$	0	0	0	0
		0	$\frac{\sqrt{10}i}{112}$	0	$\frac{\sqrt{5}i}{56}$	0	0	0	0	$\frac{i}{7}$	0	$\frac{\sqrt{15}i}{84}$	0	0	0
		0	0	$-\frac{\sqrt{5}i}{56}$	0	$-\frac{\sqrt{10}i}{112}$	0	0	0	0	$\frac{\sqrt{15}i}{84}$	0	$\frac{i}{7}$	0	0
		0	0	0	$\frac{\sqrt{15}i}{168}$	0	$\frac{\sqrt{6}i}{336}$	0	0	0	0	$-\frac{\sqrt{5}i}{14}$	0	$-\frac{3i}{28}$	0
		0	$\frac{\sqrt{6}i}{42}$	0	0	0	0	$\frac{\sqrt{35}i}{56}$	0	$\frac{5\sqrt{15}i}{84}$	0	0	0	0	0
		$-\frac{\sqrt{6}i}{42}$	0	$-\frac{\sqrt{15}i}{42}$	0	0	0	0	$-\frac{13i}{56}$	0	$-\frac{\sqrt{5}i}{28}$	0	0	0	0
		0	$\frac{\sqrt{15}i}{42}$	0	0	0	0	0	0	$\frac{\sqrt{6}i}{336}$	0	$-\frac{\sqrt{10}i}{16}$	0	0	0
		0	0	0	0	$\frac{\sqrt{15}i}{42}$	0	0	0	0	$\frac{\sqrt{10}i}{16}$	0	$-\frac{\sqrt{6}i}{336}$	0	0
		0	0	0	$-\frac{\sqrt{15}i}{42}$	0	$-\frac{\sqrt{6}i}{42}$	0	0	0	0	$\frac{\sqrt{5}i}{28}$	0	$\frac{13i}{56}$	0
		0	0	0	0	$\frac{\sqrt{6}i}{42}$	0	0	0	0	0	0	$-\frac{5\sqrt{15}i}{84}$	0	$-\frac{\sqrt{35}i}{56}$
782	symmetry	$\frac{\sqrt{10}xz(3x^2+3y^2-4z^2)}{4}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{M}_{4,2}^{(1,-1;a)}(E_{1u})$	$\frac{\sqrt{6}}{336}$	0	$-\frac{\sqrt{15}}{168}$	0	0	0	0	$\frac{3}{28}$	0	$-\frac{\sqrt{5}}{14}$	0	0	0	0
		0	$-\frac{\sqrt{10}}{112}$	0	$\frac{\sqrt{5}}{56}$	0	0	0	0	$-\frac{1}{7}$	0	$\frac{\sqrt{15}}{84}$	0	0	0
		0	0	$\frac{\sqrt{5}}{56}$	0	$-\frac{\sqrt{10}}{112}$	0	0	0	0	$-\frac{\sqrt{15}}{84}$	0	$\frac{1}{7}$	0	0
		0	0	0	$-\frac{\sqrt{15}}{168}$	0	$\frac{\sqrt{6}}{336}$	0	0	0	0	$\frac{\sqrt{5}}{14}$	0	$-\frac{3}{28}$	0
		0	$\frac{\sqrt{6}}{42}$	0	0	0	0	$-\frac{\sqrt{35}}{56}$	0	$\frac{5\sqrt{15}}{84}$	0	0	0	0	0
		$\frac{\sqrt{6}}{42}$	0	$-\frac{\sqrt{15}}{42}$	0	0	0	0	$\frac{13}{56}$	0	$-\frac{\sqrt{5}}{28}$	0	0	0	0
		0	$-\frac{\sqrt{15}}{42}$	0	0	0	0	0	0	$-\frac{\sqrt{6}}{336}$	0	$-\frac{\sqrt{10}}{16}$	0	0	0
		0	0	0	0	$\frac{\sqrt{15}}{42}$	0	0	0	0	$-\frac{\sqrt{10}}{16}$	0	$-\frac{\sqrt{6}}{336}$	0	0
		0	0	0	$\frac{\sqrt{15}}{42}$	0	$-\frac{\sqrt{6}}{42}$	0	0	0	0	$-\frac{\sqrt{5}}{28}$	0	$\frac{13}{56}$	0
		0	0	0	0	$-\frac{\sqrt{6}}{42}$	0	0	0	0	0	0	$\frac{5\sqrt{15}}{84}$	0	$-\frac{\sqrt{35}}{56}$
783	symmetry	$\frac{\sqrt{35}(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$													
	$\mathbb{M}_{4,1}^{(1,-1;a)}(E_{2u},1)$	0	0	0	0	0	$\frac{\sqrt{21}}{84}$	0	0	0	0	0	$\frac{\sqrt{14}}{28}$	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{6}}{12}$	0
		0	0	0	0	0	0	$\frac{\sqrt{6}}{12}$	0	0	0	0	0	0	0
		$-\frac{\sqrt{21}}{84}$	0	0	0	0	0	0	$\frac{\sqrt{14}}{28}$	0	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{21}}{42}$	0	0	0	0	0	0	$-\frac{\sqrt{210}}{84}$	0	0
		0	0	0	0	0	$-\frac{\sqrt{21}}{42}$	0	0	0	0	0	0	$-\frac{\sqrt{14}}{14}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{1}{4}$
		0	0	0	0	0	0	$\frac{1}{4}$	0	0	0	0	0	0	0
		$-\frac{\sqrt{21}}{42}$	0	0	0	0	0	0	$\frac{\sqrt{14}}{14}$	0	0	0	0	0	0
		0	$-\frac{\sqrt{21}}{42}$	0	0	0	0	0	0	$\frac{\sqrt{210}}{84}$	0	0	0	0	0
784	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$													

continued ...



Table 9

No.	multipole	matrix													
	$\mathbb{M}_{4,2}^{(1,-1;a)}(E_{2u}, 1)$	0	0	0	0	0	$-\frac{\sqrt{21}i}{84}$	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	$-\frac{\sqrt{6}i}{12}$
		0	0	0	0	0	0	$\frac{\sqrt{6}i}{12}$	0	0	0	0	0	0	0
		$-\frac{\sqrt{21}i}{84}$	0	0	0	0	0	0	$\frac{\sqrt{14}i}{28}$	0	0	0	0	0	0
		0	0	0	0	$\frac{\sqrt{21}i}{42}$	0	0	0	0	0	0	$\frac{\sqrt{210}i}{84}$	0	0
		0	0	0	0	0	$\frac{\sqrt{21}i}{42}$	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	$\frac{i}{4}$
		0	0	0	0	0	0	$\frac{i}{4}$	0	0	0	0	0	0	0
		$-\frac{\sqrt{21}i}{42}$	0	0	0	0	0	0	$\frac{\sqrt{14}i}{14}$	0	0	0	0	0	0
		0	$-\frac{\sqrt{21}i}{42}$	0	0	0	0	0	0	$\frac{\sqrt{210}i}{84}$	0	0	0	0	0
785	symmetry	$-\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$													
	$\mathbb{M}_{4,1}^{(1,-1;a)}(E_{2u}, 2)$	0	0	0	$\frac{\sqrt{30}}{168}$	0	0	$\frac{\sqrt{14}}{56}$	0	0	0	$\frac{3\sqrt{10}}{56}$	0	0	0
		$-\frac{1}{56}$	0	0	0	$-\frac{\sqrt{5}}{56}$	0	0	$-\frac{11\sqrt{6}}{168}$	0	0	0	$\frac{\sqrt{2}}{56}$	0	0
		0	$\frac{\sqrt{5}}{56}$	0	0	0	$\frac{1}{56}$	0	0	$\frac{\sqrt{2}}{56}$	0	0	0	$-\frac{11\sqrt{6}}{168}$	0
		0	0	$-\frac{\sqrt{30}}{168}$	0	0	0	0	0	0	$\frac{3\sqrt{10}}{56}$	0	0	0	$\frac{\sqrt{14}}{56}$
		0	0	$-\frac{\sqrt{6}}{28}$	0	0	0	0	0	0	$-\frac{5\sqrt{2}}{28}$	0	0	0	0
		0	0	0	$\frac{\sqrt{30}}{84}$	0	0	$\frac{3\sqrt{14}}{56}$	0	0	0	$-\frac{\sqrt{10}}{56}$	0	0	0
		$-\frac{\sqrt{6}}{28}$	0	0	0	$\frac{\sqrt{30}}{84}$	0	0	$-\frac{9}{56}$	0	0	0	$\frac{17\sqrt{3}}{168}$	0	0
		0	$\frac{\sqrt{30}}{84}$	0	0	0	$-\frac{\sqrt{6}}{28}$	0	0	$-\frac{17\sqrt{3}}{168}$	0	0	0	$\frac{9}{56}$	0
		0	0	$\frac{\sqrt{30}}{84}$	0	0	0	0	0	0	$\frac{\sqrt{10}}{56}$	0	0	0	$-\frac{3\sqrt{14}}{56}$
		0	0	0	$-\frac{\sqrt{6}}{28}$	0	0	0	0	0	0	$\frac{5\sqrt{2}}{28}$	0	0	0
786	symmetry	$\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{M}_{4,2}^{(1,-1;a)}(E_{2u}, 2)$	0	0	0	$\frac{\sqrt{30}i}{168}$	0	0	$-\frac{\sqrt{14}i}{56}$	0	0	0	$\frac{3\sqrt{10}i}{56}$	0	0	0
		$\frac{i}{56}$	0	0	0	$-\frac{\sqrt{5}i}{56}$	0	0	$\frac{11\sqrt{6}i}{168}$	0	0	0	$\frac{\sqrt{2}i}{56}$	0	0
		0	$-\frac{\sqrt{5}i}{56}$	0	0	0	$\frac{i}{56}$	0	0	$-\frac{\sqrt{2}i}{56}$	0	0	0	$-\frac{11\sqrt{6}i}{168}$	0
		0	0	$\frac{\sqrt{30}i}{168}$	0	0	0	0	0	$-\frac{3\sqrt{10}i}{56}$	0	0	0	$\frac{\sqrt{14}i}{56}$	
		0	0	$-\frac{\sqrt{6}i}{28}$	0	0	0	0	0	$-\frac{5\sqrt{2}i}{28}$	0	0	0	0	
		0	0	0	$\frac{\sqrt{30}i}{84}$	0	0	$-\frac{3\sqrt{14}i}{56}$	0	0	0	$-\frac{\sqrt{10}i}{56}$	0	0	0
		$\frac{\sqrt{6}i}{28}$	0	0	0	$\frac{\sqrt{30}i}{84}$	0	0	$\frac{9i}{56}$	0	0	0	$\frac{17\sqrt{3}i}{168}$	0	0
		0	$-\frac{\sqrt{30}i}{84}$	0	0	0	$-\frac{\sqrt{6}i}{28}$	0	0	$\frac{17\sqrt{3}i}{168}$	0	0	0	$\frac{9i}{56}$	0
		0	0	$-\frac{\sqrt{30}i}{84}$	0	0	0	0	0	$-\frac{\sqrt{10}i}{56}$	0	0	0	$-\frac{3\sqrt{14}i}{56}$	
		0	0	0	$\frac{\sqrt{6}i}{28}$	0	0	0	0	0	$-\frac{5\sqrt{2}i}{28}$	0	0	0	
787	symmetry	$-\frac{5x^6}{16} - \frac{15x^4y^2}{16} + \frac{45x^4z^2}{8} - \frac{15x^2y^4}{16} + \frac{45x^2y^2z^2}{4} - \frac{15x^2z^4}{2} - \frac{5y^6}{16} + \frac{45y^4z^2}{8} - \frac{15y^2z^4}{2} + z^6$													
	$\mathbb{M}_6^{(1,-1;a)}(A_u, 1)$	0	0	0	0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	$\frac{\sqrt{66}}{132}$	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	$\frac{5\sqrt{33}}{66}$	0	0	0	0	
		0	0	0	0	0	0	0	0	0	$-\frac{5\sqrt{33}}{66}$	0	0	0	
		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	$-\frac{\sqrt{66}}{132}$	0		
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
	$\mathbb{M}_6^{(1,-1;a)}(A_u, 2)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{1}{2} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{1}{2} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
789	symmetry	$\frac{\sqrt{462}xy(x^2-3y^2)(3x^2-y^2)}{16}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{i}{2} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{i}{2} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
790	symmetry	$-\frac{\sqrt{210}xz(x^2-3y^2)(3x^2+3y^2-8z^2)}{16}$

*continued ...*

Table 9

No.	multipole	matrix
	$\mathbb{M}_6^{(1,-1;a)}(B_u, 1)$	$ \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 & 0 & 0 & 0 & 0 & 0 \\ 0 & 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{77}}{44} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{231}}{44} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{22}}{44} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{154}}{44} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{154}}{44} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{22}}{44} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{231}}{44} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{77}}{44} & 0 & 0 & 0 & 0 & 0 \end{bmatrix} $
791	symmetry	$ -\frac{\sqrt{210}yz(3x^2-y^2)(3x^2+3y^2-8z^2)}{16} $ $ \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 & 0 & 0 & 0 & 0 & 0 \\ 0 & 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{77}i}{44} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{231}i}{44} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{22}i}{44} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{154}i}{44} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{154}i}{44} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{22}i}{44} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{231}i}{44} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{77}i}{44} & 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
	$\mathbb{M}_{6,1}^{(1,-1;a)}(E_{1u}, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}i}{12} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{12} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}i}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}i}{12} & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
793	symmetry	$\frac{3\sqrt{154}xz(x^4-10x^2y^2+5y^4)}{16}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{12} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{12} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{12} & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
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													
795	$\mathbb{M}_{6,1}^{(1,-1;a)}(E_{1u}, 2)$	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	$-\frac{\sqrt{22}i}{264}$	0	$-\frac{\sqrt{462}i}{264}$	0	0	0	0	0
		0	0	0	0	0	0	$\frac{\sqrt{770}i}{264}$	0	$\frac{5\sqrt{154}i}{264}$	0	0	0	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{1155}i}{132}$	0	$-\frac{5\sqrt{77}i}{132}$	0	0	0	0
		0	0	0	0	0	0	0	0	$\frac{5\sqrt{77}i}{132}$	0	$\frac{\sqrt{1155}i}{132}$	0	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{5\sqrt{154}i}{264}$	0	$-\frac{\sqrt{770}i}{264}$	0	0
		0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{462}i}{264}$	0	$\frac{\sqrt{22}i}{264}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
796	symmetry	$-\frac{\sqrt{21}xz(5x^4+10x^2y^2-20x^2z^2+5y^4-20y^2z^2+8z^4)}{8}$													
796	$\mathbb{M}_{6,2}^{(1,-1;a)}(E_{1u}, 2)$	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	$\frac{\sqrt{22}}{264}$	0	$-\frac{\sqrt{462}}{264}$	0	0	0	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{770}}{264}$	0	$\frac{5\sqrt{154}}{264}$	0	0	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{1155}}{132}$	0	$-\frac{5\sqrt{77}}{132}$	0	0	0	0
		0	0	0	0	0	0	0	0	$-\frac{5\sqrt{77}}{132}$	0	$\frac{\sqrt{1155}}{132}$	0	0	0
		0	0	0	0	0	0	0	0	0	$\frac{5\sqrt{154}}{264}$	0	$-\frac{\sqrt{770}}{264}$	0	0
		0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{462}}{264}$	0	$\frac{\sqrt{22}}{264}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
797	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
	$\mathbb{M}_{6,1}^{(1,-1;a)}(E_{2u}, 1)$	$ \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 & 0 & 0 \\ 0 & 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{154}}{44} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2310}}{132} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{165}}{66} \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{165}}{66} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2310}}{132} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{154}}{44} & 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 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 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{154}i}{44} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2310}i}{132} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{165}i}{66} \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{165}i}{66} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2310}i}{132} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{154}i}{44} & 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
	$\mathbb{M}_{6,1}^{(1,-1;a)}(E_{2u}, 2)$	$ \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 & 0 & 0 & 0 & 0 & 0 \\ 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{77}}{66} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{11}}{66} & 0 & 0 & 0 & -\frac{\sqrt{385}}{66} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{154}}{66} & 0 & 0 & 0 & \frac{\sqrt{462}}{66} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{462}}{66} & 0 & 0 & 0 & -\frac{\sqrt{154}}{66} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{385}}{66} & 0 & 0 & 0 & 0 & \frac{\sqrt{11}}{66} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{77}}{66} & 0 & 0 & 0 & 0 \end{bmatrix} $
799	symmetry	$ -\frac{\sqrt{210}xy(x^4+2x^2y^2-16x^2z^2+y^4-16y^2z^2+16z^4)}{16} $ $ \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 & 0 & 0 & 0 & 0 & 0 \\ 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{77}i}{66} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{11}i}{66} & 0 & 0 & 0 & -\frac{\sqrt{385}i}{66} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{154}i}{66} & 0 & 0 & 0 & \frac{\sqrt{462}i}{66} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{462}i}{66} & 0 & 0 & 0 & -\frac{\sqrt{154}i}{66} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{385}i}{66} & 0 & 0 & 0 & 0 & \frac{\sqrt{11}i}{66} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{77}i}{66} & 0 & 0 & 0 & 0 \end{bmatrix} $
800	symmetry	$ -\frac{x^2}{2} - \frac{y^2}{2} + z^2 $

continued ...



Table 9

No.	multipole	matrix													
	$\mathbb{M}_2^{(1,0;a)}(A_u)$	0	$-\frac{\sqrt{15}}{35}$	0	0	0	0	0	0	$\frac{\sqrt{6}}{14}$	0	0	0	0	0
		0	0	$-\frac{\sqrt{10}}{70}$	0	0	0	0	0	0	$\frac{3\sqrt{30}}{70}$	0	0	0	0
		0	0	0	$\frac{\sqrt{10}}{70}$	0	0	0	0	0	0	$\frac{3\sqrt{30}}{70}$	0	0	0
		0	0	0	0	$\frac{\sqrt{15}}{35}$	0	0	0	0	0	0	$\frac{\sqrt{6}}{14}$	0	0
		$\frac{\sqrt{15}}{14}$	0	0	0	0	0	0	$\frac{\sqrt{10}}{28}$	0	0	0	0	0	0
		0	$-\frac{\sqrt{15}}{70}$	0	0	0	0	0	0	$\frac{\sqrt{6}}{28}$	0	0	0	0	0
		0	0	$-\frac{2\sqrt{15}}{35}$	0	0	0	0	0	0	$\frac{\sqrt{5}}{70}$	0	0	0	0
		0	0	0	$-\frac{2\sqrt{15}}{35}$	0	0	0	0	0	0	$-\frac{\sqrt{5}}{70}$	0	0	0
		0	0	0	0	$-\frac{\sqrt{15}}{70}$	0	0	0	0	0	0	$-\frac{\sqrt{6}}{28}$	0	0
		0	0	0	0	0	$\frac{\sqrt{15}}{14}$	0	0	0	0	0	0	$-\frac{\sqrt{10}}{28}$	0
801	symmetry	$\sqrt{3}yz$													
	$\mathbb{M}_{2,1}^{(1,0;a)}(E_{1u})$	$\frac{i}{14}$	0	$\frac{3\sqrt{10}i}{140}$	0	0	0	0	$-\frac{\sqrt{6}i}{14}$	0	$-\frac{\sqrt{30}i}{70}$	0	0	0	0
		0	$-\frac{\sqrt{15}i}{210}$	0	$\frac{\sqrt{30}i}{84}$	0	0	0	0	$-\frac{\sqrt{6}i}{14}$	0	$-\frac{3\sqrt{10}i}{70}$	0	0	0
		0	0	$-\frac{\sqrt{30}i}{84}$	0	$\frac{\sqrt{15}i}{210}$	0	0	0	0	$-\frac{3\sqrt{10}i}{70}$	0	$-\frac{\sqrt{6}i}{14}$	0	0
		0	0	0	$-\frac{3\sqrt{10}i}{140}$	0	$-\frac{i}{14}$	0	0	0	0	$-\frac{\sqrt{30}i}{70}$	0	$-\frac{\sqrt{6}i}{14}$	0
		0	$-\frac{3i}{14}$	0	0	0	0	$-\frac{\sqrt{210}i}{168}$	0	$-\frac{\sqrt{10}i}{56}$	0	0	0	0	0
		$\frac{3i}{14}$	0	$-\frac{3\sqrt{10}i}{70}$	0	0	0	0	$-\frac{\sqrt{6}i}{168}$	0	$-\frac{11\sqrt{30}i}{840}$	0	0	0	0
		0	$\frac{3\sqrt{10}i}{70}$	0	0	0	0	0	0	$\frac{i}{28}$	0	$-\frac{\sqrt{15}i}{60}$	0	0	0
		0	0	0	0	$\frac{3\sqrt{10}i}{70}$	0	0	0	0	$\frac{\sqrt{15}i}{60}$	0	$-\frac{i}{28}$	0	0
		0	0	0	$-\frac{3\sqrt{10}i}{70}$	0	$\frac{3i}{14}$	0	0	0	0	$\frac{11\sqrt{30}i}{840}$	0	$\frac{\sqrt{6}i}{168}$	0
		0	0	0	0	$-\frac{3i}{14}$	0	0	0	0	0	0	$\frac{\sqrt{10}i}{56}$	0	$\frac{\sqrt{210}i}{168}$
802	symmetry	$-\sqrt{3}xz$													

*continued ...*

Table 9

No.	multipole	matrix													
	$\mathbb{M}_{2,2}^{(1,0;a)}(E_{1u})$	$-\frac{1}{14}$	0	$\frac{3\sqrt{10}}{140}$	0	0	0	0	$\frac{\sqrt{6}}{14}$	0	$-\frac{\sqrt{30}}{70}$	0	0	0	0
		0	$\frac{\sqrt{15}}{210}$	0	$\frac{\sqrt{30}}{84}$	0	0	0	0	$\frac{\sqrt{6}}{14}$	0	$-\frac{3\sqrt{10}}{70}$	0	0	0
		0	0	$\frac{\sqrt{30}}{84}$	0	$\frac{\sqrt{15}}{210}$	0	0	0	0	$\frac{3\sqrt{10}}{70}$	0	$-\frac{\sqrt{6}}{14}$	0	0
		0	0	0	$\frac{3\sqrt{10}}{140}$	0	$-\frac{1}{14}$	0	0	0	0	$\frac{\sqrt{30}}{70}$	0	$-\frac{\sqrt{6}}{14}$	0
		0	$-\frac{3}{14}$	0	0	0	0	$\frac{\sqrt{210}}{168}$	0	$-\frac{\sqrt{10}}{56}$	0	0	0	0	0
		$-\frac{3}{14}$	0	$-\frac{3\sqrt{10}}{70}$	0	0	0	0	$\frac{\sqrt{6}}{168}$	0	$-\frac{11\sqrt{30}}{840}$	0	0	0	0
		0	$-\frac{3\sqrt{10}}{70}$	0	0	0	0	0	0	$-\frac{1}{28}$	0	$-\frac{\sqrt{15}}{60}$	0	0	0
		0	0	0	0	$\frac{3\sqrt{10}}{70}$	0	0	0	0	$-\frac{\sqrt{15}}{60}$	0	$-\frac{1}{28}$	0	0
		0	0	0	$\frac{3\sqrt{10}}{70}$	0	$\frac{3}{14}$	0	0	0	0	$-\frac{11\sqrt{30}}{840}$	0	$\frac{\sqrt{6}}{168}$	0
		0	0	0	0	$\frac{3}{14}$	0	0	0	0	0	0	$-\frac{\sqrt{10}}{56}$	0	$\frac{\sqrt{210}}{168}$
803	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$													
	$\mathbb{M}_{2,1}^{(1,0;a)}(E_{2u})$	0	0	0	$-\frac{\sqrt{10}}{70}$	0	0	$\frac{\sqrt{42}}{28}$	0	0	0	$\frac{\sqrt{30}}{140}$	0	0	0
		$\frac{\sqrt{3}}{21}$	0	0	0	$-\frac{2\sqrt{15}}{105}$	0	0	$\frac{3\sqrt{2}}{28}$	0	0	0	$\frac{\sqrt{6}}{28}$	0	0
		0	$\frac{2\sqrt{15}}{105}$	0	0	0	$-\frac{\sqrt{3}}{21}$	0	0	$\frac{\sqrt{6}}{28}$	0	0	0	$\frac{3\sqrt{2}}{28}$	0
		0	0	$\frac{\sqrt{10}}{70}$	0	0	0	0	0	0	$\frac{\sqrt{30}}{140}$	0	0	0	$\frac{\sqrt{42}}{28}$
		0	0	$\frac{3\sqrt{2}}{28}$	0	0	0	0	0	0	$\frac{\sqrt{6}}{84}$	0	0	0	0
		0	0	0	$\frac{9\sqrt{10}}{140}$	0	0	$-\frac{\sqrt{42}}{84}$	0	0	0	$\frac{\sqrt{30}}{105}$	0	0	0
		$\frac{3\sqrt{2}}{28}$	0	0	0	$\frac{9\sqrt{10}}{140}$	0	0	$-\frac{\sqrt{3}}{21}$	0	0	0	$\frac{1}{14}$	0	0
		0	$\frac{9\sqrt{10}}{140}$	0	0	0	$\frac{3\sqrt{2}}{28}$	0	0	$-\frac{1}{14}$	0	0	0	$\frac{\sqrt{3}}{21}$	0
		0	0	$\frac{9\sqrt{10}}{140}$	0	0	0	0	0	0	$-\frac{\sqrt{30}}{105}$	0	0	0	$\frac{\sqrt{42}}{84}$
		0	0	0	$\frac{3\sqrt{2}}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{6}}{84}$	0	0	0
804	symmetry	$-\sqrt{3}xy$													

continued ...

Table 9

No.	multipole	matrix														
	$\mathbb{M}_{2,2}^{(1,0;a)}(E_{2u})$	0	0	0	$-\frac{\sqrt{10}i}{70}$	0	0	$-\frac{\sqrt{42}i}{28}$	0	0	0	$\frac{\sqrt{30}i}{140}$	0	0	0	
		$-\frac{\sqrt{3}i}{21}$	0	0	0	$-\frac{2\sqrt{15}i}{105}$	0	0	$-\frac{3\sqrt{2}i}{28}$	0	0	0	$\frac{\sqrt{6}i}{28}$	0	0	
		0	$-\frac{2\sqrt{15}i}{105}$	0	0	0	$-\frac{\sqrt{3}i}{21}$	0	0	$-\frac{\sqrt{6}i}{28}$	0	0	0	$\frac{3\sqrt{2}i}{28}$	0	
		0	0	$-\frac{\sqrt{10}i}{70}$	0	0	0	0	0	0	$-\frac{\sqrt{30}i}{140}$	0	0	0	$\frac{\sqrt{42}i}{28}$	
		0	0	$\frac{3\sqrt{2}i}{28}$	0	0	0	0	0	0	$\frac{\sqrt{6}i}{84}$	0	0	0	0	
		0	0	0	$\frac{9\sqrt{10}i}{140}$	0	0	$\frac{\sqrt{42}i}{84}$	0	0	0	$\frac{\sqrt{30}i}{105}$	0	0	0	
		$-\frac{3\sqrt{2}i}{28}$	0	0	0	$\frac{9\sqrt{10}i}{140}$	0	0	$\frac{\sqrt{3}i}{21}$	0	0	0	$\frac{i}{14}$	0	0	
		0	$-\frac{9\sqrt{10}i}{140}$	0	0	0	$\frac{3\sqrt{2}i}{28}$	0	0	$\frac{i}{14}$	0	0	0	$\frac{\sqrt{3}i}{21}$	0	
		0	0	$-\frac{9\sqrt{10}i}{140}$	0	0	0	0	0	0	$\frac{\sqrt{30}i}{105}$	0	0	0	$\frac{\sqrt{42}i}{84}$	
		0	0	0	$-\frac{3\sqrt{2}i}{28}$	0	0	0	0	0	0	$\frac{\sqrt{6}i}{84}$	0	0	0	
805	symmetry	$\frac{3x^4}{8} + \frac{3x^2y^2}{4} - 3x^2z^2 + \frac{3y^4}{8} - 3y^2z^2 + z^4$														
	$\mathbb{M}_4^{(1,0;a)}(A_u)$	0	$\frac{\sqrt{5}}{140}$	0	0	0	0	0	$-\frac{27\sqrt{2}}{140}$	0	0	0	0	0	0	
		0	0	$-\frac{\sqrt{30}}{140}$	0	0	0	0	0	$\frac{9\sqrt{10}}{140}$	0	0	0	0	0	
		0	0	0	$\frac{\sqrt{30}}{140}$	0	0	0	0	0	$\frac{9\sqrt{10}}{140}$	0	0	0	0	
		0	0	0	0	$-\frac{\sqrt{5}}{140}$	0	0	0	0	0	$-\frac{27\sqrt{2}}{140}$	0	0	0	
		$-\frac{3\sqrt{5}}{70}$	0	0	0	0	0	$-\frac{\sqrt{30}}{140}$	0	0	0	0	0	0	0	
		0	$\frac{9\sqrt{5}}{70}$	0	0	0	0	0	$\frac{\sqrt{2}}{35}$	0	0	0	0	0	0	
		0	0	$-\frac{3\sqrt{5}}{35}$	0	0	0	0	0	$\frac{\sqrt{15}}{140}$	0	0	0	0	0	
		0	0	0	$-\frac{3\sqrt{5}}{35}$	0	0	0	0	0	$-\frac{\sqrt{15}}{140}$	0	0	0	0	
		0	0	0	0	$\frac{9\sqrt{5}}{70}$	0	0	0	0	0	$-\frac{\sqrt{2}}{35}$	0	0	0	
		0	0	0	0	0	$-\frac{3\sqrt{5}}{70}$	0	0	0	0	0	0	$\frac{\sqrt{30}}{140}$	0	
806	symmetry	$\frac{\sqrt{70}xz(x^2-3y^2)}{4}$														

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{M}_4^{(1,0;a)}(B_u, 1)$	0	0	0	0	$\frac{\sqrt{14}}{112}$	0	0	0	0	0	0	$-\frac{27\sqrt{35}}{700}$	0	0
		0	0	0	0	0	$-\frac{\sqrt{210}}{560}$	$-\frac{9\sqrt{5}}{100}$	0	0	0	0	0	$-\frac{9\sqrt{35}}{350}$	0
		$-\frac{\sqrt{210}}{560}$	0	0	0	0	0	0	$\frac{9\sqrt{35}}{350}$	0	0	0	0	0	$\frac{9\sqrt{5}}{100}$
		0	$\frac{\sqrt{14}}{112}$	0	0	0	0	0	0	$\frac{27\sqrt{35}}{700}$	0	0	0	0	0
		0	0	0	$-\frac{3\sqrt{35}}{70}$	0	0	0	0	0	0	$-\frac{\sqrt{105}}{280}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{35}}{200}$	0	0
		0	0	0	0	0	$\frac{3\sqrt{35}}{70}$	$\frac{3\sqrt{30}}{400}$	0	0	0	0	0	$\frac{\sqrt{210}}{2800}$	0
		$-\frac{3\sqrt{35}}{70}$	0	0	0	0	0	0	$\frac{\sqrt{210}}{2800}$	0	0	0	0	0	$\frac{3\sqrt{30}}{400}$
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{35}}{200}$	0	0	0	0	0
		0	0	$\frac{3\sqrt{35}}{70}$	0	0	0	0	0	0	$-\frac{\sqrt{105}}{280}$	0	0	0	0
807	symmetry	$\frac{\sqrt{70}yz(3x^2-y^2)}{4}$													
	$\mathbb{M}_4^{(1,0;a)}(B_u, 2)$	0	0	0	0	$-\frac{\sqrt{14}i}{112}$	0	0	0	0	0	0	$\frac{27\sqrt{35}i}{700}$	0	0
		0	0	0	0	0	$\frac{\sqrt{210}i}{560}$	$-\frac{9\sqrt{5}i}{100}$	0	0	0	0	0	$\frac{9\sqrt{35}i}{350}$	0
		$-\frac{\sqrt{210}i}{560}$	0	0	0	0	0	0	$\frac{9\sqrt{35}i}{350}$	0	0	0	0	0	$-\frac{9\sqrt{5}i}{100}$
		0	$\frac{\sqrt{14}i}{112}$	0	0	0	0	0	0	$\frac{27\sqrt{35}i}{700}$	0	0	0	0	0
		0	0	0	$\frac{3\sqrt{35}i}{70}$	0	0	0	0	0	0	$\frac{\sqrt{105}i}{280}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{35}i}{200}$	0	0
		0	0	0	0	0	$-\frac{3\sqrt{35}i}{70}$	$\frac{3\sqrt{30}i}{400}$	0	0	0	0	0	$-\frac{\sqrt{210}i}{2800}$	0
		$-\frac{3\sqrt{35}i}{70}$	0	0	0	0	0	0	$\frac{\sqrt{210}i}{2800}$	0	0	0	0	0	$-\frac{3\sqrt{30}i}{400}$
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{35}i}{200}$	0	0	0	0	0
		0	0	$\frac{3\sqrt{35}i}{70}$	0	0	0	0	0	0	$-\frac{\sqrt{105}i}{280}$	0	0	0	0
808	symmetry	$-\frac{\sqrt{10}yz(3x^2+3y^2-4z^2)}{4}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{M}_{4,1}^{(1,0;a)}(E_{1u})$	$-\frac{\sqrt{10}i}{560}$	0	$-\frac{i}{56}$	0	0	0	0	$\frac{27\sqrt{15}i}{700}$	0	$\frac{9\sqrt{3}i}{70}$	0	0	0	0
		0	$\frac{\sqrt{6}i}{112}$	0	$\frac{\sqrt{3}i}{56}$	0	0	0	0	$-\frac{9\sqrt{15}i}{175}$	0	$-\frac{9i}{140}$	0	0	0
		0	0	$-\frac{\sqrt{3}i}{56}$	0	$-\frac{\sqrt{6}i}{112}$	0	0	0	0	$-\frac{9i}{140}$	0	$-\frac{9\sqrt{15}i}{175}$	0	0
		0	0	0	$\frac{i}{56}$	0	$\frac{\sqrt{10}i}{560}$	0	0	0	0	$\frac{9\sqrt{3}i}{70}$	0	$\frac{27\sqrt{15}i}{700}$	0
		0	$\frac{3\sqrt{10}i}{70}$	0	0	0	0	$\frac{\sqrt{21}i}{280}$	0	$\frac{i}{28}$	0	0	0	0	0
		$-\frac{3\sqrt{10}i}{70}$	0	$-\frac{3i}{14}$	0	0	0	0	$-\frac{13\sqrt{15}i}{1400}$	0	$-\frac{\sqrt{3}i}{140}$	0	0	0	0
		0	$\frac{3i}{14}$	0	0	0	0	0	0	$\frac{\sqrt{10}i}{2800}$	0	$-\frac{\sqrt{6}i}{80}$	0	0	0
		0	0	0	0	$\frac{3i}{14}$	0	0	0	0	$\frac{\sqrt{6}i}{80}$	0	$-\frac{\sqrt{10}i}{2800}$	0	0
		0	0	0	$-\frac{3i}{14}$	0	$-\frac{3\sqrt{10}i}{70}$	0	0	0	0	$\frac{\sqrt{3}i}{140}$	0	$\frac{13\sqrt{15}i}{1400}$	0
		0	0	0	0	$\frac{3\sqrt{10}i}{70}$	0	0	0	0	0	0	$-\frac{i}{28}$	0	$-\frac{\sqrt{21}i}{280}$
809	symmetry	$\frac{\sqrt{10}xz(3x^2+3y^2-4z^2)}{4}$													
	$\mathbb{M}_{4,2}^{(1,0;a)}(E_{1u})$	$\frac{\sqrt{10}}{560}$	0	$-\frac{1}{56}$	0	0	0	0	$-\frac{27\sqrt{15}}{700}$	0	$\frac{9\sqrt{3}}{70}$	0	0	0	0
		0	$-\frac{\sqrt{6}}{112}$	0	$\frac{\sqrt{3}}{56}$	0	0	0	0	$\frac{9\sqrt{15}}{175}$	0	$-\frac{9}{140}$	0	0	0
		0	0	$\frac{\sqrt{3}}{56}$	0	$-\frac{\sqrt{6}}{112}$	0	0	0	0	$\frac{9}{140}$	0	$-\frac{9\sqrt{15}}{175}$	0	0
		0	0	0	$-\frac{1}{56}$	0	$\frac{\sqrt{10}}{560}$	0	0	0	0	$-\frac{9\sqrt{3}}{70}$	0	$\frac{27\sqrt{15}}{700}$	0
		0	$\frac{3\sqrt{10}}{70}$	0	0	0	0	$-\frac{\sqrt{21}}{280}$	0	$\frac{1}{28}$	0	0	0	0	0
		$\frac{3\sqrt{10}}{70}$	0	$-\frac{3}{14}$	0	0	0	0	$\frac{13\sqrt{15}}{1400}$	0	$-\frac{\sqrt{3}}{140}$	0	0	0	0
		0	$-\frac{3}{14}$	0	0	0	0	0	0	$-\frac{\sqrt{10}}{2800}$	0	$-\frac{\sqrt{6}}{80}$	0	0	0
		0	0	0	0	$\frac{3}{14}$	0	0	0	0	$-\frac{\sqrt{6}}{80}$	0	$-\frac{\sqrt{10}}{2800}$	0	0
		0	0	0	$\frac{3}{14}$	0	$-\frac{3\sqrt{10}}{70}$	0	0	0	0	$-\frac{\sqrt{3}}{140}$	0	$\frac{13\sqrt{15}}{1400}$	0
		0	0	0	0	$-\frac{3\sqrt{10}}{70}$	0	0	0	0	0	0	$\frac{1}{28}$	0	$-\frac{\sqrt{21}}{280}$
810	symmetry	$\frac{\sqrt{35}(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{M}_{4,1}^{(1,0;a)}(E_{2u}, 1)$	0	0	0	0	0	$\frac{\sqrt{35}}{140}$	0	0	0	0	0	0	$-\frac{9\sqrt{210}}{700}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{9\sqrt{10}}{100}$
		0	0	0	0	0	0	$-\frac{9\sqrt{10}}{100}$	0	0	0	0	0	0	0
		$-\frac{\sqrt{35}}{140}$	0	0	0	0	0	0	$-\frac{9\sqrt{210}}{700}$	0	0	0	0	0	0
		0	0	0	0	$-\frac{3\sqrt{35}}{70}$	0	0	0	0	0	0	$-\frac{\sqrt{14}}{140}$	0	0
		0	0	0	0	0	$-\frac{3\sqrt{35}}{70}$	0	0	0	0	0	0	$-\frac{\sqrt{210}}{350}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{15}}{100}$
		0	0	0	0	0	0	$\frac{\sqrt{15}}{100}$	0	0	0	0	0	0	0
		$-\frac{3\sqrt{35}}{70}$	0	0	0	0	0	0	$\frac{\sqrt{210}}{350}$	0	0	0	0	0	0
		0	$-\frac{3\sqrt{35}}{70}$	0	0	0	0	0	0	$\frac{\sqrt{14}}{140}$	0	0	0	0	0
811	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$													
	$\mathbb{M}_{4,2}^{(1,0;a)}(E_{2u}, 1)$	0	0	0	0	0	$-\frac{\sqrt{35}i}{140}$	0	0	0	0	0	0	$\frac{9\sqrt{210}i}{700}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{9\sqrt{10}i}{100}$
		0	0	0	0	0	0	$-\frac{9\sqrt{10}i}{100}$	0	0	0	0	0	0	0
		$-\frac{\sqrt{35}i}{140}$	0	0	0	0	0	0	$-\frac{9\sqrt{210}i}{700}$	0	0	0	0	0	0
		0	0	0	0	$\frac{3\sqrt{35}i}{70}$	0	0	0	0	0	0	$\frac{\sqrt{14}i}{140}$	0	0
		0	0	0	0	0	$\frac{3\sqrt{35}i}{70}$	0	0	0	0	0	0	$\frac{\sqrt{210}i}{350}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{15}i}{100}$
		0	0	0	0	0	0	$\frac{\sqrt{15}i}{100}$	0	0	0	0	0	0	0
		$-\frac{3\sqrt{35}i}{70}$	0	0	0	0	0	0	$\frac{\sqrt{210}i}{350}$	0	0	0	0	0	0
		0	$-\frac{3\sqrt{35}i}{70}$	0	0	0	0	0	0	0	$\frac{\sqrt{14}i}{140}$	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													
	$\mathbb{M}_{4,1}^{(1,0;a)}(E_{2u}, 2)$	0	0	0	$\frac{\sqrt{2}}{56}$	0	0	$-\frac{9\sqrt{210}}{1400}$	0	0	0	$-\frac{27\sqrt{6}}{280}$	0	0	0
		$-\frac{\sqrt{15}}{280}$	0	0	0	$-\frac{\sqrt{3}}{56}$	0	0	$\frac{99\sqrt{10}}{1400}$	0	0	0	$-\frac{9\sqrt{30}}{1400}$	0	0
		0	$\frac{\sqrt{3}}{56}$	0	0	0	$\frac{\sqrt{15}}{280}$	0	0	$-\frac{9\sqrt{30}}{1400}$	0	0	0	$\frac{99\sqrt{10}}{1400}$	0
		0	0	$-\frac{\sqrt{2}}{56}$	0	0	0	0	0	0	$-\frac{27\sqrt{6}}{280}$	0	0	0	$-\frac{9\sqrt{210}}{1400}$
		0	0	$-\frac{9\sqrt{10}}{140}$	0	0	0	0	0	0	$-\frac{\sqrt{30}}{140}$	0	0	0	0
		0	0	0	$\frac{3\sqrt{2}}{28}$	0	0	$\frac{3\sqrt{210}}{1400}$	0	0	0	$-\frac{\sqrt{6}}{280}$	0	0	0
		$-\frac{9\sqrt{10}}{140}$	0	0	0	$\frac{3\sqrt{2}}{28}$	0	0	$-\frac{9\sqrt{15}}{1400}$	0	0	0	$\frac{17\sqrt{5}}{1400}$	0	0
		0	$\frac{3\sqrt{2}}{28}$	0	0	0	$-\frac{9\sqrt{10}}{140}$	0	0	$-\frac{17\sqrt{5}}{1400}$	0	0	0	$\frac{9\sqrt{15}}{1400}$	0
		0	0	$\frac{3\sqrt{2}}{28}$	0	0	0	0	0	0	$\frac{\sqrt{6}}{280}$	0	0	0	$-\frac{3\sqrt{210}}{1400}$
		0	0	0	$-\frac{9\sqrt{10}}{140}$	0	0	0	0	0	0	$\frac{\sqrt{30}}{140}$	0	0	0
813	symmetry	$\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$													
	$\mathbb{M}_{4,2}^{(1,0;a)}(E_{2u}, 2)$	0	0	0	$\frac{\sqrt{2}i}{56}$	0	0	$\frac{9\sqrt{210}i}{1400}$	0	0	0	$-\frac{27\sqrt{6}i}{280}$	0	0	0
		$\frac{\sqrt{15}i}{280}$	0	0	0	$-\frac{\sqrt{3}i}{56}$	0	0	$-\frac{99\sqrt{10}i}{1400}$	0	0	0	$-\frac{9\sqrt{30}i}{1400}$	0	0
		0	$-\frac{\sqrt{3}i}{56}$	0	0	0	$\frac{\sqrt{15}i}{280}$	0	0	$\frac{99\sqrt{10}i}{1400}$	0	0	0	$\frac{99\sqrt{10}i}{1400}$	0
		0	0	$\frac{\sqrt{2}i}{56}$	0	0	0	0	0	0	$\frac{27\sqrt{6}i}{280}$	0	0	0	$-\frac{9\sqrt{210}i}{1400}$
		0	0	$-\frac{9\sqrt{10}i}{140}$	0	0	0	0	0	0	$-\frac{\sqrt{30}i}{140}$	0	0	0	0
		0	0	0	$\frac{3\sqrt{2}i}{28}$	0	0	$-\frac{3\sqrt{210}i}{1400}$	0	0	0	$-\frac{\sqrt{6}i}{280}$	0	0	0
		$\frac{9\sqrt{10}i}{140}$	0	0	0	$\frac{3\sqrt{2}i}{28}$	0	0	$\frac{9\sqrt{15}i}{1400}$	0	0	0	$\frac{17\sqrt{5}i}{1400}$	0	0
		0	$-\frac{3\sqrt{2}i}{28}$	0	0	0	$-\frac{9\sqrt{10}i}{140}$	0	0	$\frac{17\sqrt{5}i}{1400}$	0	0	0	$\frac{9\sqrt{15}i}{1400}$	0
		0	0	$-\frac{3\sqrt{2}i}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{6}i}{280}$	0	0	0	$-\frac{3\sqrt{210}i}{1400}$
		0	0	0	$\frac{9\sqrt{10}i}{140}$	0	0	0	0	0	0	$-\frac{\sqrt{30}i}{140}$	0	0	0
814	symmetry	1													

continued ...

Table 9

No.	multipole	matrix														
		$ \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 & 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 \\ 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 & -\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 & -\frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} $														
815	symmetry	$ -\frac{x^2}{2} - \frac{y^2}{2} + z^2 $ $ \begin{bmatrix} 0 & \frac{12}{35} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{3\sqrt{10}}{140} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{2\sqrt{6}}{35} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{9\sqrt{2}}{140} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{2\sqrt{6}}{35} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{9\sqrt{2}}{140} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{12}{35} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{3\sqrt{10}}{140} & 0 & 0 & 0 \\ \frac{3}{14} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{21} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{3}{70} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}}{35} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{6}{35} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{2\sqrt{3}}{105} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{6}{35} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{2\sqrt{3}}{105} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{3}{70} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{35} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{3}{14} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{21} & 0 & 0 \end{bmatrix} $														
816	symmetry	$ \sqrt{3}yz $														

continued ...



Table 9

No.	multipole	matrix													
	$\mathbb{M}_{2,1}^{(1,1;a)}(E_{1u})$	$-\frac{2\sqrt{15}i}{35}$	0	$-\frac{3\sqrt{6}i}{35}$	0	0	0	0	$\frac{3\sqrt{10}i}{140}$	0	$\frac{3\sqrt{2}i}{140}$	0	0	0	0
		0	$\frac{2i}{35}$	0	$-\frac{\sqrt{2}i}{7}$	0	0	0	0	$\frac{3\sqrt{10}i}{140}$	0	$\frac{3\sqrt{6}i}{140}$	0	0	0
		0	0	$\frac{\sqrt{2}i}{7}$	0	$-\frac{2i}{35}$	0	0	0	0	$\frac{3\sqrt{6}i}{140}$	0	$\frac{3\sqrt{10}i}{140}$	0	0
		0	0	0	$\frac{3\sqrt{6}i}{35}$	0	$\frac{2\sqrt{15}i}{35}$	0	0	0	0	$\frac{3\sqrt{2}i}{140}$	0	$\frac{3\sqrt{10}i}{140}$	0
		0	$-\frac{3\sqrt{15}i}{70}$	0	0	0	0	$\frac{\sqrt{14}i}{42}$	0	$\frac{\sqrt{6}i}{42}$	0	0	0	0	0
		$\frac{3\sqrt{15}i}{70}$	0	$-\frac{3\sqrt{6}i}{70}$	0	0	0	0	$\frac{\sqrt{10}i}{210}$	0	$\frac{11\sqrt{2}i}{210}$	0	0	0	0
		0	$\frac{3\sqrt{6}i}{70}$	0	0	0	0	0	$-\frac{\sqrt{15}i}{105}$	0	$\frac{i}{15}$	0	0	0	0
		0	0	0	0	$\frac{3\sqrt{6}i}{70}$	0	0	0	$-\frac{i}{15}$	0	$\frac{\sqrt{15}i}{105}$	0	0	0
		0	0	0	$-\frac{3\sqrt{6}i}{70}$	0	$\frac{3\sqrt{15}i}{70}$	0	0	0	0	$-\frac{11\sqrt{2}i}{210}$	0	$-\frac{\sqrt{10}i}{210}$	0
		0	0	0	0	$-\frac{3\sqrt{15}i}{70}$	0	0	0	0	0	$-\frac{\sqrt{6}i}{42}$	0	$-\frac{\sqrt{14}i}{42}$	0
817	symmetry	$-\sqrt{3}xz$													
	$\mathbb{M}_{2,2}^{(1,1;a)}(E_{1u})$	$\frac{2\sqrt{15}}{35}$	0	$-\frac{3\sqrt{6}}{35}$	0	0	0	0	$-\frac{3\sqrt{10}}{140}$	0	$\frac{3\sqrt{2}}{140}$	0	0	0	0
		0	$-\frac{2}{35}$	0	$-\frac{\sqrt{2}}{7}$	0	0	0	0	$-\frac{3\sqrt{10}}{140}$	0	$\frac{3\sqrt{6}}{140}$	0	0	0
		0	0	$-\frac{\sqrt{2}}{7}$	0	$-\frac{2}{35}$	0	0	0	0	$-\frac{3\sqrt{6}}{140}$	0	$\frac{3\sqrt{10}}{140}$	0	0
		0	0	0	$-\frac{3\sqrt{6}}{35}$	0	$\frac{2\sqrt{15}}{35}$	0	0	0	0	$-\frac{3\sqrt{2}}{140}$	0	$\frac{3\sqrt{10}}{140}$	0
		0	$-\frac{3\sqrt{15}}{70}$	0	0	0	0	$-\frac{\sqrt{14}}{42}$	0	$\frac{\sqrt{6}}{42}$	0	0	0	0	0
		$-\frac{3\sqrt{15}}{70}$	0	$-\frac{3\sqrt{6}}{70}$	0	0	0	0	$-\frac{\sqrt{10}}{210}$	0	$\frac{11\sqrt{2}}{210}$	0	0	0	0
		0	$-\frac{3\sqrt{6}}{70}$	0	0	0	0	0	0	$\frac{\sqrt{15}}{105}$	0	$\frac{1}{15}$	0	0	0
		0	0	0	0	$\frac{3\sqrt{6}}{70}$	0	0	0	0	$\frac{1}{15}$	0	$\frac{\sqrt{15}}{105}$	0	0
		0	0	0	$\frac{3\sqrt{6}}{70}$	0	$\frac{3\sqrt{15}}{70}$	0	0	0	0	$\frac{11\sqrt{2}}{210}$	0	$-\frac{\sqrt{10}}{210}$	0
		0	0	0	0	$\frac{3\sqrt{15}}{70}$	0	0	0	0	0	$\frac{\sqrt{6}}{42}$	0	$-\frac{\sqrt{14}}{42}$	0
818	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{M}_{2,1}^{(1,1;a)}(E_{2u})$	0	0	0	$\frac{2\sqrt{6}}{35}$	0	0	$-\frac{3\sqrt{70}}{280}$	0	0	0	$-\frac{3\sqrt{2}}{280}$	0	0	0
		$-\frac{4\sqrt{5}}{35}$	0	0	0	$\frac{8}{35}$	0	0	$-\frac{3\sqrt{30}}{280}$	0	0	0	$-\frac{3\sqrt{10}}{280}$	0	0
		0	$-\frac{8}{35}$	0	0	0	$\frac{4\sqrt{5}}{35}$	0	0	$-\frac{3\sqrt{10}}{280}$	0	0	0	$-\frac{3\sqrt{30}}{280}$	0
		0	0	$-\frac{2\sqrt{6}}{35}$	0	0	0	0	0	$-\frac{3\sqrt{2}}{280}$	0	0	0	0	$-\frac{3\sqrt{70}}{280}$
		0	0	$\frac{3\sqrt{30}}{140}$	0	0	0	0	0	$-\frac{\sqrt{10}}{105}$	0	0	0	0	0
		0	0	0	$\frac{9\sqrt{6}}{140}$	0	0	$\frac{\sqrt{70}}{105}$	0	0	0	$-\frac{4\sqrt{2}}{105}$	0	0	0
		$\frac{3\sqrt{30}}{140}$	0	0	0	$\frac{9\sqrt{6}}{140}$	0	0	$\frac{4\sqrt{5}}{105}$	0	0	0	$-\frac{2\sqrt{15}}{105}$	0	0
		0	$\frac{9\sqrt{6}}{140}$	0	0	0	$\frac{3\sqrt{30}}{140}$	0	0	$\frac{2\sqrt{15}}{105}$	0	0	0	$-\frac{4\sqrt{5}}{105}$	0
		0	0	$\frac{9\sqrt{6}}{140}$	0	0	0	0	0	$\frac{4\sqrt{2}}{105}$	0	0	0	0	$-\frac{\sqrt{70}}{105}$
		0	0	0	$\frac{3\sqrt{30}}{140}$	0	0	0	0	0	$\frac{\sqrt{10}}{105}$	0	0	0	0
819	symmetry	$-\sqrt{3}xy$													
	$\mathbb{M}_{2,2}^{(1,1;a)}(E_{2u})$	0	0	0	$\frac{2\sqrt{6}i}{35}$	0	0	$\frac{3\sqrt{70}i}{280}$	0	0	0	$-\frac{3\sqrt{2}i}{280}$	0	0	0
		$\frac{4\sqrt{5}i}{35}$	0	0	0	$\frac{8i}{35}$	0	0	$\frac{3\sqrt{30}i}{280}$	0	0	0	$-\frac{3\sqrt{10}i}{280}$	0	0
		0	$\frac{8i}{35}$	0	0	0	$\frac{4\sqrt{5}i}{35}$	0	0	$\frac{3\sqrt{10}i}{280}$	0	0	0	$-\frac{3\sqrt{30}i}{280}$	0
		0	0	$\frac{2\sqrt{6}i}{35}$	0	0	0	0	0	$\frac{3\sqrt{2}i}{280}$	0	0	0	0	$-\frac{3\sqrt{70}i}{280}$
		0	0	$\frac{3\sqrt{30}i}{140}$	0	0	0	0	0	$-\frac{\sqrt{10}i}{105}$	0	0	0	0	0
		0	0	0	$\frac{9\sqrt{6}i}{140}$	0	0	$-\frac{\sqrt{70}i}{105}$	0	0	0	$-\frac{4\sqrt{2}i}{105}$	0	0	0
		$-\frac{3\sqrt{30}i}{140}$	0	0	0	$\frac{9\sqrt{6}i}{140}$	0	0	$-\frac{4\sqrt{5}i}{105}$	0	0	0	$-\frac{2\sqrt{15}i}{105}$	0	0
		0	$-\frac{9\sqrt{6}i}{140}$	0	0	0	$\frac{3\sqrt{30}i}{140}$	0	0	$-\frac{2\sqrt{15}i}{105}$	0	0	0	$-\frac{4\sqrt{5}i}{105}$	0
		0	0	$-\frac{9\sqrt{6}i}{140}$	0	0	0	0	0	$-\frac{4\sqrt{2}i}{105}$	0	0	0	0	$-\frac{\sqrt{70}i}{105}$
		0	0	0	$-\frac{3\sqrt{30}i}{140}$	0	0	0	0	0	$-\frac{\sqrt{10}i}{105}$	0	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													
	$\mathbb{M}_4^{(1,1;a)}(A_u)$	0	$-\frac{\sqrt{330}}{105}$	0	0	0	0	0	0	$\frac{\sqrt{33}}{70}$	0	0	0	0	0
		0	0	$\frac{2\sqrt{55}}{35}$	0	0	0	0	0	$-\frac{\sqrt{165}}{210}$	0	0	0	0	0
		0	0	0	$-\frac{2\sqrt{55}}{35}$	0	0	0	0	0	$-\frac{\sqrt{165}}{210}$	0	0	0	0
		0	0	0	0	$\frac{\sqrt{330}}{105}$	0	0	0	0	0	$\frac{\sqrt{33}}{70}$	0	0	0
		$-\frac{\sqrt{330}}{420}$	0	0	0	0	0	0	$\frac{2\sqrt{55}}{385}$	0	0	0	0	0	0
		0	$\frac{\sqrt{330}}{140}$	0	0	0	0	0	$-\frac{8\sqrt{33}}{1155}$	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{330}}{210}$	0	0	0	0	0	$-\frac{\sqrt{110}}{385}$	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{330}}{210}$	0	0	0	0	0	$\frac{\sqrt{110}}{385}$	0	0	0	0
		0	0	0	0	$\frac{\sqrt{330}}{140}$	0	0	0	0	0	$\frac{8\sqrt{33}}{1155}$	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{330}}{420}$	0	0	0	0	0	$-\frac{2\sqrt{55}}{385}$	0	0
821	symmetry	$\frac{\sqrt{70}xz(x^2-3y^2)}{4}$													
	$\mathbb{M}_4^{(1,1;a)}(B_u, 1)$	0	0	0	0	$-\frac{\sqrt{231}}{42}$	0	0	0	0	0	0	$\frac{\sqrt{2310}}{700}$	0	0
		0	0	0	0	0	$\frac{\sqrt{385}}{70}$	$\frac{\sqrt{330}}{300}$	0	0	0	0	0	$\frac{\sqrt{2310}}{1050}$	0
		$\frac{\sqrt{385}}{70}$	0	0	0	0	0	0	$-\frac{\sqrt{2310}}{1050}$	0	0	0	0	0	$-\frac{\sqrt{330}}{300}$
		0	$-\frac{\sqrt{231}}{42}$	0	0	0	0	0	$-\frac{\sqrt{2310}}{700}$	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{2310}}{420}$	0	0	0	0	0	0	$\frac{\sqrt{770}}{770}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{2310}}{1650}$	0	0
		0	0	0	0	0	$\frac{\sqrt{2310}}{420}$	$-\frac{3\sqrt{55}}{550}$	0	0	0	0	0	$-\frac{\sqrt{385}}{3850}$	0
		$-\frac{\sqrt{2310}}{420}$	0	0	0	0	0	0	$-\frac{\sqrt{385}}{3850}$	0	0	0	0	0	$-\frac{3\sqrt{55}}{550}$
		0	0	0	0	0	0	0	0	$\frac{\sqrt{2310}}{1650}$	0	0	0	0	0
		0	0	$\frac{\sqrt{2310}}{420}$	0	0	0	0	0	0	$\frac{\sqrt{770}}{770}$	0	0	0	0
822	symmetry	$\frac{\sqrt{70}yz(3x^2-y^2)}{4}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{M}_4^{(1,1;a)}(B_u, 2)$	0	0	0	0	$\frac{\sqrt{231}i}{42}$	0	0	0	0	0	0	$-\frac{\sqrt{2310}i}{700}$	0	0
		0	0	0	0	0	$-\frac{\sqrt{385}i}{70}$	$\frac{\sqrt{330}i}{300}$	0	0	0	0	0	$-\frac{\sqrt{2310}i}{1050}$	0
		$\frac{\sqrt{385}i}{70}$	0	0	0	0	0	0	$-\frac{\sqrt{2310}i}{1050}$	0	0	0	0	0	$\frac{\sqrt{330}i}{300}$
		0	$-\frac{\sqrt{231}i}{42}$	0	0	0	0	0	0	$-\frac{\sqrt{2310}i}{700}$	0	0	0	0	0
		0	0	0	$\frac{\sqrt{2310}i}{420}$	0	0	0	0	0	0	$-\frac{\sqrt{770}i}{770}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{2310}i}{1650}$	0	0
		0	0	0	0	0	$-\frac{\sqrt{2310}i}{420}$	$-\frac{3\sqrt{55}i}{550}$	0	0	0	0	0	$\frac{\sqrt{385}i}{3850}$	0
		$-\frac{\sqrt{2310}i}{420}$	0	0	0	0	0	0	$-\frac{\sqrt{385}i}{3850}$	0	0	0	0	0	$\frac{3\sqrt{55}i}{550}$
		0	0	0	0	0	0	0	0	$\frac{\sqrt{2310}i}{1650}$	0	0	0	0	0
		0	0	$\frac{\sqrt{2310}i}{420}$	0	0	0	0	0	0	$\frac{\sqrt{770}i}{770}$	0	0	0	0
823	symmetry	$-\frac{\sqrt{10}yz(3x^2+3y^2-4z^2)}{4}$													
	$\mathbb{M}_{4,1}^{(1,1;a)}(E_{1u})$	$\frac{\sqrt{165}i}{210}$	0	$\frac{\sqrt{66}i}{42}$	0	0	0	0	$-\frac{3\sqrt{110}i}{700}$	0	$-\frac{\sqrt{22}i}{70}$	0	0	0	0
		0	$-\frac{\sqrt{11}i}{14}$	0	$-\frac{\sqrt{22}i}{14}$	0	0	0	0	$\frac{\sqrt{110}i}{175}$	0	$\frac{\sqrt{66}i}{420}$	0	0	0
		0	0	$\frac{\sqrt{22}i}{14}$	0	$\frac{\sqrt{11}i}{14}$	0	0	0	0	$\frac{\sqrt{66}i}{420}$	0	$\frac{\sqrt{110}i}{175}$	0	0
		0	0	0	$-\frac{\sqrt{66}i}{42}$	0	$-\frac{\sqrt{165}i}{210}$	0	0	0	0	$-\frac{\sqrt{22}i}{70}$	0	$-\frac{3\sqrt{110}i}{700}$	0
		0	$\frac{\sqrt{165}i}{210}$	0	0	0	0	$-\frac{\sqrt{154}i}{770}$	0	$-\frac{\sqrt{66}i}{231}$	0	0	0	0	0
		$-\frac{\sqrt{165}i}{210}$	0	$-\frac{\sqrt{66}i}{84}$	0	0	0	0	$\frac{13\sqrt{110}i}{3850}$	0	$\frac{\sqrt{22}i}{385}$	0	0	0	0
		0	$\frac{\sqrt{66}i}{84}$	0	0	0	0	0	$-\frac{\sqrt{165}i}{11550}$	0	$\frac{\sqrt{11}i}{110}$	0	0	0	0
		0	0	0	0	$\frac{\sqrt{66}i}{84}$	0	0	0	0	$-\frac{\sqrt{11}i}{110}$	0	$\frac{\sqrt{165}i}{11550}$	0	0
		0	0	0	$-\frac{\sqrt{66}i}{84}$	0	$-\frac{\sqrt{165}i}{210}$	0	0	0	0	$-\frac{\sqrt{22}i}{385}$	0	$-\frac{13\sqrt{110}i}{3850}$	0
		0	0	0	0	$\frac{\sqrt{165}i}{210}$	0	0	0	0	0	0	$\frac{\sqrt{66}i}{231}$	0	$\frac{\sqrt{154}i}{770}$
824	symmetry	$\frac{\sqrt{10}xz(3x^2+3y^2-4z^2)}{4}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{M}_{4,2}^{(1,1;a)}(E_{1u})$	$-\frac{\sqrt{165}}{210}$	0	$\frac{\sqrt{66}}{42}$	0	0	0	0	$\frac{3\sqrt{110}}{700}$	0	$-\frac{\sqrt{22}}{70}$	0	0	0	0
		0	$\frac{\sqrt{11}}{14}$	0	$-\frac{\sqrt{22}}{14}$	0	0	0	0	$-\frac{\sqrt{110}}{175}$	0	$\frac{\sqrt{66}}{420}$	0	0	0
		0	0	$-\frac{\sqrt{22}}{14}$	0	$\frac{\sqrt{11}}{14}$	0	0	0	0	$-\frac{\sqrt{66}}{420}$	0	$\frac{\sqrt{110}}{175}$	0	0
		0	0	0	$\frac{\sqrt{66}}{42}$	0	$-\frac{\sqrt{165}}{210}$	0	0	0	0	$\frac{\sqrt{22}}{70}$	0	$-\frac{3\sqrt{110}}{700}$	0
		0	$\frac{\sqrt{165}}{210}$	0	0	0	0	$\frac{\sqrt{154}}{770}$	0	$-\frac{\sqrt{66}}{231}$	0	0	0	0	0
		$\frac{\sqrt{165}}{210}$	0	$-\frac{\sqrt{66}}{84}$	0	0	0	0	$-\frac{13\sqrt{110}}{3850}$	0	$\frac{\sqrt{22}}{385}$	0	0	0	0
		0	$-\frac{\sqrt{66}}{84}$	0	0	0	0	0	0	$\frac{\sqrt{165}}{11550}$	0	$\frac{\sqrt{11}}{110}$	0	0	0
		0	0	0	0	$\frac{\sqrt{66}}{84}$	0	0	0	0	$\frac{\sqrt{11}}{110}$	0	$\frac{\sqrt{165}}{11550}$	0	0
		0	0	0	$\frac{\sqrt{66}}{84}$	0	$-\frac{\sqrt{165}}{210}$	0	0	0	0	$\frac{\sqrt{22}}{385}$	0	$-\frac{13\sqrt{110}}{3850}$	0
		0	0	0	0	$-\frac{\sqrt{165}}{210}$	0	0	0	0	0	$-\frac{\sqrt{66}}{231}$	0	$\frac{\sqrt{154}}{770}$	0
825	symmetry	$\frac{\sqrt{35}(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$													
	$\mathbb{M}_{4,1}^{(1,1;a)}(E_{2u}, 1)$	0	0	0	0	0	$-\frac{\sqrt{2310}}{105}$	0	0	0	0	0	0	$\frac{\sqrt{385}}{350}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{165}}{150}$
		0	0	0	0	0	0	$\frac{\sqrt{165}}{150}$	0	0	0	0	0	0	0
		$\frac{\sqrt{2310}}{105}$	0	0	0	0	0	0	$\frac{\sqrt{385}}{350}$	0	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{2310}}{420}$	0	0	0	0	0	0	$\frac{2\sqrt{231}}{1155}$	0	0
		0	0	0	0	0	$-\frac{\sqrt{2310}}{420}$	0	0	0	0	0	0	$\frac{4\sqrt{385}}{1925}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{110}}{275}$
		0	0	0	0	0	$-\frac{\sqrt{110}}{275}$	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{2310}}{420}$	0	0	0	0	0	0	$-\frac{4\sqrt{385}}{1925}$	0	0	0	0	0	0
		0	$-\frac{\sqrt{2310}}{420}$	0	0	0	0	0	0	$-\frac{2\sqrt{231}}{1155}$	0	0	0	0	0
826	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$													

continued ...

Table 9

No.	multipole	matrix														
	$\mathbb{M}_{4,2}^{(1,1;a)}(E_{2u},1)$	0	0	0	0	0	$\frac{\sqrt{2310i}}{105}$	0	0	0	0	0	0	$-\frac{\sqrt{385i}}{350}$	0	
		0	0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{165i}}{150}$	
		0	0	0	0	0	0	$\frac{\sqrt{165i}}{150}$	0	0	0	0	0	0	0	
		$\frac{\sqrt{2310i}}{105}$	0	0	0	0	0	0	$\frac{\sqrt{385i}}{350}$	0	0	0	0	0	0	
		0	0	0	0	$\frac{\sqrt{2310i}}{420}$	0	0	0	0	0	0	$-\frac{2\sqrt{231i}}{1155}$	0	0	
		0	0	0	0	0	$\frac{\sqrt{2310i}}{420}$	0	0	0	0	0	0	$-\frac{4\sqrt{385i}}{1925}$	0	
		0	0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{110i}}{275}$	
		0	0	0	0	0	0	$-\frac{\sqrt{110i}}{275}$	0	0	0	0	0	0	0	
		$-\frac{\sqrt{2310i}}{420}$	0	0	0	0	0	0	$-\frac{4\sqrt{385i}}{1925}$	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{2310i}}{420}$	0	0	0	0	0	0	$-\frac{2\sqrt{231i}}{1155}$	0	0	0	0	0	0
827	symmetry	$-\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$														
	$\mathbb{M}_{4,1}^{(1,1;a)}(E_{2u},2)$	0	0	0	$-\frac{\sqrt{33}}{21}$	0	0	$\frac{\sqrt{385}}{700}$	0	0	0	$\frac{3\sqrt{11}}{140}$	0	0	0	
		$\frac{\sqrt{110}}{70}$	0	0	0	$\frac{\sqrt{22}}{14}$	0	0	$-\frac{11\sqrt{165}}{2100}$	0	0	0	$\frac{\sqrt{55}}{700}$	0	0	
		0	$-\frac{\sqrt{22}}{14}$	0	0	0	$-\frac{\sqrt{110}}{70}$	0	0	$\frac{\sqrt{55}}{700}$	0	0	0	$-\frac{11\sqrt{165}}{2100}$	0	
		0	0	$\frac{\sqrt{33}}{21}$	0	0	0	0	0	0	$\frac{3\sqrt{11}}{140}$	0	0	0	$\frac{\sqrt{385}}{700}$	
		0	0	$-\frac{\sqrt{165}}{140}$	0	0	0	0	0	0	$\frac{2\sqrt{55}}{385}$	0	0	0	0	
		0	0	0	$\frac{\sqrt{33}}{84}$	0	0	$-\frac{3\sqrt{385}}{1925}$	0	0	0	$\frac{\sqrt{11}}{385}$	0	0	0	
		$-\frac{\sqrt{165}}{140}$	0	0	0	$\frac{\sqrt{33}}{84}$	0	0	$\frac{9\sqrt{110}}{3850}$	0	0	0	$-\frac{17\sqrt{330}}{11550}$	0	0	
		0	$\frac{\sqrt{33}}{84}$	0	0	0	$-\frac{\sqrt{165}}{140}$	0	0	$\frac{17\sqrt{330}}{11550}$	0	0	0	$-\frac{9\sqrt{110}}{3850}$	0	
		0	0	$\frac{\sqrt{33}}{84}$	0	0	0	0	0	0	$-\frac{\sqrt{11}}{385}$	0	0	0	$\frac{3\sqrt{385}}{1925}$	
		0	0	0	$-\frac{\sqrt{165}}{140}$	0	0	0	0	0	0	$-\frac{2\sqrt{55}}{385}$	0	0	0	
828	symmetry	$\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$														

continued ...

Table 9

No.	multipole	matrix													
$M_{4,2}^{(1,1;a)}(E_{2u}, 2)$		0	0	0	$-\frac{\sqrt{33i}}{21}$	0	0	$-\frac{\sqrt{385i}}{700}$	0	0	0	$\frac{3\sqrt{11i}}{140}$	0	0	0
		$-\frac{\sqrt{110i}}{70}$	0	0	0	$\frac{\sqrt{22i}}{14}$	0	0	$\frac{11\sqrt{165i}}{2100}$	0	0	0	$\frac{\sqrt{55i}}{700}$	0	0
		0	$\frac{\sqrt{22i}}{14}$	0	0	0	$-\frac{\sqrt{110i}}{70}$	0	0	$-\frac{\sqrt{55i}}{700}$	0	0	0	$-\frac{11\sqrt{165i}}{2100}$	0
		0	0	$-\frac{\sqrt{33i}}{21}$	0	0	0	0	0	$-\frac{3\sqrt{11i}}{140}$	0	0	0	0	$\frac{\sqrt{385i}}{700}$
		0	0	$-\frac{\sqrt{165i}}{140}$	0	0	0	0	0	$\frac{2\sqrt{55i}}{385}$	0	0	0	0	0
		0	0	0	$\frac{\sqrt{33i}}{84}$	0	0	$\frac{3\sqrt{385i}}{1925}$	0	0	0	$\frac{\sqrt{11i}}{385}$	0	0	0
		$\frac{\sqrt{165i}}{140}$	0	0	0	$\frac{\sqrt{33i}}{84}$	0	0	$-\frac{9\sqrt{110i}}{3850}$	0	0	0	$-\frac{17\sqrt{330i}}{11550}$	0	0
		0	$-\frac{\sqrt{33i}}{84}$	0	0	0	$-\frac{\sqrt{165i}}{140}$	0	0	$-\frac{17\sqrt{330i}}{11550}$	0	0	0	$-\frac{9\sqrt{110i}}{3850}$	0
		0	0	$-\frac{\sqrt{33i}}{84}$	0	0	0	0	0	0	$\frac{\sqrt{11i}}{385}$	0	0	0	$\frac{3\sqrt{385i}}{1925}$
		0	0	0	$\frac{\sqrt{165i}}{140}$	0	0	0	0	0	0	$\frac{2\sqrt{55i}}{385}$	0	0	0

$$\begin{aligned} \text{bra:} &= \langle \frac{5}{2}, \frac{5}{2}; f |, \langle \frac{5}{2}, \frac{3}{2}; f |, \langle \frac{5}{2}, \frac{1}{2}; f |, \langle \frac{5}{2}, -\frac{1}{2}; f |, \langle \frac{5}{2}, -\frac{3}{2}; f |, \langle \frac{5}{2}, -\frac{5}{2}; f |, \langle \frac{7}{2}, \frac{7}{2}; f |, \langle \frac{7}{2}, \frac{5}{2}; f |, \langle \frac{7}{2}, \frac{3}{2}; f |, \langle \frac{7}{2}, \frac{1}{2}; f |, \langle \frac{7}{2}, -\frac{1}{2}; f |, \langle \frac{7}{2}, -\frac{3}{2}; f |, \langle \frac{7}{2}, -\frac{5}{2}; f |, \langle \frac{7}{2}, -\frac{7}{2}; f | \\ \text{ket:} &= | \frac{5}{2}, \frac{5}{2}; f \rangle, | \frac{5}{2}, \frac{3}{2}; f \rangle, | \frac{5}{2}, \frac{1}{2}; f \rangle, | \frac{5}{2}, -\frac{1}{2}; f \rangle, | \frac{5}{2}, -\frac{3}{2}; f \rangle, | \frac{5}{2}, -\frac{5}{2}; f \rangle, | \frac{7}{2}, \frac{7}{2}; f \rangle, | \frac{7}{2}, \frac{5}{2}; f \rangle, | \frac{7}{2}, \frac{3}{2}; f \rangle, | \frac{7}{2}, \frac{1}{2}; f \rangle, | \frac{7}{2}, -\frac{1}{2}; f \rangle, | \frac{7}{2}, -\frac{3}{2}; f \rangle, | \frac{7}{2}, -\frac{5}{2}; f \rangle, | \frac{7}{2}, -\frac{7}{2}; f \rangle \end{aligned}$$

Table 10: (f,f) block.

No.	multipole	matrix
829	symmetry	1

*continued ...*

Table 10

No.	multipole	matrix													
	$\mathbb{Q}_0^{(a)}(A_g)$	$\frac{\sqrt{14}}{14}$	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	$\frac{\sqrt{14}}{14}$	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	$\frac{\sqrt{14}}{14}$
830	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$													

*continued ...*



Table 10

No.	multipole	matrix													
$\mathbb{Q}_2^{(a)}(A_g)$		$-\frac{5\sqrt{42}}{98}$	0	0	0	0	0	0	$-\frac{5\sqrt{7}}{98}$	0	0	0	0	0	0
		0	$\frac{\sqrt{42}}{98}$	0	0	0	0	0	0	$-\frac{\sqrt{105}}{98}$	0	0	0	0	0
		0	0	$\frac{2\sqrt{42}}{49}$	0	0	0	0	0	0	$-\frac{\sqrt{14}}{98}$	0	0	0	0
		0	0	0	$\frac{2\sqrt{42}}{49}$	0	0	0	0	0	0	$\frac{\sqrt{14}}{98}$	0	0	0
		0	0	0	0	$\frac{\sqrt{42}}{98}$	0	0	0	0	0	0	$\frac{\sqrt{105}}{98}$	0	0
		0	0	0	0	0	$-\frac{5\sqrt{42}}{98}$	0	0	0	0	0	0	$\frac{5\sqrt{7}}{98}$	0
		0	0	0	0	0	0	$-\frac{5\sqrt{42}}{84}$	0	0	0	0	0	0	0
		$-\frac{5\sqrt{7}}{98}$	0	0	0	0	0	0	$-\frac{5\sqrt{42}}{588}$	0	0	0	0	0	0
		0	$-\frac{\sqrt{105}}{98}$	0	0	0	0	0	0	$\frac{5\sqrt{42}}{196}$	0	0	0	0	0
		0	0	$-\frac{\sqrt{14}}{98}$	0	0	0	0	0	0	$\frac{25\sqrt{42}}{588}$	0	0	0	0
		0	0	0	$\frac{\sqrt{14}}{98}$	0	0	0	0	0	0	$\frac{25\sqrt{42}}{588}$	0	0	0
		0	0	0	0	$\frac{\sqrt{105}}{98}$	0	0	0	0	0	0	$\frac{5\sqrt{42}}{196}$	0	0
		0	0	0	0	0	$\frac{5\sqrt{7}}{98}$	0	0	0	0	0	0	$-\frac{5\sqrt{42}}{588}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{5\sqrt{42}}{84}$
831	symmetry	$\sqrt{3}yz$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{2,1}^{(a)}(E_{1g})$		0	$\frac{3\sqrt{70}i}{98}$	0	0	0	0	$\frac{5\sqrt{3}i}{84}$	0	$\frac{5\sqrt{7}i}{196}$	0	0	0	0	0
		$-\frac{3\sqrt{70}i}{98}$	0	$\frac{3\sqrt{7}i}{49}$	0	0	0	0	$\frac{\sqrt{105}i}{588}$	0	$\frac{11\sqrt{21}i}{588}$	0	0	0	0
		0	$-\frac{3\sqrt{7}i}{49}$	0	0	0	0	0	0	$-\frac{\sqrt{70}i}{196}$	0	$\frac{\sqrt{42}i}{84}$	0	0	0
		0	0	0	0	$-\frac{3\sqrt{7}i}{49}$	0	0	0	0	$-\frac{\sqrt{42}i}{84}$	0	$\frac{\sqrt{70}i}{196}$	0	0
		0	0	0	$\frac{3\sqrt{7}i}{49}$	0	$-\frac{3\sqrt{70}i}{98}$	0	0	0	0	$-\frac{11\sqrt{21}i}{588}$	0	$-\frac{\sqrt{105}i}{588}$	0
		0	0	0	0	$\frac{3\sqrt{70}i}{98}$	0	0	0	0	0	0	$-\frac{5\sqrt{7}i}{196}$	0	$-\frac{5\sqrt{3}i}{84}$
		$-\frac{5\sqrt{3}i}{84}$	0	0	0	0	0	0	$\frac{5\sqrt{2}i}{28}$	0	0	0	0	0	0
		0	$-\frac{\sqrt{105}i}{588}$	0	0	0	0	$-\frac{5\sqrt{2}i}{28}$	0	$\frac{5\sqrt{42}i}{147}$	0	0	0	0	0
		$-\frac{5\sqrt{7}i}{196}$	0	$\frac{\sqrt{70}i}{196}$	0	0	0	0	$-\frac{5\sqrt{42}i}{147}$	0	$\frac{5\sqrt{210}i}{588}$	0	0	0	0
		0	$-\frac{11\sqrt{21}i}{588}$	0	$\frac{\sqrt{42}i}{84}$	0	0	0	0	$-\frac{5\sqrt{210}i}{588}$	0	0	0	0	0
		0	0	$-\frac{\sqrt{42}i}{84}$	0	$\frac{11\sqrt{21}i}{588}$	0	0	0	0	0	0	$-\frac{5\sqrt{210}i}{588}$	0	0
		0	0	0	$-\frac{\sqrt{70}i}{196}$	0	$\frac{5\sqrt{7}i}{196}$	0	0	0	0	$\frac{5\sqrt{210}i}{588}$	0	$-\frac{5\sqrt{42}i}{147}$	0
		0	0	0	0	$\frac{\sqrt{105}i}{588}$	0	0	0	0	0	0	$\frac{5\sqrt{42}i}{147}$	0	$-\frac{5\sqrt{2}i}{28}$
		0	0	0	0	0	$\frac{5\sqrt{3}i}{84}$	0	0	0	0	0	0	$\frac{5\sqrt{2}i}{28}$	0
832	symmetry	$-\sqrt{3}xz$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{2,2}^{(a)}(E_{1g})$		0	$\frac{3\sqrt{70}}{98}$	0	0	0	0	$-\frac{5\sqrt{3}}{84}$	0	$\frac{5\sqrt{7}}{196}$	0	0	0	0	0
		$\frac{3\sqrt{70}}{98}$	0	$\frac{3\sqrt{7}}{49}$	0	0	0	0	$-\frac{\sqrt{105}}{588}$	0	$\frac{11\sqrt{21}}{588}$	0	0	0	0
		0	$\frac{3\sqrt{7}}{49}$	0	0	0	0	0	0	$\frac{\sqrt{70}}{196}$	0	$\frac{\sqrt{42}}{84}$	0	0	0
		0	0	0	0	$-\frac{3\sqrt{7}}{49}$	0	0	0	0	$\frac{\sqrt{42}}{84}$	0	$\frac{\sqrt{70}}{196}$	0	0
		0	0	0	$-\frac{3\sqrt{7}}{49}$	0	$-\frac{3\sqrt{70}}{98}$	0	0	0	0	$\frac{11\sqrt{21}}{588}$	0	$-\frac{\sqrt{105}}{588}$	0
		0	0	0	0	$-\frac{3\sqrt{70}}{98}$	0	0	0	0	0	0	$\frac{5\sqrt{7}}{196}$	0	$-\frac{5\sqrt{3}}{84}$
		$-\frac{5\sqrt{3}}{84}$	0	0	0	0	0	0	$\frac{5\sqrt{2}}{28}$	0	0	0	0	0	0
		0	$-\frac{\sqrt{105}}{588}$	0	0	0	0	$\frac{5\sqrt{2}}{28}$	0	$\frac{5\sqrt{42}}{147}$	0	0	0	0	0
		$\frac{5\sqrt{7}}{196}$	0	$\frac{\sqrt{70}}{196}$	0	0	0	0	$\frac{5\sqrt{42}}{147}$	0	$\frac{5\sqrt{210}}{588}$	0	0	0	0
		0	$\frac{11\sqrt{21}}{588}$	0	$\frac{\sqrt{42}}{84}$	0	0	0	0	$\frac{5\sqrt{210}}{588}$	0	0	0	0	0
		0	0	$\frac{\sqrt{42}}{84}$	0	$\frac{11\sqrt{21}}{588}$	0	0	0	0	0	$-\frac{5\sqrt{210}}{588}$	0	0	0
		0	0	0	$\frac{\sqrt{70}}{196}$	0	$\frac{5\sqrt{7}}{196}$	0	0	0	0	$-\frac{5\sqrt{210}}{588}$	0	$-\frac{5\sqrt{42}}{147}$	0
		0	0	0	0	$-\frac{\sqrt{105}}{588}$	0	0	0	0	0	$-\frac{5\sqrt{42}}{147}$	0	$-\frac{5\sqrt{2}}{28}$	0
		0	0	0	0	0	$-\frac{5\sqrt{3}}{84}$	0	0	0	0	0	0	$-\frac{5\sqrt{2}}{28}$	0
833	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{2,1}^{(a)}(E_{2g})$		0	0	$-\frac{3\sqrt{35}}{98}$	0	0	0	0	0	$-\frac{\sqrt{105}}{294}$	0	0	0	0	
		0	0	0	$-\frac{9\sqrt{7}}{98}$	0	0	$\frac{\sqrt{15}}{42}$	0	0	0	$-\frac{2\sqrt{21}}{147}$	0	0	
		$-\frac{3\sqrt{35}}{98}$	0	0	0	$-\frac{9\sqrt{7}}{98}$	0	0	$\frac{\sqrt{210}}{147}$	0	0	0	$-\frac{\sqrt{70}}{98}$	0	
		0	$-\frac{9\sqrt{7}}{98}$	0	0	0	$-\frac{3\sqrt{35}}{98}$	0	0	$\frac{\sqrt{70}}{98}$	0	0	$-\frac{\sqrt{210}}{147}$	0	
		0	0	$-\frac{9\sqrt{7}}{98}$	0	0	0	0	0	0	$\frac{2\sqrt{21}}{147}$	0	0	$-\frac{\sqrt{15}}{42}$	
		0	0	0	$-\frac{3\sqrt{35}}{98}$	0	0	0	0	0	0	$\frac{\sqrt{105}}{294}$	0	0	
		0	$\frac{\sqrt{15}}{42}$	0	0	0	0	0	0	$-\frac{5\sqrt{6}}{84}$	0	0	0	0	
		0	0	$\frac{\sqrt{210}}{147}$	0	0	0	0	0	$-\frac{5\sqrt{70}}{196}$	0	0	0	0	
		0	0	0	$\frac{\sqrt{70}}{98}$	0	0	$-\frac{5\sqrt{6}}{84}$	0	0	0	$-\frac{5\sqrt{210}}{294}$	0	0	
		$-\frac{\sqrt{105}}{294}$	0	0	0	$\frac{2\sqrt{21}}{147}$	0	0	$-\frac{5\sqrt{70}}{196}$	0	0	0	$-\frac{5\sqrt{210}}{294}$	0	
		0	$-\frac{2\sqrt{21}}{147}$	0	0	0	$\frac{\sqrt{105}}{294}$	0	0	$-\frac{5\sqrt{210}}{294}$	0	0	$-\frac{5\sqrt{70}}{196}$	0	
		0	0	$-\frac{\sqrt{70}}{98}$	0	0	0	0	0	0	$-\frac{5\sqrt{210}}{294}$	0	0	$-\frac{5\sqrt{6}}{84}$	
		0	0	0	$-\frac{\sqrt{210}}{147}$	0	0	0	0	0	0	$-\frac{5\sqrt{70}}{196}$	0	0	
		0	0	0	0	$-\frac{\sqrt{15}}{42}$	0	0	0	0	0	0	$-\frac{5\sqrt{6}}{84}$	0	
834	symmetry	$-\sqrt{3}xy$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{2,2}^{(a)}(E_{2g})$	0	0	$-\frac{3\sqrt{35}i}{98}$	0	0	0	0	0	0	$-\frac{\sqrt{105}i}{294}$	0	0	0	0	
	0	0	0	$-\frac{9\sqrt{7}i}{98}$	0	0	$-\frac{\sqrt{15}i}{42}$	0	0	0	$-\frac{2\sqrt{21}i}{147}$	0	0	0	
	$\frac{3\sqrt{35}i}{98}$	0	0	0	$-\frac{9\sqrt{7}i}{98}$	0	0	$-\frac{\sqrt{210}i}{147}$	0	0	0	$-\frac{\sqrt{70}i}{98}$	0	0	
	0	$\frac{9\sqrt{7}i}{98}$	0	0	0	$-\frac{3\sqrt{35}i}{98}$	0	0	$-\frac{\sqrt{70}i}{98}$	0	0	0	$-\frac{\sqrt{210}i}{147}$	0	
	0	0	$\frac{9\sqrt{7}i}{98}$	0	0	0	0	0	0	$-\frac{2\sqrt{21}i}{147}$	0	0	0	$-\frac{\sqrt{15}i}{42}$	
	0	0	0	$\frac{3\sqrt{35}i}{98}$	0	0	0	0	0	0	$-\frac{\sqrt{105}i}{294}$	0	0	0	
	0	$\frac{\sqrt{15}i}{42}$	0	0	0	0	0	0	$-\frac{5\sqrt{6}i}{84}$	0	0	0	0	0	
	0	0	$\frac{\sqrt{210}i}{147}$	0	0	0	0	0	0	$-\frac{5\sqrt{70}i}{196}$	0	0	0	0	
	0	0	0	$\frac{\sqrt{70}i}{98}$	0	0	$\frac{5\sqrt{6}i}{84}$	0	0	0	$-\frac{5\sqrt{210}i}{294}$	0	0	0	
	$\frac{\sqrt{105}i}{294}$	0	0	0	$\frac{2\sqrt{21}i}{147}$	0	0	$\frac{5\sqrt{70}i}{196}$	0	0	0	$-\frac{5\sqrt{210}i}{294}$	0	0	
	0	$\frac{2\sqrt{21}i}{147}$	0	0	0	$\frac{\sqrt{105}i}{294}$	0	0	$\frac{5\sqrt{210}i}{294}$	0	0	0	$-\frac{5\sqrt{70}i}{196}$	0	
	0	0	$\frac{\sqrt{70}i}{98}$	0	0	0	0	0	0	$\frac{5\sqrt{210}i}{294}$	0	0	0	$-\frac{5\sqrt{6}i}{84}$	
	0	0	0	$\frac{\sqrt{210}i}{147}$	0	0	0	0	0	0	$\frac{5\sqrt{70}i}{196}$	0	0	0	
	0	0	0	0	$\frac{\sqrt{15}i}{42}$	0	0	0	0	0	0	$\frac{5\sqrt{6}i}{84}$	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													
$\mathbb{Q}_4^{(a)}(A_g)$		$\frac{\sqrt{77}}{98}$	0	0	0	0	0	0	$\frac{5\sqrt{462}}{539}$	0	0	0	0	0	0
		0	$-\frac{3\sqrt{77}}{98}$	0	0	0	0	0	0	$-\frac{4\sqrt{770}}{539}$	0	0	0	0	0
		0	0	$\frac{\sqrt{77}}{49}$	0	0	0	0	0	0	$-\frac{5\sqrt{231}}{539}$	0	0	0	0
		0	0	0	$\frac{\sqrt{77}}{49}$	0	0	0	0	0	0	$\frac{5\sqrt{231}}{539}$	0	0	0
		0	0	0	0	$-\frac{3\sqrt{77}}{98}$	0	0	0	0	0	0	$\frac{4\sqrt{770}}{539}$	0	0
		0	0	0	0	0	$\frac{\sqrt{77}}{98}$	0	0	0	0	0	0	$-\frac{5\sqrt{462}}{539}$	0
		0	0	0	0	0	0	$\frac{3\sqrt{77}}{154}$	0	0	0	0	0	0	0
		$\frac{5\sqrt{462}}{539}$	0	0	0	0	0	0	$-\frac{39\sqrt{77}}{1078}$	0	0	0	0	0	0
		0	$-\frac{4\sqrt{770}}{539}$	0	0	0	0	0	0	$-\frac{9\sqrt{77}}{1078}$	0	0	0	0	0
		0	0	$-\frac{5\sqrt{231}}{539}$	0	0	0	0	0	0	$\frac{27\sqrt{77}}{1078}$	0	0	0	0
		0	0	0	$\frac{5\sqrt{231}}{539}$	0	0	0	0	0	0	$\frac{27\sqrt{77}}{1078}$	0	0	0
		0	0	0	0	$\frac{4\sqrt{770}}{539}$	0	0	0	0	0	0	$-\frac{9\sqrt{77}}{1078}$	0	0
		0	0	0	0	0	$-\frac{5\sqrt{462}}{539}$	0	0	0	0	0	0	$-\frac{39\sqrt{77}}{1078}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{3\sqrt{77}}{154}$
836	symmetry	$\frac{\sqrt{70}xz(x^2-3y^2)}{4}$													

continued ...

Table 10

No.	multipole	matrix													
$\mathbb{Q}_4^{(a)}(B_g, 1)$		0	0	0	$\frac{\sqrt{11}}{14}$	0	0	0	0	0	0	$\frac{5\sqrt{33}}{154}$	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	$-\frac{\sqrt{11}}{14}$	$-\frac{3\sqrt{462}}{308}$	0	0	0	0	0	$-\frac{\sqrt{66}}{308}$	0
		$\frac{\sqrt{11}}{14}$	0	0	0	0	0	0	$-\frac{\sqrt{66}}{308}$	0	0	0	0	0	$-\frac{3\sqrt{462}}{308}$
		0	0	0	0	0	0	0	0	$\frac{\sqrt{11}}{22}$	0	0	0	0	0
		0	0	$-\frac{\sqrt{11}}{14}$	0	0	0	0	0	0	$\frac{5\sqrt{33}}{154}$	0	0	0	0
		0	0	$-\frac{3\sqrt{462}}{308}$	0	0	0	0	0	0	$\frac{3\sqrt{154}}{154}$	0	0	0	0
		0	0	0	$-\frac{\sqrt{66}}{308}$	0	0	0	0	0	0	$\frac{3\sqrt{22}}{77}$	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	$\frac{5\sqrt{33}}{154}$	$\frac{3\sqrt{154}}{154}$	0	0	0	0	0	$-\frac{3\sqrt{22}}{77}$	0
		$\frac{5\sqrt{33}}{154}$	0	0	0	0	0	0	$\frac{3\sqrt{22}}{77}$	0	0	0	0	0	$-\frac{3\sqrt{154}}{154}$
		0	$\frac{\sqrt{11}}{22}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{66}}{308}$	0	0	0	0	0	0	$-\frac{3\sqrt{22}}{77}$	0	0	0	0
		0	0	0	$-\frac{3\sqrt{462}}{308}$	0	0	0	0	0	0	$-\frac{3\sqrt{154}}{154}$	0	0	0
837	symmetry	$\frac{\sqrt{70}yz(3x^2-y^2)}{4}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_4^{(a)}(B_g, 2)$		0	0	0	$-\frac{\sqrt{11}i}{14}$	0	0	0	0	0	0	$-\frac{5\sqrt{33}i}{154}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{11}i}{22}$	0	0
		0	0	0	0	0	$\frac{\sqrt{11}i}{14}$	$-\frac{3\sqrt{462}i}{308}$	0	0	0	0	0	$\frac{\sqrt{66}i}{308}$	0
		$\frac{\sqrt{11}i}{14}$	0	0	0	0	0	0	$-\frac{\sqrt{66}i}{308}$	0	0	0	0	0	$\frac{3\sqrt{462}i}{308}$
		0	0	0	0	0	0	0	0	$\frac{\sqrt{11}i}{22}$	0	0	0	0	0
		0	0	$-\frac{\sqrt{11}i}{14}$	0	0	0	0	0	0	$\frac{5\sqrt{33}i}{154}$	0	0	0	0
		0	0	$\frac{3\sqrt{462}i}{308}$	0	0	0	0	0	0	$-\frac{3\sqrt{154}i}{154}$	0	0	0	0
		0	0	0	$\frac{\sqrt{66}i}{308}$	0	0	0	0	0	0	$-\frac{3\sqrt{22}i}{77}$	0	0	0
		0	0	0	0	$-\frac{\sqrt{11}i}{22}$	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	$-\frac{5\sqrt{33}i}{154}$	$\frac{3\sqrt{154}i}{154}$	0	0	0	0	0	$\frac{3\sqrt{22}i}{77}$	0
		$\frac{5\sqrt{33}i}{154}$	0	0	0	0	0	0	$\frac{3\sqrt{22}i}{77}$	0	0	0	0	0	$\frac{3\sqrt{154}i}{154}$
		0	$\frac{\sqrt{11}i}{22}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{66}i}{308}$	0	0	0	0	0	0	$-\frac{3\sqrt{22}i}{77}$	0	0	0	0
		0	0	0	$-\frac{3\sqrt{462}i}{308}$	0	0	0	0	0	0	$-\frac{3\sqrt{154}i}{154}$	0	0	0
838	symmetry	$-\frac{\sqrt{10}yz(3x^2+3y^2-4z^2)}{4}$													

*continued ...*



Table 10

No.	multipole	matrix												
$\mathbb{Q}_{4,1}^{(a)}(E_{1g})$		0	$-\frac{\sqrt{154}i}{98}$	0	0	0	0	$-\frac{\sqrt{165}i}{154}$	0	$-\frac{5\sqrt{385}i}{539}$	0	0	0	0
		$\frac{\sqrt{154}i}{98}$	0	$\frac{\sqrt{385}i}{98}$	0	0	0	0	$\frac{13\sqrt{231}i}{1078}$	0	$\frac{\sqrt{1155}i}{539}$	0	0	0
		0	$-\frac{\sqrt{385}i}{98}$	0	0	0	0	0	0	$-\frac{\sqrt{154}i}{2156}$	0	$\frac{\sqrt{2310}i}{308}$	0	0
		0	0	0	0	$-\frac{\sqrt{385}i}{98}$	0	0	0	0	$-\frac{\sqrt{2310}i}{308}$	0	$\frac{\sqrt{154}i}{2156}$	0
		0	0	0	$\frac{\sqrt{385}i}{98}$	0	$\frac{\sqrt{154}i}{98}$	0	0	0	0	$-\frac{\sqrt{1155}i}{539}$	0	$-\frac{13\sqrt{231}i}{1078}$
		0	0	0	0	$-\frac{\sqrt{154}i}{98}$	0	0	0	0	0	$\frac{5\sqrt{385}i}{539}$	0	$\frac{\sqrt{165}i}{154}$
		$\frac{\sqrt{165}i}{154}$	0	0	0	0	0	0	$-\frac{3\sqrt{110}i}{154}$	0	0	0	0	0
		0	$-\frac{13\sqrt{231}i}{1078}$	0	0	0	0	$\frac{3\sqrt{110}i}{154}$	0	$\frac{3\sqrt{2310}i}{1078}$	0	0	0	0
		$\frac{5\sqrt{385}i}{539}$	0	$\frac{\sqrt{154}i}{2156}$	0	0	0	0	$-\frac{3\sqrt{2310}i}{1078}$	0	$\frac{9\sqrt{462}i}{1078}$	0	0	0
		0	$-\frac{\sqrt{1155}i}{539}$	0	$\frac{\sqrt{2310}i}{308}$	0	0	0	0	$-\frac{9\sqrt{462}i}{1078}$	0	0	0	0
		0	0	$-\frac{\sqrt{2310}i}{308}$	0	$\frac{\sqrt{1155}i}{539}$	0	0	0	0	0	$-\frac{9\sqrt{462}i}{1078}$	0	0
		0	0	0	$-\frac{\sqrt{154}i}{2156}$	0	$-\frac{5\sqrt{385}i}{539}$	0	0	0	0	$\frac{9\sqrt{462}i}{1078}$	0	$-\frac{3\sqrt{2310}i}{1078}$
		0	0	0	0	$\frac{13\sqrt{231}i}{1078}$	0	0	0	0	0	$\frac{3\sqrt{2310}i}{1078}$	0	$\frac{3\sqrt{110}i}{154}$
		0	0	0	0	0	$-\frac{\sqrt{165}i}{154}$	0	0	0	0	0	$-\frac{3\sqrt{110}i}{154}$	0
839	symmetry	$\frac{\sqrt{10}xz(3x^2+3y^2-4z^2)}{4}$												

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{4,2}^{(a)}(E_{1g})$		0	$-\frac{\sqrt{154}}{98}$	0	0	0	0	$\frac{\sqrt{165}}{154}$	0	$-\frac{5\sqrt{385}}{539}$	0	0	0	0	0
		$-\frac{\sqrt{154}}{98}$	0	$\frac{\sqrt{385}}{98}$	0	0	0	0	$-\frac{13\sqrt{231}}{1078}$	0	$\frac{\sqrt{1155}}{539}$	0	0	0	0
		0	$\frac{\sqrt{385}}{98}$	0	0	0	0	0	0	$\frac{\sqrt{154}}{2156}$	0	$\frac{\sqrt{2310}}{308}$	0	0	0
		0	0	0	0	$-\frac{\sqrt{385}}{98}$	0	0	0	0	$\frac{\sqrt{2310}}{308}$	0	$\frac{\sqrt{154}}{2156}$	0	0
		0	0	0	$-\frac{\sqrt{385}}{98}$	0	$\frac{\sqrt{154}}{98}$	0	0	0	0	$\frac{\sqrt{1155}}{539}$	0	$-\frac{13\sqrt{231}}{1078}$	0
		0	0	0	0	$\frac{\sqrt{154}}{98}$	0	0	0	0	0	0	$-\frac{5\sqrt{385}}{539}$	0	$\frac{\sqrt{165}}{154}$
		$\frac{\sqrt{165}}{154}$	0	0	0	0	0	0	$-\frac{3\sqrt{110}}{154}$	0	0	0	0	0	0
		0	$-\frac{13\sqrt{231}}{1078}$	0	0	0	0	$-\frac{3\sqrt{110}}{154}$	0	$\frac{3\sqrt{2310}}{1078}$	0	0	0	0	0
		$-\frac{5\sqrt{385}}{539}$	0	$\frac{\sqrt{154}}{2156}$	0	0	0	0	$\frac{3\sqrt{2310}}{1078}$	0	$\frac{9\sqrt{462}}{1078}$	0	0	0	0
		0	$\frac{\sqrt{1155}}{539}$	0	$\frac{\sqrt{2310}}{308}$	0	0	0	0	$\frac{9\sqrt{462}}{1078}$	0	0	0	0	0
		0	0	$\frac{\sqrt{2310}}{308}$	0	$\frac{\sqrt{1155}}{539}$	0	0	0	0	0	$-\frac{9\sqrt{462}}{1078}$	0	0	0
		0	0	0	$\frac{\sqrt{154}}{2156}$	0	$-\frac{5\sqrt{385}}{539}$	0	0	0	0	$-\frac{9\sqrt{462}}{1078}$	0	$-\frac{3\sqrt{2310}}{1078}$	0
		0	0	0	0	$-\frac{13\sqrt{231}}{1078}$	0	0	0	0	0	0	$-\frac{3\sqrt{2310}}{1078}$	0	$\frac{3\sqrt{110}}{154}$
		0	0	0	0	0	$\frac{\sqrt{165}}{154}$	0	0	0	0	0	0	$\frac{3\sqrt{110}}{154}$	0
840	symmetry	$\frac{\sqrt{35}(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{4,1}^{(a)}(E_{2g}, 1)$		0	0	0	0	$\frac{\sqrt{11}}{14}$	0	0	0	0	0	0	$\frac{\sqrt{110}}{77}$	0	0
		0	0	0	0	0	$\frac{\sqrt{11}}{14}$	0	0	0	0	0	0	$\frac{2\sqrt{66}}{77}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{231}}{77}$
		0	0	0	0	0	0	$-\frac{\sqrt{231}}{77}$	0	0	0	0	0	0	0
		$\frac{\sqrt{11}}{14}$	0	0	0	0	0	0	$-\frac{2\sqrt{66}}{77}$	0	0	0	0	0	0
		0	$\frac{\sqrt{11}}{14}$	0	0	0	0	0	0	$-\frac{\sqrt{110}}{77}$	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{231}}{77}$	0	0	0	0	0	0	$\frac{3\sqrt{77}}{154}$	0	0	0
		0	0	0	0	$-\frac{2\sqrt{66}}{77}$	0	0	0	0	0	0	$\frac{3\sqrt{165}}{154}$	0	0
		0	0	0	0	0	$-\frac{\sqrt{110}}{77}$	0	0	0	0	0	0	$\frac{3\sqrt{165}}{154}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{3\sqrt{77}}{154}$
		0	0	0	0	0	0	$\frac{3\sqrt{77}}{154}$	0	0	0	0	0	0	0
		$\frac{\sqrt{110}}{77}$	0	0	0	0	0	0	$\frac{3\sqrt{165}}{154}$	0	0	0	0	0	0
		0	$\frac{2\sqrt{66}}{77}$	0	0	0	0	0	0	$\frac{3\sqrt{165}}{154}$	0	0	0	0	0
		0	0	$\frac{\sqrt{231}}{77}$	0	0	0	0	0	0	$\frac{3\sqrt{77}}{154}$	0	0	0	0
841	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{4,2}^{(a)}(E_{2g}, 1)$		0	0	0	0	$-\frac{\sqrt{11}i}{14}$	0	0	0	0	0	0	$-\frac{\sqrt{110}i}{77}$	0	0
		0	0	0	0	0	$-\frac{\sqrt{11}i}{14}$	0	0	0	0	0	0	$-\frac{2\sqrt{66}i}{77}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{231}i}{77}$
		0	0	0	0	0	0	$-\frac{\sqrt{231}i}{77}$	0	0	0	0	0	0	0
		$\frac{\sqrt{11}i}{14}$	0	0	0	0	0	0	$-\frac{2\sqrt{66}i}{77}$	0	0	0	0	0	0
		0	$\frac{\sqrt{11}i}{14}$	0	0	0	0	0	0	$-\frac{\sqrt{110}i}{77}$	0	0	0	0	0
		0	0	0	$\frac{\sqrt{231}i}{77}$	0	0	0	0	0	0	$-\frac{3\sqrt{77}i}{154}$	0	0	0
		0	0	0	0	$\frac{2\sqrt{66}i}{77}$	0	0	0	0	0	0	$-\frac{3\sqrt{165}i}{154}$	0	0
		0	0	0	0	0	$\frac{\sqrt{110}i}{77}$	0	0	0	0	0	0	$-\frac{3\sqrt{165}i}{154}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{3\sqrt{77}i}{154}$
		0	0	0	0	0	0	$\frac{3\sqrt{77}i}{154}$	0	0	0	0	0	0	0
		$\frac{\sqrt{110}i}{77}$	0	0	0	0	0	0	$\frac{3\sqrt{165}i}{154}$	0	0	0	0	0	0
		0	$\frac{2\sqrt{66}i}{77}$	0	0	0	0	0	0	$\frac{3\sqrt{165}i}{154}$	0	0	0	0	0
		0	0	$\frac{\sqrt{231}i}{77}$	0	0	0	0	0	$\frac{3\sqrt{77}i}{154}$	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													
$\mathbb{Q}_{4,1}^{(a)}(E_{2g}, 2)$	0	0	$\frac{3\sqrt{154}}{196}$	0	0	0	0	0	0	$\frac{5\sqrt{462}}{539}$	0	0	0	0	
	0	0	0	$-\frac{\sqrt{770}}{196}$	0	0	$-\frac{3\sqrt{66}}{154}$	0	0	0	$\frac{\sqrt{2310}}{1078}$	0	0	0	
	$\frac{3\sqrt{154}}{196}$	0	0	0	$-\frac{\sqrt{770}}{196}$	0	0	$\frac{9\sqrt{231}}{1078}$	0	0	0	$-\frac{17\sqrt{77}}{1078}$	0	0	
	0	$-\frac{\sqrt{770}}{196}$	0	0	0	$\frac{3\sqrt{154}}{196}$	0	0	$\frac{17\sqrt{77}}{1078}$	0	0	0	$-\frac{9\sqrt{231}}{1078}$	0	
	0	0	$-\frac{\sqrt{770}}{196}$	0	0	0	0	0	0	$-\frac{\sqrt{2310}}{1078}$	0	0	0	$\frac{3\sqrt{66}}{154}$	
	0	0	0	$\frac{3\sqrt{154}}{196}$	0	0	0	0	0	0	$-\frac{5\sqrt{462}}{539}$	0	0	0	
	0	$-\frac{3\sqrt{66}}{154}$	0	0	0	0	0	0	$\frac{3\sqrt{165}}{154}$	0	0	0	0	0	
	0	0	$\frac{9\sqrt{231}}{1078}$	0	0	0	0	0	0	$\frac{3\sqrt{77}}{1078}$	0	0	0	0	
	0	0	0	$\frac{17\sqrt{77}}{1078}$	0	0	$\frac{3\sqrt{165}}{154}$	0	0	0	$-\frac{6\sqrt{231}}{539}$	0	0	0	
	$\frac{5\sqrt{462}}{539}$	0	0	0	$-\frac{\sqrt{2310}}{1078}$	0	0	$\frac{3\sqrt{77}}{1078}$	0	0	0	$-\frac{6\sqrt{231}}{539}$	0	0	
	0	$\frac{\sqrt{2310}}{1078}$	0	0	0	$-\frac{5\sqrt{462}}{539}$	0	0	$-\frac{6\sqrt{231}}{539}$	0	0	0	$\frac{3\sqrt{77}}{1078}$	0	
	0	0	$-\frac{17\sqrt{77}}{1078}$	0	0	0	0	0	0	$-\frac{6\sqrt{231}}{539}$	0	0	0	$\frac{3\sqrt{165}}{154}$	
	0	0	0	$-\frac{9\sqrt{231}}{1078}$	0	0	0	0	0	0	$\frac{3\sqrt{77}}{1078}$	0	0	0	
	0	0	0	0	$\frac{3\sqrt{66}}{154}$	0	0	0	0	0	0	$\frac{3\sqrt{165}}{154}$	0	0	
843	symmetry	$\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$													

*continued ...*

Table 10

No.	multipole	matrix												
$\mathbb{Q}_{4,2}^{(a)}(E_{2g}, 2)$		0	0	$\frac{3\sqrt{154}i}{196}$	0	0	0	0	0	0	$\frac{5\sqrt{462}i}{539}$	0	0	0
		0	0	0	$-\frac{\sqrt{770}i}{196}$	0	0	$\frac{3\sqrt{66}i}{154}$	0	0	0	$\frac{\sqrt{2310}i}{1078}$	0	0
		$-\frac{3\sqrt{154}i}{196}$	0	0	0	$-\frac{\sqrt{770}i}{196}$	0	0	$-\frac{9\sqrt{231}i}{1078}$	0	0	0	$-\frac{17\sqrt{77}i}{1078}$	0
		0	$\frac{\sqrt{770}i}{196}$	0	0	0	$\frac{3\sqrt{154}i}{196}$	0	0	$-\frac{17\sqrt{77}i}{1078}$	0	0	0	$-\frac{9\sqrt{231}i}{1078}$
		0	0	$\frac{\sqrt{770}i}{196}$	0	0	0	0	0	0	$\frac{\sqrt{2310}i}{1078}$	0	0	$\frac{3\sqrt{66}i}{154}$
		0	0	0	$-\frac{3\sqrt{154}i}{196}$	0	0	0	0	0	0	$\frac{5\sqrt{462}i}{539}$	0	0
		0	$-\frac{3\sqrt{66}i}{154}$	0	0	0	0	0	0	$\frac{3\sqrt{165}i}{154}$	0	0	0	0
		0	0	$\frac{9\sqrt{231}i}{1078}$	0	0	0	0	0	0	$\frac{3\sqrt{77}i}{1078}$	0	0	0
		0	0	0	$\frac{17\sqrt{77}i}{1078}$	0	0	$-\frac{3\sqrt{165}i}{154}$	0	0	0	$-\frac{6\sqrt{231}i}{539}$	0	0
		$-\frac{5\sqrt{462}i}{539}$	0	0	0	$-\frac{\sqrt{2310}i}{1078}$	0	0	$-\frac{3\sqrt{77}i}{1078}$	0	0	0	$-\frac{6\sqrt{231}i}{539}$	0
		0	$-\frac{\sqrt{2310}i}{1078}$	0	0	0	$-\frac{5\sqrt{462}i}{539}$	0	0	$\frac{6\sqrt{231}i}{539}$	0	0	0	$\frac{3\sqrt{77}i}{1078}$
		0	0	$\frac{17\sqrt{77}i}{1078}$	0	0	0	0	0	0	$\frac{6\sqrt{231}i}{539}$	0	0	$\frac{3\sqrt{165}i}{154}$
		0	0	0	$\frac{9\sqrt{231}i}{1078}$	0	0	0	0	0	0	$-\frac{3\sqrt{77}i}{1078}$	0	0
		0	0	0	0	$-\frac{3\sqrt{66}i}{154}$	0	0	0	0	0	0	$-\frac{3\sqrt{165}i}{154}$	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													
$\mathbb{Q}_6^{(a)}(A_g, 1)$		0	0	0	0	0	0	0	$-\frac{\sqrt{77}}{154}$	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	0	0	0	0	$-\frac{5\sqrt{154}}{154}$	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	$\frac{5\sqrt{154}}{154}$	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	0	0	0	0	$\frac{\sqrt{77}}{154}$	0
		0	0	0	0	0	0	$-\frac{\sqrt{462}}{924}$	0	0	0	0	0	0	0
		$-\frac{\sqrt{77}}{154}$	0	0	0	0	0	0	$\frac{5\sqrt{462}}{924}$	0	0	0	0	0	0
		0	$\frac{\sqrt{1155}}{154}$	0	0	0	0	0	0	$-\frac{3\sqrt{462}}{308}$	0	0	0	0	0
		0	0	$-\frac{5\sqrt{154}}{154}$	0	0	0	0	0	0	$\frac{5\sqrt{462}}{924}$	0	0	0	0
		0	0	0	$\frac{5\sqrt{154}}{154}$	0	0	0	0	0	0	$\frac{5\sqrt{462}}{924}$	0	0	0
		0	0	0	0	$-\frac{\sqrt{1155}}{154}$	0	0	0	0	0	0	$-\frac{3\sqrt{462}}{308}$	0	0
		0	0	0	0	0	$\frac{\sqrt{77}}{154}$	0	0	0	0	0	0	$\frac{5\sqrt{462}}{924}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{462}}{924}$
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													
$\mathbb{Q}_6^{(a)}(A_g, 2)$		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{42}}{14}$	
		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	0	0	0	
		0	0	0	0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	$\frac{\sqrt{42}}{14}$	0	0	0	0	0	0	0	
		0	0	0	0	0	$\frac{\sqrt{42}}{14}$	0	0	0	0	0	$-\frac{\sqrt{7}}{14}$	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	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	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	
		$-\frac{\sqrt{42}}{14}$	0	0	0	0	0	$-\frac{\sqrt{7}}{14}$	0	0	0	0	0	0	
846	symmetry	$\frac{\sqrt{462}xy(x^2-3y^2)(3x^2-y^2)}{16}$													

*continued ...*



Table 10

No.	multipole	matrix														
$\mathbb{Q}_6^{(a)}(A_g, 3)$		0	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{42}i}{14}$	
		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	0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	$\frac{\sqrt{42}i}{14}$	0	0	0	0	0	0	0	
		0	0	0	0	0	$-\frac{\sqrt{42}i}{14}$	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	0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	$-\frac{\sqrt{7}i}{14}$	0	0	0	0	0	0	0	
		$-\frac{\sqrt{42}i}{14}$	0	0	0	0	0	0	$-\frac{\sqrt{7}i}{14}$	0	0	0	0	0	0	
847	symmetry	$-\frac{\sqrt{210}xz(x^2-3y^2)(3x^2+3y^2-8z^2)}{16}$														

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_6^{(a)}(B_g, 1)$		0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{66}}{44}$	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	$\frac{\sqrt{231}}{154}$	0	0	0	0	0	$-\frac{\sqrt{33}}{22}$	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{33}}{22}$	0	0	0	0	0	$\frac{\sqrt{231}}{154}$
		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	0	$-\frac{\sqrt{66}}{44}$	0	0	0	0
		0	0	$\frac{\sqrt{231}}{154}$	0	0	0	0	0	0	$-\frac{\sqrt{77}}{77}$	0	0	0	0
		0	0	0	$-\frac{\sqrt{33}}{22}$	0	0	0	0	0	0	$\frac{\sqrt{11}}{22}$	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	0	$-\frac{\sqrt{66}}{44}$	$-\frac{\sqrt{77}}{77}$	0	0	0	0	0	$-\frac{\sqrt{11}}{22}$	0
		$-\frac{\sqrt{66}}{44}$	0	0	0	0	0	0	$\frac{\sqrt{11}}{22}$	0	0	0	0	0	$\frac{\sqrt{77}}{77}$
		0	$\frac{3\sqrt{22}}{44}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{33}}{22}$	0	0	0	0	0	0	$-\frac{\sqrt{11}}{22}$	0	0	0	0
		0	0	0	$\frac{\sqrt{231}}{154}$	0	0	0	0	0	0	$\frac{\sqrt{77}}{77}$	0	0	0
848	symmetry	$-\frac{\sqrt{210}yz(3x^2-y^2)(3x^2+3y^2-8z^2)}{16}$													

*continued ...*

Table 10

No.	multipole	matrix												
$\mathbb{Q}_6^{(a)}(B_g, 2)$		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{66i}}{44}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	$-\frac{3\sqrt{22i}}{44}$	0	0
		0	0	0	0	0	0	$\frac{\sqrt{231i}}{154}$	0	0	0	0	$\frac{\sqrt{33i}}{22}$	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{33i}}{22}$	0	0	0	0	$-\frac{\sqrt{231i}}{154}$
		0	0	0	0	0	0	0	0	$\frac{3\sqrt{22i}}{44}$	0	0	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{66i}}{44}$	0	0	0
		0	0	$-\frac{\sqrt{231i}}{154}$	0	0	0	0	0	0	$\frac{\sqrt{77i}}{77}$	0	0	0
		0	0	0	$\frac{\sqrt{33i}}{22}$	0	0	0	0	0	0	$-\frac{\sqrt{11i}}{22}$	0	0
		0	0	0	0	$-\frac{3\sqrt{22i}}{44}$	0	0	0	0	0	0	0	0
		0	0	0	0	0	$\frac{\sqrt{66i}}{44}$	$-\frac{\sqrt{77i}}{77}$	0	0	0	0	$\frac{\sqrt{11i}}{22}$	0
		$-\frac{\sqrt{66i}}{44}$	0	0	0	0	0	0	$\frac{\sqrt{11i}}{22}$	0	0	0	0	$-\frac{\sqrt{77i}}{77}$
		0	$\frac{3\sqrt{22i}}{44}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{33i}}{22}$	0	0	0	0	0	0	$-\frac{\sqrt{11i}}{22}$	0	0	0
		0	0	0	$\frac{\sqrt{231i}}{154}$	0	0	0	0	0	0	$\frac{\sqrt{77i}}{77}$	0	0
849	symmetry	$\frac{3\sqrt{154}yz(5x^4-10x^2y^2+y^4)}{16}$												

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{6,1}^{(a)}(E_{1g}, 1)$		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	$-\frac{\sqrt{70}i}{28}$	
		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	$\frac{\sqrt{70}i}{28}$	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	$-\frac{\sqrt{70}i}{28}$	0	0	0	0	0	$\frac{\sqrt{7}i}{14}$	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	$-\frac{\sqrt{7}i}{14}$	
		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	$-\frac{\sqrt{7}i}{14}$	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	$\frac{\sqrt{70}i}{28}$	0	0	0	0	0	0	0	$\frac{\sqrt{7}i}{14}$	0	0	0	0	
850	symmetry	$\frac{3\sqrt{154}xz(x^4-10x^2y^2+5y^4)}{16}$													

*continued ...*

Table 10

No.	multipole	matrix														
$\mathbb{Q}_{6,2}^{(a)}(E_{1g}, 1)$		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	$\frac{\sqrt{70}}{28}$	
		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	$\frac{\sqrt{70}}{28}$	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	$\frac{\sqrt{70}}{28}$	0	0	0	0	0	$-\frac{\sqrt{7}}{14}$	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	$\frac{\sqrt{7}}{14}$	
		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	0	$-\frac{\sqrt{7}}{14}$	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	$\frac{\sqrt{70}}{28}$	0	0	0	0	0	$\frac{\sqrt{7}}{14}$	0	0	0	0	0	0	
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													
$\mathbb{Q}_{6,1}^{(a)}(E_{1g}, 2)$		0	0	0	0	0	0	$\frac{\sqrt{231}i}{924}$	0	$\frac{\sqrt{11}i}{44}$	0	0	0	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{165}i}{132}$	0	$-\frac{5\sqrt{33}i}{132}$	0	0	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{110}i}{44}$	0	$\frac{5\sqrt{66}i}{132}$	0	0	0	0
		0	0	0	0	0	0	0	0	$-\frac{5\sqrt{66}i}{132}$	0	$-\frac{\sqrt{110}i}{44}$	0	0	0
		0	0	0	0	0	0	0	0	0	$\frac{5\sqrt{33}i}{132}$	0	$\frac{\sqrt{165}i}{132}$	0	0
		0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{11}i}{44}$	0	$-\frac{\sqrt{231}i}{924}$	0
		$-\frac{\sqrt{231}i}{924}$	0	0	0	0	0	0	$\frac{\sqrt{154}i}{308}$	0	0	0	0	0	0
		0	$\frac{\sqrt{165}i}{132}$	0	0	0	0	$-\frac{\sqrt{154}i}{308}$	0	$-\frac{\sqrt{66}i}{66}$	0	0	0	0	0
		$-\frac{\sqrt{11}i}{44}$	0	$-\frac{\sqrt{110}i}{44}$	0	0	0	0	$\frac{\sqrt{66}i}{66}$	0	$\frac{\sqrt{330}i}{132}$	0	0	0	0
		0	$\frac{5\sqrt{33}i}{132}$	0	$\frac{5\sqrt{66}i}{132}$	0	0	0	0	$-\frac{\sqrt{330}i}{132}$	0	0	0	0	0
		0	0	$-\frac{5\sqrt{66}i}{132}$	0	$-\frac{5\sqrt{33}i}{132}$	0	0	0	0	0	$-\frac{\sqrt{330}i}{132}$	0	0	0
		0	0	0	$\frac{\sqrt{110}i}{44}$	0	$\frac{\sqrt{11}i}{44}$	0	0	0	0	$\frac{\sqrt{330}i}{132}$	0	$\frac{\sqrt{66}i}{66}$	0
		0	0	0	0	$-\frac{\sqrt{165}i}{132}$	0	0	0	0	0	$-\frac{\sqrt{66}i}{66}$	0	$-\frac{\sqrt{154}i}{308}$	0
		0	0	0	0	0	$\frac{\sqrt{231}i}{924}$	0	0	0	0	0	0	$\frac{\sqrt{154}i}{308}$	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													
$\mathbb{Q}_{6,2}^{(a)}(E_{1g}, 2)$		0	0	0	0	0	0	$-\frac{\sqrt{231}}{924}$	0	$\frac{\sqrt{11}}{44}$	0	0	0	0	0
		0	0	0	0	0	0	$\frac{\sqrt{165}}{132}$	0	$-\frac{5\sqrt{33}}{132}$	0	0	0	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{110}}{44}$	0	$\frac{5\sqrt{66}}{132}$	0	0	0	0
		0	0	0	0	0	0	0	0	$\frac{5\sqrt{66}}{132}$	0	$-\frac{\sqrt{110}}{44}$	0	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{5\sqrt{33}}{132}$	0	$\frac{\sqrt{165}}{132}$	0	0
		0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{11}}{44}$	0	$-\frac{\sqrt{231}}{924}$	0
		$-\frac{\sqrt{231}}{924}$	0	0	0	0	0	0	$\frac{\sqrt{154}}{308}$	0	0	0	0	0	0
		0	$\frac{\sqrt{165}}{132}$	0	0	0	0	$\frac{\sqrt{154}}{308}$	0	$-\frac{\sqrt{66}}{66}$	0	0	0	0	0
		$\frac{\sqrt{11}}{44}$	0	$-\frac{\sqrt{110}}{44}$	0	0	0	$-\frac{\sqrt{66}}{66}$	0	$\frac{\sqrt{330}}{132}$	0	0	0	0	0
		0	$-\frac{5\sqrt{33}}{132}$	0	$\frac{5\sqrt{66}}{132}$	0	0	0	0	$\frac{\sqrt{330}}{132}$	0	0	0	0	0
		0	0	$\frac{5\sqrt{66}}{132}$	0	$-\frac{5\sqrt{33}}{132}$	0	0	0	0	0	$-\frac{\sqrt{330}}{132}$	0	0	0
		0	0	0	$-\frac{\sqrt{110}}{44}$	0	$\frac{\sqrt{11}}{44}$	0	0	0	0	$-\frac{\sqrt{330}}{132}$	0	$\frac{\sqrt{66}}{66}$	0
		0	0	0	0	$\frac{\sqrt{165}}{132}$	0	0	0	0	0	$\frac{\sqrt{66}}{66}$	0	$-\frac{\sqrt{154}}{308}$	0
		0	0	0	0	0	$-\frac{\sqrt{231}}{924}$	0	0	0	0	0	0	$-\frac{\sqrt{154}}{308}$	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												
$\mathbb{Q}_{6,1}^{(a)}(E_{2g}, 1)$		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	$\frac{\sqrt{55}}{22}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{770}}{154}$
		0	0	0	0	0	0	$\frac{\sqrt{770}}{154}$	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	$\frac{\sqrt{33}}{22}$	0	0	0	0
		0	0	0	$\frac{\sqrt{770}}{154}$	0	0	0	0	0	$-\frac{\sqrt{2310}}{308}$	0	0	0
		0	0	0	0	$-\frac{\sqrt{55}}{22}$	0	0	0	0	0	$\frac{\sqrt{22}}{44}$	0	0
		0	0	0	0	0	$\frac{\sqrt{33}}{22}$	0	0	0	0	0	$\frac{\sqrt{22}}{44}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{2310}}{308}$
		0	0	0	0	0	0	$-\frac{\sqrt{2310}}{308}$	0	0	0	0	0	0
		$-\frac{\sqrt{33}}{22}$	0	0	0	0	0	0	$\frac{\sqrt{22}}{44}$	0	0	0	0	0
		0	$\frac{\sqrt{55}}{22}$	0	0	0	0	0	0	$\frac{\sqrt{22}}{44}$	0	0	0	0
		0	0	$-\frac{\sqrt{770}}{154}$	0	0	0	0	0	$-\frac{\sqrt{2310}}{308}$	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												
$\mathbb{Q}_{6,2}^{(a)}(E_{2g}, 1)$		0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{33}i}{22}$	0	0
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{55}i}{22}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{770}i}{154}$
		0	0	0	0	0	0	$\frac{\sqrt{770}i}{154}$	0	0	0	0	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{55}i}{22}$	0	0	0	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{33}i}{22}$	0	0	0	0
		0	0	0	$-\frac{\sqrt{770}i}{154}$	0	0	0	0	0	$\frac{\sqrt{2310}i}{308}$	0	0	0
		0	0	0	0	$\frac{\sqrt{55}i}{22}$	0	0	0	0	0	$-\frac{\sqrt{22}i}{44}$	0	0
		0	0	0	0	0	$-\frac{\sqrt{33}i}{22}$	0	0	0	0	0	$-\frac{\sqrt{22}i}{44}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{2310}i}{308}$
		0	0	0	0	0	0	$-\frac{\sqrt{2310}i}{308}$	0	0	0	0	0	0
		$-\frac{\sqrt{33}i}{22}$	0	0	0	0	0	0	$\frac{\sqrt{22}i}{44}$	0	0	0	0	0
		0	$\frac{\sqrt{55}i}{22}$	0	0	0	0	0	0	$\frac{\sqrt{22}i}{44}$	0	0	0	0
		0	0	$-\frac{\sqrt{770}i}{154}$	0	0	0	0	0	0	$-\frac{\sqrt{2310}i}{308}$	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												
$\mathbb{Q}_{6,1}^{(a)}(E_{2g}, 2)$		0	0	0	0	0	0	0	0	$-\frac{\sqrt{66}}{66}$	0	0	0	0
		0	0	0	0	0	$\frac{\sqrt{462}}{462}$	0	0	0	$\frac{\sqrt{330}}{66}$	0	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{33}}{33}$	0	0	0	$-\frac{\sqrt{11}}{11}$	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{11}}{11}$	0	0	0	$\frac{\sqrt{33}}{33}$	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{330}}{66}$	0	0	0	$-\frac{\sqrt{462}}{462}$
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{66}}{66}$	0	0	0
		0	$\frac{\sqrt{462}}{462}$	0	0	0	0	0	$-\frac{\sqrt{1155}}{462}$	0	0	0	0	0
		0	0	$-\frac{\sqrt{33}}{33}$	0	0	0	0	0	$\frac{\sqrt{11}}{22}$	0	0	0	0
		0	0	0	$\frac{\sqrt{11}}{11}$	0	0	$-\frac{\sqrt{1155}}{462}$	0	0	0	$-\frac{\sqrt{33}}{66}$	0	0
		$-\frac{\sqrt{66}}{66}$	0	0	0	$-\frac{\sqrt{330}}{66}$	0	0	$\frac{\sqrt{11}}{22}$	0	0	0	$-\frac{\sqrt{33}}{66}$	0
		0	$\frac{\sqrt{330}}{66}$	0	0	0	$\frac{\sqrt{66}}{66}$	0	0	$-\frac{\sqrt{33}}{66}$	0	0	0	$\frac{\sqrt{11}}{22}$
		0	0	$-\frac{\sqrt{11}}{11}$	0	0	0	0	0	$-\frac{\sqrt{33}}{66}$	0	0	0	$-\frac{\sqrt{1155}}{462}$
		0	0	0	$\frac{\sqrt{33}}{33}$	0	0	0	0	0	$\frac{\sqrt{11}}{22}$	0	0	0
		0	0	0	0	$-\frac{\sqrt{462}}{462}$	0	0	0	0	0	$-\frac{\sqrt{1155}}{462}$	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												
$\mathbb{Q}_{6,2}^{(a)}(E_{2g}, 2)$		0	0	0	0	0	0	0	0	$-\frac{\sqrt{66}i}{66}$	0	0	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{462}i}{462}$	0	0	0	$\frac{\sqrt{330}i}{66}$	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{33}i}{33}$	0	0	0	$-\frac{\sqrt{11}i}{11}$	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{11}i}{11}$	0	0	0	$\frac{\sqrt{33}i}{33}$
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{330}i}{66}$	0	0	$-\frac{\sqrt{462}i}{462}$
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{66}i}{66}$	0	0	0
		0	$\frac{\sqrt{462}i}{462}$	0	0	0	0	0	0	$-\frac{\sqrt{1155}i}{462}$	0	0	0	0
		0	0	$-\frac{\sqrt{33}i}{33}$	0	0	0	0	0	0	$\frac{\sqrt{11}i}{22}$	0	0	0
		0	0	0	$\frac{\sqrt{11}i}{11}$	0	0	$\frac{\sqrt{1155}i}{462}$	0	0	0	$-\frac{\sqrt{33}i}{66}$	0	0
		$\frac{\sqrt{66}i}{66}$	0	0	0	$-\frac{\sqrt{330}i}{66}$	0	0	$-\frac{\sqrt{11}i}{22}$	0	0	0	$-\frac{\sqrt{33}i}{66}$	0
		0	$-\frac{\sqrt{330}i}{66}$	0	0	0	$\frac{\sqrt{66}i}{66}$	0	0	$\frac{\sqrt{33}i}{66}$	0	0	0	$\frac{\sqrt{11}i}{22}$
		0	0	$\frac{\sqrt{11}i}{11}$	0	0	0	0	0	0	$\frac{\sqrt{33}i}{66}$	0	0	$-\frac{\sqrt{1155}i}{462}$
		0	0	0	$-\frac{\sqrt{33}i}{33}$	0	0	0	0	0	$-\frac{\sqrt{11}i}{22}$	0	0	0
		0	0	0	0	$\frac{\sqrt{462}i}{462}$	0	0	0	0	0	$\frac{\sqrt{1155}i}{462}$	0	0
857	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$												

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_2^{(1,-1;a)}(A_g)$		$-\frac{5\sqrt{21}}{147}$	0	0	0	0	0	0	$-\frac{15\sqrt{14}}{196}$	0	0	0	0	0	0
		0	$\frac{\sqrt{21}}{147}$	0	0	0	0	0	0	$-\frac{3\sqrt{210}}{196}$	0	0	0	0	0
		0	0	$\frac{4\sqrt{21}}{147}$	0	0	0	0	0	0	$-\frac{3\sqrt{7}}{98}$	0	0	0	0
		0	0	0	$\frac{4\sqrt{21}}{147}$	0	0	0	0	0	0	$\frac{3\sqrt{7}}{98}$	0	0	0
		0	0	0	0	$\frac{\sqrt{21}}{147}$	0	0	0	0	0	0	$\frac{3\sqrt{210}}{196}$	0	0
		0	0	0	0	0	$-\frac{5\sqrt{21}}{147}$	0	0	0	0	0	0	$\frac{15\sqrt{14}}{196}$	0
		0	0	0	0	0	0	$\frac{\sqrt{21}}{14}$	0	0	0	0	0	0	0
		$-\frac{15\sqrt{14}}{196}$	0	0	0	0	0	0	$\frac{\sqrt{21}}{98}$	0	0	0	0	0	0
		0	$-\frac{3\sqrt{210}}{196}$	0	0	0	0	0	0	$-\frac{3\sqrt{21}}{98}$	0	0	0	0	0
		0	0	$-\frac{3\sqrt{7}}{98}$	0	0	0	0	0	0	$-\frac{5\sqrt{21}}{98}$	0	0	0	0
		0	0	0	$\frac{3\sqrt{7}}{98}$	0	0	0	0	0	0	$-\frac{5\sqrt{21}}{98}$	0	0	0
		0	0	0	0	$\frac{3\sqrt{210}}{196}$	0	0	0	0	0	0	$-\frac{3\sqrt{21}}{98}$	0	0
		0	0	0	0	0	$\frac{15\sqrt{14}}{196}$	0	0	0	0	0	0	$\frac{\sqrt{21}}{98}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{21}}{14}$
858	symmetry	$\sqrt{3}yz$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{2,1}^{(1,-1;a)}(E_{1g})$		0	$\frac{\sqrt{35}i}{49}$	0	0	0	0	$\frac{5\sqrt{6}i}{56}$	0	$\frac{15\sqrt{14}i}{392}$	0	0	0	0	0
		$-\frac{\sqrt{35}i}{49}$	0	$\frac{\sqrt{14}i}{49}$	0	0	0	0	$\frac{\sqrt{210}i}{392}$	0	$\frac{11\sqrt{42}i}{392}$	0	0	0	0
		0	$-\frac{\sqrt{14}i}{49}$	0	0	0	0	0	0	$-\frac{3\sqrt{35}i}{196}$	0	$\frac{\sqrt{21}i}{28}$	0	0	0
		0	0	0	0	$-\frac{\sqrt{14}i}{49}$	0	0	0	0	$-\frac{\sqrt{21}i}{28}$	0	$\frac{3\sqrt{35}i}{196}$	0	0
		0	0	0	$\frac{\sqrt{14}i}{49}$	0	$-\frac{\sqrt{35}i}{49}$	0	0	0	0	$-\frac{11\sqrt{42}i}{392}$	0	$-\frac{\sqrt{210}i}{392}$	0
		0	0	0	0	$\frac{\sqrt{35}i}{49}$	0	0	0	0	0	0	$-\frac{15\sqrt{14}i}{392}$	0	$-\frac{5\sqrt{6}i}{56}$
		$-\frac{5\sqrt{6}i}{56}$	0	0	0	0	0	0	$-\frac{3i}{14}$	0	0	0	0	0	0
		0	$-\frac{\sqrt{210}i}{392}$	0	0	0	0	$\frac{3i}{14}$	0	$-\frac{2\sqrt{21}i}{49}$	0	0	0	0	0
		$-\frac{15\sqrt{14}i}{392}$	0	$\frac{3\sqrt{35}i}{196}$	0	0	0	0	$\frac{2\sqrt{21}i}{49}$	0	$-\frac{\sqrt{105}i}{98}$	0	0	0	0
		0	$-\frac{11\sqrt{42}i}{392}$	0	$\frac{\sqrt{21}i}{28}$	0	0	0	0	$\frac{\sqrt{105}i}{98}$	0	0	0	0	0
		0	0	$-\frac{\sqrt{21}i}{28}$	0	$\frac{11\sqrt{42}i}{392}$	0	0	0	0	0	0	$\frac{\sqrt{105}i}{98}$	0	0
		0	0	0	$-\frac{3\sqrt{35}i}{196}$	0	$\frac{15\sqrt{14}i}{392}$	0	0	0	0	$-\frac{\sqrt{105}i}{98}$	0	$\frac{2\sqrt{21}i}{49}$	0
		0	0	0	0	$\frac{\sqrt{210}i}{392}$	0	0	0	0	0	0	$-\frac{2\sqrt{21}i}{49}$	0	$\frac{3i}{14}$
		0	0	0	0	0	$\frac{5\sqrt{6}i}{56}$	0	0	0	0	0	0	$-\frac{3i}{14}$	0
859	symmetry	$-\sqrt{3}xz$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{2,2}^{(1,-1;a)}(E_{1g})$		0	$\frac{\sqrt{35}}{49}$	0	0	0	0	$-\frac{5\sqrt{6}}{56}$	0	$\frac{15\sqrt{14}}{392}$	0	0	0	0	0
		$\frac{\sqrt{35}}{49}$	0	$\frac{\sqrt{14}}{49}$	0	0	0	0	$-\frac{\sqrt{210}}{392}$	0	$\frac{11\sqrt{42}}{392}$	0	0	0	0
		0	$\frac{\sqrt{14}}{49}$	0	0	0	0	0	0	$\frac{3\sqrt{35}}{196}$	0	$\frac{\sqrt{21}}{28}$	0	0	0
		0	0	0	0	$-\frac{\sqrt{14}}{49}$	0	0	0	0	$\frac{\sqrt{21}}{28}$	0	$\frac{3\sqrt{35}}{196}$	0	0
		0	0	0	$-\frac{\sqrt{14}}{49}$	0	$-\frac{\sqrt{35}}{49}$	0	0	0	0	$\frac{11\sqrt{42}}{392}$	0	$-\frac{\sqrt{210}}{392}$	0
		0	0	0	0	$-\frac{\sqrt{35}}{49}$	0	0	0	0	0	0	$\frac{15\sqrt{14}}{392}$	0	$-\frac{5\sqrt{6}}{56}$
		$-\frac{5\sqrt{6}}{56}$	0	0	0	0	0	0	$-\frac{3}{14}$	0	0	0	0	0	0
		0	$-\frac{\sqrt{210}}{392}$	0	0	0	0	$-\frac{3}{14}$	0	$-\frac{2\sqrt{21}}{49}$	0	0	0	0	0
		$\frac{15\sqrt{14}}{392}$	0	$\frac{3\sqrt{35}}{196}$	0	0	0	0	$-\frac{2\sqrt{21}}{49}$	0	$-\frac{\sqrt{105}}{98}$	0	0	0	0
		0	$\frac{11\sqrt{42}}{392}$	0	$\frac{\sqrt{21}}{28}$	0	0	0	0	$-\frac{\sqrt{105}}{98}$	0	0	0	0	0
		0	0	$\frac{\sqrt{21}}{28}$	0	$\frac{11\sqrt{42}}{392}$	0	0	0	0	0	0	$\frac{\sqrt{105}}{98}$	0	0
		0	0	0	$\frac{3\sqrt{35}}{196}$	0	$\frac{15\sqrt{14}}{392}$	0	0	0	0	$\frac{\sqrt{105}}{98}$	0	$\frac{2\sqrt{21}}{49}$	0
		0	0	0	0	$-\frac{\sqrt{210}}{392}$	0	0	0	0	0	0	$\frac{2\sqrt{21}}{49}$	0	$\frac{3}{14}$
		0	0	0	0	0	$-\frac{5\sqrt{6}}{56}$	0	0	0	0	0	0	$\frac{3}{14}$	0
860	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{2,1}^{(1,-1;a)}(E_{2g})$		0	0	$-\frac{\sqrt{70}}{98}$	0	0	0	0	0	0	$-\frac{\sqrt{210}}{196}$	0	0	0	0
		0	0	0	$-\frac{3\sqrt{14}}{98}$	0	0	$\frac{\sqrt{30}}{28}$	0	0	0	$-\frac{\sqrt{42}}{49}$	0	0	0
		$-\frac{\sqrt{70}}{98}$	0	0	0	$-\frac{3\sqrt{14}}{98}$	0	0	$\frac{\sqrt{105}}{49}$	0	0	0	$-\frac{3\sqrt{35}}{98}$	0	0
		0	$-\frac{3\sqrt{14}}{98}$	0	0	0	$-\frac{\sqrt{70}}{98}$	0	0	$\frac{3\sqrt{35}}{98}$	0	0	0	$-\frac{\sqrt{105}}{49}$	0
		0	0	$-\frac{3\sqrt{14}}{98}$	0	0	0	0	0	0	$\frac{\sqrt{42}}{49}$	0	0	0	$-\frac{\sqrt{30}}{28}$
		0	0	0	$-\frac{\sqrt{70}}{98}$	0	0	0	0	0	0	$\frac{\sqrt{210}}{196}$	0	0	0
		0	$\frac{\sqrt{30}}{28}$	0	0	0	0	0	0	$\frac{\sqrt{3}}{14}$	0	0	0	0	0
		0	0	$\frac{\sqrt{105}}{49}$	0	0	0	0	0	0	$\frac{3\sqrt{35}}{98}$	0	0	0	0
		0	0	0	$\frac{3\sqrt{35}}{98}$	0	0	$\frac{\sqrt{3}}{14}$	0	0	0	$\frac{\sqrt{105}}{49}$	0	0	0
		$-\frac{\sqrt{210}}{196}$	0	0	0	$\frac{\sqrt{42}}{49}$	0	0	$\frac{3\sqrt{35}}{98}$	0	0	0	$\frac{\sqrt{105}}{49}$	0	0
		0	$-\frac{\sqrt{42}}{49}$	0	0	0	$\frac{\sqrt{210}}{196}$	0	0	$\frac{\sqrt{105}}{49}$	0	0	0	$\frac{3\sqrt{35}}{98}$	0
		0	0	$-\frac{3\sqrt{35}}{98}$	0	0	0	0	0	0	$\frac{\sqrt{105}}{49}$	0	0	0	$\frac{\sqrt{3}}{14}$
		0	0	0	$-\frac{\sqrt{105}}{49}$	0	0	0	0	0	0	$\frac{3\sqrt{35}}{98}$	0	0	0
		0	0	0	0	$-\frac{\sqrt{30}}{28}$	0	0	0	0	0	0	$\frac{\sqrt{3}}{14}$	0	0
861	symmetry	$-\sqrt{3}xy$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{2,2}^{(1,-1;a)}(E_{2g})$	0	0	$-\frac{\sqrt{70}i}{98}$	0	0	0	0	0	0	$-\frac{\sqrt{210}i}{196}$	0	0	0	0	
	0	0	0	$-\frac{3\sqrt{14}i}{98}$	0	0	$-\frac{\sqrt{30}i}{28}$	0	0	0	$-\frac{\sqrt{42}i}{49}$	0	0	0	
	$\frac{\sqrt{70}i}{98}$	0	0	0	$-\frac{3\sqrt{14}i}{98}$	0	0	$-\frac{\sqrt{105}i}{49}$	0	0	0	$-\frac{3\sqrt{35}i}{98}$	0	0	
	0	$\frac{3\sqrt{14}i}{98}$	0	0	0	$-\frac{\sqrt{70}i}{98}$	0	0	$-\frac{3\sqrt{35}i}{98}$	0	0	0	$-\frac{\sqrt{105}i}{49}$	0	
	0	0	$\frac{3\sqrt{14}i}{98}$	0	0	0	0	0	0	$-\frac{\sqrt{42}i}{49}$	0	0	0	$-\frac{\sqrt{30}i}{28}$	
	0	0	0	$\frac{\sqrt{70}i}{98}$	0	0	0	0	0	0	$-\frac{\sqrt{210}i}{196}$	0	0	0	
	0	$\frac{\sqrt{30}i}{28}$	0	0	0	0	0	0	$\frac{\sqrt{3}i}{14}$	0	0	0	0	0	
	0	0	$\frac{\sqrt{105}i}{49}$	0	0	0	0	0	0	$\frac{3\sqrt{35}i}{98}$	0	0	0	0	
	0	0	0	$\frac{3\sqrt{35}i}{98}$	0	0	$-\frac{\sqrt{3}i}{14}$	0	0	0	$\frac{\sqrt{105}i}{49}$	0	0	0	
	$\frac{\sqrt{210}i}{196}$	0	0	0	$\frac{\sqrt{42}i}{49}$	0	0	$-\frac{3\sqrt{35}i}{98}$	0	0	0	$\frac{\sqrt{105}i}{49}$	0	0	
	0	$\frac{\sqrt{42}i}{49}$	0	0	0	$\frac{\sqrt{210}i}{196}$	0	0	$-\frac{\sqrt{105}i}{49}$	0	0	0	$\frac{3\sqrt{35}i}{98}$	0	
	0	0	$\frac{3\sqrt{35}i}{98}$	0	0	0	0	0	0	$-\frac{\sqrt{105}i}{49}$	0	0	0	$\frac{\sqrt{3}i}{14}$	
	0	0	0	$\frac{\sqrt{105}i}{49}$	0	0	0	0	0	0	$-\frac{3\sqrt{35}i}{98}$	0	0	0	
	0	0	0	0	$\frac{\sqrt{30}i}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{3}i}{14}$	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													
$\mathbb{Q}_4^{(1,-1;a)}(A_g)$		$\frac{\sqrt{21}}{147}$	0	0	0	0	0	0	$\frac{5\sqrt{14}}{98}$	0	0	0	0	0	0
		0	$-\frac{\sqrt{21}}{49}$	0	0	0	0	0	0	$-\frac{2\sqrt{210}}{147}$	0	0	0	0	0
		0	0	$\frac{2\sqrt{21}}{147}$	0	0	0	0	0	0	$-\frac{5\sqrt{7}}{98}$	0	0	0	0
		0	0	0	$\frac{2\sqrt{21}}{147}$	0	0	0	0	0	0	$\frac{5\sqrt{7}}{98}$	0	0	0
		0	0	0	0	$-\frac{\sqrt{21}}{49}$	0	0	0	0	0	0	$\frac{2\sqrt{210}}{147}$	0	0
		0	0	0	0	0	$\frac{\sqrt{21}}{147}$	0	0	0	0	0	0	$-\frac{5\sqrt{14}}{98}$	0
		0	0	0	0	0	0	$-\frac{\sqrt{21}}{21}$	0	0	0	0	0	0	0
		$\frac{5\sqrt{14}}{98}$	0	0	0	0	0	0	$\frac{13\sqrt{21}}{147}$	0	0	0	0	0	0
		0	$-\frac{2\sqrt{210}}{147}$	0	0	0	0	0	0	$\frac{\sqrt{21}}{49}$	0	0	0	0	0
		0	0	$-\frac{5\sqrt{7}}{98}$	0	0	0	0	0	0	$-\frac{3\sqrt{21}}{49}$	0	0	0	0
		0	0	0	$\frac{5\sqrt{7}}{98}$	0	0	0	0	0	0	$-\frac{3\sqrt{21}}{49}$	0	0	0
		0	0	0	0	$\frac{2\sqrt{210}}{147}$	0	0	0	0	0	0	$\frac{\sqrt{21}}{49}$	0	0
		0	0	0	0	0	$-\frac{5\sqrt{14}}{98}$	0	0	0	0	0	0	$\frac{13\sqrt{21}}{147}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{21}}{21}$
863	symmetry	$\frac{\sqrt{70}xz(x^2-3y^2)}{4}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_4^{(1,-1;a)}(B_g, 1)$		0	0	0	$\frac{\sqrt{3}}{21}$	0	0	0	0	0	0	$\frac{5}{28}$	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	$-\frac{\sqrt{3}}{21}$	$-\frac{3\sqrt{14}}{56}$	0	0	0	0	0	$-\frac{\sqrt{2}}{56}$	0
		$\frac{\sqrt{3}}{21}$	0	0	0	0	0	0	$-\frac{\sqrt{2}}{56}$	0	0	0	0	0	$-\frac{3\sqrt{14}}{56}$
		0	0	0	0	0	0	0	0	$\frac{\sqrt{3}}{12}$	0	0	0	0	0
		0	0	$-\frac{\sqrt{3}}{21}$	0	0	0	0	0	0	$\frac{5}{28}$	0	0	0	0
		0	0	$-\frac{3\sqrt{14}}{56}$	0	0	0	0	0	0	$-\frac{\sqrt{42}}{21}$	0	0	0	0
		0	0	0	$-\frac{\sqrt{2}}{56}$	0	0	0	0	0	0	$-\frac{2\sqrt{6}}{21}$	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	$\frac{5}{28}$	$-\frac{\sqrt{42}}{21}$	0	0	0	0	0	$\frac{2\sqrt{6}}{21}$	0
		$\frac{5}{28}$	0	0	0	0	0	0	$-\frac{2\sqrt{6}}{21}$	0	0	0	0	0	$\frac{\sqrt{42}}{21}$
		0	$\frac{\sqrt{3}}{12}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{2}}{56}$	0	0	0	0	0	0	$\frac{2\sqrt{6}}{21}$	0	0	0	0
		0	0	0	$-\frac{3\sqrt{14}}{56}$	0	0	0	0	0	0	$\frac{\sqrt{42}}{21}$	0	0	0
864	symmetry	$\frac{\sqrt{70}yz(3x^2-y^2)}{4}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_4^{(1,-1;a)}(B_g, 2)$		0	0	0	$-\frac{\sqrt{3}i}{21}$	0	0	0	0	0	0	$-\frac{5i}{28}$	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	$\frac{\sqrt{3}i}{21}$	$-\frac{3\sqrt{14}i}{56}$	0	0	0	0	$\frac{\sqrt{2}i}{56}$	0	0
		$\frac{\sqrt{3}i}{21}$	0	0	0	0	0	0	$-\frac{\sqrt{2}i}{56}$	0	0	0	0	0	$\frac{3\sqrt{14}i}{56}$
		0	0	0	0	0	0	0	0	$\frac{\sqrt{3}i}{12}$	0	0	0	0	0
		0	0	$-\frac{\sqrt{3}i}{21}$	0	0	0	0	0	0	$\frac{5i}{28}$	0	0	0	0
		0	0	$\frac{3\sqrt{14}i}{56}$	0	0	0	0	0	0	$\frac{\sqrt{42}i}{21}$	0	0	0	0
		0	0	0	$\frac{\sqrt{2}i}{56}$	0	0	0	0	0	0	$\frac{2\sqrt{6}i}{21}$	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	$-\frac{5i}{28}$	$-\frac{\sqrt{42}i}{21}$	0	0	0	0	0	$-\frac{2\sqrt{6}i}{21}$	0
		$\frac{5i}{28}$	0	0	0	0	0	0	$-\frac{2\sqrt{6}i}{21}$	0	0	0	0	0	$-\frac{\sqrt{42}i}{21}$
		0	$\frac{\sqrt{3}i}{12}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{2}i}{56}$	0	0	0	0	0	0	$\frac{2\sqrt{6}i}{21}$	0	0	0	0
		0	0	0	$-\frac{3\sqrt{14}i}{56}$	0	0	0	0	0	0	$\frac{\sqrt{42}i}{21}$	0	0	0
865	symmetry	$-\frac{\sqrt{10}yz(3x^2+3y^2-4z^2)}{4}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{4,1}^{(1,-1;a)}(E_{1g})$		0	$-\frac{\sqrt{42}i}{147}$	0	0	0	0	$-\frac{\sqrt{5}i}{28}$	0	$-\frac{5\sqrt{105}i}{294}$	0	0	0	0	0
		$\frac{\sqrt{42}i}{147}$	0	$\frac{\sqrt{105}i}{147}$	0	0	0	0	$\frac{13\sqrt{7}i}{196}$	0	$\frac{\sqrt{35}i}{98}$	0	0	0	0
		0	$-\frac{\sqrt{105}i}{147}$	0	0	0	0	0	0	$-\frac{\sqrt{42}i}{1176}$	0	$\frac{\sqrt{70}i}{56}$	0	0	0
		0	0	0	0	$-\frac{\sqrt{105}i}{147}$	0	0	0	0	$-\frac{\sqrt{70}i}{56}$	0	$\frac{\sqrt{42}i}{1176}$	0	0
		0	0	0	$\frac{\sqrt{105}i}{147}$	0	$\frac{\sqrt{42}i}{147}$	0	0	0	0	$-\frac{\sqrt{35}i}{98}$	0	$-\frac{13\sqrt{7}i}{196}$	0
		0	0	0	0	$-\frac{\sqrt{42}i}{147}$	0	0	0	0	0	0	$\frac{5\sqrt{105}i}{294}$	0	$\frac{\sqrt{5}i}{28}$
		$\frac{\sqrt{5}i}{28}$	0	0	0	0	0	0	$\frac{\sqrt{30}i}{21}$	0	0	0	0	0	0
		0	$-\frac{13\sqrt{7}i}{196}$	0	0	0	0	$-\frac{\sqrt{30}i}{21}$	0	$-\frac{\sqrt{70}i}{49}$	0	0	0	0	0
		$\frac{5\sqrt{105}i}{294}$	0	$\frac{\sqrt{42}i}{1176}$	0	0	0	0	$\frac{\sqrt{70}i}{49}$	0	$-\frac{3\sqrt{14}i}{49}$	0	0	0	0
		0	$-\frac{\sqrt{35}i}{98}$	0	$\frac{\sqrt{70}i}{56}$	0	0	0	0	$\frac{3\sqrt{14}i}{49}$	0	0	0	0	0
		0	0	$-\frac{\sqrt{70}i}{56}$	0	$\frac{\sqrt{35}i}{98}$	0	0	0	0	0	0	$\frac{3\sqrt{14}i}{49}$	0	0
		0	0	0	$-\frac{\sqrt{42}i}{1176}$	0	$-\frac{5\sqrt{105}i}{294}$	0	0	0	0	$-\frac{3\sqrt{14}i}{49}$	0	$\frac{\sqrt{70}i}{49}$	0
		0	0	0	0	$\frac{13\sqrt{7}i}{196}$	0	0	0	0	0	0	$-\frac{\sqrt{70}i}{49}$	0	$-\frac{\sqrt{30}i}{21}$
		0	0	0	0	0	$-\frac{\sqrt{5}i}{28}$	0	0	0	0	0	0	$\frac{\sqrt{30}i}{21}$	0
866	symmetry	$\frac{\sqrt{10}xz(3x^2+3y^2-4z^2)}{4}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{4,2}^{(1,-1;a)}(E_{1g})$		0	$-\frac{\sqrt{42}}{147}$	0	0	0	0	$\frac{\sqrt{5}}{28}$	0	$-\frac{5\sqrt{105}}{294}$	0	0	0	0	0
		$-\frac{\sqrt{42}}{147}$	0	$\frac{\sqrt{105}}{147}$	0	0	0	0	$-\frac{13\sqrt{7}}{196}$	0	$\frac{\sqrt{35}}{98}$	0	0	0	0
		0	$\frac{\sqrt{105}}{147}$	0	0	0	0	0	0	$\frac{\sqrt{42}}{1176}$	0	$\frac{\sqrt{70}}{56}$	0	0	0
		0	0	0	0	$-\frac{\sqrt{105}}{147}$	0	0	0	0	$\frac{\sqrt{70}}{56}$	0	$\frac{\sqrt{42}}{1176}$	0	0
		0	0	0	$-\frac{\sqrt{105}}{147}$	0	$\frac{\sqrt{42}}{147}$	0	0	0	0	$\frac{\sqrt{35}}{98}$	0	$-\frac{13\sqrt{7}}{196}$	0
		0	0	0	0	$\frac{\sqrt{42}}{147}$	0	0	0	0	0	0	$-\frac{5\sqrt{105}}{294}$	0	$\frac{\sqrt{5}}{28}$
		$\frac{\sqrt{5}}{28}$	0	0	0	0	0	0	$\frac{\sqrt{30}}{21}$	0	0	0	0	0	0
		0	$-\frac{13\sqrt{7}}{196}$	0	0	0	0	$\frac{\sqrt{30}}{21}$	0	$-\frac{\sqrt{70}}{49}$	0	0	0	0	0
		$-\frac{5\sqrt{105}}{294}$	0	$\frac{\sqrt{42}}{1176}$	0	0	0	0	$-\frac{\sqrt{70}}{49}$	0	$-\frac{3\sqrt{14}}{49}$	0	0	0	0
		0	$\frac{\sqrt{35}}{98}$	0	$\frac{\sqrt{70}}{56}$	0	0	0	0	$-\frac{3\sqrt{14}}{49}$	0	0	0	0	0
		0	0	$\frac{\sqrt{70}}{56}$	0	$\frac{\sqrt{35}}{98}$	0	0	0	0	0	0	$\frac{3\sqrt{14}}{49}$	0	0
		0	0	0	$\frac{\sqrt{42}}{1176}$	0	$-\frac{5\sqrt{105}}{294}$	0	0	0	0	$\frac{3\sqrt{14}}{49}$	0	$\frac{\sqrt{70}}{49}$	0
		0	0	0	0	$-\frac{13\sqrt{7}}{196}$	0	0	0	0	0	0	$\frac{\sqrt{70}}{49}$	0	$-\frac{\sqrt{30}}{21}$
		0	0	0	0	0	$\frac{\sqrt{5}}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{30}}{21}$	0
867	symmetry	$\frac{\sqrt{35}(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{4,1}^{(1,-1;a)}(E_{2g},1)$		0	0	0	0	$\frac{\sqrt{3}}{21}$	0	0	0	0	0	0	$\frac{\sqrt{30}}{42}$	0	0
		0	0	0	0	0	$\frac{\sqrt{3}}{21}$	0	0	0	0	0	0	$\frac{\sqrt{2}}{7}$	0
		0	0	0	0	0	0	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
		$\frac{\sqrt{3}}{21}$	0	0	0	0	0	0	$-\frac{\sqrt{2}}{7}$	0	0	0	0	0	0
		0	$\frac{\sqrt{3}}{21}$	0	0	0	0	0	0	$-\frac{\sqrt{30}}{42}$	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{7}}{14}$	0	0	0	0	0	0	$-\frac{\sqrt{21}}{21}$	0	0	0
		0	0	0	0	$-\frac{\sqrt{2}}{7}$	0	0	0	0	0	0	$-\frac{\sqrt{5}}{7}$	0	0
		0	0	0	0	0	$-\frac{\sqrt{30}}{42}$	0	0	0	0	0	0	$-\frac{\sqrt{5}}{7}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{21}}{21}$
		0	0	0	0	0	0	$-\frac{\sqrt{21}}{21}$	0	0	0	0	0	0	0
		$\frac{\sqrt{30}}{42}$	0	0	0	0	0	0	$-\frac{\sqrt{5}}{7}$	0	0	0	0	0	0
		0	$\frac{\sqrt{2}}{7}$	0	0	0	0	0	0	$-\frac{\sqrt{5}}{7}$	0	0	0	0	0
		0	0	$\frac{\sqrt{7}}{14}$	0	0	0	0	0	0	$-\frac{\sqrt{21}}{21}$	0	0	0	0
868	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{4,2}^{(1,-1;a)}(E_{2g},1)$		0	0	0	0	$-\frac{\sqrt{3}i}{21}$	0	0	0	0	0	$-\frac{\sqrt{30}i}{42}$	0	0	
		0	0	0	0	0	$-\frac{\sqrt{3}i}{21}$	0	0	0	0	0	$-\frac{\sqrt{2}i}{7}$	0	
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{7}i}{14}$	
		0	0	0	0	0	0	$-\frac{\sqrt{7}i}{14}$	0	0	0	0	0	0	
		$\frac{\sqrt{3}i}{21}$	0	0	0	0	0	0	$-\frac{\sqrt{2}i}{7}$	0	0	0	0	0	
		0	$\frac{\sqrt{3}i}{21}$	0	0	0	0	0	0	$-\frac{\sqrt{30}i}{42}$	0	0	0	0	0
		0	0	0	$\frac{\sqrt{7}i}{14}$	0	0	0	0	0	$\frac{\sqrt{21}i}{21}$	0	0	0	
		0	0	0	0	$\frac{\sqrt{2}i}{7}$	0	0	0	0	0	$\frac{\sqrt{5}i}{7}$	0	0	
		0	0	0	0	0	$\frac{\sqrt{30}i}{42}$	0	0	0	0	0	$\frac{\sqrt{5}i}{7}$	0	
		0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{21}i}{21}$	
		0	0	0	0	0	0	$-\frac{\sqrt{21}i}{21}$	0	0	0	0	0	0	
		$\frac{\sqrt{30}i}{42}$	0	0	0	0	0	0	$-\frac{\sqrt{5}i}{7}$	0	0	0	0	0	
		0	$\frac{\sqrt{2}i}{7}$	0	0	0	0	0	0	$-\frac{\sqrt{5}i}{7}$	0	0	0	0	
		0	0	$\frac{\sqrt{7}i}{14}$	0	0	0	0	0	0	$-\frac{\sqrt{21}i}{21}$	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													
$\mathbb{Q}_{4,1}^{(1,-1;a)}(E_{2g},2)$		0	0	$\frac{\sqrt{42}}{98}$	0	0	0	0	0	$\frac{5\sqrt{14}}{98}$	0	0	0	0	
		0	0	0	$-\frac{\sqrt{210}}{294}$	0	0	$-\frac{3\sqrt{2}}{28}$	0	0	0	$\frac{\sqrt{70}}{196}$	0	0	0
		$\frac{\sqrt{42}}{98}$	0	0	0	$-\frac{\sqrt{210}}{294}$	0	0	$\frac{9\sqrt{7}}{196}$	0	0	0	$-\frac{17\sqrt{21}}{588}$	0	0
		0	$-\frac{\sqrt{210}}{294}$	0	0	0	$\frac{\sqrt{42}}{98}$	0	0	$\frac{17\sqrt{21}}{588}$	0	0	0	$-\frac{9\sqrt{7}}{196}$	0
		0	0	$-\frac{\sqrt{210}}{294}$	0	0	0	0	0	0	$-\frac{\sqrt{70}}{196}$	0	0	0	$\frac{3\sqrt{2}}{28}$
		0	0	0	$\frac{\sqrt{42}}{98}$	0	0	0	0	0	0	$-\frac{5\sqrt{14}}{98}$	0	0	0
		0	$-\frac{3\sqrt{2}}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{5}}{7}$	0	0	0	0	0
		0	0	$\frac{9\sqrt{7}}{196}$	0	0	0	0	0	0	$-\frac{\sqrt{21}}{147}$	0	0	0	0
		0	0	0	$\frac{17\sqrt{21}}{588}$	0	0	$-\frac{\sqrt{5}}{7}$	0	0	0	$\frac{4\sqrt{7}}{49}$	0	0	0
		$\frac{5\sqrt{14}}{98}$	0	0	0	$-\frac{\sqrt{70}}{196}$	0	0	$-\frac{\sqrt{21}}{147}$	0	0	0	$\frac{4\sqrt{7}}{49}$	0	0
		0	$\frac{\sqrt{70}}{196}$	0	0	0	$-\frac{5\sqrt{14}}{98}$	0	0	$\frac{4\sqrt{7}}{49}$	0	0	0	$-\frac{\sqrt{21}}{147}$	0
		0	0	$-\frac{17\sqrt{21}}{588}$	0	0	0	0	0	0	$\frac{4\sqrt{7}}{49}$	0	0	0	$-\frac{\sqrt{5}}{7}$
		0	0	0	$-\frac{9\sqrt{7}}{196}$	0	0	0	0	0	0	$-\frac{\sqrt{21}}{147}$	0	0	0
		0	0	0	0	$\frac{3\sqrt{2}}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{5}}{7}$	0	0
870	symmetry	$\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$													

*continued ...*



Table 10

No.	multipole	matrix													
$\mathbb{Q}_{4,2}^{(1,-1;a)}(E_{2g}, 2)$		0	0	$\frac{\sqrt{42}i}{98}$	0	0	0	0	0	0	$\frac{5\sqrt{14}i}{98}$	0	0	0	0
		0	0	0	$-\frac{\sqrt{210}i}{294}$	0	0	$\frac{3\sqrt{2}i}{28}$	0	0	0	$\frac{\sqrt{70}i}{196}$	0	0	0
		$-\frac{\sqrt{42}i}{98}$	0	0	0	$-\frac{\sqrt{210}i}{294}$	0	0	$-\frac{9\sqrt{7}i}{196}$	0	0	0	$-\frac{17\sqrt{21}i}{588}$	0	0
		0	$\frac{\sqrt{210}i}{294}$	0	0	0	$\frac{\sqrt{42}i}{98}$	0	0	$-\frac{17\sqrt{21}i}{588}$	0	0	0	$-\frac{9\sqrt{7}i}{196}$	0
		0	0	$\frac{\sqrt{210}i}{294}$	0	0	0	0	0	0	$\frac{\sqrt{70}i}{196}$	0	0	0	$\frac{3\sqrt{2}i}{28}$
		0	0	0	$-\frac{\sqrt{42}i}{98}$	0	0	0	0	0	0	$\frac{5\sqrt{14}i}{98}$	0	0	0
		0	$-\frac{3\sqrt{2}i}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{5}i}{7}$	0	0	0	0	0
		0	0	$\frac{9\sqrt{7}i}{196}$	0	0	0	0	0	0	$-\frac{\sqrt{21}i}{147}$	0	0	0	0
		0	0	0	$\frac{17\sqrt{21}i}{588}$	0	0	$\frac{\sqrt{5}i}{7}$	0	0	0	$\frac{4\sqrt{7}i}{49}$	0	0	0
		$-\frac{5\sqrt{14}i}{98}$	0	0	0	$-\frac{\sqrt{70}i}{196}$	0	0	$\frac{\sqrt{21}i}{147}$	0	0	0	$\frac{4\sqrt{7}i}{49}$	0	0
		0	$-\frac{\sqrt{70}i}{196}$	0	0	0	$-\frac{5\sqrt{14}i}{98}$	0	0	$-\frac{4\sqrt{7}i}{49}$	0	0	0	$-\frac{\sqrt{21}i}{147}$	0
		0	0	$\frac{17\sqrt{21}i}{588}$	0	0	0	0	0	0	$-\frac{4\sqrt{7}i}{49}$	0	0	0	$-\frac{\sqrt{5}i}{7}$
		0	0	0	$\frac{9\sqrt{7}i}{196}$	0	0	0	0	0	0	$\frac{\sqrt{21}i}{147}$	0	0	0
		0	0	0	0	$-\frac{3\sqrt{2}i}{28}$	0	0	0	0	0	0	$\frac{\sqrt{5}i}{7}$	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													
$\mathbb{Q}_6^{(1,-1;a)}(A_g, 1)$		0	0	0	0	0	0	0	$-\frac{\sqrt{462}}{924}$	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{770}}{308}$	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{5\sqrt{231}}{462}$	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	$\frac{5\sqrt{231}}{462}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{770}}{308}$	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{462}}{924}$	0
		0	0	0	0	0	0	$\frac{\sqrt{77}}{154}$	0	0	0	0	0	0	0
		$-\frac{\sqrt{462}}{924}$	0	0	0	0	0	0	$-\frac{5\sqrt{77}}{154}$	0	0	0	0	0	0
		0	$\frac{\sqrt{770}}{308}$	0	0	0	0	0	0	$\frac{9\sqrt{77}}{154}$	0	0	0	0	0
		0	0	$-\frac{5\sqrt{231}}{462}$	0	0	0	0	0	0	$-\frac{5\sqrt{77}}{154}$	0	0	0	0
		0	0	0	$\frac{5\sqrt{231}}{462}$	0	0	0	0	0	0	$-\frac{5\sqrt{77}}{154}$	0	0	0
		0	0	0	0	$-\frac{\sqrt{770}}{308}$	0	0	0	0	0	0	$\frac{9\sqrt{77}}{154}$	0	0
		0	0	0	0	0	$\frac{\sqrt{462}}{924}$	0	0	0	0	0	0	$-\frac{5\sqrt{77}}{154}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{77}}{154}$
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													
$\mathbb{Q}_6^{(1,-1;a)}(A_g, 2)$		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	0	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	$\frac{\sqrt{7}}{14}$	0	0	0	0	0	$\frac{\sqrt{42}}{14}$	0	
		0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{42}}{14}$	
		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	0	0	0	
		0	0	0	0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	$\frac{\sqrt{42}}{14}$	0	0	0	0	0	0	0	
		$-\frac{\sqrt{7}}{14}$	0	0	0	0	0	$\frac{\sqrt{42}}{14}$	0	0	0	0	0	0	
873	symmetry	$\frac{\sqrt{462}xy(x^2-3y^2)(3x^2-y^2)}{16}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_6^{(1,-1;a)}(A_g, 3)$		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	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	$\frac{\sqrt{7}i}{14}$	0	0	0	0	0	0	0	
		0	0	0	0	0	$-\frac{\sqrt{7}i}{14}$	0	0	0	0	0	$-\frac{\sqrt{42}i}{14}$	0	
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{42}i}{14}$	
		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	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	$\frac{\sqrt{42}i}{14}$	0	0	0	0	0	0	0	
		$-\frac{\sqrt{7}i}{14}$	0	0	0	0	0	$\frac{\sqrt{42}i}{14}$	0	0	0	0	0	0	
874	symmetry	$-\frac{\sqrt{210}xz(x^2-3y^2)(3x^2+3y^2-8z^2)}{16}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_6^{(1,-1;a)}(B_g, 1)$		0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{11}}{44}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{33}}{44}$	0	0
		0	0	0	0	0	0	$\frac{\sqrt{154}}{308}$	0	0	0	0	0	$-\frac{\sqrt{22}}{44}$	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{22}}{44}$	0	0	0	0	0	$\frac{\sqrt{154}}{308}$
		0	0	0	0	0	0	0	0	$\frac{\sqrt{33}}{44}$	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{11}}{44}$	0	0	0	0
		0	0	$\frac{\sqrt{154}}{308}$	0	0	0	0	0	0	$\frac{\sqrt{462}}{77}$	0	0	0	0
		0	0	0	$-\frac{\sqrt{22}}{44}$	0	0	0	0	0	0	$-\frac{\sqrt{66}}{22}$	0	0	0
		0	0	0	0	$\frac{\sqrt{33}}{44}$	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{11}}{44}$	$\frac{\sqrt{462}}{77}$	0	0	0	0	0	$\frac{\sqrt{66}}{22}$	0
		$-\frac{\sqrt{11}}{44}$	0	0	0	0	0	0	$-\frac{\sqrt{66}}{22}$	0	0	0	0	0	$-\frac{\sqrt{462}}{77}$
		0	$\frac{\sqrt{33}}{44}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{22}}{44}$	0	0	0	0	0	0	$\frac{\sqrt{66}}{22}$	0	0	0	0
		0	0	0	$\frac{\sqrt{154}}{308}$	0	0	0	0	0	0	$-\frac{\sqrt{462}}{77}$	0	0	0
875	symmetry	$-\frac{\sqrt{210}yz(3x^2-y^2)(3x^2+3y^2-8z^2)}{16}$													

*continued ...*

Table 10

No.	multipole	matrix												
$\mathbb{Q}_6^{(1,-1;a)}(B_g, 2)$		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{11}i}{44}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{33}i}{44}$	0	0
		0	0	0	0	0	0	$\frac{\sqrt{154}i}{308}$	0	0	0	0	$\frac{\sqrt{22}i}{44}$	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{22}i}{44}$	0	0	0	0	$-\frac{\sqrt{154}i}{308}$
		0	0	0	0	0	0	0	0	$\frac{\sqrt{33}i}{44}$	0	0	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{11}i}{44}$	0	0	0
		0	0	$-\frac{\sqrt{154}i}{308}$	0	0	0	0	0	0	$-\frac{\sqrt{462}i}{77}$	0	0	0
		0	0	0	$\frac{\sqrt{22}i}{44}$	0	0	0	0	0	0	$\frac{\sqrt{66}i}{22}$	0	0
		0	0	0	0	$-\frac{\sqrt{33}i}{44}$	0	0	0	0	0	0	0	0
		0	0	0	0	0	$\frac{\sqrt{11}i}{44}$	$\frac{\sqrt{462}i}{77}$	0	0	0	0	$-\frac{\sqrt{66}i}{22}$	0
		$-\frac{\sqrt{11}i}{44}$	0	0	0	0	0	0	$-\frac{\sqrt{66}i}{22}$	0	0	0	0	$\frac{\sqrt{462}i}{77}$
		0	$\frac{\sqrt{33}i}{44}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{22}i}{44}$	0	0	0	0	0	0	$\frac{\sqrt{66}i}{22}$	0	0	0
		0	0	0	$\frac{\sqrt{154}i}{308}$	0	0	0	0	0	0	$-\frac{\sqrt{462}i}{77}$	0	0
876	symmetry	$\frac{3\sqrt{154}yz(5x^4-10x^2y^2+y^4)}{16}$												

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{6,1}^{(1,-1;a)}(E_{1g},1)$		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	$-\frac{\sqrt{105}i}{84}$	
		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	$\frac{\sqrt{105}i}{84}$	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	$-\frac{\sqrt{105}i}{84}$	0	0	0	0	$-\frac{\sqrt{42}i}{14}$	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	0	0	0	0	$\frac{\sqrt{42}i}{14}$	
		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	$\frac{\sqrt{42}i}{14}$	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	$\frac{\sqrt{105}i}{84}$	0	0	0	0	0	0	$-\frac{\sqrt{42}i}{14}$	0	0	0	0	0	
877	symmetry	$\frac{3\sqrt{154}xz\left(x^4-10x^2y^2+5y^4\right)}{16}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{6,2}^{(1,-1;a)}(E_{1g},1)$		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	$\frac{\sqrt{105}}{84}$	
		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	$\frac{\sqrt{105}}{84}$	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	$\frac{\sqrt{105}}{84}$	0	0	0	0	0	$\frac{\sqrt{42}}{14}$	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	0	0	0	$-\frac{\sqrt{42}}{14}$	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	$\frac{\sqrt{42}}{14}$	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	$\frac{\sqrt{105}}{84}$	0	0	0	0	0	0	$-\frac{\sqrt{42}}{14}$	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													
$\mathbb{Q}_{6,1}^{(1,-1;a)}(E_{1g}, 2)$		0	0	0	0	0	0	$\frac{\sqrt{154}i}{1848}$	0	$\frac{\sqrt{66}i}{264}$	0	0	0	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{110}i}{264}$	0	$-\frac{5\sqrt{22}i}{264}$	0	0	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{165}i}{132}$	0	$\frac{5\sqrt{11}i}{132}$	0	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{5\sqrt{11}i}{132}$	0	$-\frac{\sqrt{165}i}{132}$	0	0
		0	0	0	0	0	0	0	0	0	0	$\frac{5\sqrt{22}i}{264}$	0	$\frac{\sqrt{110}i}{264}$	0
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{66}i}{264}$	0	$-\frac{\sqrt{154}i}{1848}$
		$-\frac{\sqrt{154}i}{1848}$	0	0	0	0	0	0	$-\frac{\sqrt{231}i}{154}$	0	0	0	0	0	0
		0	$\frac{\sqrt{110}i}{264}$	0	0	0	0	$\frac{\sqrt{231}i}{154}$	0	$\frac{\sqrt{11}i}{11}$	0	0	0	0	0
		$-\frac{\sqrt{66}i}{264}$	0	$-\frac{\sqrt{165}i}{132}$	0	0	0	0	$-\frac{\sqrt{11}i}{11}$	0	$-\frac{\sqrt{55}i}{22}$	0	0	0	0
		0	$\frac{5\sqrt{22}i}{264}$	0	$\frac{5\sqrt{11}i}{132}$	0	0	0	0	$\frac{\sqrt{55}i}{22}$	0	0	0	0	0
		0	0	$-\frac{5\sqrt{11}i}{132}$	0	$-\frac{5\sqrt{22}i}{264}$	0	0	0	0	0	0	$\frac{\sqrt{55}i}{22}$	0	0
		0	0	0	$\frac{\sqrt{165}i}{132}$	0	$\frac{\sqrt{66}i}{264}$	0	0	0	0	$-\frac{\sqrt{55}i}{22}$	0	$-\frac{\sqrt{11}i}{11}$	0
		0	0	0	0	$-\frac{\sqrt{110}i}{264}$	0	0	0	0	0	0	$\frac{\sqrt{11}i}{11}$	0	$\frac{\sqrt{231}i}{154}$
		0	0	0	0	0	$\frac{\sqrt{154}i}{1848}$	0	0	0	0	0	0	$-\frac{\sqrt{231}i}{154}$	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													
$\mathbb{Q}_{6,2}^{(1,-1;a)}(E_{1g}, 2)$		0	0	0	0	0	0	$-\frac{\sqrt{154}}{1848}$	0	$\frac{\sqrt{66}}{264}$	0	0	0	0	0
		0	0	0	0	0	0	$\frac{\sqrt{110}}{264}$	0	$-\frac{5\sqrt{22}}{264}$	0	0	0	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{165}}{132}$	0	$\frac{5\sqrt{11}}{132}$	0	0	0	0
		0	0	0	0	0	0	0	0	$\frac{5\sqrt{11}}{132}$	0	$-\frac{\sqrt{165}}{132}$	0	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{5\sqrt{22}}{264}$	0	$\frac{\sqrt{110}}{264}$	0	0
		0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{66}}{264}$	0	$-\frac{\sqrt{154}}{1848}$	0
		$-\frac{\sqrt{154}}{1848}$	0	0	0	0	0	$-\frac{\sqrt{231}}{154}$	0	0	0	0	0	0	0
		0	$\frac{\sqrt{110}}{264}$	0	0	0	0	$-\frac{\sqrt{231}}{154}$	0	$\frac{\sqrt{11}}{11}$	0	0	0	0	0
		$\frac{\sqrt{66}}{264}$	0	$-\frac{\sqrt{165}}{132}$	0	0	0	0	$\frac{\sqrt{11}}{11}$	0	$-\frac{\sqrt{55}}{22}$	0	0	0	0
		0	$-\frac{5\sqrt{22}}{264}$	0	$\frac{5\sqrt{11}}{132}$	0	0	0	0	$-\frac{\sqrt{55}}{22}$	0	0	0	0	0
		0	0	$\frac{5\sqrt{11}}{132}$	0	$-\frac{5\sqrt{22}}{264}$	0	0	0	0	0	$\frac{\sqrt{55}}{22}$	0	0	0
		0	0	0	$-\frac{\sqrt{165}}{132}$	0	$\frac{\sqrt{66}}{264}$	0	0	0	0	$\frac{\sqrt{55}}{22}$	0	$-\frac{\sqrt{11}}{11}$	0
		0	0	0	0	$\frac{\sqrt{110}}{264}$	0	0	0	0	0	$-\frac{\sqrt{11}}{11}$	0	$\frac{\sqrt{231}}{154}$	0
		0	0	0	0	0	$-\frac{\sqrt{154}}{1848}$	0	0	0	0	0	0	$\frac{\sqrt{231}}{154}$	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												
$\mathbb{Q}_{6,1}^{(1,-1;a)}(E_{2g},1)$		0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{22}}{44}$	0	0
		0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{330}}{132}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{1155}}{462}$
		0	0	0	0	0	0	$\frac{\sqrt{1155}}{462}$	0	0	0	0	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{330}}{132}$	0	0	0	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{22}}{44}$	0	0	0	0
		0	0	0	$\frac{\sqrt{1155}}{462}$	0	0	0	0	0	$\frac{3\sqrt{385}}{154}$	0	0	0
		0	0	0	0	$-\frac{\sqrt{330}}{132}$	0	0	0	0	0	$-\frac{\sqrt{33}}{22}$	0	0
		0	0	0	0	0	$\frac{\sqrt{22}}{44}$	0	0	0	0	0	$-\frac{\sqrt{33}}{22}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	$\frac{3\sqrt{385}}{154}$
		0	0	0	0	0	0	$\frac{3\sqrt{385}}{154}$	0	0	0	0	0	0
		$-\frac{\sqrt{22}}{44}$	0	0	0	0	0	0	$-\frac{\sqrt{33}}{22}$	0	0	0	0	0
		0	$\frac{\sqrt{330}}{132}$	0	0	0	0	0	0	$-\frac{\sqrt{33}}{22}$	0	0	0	0
		0	0	$-\frac{\sqrt{1155}}{462}$	0	0	0	0	0	0	$\frac{3\sqrt{385}}{154}$	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													
$\mathbb{Q}_{6,2}^{(1,-1;a)}(E_{2g},1)$		0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{22}i}{44}$	0	0	
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{330}i}{132}$	0	
		0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{1155}i}{462}$	
		0	0	0	0	0	0	$\frac{\sqrt{1155}i}{462}$	0	0	0	0	0	0	
		0	0	0	0	0	0	0	$-\frac{\sqrt{330}i}{132}$	0	0	0	0	0	
		0	0	0	0	0	0	0	0	$\frac{\sqrt{22}i}{44}$	0	0	0	0	
		0	0	0	$-\frac{\sqrt{1155}i}{462}$	0	0	0	0	0	0	$-\frac{3\sqrt{385}i}{154}$	0	0	
		0	0	0	0	$\frac{\sqrt{330}i}{132}$	0	0	0	0	0	0	$\frac{\sqrt{33}i}{22}$	0	
		0	0	0	0	0	$-\frac{\sqrt{22}i}{44}$	0	0	0	0	0	0	$\frac{\sqrt{33}i}{22}$	
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{3\sqrt{385}i}{154}$	
		0	0	0	0	0	0	$\frac{3\sqrt{385}i}{154}$	0	0	0	0	0	0	
		$-\frac{\sqrt{22}i}{44}$	0	0	0	0	0	0	$-\frac{\sqrt{33}i}{22}$	0	0	0	0	0	
		0	$\frac{\sqrt{330}i}{132}$	0	0	0	0	0	0	$-\frac{\sqrt{33}i}{22}$	0	0	0	0	
		0	0	$-\frac{\sqrt{1155}i}{462}$	0	0	0	0	0	0	$\frac{3\sqrt{385}i}{154}$	0	0	0	
882	symmetry	$\frac{\sqrt{210}(x-y)(x+y)\big(x^4+2x^2y^2-16x^2z^2+y^4-16y^2z^2+16z^4\big)}{32}$													

continued ...

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{6,1}^{(1,-1;a)}(E_{2g},2)$	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{11}}{66}$	0	0	0	0	
	0	0	0	0	0	0	$\frac{\sqrt{77}}{462}$	0	0	0	$\frac{\sqrt{55}}{66}$	0	0	0	
	0	0	0	0	0	0	0	$-\frac{\sqrt{22}}{66}$	0	0	0	$-\frac{\sqrt{66}}{66}$	0	0	
	0	0	0	0	0	0	0	0	$\frac{\sqrt{66}}{66}$	0	0	0	$\frac{\sqrt{22}}{66}$	0	
	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{55}}{66}$	0	0	0	$-\frac{\sqrt{77}}{462}$	
	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{11}}{66}$	0	0	0	
	0	$\frac{\sqrt{77}}{462}$	0	0	0	0	0	0	$\frac{\sqrt{770}}{154}$	0	0	0	0	0	
	0	0	$-\frac{\sqrt{22}}{66}$	0	0	0	0	0	0	$-\frac{\sqrt{66}}{22}$	0	0	0	0	
	0	0	0	$\frac{\sqrt{66}}{66}$	0	0	$\frac{\sqrt{770}}{154}$	0	0	0	$\frac{\sqrt{22}}{22}$	0	0	0	
	$-\frac{\sqrt{11}}{66}$	0	0	0	$-\frac{\sqrt{55}}{66}$	0	0	$-\frac{\sqrt{66}}{22}$	0	0	0	$\frac{\sqrt{22}}{22}$	0	0	
	0	$\frac{\sqrt{55}}{66}$	0	0	0	$\frac{\sqrt{11}}{66}$	0	0	$\frac{\sqrt{22}}{22}$	0	0	0	$-\frac{\sqrt{66}}{22}$	0	
	0	0	$-\frac{\sqrt{66}}{66}$	0	0	0	0	0	0	$\frac{\sqrt{22}}{22}$	0	0	0	$\frac{\sqrt{770}}{154}$	
	0	0	0	$\frac{\sqrt{22}}{66}$	0	0	0	0	0	0	$-\frac{\sqrt{66}}{22}$	0	0	0	
	0	0	0	0	$-\frac{\sqrt{77}}{462}$	0	0	0	0	0	0	$\frac{\sqrt{770}}{154}$	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													
$\mathbb{Q}_{6,2}^{(1,-1;a)}(E_{2g}, 2)$		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{11}i}{66}$	0	0	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{77}i}{462}$	0	0	0	$\frac{\sqrt{55}i}{66}$	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{22}i}{66}$	0	0	0	$-\frac{\sqrt{66}i}{66}$	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{66}i}{66}$	0	0	0	$\frac{\sqrt{22}i}{66}$	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{55}i}{66}$	0	0	0	$-\frac{\sqrt{77}i}{462}$
		0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{11}i}{66}$	0	0	0
		0	$\frac{\sqrt{77}i}{462}$	0	0	0	0	0	0	$\frac{\sqrt{770}i}{154}$	0	0	0	0	0
		0	0	$-\frac{\sqrt{22}i}{66}$	0	0	0	0	0	0	$-\frac{\sqrt{66}i}{22}$	0	0	0	0
		0	0	0	$\frac{\sqrt{66}i}{66}$	0	0	$-\frac{\sqrt{770}i}{154}$	0	0	0	$\frac{\sqrt{22}i}{22}$	0	0	0
		$\frac{\sqrt{11}i}{66}$	0	0	0	$-\frac{\sqrt{55}i}{66}$	0	0	$\frac{\sqrt{66}i}{22}$	0	0	0	$\frac{\sqrt{22}i}{22}$	0	0
		0	$-\frac{\sqrt{55}i}{66}$	0	0	0	$\frac{\sqrt{11}i}{66}$	0	0	$-\frac{\sqrt{22}i}{22}$	0	0	0	$-\frac{\sqrt{66}i}{22}$	0
		0	0	$\frac{\sqrt{66}i}{66}$	0	0	0	0	0	0	$-\frac{\sqrt{22}i}{22}$	0	0	0	$\frac{\sqrt{770}i}{154}$
		0	0	0	$-\frac{\sqrt{22}i}{66}$	0	0	0	0	0	0	$\frac{\sqrt{66}i}{22}$	0	0	0
		0	0	0	0	$\frac{\sqrt{77}i}{462}$	0	0	0	0	0	0	$-\frac{\sqrt{770}i}{154}$	0	0
884	symmetry	1													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_0^{(1,1;a)}(A_g)$		$-\frac{\sqrt{42}}{21}$	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{42}}{21}$	0	0	0	0	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	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	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	$\frac{\sqrt{42}}{28}$	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	$\frac{\sqrt{42}}{28}$
885	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_2^{(1,1;a)}(A_g)$		$\frac{15\sqrt{7}}{98}$	0	0	0	0	0	0	$-\frac{5\sqrt{42}}{147}$	0	0	0	0	0	0
		0	$-\frac{3\sqrt{7}}{98}$	0	0	0	0	0	0	$-\frac{\sqrt{70}}{49}$	0	0	0	0	0
		0	0	$-\frac{6\sqrt{7}}{49}$	0	0	0	0	0	0	$-\frac{2\sqrt{21}}{147}$	0	0	0	0
		0	0	0	$-\frac{6\sqrt{7}}{49}$	0	0	0	0	0	0	$\frac{2\sqrt{21}}{147}$	0	0	0
		0	0	0	0	$-\frac{3\sqrt{7}}{98}$	0	0	0	0	0	0	$\frac{\sqrt{70}}{49}$	0	0
		0	0	0	0	0	$\frac{15\sqrt{7}}{98}$	0	0	0	0	0	0	$\frac{5\sqrt{42}}{147}$	0
		0	0	0	0	0	0	$-\frac{\sqrt{7}}{14}$	0	0	0	0	0	0	0
		$-\frac{5\sqrt{42}}{147}$	0	0	0	0	0	0	$-\frac{\sqrt{7}}{98}$	0	0	0	0	0	0
		0	$-\frac{\sqrt{70}}{49}$	0	0	0	0	0	0	$\frac{3\sqrt{7}}{98}$	0	0	0	0	0
		0	0	$-\frac{2\sqrt{21}}{147}$	0	0	0	0	0	0	$\frac{5\sqrt{7}}{98}$	0	0	0	0
		0	0	0	$\frac{2\sqrt{21}}{147}$	0	0	0	0	0	0	$\frac{5\sqrt{7}}{98}$	0	0	0
		0	0	0	0	$\frac{\sqrt{70}}{49}$	0	0	0	0	0	0	$\frac{3\sqrt{7}}{98}$	0	0
		0	0	0	0	0	$\frac{5\sqrt{42}}{147}$	0	0	0	0	0	0	$-\frac{\sqrt{7}}{98}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{7}}{14}$
886	symmetry	$\sqrt{3}yz$													

*continued ...*



Table 10

No.	multipole	matrix													
$\mathbb{Q}_{2,1}^{(1,1;a)}(E_{1g})$		0	$-\frac{3\sqrt{105}i}{98}$	0	0	0	0	$\frac{5\sqrt{2}i}{42}$	0	$\frac{5\sqrt{42}i}{294}$	0	0	0	0	0
		$\frac{3\sqrt{105}i}{98}$	0	$-\frac{3\sqrt{42}i}{98}$	0	0	0	0	$\frac{\sqrt{70}i}{294}$	0	$\frac{11\sqrt{14}i}{294}$	0	0	0	0
		0	$\frac{3\sqrt{42}i}{98}$	0	0	0	0	0	0	$-\frac{\sqrt{105}i}{147}$	0	$\frac{\sqrt{7}i}{21}$	0	0	0
		0	0	0	0	$\frac{3\sqrt{42}i}{98}$	0	0	0	0	$-\frac{\sqrt{7}i}{21}$	0	$\frac{\sqrt{105}i}{147}$	0	0
		0	0	0	$-\frac{3\sqrt{42}i}{98}$	0	$\frac{3\sqrt{105}i}{98}$	0	0	0	0	$-\frac{11\sqrt{14}i}{294}$	0	$-\frac{\sqrt{70}i}{294}$	0
		0	0	0	0	$-\frac{3\sqrt{105}i}{98}$	0	0	0	0	0	0	$-\frac{5\sqrt{42}i}{294}$	0	$-\frac{5\sqrt{2}i}{42}$
		$-\frac{5\sqrt{2}i}{42}$	0	0	0	0	0	0	$\frac{\sqrt{3}i}{14}$	0	0	0	0	0	0
		0	$-\frac{\sqrt{70}i}{294}$	0	0	0	0	$-\frac{\sqrt{3}i}{14}$	0	$\frac{2\sqrt{7}i}{49}$	0	0	0	0	0
		$-\frac{5\sqrt{42}i}{294}$	0	$\frac{\sqrt{105}i}{147}$	0	0	0	0	$-\frac{2\sqrt{7}i}{49}$	0	$\frac{\sqrt{35}i}{98}$	0	0	0	0
		0	$-\frac{11\sqrt{14}i}{294}$	0	$\frac{\sqrt{7}i}{21}$	0	0	0	0	$-\frac{\sqrt{35}i}{98}$	0	0	0	0	0
		0	0	$-\frac{\sqrt{7}i}{21}$	0	$\frac{11\sqrt{14}i}{294}$	0	0	0	0	0	$-\frac{\sqrt{35}i}{98}$	0	0	0
		0	0	0	$-\frac{\sqrt{105}i}{147}$	0	$\frac{5\sqrt{42}i}{294}$	0	0	0	0	$\frac{\sqrt{35}i}{98}$	0	$-\frac{2\sqrt{7}i}{49}$	0
		0	0	0	0	$\frac{\sqrt{70}i}{294}$	0	0	0	0	0	0	$\frac{2\sqrt{7}i}{49}$	0	$-\frac{\sqrt{3}i}{14}$
		0	0	0	0	0	$\frac{5\sqrt{2}i}{42}$	0	0	0	0	0	0	$\frac{\sqrt{3}i}{14}$	0
887	symmetry	$-\sqrt{3}xz$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{2,2}^{(1,1;a)}(E_{1g})$		0	$-\frac{3\sqrt{105}}{98}$	0	0	0	0	$-\frac{5\sqrt{2}}{42}$	0	$\frac{5\sqrt{42}}{294}$	0	0	0	0	0
		$-\frac{3\sqrt{105}}{98}$	0	$-\frac{3\sqrt{42}}{98}$	0	0	0	0	$-\frac{\sqrt{70}}{294}$	0	$\frac{11\sqrt{14}}{294}$	0	0	0	0
		0	$-\frac{3\sqrt{42}}{98}$	0	0	0	0	0	0	$\frac{\sqrt{105}}{147}$	0	$\frac{\sqrt{7}}{21}$	0	0	0
		0	0	0	0	$\frac{3\sqrt{42}}{98}$	0	0	0	0	$\frac{\sqrt{7}}{21}$	0	$\frac{\sqrt{105}}{147}$	0	0
		0	0	0	$\frac{3\sqrt{42}}{98}$	0	$\frac{3\sqrt{105}}{98}$	0	0	0	0	$\frac{11\sqrt{14}}{294}$	0	$-\frac{\sqrt{70}}{294}$	0
		0	0	0	0	$\frac{3\sqrt{105}}{98}$	0	0	0	0	0	$\frac{5\sqrt{42}}{294}$	0	$-\frac{5\sqrt{2}}{42}$	0
		$-\frac{5\sqrt{2}}{42}$	0	0	0	0	0	0	$\frac{\sqrt{3}}{14}$	0	0	0	0	0	0
		0	$-\frac{\sqrt{70}}{294}$	0	0	0	0	$\frac{\sqrt{3}}{14}$	0	$\frac{2\sqrt{7}}{49}$	0	0	0	0	0
		$\frac{5\sqrt{42}}{294}$	0	$\frac{\sqrt{105}}{147}$	0	0	0	0	$\frac{2\sqrt{7}}{49}$	0	$\frac{\sqrt{35}}{98}$	0	0	0	0
		0	$\frac{11\sqrt{14}}{294}$	0	$\frac{\sqrt{7}}{21}$	0	0	0	0	$\frac{\sqrt{35}}{98}$	0	0	0	0	0
		0	0	$\frac{\sqrt{7}}{21}$	0	$\frac{11\sqrt{14}}{294}$	0	0	0	0	0	$-\frac{\sqrt{35}}{98}$	0	0	0
		0	0	0	$\frac{\sqrt{105}}{147}$	0	$\frac{5\sqrt{42}}{294}$	0	0	0	0	$-\frac{\sqrt{35}}{98}$	0	$-\frac{2\sqrt{7}}{49}$	0
		0	0	0	0	$-\frac{\sqrt{70}}{294}$	0	0	0	0	0	$-\frac{2\sqrt{7}}{49}$	0	$-\frac{\sqrt{3}}{14}$	0
		0	0	0	0	0	$-\frac{5\sqrt{2}}{42}$	0	0	0	0	0	0	$-\frac{\sqrt{3}}{14}$	0
888	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{2,1}^{(1,1;a)}(E_{2g})$		0	0	$\frac{3\sqrt{210}}{196}$	0	0	0	0	0	$-\frac{\sqrt{70}}{147}$	0	0	0	0	
		0	0	0	$\frac{9\sqrt{42}}{196}$	0	0	$\frac{\sqrt{10}}{21}$	0	0	0	$-\frac{4\sqrt{14}}{147}$	0	0	0
		$\frac{3\sqrt{210}}{196}$	0	0	0	$\frac{9\sqrt{42}}{196}$	0	0	$\frac{4\sqrt{35}}{147}$	0	0	0	$-\frac{2\sqrt{105}}{147}$	0	0
		0	$\frac{9\sqrt{42}}{196}$	0	0	0	$\frac{3\sqrt{210}}{196}$	0	0	$\frac{2\sqrt{105}}{147}$	0	0	0	$-\frac{4\sqrt{35}}{147}$	0
		0	0	$\frac{9\sqrt{42}}{196}$	0	0	0	0	0	$\frac{4\sqrt{14}}{147}$	0	0	0	0	$-\frac{\sqrt{10}}{21}$
		0	0	0	$\frac{3\sqrt{210}}{196}$	0	0	0	0	0	$\frac{\sqrt{70}}{147}$	0	0	0	0
		0	$\frac{\sqrt{10}}{21}$	0	0	0	0	0	0	$-\frac{1}{14}$	0	0	0	0	0
		0	0	$\frac{4\sqrt{35}}{147}$	0	0	0	0	0	0	$-\frac{\sqrt{105}}{98}$	0	0	0	0
		0	0	0	$\frac{2\sqrt{105}}{147}$	0	0	$-\frac{1}{14}$	0	0	0	$-\frac{\sqrt{35}}{49}$	0	0	0
		$-\frac{\sqrt{70}}{147}$	0	0	0	$\frac{4\sqrt{14}}{147}$	0	0	$-\frac{\sqrt{105}}{98}$	0	0	0	$-\frac{\sqrt{35}}{49}$	0	0
		0	$-\frac{4\sqrt{14}}{147}$	0	0	0	$\frac{\sqrt{70}}{147}$	0	0	$-\frac{\sqrt{35}}{49}$	0	0	0	$-\frac{\sqrt{105}}{98}$	0
		0	0	$-\frac{2\sqrt{105}}{147}$	0	0	0	0	0	$-\frac{\sqrt{35}}{49}$	0	0	0	0	$-\frac{1}{14}$
		0	0	0	$-\frac{4\sqrt{35}}{147}$	0	0	0	0	0	$-\frac{\sqrt{105}}{98}$	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{10}}{21}$	0	0	0	0	0	0	$-\frac{1}{14}$	0	0
889	symmetry	$-\sqrt{3}xy$													

*continued ...*

Table 10

No.	multipole	matrix												
$\mathbb{Q}_{2,2}^{(1,1;a)}(E_{2g})$		0	0	$\frac{3\sqrt{210}i}{196}$	0	0	0	0	0	$-\frac{\sqrt{70}i}{147}$	0	0	0	0
		0	0	0	$\frac{9\sqrt{42}i}{196}$	0	0	$-\frac{\sqrt{10}i}{21}$	0	0	$-\frac{4\sqrt{14}i}{147}$	0	0	0
		$-\frac{3\sqrt{210}i}{196}$	0	0	0	$\frac{9\sqrt{42}i}{196}$	0	0	$-\frac{4\sqrt{35}i}{147}$	0	0	$-\frac{2\sqrt{105}i}{147}$	0	0
		0	$-\frac{9\sqrt{42}i}{196}$	0	0	0	$\frac{3\sqrt{210}i}{196}$	0	0	$-\frac{2\sqrt{105}i}{147}$	0	0	$-\frac{4\sqrt{35}i}{147}$	0
		0	0	$-\frac{9\sqrt{42}i}{196}$	0	0	0	0	0	$-\frac{4\sqrt{14}i}{147}$	0	0	0	$-\frac{\sqrt{10}i}{21}$
		0	0	0	$-\frac{3\sqrt{210}i}{196}$	0	0	0	0	0	$-\frac{\sqrt{70}i}{147}$	0	0	0
		0	$\frac{\sqrt{10}i}{21}$	0	0	0	0	0	$-\frac{i}{14}$	0	0	0	0	0
		0	0	$\frac{4\sqrt{35}i}{147}$	0	0	0	0	0	$-\frac{\sqrt{105}i}{98}$	0	0	0	0
		0	0	0	$\frac{2\sqrt{105}i}{147}$	0	0	$\frac{i}{14}$	0	0	$-\frac{\sqrt{35}i}{49}$	0	0	0
		$\frac{\sqrt{70}i}{147}$	0	0	0	$\frac{4\sqrt{14}i}{147}$	0	0	$\frac{\sqrt{105}i}{98}$	0	0	$-\frac{\sqrt{35}i}{49}$	0	0
		0	$\frac{4\sqrt{14}i}{147}$	0	0	0	$\frac{\sqrt{70}i}{147}$	0	0	$\frac{\sqrt{35}i}{49}$	0	0	$-\frac{\sqrt{105}i}{98}$	0
		0	0	$\frac{2\sqrt{105}i}{147}$	0	0	0	0	0	$\frac{\sqrt{35}i}{49}$	0	0	0	$-\frac{i}{14}$
		0	0	0	$\frac{4\sqrt{35}i}{147}$	0	0	0	0	0	$\frac{\sqrt{105}i}{98}$	0	0	0
		0	0	0	0	$\frac{\sqrt{10}i}{21}$	0	0	0	0	0	$\frac{i}{14}$	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													
$\mathbb{Q}_4^{(1,1;a)}(A_g)$		$-\frac{\sqrt{2310}}{294}$	0	0	0	0	0	0	$\frac{4\sqrt{385}}{539}$	0	0	0	0	0	0
		0	$\frac{\sqrt{2310}}{98}$	0	0	0	0	0	0	$-\frac{16\sqrt{231}}{1617}$	0	0	0	0	0
		0	0	$-\frac{\sqrt{2310}}{147}$	0	0	0	0	0	0	$-\frac{2\sqrt{770}}{539}$	0	0	0	0
		0	0	0	$-\frac{\sqrt{2310}}{147}$	0	0	0	0	0	$\frac{2\sqrt{770}}{539}$	0	0	0	0
		0	0	0	0	$\frac{\sqrt{2310}}{98}$	0	0	0	0	0	$\frac{16\sqrt{231}}{1617}$	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{2310}}{294}$	0	0	0	0	0	$-\frac{4\sqrt{385}}{539}$	0	0
		0	0	0	0	0	0	$\frac{\sqrt{2310}}{924}$	0	0	0	0	0	0	0
		$\frac{4\sqrt{385}}{539}$	0	0	0	0	0	0	$-\frac{13\sqrt{2310}}{6468}$	0	0	0	0	0	0
		0	$-\frac{16\sqrt{231}}{1617}$	0	0	0	0	0	0	$-\frac{\sqrt{2310}}{2156}$	0	0	0	0	0
		0	0	$-\frac{2\sqrt{770}}{539}$	0	0	0	0	0	0	$\frac{3\sqrt{2310}}{2156}$	0	0	0	0
		0	0	0	$\frac{2\sqrt{770}}{539}$	0	0	0	0	0	0	$\frac{3\sqrt{2310}}{2156}$	0	0	0
		0	0	0	0	$\frac{16\sqrt{231}}{1617}$	0	0	0	0	0	0	$-\frac{\sqrt{2310}}{2156}$	0	0
		0	0	0	0	0	$-\frac{4\sqrt{385}}{539}$	0	0	0	0	0	0	$-\frac{13\sqrt{2310}}{6468}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{2310}}{924}$
891	symmetry	$\frac{\sqrt{70}xz(x^2-3y^2)}{4}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_4^{(1,1;a)}(B_g, 1)$		0	0	0	$-\frac{\sqrt{330}}{42}$	0	0	0	0	0	0	$\frac{\sqrt{110}}{77}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{330}}{165}$	0	0
		0	0	0	0	0	$\frac{\sqrt{330}}{42}$	$-\frac{3\sqrt{385}}{385}$	0	0	0	0	0	$-\frac{\sqrt{55}}{385}$	0
		$-\frac{\sqrt{330}}{42}$	0	0	0	0	0	0	$-\frac{\sqrt{55}}{385}$	0	0	0	0	0	$-\frac{3\sqrt{385}}{385}$
		0	0	0	0	0	0	0	0	$\frac{\sqrt{330}}{165}$	0	0	0	0	0
		0	0	$\frac{\sqrt{330}}{42}$	0	0	0	0	0	0	$\frac{\sqrt{110}}{77}$	0	0	0	0
		0	0	$-\frac{3\sqrt{385}}{385}$	0	0	0	0	0	0	$\frac{\sqrt{1155}}{462}$	0	0	0	0
		0	0	0	$-\frac{\sqrt{55}}{385}$	0	0	0	0	0	0	$\frac{\sqrt{165}}{231}$	0	0	0
		0	0	0	0	$\frac{\sqrt{330}}{165}$	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	$\frac{\sqrt{110}}{77}$	$\frac{\sqrt{1155}}{462}$	0	0	0	0	0	$-\frac{\sqrt{165}}{231}$	0
		$\frac{\sqrt{110}}{77}$	0	0	0	0	0	0	$\frac{\sqrt{165}}{231}$	0	0	0	0	0	$-\frac{\sqrt{1155}}{462}$
		0	$\frac{\sqrt{330}}{165}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{55}}{385}$	0	0	0	0	0	0	$-\frac{\sqrt{165}}{231}$	0	0	0	0
		0	0	0	$-\frac{3\sqrt{385}}{385}$	0	0	0	0	0	0	$-\frac{\sqrt{1155}}{462}$	0	0	0
892	symmetry	$\frac{\sqrt{70}yz(3x^2-y^2)}{4}$													

*continued ...*

Table 10

No.	multipole	matrix												
$\mathbb{Q}_4^{(1,1;a)}(B_g, 2)$		0	0	0	$\frac{\sqrt{330i}}{42}$	0	0	0	0	0	0	$-\frac{\sqrt{110i}}{77}$	0	0
		0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{330i}}{165}$	0	0
		0	0	0	0	0	$-\frac{\sqrt{330i}}{42}$	$-\frac{3\sqrt{385i}}{385}$	0	0	0	0	$\frac{\sqrt{55i}}{385}$	0
		$-\frac{\sqrt{330i}}{42}$	0	0	0	0	0	0	$-\frac{\sqrt{55i}}{385}$	0	0	0	0	$\frac{3\sqrt{385i}}{385}$
		0	0	0	0	0	0	0	0	$\frac{\sqrt{330i}}{165}$	0	0	0	0
		0	0	$\frac{\sqrt{330i}}{42}$	0	0	0	0	0	0	$\frac{\sqrt{110i}}{77}$	0	0	0
		0	0	$\frac{3\sqrt{385i}}{385}$	0	0	0	0	0	0	$-\frac{\sqrt{1155i}}{462}$	0	0	0
		0	0	0	$\frac{\sqrt{55i}}{385}$	0	0	0	0	0	0	$-\frac{\sqrt{165i}}{231}$	0	0
		0	0	0	0	$-\frac{\sqrt{330i}}{165}$	0	0	0	0	0	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{110i}}{77}$	$\frac{\sqrt{1155i}}{462}$	0	0	0	0	$\frac{\sqrt{165i}}{231}$	0
		$\frac{\sqrt{110i}}{77}$	0	0	0	0	0	0	$\frac{\sqrt{165i}}{231}$	0	0	0	0	$\frac{\sqrt{1155i}}{462}$
		0	$\frac{\sqrt{330i}}{165}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{55i}}{385}$	0	0	0	0	0	0	$-\frac{\sqrt{165i}}{231}$	0	0	0
		0	0	0	$-\frac{3\sqrt{385i}}{385}$	0	0	0	0	0	0	$-\frac{\sqrt{1155i}}{462}$	0	0
893	symmetry	$-\frac{\sqrt{10}yz(3x^2+3y^2-4z^2)}{4}$												

continued ...

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{4,1}^{(1,1;a)}(E_{1g})$		0	$\frac{\sqrt{1155}i}{147}$	0	0	0	0	$-\frac{\sqrt{22}i}{77}$	0	$-\frac{10\sqrt{462}i}{1617}$	0	0	0	0	0
		$-\frac{\sqrt{1155}i}{147}$	0	$-\frac{5\sqrt{462}i}{294}$	0	0	0	0	$\frac{13\sqrt{770}i}{2695}$	0	$\frac{2\sqrt{154}i}{539}$	0	0	0	0
		0	$\frac{5\sqrt{462}i}{294}$	0	0	0	0	0	0	$-\frac{\sqrt{1155}i}{8085}$	0	$\frac{\sqrt{77}i}{77}$	0	0	0
		0	0	0	0	$\frac{5\sqrt{462}i}{294}$	0	0	0	0	$-\frac{\sqrt{77}i}{77}$	0	$\frac{\sqrt{1155}i}{8085}$	0	0
		0	0	0	$-\frac{5\sqrt{462}i}{294}$	0	$-\frac{\sqrt{1155}i}{147}$	0	0	0	0	$-\frac{2\sqrt{154}i}{539}$	0	$-\frac{13\sqrt{770}i}{2695}$	0
		0	0	0	0	$\frac{\sqrt{1155}i}{147}$	0	0	0	0	0	0	$\frac{10\sqrt{462}i}{1617}$	0	$\frac{\sqrt{22}i}{77}$
		$\frac{\sqrt{22}i}{77}$	0	0	0	0	0	0	$-\frac{5\sqrt{33}i}{462}$	0	0	0	0	0	0
		0	$-\frac{13\sqrt{770}i}{2695}$	0	0	0	0	$\frac{5\sqrt{33}i}{462}$	0	$\frac{5\sqrt{77}i}{1078}$	0	0	0	0	0
		$\frac{10\sqrt{462}i}{1617}$	0	$\frac{\sqrt{1155}i}{8085}$	0	0	0	0	$-\frac{5\sqrt{77}i}{1078}$	0	$\frac{3\sqrt{385}i}{1078}$	0	0	0	0
		0	$-\frac{2\sqrt{154}i}{539}$	0	$\frac{\sqrt{77}i}{77}$	0	0	0	0	$-\frac{3\sqrt{385}i}{1078}$	0	0	0	0	0
		0	0	$-\frac{\sqrt{77}i}{77}$	0	$\frac{2\sqrt{154}i}{539}$	0	0	0	0	0	$-\frac{3\sqrt{385}i}{1078}$	0	0	0
		0	0	0	$-\frac{\sqrt{1155}i}{8085}$	0	$-\frac{10\sqrt{462}i}{1617}$	0	0	0	0	$\frac{3\sqrt{385}i}{1078}$	0	$-\frac{5\sqrt{77}i}{1078}$	0
		0	0	0	0	$\frac{13\sqrt{770}i}{2695}$	0	0	0	0	0	0	$\frac{5\sqrt{77}i}{1078}$	0	$\frac{5\sqrt{33}i}{462}$
		0	0	0	0	0	$-\frac{\sqrt{22}i}{77}$	0	0	0	0	0	0	$-\frac{5\sqrt{33}i}{462}$	0
894	symmetry	$\frac{\sqrt{10}xz(3x^2+3y^2-4z^2)}{4}$													

continued ...



Table 10

No.	multipole	matrix													
$\mathbb{Q}_{4,2}^{(1,1;a)}(E_{1g})$		0	$\frac{\sqrt{1155}}{147}$	0	0	0	0	$\frac{\sqrt{22}}{77}$	0	$-\frac{10\sqrt{462}}{1617}$	0	0	0	0	0
		$\frac{\sqrt{1155}}{147}$	0	$-\frac{5\sqrt{462}}{294}$	0	0	0	0	$-\frac{13\sqrt{770}}{2695}$	0	$\frac{2\sqrt{154}}{539}$	0	0	0	0
		0	$-\frac{5\sqrt{462}}{294}$	0	0	0	0	0	0	$\frac{\sqrt{1155}}{8085}$	0	$\frac{\sqrt{77}}{77}$	0	0	0
		0	0	0	0	$\frac{5\sqrt{462}}{294}$	0	0	0	0	$\frac{\sqrt{77}}{77}$	0	$\frac{\sqrt{1155}}{8085}$	0	0
		0	0	0	$\frac{5\sqrt{462}}{294}$	0	$-\frac{\sqrt{1155}}{147}$	0	0	0	0	$\frac{2\sqrt{154}}{539}$	0	$-\frac{13\sqrt{770}}{2695}$	0
		0	0	0	0	$-\frac{\sqrt{1155}}{147}$	0	0	0	0	0	0	$-\frac{10\sqrt{462}}{1617}$	0	$\frac{\sqrt{22}}{77}$
		$\frac{\sqrt{22}}{77}$	0	0	0	0	0	0	$-\frac{5\sqrt{33}}{462}$	0	0	0	0	0	0
		0	$-\frac{13\sqrt{770}}{2695}$	0	0	0	0	$-\frac{5\sqrt{33}}{462}$	0	$\frac{5\sqrt{77}}{1078}$	0	0	0	0	0
		$-\frac{10\sqrt{462}}{1617}$	0	$\frac{\sqrt{1155}}{8085}$	0	0	0	0	$\frac{5\sqrt{77}}{1078}$	0	$\frac{3\sqrt{385}}{1078}$	0	0	0	0
		0	$\frac{2\sqrt{154}}{539}$	0	$\frac{\sqrt{77}}{77}$	0	0	0	0	$\frac{3\sqrt{385}}{1078}$	0	0	0	0	0
		0	0	$\frac{\sqrt{77}}{77}$	0	$\frac{2\sqrt{154}}{539}$	0	0	0	0	0	0	$-\frac{3\sqrt{385}}{1078}$	0	0
		0	0	0	$\frac{\sqrt{1155}}{8085}$	0	$-\frac{10\sqrt{462}}{1617}$	0	0	0	0	$-\frac{3\sqrt{385}}{1078}$	0	$-\frac{5\sqrt{77}}{1078}$	0
		0	0	0	0	$-\frac{13\sqrt{770}}{2695}$	0	0	0	0	0	0	$-\frac{5\sqrt{77}}{1078}$	0	$\frac{5\sqrt{33}}{462}$
		0	0	0	0	0	$\frac{\sqrt{22}}{77}$	0	0	0	0	0	0	$\frac{5\sqrt{33}}{462}$	0
895	symmetry	$\frac{\sqrt{35}(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{4,1}^{(1,1;a)}(E_{2g}, 1)$		0	0	0	0	$-\frac{\sqrt{330}}{42}$	0	0	0	0	0	0	$\frac{4\sqrt{33}}{231}$	0	0
		0	0	0	0	0	$-\frac{\sqrt{330}}{42}$	0	0	0	0	0	0	$\frac{8\sqrt{55}}{385}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{2\sqrt{770}}{385}$
		0	0	0	0	0	0	$-\frac{2\sqrt{770}}{385}$	0	0	0	0	0	0	0
		$-\frac{\sqrt{330}}{42}$	0	0	0	0	0	0	$-\frac{8\sqrt{55}}{385}$	0	0	0	0	0	0
		0	$-\frac{\sqrt{330}}{42}$	0	0	0	0	0	0	$-\frac{4\sqrt{33}}{231}$	0	0	0	0	0
		0	0	0	$-\frac{2\sqrt{770}}{385}$	0	0	0	0	0	$\frac{\sqrt{2310}}{924}$	0	0	0	0
		0	0	0	0	$-\frac{8\sqrt{55}}{385}$	0	0	0	0	0	$\frac{5\sqrt{22}}{308}$	0	0	0
		0	0	0	0	0	$-\frac{4\sqrt{33}}{231}$	0	0	0	0	0	0	$\frac{5\sqrt{22}}{308}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{2310}}{924}$
		0	0	0	0	0	0	$\frac{\sqrt{2310}}{924}$	0	0	0	0	0	0	0
		$\frac{4\sqrt{33}}{231}$	0	0	0	0	0	0	$\frac{5\sqrt{22}}{308}$	0	0	0	0	0	0
		0	$\frac{8\sqrt{55}}{385}$	0	0	0	0	0	0	$\frac{5\sqrt{22}}{308}$	0	0	0	0	0
		0	0	$\frac{2\sqrt{770}}{385}$	0	0	0	0	0	0	$\frac{\sqrt{2310}}{924}$	0	0	0	0
896	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{4,2}^{(1,1;a)}(E_{2g}, 1)$		0	0	0	0	$\frac{\sqrt{330}i}{42}$	0	0	0	0	0	0	$-\frac{4\sqrt{33}i}{231}$	0	0
		0	0	0	0	0	$\frac{\sqrt{330}i}{42}$	0	0	0	0	0	0	$-\frac{8\sqrt{55}i}{385}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{2\sqrt{770}i}{385}$
		0	0	0	0	0	0	$-\frac{2\sqrt{770}i}{385}$	0	0	0	0	0	0	0
		$-\frac{\sqrt{330}i}{42}$	0	0	0	0	0	0	$-\frac{8\sqrt{55}i}{385}$	0	0	0	0	0	0
		0	$-\frac{\sqrt{330}i}{42}$	0	0	0	0	0	0	$-\frac{4\sqrt{33}i}{231}$	0	0	0	0	0
		0	0	0	$\frac{2\sqrt{770}i}{385}$	0	0	0	0	0	0	$-\frac{\sqrt{2310}i}{924}$	0	0	0
		0	0	0	0	$\frac{8\sqrt{55}i}{385}$	0	0	0	0	0	0	$-\frac{5\sqrt{22}i}{308}$	0	0
		0	0	0	0	0	$\frac{4\sqrt{33}i}{231}$	0	0	0	0	0	0	$-\frac{5\sqrt{22}i}{308}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{2310}i}{924}$
		0	0	0	0	0	0	$\frac{\sqrt{2310}i}{924}$	0	0	0	0	0	0	0
		$\frac{4\sqrt{33}i}{231}$	0	0	0	0	0	0	$\frac{5\sqrt{22}i}{308}$	0	0	0	0	0	0
		0	$\frac{8\sqrt{55}i}{385}$	0	0	0	0	0	0	$\frac{5\sqrt{22}i}{308}$	0	0	0	0	0
		0	0	$\frac{2\sqrt{770}i}{385}$	0	0	0	0	0	0	$\frac{\sqrt{2310}i}{924}$	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													
$\mathbb{Q}_{4,1}^{(1,1;a)}(E_{2g}, 2)$		0	0	$-\frac{\sqrt{1155}}{98}$	0	0	0	0	0	0	$\frac{4\sqrt{385}}{539}$	0	0	0	0
		0	0	0	$\frac{5\sqrt{231}}{294}$	0	0	$-\frac{6\sqrt{55}}{385}$	0	0	0	$\frac{2\sqrt{77}}{539}$	0	0	0
		$-\frac{\sqrt{1155}}{98}$	0	0	0	$\frac{5\sqrt{231}}{294}$	0	0	$\frac{9\sqrt{770}}{2695}$	0	0	0	$-\frac{17\sqrt{2310}}{8085}$	0	0
		0	$\frac{5\sqrt{231}}{294}$	0	0	0	$-\frac{\sqrt{1155}}{98}$	0	0	$\frac{17\sqrt{2310}}{8085}$	0	0	0	$-\frac{9\sqrt{770}}{2695}$	0
		0	0	$\frac{5\sqrt{231}}{294}$	0	0	0	0	0	0	$-\frac{2\sqrt{77}}{539}$	0	0	0	$\frac{6\sqrt{55}}{385}$
		0	0	0	$-\frac{\sqrt{1155}}{98}$	0	0	0	0	0	0	$-\frac{4\sqrt{385}}{539}$	0	0	0
		0	$-\frac{6\sqrt{55}}{385}$	0	0	0	0	0	0	$\frac{5\sqrt{22}}{308}$	0	0	0	0	0
		0	0	$\frac{9\sqrt{770}}{2695}$	0	0	0	0	0	0	$\frac{\sqrt{2310}}{6468}$	0	0	0	0
		0	0	0	$\frac{17\sqrt{2310}}{8085}$	0	0	$\frac{5\sqrt{22}}{308}$	0	0	0	$-\frac{\sqrt{770}}{539}$	0	0	0
		$\frac{4\sqrt{385}}{539}$	0	0	0	$-\frac{2\sqrt{77}}{539}$	0	0	$\frac{\sqrt{2310}}{6468}$	0	0	0	$-\frac{\sqrt{770}}{539}$	0	0
		0	$\frac{2\sqrt{77}}{539}$	0	0	0	$-\frac{4\sqrt{385}}{539}$	0	0	$-\frac{\sqrt{770}}{539}$	0	0	0	$\frac{\sqrt{2310}}{6468}$	0
		0	0	$-\frac{17\sqrt{2310}}{8085}$	0	0	0	0	0	0	$-\frac{\sqrt{770}}{539}$	0	0	0	$\frac{5\sqrt{22}}{308}$
		0	0	0	$-\frac{9\sqrt{770}}{2695}$	0	0	0	0	0	0	$\frac{\sqrt{2310}}{6468}$	0	0	0
		0	0	0	0	$\frac{6\sqrt{55}}{385}$	0	0	0	0	0	0	$\frac{5\sqrt{22}}{308}$	0	0
898	symmetry	$\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{4,2}^{(1,1;a)}(E_{2g}, 2)$		0	0	$-\frac{\sqrt{1155}i}{98}$	0	0	0	0	0	0	$\frac{4\sqrt{385}i}{539}$	0	0	0	0
		0	0	0	$\frac{5\sqrt{231}i}{294}$	0	0	$\frac{6\sqrt{55}i}{385}$	0	0	0	$\frac{2\sqrt{77}i}{539}$	0	0	0
		$\frac{\sqrt{1155}i}{98}$	0	0	0	$\frac{5\sqrt{231}i}{294}$	0	0	$-\frac{9\sqrt{770}i}{2695}$	0	0	0	$-\frac{17\sqrt{2310}i}{8085}$	0	0
		0	$-\frac{5\sqrt{231}i}{294}$	0	0	0	$-\frac{\sqrt{1155}i}{98}$	0	0	$-\frac{17\sqrt{2310}i}{8085}$	0	0	0	$-\frac{9\sqrt{770}i}{2695}$	0
		0	0	$-\frac{5\sqrt{231}i}{294}$	0	0	0	0	0	0	$\frac{2\sqrt{77}i}{539}$	0	0	0	$\frac{6\sqrt{55}i}{385}$
		0	0	0	$\frac{\sqrt{1155}i}{98}$	0	0	0	0	0	0	$\frac{4\sqrt{385}i}{539}$	0	0	0
		0	$-\frac{6\sqrt{55}i}{385}$	0	0	0	0	0	0	$\frac{5\sqrt{22}i}{308}$	0	0	0	0	0
		0	0	$\frac{9\sqrt{770}i}{2695}$	0	0	0	0	0	0	$\frac{\sqrt{2310}i}{6468}$	0	0	0	0
		0	0	0	$\frac{17\sqrt{2310}i}{8085}$	0	0	$-\frac{5\sqrt{22}i}{308}$	0	0	0	$-\frac{\sqrt{770}i}{539}$	0	0	0
		$-\frac{4\sqrt{385}i}{539}$	0	0	0	$-\frac{2\sqrt{77}i}{539}$	0	0	$-\frac{\sqrt{2310}i}{6468}$	0	0	0	$-\frac{\sqrt{770}i}{539}$	0	0
		0	$-\frac{2\sqrt{77}i}{539}$	0	0	0	$-\frac{4\sqrt{385}i}{539}$	0	0	$\frac{\sqrt{770}i}{539}$	0	0	0	$\frac{\sqrt{2310}i}{6468}$	0
		0	0	$\frac{17\sqrt{2310}i}{8085}$	0	0	0	0	0	0	$\frac{\sqrt{770}i}{539}$	0	0	0	$\frac{5\sqrt{22}i}{308}$
		0	0	0	$\frac{9\sqrt{770}i}{2695}$	0	0	0	0	0	0	$-\frac{\sqrt{2310}i}{6468}$	0	0	0
		0	0	0	0	$-\frac{6\sqrt{55}i}{385}$	0	0	0	0	0	0	$-\frac{5\sqrt{22}i}{308}$	0	0
899	symmetry	$z$													

continued ...

Table 10

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

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{G}_{1,1}^{(1,0;a)}(E_{1g})$		0	0	0	0	0	0	$\frac{\sqrt{6}i}{8}$	0	$-\frac{\sqrt{14}i}{56}$	0	0	0	0	0
		0	0	0	0	0	0	$\frac{\sqrt{210}i}{56}$	0	$-\frac{\sqrt{42}i}{56}$	0	0	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{35}i}{28}$	0	$-\frac{\sqrt{21}i}{28}$	0	0	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{21}i}{28}$	0	$-\frac{\sqrt{35}i}{28}$	0	0	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{42}i}{56}$	0	$-\frac{\sqrt{210}i}{56}$	0	0
		0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{14}i}{56}$	0	$-\frac{\sqrt{6}i}{8}$	0
		$-\frac{\sqrt{6}i}{8}$	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{210}i}{56}$	0	0	0	0	0	0	0	0	0	0	0	0
		$\frac{\sqrt{14}i}{56}$	0	$-\frac{\sqrt{35}i}{28}$	0	0	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{42}i}{56}$	0	$-\frac{\sqrt{21}i}{28}$	0	0	0	0	0	0	0	0	0	0
		0	0	$\frac{\sqrt{21}i}{28}$	0	$-\frac{\sqrt{42}i}{56}$	0	0	0	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{35}i}{28}$	0	$-\frac{\sqrt{14}i}{56}$	0	0	0	0	0	0	0	0
		0	0	0	0	$\frac{\sqrt{210}i}{56}$	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
901	symmetry	$y$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{G}_{1,2}^{(1,0;a)}(E_{1g})$		0	0	0	0	0	0	$-\frac{\sqrt{6}}{8}$	0	$-\frac{\sqrt{14}}{56}$	0	0	0	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{210}}{56}$	0	$-\frac{\sqrt{42}}{56}$	0	0	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{35}}{28}$	0	$-\frac{\sqrt{21}}{28}$	0	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{21}}{28}$	0	$-\frac{\sqrt{35}}{28}$	0	0
		0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{42}}{56}$	0	$-\frac{\sqrt{210}}{56}$	0
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{14}}{56}$	0	$-\frac{\sqrt{6}}{8}$
		$-\frac{\sqrt{6}}{8}$	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{210}}{56}$	0	0	0	0	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{14}}{56}$	0	$-\frac{\sqrt{35}}{28}$	0	0	0	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{42}}{56}$	0	$-\frac{\sqrt{21}}{28}$	0	0	0	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{21}}{28}$	0	$-\frac{\sqrt{42}}{56}$	0	0	0	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{35}}{28}$	0	$-\frac{\sqrt{14}}{56}$	0	0	0	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{210}}{56}$	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
902	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$													

*continued ...*



Table 10

No.	multipole	matrix														
$\mathbb{G}_3^{(1,0;a)}(A_g)$		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	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	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	$\frac{\sqrt{6}i}{6}$	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	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	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	$-\frac{\sqrt{6}i}{6}$	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
903	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$														

*continued ...*

Table 10

No.	multipole	matrix																																																																																																																																																																																																				
$\mathbb{G}_3^{(1,0;a)}(B_g,1)$	<table><tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td><math>\frac{\sqrt{3}}{12}</math></td><td>0</td><td>0</td><td>0</td></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td><math>\frac{1}{4}</math></td><td>0</td><td>0</td></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td><math>\frac{\sqrt{42}}{24}</math></td><td>0</td><td>0</td><td>0</td><td>0</td><td><math>\frac{\sqrt{6}}{8}</math></td><td>0</td></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td><math>\frac{\sqrt{6}}{8}</math></td><td>0</td><td>0</td><td>0</td><td>0</td><td><math>\frac{\sqrt{42}}{24}</math></td></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td><math>\frac{1}{4}</math></td><td>0</td><td>0</td><td>0</td><td>0</td></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td><math>\frac{\sqrt{3}}{12}</math></td><td>0</td><td>0</td><td>0</td></tr><tr><td>0</td><td>0</td><td><math>\frac{\sqrt{42}}{24}</math></td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr><tr><td>0</td><td>0</td><td>0</td><td><math>\frac{\sqrt{6}}{8}</math></td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td><td><math>\frac{1}{4}</math></td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td><math>\frac{\sqrt{3}}{12}</math></td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr><tr><td><math>\frac{\sqrt{3}}{12}</math></td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr><tr><td>0</td><td><math>\frac{1}{4}</math></td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr><tr><td>0</td><td>0</td><td><math>\frac{\sqrt{6}}{8}</math></td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr><tr><td>0</td><td>0</td><td>0</td><td><math>\frac{\sqrt{42}}{24}</math></td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr></table>															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	$\frac{1}{4}$	0	0	0	0	0	0	0	0	$\frac{\sqrt{42}}{24}$	0	0	0	0	$\frac{\sqrt{6}}{8}$	0	0	0	0	0	0	0	0	$\frac{\sqrt{6}}{8}$	0	0	0	0	$\frac{\sqrt{42}}{24}$	0	0	0	0	0	0	0	0	$\frac{1}{4}$	0	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{3}}{12}$	0	0	0	0	0	$\frac{\sqrt{42}}{24}$	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	$\frac{1}{4}$	0	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{3}}{12}$	0	0	0	0	0	0	0	$\frac{\sqrt{3}}{12}$	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	$\frac{\sqrt{6}}{8}$	0	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{42}}{24}$	0	0	0	0	0	0	0	0	0
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0	0	0	$\frac{\sqrt{42}}{24}$	0	0	0	0	0	0	0	0	0																																																																																																																																																																																										
904	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$																																																																																																																																																																																																				

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{G}_3^{(1,0;a)}(B_g, 2)$		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	$\frac{i}{4}$	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{42}i}{24}$	0	0	0	0	0	$\frac{\sqrt{6}i}{8}$	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{6}i}{8}$	0	0	0	0	0	$\frac{\sqrt{42}i}{24}$
		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	$-\frac{\sqrt{3}i}{12}$	0	0	0	0
		0	0	$\frac{\sqrt{42}i}{24}$	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	$\frac{i}{4}$	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
	$-\frac{\sqrt{3}i}{12}$	0	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	0	$-\frac{\sqrt{6}i}{8}$	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	$-\frac{\sqrt{42}i}{24}$	0	0	0	0	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													
$\mathbb{G}_{3,1}^{(1,0;a)}(E_{1g})$		0	0	0	0	0	0	$-\frac{\sqrt{7}i}{12}$	0	$\frac{\sqrt{3}i}{6}$	0	0	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{5}i}{12}$	0	$\frac{i}{6}$	0	0	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{30}i}{24}$	0	$-\frac{\sqrt{2}i}{24}$	0	0	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{2}i}{24}$	0	$-\frac{\sqrt{30}i}{24}$	0	0
		0	0	0	0	0	0	0	0	0	0	$-\frac{i}{6}$	0	$-\frac{\sqrt{5}i}{12}$	0
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{3}i}{6}$	0	$\frac{\sqrt{7}i}{12}$
		$\frac{\sqrt{7}i}{12}$	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{5}i}{12}$	0	0	0	0	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{3}i}{6}$	0	$-\frac{\sqrt{30}i}{24}$	0	0	0	0	0	0	0	0	0	0	0
		0	$-\frac{i}{6}$	0	$-\frac{\sqrt{2}i}{24}$	0	0	0	0	0	0	0	0	0	0
		0	0	$\frac{\sqrt{2}i}{24}$	0	$\frac{i}{6}$	0	0	0	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{30}i}{24}$	0	$\frac{\sqrt{3}i}{6}$	0	0	0	0	0	0	0	0
		0	0	0	0	$\frac{\sqrt{5}i}{12}$	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{7}i}{12}$	0	0	0	0	0	0	0	0
906	symmetry	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{G}_{3,2}^{(1,0;a)}(E_{1g})$		0	0	0	0	0	0	$\frac{\sqrt{7}}{12}$	0	$\frac{\sqrt{3}}{6}$	0	0	0	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{5}}{12}$	0	$\frac{1}{6}$	0	0	0	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{30}}{24}$	0	$-\frac{\sqrt{2}}{24}$	0	0	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{2}}{24}$	0	$-\frac{\sqrt{30}}{24}$	0	0	0
		0	0	0	0	0	0	0	0	0	$\frac{1}{6}$	0	$-\frac{\sqrt{5}}{12}$	0	0
		0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{3}}{6}$	0	$\frac{\sqrt{7}}{12}$	0
		$\frac{\sqrt{7}}{12}$	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{5}}{12}$	0	0	0	0	0	0	0	0	0	0	0	0
		$\frac{\sqrt{3}}{6}$	0	$-\frac{\sqrt{30}}{24}$	0	0	0	0	0	0	0	0	0	0	0
		0	$\frac{1}{6}$	0	$-\frac{\sqrt{2}}{24}$	0	0	0	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{2}}{24}$	0	$\frac{1}{6}$	0	0	0	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{30}}{24}$	0	$\frac{\sqrt{3}}{6}$	0	0	0	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{5}}{12}$	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	$\frac{\sqrt{7}}{12}$	0	0	0	0	0	0	0	0
907	symmetry	$\sqrt{15}xyz$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{G}_{3,1}^{(1,0;a)}(E_{2g})$		0	0	0	0	0	0	0	0	$\frac{\sqrt{2}}{6}$	0	0	0	0	
		0	0	0	0	0	$\frac{\sqrt{14}}{12}$	0	0	0	$\frac{\sqrt{10}}{12}$	0	0	0	
		0	0	0	0	0	0	$\frac{1}{12}$	0	0	0	$\frac{\sqrt{3}}{12}$	0	0	
		0	0	0	0	0	0	0	$-\frac{\sqrt{3}}{12}$	0	0	0	$-\frac{1}{12}$	0	
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{10}}{12}$	0	0	0	$-\frac{\sqrt{14}}{12}$	
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{2}}{6}$	0	0	0	
		0	$\frac{\sqrt{14}}{12}$	0	0	0	0	0	0	0	0	0	0	0	
		0	0	$\frac{1}{12}$	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	
		$\frac{\sqrt{2}}{6}$	0	0	0	$-\frac{\sqrt{10}}{12}$	0	0	0	0	0	0	0	0	
		0	$\frac{\sqrt{10}}{12}$	0	0	0	$-\frac{\sqrt{2}}{6}$	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	$-\frac{1}{12}$	0	0	0	0	0	0	0	0	0	
		0	0	0	0	$-\frac{\sqrt{14}}{12}$	0	0	0	0	0	0	0	0	
908	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{G}_{3,2}^{(1,0;a)}(E_{2g})$		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{2}i}{6}$	0	0	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{14}i}{12}$	0	0	0	$\frac{\sqrt{10}i}{12}$	0	0	0
		0	0	0	0	0	0	0	$-\frac{i}{12}$	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	$-\frac{i}{12}$	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{10}i}{12}$	0	0	0	$-\frac{\sqrt{14}i}{12}$
		0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{2}i}{6}$	0	0	0
		0	$\frac{\sqrt{14}i}{12}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	$\frac{i}{12}$	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
		$-\frac{\sqrt{2}i}{6}$	0	0	0	$-\frac{\sqrt{10}i}{12}$	0	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{10}i}{12}$	0	0	0	$-\frac{\sqrt{2}i}{6}$	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	$\frac{i}{12}$	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	$\frac{\sqrt{14}i}{12}$	0	0	0	0	0	0	0	0	0
909	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													
$\mathbb{G}_5^{(1,0;a)}(A_g)$		0	0	0	0	0	0	0	$-\frac{\sqrt{210i}}{84}$	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	$\frac{3\sqrt{14i}}{28}$	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	0	0	0	0	0	0	0	0	0	0	$\frac{3\sqrt{14i}}{28}$	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{210i}}{84}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		$\frac{\sqrt{210i}}{84}$	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	$-\frac{3\sqrt{14i}}{28}$	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	0	0	0	0	0	0
		0	0	0	0	$-\frac{3\sqrt{14i}}{28}$	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	$\frac{\sqrt{210i}}{84}$	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
910	symmetry	$-\frac{\sqrt{70}y(3x^2-y^2)(x^2+y^2-8z^2)}{16}$													

*continued ...*



Table 10

No.	multipole	matrix												
$\mathbb{G}_5^{(1,0;a)}(B_g, 1)$		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	$\frac{\sqrt{5}}{20}$	0	0
		0	0	0	0	0	$-\frac{\sqrt{210}}{60}$	0	0	0	0	0	$\frac{\sqrt{30}}{20}$	0
		0	0	0	0	0	0	$\frac{\sqrt{30}}{20}$	0	0	0	0	0	$-\frac{\sqrt{210}}{60}$
		0	0	0	0	0	0	0	$\frac{\sqrt{5}}{20}$	0	0	0	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{15}}{12}$	0	0	0	0
		0	0	$-\frac{\sqrt{210}}{60}$	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	$\frac{\sqrt{5}}{20}$	0	0	0	0	0	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{15}}{12}$	0	0	0	0	0	0	0
		$-\frac{\sqrt{15}}{12}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{5}}{20}$	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	$-\frac{\sqrt{210}}{60}$	0	0	0	0	0	0	0	0	0
911	symmetry	$-\frac{\sqrt{70}x(x^2-3y^2)(x^2+y^2-8z^2)}{16}$												

*continued ...*

Table 10

No.	multipole	matrix												
$\mathbb{G}_5^{(1,0;a)}(B_g, 2)$		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	$\frac{\sqrt{5}i}{20}$	0	0
		0	0	0	0	0	$\frac{\sqrt{210}i}{60}$	0	0	0	0	0	$\frac{\sqrt{30}i}{20}$	0
		0	0	0	0	0	0	$-\frac{\sqrt{30}i}{20}$	0	0	0	0	0	$-\frac{\sqrt{210}i}{60}$
		0	0	0	0	0	0	0	$-\frac{\sqrt{5}i}{20}$	0	0	0	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{15}i}{12}$	0	0	0	0
		0	0	$-\frac{\sqrt{210}i}{60}$	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	$\frac{\sqrt{5}i}{20}$	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
		$\frac{\sqrt{15}i}{12}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{5}i}{20}$	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	$\frac{\sqrt{210}i}{60}$	0	0	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													
$\mathbb{G}_{5,1}^{(1,0;a)}(E_{1g},1)$		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	$-\frac{\sqrt{21}i}{12}$	
		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	$\frac{\sqrt{21}i}{12}$	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	$-\frac{\sqrt{21}i}{12}$	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	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	0	0	0	0	
		$\frac{\sqrt{15}i}{12}$	0	0	0	0	0	0	0	0	0	0	0	0	
		0	$\frac{\sqrt{21}i}{12}$	0	0	0	0	0	0	0	0	0	0	0	
913	symmetry	$-\frac{3\sqrt{14}y\left(5x^4-10x^2y^2+y^4\right)}{16}$													

*continued ...*

Table 10

No.	multipole	matrix														
$\mathbb{G}_{5,2}^{(1,0;a)}(E_{1g}, 1)$		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	0	0	$\frac{\sqrt{21}}{12}$	
		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	$\frac{\sqrt{21}}{12}$	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	$\frac{\sqrt{21}}{12}$	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	0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		$\frac{\sqrt{15}}{12}$	0	0	0	0	0	0	0	0	0	0	0	0	0	
		0	$\frac{\sqrt{21}}{12}$	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													
$\mathbb{G}_{5,1}^{(1,0;a)}(E_{1g}, 2)$		0	0	0	0	0	0	$\frac{\sqrt{2}i}{24}$	0	$-\frac{5\sqrt{42}i}{168}$	0	0	0	0	0
		0	0	0	0	0	0	0	$-\frac{23\sqrt{70}i}{840}$	0	$\frac{13\sqrt{14}i}{168}$	0	0	0	0
		0	0	0	0	0	0	0	0	$\frac{11\sqrt{105}i}{420}$	0	$-\frac{\sqrt{7}i}{84}$	0	0	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{7}i}{84}$	0	$-\frac{11\sqrt{105}i}{420}$	0	0
		0	0	0	0	0	0	0	0	0	0	$-\frac{13\sqrt{14}i}{168}$	0	$\frac{23\sqrt{70}i}{840}$	0
		0	0	0	0	0	0	0	0	0	0	0	$\frac{5\sqrt{42}i}{168}$	0	$-\frac{\sqrt{2}i}{24}$
		$-\frac{\sqrt{2}i}{24}$	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	$\frac{23\sqrt{70}i}{840}$	0	0	0	0	0	0	0	0	0	0	0	0
		$\frac{5\sqrt{42}i}{168}$	0	$-\frac{11\sqrt{105}i}{420}$	0	0	0	0	0	0	0	0	0	0	0
		0	$-\frac{13\sqrt{14}i}{168}$	0	$-\frac{\sqrt{7}i}{84}$	0	0	0	0	0	0	0	0	0	0
		0	0	$\frac{\sqrt{7}i}{84}$	0	$\frac{13\sqrt{14}i}{168}$	0	0	0	0	0	0	0	0	0
		0	0	0	$\frac{11\sqrt{105}i}{420}$	0	$-\frac{5\sqrt{42}i}{168}$	0	0	0	0	0	0	0	0
		0	0	0	0	$-\frac{23\sqrt{70}i}{840}$	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	$\frac{\sqrt{2}i}{24}$	0	0	0	0	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													
$\mathbb{G}_{5,2}^{(1,0;a)}(E_{1g}, 2)$		0	0	0	0	0	0	$-\frac{\sqrt{2}}{24}$	0	$-\frac{5\sqrt{42}}{168}$	0	0	0	0	0
		0	0	0	0	0	0	$\frac{23\sqrt{70}}{840}$	0	$\frac{13\sqrt{14}}{168}$	0	0	0	0	0
		0	0	0	0	0	0	0	$-\frac{11\sqrt{105}}{420}$	0	$-\frac{\sqrt{7}}{84}$	0	0	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{7}}{84}$	0	$-\frac{11\sqrt{105}}{420}$	0	0	0
		0	0	0	0	0	0	0	0	0	$\frac{13\sqrt{14}}{168}$	0	$\frac{23\sqrt{70}}{840}$	0	0
		0	0	0	0	0	0	0	0	0	0	$-\frac{5\sqrt{42}}{168}$	0	$-\frac{\sqrt{2}}{24}$	0
		$-\frac{\sqrt{2}}{24}$	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	$\frac{23\sqrt{70}}{840}$	0	0	0	0	0	0	0	0	0	0	0	0
		$-\frac{5\sqrt{42}}{168}$	0	$-\frac{11\sqrt{105}}{420}$	0	0	0	0	0	0	0	0	0	0	0
		0	$\frac{13\sqrt{14}}{168}$	0	$-\frac{\sqrt{7}}{84}$	0	0	0	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{7}}{84}$	0	$\frac{13\sqrt{14}}{168}$	0	0	0	0	0	0	0	0	0
		0	0	0	$-\frac{11\sqrt{105}}{420}$	0	$-\frac{5\sqrt{42}}{168}$	0	0	0	0	0	0	0	0
		0	0	0	0	$\frac{23\sqrt{70}}{840}$	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{2}}{24}$	0	0	0	0	0	0	0	0
916	symmetry	$-\frac{3\sqrt{35}xyz(x-y)(x+y)}{2}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{G}_{5,1}^{(1,0;a)}(E_{2g},1)$		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	$\frac{\sqrt{30}}{60}$	0	
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{105}}{30}$	
		0	0	0	0	0	0	$\frac{\sqrt{105}}{30}$	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	$-\frac{\sqrt{2}}{4}$	0	0	0	0	
		0	0	0	$\frac{\sqrt{105}}{30}$	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	$-\frac{\sqrt{2}}{4}$	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	
		$\frac{\sqrt{2}}{4}$	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	$-\frac{\sqrt{105}}{30}$	0	0	0	0	0	0	0	0	0	0	
917	symmetry	$\frac{3\sqrt{35}z\left(x^2-2xy-y^2\right)\left(x^2+2xy-y^2\right)}{8}$													

*continued ...*

Table 10

No.	multipole	matrix												
$\mathbb{G}_{5,2}^{(1,0;a)}(E_{2g}, 1)$		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	$-\frac{\sqrt{30}i}{60}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{105}i}{30}$
		0	0	0	0	0	0	$\frac{\sqrt{105}i}{30}$	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	$-\frac{\sqrt{2}i}{4}$	0	0	0	0
		0	0	0	$-\frac{\sqrt{105}i}{30}$	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	$\frac{\sqrt{2}i}{4}$	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
		$\frac{\sqrt{2}i}{4}$	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	$-\frac{\sqrt{105}i}{30}$	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													
$\mathbb{G}_{5,1}^{(1,0;a)}(E_{2g}, 2)$		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{10}}{12}$	0	0	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{70}}{60}$	0	0	0	$\frac{\sqrt{2}}{6}$	0	0	0
		0	0	0	0	0	0	0	$\frac{2\sqrt{5}}{15}$	0	0	0	$\frac{\sqrt{15}}{30}$	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{15}}{30}$	0	0	0	$-\frac{2\sqrt{5}}{15}$	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{2}}{6}$	0	0	0	$\frac{\sqrt{70}}{60}$
		0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{10}}{12}$	0	0	0
		0	$-\frac{\sqrt{70}}{60}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	$\frac{2\sqrt{5}}{15}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{15}}{30}$	0	0	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{10}}{12}$	0	0	0	$-\frac{\sqrt{2}}{6}$	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{2}}{6}$	0	0	0	$\frac{\sqrt{10}}{12}$	0	0	0	0	0	0	0	0
		0	0	$\frac{\sqrt{15}}{30}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	$-\frac{2\sqrt{5}}{15}$	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	$\frac{\sqrt{70}}{60}$	0	0	0	0	0	0	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												
$\mathbb{G}_{5,2}^{(1,0;a)}(E_{2g}, 2)$		0	0	0	0	0	0	0	0	$-\frac{\sqrt{10}i}{12}$	0	0	0	0
		0	0	0	0	0	$\frac{\sqrt{70}i}{60}$	0	0	0	$\frac{\sqrt{2}i}{6}$	0	0	0
		0	0	0	0	0	0	$-\frac{2\sqrt{5}i}{15}$	0	0	0	$\frac{\sqrt{15}i}{30}$	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{15}i}{30}$	0	0	0	$-\frac{2\sqrt{5}i}{15}$	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{2}i}{6}$	0	0	0	$\frac{\sqrt{70}i}{60}$
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{10}i}{12}$	0	0	0
		0	$-\frac{\sqrt{70}i}{60}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	$\frac{2\sqrt{5}i}{15}$	0	0	0	0	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{15}i}{30}$	0	0	0	0	0	0	0	0	0
		$\frac{\sqrt{10}i}{12}$	0	0	0	$-\frac{\sqrt{2}i}{6}$	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{2}i}{6}$	0	0	0	$\frac{\sqrt{10}i}{12}$	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{15}i}{30}$	0	0	0	0	0	0	0	0	0	0
		0	0	0	$\frac{2\sqrt{5}i}{15}$	0	0	0	0	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{70}i}{60}$	0	0	0	0	0	0	0	0
920	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$												

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{T}_2^{(1,0;a)}(A_g)$		0	0	0	0	0	0	0	$\frac{5\sqrt{42}i}{84}$	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	$\frac{\sqrt{21}i}{42}$	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{21}i}{42}$	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	$-\frac{5\sqrt{42}i}{84}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		$-\frac{5\sqrt{42}i}{84}$	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	$-\frac{\sqrt{21}i}{42}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{21}i}{42}$	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	$\frac{5\sqrt{42}i}{84}$	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
921	symmetry	$\sqrt{3}yz$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{T}_{2,1}^{(1,0;a)}(E_{1g})$		0	0	0	0	0	0	$\frac{5\sqrt{2}}{24}$	0	$\frac{5\sqrt{42}}{168}$	0	0	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{70}}{168}$	0	$\frac{11\sqrt{14}}{168}$	0	0	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{105}}{84}$	0	$\frac{\sqrt{7}}{12}$	0	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{7}}{12}$	0	$\frac{\sqrt{105}}{84}$	0	0
		0	0	0	0	0	0	0	0	0	0	$-\frac{11\sqrt{14}}{168}$	0	$-\frac{\sqrt{70}}{168}$	0
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{5\sqrt{42}}{168}$	0	$-\frac{5\sqrt{2}}{24}$
		$\frac{5\sqrt{2}}{24}$	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{70}}{168}$	0	0	0	0	0	0	0	0	0	0	0	0
		$\frac{5\sqrt{42}}{168}$	0	$-\frac{\sqrt{105}}{84}$	0	0	0	0	0	0	0	0	0	0	0
		0	$\frac{11\sqrt{14}}{168}$	0	$-\frac{\sqrt{7}}{12}$	0	0	0	0	0	0	0	0	0	0
		0	0	$\frac{\sqrt{7}}{12}$	0	$-\frac{11\sqrt{14}}{168}$	0	0	0	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{105}}{84}$	0	$-\frac{5\sqrt{42}}{168}$	0	0	0	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{70}}{168}$	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	$-\frac{5\sqrt{2}}{24}$	0	0	0	0	0	0	0	0
922	symmetry	$-\sqrt{3}xz$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{T}_{2,2}^{(1,0;a)}(E_{1g})$		0	0	0	0	0	0	$\frac{5\sqrt{2}i}{24}$	0	$-\frac{5\sqrt{42}i}{168}$	0	0	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{70}i}{168}$	0	$-\frac{11\sqrt{14}i}{168}$	0	0	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{105}i}{84}$	0	$-\frac{\sqrt{7}i}{12}$	0	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{7}i}{12}$	0	$-\frac{\sqrt{105}i}{84}$	0	0
		0	0	0	0	0	0	0	0	0	0	$-\frac{11\sqrt{14}i}{168}$	0	$\frac{\sqrt{70}i}{168}$	0
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{5\sqrt{42}i}{168}$	0	$\frac{5\sqrt{2}i}{24}$
		$-\frac{5\sqrt{2}i}{24}$	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{70}i}{168}$	0	0	0	0	0	0	0	0	0	0	0	0
		$\frac{5\sqrt{42}i}{168}$	0	$\frac{\sqrt{105}i}{84}$	0	0	0	0	0	0	0	0	0	0	0
		0	$\frac{11\sqrt{14}i}{168}$	0	$\frac{\sqrt{7}i}{12}$	0	0	0	0	0	0	0	0	0	0
		0	0	$\frac{\sqrt{7}i}{12}$	0	$\frac{11\sqrt{14}i}{168}$	0	0	0	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{105}i}{84}$	0	$\frac{5\sqrt{42}i}{168}$	0	0	0	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{70}i}{168}$	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	$-\frac{5\sqrt{2}i}{24}$	0	0	0	0	0	0	0	0
923	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$													

*continued ...*

Table 10

No.	multipole	matrix												
$\mathbb{T}_{2,1}^{(1,0;a)}(E_{2g})$		0	0	0	0	0	0	0	0	$\frac{\sqrt{70}i}{84}$	0	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{10}i}{12}$	0	0	0	$\frac{\sqrt{14}i}{21}$	0	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{35}i}{21}$	0	0	0	$\frac{\sqrt{105}i}{42}$	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{105}i}{42}$	0	0	0	$\frac{\sqrt{35}i}{21}$	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{14}i}{21}$	0	0	0	$\frac{\sqrt{10}i}{12}$
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{70}i}{84}$	0	0	0
		0	$\frac{\sqrt{10}i}{12}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	$\frac{\sqrt{35}i}{21}$	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
		$-\frac{\sqrt{70}i}{84}$	0	0	0	$\frac{\sqrt{14}i}{21}$	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{14}i}{21}$	0	0	0	$\frac{\sqrt{70}i}{84}$	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	$-\frac{\sqrt{35}i}{21}$	0	0	0	0	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{10}i}{12}$	0	0	0	0	0	0	0	0
924	symmetry	$-\sqrt{3}xy$												

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{T}_{2,2}^{(1,0;a)}(E_{2g})$		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{70}}{84}$	0	0	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{10}}{12}$	0	0	0	$-\frac{\sqrt{14}}{21}$	0	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{35}}{21}$	0	0	0	$-\frac{\sqrt{105}}{42}$	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{105}}{42}$	0	0	0	$-\frac{\sqrt{35}}{21}$	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{14}}{21}$	0	0	0	$-\frac{\sqrt{10}}{12}$
		0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{70}}{84}$	0	0	0
		0	$-\frac{\sqrt{10}}{12}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{35}}{21}$	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
		$-\frac{\sqrt{70}}{84}$	0	0	0	$-\frac{\sqrt{14}}{21}$	0	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{14}}{21}$	0	0	0	$-\frac{\sqrt{70}}{84}$	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	$-\frac{\sqrt{35}}{21}$	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{10}}{12}$	0	0	0	0	0	0	0	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													
$\mathbb{T}_4^{(1,0;a)}(A_g)$		0	0	0	0	0	0	0	$-\frac{\sqrt{2310i}}{154}$	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	$\frac{2\sqrt{154i}}{77}$	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{1155i}}{154}$	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{1155i}}{154}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{2\sqrt{154i}}{77}$	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{2310i}}{154}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		$\frac{\sqrt{2310i}}{154}$	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	$-\frac{2\sqrt{154i}}{77}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{1155i}}{154}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{1155i}}{154}$	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	$\frac{2\sqrt{154i}}{77}$	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{2310i}}{154}$	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
926	symmetry	$\frac{\sqrt{70}xz(x^2-3y^2)}{4}$													

*continued ...*



Table 10

No.	multipole	matrix												
$\mathbb{T}_4^{(1,0;a)}(B_g, 1)$		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{165}i}{44}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	$-\frac{7\sqrt{55}i}{220}$	0	0
		0	0	0	0	0	$\frac{3\sqrt{2310}i}{440}$	0	0	0	0	0	$\frac{\sqrt{330}i}{440}$	0
		0	0	0	0	0	0	$\frac{\sqrt{330}i}{440}$	0	0	0	0	0	$\frac{3\sqrt{2310}i}{440}$
		0	0	0	0	0	0	0	$-\frac{7\sqrt{55}i}{220}$	0	0	0	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{165}i}{44}$	0	0	0	0
		0	0	$-\frac{3\sqrt{2310}i}{440}$	0	0	0	0	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{330}i}{440}$	0	0	0	0	0	0	0	0	0
		0	0	0	0	$\frac{7\sqrt{55}i}{220}$	0	0	0	0	0	0	0	0
		0	0	0	0	0	$\frac{\sqrt{165}i}{44}$	0	0	0	0	0	0	0
		$\frac{\sqrt{165}i}{44}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	$\frac{7\sqrt{55}i}{220}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{330}i}{440}$	0	0	0	0	0	0	0	0	0	0
		0	0	0	$-\frac{3\sqrt{2310}i}{440}$	0	0	0	0	0	0	0	0	0
927	symmetry	$\frac{\sqrt{70}yz(3x^2-y^2)}{4}$												

*continued ...*

Table 10

No.	multipole	matrix												
$\mathbb{T}_4^{(1,0;a)}(B_g, 2)$		0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{165}}{44}$	0	0
		0	0	0	0	0	0	0	0	0	0	$-\frac{7\sqrt{55}}{220}$	0	0
		0	0	0	0	0	$-\frac{3\sqrt{2310}}{440}$	0	0	0	0	0	$\frac{\sqrt{330}}{440}$	0
		0	0	0	0	0	0	$-\frac{\sqrt{330}}{440}$	0	0	0	0	0	$\frac{3\sqrt{2310}}{440}$
		0	0	0	0	0	0	0	$\frac{7\sqrt{55}}{220}$	0	0	0	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{165}}{44}$	0	0	0	0
		0	0	$-\frac{3\sqrt{2310}}{440}$	0	0	0	0	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{330}}{440}$	0	0	0	0	0	0	0	0	0
		0	0	0	0	$\frac{7\sqrt{55}}{220}$	0	0	0	0	0	0	0	0
		0	0	0	0	0	$\frac{\sqrt{165}}{44}$	0	0	0	0	0	0	0
		$-\frac{\sqrt{165}}{44}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	$-\frac{7\sqrt{55}}{220}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	$\frac{\sqrt{330}}{440}$	0	0	0	0	0	0	0	0	0	0
		0	0	0	$\frac{3\sqrt{2310}}{440}$	0	0	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												
$\mathbb{T}_{4,1}^{(1,0;a)}(E_{1g})$		0	0	0	0	0	0	$-\frac{\sqrt{33}}{44}$	0	$-\frac{5\sqrt{77}}{154}$	0	0	0	0
		0	0	0	0	0	0	0	$\frac{13\sqrt{1155}}{1540}$	0	$\frac{\sqrt{231}}{154}$	0	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{770}}{3080}$	0	$\frac{\sqrt{462}}{88}$	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{462}}{88}$	0	$\frac{\sqrt{770}}{3080}$	0
		0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{231}}{154}$	0	$-\frac{13\sqrt{1155}}{1540}$
		0	0	0	0	0	0	0	0	0	0	0	$\frac{5\sqrt{77}}{154}$	$\frac{\sqrt{33}}{44}$
		$-\frac{\sqrt{33}}{44}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	$\frac{13\sqrt{1155}}{1540}$	0	0	0	0	0	0	0	0	0	0	0
		$-\frac{5\sqrt{77}}{154}$	0	$-\frac{\sqrt{770}}{3080}$	0	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{231}}{154}$	0	$-\frac{\sqrt{462}}{88}$	0	0	0	0	0	0	0	0	0
		0	0	$\frac{\sqrt{462}}{88}$	0	$-\frac{\sqrt{231}}{154}$	0	0	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{770}}{3080}$	0	$\frac{5\sqrt{77}}{154}$	0	0	0	0	0	0	0
		0	0	0	0	$-\frac{13\sqrt{1155}}{1540}$	0	0	0	0	0	0	0	0
		0	0	0	0	0	$\frac{\sqrt{33}}{44}$	0	0	0	0	0	0	0
929	symmetry	$\frac{\sqrt{10}xz(3x^2+3y^2-4z^2)}{4}$												

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{T}_{4,2}^{(1,0;a)}(E_{1g})$		0	0	0	0	0	0	$-\frac{\sqrt{33}i}{44}$	0	$\frac{5\sqrt{77}i}{154}$	0	0	0	0	0
		0	0	0	0	0	0	0	$\frac{13\sqrt{1155}i}{1540}$	0	$-\frac{\sqrt{231}i}{154}$	0	0	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{770}i}{3080}$	0	$-\frac{\sqrt{462}i}{88}$	0	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{462}i}{88}$	0	$-\frac{\sqrt{770}i}{3080}$	0	0
		0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{231}i}{154}$	0	$\frac{13\sqrt{1155}i}{1540}$	0
		0	0	0	0	0	0	0	0	0	0	0	$\frac{5\sqrt{77}i}{154}$	0	$-\frac{\sqrt{33}i}{44}$
		$\frac{\sqrt{33}i}{44}$	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	$-\frac{13\sqrt{1155}i}{1540}$	0	0	0	0	0	0	0	0	0	0	0	0
		$-\frac{5\sqrt{77}i}{154}$	0	$\frac{\sqrt{770}i}{3080}$	0	0	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{231}i}{154}$	0	$\frac{\sqrt{462}i}{88}$	0	0	0	0	0	0	0	0	0	0
		0	0	$\frac{\sqrt{462}i}{88}$	0	$\frac{\sqrt{231}i}{154}$	0	0	0	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{770}i}{3080}$	0	$-\frac{5\sqrt{77}i}{154}$	0	0	0	0	0	0	0	0
		0	0	0	0	$-\frac{13\sqrt{1155}i}{1540}$	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	$\frac{\sqrt{33}i}{44}$	0	0	0	0	0	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												
$\mathbb{T}_{4,1}^{(1,0;a)}(E_{2g},1)$		0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{22}i}{22}$	0	0
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{330}i}{55}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{1155}i}{110}$
		0	0	0	0	0	0	$\frac{\sqrt{1155}i}{110}$	0	0	0	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{330}i}{55}$	0	0	0	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{22}i}{22}$	0	0	0	0
		0	0	0	$-\frac{\sqrt{1155}i}{110}$	0	0	0	0	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{330}i}{55}$	0	0	0	0	0	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{22}i}{22}$	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
		$\frac{\sqrt{22}i}{22}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{330}i}{55}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	$\frac{\sqrt{1155}i}{110}$	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												
$\mathbb{T}_{4,2}^{(1,0;a)}(E_{2g},1)$		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	$-\frac{\sqrt{330}}{55}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{1155}}{110}$
		0	0	0	0	0	0	$-\frac{\sqrt{1155}}{110}$	0	0	0	0	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{330}}{55}$	0	0	0	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{22}}{22}$	0	0	0	0
		0	0	0	$-\frac{\sqrt{1155}}{110}$	0	0	0	0	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{330}}{55}$	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
		$-\frac{\sqrt{22}}{22}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{330}}{55}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{1155}}{110}$	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												
$\mathbb{T}_{4,1}^{(1,0;a)}(E_{2g}, 2)$		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{2310}i}{154}$	0	0	0
		0	0	0	0	0	0	$\frac{3\sqrt{330}i}{220}$	0	0	0	$-\frac{\sqrt{462}i}{308}$	0	0
		0	0	0	0	0	0	0	$-\frac{9\sqrt{1155}i}{1540}$	0	0	0	$\frac{17\sqrt{385}i}{1540}$	0
		0	0	0	0	0	0	0	0	$-\frac{17\sqrt{385}i}{1540}$	0	0	0	$\frac{9\sqrt{1155}i}{1540}$
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{462}i}{308}$	0	0	$-\frac{3\sqrt{330}i}{220}$
		0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{2310}i}{154}$	0	0
		0	$-\frac{3\sqrt{330}i}{220}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	$\frac{9\sqrt{1155}i}{1540}$	0	0	0	0	0	0	0	0	0	0
		0	0	0	$\frac{17\sqrt{385}i}{1540}$	0	0	0	0	0	0	0	0	0
		$\frac{\sqrt{2310}i}{154}$	0	0	0	$-\frac{\sqrt{462}i}{308}$	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{462}i}{308}$	0	0	0	$-\frac{\sqrt{2310}i}{154}$	0	0	0	0	0	0	0
		0	0	$-\frac{17\sqrt{385}i}{1540}$	0	0	0	0	0	0	0	0	0	0
		0	0	0	$-\frac{9\sqrt{1155}i}{1540}$	0	0	0	0	0	0	0	0	0
		0	0	0	0	$\frac{3\sqrt{330}i}{220}$	0	0	0	0	0	0	0	0
933	symmetry	$\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$												

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{T}_{4,2}^{(1,0;a)}(E_{2g}, 2)$		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{2310}}{154}$	0	0	0	0
		0	0	0	0	0	0	$\frac{3\sqrt{330}}{220}$	0	0	0	$\frac{\sqrt{462}}{308}$	0	0	0
		0	0	0	0	0	0	0	$-\frac{9\sqrt{1155}}{1540}$	0	0	0	$-\frac{17\sqrt{385}}{1540}$	0	0
		0	0	0	0	0	0	0	0	$-\frac{17\sqrt{385}}{1540}$	0	0	0	$-\frac{9\sqrt{1155}}{1540}$	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{462}}{308}$	0	0	0	$\frac{3\sqrt{330}}{220}$
		0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{2310}}{154}$	0	0	0
		0	$\frac{3\sqrt{330}}{220}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	$-\frac{9\sqrt{1155}}{1540}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	$-\frac{17\sqrt{385}}{1540}$	0	0	0	0	0	0	0	0	0	0
		$\frac{\sqrt{2310}}{154}$	0	0	0	$\frac{\sqrt{462}}{308}$	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{462}}{308}$	0	0	0	$\frac{\sqrt{2310}}{154}$	0	0	0	0	0	0	0	0
		0	0	$-\frac{17\sqrt{385}}{1540}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	$-\frac{9\sqrt{1155}}{1540}$	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	$\frac{3\sqrt{330}}{220}$	0	0	0	0	0	0	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													
$\mathbb{T}_6^{(1,0;a)}(A_g, 1)$		0	0	0	0	0	0	0	$\frac{\sqrt{66}i}{132}$	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{110}i}{44}$	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	$\frac{5\sqrt{33}i}{66}$	0	0	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{5\sqrt{33}i}{66}$	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{110}i}{44}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{66}i}{132}$	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{66}i}{132}$	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{110}i}{44}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	$-\frac{5\sqrt{33}i}{66}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	$\frac{5\sqrt{33}i}{66}$	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{110}i}{44}$	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	$\frac{\sqrt{66}i}{132}$	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	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															
$\mathbb{T}_6^{(1,0;a)}(A_g,2)$		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	0	0	0	
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	0	0	0	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	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	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	0	0	0	
936	symmetry	$\frac{\sqrt{462}xy(x^2-3y^2)(3x^2-y^2)}{16}$															

*continued ...*

Table 10

No.	multipole	matrix															
$\mathbb{T}_6^{(1,0;a)}(A_g,3)$		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	0	0	0	
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	$\frac{1}{2}$	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	0	0	0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		$\frac{1}{2}$	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
937	symmetry	$-\frac{\sqrt{210}xz(x^2-3y^2)(3x^2+3y^2-8z^2)}{16}$															

*continued ...*

Table 10

No.	multipole	matrix												
$\mathbb{T}_6^{(1,0;a)}(B_g, 1)$		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{77}i}{44}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{231}i}{44}$	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{22}i}{44}$	0	0	0	0	$\frac{\sqrt{154}i}{44}$	0
		0	0	0	0	0	0	0	$\frac{\sqrt{154}i}{44}$	0	0	0	0	$-\frac{\sqrt{22}i}{44}$
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{231}i}{44}$	0	0	0	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{77}i}{44}$	0	0	0
		0	0	$\frac{\sqrt{22}i}{44}$	0	0	0	0	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{154}i}{44}$	0	0	0	0	0	0	0	0	0
		0	0	0	0	$\frac{\sqrt{231}i}{44}$	0	0	0	0	0	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{77}i}{44}$	0	0	0	0	0	0	0
		$-\frac{\sqrt{77}i}{44}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{231}i}{44}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{154}i}{44}$	0	0	0	0	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{22}i}{44}$	0	0	0	0	0	0	0	0	0
938	symmetry	$-\frac{\sqrt{210}yz(3x^2-y^2)(3x^2+3y^2-8z^2)}{16}$												

*continued ...*

Table 10

No.	multipole	matrix												
$\mathbb{T}_6^{(1,0;a)}(B_g, 2)$		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{77}}{44}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{231}}{44}$	0	0
		0	0	0	0	0	0	$\frac{\sqrt{22}}{44}$	0	0	0	0	$\frac{\sqrt{154}}{44}$	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{154}}{44}$	0	0	0	0	$-\frac{\sqrt{22}}{44}$
		0	0	0	0	0	0	0	0	$\frac{\sqrt{231}}{44}$	0	0	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{77}}{44}$	0	0	0
		0	0	$\frac{\sqrt{22}}{44}$	0	0	0	0	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{154}}{44}$	0	0	0	0	0	0	0	0	0
		0	0	0	0	$\frac{\sqrt{231}}{44}$	0	0	0	0	0	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{77}}{44}$	0	0	0	0	0	0	0
		$\frac{\sqrt{77}}{44}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{231}}{44}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	$\frac{\sqrt{154}}{44}$	0	0	0	0	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{22}}{44}$	0	0	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													
$\mathbb{T}_{6,1}^{(1,0;a)}(E_{1g}, 1)$		0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{21}}{12}$	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	0	
		0	0	0	0	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	0	$-\frac{\sqrt{21}}{12}$	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	$-\frac{\sqrt{21}}{12}$	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	0	0	
		0	0	0	0	0	0	0	0	0	0	0	0	0	
		$\frac{\sqrt{21}}{12}$	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	
940	symmetry	$\frac{3\sqrt{154}xz\left(x^4-10x^2y^2+5y^4\right)}{16}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{T}_{6,2}^{(1,0;a)}(E_{1g}, 1)$		0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{21}i}{12}$	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	
		0	0	0	0	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	$\frac{\sqrt{21}i}{12}$	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	$-\frac{\sqrt{21}i}{12}$	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	0	0	0	0	0	0	0	
		0	0	0	0	0	0	0	0	0	0	0	0	0	
		$-\frac{\sqrt{21}i}{12}$	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	
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													
$\mathbb{T}_{6,1}^{(1,0;a)}(E_{1g}, 2)$		0	0	0	0	0	0	$\frac{\sqrt{22}}{264}$	0	$\frac{\sqrt{462}}{264}$	0	0	0	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{770}}{264}$	0	$-\frac{5\sqrt{154}}{264}$	0	0	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{1155}}{132}$	0	$\frac{5\sqrt{77}}{132}$	0	0	0	0
		0	0	0	0	0	0	0	0	$-\frac{5\sqrt{77}}{132}$	0	$-\frac{\sqrt{1155}}{132}$	0	0	0
		0	0	0	0	0	0	0	0	0	$\frac{5\sqrt{154}}{264}$	0	$\frac{\sqrt{770}}{264}$	0	0
		0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{462}}{264}$	0	$-\frac{\sqrt{22}}{264}$	0
		$\frac{\sqrt{22}}{264}$	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{770}}{264}$	0	0	0	0	0	0	0	0	0	0	0	0
		$\frac{\sqrt{462}}{264}$	0	$\frac{\sqrt{1155}}{132}$	0	0	0	0	0	0	0	0	0	0	0
		0	$-\frac{5\sqrt{154}}{264}$	0	$-\frac{5\sqrt{77}}{132}$	0	0	0	0	0	0	0	0	0	0
		0	0	$\frac{5\sqrt{77}}{132}$	0	$\frac{5\sqrt{154}}{264}$	0	0	0	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{1155}}{132}$	0	$-\frac{\sqrt{462}}{264}$	0	0	0	0	0	0	0	0
		0	0	0	0	$\frac{\sqrt{770}}{264}$	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{22}}{264}$	0	0	0	0	0	0	0	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												
$\mathbb{T}_{6,2}^{(1,0;a)}(E_{1g}, 2)$		0	0	0	0	0	0	$\frac{\sqrt{22}i}{264}$	0	$-\frac{\sqrt{462}i}{264}$	0	0	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{770}i}{264}$	0	$\frac{5\sqrt{154}i}{264}$	0	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{1155}i}{132}$	0	$-\frac{5\sqrt{77}i}{132}$	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{5\sqrt{77}i}{132}$	0	$\frac{\sqrt{1155}i}{132}$	0
		0	0	0	0	0	0	0	0	0	0	$\frac{5\sqrt{154}i}{264}$	0	$-\frac{\sqrt{770}i}{264}$
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{462}i}{264}$	$\frac{\sqrt{22}i}{264}$
		$-\frac{\sqrt{22}i}{264}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{770}i}{264}$	0	0	0	0	0	0	0	0	0	0	0
		$\frac{\sqrt{462}i}{264}$	0	$-\frac{\sqrt{1155}i}{132}$	0	0	0	0	0	0	0	0	0	0
		0	$-\frac{5\sqrt{154}i}{264}$	0	$\frac{5\sqrt{77}i}{132}$	0	0	0	0	0	0	0	0	0
		0	0	$\frac{5\sqrt{77}i}{132}$	0	$-\frac{5\sqrt{154}i}{264}$	0	0	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{1155}i}{132}$	0	$\frac{\sqrt{462}i}{264}$	0	0	0	0	0	0	0
		0	0	0	0	$\frac{\sqrt{770}i}{264}$	0	0	0	0	0	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{22}i}{264}$	0	0	0	0	0	0	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												
$\mathbb{T}_{6,1}^{(1,0;a)}(E_{2g}, 1)$		0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{154}i}{44}$	0	0
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{2310}i}{132}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{165}i}{66}$
		0	0	0	0	0	0	$-\frac{\sqrt{165}i}{66}$	0	0	0	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{2310}i}{132}$	0	0	0	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{154}i}{44}$	0	0	0	0
		0	0	0	$\frac{\sqrt{165}i}{66}$	0	0	0	0	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{2310}i}{132}$	0	0	0	0	0	0	0	0
		0	0	0	0	0	$\frac{\sqrt{154}i}{44}$	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
		$-\frac{\sqrt{154}i}{44}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{2310}i}{132}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{165}i}{66}$	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												
$\mathbb{T}_{6,2}^{(1,0;a)}(E_{2g},1)$		0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{154}}{44}$	0	0
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{2310}}{132}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{165}}{66}$
		0	0	0	0	0	0	$\frac{\sqrt{165}}{66}$	0	0	0	0	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{2310}}{132}$	0	0	0	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{154}}{44}$	0	0	0	0
		0	0	0	$\frac{\sqrt{165}}{66}$	0	0	0	0	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{2310}}{132}$	0	0	0	0	0	0	0	0
		0	0	0	0	0	$\frac{\sqrt{154}}{44}$	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
		$\frac{\sqrt{154}}{44}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{2310}}{132}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	$\frac{\sqrt{165}}{66}$	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													
$\mathbb{T}_{6,1}^{(1,0;a)}(E_{2g}, 2)$		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{77}i}{66}$	0	0	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{11}i}{66}$	0	0	0	$-\frac{\sqrt{385}i}{66}$	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{154}i}{66}$	0	0	0	$\frac{\sqrt{462}i}{66}$	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{462}i}{66}$	0	0	0	$-\frac{\sqrt{154}i}{66}$	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{385}i}{66}$	0	0	0	$\frac{\sqrt{11}i}{66}$
		0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{77}i}{66}$	0	0	0
		0	$\frac{\sqrt{11}i}{66}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{154}i}{66}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{462}i}{66}$	0	0	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{77}i}{66}$	0	0	0	$-\frac{\sqrt{385}i}{66}$	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{385}i}{66}$	0	0	0	$\frac{\sqrt{77}i}{66}$	0	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{462}i}{66}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{154}i}{66}$	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{11}i}{66}$	0	0	0	0	0	0	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												
$\mathbb{T}_{6,2}^{(1,0;a)}(E_{2g}, 2)$		0	0	0	0	0	0	0	0	$-\frac{\sqrt{77}}{66}$	0	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{11}}{66}$	0	0	0	$\frac{\sqrt{385}}{66}$	0	0	0
		0	0	0	0	0	0	$\frac{\sqrt{154}}{66}$	0	0	0	$-\frac{\sqrt{462}}{66}$	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{462}}{66}$	0	0	0	$\frac{\sqrt{154}}{66}$	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{385}}{66}$	0	0	0	$-\frac{\sqrt{11}}{66}$
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{77}}{66}$	0	0	0
		0	$-\frac{\sqrt{11}}{66}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	$\frac{\sqrt{154}}{66}$	0	0	0	0	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{462}}{66}$	0	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{77}}{66}$	0	0	0	$\frac{\sqrt{385}}{66}$	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{385}}{66}$	0	0	0	$-\frac{\sqrt{77}}{66}$	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{462}}{66}$	0	0	0	0	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{154}}{66}$	0	0	0	0	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{11}}{66}$	0	0	0	0	0	0	0	0
947	symmetry	$z$												

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{M}_1^{(a)}(A_g)$		$\frac{5\sqrt{14}}{49}$	0	0	0	0	0	0	$\frac{\sqrt{21}}{98}$	0	0	0	0	0	0
		0	$\frac{3\sqrt{14}}{49}$	0	0	0	0	0	0	$\frac{\sqrt{35}}{98}$	0	0	0	0	0
		0	0	$\frac{\sqrt{14}}{49}$	0	0	0	0	0	0	$\frac{\sqrt{42}}{98}$	0	0	0	0
		0	0	0	$-\frac{\sqrt{14}}{49}$	0	0	0	0	0	0	$\frac{\sqrt{42}}{98}$	0	0	0
		0	0	0	0	$-\frac{3\sqrt{14}}{49}$	0	0	0	0	0	0	$\frac{\sqrt{35}}{98}$	0	0
		0	0	0	0	0	$-\frac{5\sqrt{14}}{49}$	0	0	0	0	0	0	$\frac{\sqrt{21}}{98}$	0
		0	0	0	0	0	0	$\frac{3\sqrt{14}}{28}$	0	0	0	0	0	0	0
		$\frac{\sqrt{21}}{98}$	0	0	0	0	0	0	$\frac{15\sqrt{14}}{196}$	0	0	0	0	0	0
		0	$\frac{\sqrt{35}}{98}$	0	0	0	0	0	0	$\frac{9\sqrt{14}}{196}$	0	0	0	0	0
		0	0	$\frac{\sqrt{42}}{98}$	0	0	0	0	0	0	$\frac{3\sqrt{14}}{196}$	0	0	0	0
		0	0	0	$\frac{\sqrt{42}}{98}$	0	0	0	0	0	0	$-\frac{3\sqrt{14}}{196}$	0	0	0
		0	0	0	0	$\frac{\sqrt{35}}{98}$	0	0	0	0	0	0	$-\frac{9\sqrt{14}}{196}$	0	0
		0	0	0	0	0	$\frac{\sqrt{21}}{98}$	0	0	0	0	0	0	$-\frac{15\sqrt{14}}{196}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{3\sqrt{14}}{28}$
948	symmetry	$x$													

*continued ...*

Table 10

No.	multipole	matrix													
$M_{1,1}^{(a)}(E_{1g})$		0	$\frac{\sqrt{70}}{49}$	0	0	0	0	$-\frac{\sqrt{3}}{28}$	0	$\frac{\sqrt{7}}{196}$	0	0	0	0	0
		$\frac{\sqrt{70}}{49}$	0	$\frac{4\sqrt{7}}{49}$	0	0	0	0	$-\frac{\sqrt{105}}{196}$	0	$\frac{\sqrt{21}}{196}$	0	0	0	0
		0	$\frac{4\sqrt{7}}{49}$	0	$\frac{3\sqrt{14}}{49}$	0	0	0	0	$-\frac{\sqrt{70}}{196}$	0	$\frac{\sqrt{42}}{196}$	0	0	0
		0	0	$\frac{3\sqrt{14}}{49}$	0	$\frac{4\sqrt{7}}{49}$	0	0	0	0	$-\frac{\sqrt{42}}{196}$	0	$\frac{\sqrt{70}}{196}$	0	0
		0	0	0	$\frac{4\sqrt{7}}{49}$	0	$\frac{\sqrt{70}}{49}$	0	0	0	0	$-\frac{\sqrt{21}}{196}$	0	$\frac{\sqrt{105}}{196}$	0
		0	0	0	0	$\frac{\sqrt{70}}{49}$	0	0	0	0	0	0	$-\frac{\sqrt{7}}{196}$	0	$\frac{\sqrt{3}}{28}$
		$-\frac{\sqrt{3}}{28}$	0	0	0	0	0	0	$\frac{3\sqrt{2}}{28}$	0	0	0	0	0	0
		0	$-\frac{\sqrt{105}}{196}$	0	0	0	0	$\frac{3\sqrt{2}}{28}$	0	$\frac{3\sqrt{42}}{98}$	0	0	0	0	0
		$\frac{\sqrt{7}}{196}$	0	$-\frac{\sqrt{70}}{196}$	0	0	0	0	$\frac{3\sqrt{42}}{98}$	0	$\frac{3\sqrt{210}}{196}$	0	0	0	0
		0	$\frac{\sqrt{21}}{196}$	0	$-\frac{\sqrt{42}}{196}$	0	0	0	0	$\frac{3\sqrt{210}}{196}$	0	$\frac{3\sqrt{14}}{49}$	0	0	0
		0	0	$\frac{\sqrt{42}}{196}$	0	$-\frac{\sqrt{21}}{196}$	0	0	0	0	$\frac{3\sqrt{14}}{49}$	0	$\frac{3\sqrt{210}}{196}$	0	0
		0	0	0	$\frac{\sqrt{70}}{196}$	0	$-\frac{\sqrt{7}}{196}$	0	0	0	0	$\frac{3\sqrt{210}}{196}$	0	$\frac{3\sqrt{42}}{98}$	0
		0	0	0	0	$\frac{\sqrt{105}}{196}$	0	0	0	0	0	0	$\frac{3\sqrt{42}}{98}$	0	$\frac{3\sqrt{2}}{28}$
		0	0	0	0	0	$\frac{\sqrt{3}}{28}$	0	0	0	0	0	0	$\frac{3\sqrt{2}}{28}$	0
949	symmetry	$y$													

*continued ...*

Table 10

No.	multipole	matrix													
950	$M_{1,2}^{(a)}(E_{1g})$	0	$-\frac{\sqrt{70}i}{49}$	0	0	0	0	$-\frac{\sqrt{3}i}{28}$	0	$-\frac{\sqrt{7}i}{196}$	0	0	0	0	0
		$\frac{\sqrt{70}i}{49}$	0	$-\frac{4\sqrt{7}i}{49}$	0	0	0	0	$-\frac{\sqrt{105}i}{196}$	0	$-\frac{\sqrt{21}i}{196}$	0	0	0	0
		0	$\frac{4\sqrt{7}i}{49}$	0	$-\frac{3\sqrt{14}i}{49}$	0	0	0	0	$-\frac{\sqrt{70}i}{196}$	0	$-\frac{\sqrt{42}i}{196}$	0	0	0
		0	0	$\frac{3\sqrt{14}i}{49}$	0	$-\frac{4\sqrt{7}i}{49}$	0	0	0	0	$-\frac{\sqrt{42}i}{196}$	0	$-\frac{\sqrt{70}i}{196}$	0	0
		0	0	0	$\frac{4\sqrt{7}i}{49}$	0	$-\frac{\sqrt{70}i}{49}$	0	0	0	0	$-\frac{\sqrt{21}i}{196}$	0	$-\frac{\sqrt{105}i}{196}$	0
		0	0	0	0	$\frac{\sqrt{70}i}{49}$	0	0	0	0	0	$-\frac{\sqrt{7}i}{196}$	0	$-\frac{\sqrt{3}i}{28}$	0
		$\frac{\sqrt{3}i}{28}$	0	0	0	0	0	$-\frac{3\sqrt{2}i}{28}$	0	0	0	0	0	0	0
		0	$\frac{\sqrt{105}i}{196}$	0	0	0	0	$\frac{3\sqrt{2}i}{28}$	0	$-\frac{3\sqrt{42}i}{98}$	0	0	0	0	0
		$\frac{\sqrt{7}i}{196}$	0	$\frac{\sqrt{70}i}{196}$	0	0	0	$\frac{3\sqrt{42}i}{98}$	0	$-\frac{3\sqrt{210}i}{196}$	0	0	0	0	0
		0	$\frac{\sqrt{21}i}{196}$	0	$\frac{\sqrt{42}i}{196}$	0	0	0	0	$\frac{3\sqrt{210}i}{196}$	0	$-\frac{3\sqrt{14}i}{49}$	0	0	0
		0	0	$\frac{\sqrt{42}i}{196}$	0	$\frac{\sqrt{21}i}{196}$	0	0	0	0	$\frac{3\sqrt{14}i}{49}$	0	$-\frac{3\sqrt{210}i}{196}$	0	0
		0	0	0	$\frac{\sqrt{70}i}{196}$	0	$\frac{\sqrt{7}i}{196}$	0	0	0	0	$\frac{3\sqrt{210}i}{196}$	0	$-\frac{3\sqrt{42}i}{98}$	0
		0	0	0	0	$\frac{\sqrt{105}i}{196}$	0	0	0	0	0	$\frac{3\sqrt{42}i}{98}$	0	$-\frac{3\sqrt{2}i}{28}$	0
		0	0	0	0	0	$\frac{\sqrt{3}i}{28}$	0	0	0	0	0	$\frac{3\sqrt{2}i}{28}$	0	0
950	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$													

*continued ...*



Table 10

No.	multipole	matrix													
	$\mathbb{M}_3^{(a)}(A_g)$	$-\frac{5\sqrt{3}}{42}$	0	0	0	0	0	0	$-\frac{\sqrt{2}}{7}$	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	$\frac{2\sqrt{3}}{21}$	0	0	0	0	0	$\frac{1}{7}$	0	0	0	0	0
		0	0	0	$-\frac{2\sqrt{3}}{21}$	0	0	0	0	0	$\frac{1}{7}$	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	$\frac{5\sqrt{3}}{42}$	0	0	0	0	0	0	$-\frac{\sqrt{2}}{7}$	0
		0	0	0	0	0	0	$-\frac{\sqrt{3}}{6}$	0	0	0	0	0	0	0
		$-\frac{\sqrt{2}}{7}$	0	0	0	0	0	0	$\frac{5\sqrt{3}}{42}$	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	$\frac{1}{7}$	0	0	0	0	0	0	$\frac{\sqrt{3}}{14}$	0	0	0	0
		0	0	0	$\frac{1}{7}$	0	0	0	0	0	0	$-\frac{\sqrt{3}}{14}$	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	$-\frac{\sqrt{2}}{7}$	0	0	0	0	0	0	$-\frac{5\sqrt{3}}{42}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{3}}{6}$
951	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$													

*continued ...*

Table 10

No.	multipole	matrix													
952	$M_3^{(a)}(B_g, 1)$	0	0	0	$\frac{5\sqrt{3}i}{42}$	0	0	0	0	0	0	$\frac{i}{14}$	0	0	0
		0	0	0	0	$\frac{\sqrt{30}i}{21}$	0	0	0	0	0	0	$\frac{\sqrt{3}i}{14}$	0	0
		0	0	0	0	0	$\frac{5\sqrt{3}i}{42}$	$\frac{\sqrt{14}i}{28}$	0	0	0	0	0	$\frac{3\sqrt{2}i}{28}$	0
		$-\frac{5\sqrt{3}i}{42}$	0	0	0	0	0	0	$\frac{3\sqrt{2}i}{28}$	0	0	0	0	0	$\frac{\sqrt{14}i}{28}$
		0	$-\frac{\sqrt{30}i}{21}$	0	0	0	0	0	0	$\frac{\sqrt{3}i}{14}$	0	0	0	0	0
		0	0	$-\frac{5\sqrt{3}i}{42}$	0	0	0	0	0	0	$\frac{i}{14}$	0	0	0	0
		0	0	$-\frac{\sqrt{14}i}{28}$	0	0	0	0	0	0	$\frac{\sqrt{42}i}{42}$	0	0	0	0
		0	0	0	$-\frac{3\sqrt{2}i}{28}$	0	0	0	0	0	0	$\frac{2\sqrt{6}i}{21}$	0	0	0
		0	0	0	0	$-\frac{\sqrt{3}i}{14}$	0	0	0	0	0	0	$\frac{\sqrt{30}i}{21}$	0	0
		0	0	0	0	0	$-\frac{i}{14}$	$-\frac{\sqrt{42}i}{42}$	0	0	0	0	0	$\frac{2\sqrt{6}i}{21}$	0
		$-\frac{i}{14}$	0	0	0	0	0	0	$-\frac{2\sqrt{6}i}{21}$	0	0	0	0	0	$\frac{\sqrt{42}i}{42}$
		0	$-\frac{\sqrt{3}i}{14}$	0	0	0	0	0	0	$-\frac{\sqrt{30}i}{21}$	0	0	0	0	0
		0	0	$-\frac{3\sqrt{2}i}{28}$	0	0	0	0	0	0	$-\frac{2\sqrt{6}i}{21}$	0	0	0	0
		0	0	0	$-\frac{\sqrt{14}i}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{42}i}{42}$	0	0	0
952	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{M}_3^{(a)}(B_g, 2)$		0	0	0	$-\frac{5\sqrt{3}}{42}$	0	0	0	0	0	0	$-\frac{1}{14}$	0	0	0
		0	0	0	0	$-\frac{\sqrt{30}}{21}$	0	0	0	0	0	0	$-\frac{\sqrt{3}}{14}$	0	0
		0	0	0	0	0	$-\frac{5\sqrt{3}}{42}$	$\frac{\sqrt{14}}{28}$	0	0	0	0	0	$-\frac{3\sqrt{2}}{28}$	0
		$-\frac{5\sqrt{3}}{42}$	0	0	0	0	0	0	$\frac{3\sqrt{2}}{28}$	0	0	0	0	0	$-\frac{\sqrt{14}}{28}$
		0	$-\frac{\sqrt{30}}{21}$	0	0	0	0	0	0	$\frac{\sqrt{3}}{14}$	0	0	0	0	0
		0	0	$-\frac{5\sqrt{3}}{42}$	0	0	0	0	0	0	$\frac{1}{14}$	0	0	0	0
		0	0	$\frac{\sqrt{14}}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{42}}{42}$	0	0	0	0
		0	0	0	$\frac{3\sqrt{2}}{28}$	0	0	0	0	0	0	$-\frac{2\sqrt{6}}{21}$	0	0	0
		0	0	0	0	$\frac{\sqrt{3}}{14}$	0	0	0	0	0	0	$-\frac{\sqrt{30}}{21}$	0	0
		0	0	0	0	0	$\frac{1}{14}$	$-\frac{\sqrt{42}}{42}$	0	0	0	0	0	$-\frac{2\sqrt{6}}{21}$	0
		$-\frac{1}{14}$	0	0	0	0	0	0	$-\frac{2\sqrt{6}}{21}$	0	0	0	0	0	$-\frac{\sqrt{42}}{42}$
		0	$-\frac{\sqrt{3}}{14}$	0	0	0	0	0	0	$-\frac{\sqrt{30}}{21}$	0	0	0	0	0
		0	0	$-\frac{3\sqrt{2}}{28}$	0	0	0	0	0	0	$-\frac{2\sqrt{6}}{21}$	0	0	0	0
		0	0	0	$-\frac{\sqrt{14}}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{42}}{42}$	0	0	0
953	symmetry	$-\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$													

*continued ...*

Table 10

No.	multipole	matrix													
$M_{3,1}^{(a)}(E_{1g})$		0	$-\frac{\sqrt{10}}{14}$	0	0	0	0	$\frac{\sqrt{21}}{42}$	0	$-\frac{1}{7}$	0	0	0	0	0
		$-\frac{\sqrt{10}}{14}$	0	$\frac{1}{14}$	0	0	0	0	$-\frac{\sqrt{15}}{42}$	0	$-\frac{\sqrt{3}}{21}$	0	0	0	0
		0	$\frac{1}{14}$	0	$\frac{\sqrt{2}}{7}$	0	0	0	0	$-\frac{\sqrt{10}}{28}$	0	$\frac{\sqrt{6}}{84}$	0	0	0
		0	0	$\frac{\sqrt{2}}{7}$	0	$\frac{1}{14}$	0	0	0	0	$-\frac{\sqrt{6}}{84}$	0	$\frac{\sqrt{10}}{28}$	0	0
		0	0	0	$\frac{1}{14}$	0	$-\frac{\sqrt{10}}{14}$	0	0	0	0	$\frac{\sqrt{3}}{21}$	0	$\frac{\sqrt{15}}{42}$	0
		0	0	0	0	$-\frac{\sqrt{10}}{14}$	0	0	0	0	0	$\frac{1}{7}$	0	$-\frac{\sqrt{21}}{42}$	0
		$\frac{\sqrt{21}}{42}$	0	0	0	0	0	0	$-\frac{\sqrt{14}}{14}$	0	0	0	0	0	0
		0	$-\frac{\sqrt{15}}{42}$	0	0	0	0	$-\frac{\sqrt{14}}{14}$	0	$-\frac{\sqrt{6}}{42}$	0	0	0	0	0
		$-\frac{1}{7}$	0	$-\frac{\sqrt{10}}{28}$	0	0	0	0	$-\frac{\sqrt{6}}{42}$	0	$\frac{\sqrt{30}}{42}$	0	0	0	0
		0	$-\frac{\sqrt{3}}{21}$	0	$-\frac{\sqrt{6}}{84}$	0	0	0	0	$\frac{\sqrt{30}}{42}$	0	$\frac{\sqrt{2}}{7}$	0	0	0
		0	0	$\frac{\sqrt{6}}{84}$	0	$\frac{\sqrt{3}}{21}$	0	0	0	0	$\frac{\sqrt{2}}{7}$	0	$\frac{\sqrt{30}}{42}$	0	0
		0	0	0	$\frac{\sqrt{10}}{28}$	0	$\frac{1}{7}$	0	0	0	0	$\frac{\sqrt{30}}{42}$	0	$-\frac{\sqrt{6}}{42}$	0
		0	0	0	0	$\frac{\sqrt{15}}{42}$	0	0	0	0	0	0	$-\frac{\sqrt{6}}{42}$	0	$-\frac{\sqrt{14}}{14}$
		0	0	0	0	0	$-\frac{\sqrt{21}}{42}$	0	0	0	0	0	0	$-\frac{\sqrt{14}}{14}$	0
954	symmetry	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$													

*continued ...*

Table 10

No.	multipole	matrix													
$M_{3,2}^{(a)}(E_{1g})$		0	$\frac{\sqrt{10}i}{14}$	0	0	0	0	$\frac{\sqrt{21}i}{42}$	0	$\frac{i}{7}$	0	0	0	0	0
		$-\frac{\sqrt{10}i}{14}$	0	$-\frac{i}{14}$	0	0	0	0	$-\frac{\sqrt{15}i}{42}$	0	$\frac{\sqrt{3}i}{21}$	0	0	0	0
		0	$\frac{i}{14}$	0	$-\frac{\sqrt{2}i}{7}$	0	0	0	0	$-\frac{\sqrt{10}i}{28}$	0	$-\frac{\sqrt{6}i}{84}$	0	0	0
		0	0	$\frac{\sqrt{2}i}{7}$	0	$-\frac{i}{14}$	0	0	0	0	$-\frac{\sqrt{6}i}{84}$	0	$-\frac{\sqrt{10}i}{28}$	0	0
		0	0	0	$\frac{i}{14}$	0	$\frac{\sqrt{10}i}{14}$	0	0	0	0	$\frac{\sqrt{3}i}{21}$	0	$-\frac{\sqrt{15}i}{42}$	0
		0	0	0	0	$-\frac{\sqrt{10}i}{14}$	0	0	0	0	0	0	$\frac{i}{7}$	0	$\frac{\sqrt{21}i}{42}$
		$-\frac{\sqrt{21}i}{42}$	0	0	0	0	0	0	$\frac{\sqrt{14}i}{14}$	0	0	0	0	0	0
		0	$\frac{\sqrt{15}i}{42}$	0	0	0	0	$-\frac{\sqrt{14}i}{14}$	0	$\frac{\sqrt{6}i}{42}$	0	0	0	0	0
		$-\frac{i}{7}$	0	$\frac{\sqrt{10}i}{28}$	0	0	0	0	$-\frac{\sqrt{6}i}{42}$	0	$-\frac{\sqrt{30}i}{42}$	0	0	0	0
		0	$-\frac{\sqrt{3}i}{21}$	0	$\frac{\sqrt{6}i}{84}$	0	0	0	0	$\frac{\sqrt{30}i}{42}$	0	$-\frac{\sqrt{2}i}{7}$	0	0	0
		0	0	$\frac{\sqrt{6}i}{84}$	0	$-\frac{\sqrt{3}i}{21}$	0	0	0	0	$\frac{\sqrt{2}i}{7}$	0	$-\frac{\sqrt{30}i}{42}$	0	0
		0	0	0	$\frac{\sqrt{10}i}{28}$	0	$-\frac{i}{7}$	0	0	0	0	$\frac{\sqrt{30}i}{42}$	0	$\frac{\sqrt{6}i}{42}$	0
		0	0	0	0	$\frac{\sqrt{15}i}{42}$	0	0	0	0	0	0	$-\frac{\sqrt{6}i}{42}$	0	$\frac{\sqrt{14}i}{14}$
		0	0	0	0	0	$-\frac{\sqrt{21}i}{42}$	0	0	0	0	0	0	$-\frac{\sqrt{14}i}{14}$	0
955	symmetry	$\sqrt{15}xyz$													

*continued ...*

Table 10

No.	multipole	matrix													
$M_{3,1}^{(a)}(E_{2g})$		0	0	$\frac{5\sqrt{2}i}{28}$	0	0	0	0	0	0	$\frac{\sqrt{6}i}{21}$	0	0	0	0
		0	0	0	$\frac{\sqrt{10}i}{28}$	0	0	$\frac{\sqrt{42}i}{42}$	0	0	0	$\frac{\sqrt{30}i}{42}$	0	0	0
		$-\frac{5\sqrt{2}i}{28}$	0	0	0	$-\frac{\sqrt{10}i}{28}$	0	0	$\frac{\sqrt{3}i}{42}$	0	0	0	$\frac{i}{14}$	0	0
		0	$-\frac{\sqrt{10}i}{28}$	0	0	0	$-\frac{5\sqrt{2}i}{28}$	0	0	$-\frac{i}{14}$	0	0	0	$-\frac{\sqrt{3}i}{42}$	0
		0	0	$\frac{\sqrt{10}i}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{30}i}{42}$	0	0	0	$-\frac{\sqrt{42}i}{42}$
		0	0	0	$\frac{5\sqrt{2}i}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{6}i}{21}$	0	0	0
		0	$-\frac{\sqrt{42}i}{42}$	0	0	0	0	0	0	$\frac{\sqrt{105}i}{42}$	0	0	0	0	0
		0	0	$-\frac{\sqrt{3}i}{42}$	0	0	0	0	0	0	$\frac{3i}{14}$	0	0	0	0
		0	0	0	$\frac{i}{14}$	0	0	$-\frac{\sqrt{105}i}{42}$	0	0	0	$\frac{\sqrt{3}i}{21}$	0	0	0
		$-\frac{\sqrt{6}i}{21}$	0	0	0	$\frac{\sqrt{30}i}{42}$	0	0	$-\frac{3i}{14}$	0	0	0	$-\frac{\sqrt{3}i}{21}$	0	0
		0	$-\frac{\sqrt{30}i}{42}$	0	0	0	$\frac{\sqrt{6}i}{21}$	0	0	$-\frac{\sqrt{3}i}{21}$	0	0	0	$-\frac{3i}{14}$	0
		0	0	$-\frac{i}{14}$	0	0	0	0	0	0	$\frac{\sqrt{3}i}{21}$	0	0	0	$-\frac{\sqrt{105}i}{42}$
		0	0	0	$\frac{\sqrt{3}i}{42}$	0	0	0	0	0	0	$\frac{3i}{14}$	0	0	0
		0	0	0	0	$\frac{\sqrt{42}i}{42}$	0	0	0	0	0	0	$\frac{\sqrt{105}i}{42}$	0	0
956	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{M}_{3,2}^{(a)}(E_{2g})$		0	0	$-\frac{5\sqrt{2}}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{6}}{21}$	0	0	0	0
		0	0	0	$-\frac{\sqrt{10}}{28}$	0	0	$\frac{\sqrt{42}}{42}$	0	0	0	$-\frac{\sqrt{30}}{42}$	0	0	0
		$-\frac{5\sqrt{2}}{28}$	0	0	0	$\frac{\sqrt{10}}{28}$	0	0	$\frac{\sqrt{3}}{42}$	0	0	0	$-\frac{1}{14}$	0	0
		0	$-\frac{\sqrt{10}}{28}$	0	0	0	$\frac{5\sqrt{2}}{28}$	0	0	$-\frac{1}{14}$	0	0	0	$\frac{\sqrt{3}}{42}$	0
		0	0	$\frac{\sqrt{10}}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{30}}{42}$	0	0	0	$\frac{\sqrt{42}}{42}$
		0	0	0	$\frac{5\sqrt{2}}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{6}}{21}$	0	0	0
		0	$\frac{\sqrt{42}}{42}$	0	0	0	0	0	$-\frac{\sqrt{105}}{42}$	0	0	0	0	0	0
		0	0	$\frac{\sqrt{3}}{42}$	0	0	0	0	0	$-\frac{3}{14}$	0	0	0	0	0
		0	0	0	$-\frac{1}{14}$	0	0	$-\frac{\sqrt{105}}{42}$	0	0	0	$-\frac{\sqrt{3}}{21}$	0	0	0
		$-\frac{\sqrt{6}}{21}$	0	0	0	$-\frac{\sqrt{30}}{42}$	0	0	$-\frac{3}{14}$	0	0	0	$\frac{\sqrt{3}}{21}$	0	0
		0	$-\frac{\sqrt{30}}{42}$	0	0	0	$-\frac{\sqrt{6}}{21}$	0	0	$-\frac{\sqrt{3}}{21}$	0	0	0	$\frac{3}{14}$	0
		0	0	$-\frac{1}{14}$	0	0	0	0	0	0	$\frac{\sqrt{3}}{21}$	0	0	0	$\frac{\sqrt{105}}{42}$
		0	0	0	$\frac{\sqrt{3}}{42}$	0	0	0	0	0	0	$\frac{3}{14}$	0	0	0
		0	0	0	0	$\frac{\sqrt{42}}{42}$	0	0	0	0	0	0	$\frac{\sqrt{105}}{42}$	0	0
957	symmetry	$\frac{z\left(15x^4+30x^2y^2-40x^2z^2+15y^4-40y^2z^2+8z^4\right)}{8}$													

*continued ...*

Table 10

No.	multipole	matrix												
$\mathbb{M}_5^{(a)}(A_g)$		$\frac{\sqrt{42}}{294}$	0	0	0	0	0	0	$\frac{5\sqrt{7}}{98}$	0	0	0	0	0
		0	$-\frac{5\sqrt{42}}{294}$	0	0	0	0	0	0	$-\frac{3\sqrt{105}}{98}$	0	0	0	0
		0	0	$\frac{5\sqrt{42}}{147}$	0	0	0	0	0	0	$\frac{5\sqrt{14}}{98}$	0	0	0
		0	0	0	$-\frac{5\sqrt{42}}{147}$	0	0	0	0	0	0	$\frac{5\sqrt{14}}{98}$	0	0
		0	0	0	0	$\frac{5\sqrt{42}}{294}$	0	0	0	0	0	0	$-\frac{3\sqrt{105}}{98}$	0
		0	0	0	0	0	$-\frac{\sqrt{42}}{294}$	0	0	0	0	0	0	$\frac{5\sqrt{7}}{98}$
		0	0	0	0	0	0	$\frac{\sqrt{42}}{84}$	0	0	0	0	0	0
		$\frac{5\sqrt{7}}{98}$	0	0	0	0	0	0	$-\frac{23\sqrt{42}}{588}$	0	0	0	0	0
		0	$-\frac{3\sqrt{105}}{98}$	0	0	0	0	0	0	$\frac{17\sqrt{42}}{588}$	0	0	0	0
		0	0	$\frac{5\sqrt{14}}{98}$	0	0	0	0	0	0	$\frac{5\sqrt{42}}{196}$	0	0	0
		0	0	0	$\frac{5\sqrt{14}}{98}$	0	0	0	0	0	0	$-\frac{5\sqrt{42}}{196}$	0	0
		0	0	0	0	$-\frac{3\sqrt{105}}{98}$	0	0	0	0	0	0	$-\frac{17\sqrt{42}}{588}$	0
		0	0	0	0	0	$\frac{5\sqrt{7}}{98}$	0	0	0	0	0	0	$\frac{23\sqrt{42}}{588}$
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{42}}{84}$
958	symmetry	$-\frac{\sqrt{70}y(3x^2-y^2)(x^2+y^2-8z^2)}{16}$												

*continued ...*



Table 10

No.	multipole	matrix													
$M_5^{(a)}(B_g, 1)$		0	0	0	$-\frac{\sqrt{6}i}{21}$	0	0	0	0	0	0	$-\frac{5\sqrt{2}i}{28}$	0	0	0
		0	0	0	0	$\frac{\sqrt{15}i}{21}$	0	0	0	0	0	0	$\frac{\sqrt{6}i}{28}$	0	0
		0	0	0	0	0	$-\frac{\sqrt{6}i}{21}$	$-\frac{\sqrt{7}i}{14}$	0	0	0	0	0	$\frac{3i}{14}$	0
		$\frac{\sqrt{6}i}{21}$	0	0	0	0	0	0	$\frac{3i}{14}$	0	0	0	0	0	$-\frac{\sqrt{7}i}{14}$
		0	$-\frac{\sqrt{15}i}{21}$	0	0	0	0	0	0	$\frac{\sqrt{6}i}{28}$	0	0	0	0	0
		0	0	$\frac{\sqrt{6}i}{21}$	0	0	0	0	0	0	$-\frac{5\sqrt{2}i}{28}$	0	0	0	0
		0	0	$\frac{\sqrt{7}i}{14}$	0	0	0	0	0	0	$-\frac{\sqrt{21}i}{21}$	0	0	0	0
		0	0	0	$-\frac{3i}{14}$	0	0	0	0	0	0	$\frac{\sqrt{3}i}{42}$	0	0	0
		0	0	0	0	$-\frac{\sqrt{6}i}{28}$	0	0	0	0	0	0	$\frac{\sqrt{15}i}{21}$	0	0
		0	0	0	0	0	$\frac{5\sqrt{2}i}{28}$	$\frac{\sqrt{21}i}{21}$	0	0	0	0	0	$\frac{\sqrt{3}i}{42}$	0
		$\frac{5\sqrt{2}i}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{3}i}{42}$	0	0	0	0	0	$-\frac{\sqrt{21}i}{21}$
		0	$-\frac{\sqrt{6}i}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{15}i}{21}$	0	0	0	0	0
		0	0	$-\frac{3i}{14}$	0	0	0	0	0	0	$-\frac{\sqrt{3}i}{42}$	0	0	0	0
		0	0	0	$\frac{\sqrt{7}i}{14}$	0	0	0	0	0	0	$\frac{\sqrt{21}i}{21}$	0	0	0
959	symmetry	$-\frac{\sqrt{70}x(x^2-3y^2)(x^2+y^2-8z^2)}{16}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{M}_5^{(a)}(B_g, 2)$		0	0	0	$\frac{\sqrt{6}}{21}$	0	0	0	0	0	$\frac{5\sqrt{2}}{28}$	0	0	0	
		0	0	0	0	$-\frac{\sqrt{15}}{21}$	0	0	0	0	0	$-\frac{\sqrt{6}}{28}$	0	0	
		0	0	0	0	0	$\frac{\sqrt{6}}{21}$	$-\frac{\sqrt{7}}{14}$	0	0	0	0	$-\frac{3}{14}$	0	
		$\frac{\sqrt{6}}{21}$	0	0	0	0	0	$\frac{3}{14}$	0	0	0	0	0	$\frac{\sqrt{7}}{14}$	
		0	$-\frac{\sqrt{15}}{21}$	0	0	0	0	0	$\frac{\sqrt{6}}{28}$	0	0	0	0	0	
		0	0	$\frac{\sqrt{6}}{21}$	0	0	0	0	0	$-\frac{5\sqrt{2}}{28}$	0	0	0	0	
		0	0	$-\frac{\sqrt{7}}{14}$	0	0	0	0	0	$\frac{\sqrt{21}}{21}$	0	0	0	0	
		0	0	0	$\frac{3}{14}$	0	0	0	0	0	$-\frac{\sqrt{3}}{42}$	0	0	0	
		0	0	0	0	$\frac{\sqrt{6}}{28}$	0	0	0	0	0	$-\frac{\sqrt{15}}{21}$	0	0	
		0	0	0	0	0	$-\frac{5\sqrt{2}}{28}$	$\frac{\sqrt{21}}{21}$	0	0	0	0	$-\frac{\sqrt{3}}{42}$	0	
		$\frac{5\sqrt{2}}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{3}}{42}$	0	0	0	0	$\frac{\sqrt{21}}{21}$	
		0	$-\frac{\sqrt{6}}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{15}}{21}$	0	0	0	0	
		0	0	$-\frac{3}{14}$	0	0	0	0	0	0	$-\frac{\sqrt{3}}{42}$	0	0	0	
		0	0	0	$\frac{\sqrt{7}}{14}$	0	0	0	0	0	0	$\frac{\sqrt{21}}{21}$	0	0	
960	symmetry	$\frac{3\sqrt{14}x(x^4-10x^2y^2+5y^4)}{16}$													

*continued ...*

Table 10

No.	multipole	matrix														
$\mathbb{M}_{5,1}^{(a)}(E_{1g}, 1)$		0	0	0	0	0	$\frac{\sqrt{3}}{7}$	0	0	0	0	0	0	$\frac{5\sqrt{2}}{28}$	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	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	
		$\frac{\sqrt{3}}{7}$	0	0	0	0	0	0	$-\frac{5\sqrt{2}}{28}$	0	0	0	0	0	0	
		0	0	0	0	$-\frac{\sqrt{70}}{28}$	0	0	0	0	0	0	$\frac{\sqrt{7}}{14}$	0	0	
		0	0	0	0	0	$-\frac{5\sqrt{2}}{28}$	0	0	0	0	0	0	$\frac{\sqrt{3}}{7}$	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	0	0	$\frac{\sqrt{7}}{14}$	0	0	0	0	0	0	0	
		$\frac{5\sqrt{2}}{28}$	0	0	0	0	0	0	$\frac{\sqrt{3}}{7}$	0	0	0	0	0	0	
		0	$\frac{\sqrt{70}}{28}$	0	0	0	0	0	0	$\frac{\sqrt{7}}{14}$	0	0	0	0	0	
961	symmetry	$-\frac{3\sqrt{14}y(5x^4-10x^2y^2+y^4)}{16}$														

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{M}_{5,2}^{(a)}(E_{1g}, 1)$		0	0	0	0	0	$\frac{\sqrt{3}i}{7}$	0	0	0	0	0	0	$\frac{5\sqrt{2}i}{28}$	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	0	0	$\frac{\sqrt{70}i}{28}$	0	0	0	0	0	0	0
		$-\frac{\sqrt{3}i}{7}$	0	0	0	0	0	0	$\frac{5\sqrt{2}i}{28}$	0	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{70}i}{28}$	0	0	0	0	0	$\frac{\sqrt{7}i}{14}$	0	0	0
		0	0	0	0	0	$-\frac{5\sqrt{2}i}{28}$	0	0	0	0	0	0	$\frac{\sqrt{3}i}{7}$	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	0	0	$-\frac{\sqrt{7}i}{14}$	0	0	0	0	0	0	0
		$-\frac{5\sqrt{2}i}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{3}i}{7}$	0	0	0	0	0	0
		0	$-\frac{\sqrt{70}i}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{7}i}{14}$	0	0	0	0	0
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												
$\mathbb{M}_{5,1}^{(a)}(E_{1g}, 2)$		0	$\frac{\sqrt{14}}{98}$	0	0	0	0	$-\frac{\sqrt{15}}{84}$	0	$\frac{5\sqrt{35}}{196}$	0	0	0	0
		$\frac{\sqrt{14}}{98}$	0	$-\frac{\sqrt{35}}{49}$	0	0	0	0	$\frac{23\sqrt{21}}{588}$	0	$-\frac{13\sqrt{105}}{588}$	0	0	0
		0	$-\frac{\sqrt{35}}{49}$	0	$\frac{\sqrt{70}}{49}$	0	0	0	0	$-\frac{11\sqrt{14}}{196}$	0	$\frac{\sqrt{210}}{588}$	0	0
		0	0	$\frac{\sqrt{70}}{49}$	0	$-\frac{\sqrt{35}}{49}$	0	0	0	0	$-\frac{\sqrt{210}}{588}$	0	$\frac{11\sqrt{14}}{196}$	0
		0	0	0	$-\frac{\sqrt{35}}{49}$	0	$\frac{\sqrt{14}}{98}$	0	0	0	0	$\frac{13\sqrt{105}}{588}$	0	$-\frac{23\sqrt{21}}{588}$
		0	0	0	0	$\frac{\sqrt{14}}{98}$	0	0	0	0	0	$-\frac{5\sqrt{35}}{196}$	0	$\frac{\sqrt{15}}{84}$
		$-\frac{\sqrt{15}}{84}$	0	0	0	0	0	0	$\frac{\sqrt{10}}{28}$	0	0	0	0	0
		0	$\frac{23\sqrt{21}}{588}$	0	0	0	0	$\frac{\sqrt{10}}{28}$	0	$-\frac{2\sqrt{210}}{147}$	0	0	0	0
		$\frac{5\sqrt{35}}{196}$	0	$-\frac{11\sqrt{14}}{196}$	0	0	0	0	$-\frac{2\sqrt{210}}{147}$	0	$\frac{\sqrt{42}}{588}$	0	0	0
		0	$-\frac{13\sqrt{105}}{588}$	0	$-\frac{\sqrt{210}}{588}$	0	0	0	0	$\frac{\sqrt{42}}{588}$	0	$\frac{\sqrt{70}}{49}$	0	0
		0	0	$\frac{\sqrt{210}}{588}$	0	$\frac{13\sqrt{105}}{588}$	0	0	0	0	$\frac{\sqrt{70}}{49}$	0	$\frac{\sqrt{42}}{588}$	0
		0	0	0	$\frac{11\sqrt{14}}{196}$	0	$-\frac{5\sqrt{35}}{196}$	0	0	0	0	$\frac{\sqrt{42}}{588}$	0	$-\frac{2\sqrt{210}}{147}$
		0	0	0	0	$-\frac{23\sqrt{21}}{588}$	0	0	0	0	0	$-\frac{2\sqrt{210}}{147}$	0	$\frac{\sqrt{10}}{28}$
		0	0	0	0	0	$\frac{\sqrt{15}}{84}$	0	0	0	0	0	$\frac{\sqrt{10}}{28}$	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													
$\mathbb{M}_{5,2}^{(a)}(E_{1g}, 2)$		0	$-\frac{\sqrt{14}i}{98}$	0	0	0	0	$-\frac{\sqrt{15}i}{84}$	0	$-\frac{5\sqrt{35}i}{196}$	0	0	0	0	0
		$\frac{\sqrt{14}i}{98}$	0	$\frac{\sqrt{35}i}{49}$	0	0	0	0	$\frac{23\sqrt{21}i}{588}$	0	$\frac{13\sqrt{105}i}{588}$	0	0	0	0
		0	$-\frac{\sqrt{35}i}{49}$	0	$-\frac{\sqrt{70}i}{49}$	0	0	0	0	$-\frac{11\sqrt{14}i}{196}$	0	$-\frac{\sqrt{210}i}{588}$	0	0	0
		0	0	$\frac{\sqrt{70}i}{49}$	0	$\frac{\sqrt{35}i}{49}$	0	0	0	0	$-\frac{\sqrt{210}i}{588}$	0	$-\frac{11\sqrt{14}i}{196}$	0	0
		0	0	0	$-\frac{\sqrt{35}i}{49}$	0	$-\frac{\sqrt{14}i}{98}$	0	0	0	0	$\frac{13\sqrt{105}i}{588}$	0	$\frac{23\sqrt{21}i}{588}$	0
		0	0	0	0	$\frac{\sqrt{14}i}{98}$	0	0	0	0	0	0	$-\frac{5\sqrt{35}i}{196}$	0	$-\frac{\sqrt{15}i}{84}$
		$\frac{\sqrt{15}i}{84}$	0	0	0	0	0	$-\frac{\sqrt{10}i}{28}$	0	0	0	0	0	0	0
		0	$-\frac{23\sqrt{21}i}{588}$	0	0	0	0	$\frac{\sqrt{10}i}{28}$	0	$\frac{2\sqrt{210}i}{147}$	0	0	0	0	0
		$\frac{5\sqrt{35}i}{196}$	0	$\frac{11\sqrt{14}i}{196}$	0	0	0	0	$-\frac{2\sqrt{210}i}{147}$	0	$-\frac{\sqrt{42}i}{588}$	0	0	0	0
		0	$-\frac{13\sqrt{105}i}{588}$	0	$\frac{\sqrt{210}i}{588}$	0	0	0	0	$\frac{\sqrt{42}i}{588}$	0	$-\frac{\sqrt{70}i}{49}$	0	0	0
		0	0	$\frac{\sqrt{210}i}{588}$	0	$-\frac{13\sqrt{105}i}{588}$	0	0	0	0	$\frac{\sqrt{70}i}{49}$	0	$-\frac{\sqrt{42}i}{588}$	0	0
		0	0	0	$\frac{11\sqrt{14}i}{196}$	0	$\frac{5\sqrt{35}i}{196}$	0	0	0	0	$\frac{\sqrt{42}i}{588}$	0	$\frac{2\sqrt{210}i}{147}$	0
		0	0	0	0	$-\frac{23\sqrt{21}i}{588}$	0	0	0	0	0	0	$-\frac{2\sqrt{210}i}{147}$	0	$-\frac{\sqrt{10}i}{28}$
		0	0	0	0	0	$\frac{\sqrt{15}i}{84}$	0	0	0	0	0	0	$\frac{\sqrt{10}i}{28}$	0
964	symmetry	$-\frac{3\sqrt{35}xyz(x-y)(x+y)}{2}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{M}_{5,1}^{(a)}(E_{2g}, 1)$		0	0	0	0	$\frac{\sqrt{6}i}{14}$	0	0	0	0	0	$\frac{\sqrt{15}i}{14}$	0	0	
		0	0	0	0	0	$-\frac{\sqrt{6}i}{14}$	0	0	0	0	0	$\frac{i}{14}$	0	
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{14}i}{14}$	
		0	0	0	0	0	0	$\frac{\sqrt{14}i}{14}$	0	0	0	0	0	0	
		$-\frac{\sqrt{6}i}{14}$	0	0	0	0	0	0	$-\frac{i}{14}$	0	0	0	0	0	
		0	$\frac{\sqrt{6}i}{14}$	0	0	0	0	0	0	$-\frac{\sqrt{15}i}{14}$	0	0	0	0	
		0	0	0	$-\frac{\sqrt{14}i}{14}$	0	0	0	0	0	$\frac{\sqrt{42}i}{28}$	0	0	0	
		0	0	0	0	$\frac{i}{14}$	0	0	0	0	0	$\frac{\sqrt{10}i}{28}$	0	0	
		0	0	0	0	0	$\frac{\sqrt{15}i}{14}$	0	0	0	0	0	$-\frac{\sqrt{10}i}{28}$	0	
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{42}i}{28}$	
		0	0	0	0	0	0	$-\frac{\sqrt{42}i}{28}$	0	0	0	0	0	0	
		$-\frac{\sqrt{15}i}{14}$	0	0	0	0	0	0	$-\frac{\sqrt{10}i}{28}$	0	0	0	0	0	
		0	$-\frac{i}{14}$	0	0	0	0	0	0	$\frac{\sqrt{10}i}{28}$	0	0	0	0	
		0	0	$\frac{\sqrt{14}i}{14}$	0	0	0	0	0	$\frac{\sqrt{42}i}{28}$	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													
$\mathbb{M}_{5,2}^{(a)}(E_{2g}, 1)$		0	0	0	0	$\frac{\sqrt{6}}{14}$	0	0	0	0	0	$\frac{\sqrt{15}}{14}$	0	0	
		0	0	0	0	0	$-\frac{\sqrt{6}}{14}$	0	0	0	0	0	$\frac{1}{14}$	0	
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{14}}{14}$	
		0	0	0	0	0	0	$-\frac{\sqrt{14}}{14}$	0	0	0	0	0	0	
		$\frac{\sqrt{6}}{14}$	0	0	0	0	0	0	$\frac{1}{14}$	0	0	0	0	0	
		0	$-\frac{\sqrt{6}}{14}$	0	0	0	0	0	0	$\frac{\sqrt{15}}{14}$	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{14}}{14}$	0	0	0	0	0	$\frac{\sqrt{42}}{28}$	0	0	0	
		0	0	0	0	$\frac{1}{14}$	0	0	0	0	0	$\frac{\sqrt{10}}{28}$	0	0	
		0	0	0	0	0	$\frac{\sqrt{15}}{14}$	0	0	0	0	0	$-\frac{\sqrt{10}}{28}$	0	
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{42}}{28}$	
		0	0	0	0	0	0	$\frac{\sqrt{42}}{28}$	0	0	0	0	0	0	
		$\frac{\sqrt{15}}{14}$	0	0	0	0	0	0	$\frac{\sqrt{10}}{28}$	0	0	0	0	0	
		0	$\frac{1}{14}$	0	0	0	0	0	0	$-\frac{\sqrt{10}}{28}$	0	0	0	0	
		0	0	$-\frac{\sqrt{14}}{14}$	0	0	0	0	0	0	$-\frac{\sqrt{42}}{28}$	0	0	0	
966	symmetry	$-\frac{\sqrt{105}xyz(x^2+y^2-2z^2)}{2}$													

*continued ...*



Table 10

No.	multipole	matrix												
$\mathbb{M}_{5,1}^{(a)}(E_{2g}, 2)$		0	0	$-\frac{i}{14}$	0	0	0	0	0	$-\frac{5\sqrt{3}i}{42}$	0	0	0	0
		0	0	0	$\frac{\sqrt{5}i}{14}$	0	0	$-\frac{\sqrt{21}i}{42}$	0	0	$\frac{\sqrt{15}i}{21}$	0	0	0
		$\frac{i}{14}$	0	0	0	$-\frac{\sqrt{5}i}{14}$	0	0	$\frac{2\sqrt{6}i}{21}$	0	0	$\frac{\sqrt{2}i}{14}$	0	0
		0	$-\frac{\sqrt{5}i}{14}$	0	0	0	$\frac{i}{14}$	0	0	$-\frac{\sqrt{2}i}{14}$	0	0	$-\frac{2\sqrt{6}i}{21}$	0
		0	0	$\frac{\sqrt{5}i}{14}$	0	0	0	0	0	$-\frac{\sqrt{15}i}{21}$	0	0	0	$\frac{\sqrt{21}i}{42}$
		0	0	0	$-\frac{i}{14}$	0	0	0	0	0	$\frac{5\sqrt{3}i}{42}$	0	0	0
		0	$\frac{\sqrt{21}i}{42}$	0	0	0	0	0	$-\frac{\sqrt{210}i}{84}$	0	0	0	0	0
		0	0	$-\frac{2\sqrt{6}i}{21}$	0	0	0	0	0	$\frac{3\sqrt{2}i}{28}$	0	0	0	0
		0	0	0	$\frac{\sqrt{2}i}{14}$	0	0	$\frac{\sqrt{210}i}{84}$	0	0	$\frac{\sqrt{6}i}{21}$	0	0	0
		$\frac{5\sqrt{3}i}{42}$	0	0	0	$\frac{\sqrt{15}i}{21}$	0	0	$-\frac{3\sqrt{2}i}{28}$	0	0	$-\frac{\sqrt{6}i}{21}$	0	0
		0	$-\frac{\sqrt{15}i}{21}$	0	0	0	$-\frac{5\sqrt{3}i}{42}$	0	0	$-\frac{\sqrt{6}i}{21}$	0	0	$-\frac{3\sqrt{2}i}{28}$	0
		0	0	$-\frac{\sqrt{2}i}{14}$	0	0	0	0	0	$\frac{\sqrt{6}i}{21}$	0	0	0	$\frac{\sqrt{210}i}{84}$
		0	0	0	$\frac{2\sqrt{6}i}{21}$	0	0	0	0	0	$\frac{3\sqrt{2}i}{28}$	0	0	0
		0	0	0	0	$-\frac{\sqrt{21}i}{42}$	0	0	0	0	0	$-\frac{\sqrt{210}i}{84}$	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													
$\mathbb{M}_{5,2}^{(a)}(E_{2g}, 2)$		0	0	$\frac{1}{14}$	0	0	0	0	0	$\frac{5\sqrt{3}}{42}$	0	0	0	0	
		0	0	0	$-\frac{\sqrt{5}}{14}$	0	0	$-\frac{\sqrt{21}}{42}$	0	0	$-\frac{\sqrt{15}}{21}$	0	0	0	
		$\frac{1}{14}$	0	0	0	$\frac{\sqrt{5}}{14}$	0	0	$\frac{2\sqrt{6}}{21}$	0	0	$-\frac{\sqrt{2}}{14}$	0	0	
		0	$-\frac{\sqrt{5}}{14}$	0	0	0	$-\frac{1}{14}$	0	0	$-\frac{\sqrt{2}}{14}$	0	0	$\frac{2\sqrt{6}}{21}$	0	
		0	0	$\frac{\sqrt{5}}{14}$	0	0	0	0	0	$-\frac{\sqrt{15}}{21}$	0	0	0	$-\frac{\sqrt{21}}{42}$	
		0	0	0	$-\frac{1}{14}$	0	0	0	0	0	$\frac{5\sqrt{3}}{42}$	0	0	0	
		0	$-\frac{\sqrt{21}}{42}$	0	0	0	0	0	$\frac{\sqrt{210}}{84}$	0	0	0	0	0	
		0	0	$\frac{2\sqrt{6}}{21}$	0	0	0	0	0	$-\frac{3\sqrt{2}}{28}$	0	0	0	0	
		0	0	0	$-\frac{\sqrt{2}}{14}$	0	0	$\frac{\sqrt{210}}{84}$	0	0	$-\frac{\sqrt{6}}{21}$	0	0	0	
		$\frac{5\sqrt{3}}{42}$	0	0	0	$-\frac{\sqrt{15}}{21}$	0	0	$-\frac{3\sqrt{2}}{28}$	0	0	$\frac{\sqrt{6}}{21}$	0	0	
		0	$-\frac{\sqrt{15}}{21}$	0	0	0	$\frac{5\sqrt{3}}{42}$	0	0	$-\frac{\sqrt{6}}{21}$	0	0	$\frac{3\sqrt{2}}{28}$	0	
		0	0	$-\frac{\sqrt{2}}{14}$	0	0	0	0	0	$\frac{\sqrt{6}}{21}$	0	0	0	$-\frac{\sqrt{210}}{84}$	
		0	0	0	$\frac{2\sqrt{6}}{21}$	0	0	0	0	0	$\frac{3\sqrt{2}}{28}$	0	0	0	
		0	0	0	0	$-\frac{\sqrt{21}}{42}$	0	0	0	0	0	$-\frac{\sqrt{210}}{84}$	0	0	
968	symmetry	$z$													

*continued ...*

Table 10

No.	multipole	matrix													
969	$M_1^{(1,-1;a)}(A_g)$	$-\frac{5\sqrt{14}}{98}$	0	0	0	0	0	0	$-\frac{2\sqrt{21}}{49}$	0	0	0	0	0	0
		0	$-\frac{3\sqrt{14}}{98}$	0	0	0	0	0	0	$-\frac{2\sqrt{35}}{49}$	0	0	0	0	0
		0	0	$-\frac{\sqrt{14}}{98}$	0	0	0	0	0	0	$-\frac{2\sqrt{42}}{49}$	0	0	0	0
		0	0	0	$\frac{\sqrt{14}}{98}$	0	0	0	0	0	0	$-\frac{2\sqrt{42}}{49}$	0	0	0
		0	0	0	0	$\frac{3\sqrt{14}}{98}$	0	0	0	0	0	0	$-\frac{2\sqrt{35}}{49}$	0	0
		0	0	0	0	0	$\frac{5\sqrt{14}}{98}$	0	0	0	0	0	0	$-\frac{2\sqrt{21}}{49}$	0
		0	0	0	0	0	0	$\frac{\sqrt{14}}{14}$	0	0	0	0	0	0	0
		$-\frac{2\sqrt{21}}{49}$	0	0	0	0	0	0	$\frac{5\sqrt{14}}{98}$	0	0	0	0	0	0
		0	$-\frac{2\sqrt{35}}{49}$	0	0	0	0	0	0	$\frac{3\sqrt{14}}{98}$	0	0	0	0	0
		0	0	$-\frac{2\sqrt{42}}{49}$	0	0	0	0	0	0	$\frac{\sqrt{14}}{98}$	0	0	0	0
		0	0	0	$-\frac{2\sqrt{42}}{49}$	0	0	0	0	0	0	$-\frac{\sqrt{14}}{98}$	0	0	0
		0	0	0	0	$-\frac{2\sqrt{35}}{49}$	0	0	0	0	0	0	$-\frac{3\sqrt{14}}{98}$	0	0
		0	0	0	0	0	$-\frac{2\sqrt{21}}{49}$	0	0	0	0	0	0	$-\frac{5\sqrt{14}}{98}$	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													
$\mathbb{M}_{1,1}^{(1,-1;a)}(E_{1g})$		0	$-\frac{\sqrt{70}}{98}$	0	0	0	0	$\frac{\sqrt{3}}{7}$	0	$-\frac{\sqrt{7}}{49}$	0	0	0	0	0
		$-\frac{\sqrt{70}}{98}$	0	$-\frac{2\sqrt{7}}{49}$	0	0	0	0	$\frac{\sqrt{105}}{49}$	0	$-\frac{\sqrt{21}}{49}$	0	0	0	0
		0	$-\frac{2\sqrt{7}}{49}$	0	$-\frac{3\sqrt{14}}{98}$	0	0	0	0	$\frac{\sqrt{70}}{49}$	0	$-\frac{\sqrt{42}}{49}$	0	0	0
		0	0	$-\frac{3\sqrt{14}}{98}$	0	$-\frac{2\sqrt{7}}{49}$	0	0	0	0	$\frac{\sqrt{42}}{49}$	0	$-\frac{\sqrt{70}}{49}$	0	0
		0	0	0	$-\frac{2\sqrt{7}}{49}$	0	$-\frac{\sqrt{70}}{98}$	0	0	0	0	$\frac{\sqrt{21}}{49}$	0	$-\frac{\sqrt{105}}{49}$	0
		0	0	0	0	$-\frac{\sqrt{70}}{98}$	0	0	0	0	0	0	$\frac{\sqrt{7}}{49}$	0	$-\frac{\sqrt{3}}{7}$
		$\frac{\sqrt{3}}{7}$	0	0	0	0	0	0	$\frac{\sqrt{2}}{14}$	0	0	0	0	0	0
		0	$\frac{\sqrt{105}}{49}$	0	0	0	0	$\frac{\sqrt{2}}{14}$	0	$\frac{\sqrt{42}}{49}$	0	0	0	0	0
		$-\frac{\sqrt{7}}{49}$	0	$\frac{\sqrt{70}}{49}$	0	0	0	0	$\frac{\sqrt{42}}{49}$	0	$\frac{\sqrt{210}}{98}$	0	0	0	0
		0	$-\frac{\sqrt{21}}{49}$	0	$\frac{\sqrt{42}}{49}$	0	0	0	0	$\frac{\sqrt{210}}{98}$	0	$\frac{2\sqrt{14}}{49}$	0	0	0
		0	0	$-\frac{\sqrt{42}}{49}$	0	$\frac{\sqrt{21}}{49}$	0	0	0	0	$\frac{2\sqrt{14}}{49}$	0	$\frac{\sqrt{210}}{98}$	0	0
		0	0	0	$-\frac{\sqrt{70}}{49}$	0	$\frac{\sqrt{7}}{49}$	0	0	0	0	$\frac{\sqrt{210}}{98}$	0	$\frac{\sqrt{42}}{49}$	0
		0	0	0	0	$-\frac{\sqrt{105}}{49}$	0	0	0	0	0	0	$\frac{\sqrt{42}}{49}$	0	$\frac{\sqrt{2}}{14}$
		0	0	0	0	0	$-\frac{\sqrt{3}}{7}$	0	0	0	0	0	0	$\frac{\sqrt{2}}{14}$	0
970	symmetry	$y$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{M}_{1,2}^{(1,-1;a)}(E_{1g})$		0	$\frac{\sqrt{70}i}{98}$	0	0	0	0	$\frac{\sqrt{3}i}{7}$	0	$\frac{\sqrt{7}i}{49}$	0	0	0	0	0
		$-\frac{\sqrt{70}i}{98}$	0	$\frac{2\sqrt{7}i}{49}$	0	0	0	0	$\frac{\sqrt{105}i}{49}$	0	$\frac{\sqrt{21}i}{49}$	0	0	0	0
		0	$-\frac{2\sqrt{7}i}{49}$	0	$\frac{3\sqrt{14}i}{98}$	0	0	0	0	$\frac{\sqrt{70}i}{49}$	0	$\frac{\sqrt{42}i}{49}$	0	0	0
		0	0	$-\frac{3\sqrt{14}i}{98}$	0	$\frac{2\sqrt{7}i}{49}$	0	0	0	0	$\frac{\sqrt{42}i}{49}$	0	$\frac{\sqrt{70}i}{49}$	0	0
		0	0	0	$-\frac{2\sqrt{7}i}{49}$	0	$\frac{\sqrt{70}i}{98}$	0	0	0	0	$\frac{\sqrt{21}i}{49}$	0	$\frac{\sqrt{105}i}{49}$	0
		0	0	0	0	$-\frac{\sqrt{70}i}{98}$	0	0	0	0	0	0	$\frac{\sqrt{7}i}{49}$	0	$\frac{\sqrt{3}i}{7}$
		$-\frac{\sqrt{3}i}{7}$	0	0	0	0	0	0	$-\frac{\sqrt{2}i}{14}$	0	0	0	0	0	0
		0	$-\frac{\sqrt{105}i}{49}$	0	0	0	0	$\frac{\sqrt{2}i}{14}$	0	$-\frac{\sqrt{42}i}{49}$	0	0	0	0	0
		$-\frac{\sqrt{7}i}{49}$	0	$-\frac{\sqrt{70}i}{49}$	0	0	0	0	$\frac{\sqrt{42}i}{49}$	0	$-\frac{\sqrt{210}i}{98}$	0	0	0	0
		0	$-\frac{\sqrt{21}i}{49}$	0	$-\frac{\sqrt{42}i}{49}$	0	0	0	0	$\frac{\sqrt{210}i}{98}$	0	$-\frac{2\sqrt{14}i}{49}$	0	0	0
		0	0	$-\frac{\sqrt{42}i}{49}$	0	$-\frac{\sqrt{21}i}{49}$	0	0	0	0	$\frac{2\sqrt{14}i}{49}$	0	$-\frac{\sqrt{210}i}{98}$	0	0
		0	0	0	$-\frac{\sqrt{70}i}{49}$	0	$-\frac{\sqrt{7}i}{49}$	0	0	0	0	$\frac{\sqrt{210}i}{98}$	0	$-\frac{\sqrt{42}i}{49}$	0
		0	0	0	0	$-\frac{\sqrt{105}i}{49}$	0	0	0	0	0	0	$\frac{\sqrt{42}i}{49}$	0	$-\frac{\sqrt{2}i}{14}$
		0	0	0	0	0	$-\frac{\sqrt{3}i}{7}$	0	0	0	0	0	0	$\frac{\sqrt{2}i}{14}$	0
971	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$													

*continued ...*

Table 10

No.	multipole	matrix													
972	$M_3^{(1,-1;a)}(A_g)$	$\frac{\sqrt{70}}{98}$	0	0	0	0	0	0	$\frac{4\sqrt{105}}{147}$	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	$-\frac{2\sqrt{70}}{245}$	0	0	0	0	0	0	$-\frac{2\sqrt{210}}{147}$	0	0	0	0
		0	0	0	$\frac{2\sqrt{70}}{245}$	0	0	0	0	0	0	$-\frac{2\sqrt{210}}{147}$	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	$-\frac{\sqrt{70}}{98}$	0	0	0	0	0	0	$\frac{4\sqrt{105}}{147}$	0
		0	0	0	0	0	0	$-\frac{\sqrt{70}}{28}$	0	0	0	0	0	0	0
		$\frac{4\sqrt{105}}{147}$	0	0	0	0	0	0	$\frac{5\sqrt{70}}{196}$	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	$-\frac{2\sqrt{210}}{147}$	0	0	0	0	0	0	$\frac{3\sqrt{70}}{196}$	0	0	0	0
		0	0	0	$-\frac{2\sqrt{210}}{147}$	0	0	0	0	0	0	$-\frac{3\sqrt{70}}{196}$	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	$\frac{4\sqrt{105}}{147}$	0	0	0	0	0	0	$-\frac{5\sqrt{70}}{196}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{70}}{28}$
		$\frac{\sqrt{10}y(3x^2-y^2)}{4}$													

continued ...

Table 10

No.	multipole	matrix													
$\mathbb{M}_3^{(1,-1;a)}(B_g,1)$		0	0	0	$-\frac{\sqrt{70}i}{98}$	0	0	0	0	0	0	$-\frac{\sqrt{210}i}{147}$	0	0	0
		0	0	0	0	$-\frac{2\sqrt{7}i}{49}$	0	0	0	0	0	0	$-\frac{\sqrt{70}i}{49}$	0	0
		0	0	0	0	0	$-\frac{\sqrt{70}i}{98}$	$-\frac{\sqrt{15}i}{21}$	0	0	0	0	0	$-\frac{\sqrt{105}i}{49}$	0
		$\frac{\sqrt{70}i}{98}$	0	0	0	0	0	0	$-\frac{\sqrt{105}i}{49}$	0	0	0	0	0	$-\frac{\sqrt{15}i}{21}$
		0	$\frac{2\sqrt{7}i}{49}$	0	0	0	0	0	0	$-\frac{\sqrt{70}i}{49}$	0	0	0	0	0
		0	0	$\frac{\sqrt{70}i}{98}$	0	0	0	0	0	0	$-\frac{\sqrt{210}i}{147}$	0	0	0	0
		0	0	$\frac{\sqrt{15}i}{21}$	0	0	0	0	0	0	$\frac{\sqrt{5}i}{14}$	0	0	0	0
		0	0	0	$\frac{\sqrt{105}i}{49}$	0	0	0	0	0	0	$\frac{2\sqrt{35}i}{49}$	0	0	0
		0	0	0	0	$\frac{\sqrt{70}i}{49}$	0	0	0	0	0	0	$\frac{5\sqrt{7}i}{49}$	0	0
		0	0	0	0	0	$\frac{\sqrt{210}i}{147}$	$-\frac{\sqrt{5}i}{14}$	0	0	0	0	0	$\frac{2\sqrt{35}i}{49}$	0
		$\frac{\sqrt{210}i}{147}$	0	0	0	0	0	0	$-\frac{2\sqrt{35}i}{49}$	0	0	0	0	0	$\frac{\sqrt{5}i}{14}$
		0	$\frac{\sqrt{70}i}{49}$	0	0	0	0	0	0	$-\frac{5\sqrt{7}i}{49}$	0	0	0	0	0
		0	0	$\frac{\sqrt{105}i}{49}$	0	0	0	0	0	0	$-\frac{2\sqrt{35}i}{49}$	0	0	0	0
		0	0	0	$\frac{\sqrt{15}i}{21}$	0	0	0	0	0	0	$-\frac{\sqrt{5}i}{14}$	0	0	0
973	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{M}_3^{(1,-1;a)}(B_g, 2)$		0	0	0	$\frac{\sqrt{70}}{98}$	0	0	0	0	0	0	$\frac{\sqrt{210}}{147}$	0	0	0
		0	0	0	0	$\frac{2\sqrt{7}}{49}$	0	0	0	0	0	0	$\frac{\sqrt{70}}{49}$	0	0
		0	0	0	0	0	$\frac{\sqrt{70}}{98}$	$-\frac{\sqrt{15}}{21}$	0	0	0	0	0	$\frac{\sqrt{105}}{49}$	0
		$\frac{\sqrt{70}}{98}$	0	0	0	0	0	0	$-\frac{\sqrt{105}}{49}$	0	0	0	0	0	$\frac{\sqrt{15}}{21}$
		0	$\frac{2\sqrt{7}}{49}$	0	0	0	0	0	0	$-\frac{\sqrt{70}}{49}$	0	0	0	0	0
		0	0	$\frac{\sqrt{70}}{98}$	0	0	0	0	0	0	$-\frac{\sqrt{210}}{147}$	0	0	0	0
		0	0	$-\frac{\sqrt{15}}{21}$	0	0	0	0	0	0	$-\frac{\sqrt{5}}{14}$	0	0	0	0
		0	0	0	$-\frac{\sqrt{105}}{49}$	0	0	0	0	0	0	$-\frac{2\sqrt{35}}{49}$	0	0	0
		0	0	0	0	$-\frac{\sqrt{70}}{49}$	0	0	0	0	0	0	$-\frac{5\sqrt{7}}{49}$	0	0
		0	0	0	0	0	$-\frac{\sqrt{210}}{147}$	$-\frac{\sqrt{5}}{14}$	0	0	0	0	0	$-\frac{2\sqrt{35}}{49}$	0
		$\frac{\sqrt{210}}{147}$	0	0	0	0	0	0	$-\frac{2\sqrt{35}}{49}$	0	0	0	0	0	$-\frac{\sqrt{5}}{14}$
		0	$\frac{\sqrt{70}}{49}$	0	0	0	0	0	0	$-\frac{5\sqrt{7}}{49}$	0	0	0	0	0
		0	0	$\frac{\sqrt{105}}{49}$	0	0	0	0	0	0	$-\frac{2\sqrt{35}}{49}$	0	0	0	0
		0	0	0	$\frac{\sqrt{15}}{21}$	0	0	0	0	0	0	$-\frac{\sqrt{5}}{14}$	0	0	0
974	symmetry	$-\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$													

*continued ...*



Table 10

No.	multipole	matrix													
$\mathbb{M}_{3,1}^{(1,-1;a)}(E_{1g})$		0	$\frac{\sqrt{21}}{49}$	0	0	0	0	$-\frac{\sqrt{10}}{21}$	0	$\frac{2\sqrt{210}}{147}$	0	0	0	0	0
		$\frac{\sqrt{21}}{49}$	0	$-\frac{\sqrt{210}}{490}$	0	0	0	0	$\frac{5\sqrt{14}}{147}$	0	$\frac{2\sqrt{70}}{147}$	0	0	0	0
		0	$-\frac{\sqrt{210}}{490}$	0	$-\frac{2\sqrt{105}}{245}$	0	0	0	0	$\frac{5\sqrt{21}}{147}$	0	$-\frac{\sqrt{35}}{147}$	0	0	0
		0	0	$-\frac{2\sqrt{105}}{245}$	0	$-\frac{\sqrt{210}}{490}$	0	0	0	0	$\frac{\sqrt{35}}{147}$	0	$-\frac{5\sqrt{21}}{147}$	0	0
		0	0	0	$-\frac{\sqrt{210}}{490}$	0	$\frac{\sqrt{21}}{49}$	0	0	0	0	$-\frac{2\sqrt{70}}{147}$	0	$-\frac{5\sqrt{14}}{147}$	0
		0	0	0	0	$\frac{\sqrt{21}}{49}$	0	0	0	0	0	0	$-\frac{2\sqrt{210}}{147}$	0	$\frac{\sqrt{10}}{21}$
		$-\frac{\sqrt{10}}{21}$	0	0	0	0	0	0	$-\frac{\sqrt{15}}{14}$	0	0	0	0	0	0
		0	$\frac{5\sqrt{14}}{147}$	0	0	0	0	$-\frac{\sqrt{15}}{14}$	0	$-\frac{\sqrt{35}}{98}$	0	0	0	0	0
		$\frac{2\sqrt{210}}{147}$	0	$\frac{5\sqrt{21}}{147}$	0	0	0	0	$-\frac{\sqrt{35}}{98}$	0	$\frac{5\sqrt{7}}{98}$	0	0	0	0
		0	$\frac{2\sqrt{70}}{147}$	0	$\frac{\sqrt{35}}{147}$	0	0	0	0	$\frac{5\sqrt{7}}{98}$	0	$\frac{\sqrt{105}}{49}$	0	0	0
		0	0	$-\frac{\sqrt{35}}{147}$	0	$-\frac{2\sqrt{70}}{147}$	0	0	0	0	$\frac{\sqrt{105}}{49}$	0	$\frac{5\sqrt{7}}{98}$	0	0
		0	0	0	$-\frac{5\sqrt{21}}{147}$	0	$-\frac{2\sqrt{210}}{147}$	0	0	0	0	$\frac{5\sqrt{7}}{98}$	0	$-\frac{\sqrt{35}}{98}$	0
		0	0	0	0	$-\frac{5\sqrt{14}}{147}$	0	0	0	0	0	0	$-\frac{\sqrt{35}}{98}$	0	$-\frac{\sqrt{15}}{14}$
		0	0	0	0	0	$\frac{\sqrt{10}}{21}$	0	0	0	0	0	0	$-\frac{\sqrt{15}}{14}$	0
975	symmetry	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{M}_{3,2}^{(1,-1;a)}(E_{1g})$		0	$-\frac{\sqrt{21}i}{49}$	0	0	0	0	$-\frac{\sqrt{10}i}{21}$	0	$-\frac{2\sqrt{210}i}{147}$	0	0	0	0	0
		$\frac{\sqrt{21}i}{49}$	0	$\frac{\sqrt{210}i}{490}$	0	0	0	0	$\frac{5\sqrt{14}i}{147}$	0	$-\frac{2\sqrt{70}i}{147}$	0	0	0	0
		0	$-\frac{\sqrt{210}i}{490}$	0	$\frac{2\sqrt{105}i}{245}$	0	0	0	0	$\frac{5\sqrt{21}i}{147}$	0	$\frac{\sqrt{35}i}{147}$	0	0	0
		0	0	$-\frac{2\sqrt{105}i}{245}$	0	$\frac{\sqrt{210}i}{490}$	0	0	0	0	$\frac{\sqrt{35}i}{147}$	0	$\frac{5\sqrt{21}i}{147}$	0	0
		0	0	0	$-\frac{\sqrt{210}i}{490}$	0	$-\frac{\sqrt{21}i}{49}$	0	0	0	0	$-\frac{2\sqrt{70}i}{147}$	0	$\frac{5\sqrt{14}i}{147}$	0
		0	0	0	0	$\frac{\sqrt{21}i}{49}$	0	0	0	0	0	$-\frac{2\sqrt{210}i}{147}$	0	$-\frac{\sqrt{10}i}{21}$	
		$\frac{\sqrt{10}i}{21}$	0	0	0	0	0	0	$\frac{\sqrt{15}i}{14}$	0	0	0	0	0	0
		0	$-\frac{5\sqrt{14}i}{147}$	0	0	0	0	$-\frac{\sqrt{15}i}{14}$	0	$\frac{\sqrt{35}i}{98}$	0	0	0	0	0
		$\frac{2\sqrt{210}i}{147}$	0	$-\frac{5\sqrt{21}i}{147}$	0	0	0	0	$-\frac{\sqrt{35}i}{98}$	0	$-\frac{5\sqrt{7}i}{98}$	0	0	0	0
		0	$\frac{2\sqrt{70}i}{147}$	0	$-\frac{\sqrt{35}i}{147}$	0	0	0	0	$\frac{5\sqrt{7}i}{98}$	0	$-\frac{\sqrt{105}i}{49}$	0	0	0
		0	0	$-\frac{\sqrt{35}i}{147}$	0	$\frac{2\sqrt{70}i}{147}$	0	0	0	0	$\frac{\sqrt{105}i}{49}$	0	$-\frac{5\sqrt{7}i}{98}$	0	0
		0	0	0	$-\frac{5\sqrt{21}i}{147}$	0	$\frac{2\sqrt{210}i}{147}$	0	0	0	0	$\frac{5\sqrt{7}i}{98}$	0	$\frac{\sqrt{35}i}{98}$	0
		0	0	0	0	$-\frac{5\sqrt{14}i}{147}$	0	0	0	0	0	$-\frac{\sqrt{35}i}{98}$	0	$\frac{\sqrt{15}i}{14}$	
		0	0	0	0	0	$\frac{\sqrt{10}i}{21}$	0	0	0	0	0	0	$-\frac{\sqrt{15}i}{14}$	0
976	symmetry	$\sqrt{15}xyz$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{M}_{3,1}^{(1,-1;a)}(E_{2g})$		0	0	$-\frac{\sqrt{105}i}{98}$	0	0	0	0	0	$-\frac{4\sqrt{35}i}{147}$	0	0	0	0	
		0	0	0	$-\frac{\sqrt{21}i}{98}$	0	0	$-\frac{2\sqrt{5}i}{21}$	0	0	0	$-\frac{10\sqrt{7}i}{147}$	0	0	
		$\frac{\sqrt{105}i}{98}$	0	0	0	$\frac{\sqrt{21}i}{98}$	0	0	$-\frac{\sqrt{70}i}{147}$	0	0	0	$-\frac{\sqrt{210}i}{147}$	0	
		0	$\frac{\sqrt{21}i}{98}$	0	0	0	$\frac{\sqrt{105}i}{98}$	0	0	$\frac{\sqrt{210}i}{147}$	0	0	0	$\frac{\sqrt{70}i}{147}$	
		0	0	$-\frac{\sqrt{21}i}{98}$	0	0	0	0	0	$\frac{10\sqrt{7}i}{147}$	0	0	0	$\frac{2\sqrt{5}i}{21}$	
		0	0	0	$-\frac{\sqrt{105}i}{98}$	0	0	0	0	0	$\frac{4\sqrt{35}i}{147}$	0	0	0	
		0	$\frac{2\sqrt{5}i}{21}$	0	0	0	0	0	$\frac{5\sqrt{2}i}{28}$	0	0	0	0	0	
		0	0	$\frac{\sqrt{70}i}{147}$	0	0	0	0	0	$\frac{3\sqrt{210}i}{196}$	0	0	0	0	
		0	0	0	$-\frac{\sqrt{210}i}{147}$	0	0	$-\frac{5\sqrt{2}i}{28}$	0	0	0	$\frac{\sqrt{70}i}{98}$	0	0	
		$\frac{4\sqrt{35}i}{147}$	0	0	0	$-\frac{10\sqrt{7}i}{147}$	0	0	$-\frac{3\sqrt{210}i}{196}$	0	0	0	$-\frac{\sqrt{70}i}{98}$	0	
		0	$\frac{10\sqrt{7}i}{147}$	0	0	0	$-\frac{4\sqrt{35}i}{147}$	0	0	$-\frac{\sqrt{70}i}{98}$	0	0	$-\frac{3\sqrt{210}i}{196}$	0	
		0	0	$\frac{\sqrt{210}i}{147}$	0	0	0	0	0	$\frac{\sqrt{70}i}{98}$	0	0	0	$-\frac{5\sqrt{2}i}{28}$	
		0	0	0	$-\frac{\sqrt{70}i}{147}$	0	0	0	0	0	$\frac{3\sqrt{210}i}{196}$	0	0	0	
		0	0	0	0	$-\frac{2\sqrt{5}i}{21}$	0	0	0	0	0	$\frac{5\sqrt{2}i}{28}$	0	0	
977	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{M}_{3,2}^{(1,-1;a)}(E_{2g})$	0	0	$\frac{\sqrt{105}}{98}$	0	0	0	0	0	0	$\frac{4\sqrt{35}}{147}$	0	0	0	0	
	0	0	0	$\frac{\sqrt{21}}{98}$	0	0	$-\frac{2\sqrt{5}}{21}$	0	0	0	$\frac{10\sqrt{7}}{147}$	0	0	0	
	$\frac{\sqrt{105}}{98}$	0	0	0	$-\frac{\sqrt{21}}{98}$	0	0	$-\frac{\sqrt{70}}{147}$	0	0	0	$\frac{\sqrt{210}}{147}$	0	0	
	0	$\frac{\sqrt{21}}{98}$	0	0	0	$-\frac{\sqrt{105}}{98}$	0	0	$\frac{\sqrt{210}}{147}$	0	0	0	$-\frac{\sqrt{70}}{147}$	0	
	0	0	$-\frac{\sqrt{21}}{98}$	0	0	0	0	0	0	$\frac{10\sqrt{7}}{147}$	0	0	0	$-\frac{2\sqrt{5}}{21}$	
	0	0	0	$-\frac{\sqrt{105}}{98}$	0	0	0	0	0	0	$\frac{4\sqrt{35}}{147}$	0	0	0	
	0	$-\frac{2\sqrt{5}}{21}$	0	0	0	0	0	0	$-\frac{5\sqrt{2}}{28}$	0	0	0	0	0	
	0	0	$-\frac{\sqrt{70}}{147}$	0	0	0	0	0	0	$-\frac{3\sqrt{210}}{196}$	0	0	0	0	
	0	0	0	$\frac{\sqrt{210}}{147}$	0	0	$-\frac{5\sqrt{2}}{28}$	0	0	0	$-\frac{\sqrt{70}}{98}$	0	0	0	
	$\frac{4\sqrt{35}}{147}$	0	0	0	$\frac{10\sqrt{7}}{147}$	0	0	$-\frac{3\sqrt{210}}{196}$	0	0	0	$\frac{\sqrt{70}}{98}$	0	0	
	0	$\frac{10\sqrt{7}}{147}$	0	0	0	$\frac{4\sqrt{35}}{147}$	0	0	$-\frac{\sqrt{70}}{98}$	0	0	0	$\frac{3\sqrt{210}}{196}$	0	
	0	0	$\frac{\sqrt{210}}{147}$	0	0	0	0	0	0	$\frac{\sqrt{70}}{98}$	0	0	0	$\frac{5\sqrt{2}}{28}$	
	0	0	0	$-\frac{\sqrt{70}}{147}$	0	0	0	0	0	0	$\frac{3\sqrt{210}}{196}$	0	0	0	
	0	0	0	0	$-\frac{2\sqrt{5}}{21}$	0	0	0	0	0	0	$\frac{5\sqrt{2}}{28}$	0	0	
978	symmetry	$\frac{z\left(15x^4+30x^2y^2-40x^2z^2+15y^4-40y^2z^2+8z^4\right)}{8}$													

*continued ...*

Table 10

No.	multipole	matrix													
$M_5^{(1,-1;a)}(A_g)$		$-\frac{\sqrt{385}}{3234}$	0	0	0	0	0	0	$-\frac{\sqrt{2310}}{539}$	0	0	0	0	0	0
		0	$\frac{5\sqrt{385}}{3234}$	0	0	0	0	0	0	$\frac{9\sqrt{154}}{539}$	0	0	0	0	0
		0	0	$-\frac{5\sqrt{385}}{1617}$	0	0	0	0	0	0	$-\frac{2\sqrt{1155}}{539}$	0	0	0	0
		0	0	0	$\frac{5\sqrt{385}}{1617}$	0	0	0	0	0	0	$-\frac{2\sqrt{1155}}{539}$	0	0	0
		0	0	0	0	$-\frac{5\sqrt{385}}{3234}$	0	0	0	0	0	0	$\frac{9\sqrt{154}}{539}$	0	0
		0	0	0	0	0	$\frac{\sqrt{385}}{3234}$	0	0	0	0	0	0	$-\frac{\sqrt{2310}}{539}$	0
		0	0	0	0	0	0	$\frac{\sqrt{385}}{154}$	0	0	0	0	0	0	0
		$-\frac{\sqrt{2310}}{539}$	0	0	0	0	0	0	$-\frac{23\sqrt{385}}{1078}$	0	0	0	0	0	0
		0	$\frac{9\sqrt{154}}{539}$	0	0	0	0	0	0	$\frac{17\sqrt{385}}{1078}$	0	0	0	0	0
		0	0	$-\frac{2\sqrt{1155}}{539}$	0	0	0	0	0	0	$\frac{15\sqrt{385}}{1078}$	0	0	0	0
		0	0	0	$-\frac{2\sqrt{1155}}{539}$	0	0	0	0	0	0	$-\frac{15\sqrt{385}}{1078}$	0	0	0
		0	0	0	0	$\frac{9\sqrt{154}}{539}$	0	0	0	0	0	0	$-\frac{17\sqrt{385}}{1078}$	0	0
		0	0	0	0	0	$-\frac{\sqrt{2310}}{539}$	0	0	0	0	0	0	$\frac{23\sqrt{385}}{1078}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{385}}{154}$
979	symmetry	$-\frac{\sqrt{70}y(3x^2-y^2)(x^2+y^2-8z^2)}{16}$													

continued ...

Table 10

No.	multipole	matrix													
$\mathbb{M}_5^{(1,-1;a)}(B_g, 1)$		0	0	0	$\frac{\sqrt{55}i}{231}$	0	0	0	0	0	0	$\frac{\sqrt{165}i}{77}$	0	0	0
		0	0	0	0	$-\frac{5\sqrt{22}i}{462}$	0	0	0	0	0	0	$-\frac{3\sqrt{55}i}{385}$	0	0
		0	0	0	0	0	$\frac{\sqrt{55}i}{231}$	$\frac{\sqrt{2310}i}{385}$	0	0	0	0	0	$-\frac{3\sqrt{330}i}{385}$	0
		$-\frac{\sqrt{55}i}{231}$	0	0	0	0	0	0	$-\frac{3\sqrt{330}i}{385}$	0	0	0	0	0	$\frac{\sqrt{2310}i}{385}$
		0	$\frac{5\sqrt{22}i}{462}$	0	0	0	0	0	0	$-\frac{3\sqrt{55}i}{385}$	0	0	0	0	0
		0	0	$-\frac{\sqrt{55}i}{231}$	0	0	0	0	0	0	$\frac{\sqrt{165}i}{77}$	0	0	0	0
		0	0	$-\frac{\sqrt{2310}i}{385}$	0	0	0	0	0	0	$-\frac{\sqrt{770}i}{77}$	0	0	0	0
		0	0	0	$\frac{3\sqrt{330}i}{385}$	0	0	0	0	0	0	$\frac{\sqrt{110}i}{154}$	0	0	0
		0	0	0	0	$\frac{3\sqrt{55}i}{385}$	0	0	0	0	0	0	$\frac{5\sqrt{22}i}{77}$	0	0
		0	0	0	0	0	$-\frac{\sqrt{165}i}{77}$	$\frac{\sqrt{770}i}{77}$	0	0	0	0	0	$\frac{\sqrt{110}i}{154}$	0
		$-\frac{\sqrt{165}i}{77}$	0	0	0	0	0	0	$-\frac{\sqrt{110}i}{154}$	0	0	0	0	0	$-\frac{\sqrt{770}i}{77}$
		0	$\frac{3\sqrt{55}i}{385}$	0	0	0	0	0	0	$-\frac{5\sqrt{22}i}{77}$	0	0	0	0	0
		0	0	$\frac{3\sqrt{330}i}{385}$	0	0	0	0	0	0	$-\frac{\sqrt{110}i}{154}$	0	0	0	0
		0	0	0	$-\frac{\sqrt{2310}i}{385}$	0	0	0	0	0	0	$\frac{\sqrt{770}i}{77}$	0	0	0
980	symmetry	$-\frac{\sqrt{70}x(x^2-3y^2)(x^2+y^2-8z^2)}{16}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{M}_5^{(1,-1;a)}(B_g, 2)$		0	0	0	$-\frac{\sqrt{55}}{231}$	0	0	0	0	0	0	$-\frac{\sqrt{165}}{77}$	0	0	0
		0	0	0	0	$\frac{5\sqrt{22}}{462}$	0	0	0	0	0	0	$\frac{3\sqrt{55}}{385}$	0	0
		0	0	0	0	0	$-\frac{\sqrt{55}}{231}$	$\frac{\sqrt{2310}}{385}$	0	0	0	0	0	$\frac{3\sqrt{330}}{385}$	0
		$-\frac{\sqrt{55}}{231}$	0	0	0	0	0	0	$-\frac{3\sqrt{330}}{385}$	0	0	0	0	0	$-\frac{\sqrt{2310}}{385}$
		0	$\frac{5\sqrt{22}}{462}$	0	0	0	0	0	0	$-\frac{3\sqrt{55}}{385}$	0	0	0	0	0
		0	0	$-\frac{\sqrt{55}}{231}$	0	0	0	0	0	0	$\frac{\sqrt{165}}{77}$	0	0	0	0
		0	0	$\frac{\sqrt{2310}}{385}$	0	0	0	0	0	0	$\frac{\sqrt{770}}{77}$	0	0	0	0
		0	0	0	$-\frac{3\sqrt{330}}{385}$	0	0	0	0	0	0	$-\frac{\sqrt{110}}{154}$	0	0	0
		0	0	0	0	$-\frac{3\sqrt{55}}{385}$	0	0	0	0	0	0	$-\frac{5\sqrt{22}}{77}$	0	0
		0	0	0	0	0	$\frac{\sqrt{165}}{77}$	$\frac{\sqrt{770}}{77}$	0	0	0	0	0	$-\frac{\sqrt{110}}{154}$	0
		$-\frac{\sqrt{165}}{77}$	0	0	0	0	0	0	$-\frac{\sqrt{110}}{154}$	0	0	0	0	0	$\frac{\sqrt{770}}{77}$
		0	$\frac{3\sqrt{55}}{385}$	0	0	0	0	0	0	$-\frac{5\sqrt{22}}{77}$	0	0	0	0	0
		0	0	$\frac{3\sqrt{330}}{385}$	0	0	0	0	0	0	$-\frac{\sqrt{110}}{154}$	0	0	0	0
		0	0	0	$-\frac{\sqrt{2310}}{385}$	0	0	0	0	0	0	$\frac{\sqrt{770}}{77}$	0	0	0
981	symmetry	$\frac{3\sqrt{14}x(x^4-10x^2y^2+5y^4)}{16}$													

*continued ...*

Table 10

No.	multipole	matrix													
982	$M_{5,1}^{(1,-1;a)}(E_{1g}, 1)$	0	0	0	0	0	$-\frac{\sqrt{110}}{154}$	0	0	0	0	0	0	$-\frac{\sqrt{165}}{77}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{231}}{77}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	$\frac{\sqrt{231}}{77}$	0	0	0	0	0	0	0
		$-\frac{\sqrt{110}}{154}$	0	0	0	0	0	0	$\frac{\sqrt{165}}{77}$	0	0	0	0	0	0
		0	0	0	0	$\frac{\sqrt{231}}{77}$	0	0	0	0	0	$\frac{\sqrt{2310}}{154}$	0	0	0
		0	0	0	0	0	$\frac{\sqrt{165}}{77}$	0	0	0	0	0	$\frac{3\sqrt{110}}{77}$	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{2310}}{154}$	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	$\frac{\sqrt{2310}}{154}$	0	0	0	0	0	0	0
		$-\frac{\sqrt{165}}{77}$	0	0	0	0	0	0	$\frac{3\sqrt{110}}{77}$	0	0	0	0	0	0
		0	$-\frac{\sqrt{231}}{77}$	0	0	0	0	0	0	$\frac{\sqrt{2310}}{154}$	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												
$M_{5,2}^{(1,-1;a)}(E_{1g},1)$		0	0	0	0	0	$-\frac{\sqrt{110}i}{154}$	0	0	0	0	0	$-\frac{\sqrt{165}i}{77}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{231}i}{77}$
		0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{231}i}{77}$	0	0	0	0	0	0
		$\frac{\sqrt{110}i}{154}$	0	0	0	0	0	0	$-\frac{\sqrt{165}i}{77}$	0	0	0	0	0
		0	0	0	0	$\frac{\sqrt{231}i}{77}$	0	0	0	0	0	$\frac{\sqrt{2310}i}{154}$	0	0
		0	0	0	0	0	$\frac{\sqrt{165}i}{77}$	0	0	0	0	0	$\frac{3\sqrt{110}i}{77}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{2310}i}{154}$
		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	$-\frac{\sqrt{2310}i}{154}$	0	0	0	0	0	0
		$\frac{\sqrt{165}i}{77}$	0	0	0	0	0	0	$-\frac{3\sqrt{110}i}{77}$	0	0	0	0	0
		0	$\frac{\sqrt{231}i}{77}$	0	0	0	0	0	0	$-\frac{\sqrt{2310}i}{154}$	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													
984	$M_{5,1}^{(1,-1;a)}(E_{1g}, 2)$	0	$-\frac{\sqrt{1155}}{3234}$	0	0	0	0	$\frac{\sqrt{22}}{154}$	0	$-\frac{5\sqrt{462}}{1078}$	0	0	0	0	0
		$-\frac{\sqrt{1155}}{3234}$	0	$\frac{5\sqrt{462}}{3234}$	0	0	0	0	$-\frac{23\sqrt{770}}{5390}$	0	$\frac{13\sqrt{154}}{1078}$	0	0	0	0
		0	$\frac{5\sqrt{462}}{3234}$	0	$-\frac{5\sqrt{231}}{1617}$	0	0	0	0	$\frac{\sqrt{1155}}{245}$	0	$-\frac{\sqrt{77}}{539}$	0	0	0
		0	0	$-\frac{5\sqrt{231}}{1617}$	0	$\frac{5\sqrt{462}}{3234}$	0	0	0	0	$\frac{\sqrt{77}}{539}$	0	$-\frac{\sqrt{1155}}{245}$	0	0
		0	0	0	$\frac{5\sqrt{462}}{3234}$	0	$-\frac{\sqrt{1155}}{3234}$	0	0	0	0	$-\frac{13\sqrt{154}}{1078}$	0	$\frac{23\sqrt{770}}{5390}$	0
		0	0	0	0	$-\frac{\sqrt{1155}}{3234}$	0	0	0	0	0	0	$\frac{5\sqrt{462}}{1078}$	0	$-\frac{\sqrt{22}}{154}$
		$\frac{\sqrt{22}}{154}$	0	0	0	0	0	0	$\frac{5\sqrt{33}}{154}$	0	0	0	0	0	0
		0	$-\frac{23\sqrt{770}}{5390}$	0	0	0	0	$\frac{5\sqrt{33}}{154}$	0	$-\frac{20\sqrt{77}}{539}$	0	0	0	0	0
		$-\frac{5\sqrt{462}}{1078}$	0	$\frac{\sqrt{1155}}{245}$	0	0	0	0	$-\frac{20\sqrt{77}}{539}$	0	$\frac{\sqrt{385}}{1078}$	0	0	0	0
		0	$\frac{13\sqrt{154}}{1078}$	0	$\frac{\sqrt{77}}{539}$	0	0	0	0	$\frac{\sqrt{385}}{1078}$	0	$\frac{10\sqrt{231}}{539}$	0	0	0
		0	0	$-\frac{\sqrt{77}}{539}$	0	$-\frac{13\sqrt{154}}{1078}$	0	0	0	0	$\frac{10\sqrt{231}}{539}$	0	$\frac{\sqrt{385}}{1078}$	0	0
		0	0	0	$-\frac{\sqrt{1155}}{245}$	0	$\frac{5\sqrt{462}}{1078}$	0	0	0	0	$\frac{\sqrt{385}}{1078}$	0	$-\frac{20\sqrt{77}}{539}$	0
		0	0	0	0	$\frac{23\sqrt{770}}{5390}$	0	0	0	0	0	0	$-\frac{20\sqrt{77}}{539}$	0	$\frac{5\sqrt{33}}{154}$
		0	0	0	0	0	$-\frac{\sqrt{22}}{154}$	0	0	0	0	0	0	$\frac{5\sqrt{33}}{154}$	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													
$M_{5,2}^{(1,-1;a)}(E_{1g}, 2)$		0	$\frac{\sqrt{1155}i}{3234}$	0	0	0	0	$\frac{\sqrt{22}i}{154}$	0	$\frac{5\sqrt{462}i}{1078}$	0	0	0	0	0
		$-\frac{\sqrt{1155}i}{3234}$	0	$-\frac{5\sqrt{462}i}{3234}$	0	0	0	0	$-\frac{23\sqrt{770}i}{5390}$	0	$-\frac{13\sqrt{154}i}{1078}$	0	0	0	0
		0	$\frac{5\sqrt{462}i}{3234}$	0	$\frac{5\sqrt{231}i}{1617}$	0	0	0	0	$\frac{\sqrt{1155}i}{245}$	0	$\frac{\sqrt{77}i}{539}$	0	0	0
		0	0	$-\frac{5\sqrt{231}i}{1617}$	0	$-\frac{5\sqrt{462}i}{3234}$	0	0	0	0	$\frac{\sqrt{77}i}{539}$	0	$\frac{\sqrt{1155}i}{245}$	0	0
		0	0	0	$\frac{5\sqrt{462}i}{3234}$	0	$\frac{\sqrt{1155}i}{3234}$	0	0	0	0	$-\frac{13\sqrt{154}i}{1078}$	0	$-\frac{23\sqrt{770}i}{5390}$	0
		0	0	0	0	$-\frac{\sqrt{1155}i}{3234}$	0	0	0	0	0	0	$\frac{5\sqrt{462}i}{1078}$	0	$\frac{\sqrt{22}i}{154}$
		$-\frac{\sqrt{22}i}{154}$	0	0	0	0	0	0	$-\frac{5\sqrt{33}i}{154}$	0	0	0	0	0	0
		0	$\frac{23\sqrt{770}i}{5390}$	0	0	0	0	$\frac{5\sqrt{33}i}{154}$	0	$\frac{20\sqrt{77}i}{539}$	0	0	0	0	0
		$-\frac{5\sqrt{462}i}{1078}$	0	$-\frac{\sqrt{1155}i}{245}$	0	0	0	0	$-\frac{20\sqrt{77}i}{539}$	0	$-\frac{\sqrt{385}i}{1078}$	0	0	0	0
		0	$\frac{13\sqrt{154}i}{1078}$	0	$-\frac{\sqrt{77}i}{539}$	0	0	0	0	$\frac{\sqrt{385}i}{1078}$	0	$-\frac{10\sqrt{231}i}{539}$	0	0	0
		0	0	$-\frac{\sqrt{77}i}{539}$	0	$\frac{13\sqrt{154}i}{1078}$	0	0	0	0	$\frac{10\sqrt{231}i}{539}$	0	$-\frac{\sqrt{385}i}{1078}$	0	0
		0	0	0	$-\frac{\sqrt{1155}i}{245}$	0	$-\frac{5\sqrt{462}i}{1078}$	0	0	0	0	$\frac{\sqrt{385}i}{1078}$	0	$\frac{20\sqrt{77}i}{539}$	0
		0	0	0	0	$\frac{23\sqrt{770}i}{5390}$	0	0	0	0	0	$-\frac{20\sqrt{77}i}{539}$	0	$-\frac{5\sqrt{33}i}{154}$	0
		0	0	0	0	$-\frac{\sqrt{22}i}{154}$	0	0	0	0	0	0	0	$\frac{5\sqrt{33}i}{154}$	0
985	symmetry	$-\frac{3\sqrt{35}xyz(x-y)(x+y)}{2}$													

continued ...

Table 10

No.	multipole	matrix													
$\mathbb{M}_{5,1}^{(1,-1;a)}(E_{2g},1)$	0	0	0	0	$-\frac{\sqrt{55}i}{154}$	0	0	0	0	0	0	$-\frac{3\sqrt{22}i}{77}$	0	0	
	0	0	0	0	0	$\frac{\sqrt{55}i}{154}$	0	0	0	0	0	0	$-\frac{\sqrt{330}i}{385}$	0	
	0	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{2\sqrt{1155}i}{385}$	
	0	0	0	0	0	0	$-\frac{2\sqrt{1155}i}{385}$	0	0	0	0	0	0	0	
	$\frac{\sqrt{55}i}{154}$	0	0	0	0	0	0	$\frac{\sqrt{330}i}{385}$	0	0	0	0	0	0	
	0	$-\frac{\sqrt{55}i}{154}$	0	0	0	0	0	0	$\frac{3\sqrt{22}i}{77}$	0	0	0	0	0	
	0	0	0	$\frac{2\sqrt{1155}i}{385}$	0	0	0	0	0	$\frac{3\sqrt{385}i}{154}$	0	0	0	0	
	0	0	0	0	$-\frac{\sqrt{330}i}{385}$	0	0	0	0	0	0	$\frac{5\sqrt{33}i}{154}$	0	0	
	0	0	0	0	0	$-\frac{3\sqrt{22}i}{77}$	0	0	0	0	0	0	$-\frac{5\sqrt{33}i}{154}$	0	
	0	0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{3\sqrt{385}i}{154}$	
	0	0	0	0	0	0	$-\frac{3\sqrt{385}i}{154}$	0	0	0	0	0	0	0	
	$\frac{3\sqrt{22}i}{77}$	0	0	0	0	0	0	$-\frac{5\sqrt{33}i}{154}$	0	0	0	0	0	0	
	0	$\frac{\sqrt{330}i}{385}$	0	0	0	0	0	0	$\frac{5\sqrt{33}i}{154}$	0	0	0	0	0	
	0	0	$-\frac{2\sqrt{1155}i}{385}$	0	0	0	0	0	0	$\frac{3\sqrt{385}i}{154}$	0	0	0	0	
986	symmetry	$\frac{3\sqrt{35}z\left(x^2-2xy-y^2\right)\left(x^2+2xy-y^2\right)}{8}$													

continued ...

Table 10

No.	multipole	matrix													
$M_{5,2}^{(1,-1;a)}(E_{2g},1)$		0	0	0	0	$-\frac{\sqrt{55}}{154}$	0	0	0	0	0	$-\frac{3\sqrt{22}}{77}$	0	0	
		0	0	0	0	0	$\frac{\sqrt{55}}{154}$	0	0	0	0	0	$-\frac{\sqrt{330}}{385}$	0	
		0	0	0	0	0	0	0	0	0	0	0	0	$\frac{2\sqrt{1155}}{385}$	
		0	0	0	0	0	0	$\frac{2\sqrt{1155}}{385}$	0	0	0	0	0	0	
		$-\frac{\sqrt{55}}{154}$	0	0	0	0	0	0	$-\frac{\sqrt{330}}{385}$	0	0	0	0	0	
		0	$\frac{\sqrt{55}}{154}$	0	0	0	0	0	0	$-\frac{3\sqrt{22}}{77}$	0	0	0	0	
		0	0	0	$\frac{2\sqrt{1155}}{385}$	0	0	0	0	0	$\frac{3\sqrt{385}}{154}$	0	0	0	
		0	0	0	0	$-\frac{\sqrt{330}}{385}$	0	0	0	0	0	$\frac{5\sqrt{33}}{154}$	0	0	
		0	0	0	0	0	$-\frac{3\sqrt{22}}{77}$	0	0	0	0	0	$-\frac{5\sqrt{33}}{154}$	0	
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{3\sqrt{385}}{154}$	
		0	0	0	0	0	0	$\frac{3\sqrt{385}}{154}$	0	0	0	0	0	0	
		$-\frac{3\sqrt{22}}{77}$	0	0	0	0	0	0	$\frac{5\sqrt{33}}{154}$	0	0	0	0	0	
		0	$-\frac{\sqrt{330}}{385}$	0	0	0	0	0	0	$-\frac{5\sqrt{33}}{154}$	0	0	0	0	
		0	0	$\frac{2\sqrt{1155}}{385}$	0	0	0	0	0	0	$-\frac{3\sqrt{385}}{154}$	0	0	0	
987	symmetry	$-\frac{\sqrt{105}xyz(x^2+y^2-2z^2)}{2}$													

continued ...

Table 10

No.	multipole	matrix													
$M_{5,1}^{(1,-1;a)}(E_{2g},2)$		0	0	$\frac{\sqrt{330}i}{924}$	0	0	0	0	0	$\frac{\sqrt{110}i}{77}$	0	0	0	0	
		0	0	0	$-\frac{5\sqrt{66}i}{924}$	0	0	$\frac{\sqrt{770}i}{385}$	0	0	$-\frac{2\sqrt{22}i}{77}$	0	0	0	
	$-\frac{\sqrt{330}i}{924}$	0	0	0	$\frac{5\sqrt{66}i}{924}$	0	0	$-\frac{8\sqrt{55}i}{385}$	0	0	0	$-\frac{2\sqrt{165}i}{385}$	0	0	
	0	$\frac{5\sqrt{66}i}{924}$	0	0	0	$-\frac{\sqrt{330}i}{924}$	0	0	$\frac{2\sqrt{165}i}{385}$	0	0	0	$\frac{8\sqrt{55}i}{385}$	0	
	0	0	$-\frac{5\sqrt{66}i}{924}$	0	0	0	0	0	$\frac{2\sqrt{22}i}{77}$	0	0	0	0	$-\frac{\sqrt{770}i}{385}$	
	0	0	0	$\frac{\sqrt{330}i}{924}$	0	0	0	0	0	$-\frac{\sqrt{110}i}{77}$	0	0	0	0	
	0	$-\frac{\sqrt{770}i}{385}$	0	0	0	0	0	0	$-\frac{5\sqrt{77}i}{154}$	0	0	0	0	0	
	0	0	$\frac{8\sqrt{55}i}{385}$	0	0	0	0	0	0	$\frac{3\sqrt{165}i}{154}$	0	0	0	0	
	0	0	0	$-\frac{2\sqrt{165}i}{385}$	0	0	$\frac{5\sqrt{77}i}{154}$	0	0	0	$\frac{2\sqrt{55}i}{77}$	0	0	0	
	$-\frac{\sqrt{110}i}{77}$	0	0	0	$-\frac{2\sqrt{22}i}{77}$	0	0	$-\frac{3\sqrt{165}i}{154}$	0	0	0	$-\frac{2\sqrt{55}i}{77}$	0	0	
	0	$\frac{2\sqrt{22}i}{77}$	0	0	0	$\frac{\sqrt{110}i}{77}$	0	0	$-\frac{2\sqrt{55}i}{77}$	0	0	0	$-\frac{3\sqrt{165}i}{154}$	0	
	0	0	$\frac{2\sqrt{165}i}{385}$	0	0	0	0	0	0	$\frac{2\sqrt{55}i}{77}$	0	0	0	$\frac{5\sqrt{77}i}{154}$	
	0	0	0	$-\frac{8\sqrt{55}i}{385}$	0	0	0	0	0	0	$\frac{3\sqrt{165}i}{154}$	0	0	0	
	0	0	0	0	$\frac{\sqrt{770}i}{385}$	0	0	0	0	0	0	$-\frac{5\sqrt{77}i}{154}$	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													
$\mathbb{M}_{5,2}^{(1,-1;a)}(E_{2g},2)$		0	0	$-\frac{\sqrt{330}}{924}$	0	0	0	0	0	0	$-\frac{\sqrt{110}}{77}$	0	0	0	0
		0	0	0	$\frac{5\sqrt{66}}{924}$	0	0	$\frac{\sqrt{770}}{385}$	0	0	0	$\frac{2\sqrt{22}}{77}$	0	0	0
		$-\frac{\sqrt{330}}{924}$	0	0	0	$-\frac{5\sqrt{66}}{924}$	0	0	$-\frac{8\sqrt{55}}{385}$	0	0	0	$\frac{2\sqrt{165}}{385}$	0	0
		0	$\frac{5\sqrt{66}}{924}$	0	0	0	$\frac{\sqrt{330}}{924}$	0	0	$\frac{2\sqrt{165}}{385}$	0	0	0	$-\frac{8\sqrt{55}}{385}$	0
		0	0	$-\frac{5\sqrt{66}}{924}$	0	0	0	0	0	0	$\frac{2\sqrt{22}}{77}$	0	0	0	$\frac{\sqrt{770}}{385}$
		0	0	0	$\frac{\sqrt{330}}{924}$	0	0	0	0	0	0	$-\frac{\sqrt{110}}{77}$	0	0	0
		0	$\frac{\sqrt{770}}{385}$	0	0	0	0	0	0	$\frac{5\sqrt{77}}{154}$	0	0	0	0	0
		0	0	$-\frac{8\sqrt{55}}{385}$	0	0	0	0	0	0	$-\frac{3\sqrt{165}}{154}$	0	0	0	0
		0	0	0	$\frac{2\sqrt{165}}{385}$	0	0	$\frac{5\sqrt{77}}{154}$	0	0	0	$-\frac{2\sqrt{55}}{77}$	0	0	0
		$-\frac{\sqrt{110}}{77}$	0	0	0	$\frac{2\sqrt{22}}{77}$	0	0	$-\frac{3\sqrt{165}}{154}$	0	0	0	$\frac{2\sqrt{55}}{77}$	0	0
		0	$\frac{2\sqrt{22}}{77}$	0	0	0	$-\frac{\sqrt{110}}{77}$	0	0	$-\frac{2\sqrt{55}}{77}$	0	0	0	$\frac{3\sqrt{165}}{154}$	0
		0	0	$\frac{2\sqrt{165}}{385}$	0	0	0	0	0	0	$\frac{2\sqrt{55}}{77}$	0	0	0	$-\frac{5\sqrt{77}}{154}$
		0	0	0	$-\frac{8\sqrt{55}}{385}$	0	0	0	0	0	0	$\frac{3\sqrt{165}}{154}$	0	0	0
		0	0	0	0	$\frac{\sqrt{770}}{385}$	0	0	0	0	0	0	$-\frac{5\sqrt{77}}{154}$	0	0
989	symmetry	$\frac{\sqrt{6006}xyz(x^2-3y^2)(3x^2-y^2)}{16}$													

*continued ...*

Table 10

No.	multipole	matrix															
$\mathbb{M}_7^{(1,-1;a)}(A_g, 1)$		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	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	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	$-\frac{i}{2}$	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	
990	symmetry	$-\frac{z(35x^6+105x^4y^2-210x^4z^2+105x^2y^4-420x^2y^2z^2+168x^2z^4+35y^6-210y^4z^2+168y^2z^4-16z^6)}{16}$															

*continued ...*



Table 10

No.	multipole	matrix													
$\mathbb{M}_7^{(1,-1;a)}(A_g, 2)$		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
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{858}}{1716}$	0	0	0	0	0	0	0
		0	0	0	0	0	0	$\frac{7\sqrt{858}}{1716}$	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	$-\frac{7\sqrt{858}}{572}$	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	$\frac{35\sqrt{858}}{1716}$	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{35\sqrt{858}}{1716}$	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	$\frac{7\sqrt{858}}{572}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{7\sqrt{858}}{1716}$	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{858}}{1716}$	0
991	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															
$\mathbb{M}_7^{(1,-1;a)}(A_g,3)$		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	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{1}{2}$	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	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	$-\frac{1}{2}$	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	0	0
992	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													
$\mathbb{M}_7^{(1,-1;a)}(B_g, 1)$		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{1430}i}{286}$	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{10010}i}{286}$	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	$\frac{3\sqrt{2002}i}{286}$	0	0	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{1430}i}{286}$	0	0	0	0	$-\frac{\sqrt{10010}i}{286}$	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{10010}i}{286}$	0	0	0	0	0	$\frac{\sqrt{1430}i}{286}$
		0	0	0	0	0	0	0	$-\frac{3\sqrt{2002}i}{286}$	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{10010}i}{286}$	0	0	0	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{1430}i}{286}$	0	0	0	0	0
993	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														
$\mathbb{M}_7^{(1,-1;a)}(B_g, 2)$		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	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{1430}}{286}$	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{10010}}{286}$	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	$-\frac{3\sqrt{2002}}{286}$	0	0	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{1430}}{286}$	0	0	0	0	0	$\frac{\sqrt{10010}}{286}$	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{10010}}{286}$	0	0	0	0	0	0	$-\frac{\sqrt{1430}}{286}$
		0	0	0	0	0	0	0	0	$-\frac{3\sqrt{2002}}{286}$	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{10010}}{286}$	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{1430}}{286}$	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													
$\mathbb{M}_{7,1}^{(1,-1;a)}(E_{1g},1)$		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{2}}{2}$
		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	0	0	0	0	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{2}}{2}$	0	0	0	0	0	0	0
995	symmetry	$\frac{\sqrt{429}y(7x^6-35x^4y^2+21x^2y^4-y^6)}{32}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{M}_{7,2}^{(1,-1;a)}(E_{1g},1)$		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{2}i}{2}$	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	0	0	0	0	0	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{2}i}{2}$	0	0	0	0	0	0	0
996	symmetry	$-\frac{\sqrt{231}x(x^2+y^2-12z^2)(x^4-10x^2y^2+5y^4)}{32}$													

*continued ...*

Table 10

No.	multipole	matrix														
$\mathbb{M}_{7,1}^{(1,-1;a)}(E_{1g},2)$		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	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{78}}{26}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{182}}{26}$	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{78}}{26}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{78}}{26}$	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{182}}{26}$	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{78}}{26}$	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														
$M_{7,2}^{(1,-1;a)}(E_{1g}, 2)$		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	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{78}i}{26}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{182}i}{26}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{78}i}{26}$	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	$\frac{\sqrt{78}i}{26}$	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{182}i}{26}$	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{78}i}{26}$	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													
$M_{7,1}^{(1,-1;a)}(E_{1g}, 3)$		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
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{858}}{858}$	0	0	0	0	0	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{858}}{858}$	$\frac{\sqrt{2002}}{286}$	0	0	0	0	0	0
		0	0	0	0	0	0	$\frac{\sqrt{2002}}{286}$	0	$-\frac{\sqrt{10010}}{286}$	0	0	0	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{10010}}{286}$	0	$\frac{5\sqrt{6006}}{858}$	0	0	0	0
		0	0	0	0	0	0	0	0	$\frac{5\sqrt{6006}}{858}$	0	$-\frac{\sqrt{10010}}{286}$	0	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{10010}}{286}$	0	0	$\frac{\sqrt{2002}}{286}$	0	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{2002}}{286}$	0	0	$-\frac{\sqrt{858}}{858}$	0
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{858}}{858}$	0	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													
$M_{7,2}^{(1,-1;a)}(E_{1g}, 3)$		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
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	$\frac{\sqrt{858}i}{858}$	0	0	0	0	0	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{858}i}{858}$	$-\frac{\sqrt{2002}i}{286}$	0	0	0	0	0	0
		0	0	0	0	0	0	$\frac{\sqrt{2002}i}{286}$	0	$\frac{\sqrt{10010}i}{286}$	0	0	0	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{10010}i}{286}$	0	$-\frac{5\sqrt{6006}i}{858}$	0	0	0	0
		0	0	0	0	0	0	0	0	$\frac{5\sqrt{6006}i}{858}$	0	$\frac{\sqrt{10010}i}{286}$	0	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{10010}i}{286}$	0	$-\frac{\sqrt{2002}i}{286}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{2002}i}{286}$	0	$\frac{\sqrt{858}i}{858}$	0
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{858}i}{858}$	0	0
1000	symmetry	$\frac{\sqrt{231}xyz(x-y)(x+y)(3x^2+3y^2-10z^2)}{4}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{M}_{7,1}^{(1,-1;a)}(E_{2g},1)$		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{130}i}{52}$	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{546}i}{52}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{546}i}{52}$	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{130}i}{52}$	0
		0	0	0	0	0	0	$\frac{\sqrt{130}i}{52}$	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{546}i}{52}$	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{546}i}{52}$	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{130}i}{52}$	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														
$\mathbb{M}_{7,2}^{(1,-1;a)}(E_{2g},1)$		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{130}}{52}$	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{546}}{52}$	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{546}}{52}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{130}}{52}$	0
		0	0	0	0	0	0	$-\frac{\sqrt{130}}{52}$	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{546}}{52}$	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{546}}{52}$	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{130}}{52}$	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														
$M_{7,1}^{(1,-1;a)}(E_{2g}, 2)$		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	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{429}i}{286}$	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{5005}i}{286}$	0	0	0	0	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{429}i}{286}$	0	0	0	$\frac{\sqrt{15015}i}{286}$	0	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{5005}i}{286}$	0	0	0	$-\frac{\sqrt{15015}i}{286}$	0	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{15015}i}{286}$	0	0	0	$\frac{\sqrt{5005}i}{286}$	0	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{15015}i}{286}$	0	0	0	$-\frac{\sqrt{429}i}{286}$	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{5005}i}{286}$	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{429}i}{286}$	0	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													
$M_{7,2}^{(1,-1;a)}(E_{2g}, 2)$		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	0	0	0	0	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{429}}{286}$	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{5005}}{286}$	0	0	0	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{429}}{286}$	0	0	0	$-\frac{\sqrt{15015}}{286}$	0	0	0
		0	0	0	0	0	0	$\frac{\sqrt{5005}}{286}$	0	0	0	$\frac{\sqrt{15015}}{286}$	0	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{15015}}{286}$	0	0	0	$-\frac{\sqrt{5005}}{286}$	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{15015}}{286}$	0	0	0	$\frac{\sqrt{429}}{286}$	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{5005}}{286}$	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{429}}{286}$	0	0	0	0
1004	symmetry	$z$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{M}_1^{(1,1;a)}(A_g)$		$\frac{2\sqrt{105}}{49}$	0	0	0	0	0	0	$-\frac{3\sqrt{70}}{196}$	0	0	0	0	0	0
		0	$\frac{6\sqrt{105}}{245}$	0	0	0	0	0	0	$-\frac{5\sqrt{42}}{196}$	0	0	0	0	0
		0	0	$\frac{2\sqrt{105}}{245}$	0	0	0	0	0	0	$-\frac{3\sqrt{35}}{98}$	0	0	0	0
		0	0	0	$-\frac{2\sqrt{105}}{245}$	0	0	0	0	0	0	$-\frac{3\sqrt{35}}{98}$	0	0	0
		0	0	0	0	$-\frac{6\sqrt{105}}{245}$	0	0	0	0	0	0	$-\frac{5\sqrt{42}}{196}$	0	0
		0	0	0	0	0	$-\frac{2\sqrt{105}}{49}$	0	0	0	0	0	0	$-\frac{3\sqrt{70}}{196}$	0
		0	0	0	0	0	0	$-\frac{\sqrt{105}}{42}$	0	0	0	0	0	0	0
		$-\frac{3\sqrt{70}}{196}$	0	0	0	0	0	0	$-\frac{5\sqrt{105}}{294}$	0	0	0	0	0	0
		0	$-\frac{5\sqrt{42}}{196}$	0	0	0	0	0	0	$-\frac{\sqrt{105}}{98}$	0	0	0	0	0
		0	0	$-\frac{3\sqrt{35}}{98}$	0	0	0	0	0	0	$-\frac{\sqrt{105}}{294}$	0	0	0	0
		0	0	0	$-\frac{3\sqrt{35}}{98}$	0	0	0	0	0	0	$\frac{\sqrt{105}}{294}$	0	0	0
		0	0	0	0	$-\frac{5\sqrt{42}}{196}$	0	0	0	0	0	0	$\frac{\sqrt{105}}{98}$	0	0
		0	0	0	0	0	$-\frac{3\sqrt{70}}{196}$	0	0	0	0	0	0	$\frac{5\sqrt{105}}{294}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{105}}{42}$
1005	symmetry	$x$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{M}_{1,1}^{(1,1;a)}(E_{1g})$		0	$\frac{2\sqrt{21}}{49}$	0	0	0	0	$\frac{3\sqrt{10}}{56}$	0	$-\frac{\sqrt{210}}{392}$	0	0	0	0	0
		$\frac{2\sqrt{21}}{49}$	0	$\frac{4\sqrt{210}}{245}$	0	0	0	0	$\frac{15\sqrt{14}}{392}$	0	$-\frac{3\sqrt{70}}{392}$	0	0	0	0
		0	$\frac{4\sqrt{210}}{245}$	0	$\frac{6\sqrt{105}}{245}$	0	0	0	0	$\frac{5\sqrt{21}}{196}$	0	$-\frac{3\sqrt{35}}{196}$	0	0	0
		0	0	$\frac{6\sqrt{105}}{245}$	0	$\frac{4\sqrt{210}}{245}$	0	0	0	0	$\frac{3\sqrt{35}}{196}$	0	$-\frac{5\sqrt{21}}{196}$	0	0
		0	0	0	$\frac{4\sqrt{210}}{245}$	0	$\frac{2\sqrt{21}}{49}$	0	0	0	0	$\frac{3\sqrt{70}}{392}$	0	$-\frac{15\sqrt{14}}{392}$	0
		0	0	0	0	$\frac{2\sqrt{21}}{49}$	0	0	0	0	0	0	$\frac{\sqrt{210}}{392}$	0	$-\frac{3\sqrt{10}}{56}$
		$\frac{3\sqrt{10}}{56}$	0	0	0	0	0	0	$-\frac{\sqrt{15}}{42}$	0	0	0	0	0	0
		0	$\frac{15\sqrt{14}}{392}$	0	0	0	0	$-\frac{\sqrt{15}}{42}$	0	$-\frac{\sqrt{35}}{49}$	0	0	0	0	0
		$-\frac{\sqrt{210}}{392}$	0	$\frac{5\sqrt{21}}{196}$	0	0	0	0	$-\frac{\sqrt{35}}{49}$	0	$-\frac{5\sqrt{7}}{98}$	0	0	0	0
		0	$-\frac{3\sqrt{70}}{392}$	0	$\frac{3\sqrt{35}}{196}$	0	0	0	0	$-\frac{5\sqrt{7}}{98}$	0	$-\frac{2\sqrt{105}}{147}$	0	0	0
		0	0	$-\frac{3\sqrt{35}}{196}$	0	$\frac{3\sqrt{70}}{392}$	0	0	0	0	$-\frac{2\sqrt{105}}{147}$	0	$-\frac{5\sqrt{7}}{98}$	0	0
		0	0	0	$-\frac{5\sqrt{21}}{196}$	0	$\frac{\sqrt{210}}{392}$	0	0	0	0	$-\frac{5\sqrt{7}}{98}$	0	$-\frac{\sqrt{35}}{49}$	0
		0	0	0	0	$-\frac{15\sqrt{14}}{392}$	0	0	0	0	0	0	$-\frac{\sqrt{35}}{49}$	0	$-\frac{\sqrt{15}}{42}$
		0	0	0	0	0	$-\frac{3\sqrt{10}}{56}$	0	0	0	0	0	0	$-\frac{\sqrt{15}}{42}$	0
1006	symmetry	$y$													

*continued ...*



Table 10

No.	multipole	matrix													
$\mathbb{M}_{1,2}^{(1,1;a)}(E_{1g})$		0	$-\frac{2\sqrt{21}i}{49}$	0	0	0	0	$\frac{3\sqrt{10}i}{56}$	0	$\frac{\sqrt{210}i}{392}$	0	0	0	0	0
		$\frac{2\sqrt{21}i}{49}$	0	$-\frac{4\sqrt{210}i}{245}$	0	0	0	0	$\frac{15\sqrt{14}i}{392}$	0	$\frac{3\sqrt{70}i}{392}$	0	0	0	0
		0	$\frac{4\sqrt{210}i}{245}$	0	$-\frac{6\sqrt{105}i}{245}$	0	0	0	0	$\frac{5\sqrt{21}i}{196}$	0	$\frac{3\sqrt{35}i}{196}$	0	0	0
		0	0	$\frac{6\sqrt{105}i}{245}$	0	$-\frac{4\sqrt{210}i}{245}$	0	0	0	0	$\frac{3\sqrt{35}i}{196}$	0	$\frac{5\sqrt{21}i}{196}$	0	0
		0	0	0	$\frac{4\sqrt{210}i}{245}$	0	$-\frac{2\sqrt{21}i}{49}$	0	0	0	0	$\frac{3\sqrt{70}i}{392}$	0	$\frac{15\sqrt{14}i}{392}$	0
		0	0	0	0	$\frac{2\sqrt{21}i}{49}$	0	0	0	0	0	$\frac{\sqrt{210}i}{392}$	0	$\frac{3\sqrt{10}i}{56}$	
		$-\frac{3\sqrt{10}i}{56}$	0	0	0	0	0	0	$\frac{\sqrt{15}i}{42}$	0	0	0	0	0	0
		0	$-\frac{15\sqrt{14}i}{392}$	0	0	0	0	$-\frac{\sqrt{15}i}{42}$	0	$\frac{\sqrt{35}i}{49}$	0	0	0	0	0
		$-\frac{\sqrt{210}i}{392}$	0	$-\frac{5\sqrt{21}i}{196}$	0	0	0	$-\frac{\sqrt{35}i}{49}$	0	$\frac{5\sqrt{7}i}{98}$	0	0	0	0	0
		0	$-\frac{3\sqrt{70}i}{392}$	0	$-\frac{3\sqrt{35}i}{196}$	0	0	0	$-\frac{5\sqrt{7}i}{98}$	0	$\frac{2\sqrt{105}i}{147}$	0	0	0	0
		0	0	$-\frac{3\sqrt{35}i}{196}$	0	$-\frac{3\sqrt{70}i}{392}$	0	0	0	0	$-\frac{2\sqrt{105}i}{147}$	0	$\frac{5\sqrt{7}i}{98}$	0	0
		0	0	0	$-\frac{5\sqrt{21}i}{196}$	0	$-\frac{\sqrt{210}i}{392}$	0	0	0	0	$-\frac{5\sqrt{7}i}{98}$	0	$\frac{\sqrt{35}i}{49}$	0
		0	0	0	0	$-\frac{15\sqrt{14}i}{392}$	0	0	0	0	0	$-\frac{\sqrt{35}i}{49}$	0	$\frac{\sqrt{15}i}{42}$	
		0	0	0	0	0	$-\frac{3\sqrt{10}i}{56}$	0	0	0	0	0	$-\frac{\sqrt{15}i}{42}$	0	
1007	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$													

continued ...

Table 10

No.	multipole	matrix													
$\mathbb{M}_3^{(1,1;a)}(A_g)$		$-\frac{5\sqrt{77}}{147}$	0	0	0	0	0	0	$\frac{\sqrt{462}}{98}$	0	0	0	0	0	0
		0	$\frac{\sqrt{77}}{21}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	$\frac{4\sqrt{77}}{147}$	0	0	0	0	0	0	$-\frac{\sqrt{231}}{98}$	0	0	0	0
		0	0	0	$-\frac{4\sqrt{77}}{147}$	0	0	0	0	0	0	$-\frac{\sqrt{231}}{98}$	0	0	0
		0	0	0	0	$-\frac{\sqrt{77}}{21}$	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	$\frac{5\sqrt{77}}{147}$	0	0	0	0	0	0	$\frac{\sqrt{462}}{98}$	0
		0	0	0	0	0	0	$\frac{\sqrt{77}}{77}$	0	0	0	0	0	0	0
		$\frac{\sqrt{462}}{98}$	0	0	0	0	0	0	$-\frac{5\sqrt{77}}{539}$	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{77}}{77}$	0	0	0	0	0
		0	0	$-\frac{\sqrt{231}}{98}$	0	0	0	0	0	0	$-\frac{3\sqrt{77}}{539}$	0	0	0	0
		0	0	0	$-\frac{\sqrt{231}}{98}$	0	0	0	0	0	0	$\frac{3\sqrt{77}}{539}$	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{77}}{77}$	0	0
		0	0	0	0	0	$\frac{\sqrt{462}}{98}$	0	0	0	0	0	0	$\frac{5\sqrt{77}}{539}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{77}}{77}$
1008	symmetry	$\frac{\sqrt{10}y(3x^2-y^2)}{4}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{M}_3^{(1,1;a)}(B_g, 1)$		0	0	0	$\frac{5\sqrt{77}i}{147}$	0	0	0	0	0	0	$-\frac{\sqrt{231}i}{196}$	0	0	0
		0	0	0	0	$\frac{2\sqrt{770}i}{147}$	0	0	0	0	0	0	$-\frac{3\sqrt{77}i}{196}$	0	0
		0	0	0	0	0	$\frac{5\sqrt{77}i}{147}$	$-\frac{\sqrt{66}i}{56}$	0	0	0	0	0	$-\frac{3\sqrt{462}i}{392}$	0
		$-\frac{5\sqrt{77}i}{147}$	0	0	0	0	0	0	$-\frac{3\sqrt{462}i}{392}$	0	0	0	0	0	$-\frac{\sqrt{66}i}{56}$
		0	$-\frac{2\sqrt{770}i}{147}$	0	0	0	0	0	0	$-\frac{3\sqrt{77}i}{196}$	0	0	0	0	0
		0	0	$-\frac{5\sqrt{77}i}{147}$	0	0	0	0	0	0	$-\frac{\sqrt{231}i}{196}$	0	0	0	0
		0	0	$\frac{\sqrt{66}i}{56}$	0	0	0	0	0	0	$-\frac{\sqrt{22}i}{77}$	0	0	0	0
		0	0	0	$\frac{3\sqrt{462}i}{392}$	0	0	0	0	0	0	$-\frac{4\sqrt{154}i}{539}$	0	0	0
		0	0	0	0	$\frac{3\sqrt{77}i}{196}$	0	0	0	0	0	0	$-\frac{2\sqrt{770}i}{539}$	0	0
		0	0	0	0	0	$\frac{\sqrt{231}i}{196}$	$\frac{\sqrt{22}i}{77}$	0	0	0	0	0	$-\frac{4\sqrt{154}i}{539}$	0
		$\frac{\sqrt{231}i}{196}$	0	0	0	0	0	0	$\frac{4\sqrt{154}i}{539}$	0	0	0	0	0	$-\frac{\sqrt{22}i}{77}$
		0	$\frac{3\sqrt{77}i}{196}$	0	0	0	0	0	0	$\frac{2\sqrt{770}i}{539}$	0	0	0	0	0
		0	0	$\frac{3\sqrt{462}i}{392}$	0	0	0	0	0	0	$\frac{4\sqrt{154}i}{539}$	0	0	0	0
		0	0	0	$\frac{\sqrt{66}i}{56}$	0	0	0	0	0	0	$\frac{\sqrt{22}i}{77}$	0	0	0
1009	symmetry	$\frac{\sqrt{10}x(x^2-3y^2)}{4}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{M}_3^{(1,1;a)}(B_g, 2)$		0	0	0	$-\frac{5\sqrt{77}}{147}$	0	0	0	0	0	0	$\frac{\sqrt{231}}{196}$	0	0	0
		0	0	0	0	$-\frac{2\sqrt{770}}{147}$	0	0	0	0	0	0	$\frac{3\sqrt{77}}{196}$	0	0
		0	0	0	0	0	$-\frac{5\sqrt{77}}{147}$	$-\frac{\sqrt{66}}{56}$	0	0	0	0	0	$\frac{3\sqrt{462}}{392}$	0
		$-\frac{5\sqrt{77}}{147}$	0	0	0	0	0	0	$-\frac{3\sqrt{462}}{392}$	0	0	0	0	0	$\frac{\sqrt{66}}{56}$
		0	$-\frac{2\sqrt{770}}{147}$	0	0	0	0	0	0	$-\frac{3\sqrt{77}}{196}$	0	0	0	0	0
		0	0	$-\frac{5\sqrt{77}}{147}$	0	0	0	0	0	0	$-\frac{\sqrt{231}}{196}$	0	0	0	0
		0	0	$-\frac{\sqrt{66}}{56}$	0	0	0	0	0	0	$\frac{\sqrt{22}}{77}$	0	0	0	0
		0	0	0	$-\frac{3\sqrt{462}}{392}$	0	0	0	0	0	0	$\frac{4\sqrt{154}}{539}$	0	0	0
		0	0	0	0	$-\frac{3\sqrt{77}}{196}$	0	0	0	0	0	0	$\frac{2\sqrt{770}}{539}$	0	0
		0	0	0	0	0	$-\frac{\sqrt{231}}{196}$	$\frac{\sqrt{22}}{77}$	0	0	0	0	0	$\frac{4\sqrt{154}}{539}$	0
		$\frac{\sqrt{231}}{196}$	0	0	0	0	0	0	$\frac{4\sqrt{154}}{539}$	0	0	0	0	0	$\frac{\sqrt{22}}{77}$
		0	$\frac{3\sqrt{77}}{196}$	0	0	0	0	0	0	$\frac{2\sqrt{770}}{539}$	0	0	0	0	0
		0	0	$\frac{3\sqrt{462}}{392}$	0	0	0	0	0	0	$\frac{4\sqrt{154}}{539}$	0	0	0	0
		0	0	0	$\frac{\sqrt{66}}{56}$	0	0	0	0	0	0	$\frac{\sqrt{22}}{77}$	0	0	0
1010	symmetry	$-\frac{\sqrt{6}x(x^2+y^2-4z^2)}{4}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{M}_{3,1}^{(1,1;a)}(E_{1g})$		0	$-\frac{\sqrt{2310}}{147}$	0	0	0	0	$-\frac{\sqrt{11}}{28}$	0	$\frac{\sqrt{231}}{98}$	0	0	0	0	0
		$-\frac{\sqrt{2310}}{147}$	0	$\frac{\sqrt{231}}{147}$	0	0	0	0	$\frac{\sqrt{385}}{196}$	0	$\frac{\sqrt{77}}{98}$	0	0	0	0
		0	$\frac{\sqrt{231}}{147}$	0	$\frac{2\sqrt{462}}{147}$	0	0	0	0	$\frac{\sqrt{2310}}{392}$	0	$-\frac{\sqrt{154}}{392}$	0	0	0
		0	0	$\frac{2\sqrt{462}}{147}$	0	$\frac{\sqrt{231}}{147}$	0	0	0	0	$\frac{\sqrt{154}}{392}$	0	$-\frac{\sqrt{2310}}{392}$	0	0
		0	0	0	$\frac{\sqrt{231}}{147}$	0	$-\frac{\sqrt{2310}}{147}$	0	0	0	0	$-\frac{\sqrt{77}}{98}$	0	$-\frac{\sqrt{385}}{196}$	0
		0	0	0	0	$-\frac{\sqrt{2310}}{147}$	0	0	0	0	0	0	$-\frac{\sqrt{231}}{98}$	0	$\frac{\sqrt{11}}{28}$
		$-\frac{\sqrt{11}}{28}$	0	0	0	0	0	0	$\frac{\sqrt{66}}{77}$	0	0	0	0	0	0
		0	$\frac{\sqrt{385}}{196}$	0	0	0	0	$\frac{\sqrt{66}}{77}$	0	$\frac{\sqrt{154}}{539}$	0	0	0	0	0
		$\frac{\sqrt{231}}{98}$	0	$\frac{\sqrt{2310}}{392}$	0	0	0	0	$\frac{\sqrt{154}}{539}$	0	$-\frac{\sqrt{770}}{539}$	0	0	0	0
		0	$\frac{\sqrt{77}}{98}$	0	$\frac{\sqrt{154}}{392}$	0	0	0	0	$-\frac{\sqrt{770}}{539}$	0	$-\frac{2\sqrt{462}}{539}$	0	0	0
		0	0	$-\frac{\sqrt{154}}{392}$	0	$-\frac{\sqrt{77}}{98}$	0	0	0	0	$-\frac{2\sqrt{462}}{539}$	0	$-\frac{\sqrt{770}}{539}$	0	0
		0	0	0	$-\frac{\sqrt{2310}}{392}$	0	$-\frac{\sqrt{231}}{98}$	0	0	0	0	$-\frac{\sqrt{770}}{539}$	0	$\frac{\sqrt{154}}{539}$	0
		0	0	0	0	$-\frac{\sqrt{385}}{196}$	0	0	0	0	0	0	$\frac{\sqrt{154}}{539}$	0	$\frac{\sqrt{66}}{77}$
		0	0	0	0	0	$\frac{\sqrt{11}}{28}$	0	0	0	0	0	0	$\frac{\sqrt{66}}{77}$	0
1011	symmetry	$-\frac{\sqrt{6}y(x^2+y^2-4z^2)}{4}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{M}_{3,2}^{(1,1;a)}(E_{1g})$		0	$\frac{\sqrt{2310i}}{147}$	0	0	0	0	$-\frac{\sqrt{11i}}{28}$	0	$-\frac{\sqrt{231i}}{98}$	0	0	0	0	0
		$-\frac{\sqrt{2310i}}{147}$	0	$-\frac{\sqrt{231i}}{147}$	0	0	0	0	$\frac{\sqrt{385i}}{196}$	0	$-\frac{\sqrt{77i}}{98}$	0	0	0	0
		0	$\frac{\sqrt{231i}}{147}$	0	$-\frac{2\sqrt{462i}}{147}$	0	0	0	0	$\frac{\sqrt{2310i}}{392}$	0	$\frac{\sqrt{154i}}{392}$	0	0	0
		0	0	$\frac{2\sqrt{462i}}{147}$	0	$-\frac{\sqrt{231i}}{147}$	0	0	0	0	$\frac{\sqrt{154i}}{392}$	0	$\frac{\sqrt{2310i}}{392}$	0	0
		0	0	0	$\frac{\sqrt{231i}}{147}$	0	$\frac{\sqrt{2310i}}{147}$	0	0	0	0	$-\frac{\sqrt{77i}}{98}$	0	$\frac{\sqrt{385i}}{196}$	0
		0	0	0	0	$-\frac{\sqrt{2310i}}{147}$	0	0	0	0	0	0	$-\frac{\sqrt{231i}}{98}$	0	$-\frac{\sqrt{11i}}{28}$
		$\frac{\sqrt{11i}}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{66i}}{77}$	0	0	0	0	0	0
		0	$-\frac{\sqrt{385i}}{196}$	0	0	0	0	$\frac{\sqrt{66i}}{77}$	0	$-\frac{\sqrt{154i}}{539}$	0	0	0	0	0
		$\frac{\sqrt{231i}}{98}$	0	$-\frac{\sqrt{2310i}}{392}$	0	0	0	0	$\frac{\sqrt{154i}}{539}$	0	$\frac{\sqrt{770i}}{539}$	0	0	0	0
		0	$\frac{\sqrt{77i}}{98}$	0	$-\frac{\sqrt{154i}}{392}$	0	0	0	0	$-\frac{\sqrt{770i}}{539}$	0	$\frac{2\sqrt{462i}}{539}$	0	0	0
		0	0	$-\frac{\sqrt{154i}}{392}$	0	$\frac{\sqrt{77i}}{98}$	0	0	0	0	$-\frac{2\sqrt{462i}}{539}$	0	$\frac{\sqrt{770i}}{539}$	0	0
		0	0	0	$-\frac{\sqrt{2310i}}{392}$	0	$\frac{\sqrt{231i}}{98}$	0	0	0	0	$-\frac{\sqrt{770i}}{539}$	0	$-\frac{\sqrt{154i}}{539}$	0
		0	0	0	0	$-\frac{\sqrt{385i}}{196}$	0	0	0	0	0	0	$\frac{\sqrt{154i}}{539}$	0	$-\frac{\sqrt{66i}}{77}$
		0	0	0	0	0	$\frac{\sqrt{11i}}{28}$	0	0	0	0	0	0	$\frac{\sqrt{66i}}{77}$	0
1012	symmetry	$\sqrt{15}xyz$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{M}_{3,1}^{(1,1;a)}(E_{2g})$	0	0	$\frac{5\sqrt{462}i}{294}$	0	0	0	0	0	0	$-\frac{\sqrt{154}i}{98}$	0	0	0	0	
	0	0	0	$\frac{\sqrt{2310}i}{294}$	0	0	$-\frac{\sqrt{22}i}{28}$	0	0	0	$-\frac{\sqrt{770}i}{196}$	0	0	0	
	$-\frac{5\sqrt{462}i}{294}$	0	0	0	$-\frac{\sqrt{2310}i}{294}$	0	0	$-\frac{\sqrt{77}i}{196}$	0	0	0	$-\frac{\sqrt{231}i}{196}$	0	0	
	0	$-\frac{\sqrt{2310}i}{294}$	0	0	0	$-\frac{5\sqrt{462}i}{294}$	0	0	$\frac{\sqrt{231}i}{196}$	0	0	0	$\frac{\sqrt{77}i}{196}$	0	
	0	0	$\frac{\sqrt{2310}i}{294}$	0	0	0	0	0	0	$\frac{\sqrt{770}i}{196}$	0	0	0	$\frac{\sqrt{22}i}{28}$	
	0	0	0	$\frac{5\sqrt{462}i}{294}$	0	0	0	0	0	0	$\frac{\sqrt{154}i}{98}$	0	0	0	
	0	$\frac{\sqrt{22}i}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{55}i}{77}$	0	0	0	0	0	
	0	0	$\frac{\sqrt{77}i}{196}$	0	0	0	0	0	0	$-\frac{3\sqrt{231}i}{539}$	0	0	0	0	
	0	0	0	$-\frac{\sqrt{231}i}{196}$	0	0	$\frac{\sqrt{55}i}{77}$	0	0	0	$-\frac{2\sqrt{77}i}{539}$	0	0	0	
	$\frac{\sqrt{154}i}{98}$	0	0	0	$-\frac{\sqrt{770}i}{196}$	0	0	$\frac{3\sqrt{231}i}{539}$	0	0	0	$\frac{2\sqrt{77}i}{539}$	0	0	
	0	$\frac{\sqrt{770}i}{196}$	0	0	0	$-\frac{\sqrt{154}i}{98}$	0	0	$\frac{2\sqrt{77}i}{539}$	0	0	0	$\frac{3\sqrt{231}i}{539}$	0	
	0	0	$\frac{\sqrt{231}i}{196}$	0	0	0	0	0	0	$-\frac{2\sqrt{77}i}{539}$	0	0	0	$\frac{\sqrt{55}i}{77}$	
	0	0	0	$-\frac{\sqrt{77}i}{196}$	0	0	0	0	0	0	$-\frac{3\sqrt{231}i}{539}$	0	0	0	
	0	0	0	0	$-\frac{\sqrt{22}i}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{55}i}{77}$	0	0	
1013	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{M}_{3,2}^{(1,1;a)}(E_{2g})$		0	0	$-\frac{5\sqrt{462}}{294}$	0	0	0	0	0	0	$\frac{\sqrt{154}}{98}$	0	0	0	0
		0	0	0	$-\frac{\sqrt{2310}}{294}$	0	0	$-\frac{\sqrt{22}}{28}$	0	0	0	$\frac{\sqrt{770}}{196}$	0	0	0
		$-\frac{5\sqrt{462}}{294}$	0	0	0	$\frac{\sqrt{2310}}{294}$	0	0	$-\frac{\sqrt{77}}{196}$	0	0	0	$\frac{\sqrt{231}}{196}$	0	0
		0	$-\frac{\sqrt{2310}}{294}$	0	0	0	$\frac{5\sqrt{462}}{294}$	0	0	$\frac{\sqrt{231}}{196}$	0	0	0	$-\frac{\sqrt{77}}{196}$	0
		0	0	$\frac{\sqrt{2310}}{294}$	0	0	0	0	0	0	$\frac{\sqrt{770}}{196}$	0	0	0	$-\frac{\sqrt{22}}{28}$
		0	0	0	$\frac{5\sqrt{462}}{294}$	0	0	0	0	0	0	$\frac{\sqrt{154}}{98}$	0	0	0
		0	$-\frac{\sqrt{22}}{28}$	0	0	0	0	0	0	$\frac{\sqrt{55}}{77}$	0	0	0	0	0
		0	0	$-\frac{\sqrt{77}}{196}$	0	0	0	0	0	0	$\frac{3\sqrt{231}}{539}$	0	0	0	0
		0	0	0	$\frac{\sqrt{231}}{196}$	0	0	$\frac{\sqrt{55}}{77}$	0	0	0	$\frac{2\sqrt{77}}{539}$	0	0	0
		$\frac{\sqrt{154}}{98}$	0	0	0	$\frac{\sqrt{770}}{196}$	0	0	$\frac{3\sqrt{231}}{539}$	0	0	0	$-\frac{2\sqrt{77}}{539}$	0	0
		0	$\frac{\sqrt{770}}{196}$	0	0	0	$\frac{\sqrt{154}}{98}$	0	0	$\frac{2\sqrt{77}}{539}$	0	0	0	$-\frac{3\sqrt{231}}{539}$	0
		0	0	$\frac{\sqrt{231}}{196}$	0	0	0	0	0	$-\frac{2\sqrt{77}}{539}$	0	0	0	0	$-\frac{\sqrt{55}}{77}$
		0	0	0	$-\frac{\sqrt{77}}{196}$	0	0	0	0	0	0	$-\frac{3\sqrt{231}}{539}$	0	0	0
		0	0	0	0	$-\frac{\sqrt{22}}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{55}}{77}$	0	0
1014	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												
$M_5^{(1,1;a)}(A_g)$		$\frac{\sqrt{1001}}{539}$	0	0	0	0	0	$-\frac{5\sqrt{6006}}{6468}$	0	0	0	0	0	0
		0	$-\frac{5\sqrt{1001}}{539}$	0	0	0	0	0	$\frac{3\sqrt{10010}}{2156}$	0	0	0	0	0
		0	0	$\frac{10\sqrt{1001}}{539}$	0	0	0	0	0	$-\frac{5\sqrt{3003}}{3234}$	0	0	0	0
		0	0	0	$-\frac{10\sqrt{1001}}{539}$	0	0	0	0	0	$-\frac{5\sqrt{3003}}{3234}$	0	0	0
		0	0	0	0	$\frac{5\sqrt{1001}}{539}$	0	0	0	0	0	$\frac{3\sqrt{10010}}{2156}$	0	0
		0	0	0	0	0	$-\frac{\sqrt{1001}}{539}$	0	0	0	0	0	$-\frac{5\sqrt{6006}}{6468}$	0
		0	0	0	0	0	0	$-\frac{\sqrt{1001}}{2002}$	0	0	0	0	0	0
		$-\frac{5\sqrt{6006}}{6468}$	0	0	0	0	0	0	$\frac{23\sqrt{1001}}{14014}$	0	0	0	0	0
		0	$\frac{3\sqrt{10010}}{2156}$	0	0	0	0	0	0	$-\frac{17\sqrt{1001}}{14014}$	0	0	0	0
		0	0	$-\frac{5\sqrt{3003}}{3234}$	0	0	0	0	0	0	$-\frac{15\sqrt{1001}}{14014}$	0	0	0
		0	0	0	$-\frac{5\sqrt{3003}}{3234}$	0	0	0	0	0	$\frac{15\sqrt{1001}}{14014}$	0	0	0
		0	0	0	0	$\frac{3\sqrt{10010}}{2156}$	0	0	0	0	0	$\frac{17\sqrt{1001}}{14014}$	0	0
		0	0	0	0	0	$-\frac{5\sqrt{6006}}{6468}$	0	0	0	0	0	$-\frac{23\sqrt{1001}}{14014}$	0
1015	symmetry	$-\frac{\sqrt{70}y(3x^2-y^2)(x^2+y^2-8z^2)}{16}$												

continued ...

Table 10

No.	multipole	matrix												
$\mathbb{M}_5^{(1,1;a)}(B_g, 1)$		0	0	0	$-\frac{2\sqrt{143}i}{77}$	0	0	0	0	0	$\frac{5\sqrt{429}i}{924}$	0	0	0
		0	0	0	0	$\frac{\sqrt{1430}i}{77}$	0	0	0	0	0	$-\frac{\sqrt{143}i}{308}$	0	0
		0	0	0	0	0	$-\frac{2\sqrt{143}i}{77}$	$\frac{\sqrt{6006}i}{924}$	0	0	0	0	$-\frac{\sqrt{858}i}{308}$	0
		$\frac{2\sqrt{143}i}{77}$	0	0	0	0	0	0	$-\frac{\sqrt{858}i}{308}$	0	0	0	0	$\frac{\sqrt{6006}i}{924}$
		0	$-\frac{\sqrt{1430}i}{77}$	0	0	0	0	0	0	$-\frac{\sqrt{143}i}{308}$	0	0	0	0
		0	0	$\frac{2\sqrt{143}i}{77}$	0	0	0	0	0	0	$\frac{5\sqrt{429}i}{924}$	0	0	0
		0	0	$-\frac{\sqrt{6006}i}{924}$	0	0	0	0	0	0	$\frac{\sqrt{2002}i}{1001}$	0	0	0
		0	0	0	$\frac{\sqrt{858}i}{308}$	0	0	0	0	0	0	$-\frac{\sqrt{286}i}{2002}$	0	0
		0	0	0	0	$\frac{\sqrt{143}i}{308}$	0	0	0	0	0	$-\frac{\sqrt{1430}i}{1001}$	0	0
		0	0	0	0	0	$-\frac{5\sqrt{429}i}{924}$	$-\frac{\sqrt{2002}i}{1001}$	0	0	0	0	$-\frac{\sqrt{286}i}{2002}$	0
		$-\frac{5\sqrt{429}i}{924}$	0	0	0	0	0	0	$\frac{\sqrt{286}i}{2002}$	0	0	0	0	$\frac{\sqrt{2002}i}{1001}$
		0	$\frac{\sqrt{143}i}{308}$	0	0	0	0	0	0	$\frac{\sqrt{1430}i}{1001}$	0	0	0	0
		0	0	$\frac{\sqrt{858}i}{308}$	0	0	0	0	0	0	$\frac{\sqrt{286}i}{2002}$	0	0	0
		0	0	0	$-\frac{\sqrt{6006}i}{924}$	0	0	0	0	0	$-\frac{\sqrt{2002}i}{1001}$	0	0	0
1016	symmetry	$-\frac{\sqrt{70}x(x^2-3y^2)(x^2+y^2-8z^2)}{16}$												

*continued ...*

Table 10

No.	multipole	matrix												
1017	$\mathbb{M}_5^{(1,1;a)}(B_g, 2)$	0	0	0	$\frac{2\sqrt{143}}{77}$	0	0	0	0	0	0	$-\frac{5\sqrt{429}}{924}$	0	0
		0	0	0	0	$-\frac{\sqrt{1430}}{77}$	0	0	0	0	0	0	$\frac{\sqrt{143}}{308}$	0
		0	0	0	0	0	$\frac{2\sqrt{143}}{77}$	$\frac{\sqrt{6006}}{924}$	0	0	0	0	0	$\frac{\sqrt{858}}{308}$
		$\frac{2\sqrt{143}}{77}$	0	0	0	0	0	0	$-\frac{\sqrt{858}}{308}$	0	0	0	0	$-\frac{\sqrt{6006}}{924}$
		0	$-\frac{\sqrt{1430}}{77}$	0	0	0	0	0	0	$-\frac{\sqrt{143}}{308}$	0	0	0	0
		0	0	$\frac{2\sqrt{143}}{77}$	0	0	0	0	0	0	$\frac{5\sqrt{429}}{924}$	0	0	0
		0	0	$\frac{\sqrt{6006}}{924}$	0	0	0	0	0	0	$-\frac{\sqrt{2002}}{1001}$	0	0	0
		0	0	0	$-\frac{\sqrt{858}}{308}$	0	0	0	0	0	0	$\frac{\sqrt{286}}{2002}$	0	0
		0	0	0	0	$-\frac{\sqrt{143}}{308}$	0	0	0	0	0	0	$\frac{\sqrt{1430}}{1001}$	0
		0	0	0	0	0	$\frac{5\sqrt{429}}{924}$	$-\frac{\sqrt{2002}}{1001}$	0	0	0	0	0	$\frac{\sqrt{286}}{2002}$
		$-\frac{5\sqrt{429}}{924}$	0	0	0	0	0	0	$\frac{\sqrt{286}}{2002}$	0	0	0	0	$-\frac{\sqrt{2002}}{1001}$
		0	$\frac{\sqrt{143}}{308}$	0	0	0	0	0	0	$\frac{\sqrt{1430}}{1001}$	0	0	0	0
		0	0	$\frac{\sqrt{858}}{308}$	0	0	0	0	0	0	$\frac{\sqrt{286}}{2002}$	0	0	0
		0	0	0	$-\frac{\sqrt{6006}}{924}$	0	0	0	0	0	0	$-\frac{\sqrt{2002}}{1001}$	0	0
1017	symmetry	$\frac{3\sqrt{14}x(x^4-10x^2y^2+5y^4)}{16}$												

*continued ...*

Table 10

No.	multipole	matrix													
1018	$M_{5,1}^{(1,1;a)}(E_{1g}, 1)$	0	0	0	0	0	$\frac{3\sqrt{286}}{77}$	0	0	0	0	0	0	$-\frac{5\sqrt{429}}{924}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{15015}}{924}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	$\frac{\sqrt{15015}}{924}$	0	0	0	0	0	0	0
		$\frac{3\sqrt{286}}{77}$	0	0	0	0	0	0	$\frac{5\sqrt{429}}{924}$	0	0	0	0	0	0
		0	0	0	0	$\frac{\sqrt{15015}}{924}$	0	0	0	0	0	$-\frac{\sqrt{6006}}{2002}$	0	0	0
		0	0	0	0	0	$\frac{5\sqrt{429}}{924}$	0	0	0	0	0	$-\frac{3\sqrt{286}}{1001}$	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{6006}}{2002}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{6006}}{2002}$	0	0	0	0	0	0	0
		$-\frac{5\sqrt{429}}{924}$	0	0	0	0	0	0	$-\frac{3\sqrt{286}}{1001}$	0	0	0	0	0	0
		0	$-\frac{\sqrt{15015}}{924}$	0	0	0	0	0	0	$-\frac{\sqrt{6006}}{2002}$	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													
1019	$M_{5,2}^{(1,1;a)}(E_{1g}, 1)$	0	0	0	0	0	$\frac{3\sqrt{286}i}{77}$	0	0	0	0	0	0	$-\frac{5\sqrt{429}i}{924}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{15015}i}{924}$
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{15015}i}{924}$	0	0	0	0	0	0	0
		$-\frac{3\sqrt{286}i}{77}$	0	0	0	0	0	0	$-\frac{5\sqrt{429}i}{924}$	0	0	0	0	0	0
		0	0	0	0	$\frac{\sqrt{15015}i}{924}$	0	0	0	0	0	$-\frac{\sqrt{6006}i}{2002}$	0	0	0
		0	0	0	0	0	$\frac{5\sqrt{429}i}{924}$	0	0	0	0	0	$-\frac{3\sqrt{286}i}{1001}$	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{6006}i}{2002}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	$\frac{\sqrt{6006}i}{2002}$	0	0	0	0	0	0	0
		$\frac{5\sqrt{429}i}{924}$	0	0	0	0	0	0	$\frac{3\sqrt{286}i}{1001}$	0	0	0	0	0	0
		0	$\frac{\sqrt{15015}i}{924}$	0	0	0	0	0	0	$\frac{\sqrt{6006}i}{2002}$	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													
$M_{5,1}^{(1,1;a)}(E_{1g}, 2)$		0	$\frac{\sqrt{3003}}{539}$	0	0	0	0	$\frac{\sqrt{1430}}{1848}$	0	$-\frac{5\sqrt{30030}}{12936}$	0	0	0	0	0
		$\frac{\sqrt{3003}}{539}$	0	$-\frac{\sqrt{30030}}{539}$	0	0	0	0	$-\frac{23\sqrt{2002}}{12936}$	0	$\frac{13\sqrt{10010}}{12936}$	0	0	0	0
		0	$-\frac{\sqrt{30030}}{539}$	0	$\frac{2\sqrt{15015}}{539}$	0	0	0	0	$\frac{\sqrt{3003}}{588}$	0	$-\frac{\sqrt{5005}}{6468}$	0	0	0
		0	0	$\frac{2\sqrt{15015}}{539}$	0	$-\frac{\sqrt{30030}}{539}$	0	0	0	0	$\frac{\sqrt{5005}}{6468}$	0	$-\frac{\sqrt{3003}}{588}$	0	0
		0	0	0	$-\frac{\sqrt{30030}}{539}$	0	$\frac{\sqrt{3003}}{539}$	0	0	0	0	$-\frac{13\sqrt{10010}}{12936}$	0	$\frac{23\sqrt{2002}}{12936}$	0
		0	0	0	0	$\frac{\sqrt{3003}}{539}$	0	0	0	0	0	0	$\frac{5\sqrt{30030}}{12936}$	0	$-\frac{\sqrt{1430}}{1848}$
		$\frac{\sqrt{1430}}{1848}$	0	0	0	0	0	0	$-\frac{\sqrt{2145}}{2002}$	0	0	0	0	0	0
		0	$-\frac{23\sqrt{2002}}{12936}$	0	0	0	0	$-\frac{\sqrt{2145}}{2002}$	0	$\frac{4\sqrt{5005}}{7007}$	0	0	0	0	0
		$-\frac{5\sqrt{30030}}{12936}$	0	$\frac{\sqrt{3003}}{588}$	0	0	0	0	$\frac{4\sqrt{5005}}{7007}$	0	$-\frac{\sqrt{1001}}{14014}$	0	0	0	0
		0	$\frac{13\sqrt{10010}}{12936}$	0	$\frac{\sqrt{5005}}{6468}$	0	0	0	0	$-\frac{\sqrt{1001}}{14014}$	0	$-\frac{2\sqrt{15015}}{7007}$	0	0	0
		0	0	$-\frac{\sqrt{5005}}{6468}$	0	$-\frac{13\sqrt{10010}}{12936}$	0	0	0	0	$-\frac{2\sqrt{15015}}{7007}$	0	$-\frac{\sqrt{1001}}{14014}$	0	0
		0	0	0	$-\frac{\sqrt{3003}}{588}$	0	$\frac{5\sqrt{30030}}{12936}$	0	0	0	0	$-\frac{\sqrt{1001}}{14014}$	0	$\frac{4\sqrt{5005}}{7007}$	0
		0	0	0	0	$\frac{23\sqrt{2002}}{12936}$	0	0	0	0	0	0	$\frac{4\sqrt{5005}}{7007}$	0	$-\frac{\sqrt{2145}}{2002}$
		0	0	0	0	0	$-\frac{\sqrt{1430}}{1848}$	0	0	0	0	0	0	$-\frac{\sqrt{2145}}{2002}$	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													
$M_{5,2}^{(1,1;a)}(E_{1g}, 2)$		0	$-\frac{\sqrt{3003}i}{539}$	0	0	0	0	$\frac{\sqrt{1430}i}{1848}$	0	$\frac{5\sqrt{30030}i}{12936}$	0	0	0	0	0
		$\frac{\sqrt{3003}i}{539}$	0	$\frac{\sqrt{30030}i}{539}$	0	0	0	0	$-\frac{23\sqrt{2002}i}{12936}$	0	$-\frac{13\sqrt{10010}i}{12936}$	0	0	0	0
		0	$-\frac{\sqrt{30030}i}{539}$	0	$-\frac{2\sqrt{15015}i}{539}$	0	0	0	0	$\frac{\sqrt{3003}i}{588}$	0	$\frac{\sqrt{5005}i}{6468}$	0	0	0
		0	0	$\frac{2\sqrt{15015}i}{539}$	0	$\frac{\sqrt{30030}i}{539}$	0	0	0	0	$\frac{\sqrt{5005}i}{6468}$	0	$\frac{\sqrt{3003}i}{588}$	0	0
		0	0	0	$-\frac{\sqrt{30030}i}{539}$	0	$-\frac{\sqrt{3003}i}{539}$	0	0	0	0	$-\frac{13\sqrt{10010}i}{12936}$	0	$-\frac{23\sqrt{2002}i}{12936}$	0
		0	0	0	0	$\frac{\sqrt{3003}i}{539}$	0	0	0	0	0	0	$\frac{5\sqrt{30030}i}{12936}$	0	$\frac{\sqrt{1430}i}{1848}$
		$-\frac{\sqrt{1430}i}{1848}$	0	0	0	0	0	0	$\frac{\sqrt{2145}i}{2002}$	0	0	0	0	0	0
		0	$\frac{23\sqrt{2002}i}{12936}$	0	0	0	0	$-\frac{\sqrt{2145}i}{2002}$	0	$-\frac{4\sqrt{5005}i}{7007}$	0	0	0	0	0
		$-\frac{5\sqrt{30030}i}{12936}$	0	$-\frac{\sqrt{3003}i}{588}$	0	0	0	0	$\frac{4\sqrt{5005}i}{7007}$	0	$\frac{\sqrt{1001}i}{14014}$	0	0	0	0
		0	$\frac{13\sqrt{10010}i}{12936}$	0	$-\frac{\sqrt{5005}i}{6468}$	0	0	0	0	$-\frac{\sqrt{1001}i}{14014}$	0	$\frac{2\sqrt{15015}i}{7007}$	0	0	0
		0	0	$-\frac{\sqrt{5005}i}{6468}$	0	$\frac{13\sqrt{10010}i}{12936}$	0	0	0	0	$-\frac{2\sqrt{15015}i}{7007}$	0	$\frac{\sqrt{1001}i}{14014}$	0	0
		0	0	0	$-\frac{\sqrt{3003}i}{588}$	0	$-\frac{5\sqrt{30030}i}{12936}$	0	0	0	0	$-\frac{\sqrt{1001}i}{14014}$	0	$-\frac{4\sqrt{5005}i}{7007}$	0
		0	0	0	0	$\frac{23\sqrt{2002}i}{12936}$	0	0	0	0	0	0	$\frac{4\sqrt{5005}i}{7007}$	0	$\frac{\sqrt{2145}i}{2002}$
		0	0	0	0	0	$-\frac{\sqrt{1430}i}{1848}$	0	0	0	0	0	0	$-\frac{\sqrt{2145}i}{2002}$	0
1021	symmetry	$-\frac{3\sqrt{35}xyz(x-y)(x+y)}{2}$													

continued ...

Table 10

No.	multipole	matrix													
1022	$M_{5,1}^{(1,1;a)}(E_{2g}, 1)$	0	0	0	0	$\frac{3\sqrt{143}i}{77}$	0	0	0	0	0	0	$-\frac{\sqrt{1430}i}{308}$	0	0
		0	0	0	0	0	$-\frac{3\sqrt{143}i}{77}$	0	0	0	0	0	0	$-\frac{\sqrt{858}i}{924}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{3003}i}{462}$
		0	0	0	0	0	0	$-\frac{\sqrt{3003}i}{462}$	0	0	0	0	0	0	0
		$-\frac{3\sqrt{143}i}{77}$	0	0	0	0	0	0	$\frac{\sqrt{858}i}{924}$	0	0	0	0	0	0
		0	$\frac{3\sqrt{143}i}{77}$	0	0	0	0	0	0	$\frac{\sqrt{1430}i}{308}$	0	0	0	0	0
		0	0	0	$\frac{\sqrt{3003}i}{462}$	0	0	0	0	0	0	$-\frac{3\sqrt{1001}i}{2002}$	0	0	0
		0	0	0	0	$-\frac{\sqrt{858}i}{924}$	0	0	0	0	0	0	$-\frac{\sqrt{2145}i}{2002}$	0	0
		0	0	0	0	0	$-\frac{\sqrt{1430}i}{308}$	0	0	0	0	0	0	$\frac{\sqrt{2145}i}{2002}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{3\sqrt{1001}i}{2002}$
		0	0	0	0	0	0	$\frac{3\sqrt{1001}i}{2002}$	0	0	0	0	0	0	0
		$\frac{\sqrt{1430}i}{308}$	0	0	0	0	0	0	$\frac{\sqrt{2145}i}{2002}$	0	0	0	0	0	0
		0	$\frac{\sqrt{858}i}{924}$	0	0	0	0	0	0	$-\frac{\sqrt{2145}i}{2002}$	0	0	0	0	0
		0	0	$-\frac{\sqrt{3003}i}{462}$	0	0	0	0	0	0	$-\frac{3\sqrt{1001}i}{2002}$	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													
1023	$M_{5,2}^{(1,1;a)}(E_{2g}, 1)$	0	0	0	0	$\frac{3\sqrt{143}}{77}$	0	0	0	0	0	0	$-\frac{\sqrt{1430}}{308}$	0	0
		0	0	0	0	0	$-\frac{3\sqrt{143}}{77}$	0	0	0	0	0	0	$-\frac{\sqrt{858}}{924}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{3003}}{462}$
		0	0	0	0	0	0	$\frac{\sqrt{3003}}{462}$	0	0	0	0	0	0	0
		$\frac{3\sqrt{143}}{77}$	0	0	0	0	0	0	$-\frac{\sqrt{858}}{924}$	0	0	0	0	0	0
		0	$-\frac{3\sqrt{143}}{77}$	0	0	0	0	0	0	$-\frac{\sqrt{1430}}{308}$	0	0	0	0	0
		0	0	0	$\frac{\sqrt{3003}}{462}$	0	0	0	0	0	0	$-\frac{3\sqrt{1001}}{2002}$	0	0	0
		0	0	0	0	$-\frac{\sqrt{858}}{924}$	0	0	0	0	0	0	$-\frac{\sqrt{2145}}{2002}$	0	0
		0	0	0	0	0	$-\frac{\sqrt{1430}}{308}$	0	0	0	0	0	0	$\frac{\sqrt{2145}}{2002}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{3\sqrt{1001}}{2002}$
		0	0	0	0	0	0	$-\frac{3\sqrt{1001}}{2002}$	0	0	0	0	0	0	0
		$-\frac{\sqrt{1430}}{308}$	0	0	0	0	0	0	$-\frac{\sqrt{2145}}{2002}$	0	0	0	0	0	0
		0	$-\frac{\sqrt{858}}{924}$	0	0	0	0	0	0	$\frac{\sqrt{2145}}{2002}$	0	0	0	0	0
		0	0	$\frac{\sqrt{3003}}{462}$	0	0	0	0	0	0	$\frac{3\sqrt{1001}}{2002}$	0	0	0	0
1023	symmetry	$-\frac{\sqrt{105}xyz(x^2+y^2-2z^2)}{2}$													

*continued ...*

Table 10

No.	multipole	matrix													
$M_{5,1}^{(1,1;a)}(E_{2g}, 2)$		0	0	$-\frac{\sqrt{858}i}{154}$	0	0	0	0	0	0	$\frac{5\sqrt{286}i}{924}$	0	0	0	0
		0	0	0	$\frac{\sqrt{4290}i}{154}$	0	0	$\frac{\sqrt{2002}i}{924}$	0	0	0	$-\frac{\sqrt{1430}i}{462}$	0	0	0
		$\frac{\sqrt{858}i}{154}$	0	0	0	$-\frac{\sqrt{4290}i}{154}$	0	0	$-\frac{2\sqrt{143}i}{231}$	0	0	0	$-\frac{\sqrt{429}i}{462}$	0	0
		0	$-\frac{\sqrt{4290}i}{154}$	0	0	0	$\frac{\sqrt{858}i}{154}$	0	0	$\frac{\sqrt{429}i}{462}$	0	0	0	$\frac{2\sqrt{143}i}{231}$	0
		0	0	$\frac{\sqrt{4290}i}{154}$	0	0	0	0	0	0	$\frac{\sqrt{1430}i}{462}$	0	0	0	$-\frac{\sqrt{2002}i}{924}$
		0	0	0	$-\frac{\sqrt{858}i}{154}$	0	0	0	0	0	0	$-\frac{5\sqrt{286}i}{924}$	0	0	0
		0	$-\frac{\sqrt{2002}i}{924}$	0	0	0	0	0	0	$\frac{\sqrt{5005}i}{2002}$	0	0	0	0	0
		0	0	$\frac{2\sqrt{143}i}{231}$	0	0	0	0	0	0	$-\frac{3\sqrt{429}i}{2002}$	0	0	0	0
		0	0	0	$-\frac{\sqrt{429}i}{462}$	0	0	$-\frac{\sqrt{5005}i}{2002}$	0	0	0	$-\frac{2\sqrt{143}i}{1001}$	0	0	0
		$-\frac{5\sqrt{286}i}{924}$	0	0	0	$-\frac{\sqrt{1430}i}{462}$	0	0	$\frac{3\sqrt{429}i}{2002}$	0	0	0	$\frac{2\sqrt{143}i}{1001}$	0	0
		0	$\frac{\sqrt{1430}i}{462}$	0	0	0	$\frac{5\sqrt{286}i}{924}$	0	0	$\frac{2\sqrt{143}i}{1001}$	0	0	0	$\frac{3\sqrt{429}i}{2002}$	0
		0	0	$\frac{\sqrt{429}i}{462}$	0	0	0	0	0	0	$-\frac{2\sqrt{143}i}{1001}$	0	0	0	$-\frac{\sqrt{5005}i}{2002}$
		0	0	0	$-\frac{2\sqrt{143}i}{231}$	0	0	0	0	0	0	$-\frac{3\sqrt{429}i}{2002}$	0	0	0
		0	0	0	0	$\frac{\sqrt{2002}i}{924}$	0	0	0	0	0	0	$\frac{\sqrt{5005}i}{2002}$	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													
$\mathbb{M}_{5,2}^{(1,1;a)}(E_{2g}, 2)$		0	0	$\frac{\sqrt{858}}{154}$	0	0	0	0	0	0	$-\frac{5\sqrt{286}}{924}$	0	0	0	0
		0	0	0	$-\frac{\sqrt{4290}}{154}$	0	0	$\frac{\sqrt{2002}}{924}$	0	0	0	$\frac{\sqrt{1430}}{462}$	0	0	0
		$\frac{\sqrt{858}}{154}$	0	0	0	$\frac{\sqrt{4290}}{154}$	0	0	$-\frac{2\sqrt{143}}{231}$	0	0	0	$\frac{\sqrt{429}}{462}$	0	0
		0	$-\frac{\sqrt{4290}}{154}$	0	0	0	$-\frac{\sqrt{858}}{154}$	0	0	$\frac{\sqrt{429}}{462}$	0	0	0	$-\frac{2\sqrt{143}}{231}$	0
		0	0	$\frac{\sqrt{4290}}{154}$	0	0	0	0	0	0	$\frac{\sqrt{1430}}{462}$	0	0	0	$\frac{\sqrt{2002}}{924}$
		0	0	0	$-\frac{\sqrt{858}}{154}$	0	0	0	0	0	0	$-\frac{5\sqrt{286}}{924}$	0	0	0
		0	$\frac{\sqrt{2002}}{924}$	0	0	0	0	0	$-\frac{\sqrt{5005}}{2002}$	0	0	0	0	0	0
		0	0	$-\frac{2\sqrt{143}}{231}$	0	0	0	0	0	0	$\frac{3\sqrt{429}}{2002}$	0	0	0	0
		0	0	0	$\frac{\sqrt{429}}{462}$	0	0	$-\frac{\sqrt{5005}}{2002}$	0	0	0	$\frac{2\sqrt{143}}{1001}$	0	0	0
		$-\frac{5\sqrt{286}}{924}$	0	0	0	$\frac{\sqrt{1430}}{462}$	0	0	$\frac{3\sqrt{429}}{2002}$	0	0	0	$-\frac{2\sqrt{143}}{1001}$	0	0
		0	$\frac{\sqrt{1430}}{462}$	0	0	0	$-\frac{5\sqrt{286}}{924}$	0	0	$\frac{2\sqrt{143}}{1001}$	0	0	0	$-\frac{3\sqrt{429}}{2002}$	0
		0	0	$\frac{\sqrt{429}}{462}$	0	0	0	0	0	$-\frac{2\sqrt{143}}{1001}$	0	0	0	0	$\frac{\sqrt{5005}}{2002}$
		0	0	0	$-\frac{2\sqrt{143}}{231}$	0	0	0	0	0	0	$-\frac{3\sqrt{429}}{2002}$	0	0	0
		0	0	0	0	$\frac{\sqrt{2002}}{924}$	0	0	0	0	0	0	$\frac{\sqrt{5005}}{2002}$	0	0