

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

Table 1: (s,s) block.

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

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

Table 2: (s,p) block.

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

*continued ...*

Table 2

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

*continued ...*

Table 2

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

continued ...

Table 2

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

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

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

Table 3: (s,d) block.

No.	multipole	matrix
29	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$
	$\mathbb{Q}_{2,1}^{(a)}(E_g)$	$\begin{bmatrix} 0 & -\frac{\sqrt{10}}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{10} & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{10}}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{10} & 0 & 0 \end{bmatrix}$
30	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$
	$\mathbb{Q}_{2,2}^{(a)}(E_g)$	$\begin{bmatrix} 0 & 0 & 0 & -\frac{\sqrt{10}}{10} & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & \frac{\sqrt{10}}{20} & 0 \\ \frac{\sqrt{10}}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{20} & 0 & 0 & 0 & \frac{\sqrt{2}}{4} \end{bmatrix}$
31	symmetry	$\sqrt{3}yz$
	$\mathbb{Q}_{2,1}^{(a)}(T_{2g})$	$\begin{bmatrix} \frac{\sqrt{10}i}{20} & 0 & \frac{\sqrt{30}i}{20} & 0 & 0 & -\frac{\sqrt{10}i}{10} & 0 & -\frac{\sqrt{5}i}{10} & 0 & 0 \\ 0 & -\frac{\sqrt{30}i}{20} & 0 & -\frac{\sqrt{10}i}{20} & 0 & 0 & -\frac{\sqrt{5}i}{10} & 0 & -\frac{\sqrt{10}i}{10} & 0 \end{bmatrix}$
32	symmetry	$\sqrt{3}xz$

continued ...

Table 3

No.	multipole	matrix
	$\mathbb{Q}_{2,2}^{(a)}(T_{2g})$	$\begin{bmatrix} \frac{\sqrt{10}}{20} & 0 & -\frac{\sqrt{30}}{20} & 0 & 0 & -\frac{\sqrt{10}}{10} & 0 & \frac{\sqrt{5}}{10} & 0 & 0 \\ 0 & -\frac{\sqrt{30}}{20} & 0 & \frac{\sqrt{10}}{20} & 0 & 0 & -\frac{\sqrt{5}}{10} & 0 & \frac{\sqrt{10}}{10} & 0 \end{bmatrix}$
33	symmetry	$\sqrt{3}xy$
	$\mathbb{Q}_{2,3}^{(a)}(T_{2g})$	$\begin{bmatrix} 0 & 0 & 0 & \frac{\sqrt{10}i}{10} & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & -\frac{\sqrt{10}i}{20} & 0 \\ \frac{\sqrt{10}i}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{20} & 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} \end{bmatrix}$
34	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$
	$\mathbb{Q}_{2,1}^{(1,0;a)}(E_g)$	$\begin{bmatrix} 0 & \frac{\sqrt{15}}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{10} & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{15}}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{10} & 0 & 0 \end{bmatrix}$
35	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$
	$\mathbb{Q}_{2,2}^{(1,0;a)}(E_g)$	$\begin{bmatrix} 0 & 0 & 0 & \frac{\sqrt{15}}{10} & \frac{\sqrt{3}}{6} & 0 & 0 & 0 & \frac{\sqrt{15}}{30} & 0 \\ -\frac{\sqrt{15}}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{30} & 0 & 0 & 0 & \frac{\sqrt{3}}{6} \end{bmatrix}$
36	symmetry	$\sqrt{3}yz$
	$\mathbb{Q}_{2,1}^{(1,0;a)}(T_{2g})$	$\begin{bmatrix} -\frac{\sqrt{15}i}{20} & 0 & -\frac{3\sqrt{5}i}{20} & 0 & 0 & -\frac{\sqrt{15}i}{15} & 0 & -\frac{\sqrt{30}i}{30} & 0 & 0 \\ 0 & \frac{3\sqrt{5}i}{20} & 0 & \frac{\sqrt{15}i}{20} & 0 & 0 & -\frac{\sqrt{30}i}{30} & 0 & -\frac{\sqrt{15}i}{15} & 0 \end{bmatrix}$
37	symmetry	$\sqrt{3}xz$
	$\mathbb{Q}_{2,2}^{(1,0;a)}(T_{2g})$	$\begin{bmatrix} -\frac{\sqrt{15}}{20} & 0 & \frac{3\sqrt{5}}{20} & 0 & 0 & -\frac{\sqrt{15}}{15} & 0 & \frac{\sqrt{30}}{30} & 0 & 0 \\ 0 & \frac{3\sqrt{5}}{20} & 0 & -\frac{\sqrt{15}}{20} & 0 & 0 & -\frac{\sqrt{30}}{30} & 0 & \frac{\sqrt{15}}{15} & 0 \end{bmatrix}$
38	symmetry	$\sqrt{3}xy$
	$\mathbb{Q}_{2,3}^{(1,0;a)}(T_{2g})$	$\begin{bmatrix} 0 & 0 & 0 & -\frac{\sqrt{15}i}{10} & \frac{\sqrt{3}i}{6} & 0 & 0 & 0 & -\frac{\sqrt{15}i}{30} & 0 \\ -\frac{\sqrt{15}i}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{30} & 0 & 0 & 0 & -\frac{\sqrt{3}i}{6} \end{bmatrix}$
39	symmetry	$\sqrt{15}xyz$
	$\mathbb{G}_3^{(1,-1;a)}(A_{2g})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{12} & 0 & 0 & 0 & \frac{\sqrt{30}}{12} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{12} & 0 & 0 & 0 & -\frac{\sqrt{6}}{12} \end{bmatrix}$
40	symmetry	$\frac{x(2x^2-3y^2-3z^2)}{2}$
	$\mathbb{G}_{3,1}^{(1,-1;a)}(T_{1g})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{8} & 0 & -\frac{i}{4} & 0 & \frac{\sqrt{10}i}{8} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{8} & 0 & -\frac{i}{4} & 0 & \frac{\sqrt{2}i}{8} & 0 \end{bmatrix}$
41	symmetry	$-\frac{y(3x^2-2y^2+3z^2)}{2}$

continued ...

Table 3

No.	multipole	matrix
	$\mathbb{G}_{3,2}^{(1,-1;a)}(T_{1g})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{8} & 0 & -\frac{1}{4} & 0 & -\frac{\sqrt{10}}{8} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{8} & 0 & \frac{1}{4} & 0 & \frac{\sqrt{2}}{8} & 0 \end{bmatrix}$
42	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$
	$\mathbb{G}_{3,3}^{(1,-1;a)}(T_{1g})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & \frac{i}{2} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{i}{2} & 0 & 0 \end{bmatrix}$
43	symmetry	$\frac{\sqrt{15}x(y-z)(y+z)}{2}$
	$\mathbb{G}_{3,1}^{(1,-1;a)}(T_{2g})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{24} & 0 & -\frac{\sqrt{15}i}{12} & 0 & -\frac{\sqrt{6}i}{8} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{8} & 0 & -\frac{\sqrt{15}i}{12} & 0 & \frac{\sqrt{30}i}{24} & 0 \end{bmatrix}$
44	symmetry	$-\frac{\sqrt{15}y(x-z)(x+z)}{2}$
	$\mathbb{G}_{3,2}^{(1,-1;a)}(T_{2g})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{24} & 0 & \frac{\sqrt{15}}{12} & 0 & -\frac{\sqrt{6}}{8} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{8} & 0 & -\frac{\sqrt{15}}{12} & 0 & -\frac{\sqrt{30}}{24} & 0 \end{bmatrix}$
45	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$
	$\mathbb{G}_{3,3}^{(1,-1;a)}(T_{2g})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{12} & 0 & 0 & 0 & \frac{\sqrt{30}i}{12} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}i}{12} & 0 & 0 & 0 & -\frac{\sqrt{6}i}{12} \end{bmatrix}$
46	symmetry	$x$
	$\mathbb{G}_{1,1}^{(1,1;a)}(T_{1g})$	$\begin{bmatrix} \frac{\sqrt{3}i}{4} & 0 & -\frac{i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{i}{4} & 0 & -\frac{\sqrt{3}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
47	symmetry	$y$
	$\mathbb{G}_{1,2}^{(1,1;a)}(T_{1g})$	$\begin{bmatrix} -\frac{\sqrt{3}}{4} & 0 & -\frac{1}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{1}{4} & 0 & -\frac{\sqrt{3}}{4} & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
48	symmetry	$z$
	$\mathbb{G}_{1,3}^{(1,1;a)}(T_{1g})$	$\begin{bmatrix} 0 & -\frac{i}{2} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{i}{2} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
49	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$
	$\mathbb{T}_{2,1}^{(a)}(E_g)$	$\begin{bmatrix} 0 & -\frac{\sqrt{10}i}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{10} & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{10}i}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{10} & 0 & 0 \end{bmatrix}$
50	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$

continued ...

Table 3

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

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Table 3

No.	multipole	matrix
	$\mathbb{M}_3^{(1,-1;a)}(A_{2g})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{12} & 0 & 0 & 0 & -\frac{\sqrt{30}i}{12} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}i}{12} & 0 & 0 & 0 & \frac{\sqrt{6}i}{12} \end{bmatrix}$
60	symmetry	$\frac{x(2x^2-3y^2-3z^2)}{2}$
	$\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{8} & 0 & -\frac{1}{4} & 0 & \frac{\sqrt{10}}{8} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{8} & 0 & -\frac{1}{4} & 0 & \frac{\sqrt{2}}{8} & 0 \end{bmatrix}$
61	symmetry	$-\frac{y(3x^2-2y^2+3z^2)}{2}$
	$\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{8} & 0 & \frac{i}{4} & 0 & \frac{\sqrt{10}i}{8} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{10}i}{8} & 0 & -\frac{i}{4} & 0 & -\frac{\sqrt{2}i}{8} & 0 \end{bmatrix}$
62	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$
	$\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{1}{2} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{1}{2} & 0 & 0 & 0 \end{bmatrix}$
63	symmetry	$\frac{\sqrt{15}x(y-z)(y+z)}{2}$
	$\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{24} & 0 & -\frac{\sqrt{15}}{12} & 0 & -\frac{\sqrt{6}}{8} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{8} & 0 & -\frac{\sqrt{15}}{12} & 0 & \frac{\sqrt{30}}{24} & 0 \end{bmatrix}$
64	symmetry	$-\frac{\sqrt{15}y(x-z)(x+z)}{2}$
	$\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}i}{24} & 0 & -\frac{\sqrt{15}i}{12} & 0 & \frac{\sqrt{6}i}{8} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{8} & 0 & \frac{\sqrt{15}i}{12} & 0 & \frac{\sqrt{30}i}{24} & 0 \end{bmatrix}$
65	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$
	$\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{12} & 0 & 0 & 0 & \frac{\sqrt{30}}{12} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{12} & 0 & 0 & 0 & -\frac{\sqrt{6}}{12} \end{bmatrix}$
66	symmetry	$x$
	$\mathbb{M}_{1,1}^{(1,1;a)}(T_{1g})$	$\begin{bmatrix} \frac{\sqrt{3}}{4} & 0 & -\frac{1}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{1}{4} & 0 & -\frac{\sqrt{3}}{4} & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
67	symmetry	$y$
	$\mathbb{M}_{1,2}^{(1,1;a)}(T_{1g})$	$\begin{bmatrix} \frac{\sqrt{3}i}{4} & 0 & \frac{i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{i}{4} & 0 & \frac{\sqrt{3}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
68	symmetry	$z$

continued ...



Table 3

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

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

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

Table 4: (s,f) block.

No.	multipole	matrix
69	symmetry	$\sqrt{15}xyz$
	$\mathbb{Q}_3^{(a)}(A_{2u})$	$\begin{bmatrix} -\frac{\sqrt{14}i}{28} & 0 & 0 & 0 & \frac{\sqrt{70}i}{28} & 0 & 0 & \frac{\sqrt{21}i}{14} & 0 & 0 & 0 & -\frac{\sqrt{7}i}{14} & 0 & 0 \\ 0 & \frac{\sqrt{70}i}{28} & 0 & 0 & 0 & -\frac{\sqrt{14}i}{28} & 0 & 0 & \frac{\sqrt{7}i}{14} & 0 & 0 & 0 & -\frac{\sqrt{21}i}{14} & 0 \end{bmatrix}$
70	symmetry	$\frac{x(2x^2-3y^2-3z^2)}{2}$
	$\mathbb{Q}_{3,1}^{(a)}(T_{1u})$	$\begin{bmatrix} 0 & -\frac{\sqrt{42}}{56} & 0 & \frac{\sqrt{21}}{28} & 0 & -\frac{\sqrt{210}}{56} & -\frac{\sqrt{5}}{8} & 0 & \frac{\sqrt{105}}{56} & 0 & -\frac{3\sqrt{7}}{56} & 0 & \frac{\sqrt{35}}{56} & 0 \\ -\frac{\sqrt{210}}{56} & 0 & \frac{\sqrt{21}}{28} & 0 & -\frac{\sqrt{42}}{56} & 0 & 0 & -\frac{\sqrt{35}}{56} & 0 & \frac{3\sqrt{7}}{56} & 0 & -\frac{\sqrt{105}}{56} & 0 & \frac{\sqrt{5}}{8} \end{bmatrix}$
71	symmetry	$-\frac{y(3x^2-2y^2+3z^2)}{2}$
	$\mathbb{Q}_{3,2}^{(a)}(T_{1u})$	$\begin{bmatrix} 0 & -\frac{\sqrt{42}i}{56} & 0 & -\frac{\sqrt{21}i}{28} & 0 & -\frac{\sqrt{210}i}{56} & \frac{\sqrt{5}i}{8} & 0 & \frac{\sqrt{105}i}{56} & 0 & \frac{3\sqrt{7}i}{56} & 0 & \frac{\sqrt{35}i}{56} & 0 \\ \frac{\sqrt{210}i}{56} & 0 & \frac{\sqrt{21}i}{28} & 0 & \frac{\sqrt{42}i}{56} & 0 & 0 & \frac{\sqrt{35}i}{56} & 0 & \frac{3\sqrt{7}i}{56} & 0 & \frac{\sqrt{105}i}{56} & 0 & \frac{\sqrt{5}i}{8} \end{bmatrix}$
72	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$
	$\mathbb{Q}_{3,3}^{(a)}(T_{1u})$	$\begin{bmatrix} 0 & 0 & -\frac{\sqrt{21}}{14} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{7} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{21}}{14} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{7} & 0 & 0 & 0 \end{bmatrix}$
73	symmetry	$\frac{\sqrt{15}x(y-z)(y+z)}{2}$
	$\mathbb{Q}_{3,1}^{(a)}(T_{2u})$	$\begin{bmatrix} 0 & -\frac{\sqrt{70}}{56} & 0 & \frac{\sqrt{35}}{28} & 0 & \frac{3\sqrt{14}}{56} & \frac{\sqrt{3}}{8} & 0 & \frac{5\sqrt{7}}{56} & 0 & -\frac{\sqrt{105}}{56} & 0 & -\frac{\sqrt{21}}{56} & 0 \\ \frac{3\sqrt{14}}{56} & 0 & \frac{\sqrt{35}}{28} & 0 & -\frac{\sqrt{70}}{56} & 0 & 0 & \frac{\sqrt{21}}{56} & 0 & \frac{\sqrt{105}}{56} & 0 & -\frac{5\sqrt{7}}{56} & 0 & -\frac{\sqrt{3}}{8} \end{bmatrix}$
74	symmetry	$-\frac{\sqrt{15}y(x-z)(x+z)}{2}$
	$\mathbb{Q}_{3,2}^{(a)}(T_{2u})$	$\begin{bmatrix} 0 & \frac{\sqrt{70}i}{56} & 0 & \frac{\sqrt{35}i}{28} & 0 & -\frac{3\sqrt{14}i}{56} & \frac{\sqrt{3}i}{8} & 0 & -\frac{5\sqrt{7}i}{56} & 0 & -\frac{\sqrt{105}i}{56} & 0 & \frac{\sqrt{21}i}{56} & 0 \\ \frac{3\sqrt{14}i}{56} & 0 & -\frac{\sqrt{35}i}{28} & 0 & -\frac{\sqrt{70}i}{56} & 0 & 0 & \frac{\sqrt{21}i}{56} & 0 & -\frac{\sqrt{105}i}{56} & 0 & -\frac{5\sqrt{7}i}{56} & 0 & \frac{\sqrt{3}i}{8} \end{bmatrix}$
75	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$

continued ...

Table 4

No.	multipole	matrix
	$\mathbb{Q}_{3,3}^{(a)}(T_{2u})$	$\begin{bmatrix} -\frac{\sqrt{14}}{28} & 0 & 0 & 0 & -\frac{\sqrt{70}}{28} & 0 & 0 & \frac{\sqrt{21}}{14} & 0 & 0 & 0 & \frac{\sqrt{7}}{14} & 0 & 0 \\ 0 & \frac{\sqrt{70}}{28} & 0 & 0 & 0 & \frac{\sqrt{14}}{28} & 0 & 0 & \frac{\sqrt{7}}{14} & 0 & 0 & 0 & \frac{\sqrt{21}}{14} & 0 \end{bmatrix}$
76	symmetry	$\sqrt{15}xyz$
	$\mathbb{Q}_3^{(1,0;a)}(A_{2u})$	$\begin{bmatrix} \frac{\sqrt{42}i}{42} & 0 & 0 & 0 & -\frac{\sqrt{210}i}{42} & 0 & 0 & \frac{3\sqrt{7}i}{28} & 0 & 0 & 0 & -\frac{\sqrt{21}i}{28} & 0 & 0 \\ 0 & -\frac{\sqrt{210}i}{42} & 0 & 0 & 0 & \frac{\sqrt{42}i}{42} & 0 & 0 & \frac{\sqrt{21}i}{28} & 0 & 0 & 0 & -\frac{3\sqrt{7}i}{28} & 0 \end{bmatrix}$
77	symmetry	$\frac{x(2x^2-3y^2-3z^2)}{2}$
	$\mathbb{Q}_{3,1}^{(1,0;a)}(T_{1u})$	$\begin{bmatrix} 0 & \frac{\sqrt{14}}{28} & 0 & -\frac{\sqrt{7}}{14} & 0 & \frac{\sqrt{70}}{28} & -\frac{\sqrt{15}}{16} & 0 & \frac{3\sqrt{35}}{112} & 0 & -\frac{3\sqrt{21}}{112} & 0 & \frac{\sqrt{105}}{112} & 0 \\ \frac{\sqrt{70}}{28} & 0 & -\frac{\sqrt{7}}{14} & 0 & \frac{\sqrt{14}}{28} & 0 & 0 & -\frac{\sqrt{105}}{112} & 0 & \frac{3\sqrt{21}}{112} & 0 & -\frac{3\sqrt{35}}{112} & 0 & \frac{\sqrt{15}}{16} \end{bmatrix}$
78	symmetry	$-\frac{y(3x^2-2y^2+3z^2)}{2}$
	$\mathbb{Q}_{3,2}^{(1,0;a)}(T_{1u})$	$\begin{bmatrix} 0 & \frac{\sqrt{14}i}{28} & 0 & \frac{\sqrt{7}i}{14} & 0 & \frac{\sqrt{70}i}{28} & \frac{\sqrt{15}i}{16} & 0 & \frac{3\sqrt{35}i}{112} & 0 & \frac{3\sqrt{21}i}{112} & 0 & \frac{\sqrt{105}i}{112} & 0 \\ -\frac{\sqrt{70}i}{28} & 0 & -\frac{\sqrt{7}i}{14} & 0 & -\frac{\sqrt{14}i}{28} & 0 & 0 & \frac{\sqrt{105}i}{112} & 0 & \frac{3\sqrt{21}i}{112} & 0 & \frac{3\sqrt{35}i}{112} & 0 & \frac{\sqrt{15}i}{16} \end{bmatrix}$
79	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$
	$\mathbb{Q}_{3,3}^{(1,0;a)}(T_{1u})$	$\begin{bmatrix} 0 & 0 & \frac{\sqrt{7}}{7} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{14} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{7}}{7} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{14} & 0 & 0 & 0 \end{bmatrix}$
80	symmetry	$\frac{\sqrt{15}x(y-z)(y+z)}{2}$
	$\mathbb{Q}_{3,1}^{(1,0;a)}(T_{2u})$	$\begin{bmatrix} 0 & \frac{\sqrt{210}}{84} & 0 & -\frac{\sqrt{105}}{42} & 0 & -\frac{\sqrt{42}}{28} & \frac{3}{16} & 0 & \frac{5\sqrt{21}}{112} & 0 & -\frac{3\sqrt{35}}{112} & 0 & -\frac{3\sqrt{7}}{112} & 0 \\ -\frac{\sqrt{42}}{28} & 0 & -\frac{\sqrt{105}}{42} & 0 & \frac{\sqrt{210}}{84} & 0 & 0 & \frac{3\sqrt{7}}{112} & 0 & \frac{3\sqrt{35}}{112} & 0 & -\frac{5\sqrt{21}}{112} & 0 & -\frac{3}{16} \end{bmatrix}$
81	symmetry	$-\frac{\sqrt{15}y(x-z)(x+z)}{2}$
	$\mathbb{Q}_{3,2}^{(1,0;a)}(T_{2u})$	$\begin{bmatrix} 0 & -\frac{\sqrt{210}i}{84} & 0 & -\frac{\sqrt{105}i}{42} & 0 & \frac{\sqrt{42}i}{28} & \frac{3i}{16} & 0 & -\frac{5\sqrt{21}i}{112} & 0 & -\frac{3\sqrt{35}i}{112} & 0 & \frac{3\sqrt{7}i}{112} & 0 \\ -\frac{\sqrt{42}i}{28} & 0 & \frac{\sqrt{105}i}{42} & 0 & \frac{\sqrt{210}i}{84} & 0 & 0 & \frac{3\sqrt{7}i}{112} & 0 & -\frac{3\sqrt{35}i}{112} & 0 & -\frac{5\sqrt{21}i}{112} & 0 & \frac{3i}{16} \end{bmatrix}$
82	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$
	$\mathbb{Q}_{3,3}^{(1,0;a)}(T_{2u})$	$\begin{bmatrix} \frac{\sqrt{42}}{42} & 0 & 0 & 0 & \frac{\sqrt{210}}{42} & 0 & 0 & \frac{3\sqrt{7}}{28} & 0 & 0 & 0 & \frac{\sqrt{21}}{28} & 0 & 0 \\ 0 & -\frac{\sqrt{210}}{42} & 0 & 0 & 0 & -\frac{\sqrt{42}}{42} & 0 & 0 & \frac{\sqrt{21}}{28} & 0 & 0 & 0 & \frac{3\sqrt{7}}{28} & 0 \end{bmatrix}$
83	symmetry	$\frac{\sqrt{21}(x^4-3x^2y^2-3x^2z^2+y^4-3y^2z^2+z^4)}{6}$
	$\mathbb{G}_4^{(1,-1;a)}(A_{1u})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}i}{12} & 0 & 0 & 0 & \frac{\sqrt{15}i}{12} \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}i}{12} & 0 & 0 & 0 & -\frac{\sqrt{21}i}{12} & 0 & 0 & 0 \end{bmatrix}$
84	symmetry	$-\frac{\sqrt{15}(x^4-12x^2y^2+6x^2z^2+y^4+6y^2z^2-2z^4)}{12}$

continued ...

Table 4

No.	multipole	matrix
	$\mathbb{G}_{4,1}^{(1,-1;a)}(E_u)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{12} & 0 & 0 & 0 & -\frac{\sqrt{21}i}{12} \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}i}{12} & 0 & 0 & 0 & -\frac{\sqrt{15}i}{12} & 0 & 0 & 0 \end{bmatrix}$
85	symmetry	$\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$
	$\mathbb{G}_{4,2}^{(1,-1;a)}(E_u)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{i}{4} & 0 & 0 & 0 & -\frac{\sqrt{3}i}{4} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}i}{4} & 0 & 0 & 0 & \frac{i}{4} & 0 \end{bmatrix}$
86	symmetry	$\frac{\sqrt{35}yz(y-z)(y+z)}{2}$
	$\mathbb{G}_{4,1}^{(1,-1;a)}(T_{1u})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & -\frac{1}{16} & 0 & -\frac{\sqrt{21}}{16} & 0 & -\frac{\sqrt{35}}{16} & 0 & -\frac{\sqrt{7}}{16} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{16} & 0 & \frac{\sqrt{35}}{16} & 0 & \frac{\sqrt{21}}{16} & 0 & \frac{1}{16} \end{bmatrix}$
87	symmetry	$-\frac{\sqrt{35}xz(x-z)(x+z)}{2}$
	$\mathbb{G}_{4,2}^{(1,-1;a)}(T_{1u})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & \frac{i}{16} & 0 & -\frac{\sqrt{21}i}{16} & 0 & \frac{\sqrt{35}i}{16} & 0 & -\frac{\sqrt{7}i}{16} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}i}{16} & 0 & \frac{\sqrt{35}i}{16} & 0 & -\frac{\sqrt{21}i}{16} & 0 & \frac{i}{16} \end{bmatrix}$
88	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$
	$\mathbb{G}_{4,3}^{(1,-1;a)}(T_{1u})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{1}{2} \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{1}{2} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
89	symmetry	$\frac{\sqrt{5}yz(6x^2-y^2-z^2)}{2}$
	$\mathbb{G}_{4,1}^{(1,-1;a)}(T_{2u})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{16} & 0 & -\frac{\sqrt{3}}{16} & 0 & -\frac{\sqrt{5}}{16} & 0 & \frac{7}{16} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{7}{16} & 0 & \frac{\sqrt{5}}{16} & 0 & \frac{\sqrt{3}}{16} & 0 & -\frac{\sqrt{7}}{16} \end{bmatrix}$
90	symmetry	$-\frac{\sqrt{5}xz(x^2-6y^2+z^2)}{2}$
	$\mathbb{G}_{4,2}^{(1,-1;a)}(T_{2u})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}i}{16} & 0 & \frac{\sqrt{3}i}{16} & 0 & -\frac{\sqrt{5}i}{16} & 0 & -\frac{7i}{16} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{7i}{16} & 0 & -\frac{\sqrt{5}i}{16} & 0 & \frac{\sqrt{3}i}{16} & 0 & \frac{\sqrt{7}i}{16} \end{bmatrix}$
91	symmetry	$-\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$
	$\mathbb{G}_{4,3}^{(1,-1;a)}(T_{2u})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{1}{4} & 0 & 0 & 0 & \frac{\sqrt{3}}{4} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{4} & 0 & 0 & 0 & -\frac{1}{4} & 0 \end{bmatrix}$
92	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$
	$\mathbb{G}_{2,1}^{(1,1;a)}(E_u)$	$\begin{bmatrix} 0 & 0 & -\frac{i}{2} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{i}{2} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
93	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$

continued ...

Table 4

No.	multipole	matrix
	$\mathbb{G}_{2,2}^{(1,1;a)}(E_u)$	$\begin{bmatrix} -\frac{\sqrt{30}i}{12} & 0 & 0 & 0 & -\frac{\sqrt{6}i}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{6}i}{12} & 0 & 0 & 0 & -\frac{\sqrt{30}i}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
94	symmetry	$\sqrt{3}yz$
	$\mathbb{G}_{2,1}^{(1,1;a)}(T_{2u})$	$\begin{bmatrix} 0 & -\frac{\sqrt{6}}{6} & 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{3}}{6} & 0 & -\frac{\sqrt{6}}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
95	symmetry	$\sqrt{3}xz$
	$\mathbb{G}_{2,2}^{(1,1;a)}(T_{2u})$	$\begin{bmatrix} 0 & \frac{\sqrt{6}i}{6} & 0 & -\frac{\sqrt{3}i}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{3}i}{6} & 0 & -\frac{\sqrt{6}i}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
96	symmetry	$\sqrt{3}xy$
	$\mathbb{G}_{2,3}^{(1,1;a)}(T_{2u})$	$\begin{bmatrix} \frac{\sqrt{30}}{12} & 0 & 0 & 0 & -\frac{\sqrt{6}}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{6}}{12} & 0 & 0 & 0 & -\frac{\sqrt{30}}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
97	symmetry	$\sqrt{15}xyz$
	$\mathbb{T}_3^{(a)}(A_{2u})$	$\begin{bmatrix} \frac{\sqrt{14}}{28} & 0 & 0 & 0 & -\frac{\sqrt{70}}{28} & 0 & 0 & -\frac{\sqrt{21}}{14} & 0 & 0 & 0 & \frac{\sqrt{7}}{14} & 0 & 0 \\ 0 & -\frac{\sqrt{70}}{28} & 0 & 0 & 0 & \frac{\sqrt{14}}{28} & 0 & 0 & -\frac{\sqrt{7}}{14} & 0 & 0 & 0 & \frac{\sqrt{21}}{14} & 0 \end{bmatrix}$
98	symmetry	$\frac{x(2x^2-3y^2-3z^2)}{2}$
	$\mathbb{T}_{3,1}^{(a)}(T_{1u})$	$\begin{bmatrix} 0 & -\frac{\sqrt{42}i}{56} & 0 & \frac{\sqrt{21}i}{28} & 0 & -\frac{\sqrt{210}i}{56} & -\frac{\sqrt{5}i}{8} & 0 & \frac{\sqrt{105}i}{56} & 0 & -\frac{3\sqrt{7}i}{56} & 0 & \frac{\sqrt{35}i}{56} & 0 \\ -\frac{\sqrt{210}i}{56} & 0 & \frac{\sqrt{21}i}{28} & 0 & -\frac{\sqrt{42}i}{56} & 0 & 0 & -\frac{\sqrt{35}i}{56} & 0 & \frac{3\sqrt{7}i}{56} & 0 & -\frac{\sqrt{105}i}{56} & 0 & \frac{\sqrt{5}i}{8} \end{bmatrix}$
99	symmetry	$-\frac{y(3x^2-2y^2+3z^2)}{2}$
	$\mathbb{T}_{3,2}^{(a)}(T_{1u})$	$\begin{bmatrix} 0 & \frac{\sqrt{42}}{56} & 0 & \frac{\sqrt{21}}{28} & 0 & \frac{\sqrt{210}}{56} & -\frac{\sqrt{5}}{8} & 0 & -\frac{\sqrt{105}}{56} & 0 & -\frac{3\sqrt{7}}{56} & 0 & -\frac{\sqrt{35}}{56} & 0 \\ -\frac{\sqrt{210}}{56} & 0 & -\frac{\sqrt{21}}{28} & 0 & -\frac{\sqrt{42}}{56} & 0 & 0 & -\frac{\sqrt{35}}{56} & 0 & -\frac{3\sqrt{7}}{56} & 0 & -\frac{\sqrt{105}}{56} & 0 & -\frac{\sqrt{5}}{8} \end{bmatrix}$
100	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$
	$\mathbb{T}_{3,3}^{(a)}(T_{1u})$	$\begin{bmatrix} 0 & 0 & -\frac{\sqrt{21}i}{14} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}i}{7} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{21}i}{14} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}i}{7} & 0 & 0 & 0 \end{bmatrix}$
101	symmetry	$\frac{\sqrt{15}x(y-z)(y+z)}{2}$
	$\mathbb{T}_{3,1}^{(a)}(T_{2u})$	$\begin{bmatrix} 0 & -\frac{\sqrt{70}i}{56} & 0 & \frac{\sqrt{35}i}{28} & 0 & \frac{3\sqrt{14}i}{56} & \frac{\sqrt{3}i}{8} & 0 & \frac{5\sqrt{7}i}{56} & 0 & -\frac{\sqrt{105}i}{56} & 0 & -\frac{\sqrt{21}i}{56} & 0 \\ \frac{3\sqrt{14}i}{56} & 0 & \frac{\sqrt{35}i}{28} & 0 & -\frac{\sqrt{70}i}{56} & 0 & 0 & \frac{\sqrt{21}i}{56} & 0 & \frac{\sqrt{105}i}{56} & 0 & -\frac{5\sqrt{7}i}{56} & 0 & -\frac{\sqrt{3}i}{8} \end{bmatrix}$
102	symmetry	$-\frac{\sqrt{15}y(x-z)(x+z)}{2}$

continued ...

Table 4

No.	multipole	matrix
	$\mathbb{T}_{3,2}^{(a)}(T_{2u})$	$\begin{bmatrix} 0 & -\frac{\sqrt{70}}{56} & 0 & -\frac{\sqrt{35}}{28} & 0 & \frac{3\sqrt{14}}{56} & -\frac{\sqrt{3}}{8} & 0 & \frac{5\sqrt{7}}{56} & 0 & \frac{\sqrt{105}}{56} & 0 & -\frac{\sqrt{21}}{56} & 0 \\ -\frac{3\sqrt{14}}{56} & 0 & \frac{\sqrt{35}}{28} & 0 & \frac{\sqrt{70}}{56} & 0 & 0 & -\frac{\sqrt{21}}{56} & 0 & \frac{\sqrt{105}}{56} & 0 & \frac{5\sqrt{7}}{56} & 0 & -\frac{\sqrt{3}}{8} \end{bmatrix}$
103	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$
	$\mathbb{T}_{3,3}^{(a)}(T_{2u})$	$\begin{bmatrix} -\frac{\sqrt{14}i}{28} & 0 & 0 & 0 & -\frac{\sqrt{70}i}{28} & 0 & 0 & \frac{\sqrt{21}i}{14} & 0 & 0 & 0 & \frac{\sqrt{7}i}{14} & 0 & 0 \\ 0 & \frac{\sqrt{70}i}{28} & 0 & 0 & 0 & \frac{\sqrt{14}i}{28} & 0 & 0 & \frac{\sqrt{7}i}{14} & 0 & 0 & 0 & \frac{\sqrt{21}i}{14} & 0 \end{bmatrix}$
104	symmetry	$\sqrt{15}xyz$
	$\mathbb{T}_3^{(1,0;a)}(A_{2u})$	$\begin{bmatrix} \frac{\sqrt{42}}{42} & 0 & 0 & 0 & -\frac{\sqrt{210}}{42} & 0 & 0 & \frac{3\sqrt{7}}{28} & 0 & 0 & 0 & -\frac{\sqrt{21}}{28} & 0 & 0 \\ 0 & -\frac{\sqrt{210}}{42} & 0 & 0 & 0 & \frac{\sqrt{42}}{42} & 0 & 0 & \frac{\sqrt{21}}{28} & 0 & 0 & 0 & -\frac{3\sqrt{7}}{28} & 0 \end{bmatrix}$
105	symmetry	$\frac{x(2x^2-3y^2-3z^2)}{2}$
	$\mathbb{T}_{3,1}^{(1,0;a)}(T_{1u})$	$\begin{bmatrix} 0 & -\frac{\sqrt{14}i}{28} & 0 & \frac{\sqrt{7}i}{14} & 0 & -\frac{\sqrt{70}i}{28} & \frac{\sqrt{15}i}{16} & 0 & -\frac{3\sqrt{35}i}{112} & 0 & \frac{3\sqrt{21}i}{112} & 0 & -\frac{\sqrt{105}i}{112} & 0 \\ -\frac{\sqrt{70}i}{28} & 0 & \frac{\sqrt{7}i}{14} & 0 & -\frac{\sqrt{14}i}{28} & 0 & 0 & \frac{\sqrt{105}i}{112} & 0 & -\frac{3\sqrt{21}i}{112} & 0 & \frac{3\sqrt{35}i}{112} & 0 & -\frac{\sqrt{15}i}{16} \end{bmatrix}$
106	symmetry	$-\frac{y(3x^2-2y^2+3z^2)}{2}$
	$\mathbb{T}_{3,2}^{(1,0;a)}(T_{1u})$	$\begin{bmatrix} 0 & \frac{\sqrt{14}}{28} & 0 & \frac{\sqrt{7}}{14} & 0 & \frac{\sqrt{70}}{28} & \frac{\sqrt{15}}{16} & 0 & \frac{3\sqrt{35}}{112} & 0 & \frac{3\sqrt{21}}{112} & 0 & \frac{\sqrt{105}}{112} & 0 \\ -\frac{\sqrt{70}}{28} & 0 & -\frac{\sqrt{7}}{14} & 0 & -\frac{\sqrt{14}}{28} & 0 & 0 & \frac{\sqrt{105}}{112} & 0 & \frac{3\sqrt{21}}{112} & 0 & \frac{3\sqrt{35}}{112} & 0 & \frac{\sqrt{15}}{16} \end{bmatrix}$
107	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$
	$\mathbb{T}_{3,3}^{(1,0;a)}(T_{1u})$	$\begin{bmatrix} 0 & 0 & -\frac{\sqrt{7}i}{7} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}i}{14} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{7}i}{7} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}i}{14} & 0 & 0 & 0 \end{bmatrix}$
108	symmetry	$\frac{\sqrt{15}x(y-z)(y+z)}{2}$
	$\mathbb{T}_{3,1}^{(1,0;a)}(T_{2u})$	$\begin{bmatrix} 0 & -\frac{\sqrt{210}i}{84} & 0 & \frac{\sqrt{105}i}{42} & 0 & \frac{\sqrt{42}i}{28} & -\frac{3i}{16} & 0 & -\frac{5\sqrt{21}i}{112} & 0 & \frac{3\sqrt{35}i}{112} & 0 & \frac{3\sqrt{7}i}{112} & 0 \\ \frac{\sqrt{42}i}{28} & 0 & \frac{\sqrt{105}i}{42} & 0 & -\frac{\sqrt{210}i}{84} & 0 & 0 & -\frac{3\sqrt{7}i}{112} & 0 & -\frac{3\sqrt{35}i}{112} & 0 & \frac{5\sqrt{21}i}{112} & 0 & \frac{3i}{16} \end{bmatrix}$
109	symmetry	$-\frac{\sqrt{15}y(x-z)(x+z)}{2}$
	$\mathbb{T}_{3,2}^{(1,0;a)}(T_{2u})$	$\begin{bmatrix} 0 & -\frac{\sqrt{210}}{84} & 0 & -\frac{\sqrt{105}}{42} & 0 & \frac{\sqrt{42}}{28} & \frac{3}{16} & 0 & -\frac{5\sqrt{21}}{112} & 0 & -\frac{3\sqrt{35}}{112} & 0 & \frac{3\sqrt{7}}{112} & 0 \\ -\frac{\sqrt{42}}{28} & 0 & \frac{\sqrt{105}}{42} & 0 & \frac{\sqrt{210}}{84} & 0 & 0 & \frac{3\sqrt{7}}{112} & 0 & -\frac{3\sqrt{35}}{112} & 0 & -\frac{5\sqrt{21}}{112} & 0 & \frac{3}{16} \end{bmatrix}$
110	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$
	$\mathbb{T}_{3,3}^{(1,0;a)}(T_{2u})$	$\begin{bmatrix} -\frac{\sqrt{42}i}{42} & 0 & 0 & 0 & -\frac{\sqrt{210}i}{42} & 0 & 0 & -\frac{3\sqrt{7}i}{28} & 0 & 0 & 0 & -\frac{\sqrt{21}i}{28} & 0 & 0 \\ 0 & \frac{\sqrt{210}i}{42} & 0 & 0 & 0 & \frac{\sqrt{42}i}{42} & 0 & 0 & -\frac{\sqrt{21}i}{28} & 0 & 0 & 0 & -\frac{3\sqrt{7}i}{28} & 0 \end{bmatrix}$
111	symmetry	$\frac{\sqrt{21}(x^4-3x^2y^2-3x^2z^2+y^4-3y^2z^2+z^4)}{6}$

continued ...

Table 4

No.	multipole	matrix
	$\mathbb{M}_4^{(1,-1;a)}(A_{1u})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{12} & 0 & 0 & 0 & \frac{\sqrt{15}}{12} \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{12} & 0 & 0 & 0 & -\frac{\sqrt{21}}{12} & 0 & 0 & 0 \end{bmatrix}$
112	symmetry	$-\frac{\sqrt{15}(x^4-12x^2y^2+6x^2z^2+y^4+6y^2z^2-2z^4)}{12}$
	$\mathbb{M}_{4,1}^{(1,-1;a)}(E_u)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{12} & 0 & 0 & 0 & -\frac{\sqrt{21}}{12} \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{12} & 0 & 0 & 0 & -\frac{\sqrt{15}}{12} & 0 & 0 & 0 \end{bmatrix}$
113	symmetry	$\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$
	$\mathbb{M}_{4,2}^{(1,-1;a)}(E_u)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{1}{4} & 0 & 0 & 0 & -\frac{\sqrt{3}}{4} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{4} & 0 & 0 & 0 & \frac{1}{4} & 0 \end{bmatrix}$
114	symmetry	$\frac{\sqrt{35}yz(y-z)(y+z)}{2}$
	$\mathbb{M}_{4,1}^{(1,-1;a)}(T_{1u})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & \frac{i}{16} & 0 & \frac{\sqrt{21}i}{16} & 0 & \frac{\sqrt{35}i}{16} & 0 & \frac{\sqrt{7}i}{16} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}i}{16} & 0 & -\frac{\sqrt{35}i}{16} & 0 & -\frac{\sqrt{21}i}{16} & 0 & -\frac{i}{16} \end{bmatrix}$
115	symmetry	$-\frac{\sqrt{35}xz(x-z)(x+z)}{2}$
	$\mathbb{M}_{4,2}^{(1,-1;a)}(T_{1u})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & \frac{1}{16} & 0 & -\frac{\sqrt{21}}{16} & 0 & \frac{\sqrt{35}}{16} & 0 & -\frac{\sqrt{7}}{16} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}}{16} & 0 & \frac{\sqrt{35}}{16} & 0 & -\frac{\sqrt{21}}{16} & 0 & \frac{1}{16} \end{bmatrix}$
116	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$
	$\mathbb{M}_{4,3}^{(1,-1;a)}(T_{1u})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{i}{2} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{i}{2} & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
117	symmetry	$\frac{\sqrt{5}yz(6x^2-y^2-z^2)}{2}$
	$\mathbb{M}_{4,1}^{(1,-1;a)}(T_{2u})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}i}{16} & 0 & \frac{\sqrt{3}i}{16} & 0 & \frac{\sqrt{5}i}{16} & 0 & -\frac{7i}{16} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{7i}{16} & 0 & -\frac{\sqrt{5}i}{16} & 0 & -\frac{\sqrt{3}i}{16} & 0 & \frac{\sqrt{7}i}{16} \end{bmatrix}$
118	symmetry	$-\frac{\sqrt{5}xz(x^2-6y^2+z^2)}{2}$
	$\mathbb{M}_{4,2}^{(1,-1;a)}(T_{2u})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{16} & 0 & \frac{\sqrt{3}}{16} & 0 & -\frac{\sqrt{5}}{16} & 0 & -\frac{7}{16} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{7}{16} & 0 & -\frac{\sqrt{5}}{16} & 0 & \frac{\sqrt{3}}{16} & 0 & \frac{\sqrt{7}}{16} \end{bmatrix}$
119	symmetry	$-\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$
	$\mathbb{M}_{4,3}^{(1,-1;a)}(T_{2u})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{i}{4} & 0 & 0 & 0 & -\frac{\sqrt{3}i}{4} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{4} & 0 & 0 & 0 & \frac{i}{4} & 0 \end{bmatrix}$
120	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$

continued ...

Table 4

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

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

Table 5: (p,p) block.

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

continued ...

Table 5

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

continued ...



Table 5

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

continued ...

Table 5

No.	multipole	matrix
	$\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})$	$\begin{bmatrix} 0 & 0 & \frac{\sqrt{3}}{12} & 0 & -\frac{1}{4} & 0 \\ 0 & 0 & 0 & -\frac{1}{4} & 0 & \frac{\sqrt{3}}{12} \\ \frac{\sqrt{3}}{12} & 0 & 0 & \frac{\sqrt{6}}{6} & 0 & 0 \\ 0 & -\frac{1}{4} & \frac{\sqrt{6}}{6} & 0 & 0 & 0 \\ -\frac{1}{4} & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{6} \\ 0 & \frac{\sqrt{3}}{12} & 0 & 0 & -\frac{\sqrt{6}}{6} & 0 \end{bmatrix}$
135	symmetry	$\begin{array}{c} \sqrt{3}xy \\ \mathbb{Q}_{2,3}^{(1,-1;a)}(T_{2g}) \end{array} \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}i}{6} \\ 0 & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{3}i}{6} & 0 & 0 & -\frac{\sqrt{6}i}{6} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{6} \\ 0 & 0 & \frac{\sqrt{6}i}{6} & 0 & 0 & 0 \\ -\frac{\sqrt{3}i}{6} & 0 & 0 & \frac{\sqrt{6}i}{6} & 0 & 0 \end{bmatrix}$
136	symmetry	$\begin{array}{c} 1 \\ \mathbb{Q}_0^{(1,1;a)}(A_{1g}) \end{array} \begin{bmatrix} -\frac{\sqrt{3}}{3} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{3}}{3} & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{3}}{6} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{3}}{6} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{6} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{6} \end{bmatrix}$
137	symmetry	$\begin{array}{c} x \\ \mathbb{G}_{1,1}^{(1,0;a)}(T_{1g}) \end{array} \begin{bmatrix} 0 & 0 & \frac{\sqrt{3}i}{4} & 0 & -\frac{i}{4} & 0 \\ 0 & 0 & 0 & \frac{i}{4} & 0 & -\frac{\sqrt{3}i}{4} \\ -\frac{\sqrt{3}i}{4} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{i}{4} & 0 & 0 & 0 & 0 \\ \frac{i}{4} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{3}i}{4} & 0 & 0 & 0 & 0 \end{bmatrix}$
138	symmetry	$y$

continued ...

Table 5

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

continued ...

Table 5

No.	multipole	matrix
	$\mathbb{T}_{2,1}^{(1,0;a)}(T_{2g})$	$\begin{bmatrix} 0 & 0 & \frac{1}{4} & 0 & \frac{\sqrt{3}}{4} & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{3}}{4} & 0 & -\frac{1}{4} \\ \frac{1}{4} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{3}}{4} & 0 & 0 & 0 & 0 \\ \frac{\sqrt{3}}{4} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{1}{4} & 0 & 0 & 0 & 0 \end{bmatrix}$
143	symmetry	$\begin{array}{c} \sqrt{3}xz \\ \mathbb{T}_{2,2}^{(1,0;a)}(T_{2g}) \end{array}$ $\begin{bmatrix} 0 & 0 & -\frac{i}{4} & 0 & \frac{\sqrt{3}i}{4} & 0 \\ 0 & 0 & 0 & \frac{\sqrt{3}i}{4} & 0 & -\frac{i}{4} \\ \frac{i}{4} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{3}i}{4} & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{3}i}{4} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{i}{4} & 0 & 0 & 0 & 0 \end{bmatrix}$
144	symmetry	$\begin{array}{c} \sqrt{3}xy \\ \mathbb{T}_{2,3}^{(1,0;a)}(T_{2g}) \end{array}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{1}{2} \\ 0 & 0 & \frac{1}{2} & 0 & 0 & 0 \\ 0 & \frac{1}{2} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{1}{2} & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
145	symmetry	$\begin{array}{c} x \\ \mathbb{M}_{1,1}^{(a)}(T_{1g}) \end{array}$ $\begin{bmatrix} 0 & \frac{1}{3} & -\frac{\sqrt{6}}{12} & 0 & \frac{\sqrt{2}}{12} & 0 \\ \frac{1}{3} & 0 & 0 & -\frac{\sqrt{2}}{12} & 0 & \frac{\sqrt{6}}{12} \\ -\frac{\sqrt{6}}{12} & 0 & 0 & \frac{\sqrt{3}}{6} & 0 & 0 \\ 0 & -\frac{\sqrt{2}}{12} & \frac{\sqrt{3}}{6} & 0 & \frac{1}{3} & 0 \\ \frac{\sqrt{2}}{12} & 0 & 0 & \frac{1}{3} & 0 & \frac{\sqrt{3}}{6} \\ 0 & \frac{\sqrt{6}}{12} & 0 & 0 & \frac{\sqrt{3}}{6} & 0 \end{bmatrix}$
146	symmetry	$y$

*continued ...*

Table 5

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

*continued ...*

Table 5

No.	multipole	matrix
	$\mathbb{M}_{1,3}^{(1,-1;a)}(T_{1g})$	$\begin{bmatrix} -\frac{\sqrt{6}}{18} & 0 & 0 & -\frac{2\sqrt{3}}{9} & 0 & 0 \\ 0 & \frac{\sqrt{6}}{18} & 0 & 0 & -\frac{2\sqrt{3}}{9} & 0 \\ 0 & 0 & \frac{\sqrt{6}}{6} & 0 & 0 & 0 \\ -\frac{2\sqrt{3}}{9} & 0 & 0 & \frac{\sqrt{6}}{18} & 0 & 0 \\ 0 & -\frac{2\sqrt{3}}{9} & 0 & 0 & -\frac{\sqrt{6}}{18} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{6} \end{bmatrix}$
151	symmetry	$\sqrt{15}xyz$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{i}{2} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{i}{2} \\ 0 & 0 & -\frac{i}{2} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{i}{2} & 0 & 0 \end{bmatrix}$
152	symmetry	$\frac{x(2x^2-3y^2-3z^2)}{2}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{15}}{20} & 0 & -\frac{\sqrt{5}}{4} \\ 0 & 0 & \frac{\sqrt{15}}{20} & 0 & -\frac{3\sqrt{5}}{20} & 0 \\ 0 & 0 & 0 & -\frac{3\sqrt{5}}{20} & 0 & \frac{\sqrt{15}}{20} \\ 0 & 0 & -\frac{\sqrt{5}}{4} & 0 & \frac{\sqrt{15}}{20} & 0 \end{bmatrix}$
153	symmetry	$-\frac{y(3x^2-2y^2+3z^2)}{2}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{15}i}{20} & 0 & -\frac{\sqrt{5}i}{4} \\ 0 & 0 & \frac{\sqrt{15}i}{20} & 0 & \frac{3\sqrt{5}i}{20} & 0 \\ 0 & 0 & 0 & -\frac{3\sqrt{5}i}{20} & 0 & -\frac{\sqrt{15}i}{20} \\ 0 & 0 & \frac{\sqrt{5}i}{4} & 0 & \frac{\sqrt{15}i}{20} & 0 \end{bmatrix}$
154	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$

continued ...

Table 5

No.	multipole	matrix
	$\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{5}}{10} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{3\sqrt{5}}{10} & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{3\sqrt{5}}{10} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{5}}{10} \end{bmatrix}$
155	symmetry	$\frac{\sqrt{15}x(y-z)(y+z)}{2}$ $\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{1}{4} & 0 & \frac{\sqrt{3}}{4} \\ 0 & 0 & \frac{1}{4} & 0 & -\frac{\sqrt{3}}{4} & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{3}}{4} & 0 & \frac{1}{4} \\ 0 & 0 & \frac{\sqrt{3}}{4} & 0 & \frac{1}{4} & 0 \end{bmatrix}$
156	symmetry	$-\frac{\sqrt{15}y(x-z)(x+z)}{2}$ $\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{i}{4} & 0 & -\frac{\sqrt{3}i}{4} \\ 0 & 0 & -\frac{i}{4} & 0 & -\frac{\sqrt{3}i}{4} & 0 \\ 0 & 0 & 0 & \frac{\sqrt{3}i}{4} & 0 & \frac{i}{4} \\ 0 & 0 & \frac{\sqrt{3}i}{4} & 0 & -\frac{i}{4} & 0 \end{bmatrix}$
157	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$ $\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{1}{2} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{1}{2} \\ 0 & 0 & -\frac{1}{2} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{1}{2} & 0 & 0 \end{bmatrix}$
158	symmetry	$x$

continued ...

Table 5

No.	multipole	matrix					
		$\mathbb{M}_{1,1}^{(1,1;a)}(T_{1g}) = \begin{bmatrix} 0 & \frac{\sqrt{30}}{9} & \frac{\sqrt{5}}{12} & 0 & -\frac{\sqrt{15}}{36} & 0 \\ \frac{\sqrt{30}}{9} & 0 & 0 & \frac{\sqrt{15}}{36} & 0 & -\frac{\sqrt{5}}{12} \\ \frac{\sqrt{5}}{12} & 0 & 0 & -\frac{\sqrt{10}}{30} & 0 & 0 \\ 0 & \frac{\sqrt{15}}{36} & -\frac{\sqrt{10}}{30} & 0 & -\frac{\sqrt{30}}{45} & 0 \\ -\frac{\sqrt{15}}{36} & 0 & 0 & -\frac{\sqrt{30}}{45} & 0 & -\frac{\sqrt{10}}{30} \\ 0 & -\frac{\sqrt{5}}{12} & 0 & 0 & -\frac{\sqrt{10}}{30} & 0 \end{bmatrix}$					
159	symmetry	$\mathbb{M}_{1,2}^{(1,1;a)}(T_{1g}) = \begin{bmatrix} 0 & -\frac{\sqrt{30}i}{9} & \frac{\sqrt{5}i}{12} & 0 & \frac{\sqrt{15}i}{36} & 0 \\ \frac{\sqrt{30}i}{9} & 0 & 0 & \frac{\sqrt{15}i}{36} & 0 & \frac{\sqrt{5}i}{12} \\ -\frac{\sqrt{5}i}{12} & 0 & 0 & \frac{\sqrt{10}i}{30} & 0 & 0 \\ 0 & -\frac{\sqrt{15}i}{36} & -\frac{\sqrt{10}i}{30} & 0 & \frac{\sqrt{30}i}{45} & 0 \\ -\frac{\sqrt{15}i}{36} & 0 & 0 & -\frac{\sqrt{30}i}{45} & 0 & \frac{\sqrt{10}i}{30} \\ 0 & -\frac{\sqrt{5}i}{12} & 0 & 0 & -\frac{\sqrt{10}i}{30} & 0 \end{bmatrix}$					
160	symmetry	$\mathbb{M}_{1,3}^{(1,1;a)}(T_{1g}) = \begin{bmatrix} \frac{\sqrt{30}}{9} & 0 & 0 & -\frac{\sqrt{15}}{18} & 0 & 0 \\ 0 & -\frac{\sqrt{30}}{9} & 0 & 0 & -\frac{\sqrt{15}}{18} & 0 \\ 0 & 0 & -\frac{\sqrt{30}}{30} & 0 & 0 & 0 \\ -\frac{\sqrt{15}}{18} & 0 & 0 & -\frac{\sqrt{30}}{90} & 0 & 0 \\ 0 & -\frac{\sqrt{15}}{18} & 0 & 0 & \frac{\sqrt{30}}{90} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{30} \end{bmatrix}$					

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

Table 6: (p,d) block.

No.	multipole	matrix
161	symmetry	$x$

continued ...



Table 6

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

continued ...

Table 6

No.	multipole	matrix
	$\mathbb{Q}_{3,1}^{(a)}(T_{1u})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{24} & 0 & \frac{\sqrt{3}}{12} & 0 & -\frac{\sqrt{30}}{24} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{24} & 0 & \frac{\sqrt{3}}{12} & 0 & -\frac{\sqrt{6}}{24} & 0 \\ 0 & -\frac{\sqrt{3}}{20} & 0 & \frac{1}{4} & -\frac{\sqrt{5}}{40} & 0 & \frac{3\sqrt{2}}{40} & 0 & -\frac{1}{8} & 0 \\ -\frac{\sqrt{3}}{20} & 0 & \frac{3}{20} & 0 & 0 & \frac{7\sqrt{3}}{120} & 0 & -\frac{\sqrt{6}}{120} & 0 & -\frac{\sqrt{15}}{24} \\ 0 & \frac{3}{20} & 0 & -\frac{\sqrt{3}}{20} & \frac{\sqrt{15}}{24} & 0 & \frac{\sqrt{6}}{120} & 0 & -\frac{7\sqrt{3}}{120} & 0 \\ \frac{1}{4} & 0 & -\frac{\sqrt{3}}{20} & 0 & 0 & \frac{1}{8} & 0 & -\frac{3\sqrt{2}}{40} & 0 & \frac{\sqrt{5}}{40} \end{bmatrix}$
166	symmetry	$-\frac{y(3x^2-2y^2+3z^2)}{2}$ $\mathbb{Q}_{3,2}^{(a)}(T_{1u}) \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{24} & 0 & -\frac{\sqrt{3}i}{12} & 0 & -\frac{\sqrt{30}i}{24} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{24} & 0 & \frac{\sqrt{3}i}{12} & 0 & \frac{\sqrt{6}i}{24} & 0 \\ 0 & \frac{\sqrt{3}i}{20} & 0 & \frac{i}{4} & -\frac{\sqrt{5}i}{40} & 0 & -\frac{3\sqrt{2}i}{40} & 0 & -\frac{i}{8} & 0 \\ -\frac{\sqrt{3}i}{20} & 0 & -\frac{3i}{20} & 0 & 0 & \frac{7\sqrt{3}i}{120} & 0 & \frac{\sqrt{6}i}{120} & 0 & -\frac{\sqrt{15}i}{24} \\ 0 & \frac{3i}{20} & 0 & \frac{\sqrt{3}i}{20} & -\frac{\sqrt{15}i}{24} & 0 & \frac{\sqrt{6}i}{120} & 0 & \frac{7\sqrt{3}i}{120} & 0 \\ -\frac{i}{4} & 0 & -\frac{\sqrt{3}i}{20} & 0 & 0 & -\frac{i}{8} & 0 & -\frac{3\sqrt{2}i}{40} & 0 & -\frac{\sqrt{5}i}{40} \end{bmatrix}$
167	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$ $\mathbb{Q}_{3,3}^{(a)}(T_{1u}) \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{6} & 0 & 0 \\ \frac{1}{10} & 0 & 0 & 0 & 0 & -\frac{1}{5} & 0 & 0 & 0 & 0 \\ 0 & -\frac{3}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{15} & 0 & 0 & 0 \\ 0 & 0 & \frac{3}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{15} & 0 & 0 \\ 0 & 0 & 0 & -\frac{1}{10} & 0 & 0 & 0 & 0 & -\frac{1}{5} & 0 \end{bmatrix}$
168	symmetry	$\frac{\sqrt{15}x(y-z)(y+z)}{2}$ $\mathbb{Q}_{3,1}^{(a)}(T_{2u}) \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}}{24} & 0 & \frac{\sqrt{5}}{12} & 0 & \frac{\sqrt{2}}{8} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{8} & 0 & \frac{\sqrt{5}}{12} & 0 & -\frac{\sqrt{10}}{24} & 0 \\ 0 & -\frac{\sqrt{5}}{20} & 0 & -\frac{\sqrt{15}}{20} & -\frac{\sqrt{3}}{24} & 0 & \frac{\sqrt{30}}{40} & 0 & \frac{\sqrt{15}}{40} & 0 \\ -\frac{\sqrt{5}}{20} & 0 & \frac{\sqrt{15}}{20} & 0 & 0 & \frac{7\sqrt{5}}{120} & 0 & -\frac{\sqrt{10}}{120} & 0 & \frac{1}{8} \\ 0 & \frac{\sqrt{15}}{20} & 0 & -\frac{\sqrt{5}}{20} & -\frac{1}{8} & 0 & \frac{\sqrt{10}}{120} & 0 & -\frac{7\sqrt{5}}{120} & 0 \\ -\frac{\sqrt{15}}{20} & 0 & -\frac{\sqrt{5}}{20} & 0 & 0 & -\frac{\sqrt{15}}{40} & 0 & -\frac{\sqrt{30}}{40} & 0 & \frac{\sqrt{3}}{24} \end{bmatrix}$
169	symmetry	$-\frac{\sqrt{15}y(x-z)(x+z)}{2}$

continued ...

Table 6

No.	multipole	matrix
	$\mathbb{Q}_{3,2}^{(a)}(T_{2u})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{24} & 0 & \frac{\sqrt{5}i}{12} & 0 & -\frac{\sqrt{2}i}{8} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{8} & 0 & -\frac{\sqrt{5}i}{12} & 0 & -\frac{\sqrt{10}i}{24} & 0 \\ 0 & -\frac{\sqrt{5}i}{20} & 0 & \frac{\sqrt{15}i}{20} & \frac{\sqrt{3}i}{24} & 0 & \frac{\sqrt{30}i}{40} & 0 & -\frac{\sqrt{15}i}{40} & 0 \\ \frac{\sqrt{5}i}{20} & 0 & \frac{\sqrt{15}i}{20} & 0 & 0 & -\frac{7\sqrt{5}i}{120} & 0 & -\frac{\sqrt{10}i}{120} & 0 & -\frac{i}{8} \\ 0 & -\frac{\sqrt{15}i}{20} & 0 & -\frac{\sqrt{5}i}{20} & -\frac{i}{8} & 0 & -\frac{\sqrt{10}i}{120} & 0 & -\frac{7\sqrt{5}i}{120} & 0 \\ -\frac{\sqrt{15}i}{20} & 0 & \frac{\sqrt{5}i}{20} & 0 & 0 & -\frac{\sqrt{15}i}{40} & 0 & \frac{\sqrt{30}i}{40} & 0 & \frac{\sqrt{3}i}{24} \end{bmatrix}$
170	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$ $\mathbb{Q}_{3,3}^{(a)}(T_{2u}) \begin{bmatrix} 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{12} & 0 & 0 & 0 & -\frac{\sqrt{10}}{12} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{12} & 0 & 0 & 0 & \frac{\sqrt{2}}{12} \\ 0 & 0 & \frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{30} & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{5}}{10} & \frac{1}{6} & 0 & 0 & 0 & -\frac{\sqrt{5}}{30} & 0 \\ \frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{30} & 0 & 0 & 0 & \frac{1}{6} \\ 0 & -\frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{30} & 0 & 0 & 0 \end{bmatrix}$
171	symmetry	$\sqrt{15}xyz$ $\mathbb{Q}_3^{(1,-1;a)}(A_{2u}) \begin{bmatrix} 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{18} & 0 & 0 & 0 & \frac{\sqrt{15}i}{18} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{18} & 0 & 0 & 0 & -\frac{\sqrt{3}i}{18} \\ 0 & 0 & -\frac{\sqrt{30}i}{60} & 0 & 0 & 0 & 0 & -\frac{2\sqrt{5}i}{15} & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{30}i}{60} & -\frac{\sqrt{6}i}{9} & 0 & 0 & 0 & -\frac{\sqrt{30}i}{45} & 0 \\ \frac{\sqrt{30}i}{60} & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{45} & 0 & 0 & 0 & \frac{\sqrt{6}i}{9} \\ 0 & -\frac{\sqrt{30}i}{60} & 0 & 0 & 0 & 0 & \frac{2\sqrt{5}i}{15} & 0 & 0 & 0 \end{bmatrix}$
172	symmetry	$\frac{x(2x^2-3y^2-3z^2)}{2}$ $\mathbb{Q}_{3,1}^{(1,-1;a)}(T_{1u}) \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{1}{12} & 0 & \frac{\sqrt{2}}{12} & 0 & -\frac{\sqrt{5}}{12} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{12} & 0 & \frac{\sqrt{2}}{12} & 0 & -\frac{1}{12} & 0 \\ 0 & -\frac{\sqrt{2}}{40} & 0 & \frac{\sqrt{6}}{24} & \frac{\sqrt{30}}{60} & 0 & -\frac{\sqrt{3}}{10} & 0 & \frac{\sqrt{6}}{12} & 0 \\ -\frac{\sqrt{2}}{40} & 0 & \frac{\sqrt{6}}{40} & 0 & 0 & -\frac{7\sqrt{2}}{60} & 0 & \frac{1}{30} & 0 & \frac{\sqrt{10}}{12} \\ 0 & \frac{\sqrt{6}}{40} & 0 & -\frac{\sqrt{2}}{40} & -\frac{\sqrt{10}}{12} & 0 & -\frac{1}{30} & 0 & \frac{7\sqrt{2}}{60} & 0 \\ \frac{\sqrt{6}}{24} & 0 & -\frac{\sqrt{2}}{40} & 0 & 0 & -\frac{\sqrt{6}}{12} & 0 & \frac{\sqrt{3}}{10} & 0 & -\frac{\sqrt{30}}{60} \end{bmatrix}$
173	symmetry	$-\frac{y(3x^2-2y^2+3z^2)}{2}$

continued ...

Table 6

No.	multipole	matrix
	$\mathbb{Q}_{3,2}^{(1,-1;a)}(T_{1u})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{i}{12} & 0 & -\frac{\sqrt{2}i}{12} & 0 & -\frac{\sqrt{5}i}{12} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{5}i}{12} & 0 & \frac{\sqrt{2}i}{12} & 0 & \frac{i}{12} & 0 \\ 0 & \frac{\sqrt{2}i}{40} & 0 & \frac{\sqrt{6}i}{24} & \frac{\sqrt{30}i}{60} & 0 & \frac{\sqrt{3}i}{10} & 0 & \frac{\sqrt{6}i}{12} & 0 \\ -\frac{\sqrt{2}i}{40} & 0 & -\frac{\sqrt{6}i}{40} & 0 & 0 & -\frac{7\sqrt{2}i}{60} & 0 & -\frac{i}{30} & 0 & \frac{\sqrt{10}i}{12} \\ 0 & \frac{\sqrt{6}i}{40} & 0 & \frac{\sqrt{2}i}{40} & \frac{\sqrt{10}i}{12} & 0 & -\frac{i}{30} & 0 & -\frac{7\sqrt{2}i}{60} & 0 \\ -\frac{\sqrt{6}i}{24} & 0 & -\frac{\sqrt{2}i}{40} & 0 & 0 & \frac{\sqrt{6}i}{12} & 0 & \frac{\sqrt{3}i}{10} & 0 & \frac{\sqrt{30}i}{60} \end{bmatrix}$
174	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{6} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{6} & 0 & 0 \\ \frac{\sqrt{6}}{60} & 0 & 0 & 0 & 0 & \frac{2\sqrt{6}}{15} & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{6}}{20} & 0 & 0 & 0 & 0 & -\frac{4}{15} & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{6}}{20} & 0 & 0 & 0 & 0 & -\frac{4}{15} & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{6}}{60} & 0 & 0 & 0 & 0 & \frac{2\sqrt{6}}{15} & 0 \end{bmatrix}$
175	symmetry	$\frac{\sqrt{15}x(y-z)(y+z)}{2}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{36} & 0 & \frac{\sqrt{30}}{36} & 0 & \frac{\sqrt{3}}{12} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{12} & 0 & \frac{\sqrt{30}}{36} & 0 & -\frac{\sqrt{15}}{36} & 0 \\ 0 & -\frac{\sqrt{30}}{120} & 0 & -\frac{\sqrt{10}}{40} & \frac{\sqrt{2}}{12} & 0 & -\frac{\sqrt{5}}{10} & 0 & -\frac{\sqrt{10}}{20} & 0 \\ -\frac{\sqrt{30}}{120} & 0 & \frac{\sqrt{10}}{40} & 0 & 0 & -\frac{7\sqrt{30}}{180} & 0 & \frac{\sqrt{15}}{90} & 0 & -\frac{\sqrt{6}}{12} \\ 0 & \frac{\sqrt{10}}{40} & 0 & -\frac{\sqrt{30}}{120} & \frac{\sqrt{6}}{12} & 0 & -\frac{\sqrt{15}}{90} & 0 & \frac{7\sqrt{30}}{180} & 0 \\ -\frac{\sqrt{10}}{40} & 0 & -\frac{\sqrt{30}}{120} & 0 & 0 & \frac{\sqrt{10}}{20} & 0 & \frac{\sqrt{5}}{10} & 0 & -\frac{\sqrt{2}}{12} \end{bmatrix}$
176	symmetry	$-\frac{\sqrt{15}y(x-z)(x+z)}{2}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{36} & 0 & \frac{\sqrt{30}i}{36} & 0 & -\frac{\sqrt{3}i}{12} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{3}i}{12} & 0 & -\frac{\sqrt{30}i}{36} & 0 & -\frac{\sqrt{15}i}{36} & 0 \\ 0 & -\frac{\sqrt{30}i}{120} & 0 & \frac{\sqrt{10}i}{40} & -\frac{\sqrt{2}i}{12} & 0 & -\frac{\sqrt{5}i}{10} & 0 & \frac{\sqrt{10}i}{20} & 0 \\ \frac{\sqrt{30}i}{120} & 0 & \frac{\sqrt{10}i}{40} & 0 & 0 & \frac{7\sqrt{30}i}{180} & 0 & \frac{\sqrt{15}i}{90} & 0 & \frac{\sqrt{6}i}{12} \\ 0 & -\frac{\sqrt{10}i}{40} & 0 & -\frac{\sqrt{30}i}{120} & \frac{\sqrt{6}i}{12} & 0 & \frac{\sqrt{15}i}{90} & 0 & \frac{7\sqrt{30}i}{180} & 0 \\ -\frac{\sqrt{10}i}{40} & 0 & \frac{\sqrt{30}i}{120} & 0 & 0 & \frac{\sqrt{10}i}{20} & 0 & -\frac{\sqrt{5}i}{10} & 0 & -\frac{\sqrt{2}i}{12} \end{bmatrix}$
177	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$

continued ...

Table 6

No.	multipole	matrix									
	$\mathbb{Q}_{3,3}^{(1,-1;a)}(T_{2u})$	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
178	symmetry	$x$									
	$\mathbb{Q}_{1,1}^{(1,0;a)}(T_{1u})$	$\frac{\sqrt{2}}{8}$	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	$\frac{\sqrt{15}}{20}$
179	symmetry	$y$									
	$\mathbb{Q}_{1,2}^{(1,0;a)}(T_{1u})$	$\frac{\sqrt{2}i}{8}$	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	$-\frac{\sqrt{15}i}{20}$
180	symmetry	$z$									
	$\mathbb{Q}_{1,3}^{(1,0;a)}(T_{1u})$	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
181	symmetry	$\sqrt{15}xyz$									

*continued ...*

Table 6

No.	multipole	matrix									
	$\mathbb{Q}_3^{(1,0;a)}(A_{2u})$	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
182	symmetry	$\frac{x(2x^2-3y^2-3z^2)}{2}$									
	$\mathbb{Q}_{3,1}^{(1,0;a)}(T_{1u})$	0	0	0	0	0	$-\frac{\sqrt{2}}{12}$	0	$\frac{1}{6}$	0	$-\frac{\sqrt{10}}{12}$
		0	0	0	0	$-\frac{\sqrt{10}}{12}$	0	$\frac{1}{6}$	0	$-\frac{\sqrt{2}}{12}$	0
		0	$\frac{1}{10}$	0	$-\frac{\sqrt{3}}{6}$	$-\frac{\sqrt{15}}{240}$	0	$\frac{\sqrt{6}}{80}$	0	$-\frac{\sqrt{3}}{48}$	0
		$\frac{1}{10}$	0	$-\frac{\sqrt{3}}{10}$	0	0	$\frac{7}{240}$	0	$-\frac{\sqrt{2}}{240}$	0	$-\frac{\sqrt{5}}{48}$
		0	$-\frac{\sqrt{3}}{10}$	0	$\frac{1}{10}$	$\frac{\sqrt{5}}{48}$	0	$\frac{\sqrt{2}}{240}$	0	$-\frac{7}{240}$	0
		$-\frac{\sqrt{3}}{6}$	0	$\frac{1}{10}$	0	0	$\frac{\sqrt{3}}{48}$	0	$-\frac{\sqrt{6}}{80}$	0	$\frac{\sqrt{15}}{240}$
183	symmetry	$-\frac{y(3x^2-2y^2+3z^2)}{2}$									
	$\mathbb{Q}_{3,2}^{(1,0;a)}(T_{1u})$	0	0	0	0	0	$-\frac{\sqrt{2}i}{12}$	0	$-\frac{i}{6}$	0	$-\frac{\sqrt{10}i}{12}$
		0	0	0	0	$\frac{\sqrt{10}i}{12}$	0	$\frac{i}{6}$	0	$\frac{\sqrt{2}i}{12}$	0
		0	$-\frac{i}{10}$	0	$-\frac{\sqrt{3}i}{6}$	$-\frac{\sqrt{15}i}{240}$	0	$-\frac{\sqrt{6}i}{80}$	0	$-\frac{\sqrt{3}i}{48}$	0
		$\frac{i}{10}$	0	$\frac{\sqrt{3}i}{10}$	0	0	$\frac{7i}{240}$	0	$\frac{\sqrt{2}i}{240}$	0	$-\frac{\sqrt{5}i}{48}$
		0	$-\frac{\sqrt{3}i}{10}$	0	$-\frac{i}{10}$	$-\frac{\sqrt{5}i}{48}$	0	$\frac{\sqrt{2}i}{240}$	0	$\frac{7i}{240}$	0
		$\frac{\sqrt{3}i}{6}$	0	$\frac{i}{10}$	0	0	$-\frac{\sqrt{3}i}{48}$	0	$-\frac{\sqrt{6}i}{80}$	0	$-\frac{\sqrt{15}i}{240}$
184	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$									
	$\mathbb{Q}_{3,3}^{(1,0;a)}(T_{1u})$	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
185	symmetry	$\frac{\sqrt{15}x(y-z)(y+z)}{2}$									

continued ...

Table 6

No.	multipole	matrix									
	$\mathbb{Q}_{3,1}^{(1,0;a)}(T_{2u})$	0	0	0	0	0	$-\frac{\sqrt{30}}{36}$	0	$\frac{\sqrt{15}}{18}$	0	$\frac{\sqrt{6}}{12}$
		0	0	0	0	$\frac{\sqrt{6}}{12}$	0	$\frac{\sqrt{15}}{18}$	0	$-\frac{\sqrt{30}}{36}$	0
		0	$\frac{\sqrt{15}}{30}$	0	$\frac{\sqrt{5}}{10}$	$-\frac{1}{48}$	0	$\frac{\sqrt{10}}{80}$	0	$\frac{\sqrt{5}}{80}$	0
		$\frac{\sqrt{15}}{30}$	0	$-\frac{\sqrt{5}}{10}$	0	0	$\frac{7\sqrt{15}}{720}$	0	$-\frac{\sqrt{30}}{720}$	0	$\frac{\sqrt{3}}{48}$
		0	$-\frac{\sqrt{5}}{10}$	0	$\frac{\sqrt{15}}{30}$	$-\frac{\sqrt{3}}{48}$	0	$\frac{\sqrt{30}}{720}$	0	$-\frac{7\sqrt{15}}{720}$	0
		$\frac{\sqrt{5}}{10}$	0	$\frac{\sqrt{15}}{30}$	0	0	$-\frac{\sqrt{5}}{80}$	0	$-\frac{\sqrt{10}}{80}$	0	$\frac{1}{48}$
186	symmetry	$-\frac{\sqrt{15}y(x-z)(x+z)}{2}$									
	$\mathbb{Q}_{3,2}^{(1,0;a)}(T_{2u})$	0	0	0	0	0	$\frac{\sqrt{30}i}{36}$	0	$\frac{\sqrt{15}i}{18}$	0	$-\frac{\sqrt{6}i}{12}$
		0	0	0	0	$\frac{\sqrt{6}i}{12}$	0	$-\frac{\sqrt{15}i}{18}$	0	$-\frac{\sqrt{30}i}{36}$	0
		0	$\frac{\sqrt{15}i}{30}$	0	$-\frac{\sqrt{5}i}{10}$	$\frac{i}{48}$	0	$\frac{\sqrt{10}i}{80}$	0	$-\frac{\sqrt{5}i}{80}$	0
		$-\frac{\sqrt{15}i}{30}$	0	$-\frac{\sqrt{5}i}{10}$	0	0	$-\frac{7\sqrt{15}i}{720}$	0	$-\frac{\sqrt{30}i}{720}$	0	$-\frac{\sqrt{3}i}{48}$
		0	$\frac{\sqrt{5}i}{10}$	0	$\frac{\sqrt{15}i}{30}$	$-\frac{\sqrt{3}i}{48}$	0	$-\frac{\sqrt{30}i}{720}$	0	$-\frac{7\sqrt{15}i}{720}$	0
		$\frac{\sqrt{5}i}{10}$	0	$-\frac{\sqrt{15}i}{30}$	0	0	$-\frac{\sqrt{5}i}{80}$	0	$\frac{\sqrt{10}i}{80}$	0	$\frac{i}{48}$
187	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$									
	$\mathbb{Q}_{3,3}^{(1,0;a)}(T_{2u})$	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
188	symmetry	$x$									
	$\mathbb{Q}_{1,1}^{(1,1;a)}(T_{1u})$	$\frac{\sqrt{6}}{8}$	0	$-\frac{\sqrt{2}}{8}$	0	0	0	0	0	0	0
		0	$\frac{\sqrt{2}}{8}$	0	$-\frac{\sqrt{6}}{8}$	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
		$-\frac{\sqrt{3}}{10}$	0	$-\frac{1}{5}$	0	0	$-\frac{\sqrt{3}}{20}$	0	$\frac{\sqrt{6}}{40}$	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	$-\frac{\sqrt{3}}{10}$	0	0	0	0	$-\frac{\sqrt{2}}{40}$	0	$\frac{\sqrt{5}}{20}$
189	symmetry	$y$									

continued ...

Table 6

No.	multipole	matrix									
	$\mathbb{Q}_{1,2}^{(1,1;a)}(T_{1u})$	$\frac{\sqrt{6}i}{8}$	0	$\frac{\sqrt{2}i}{8}$	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	$\frac{\sqrt{3}i}{10}$	0	0	$-\frac{\sqrt{5}i}{20}$	0	$-\frac{\sqrt{2}i}{40}$	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	$-\frac{i}{5}$	0	$\frac{\sqrt{3}i}{10}$	0	0	$-\frac{\sqrt{6}i}{40}$	0	$-\frac{\sqrt{3}i}{20}$	0
		0	0	$-\frac{\sqrt{3}i}{10}$	0	0	0	0	$-\frac{\sqrt{2}i}{40}$	0	$-\frac{\sqrt{5}i}{20}$
190	symmetry	$z$									
	$\mathbb{Q}_{1,3}^{(1,1;a)}(T_{1u})$	$\begin{bmatrix} 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{3}{10} & 0 & 0 & 0 & 0 & 0 & \frac{1}{10} & 0 & 0 & 0 & 0 \\ 0 & -\frac{1}{10} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{20} & 0 & 0 & 0 \\ 0 & 0 & \frac{1}{10} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{20} & 0 & 0 \\ 0 & 0 & 0 & \frac{3}{10} & 0 & 0 & 0 & 0 & 0 & \frac{1}{10} & 0 \end{bmatrix}$									
191	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$									
	$\mathbb{G}_{2,1}^{(a)}(E_u)$	$\begin{bmatrix} 0 & \frac{\sqrt{5}i}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{30} & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{5}i}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{30} & 0 & 0 & 0 \\ -\frac{\sqrt{10}i}{20} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{10} & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{10}i}{20} & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{30} & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{10}i}{20} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}i}{30} & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{10}i}{20} & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}i}{10} & 0 \end{bmatrix}$									
192	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$									
	$\mathbb{G}_{2,2}^{(a)}(E_u)$	$\begin{bmatrix} 0 & 0 & 0 & \frac{\sqrt{5}i}{10} & \frac{i}{6} & 0 & 0 & 0 & \frac{\sqrt{5}i}{30} & 0 & 0 \\ -\frac{\sqrt{5}i}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{5}i}{30} & 0 & 0 & 0 & 0 & \frac{i}{6} \\ 0 & 0 & -\frac{\sqrt{10}i}{20} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{30} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{10}i}{20} & -\frac{\sqrt{2}i}{6} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{15} & 0 \\ -\frac{\sqrt{10}i}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}i}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{6} \\ 0 & -\frac{\sqrt{10}i}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}i}{30} & 0 & 0 & 0 & 0 \end{bmatrix}$									
193	symmetry	$\sqrt{3}yz$									

continued ...



Table 6

No.	multipole	matrix									
	$\mathbb{G}_{2,1}^{(a)}(T_{2u})$	$\frac{\sqrt{5}}{20}$	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	$-\frac{\sqrt{6}}{12}$
194	symmetry	$\sqrt{3}xz$									
	$\mathbb{G}_{2,2}^{(a)}(T_{2u})$	$-\frac{\sqrt{5}i}{20}$	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	$-\frac{\sqrt{6}i}{12}$
195	symmetry	$\sqrt{3}xy$									
	$\mathbb{G}_{2,3}^{(a)}(T_{2u})$	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
196	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$									
	$\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)$	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
197	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$									

continued ...

Table 6

No.	multipole	matrix
	$\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)$	$\begin{bmatrix} 0 & 0 & 0 & -\frac{\sqrt{2}i}{20} & -\frac{\sqrt{10}i}{10} & 0 & 0 & 0 & -\frac{\sqrt{2}i}{10} & 0 \\ \frac{\sqrt{2}i}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{10} & 0 & 0 & 0 & -\frac{\sqrt{10}i}{10} \\ 0 & 0 & \frac{i}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{20} & 0 & 0 \\ 0 & 0 & 0 & \frac{i}{10} & -\frac{\sqrt{5}i}{10} & 0 & 0 & 0 & \frac{i}{5} & 0 \\ \frac{i}{10} & 0 & 0 & 0 & 0 & -\frac{i}{5} & 0 & 0 & 0 & \frac{\sqrt{5}i}{10} \\ 0 & \frac{i}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{20} & 0 & 0 & 0 \end{bmatrix}$
198	symmetry	$\begin{matrix} \sqrt{3}yz \\ \mathbb{G}_{2,1}^{(1,-1;a)}(T_{2u}) \end{matrix}$ $\begin{bmatrix} -\frac{\sqrt{2}}{40} & 0 & -\frac{\sqrt{6}}{40} & 0 & 0 & -\frac{\sqrt{2}}{5} & 0 & -\frac{1}{5} & 0 & 0 \\ 0 & \frac{\sqrt{6}}{40} & 0 & \frac{\sqrt{2}}{40} & 0 & 0 & -\frac{1}{5} & 0 & -\frac{\sqrt{2}}{5} & 0 \\ 0 & \frac{1}{10} & 0 & 0 & \frac{\sqrt{15}}{20} & 0 & \frac{3\sqrt{6}}{40} & 0 & 0 & 0 \\ -\frac{1}{10} & 0 & 0 & 0 & 0 & -\frac{1}{20} & 0 & \frac{\sqrt{2}}{8} & 0 & 0 \\ 0 & 0 & 0 & -\frac{1}{10} & 0 & 0 & -\frac{\sqrt{2}}{8} & 0 & \frac{1}{20} & 0 \\ 0 & 0 & \frac{1}{10} & 0 & 0 & 0 & 0 & -\frac{3\sqrt{6}}{40} & 0 & -\frac{\sqrt{15}}{20} \end{bmatrix}$
199	symmetry	$\begin{matrix} \sqrt{3}xz \\ \mathbb{G}_{2,2}^{(1,-1;a)}(T_{2u}) \end{matrix}$ $\begin{bmatrix} \frac{\sqrt{2}i}{40} & 0 & -\frac{\sqrt{6}i}{40} & 0 & 0 & \frac{\sqrt{2}i}{5} & 0 & -\frac{i}{5} & 0 & 0 \\ 0 & -\frac{\sqrt{6}i}{40} & 0 & \frac{\sqrt{2}i}{40} & 0 & 0 & \frac{i}{5} & 0 & -\frac{\sqrt{2}i}{5} & 0 \\ 0 & \frac{i}{10} & 0 & 0 & -\frac{\sqrt{15}i}{20} & 0 & \frac{3\sqrt{6}i}{40} & 0 & 0 & 0 \\ \frac{i}{10} & 0 & 0 & 0 & 0 & \frac{i}{20} & 0 & \frac{\sqrt{2}i}{8} & 0 & 0 \\ 0 & 0 & 0 & -\frac{i}{10} & 0 & 0 & \frac{\sqrt{2}i}{8} & 0 & \frac{i}{20} & 0 \\ 0 & 0 & -\frac{i}{10} & 0 & 0 & 0 & 0 & \frac{3\sqrt{6}i}{40} & 0 & -\frac{\sqrt{15}i}{20} \end{bmatrix}$
200	symmetry	$\begin{matrix} \sqrt{3}xy \\ \mathbb{G}_{2,3}^{(1,-1;a)}(T_{2u}) \end{matrix}$ $\begin{bmatrix} 0 & 0 & 0 & -\frac{\sqrt{2}}{20} & \frac{\sqrt{10}}{10} & 0 & 0 & 0 & -\frac{\sqrt{2}}{10} & 0 \\ -\frac{\sqrt{2}}{20} & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{10} & 0 & 0 & 0 & -\frac{\sqrt{10}}{10} \\ 0 & 0 & \frac{1}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{20} & 0 & 0 \\ 0 & 0 & 0 & \frac{1}{10} & \frac{\sqrt{5}}{10} & 0 & 0 & 0 & \frac{1}{5} & 0 \\ -\frac{1}{10} & 0 & 0 & 0 & 0 & \frac{1}{5} & 0 & 0 & 0 & \frac{\sqrt{5}}{10} \\ 0 & -\frac{1}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{20} & 0 & 0 & 0 \end{bmatrix}$
201	symmetry	$\frac{\sqrt{21}(x^4-3x^2y^2-3x^2z^2+y^4-3y^2z^2+z^4)}{6}$

continued ...

Table 6

No.	multipole	matrix
	$\mathbb{G}_4^{(1,-1;a)}(A_{1u})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{12} & 0 & 0 & 0 & -\frac{\sqrt{15}i}{12} \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{12} & 0 & 0 & 0 & \frac{\sqrt{3}i}{12} & 0 \end{bmatrix}$
202	symmetry	$-\frac{\sqrt{15}(x^4-12x^2y^2+6x^2z^2+y^4+6y^2z^2-2z^4)}{12}$ $\mathbb{G}_{4,1}^{(1,-1;a)}(E_u)$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}i}{84} & 0 & 0 & 0 & \frac{\sqrt{21}i}{12} \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{70}i}{28} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}i}{28} & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{21}i}{12} & 0 & 0 & 0 & \frac{\sqrt{105}i}{84} & 0 \end{bmatrix}$
203	symmetry	$\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$ $\mathbb{G}_{4,2}^{(1,-1;a)}(E_u)$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{70}i}{28} & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{21}i}{28} & 0 & 0 & 0 & -\frac{\sqrt{105}i}{28} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{105}i}{28} & 0 & 0 & 0 & \frac{\sqrt{21}i}{28} \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}i}{28} & 0 & 0 & 0 \end{bmatrix}$
204	symmetry	$\frac{\sqrt{35}yz(y-z)(y+z)}{2}$ $\mathbb{G}_{4,1}^{(1,-1;a)}(T_{1u})$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{1}{16} & 0 & \frac{\sqrt{10}}{16} & 0 & \frac{\sqrt{5}}{16} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{16} & 0 & -\frac{\sqrt{30}}{16} & 0 & -\frac{\sqrt{3}}{16} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{16} & 0 & \frac{\sqrt{30}}{16} & 0 & \frac{\sqrt{15}}{16} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{16} & 0 & -\frac{\sqrt{10}}{16} & 0 & -\frac{1}{16} \end{bmatrix}$
205	symmetry	$-\frac{\sqrt{35}xz(x-z)(x+z)}{2}$

continued ...

Table 6

No.	multipole	matrix
	$\mathbb{G}_{4,2}^{(1,-1;a)}(T_{1u})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{i}{16} & 0 & -\frac{\sqrt{10}i}{16} & 0 & \frac{\sqrt{5}i}{16} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}i}{16} & 0 & \frac{\sqrt{30}i}{16} & 0 & -\frac{\sqrt{3}i}{16} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{16} & 0 & \frac{\sqrt{30}i}{16} & 0 & -\frac{\sqrt{15}i}{16} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{5}i}{16} & 0 & -\frac{\sqrt{10}i}{16} & 0 & \frac{i}{16} \end{bmatrix}$
206	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$ $\mathbb{G}_{4,3}^{(1,-1;a)}(T_{1u}) \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{1}{2} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{1}{2} & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
207	symmetry	$\frac{\sqrt{5}yz(6x^2-y^2-z^2)}{2}$ $\mathbb{G}_{4,1}^{(1,-1;a)}(T_{2u}) \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{112} & 0 & \frac{\sqrt{70}}{112} & 0 & -\frac{\sqrt{35}}{16} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}}{112} & 0 & -\frac{\sqrt{210}}{112} & 0 & \frac{\sqrt{21}}{16} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{21}}{16} & 0 & \frac{\sqrt{210}}{112} & 0 & \frac{\sqrt{105}}{112} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{35}}{16} & 0 & -\frac{\sqrt{70}}{112} & 0 & -\frac{\sqrt{7}}{112} \end{bmatrix}$
208	symmetry	$-\frac{\sqrt{5}xz(x^2-6y^2+z^2)}{2}$ $\mathbb{G}_{4,2}^{(1,-1;a)}(T_{2u}) \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{7}i}{112} & 0 & \frac{\sqrt{70}i}{112} & 0 & \frac{\sqrt{35}i}{16} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{105}i}{112} & 0 & -\frac{\sqrt{210}i}{112} & 0 & -\frac{\sqrt{21}i}{16} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{21}i}{16} & 0 & -\frac{\sqrt{210}i}{112} & 0 & \frac{\sqrt{105}i}{112} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{35}i}{16} & 0 & \frac{\sqrt{70}i}{112} & 0 & -\frac{\sqrt{7}i}{112} \end{bmatrix}$
209	symmetry	$-\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$

continued ...

Table 6

No.	multipole	matrix
	$\mathbb{G}_{4,3}^{(1,-1;a)}(T_{2u})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}}{28} & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{21}}{28} & 0 & 0 & 0 & \frac{\sqrt{105}}{28} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{105}}{28} & 0 & 0 & 0 & -\frac{\sqrt{21}}{28} \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}}{28} & 0 & 0 & 0 \end{bmatrix}$
210	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$
	$\mathbb{G}_{2,1}^{(1,0;a)}(E_u)$	$\begin{bmatrix} 0 & \frac{\sqrt{30}i}{60} & 0 & 0 & 0 & 0 & -\frac{2\sqrt{5}i}{15} & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{30}i}{60} & 0 & 0 & 0 & 0 & -\frac{2\sqrt{5}i}{15} & 0 & 0 \\ -\frac{\sqrt{15}i}{15} & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}i}{30} & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{15}i}{15} & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}i}{60} & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{15}i}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{60} & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{15}i}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{30} & 0 \end{bmatrix}$
211	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$
	$\mathbb{G}_{2,2}^{(1,0;a)}(E_u)$	$\begin{bmatrix} 0 & 0 & 0 & \frac{\sqrt{30}i}{60} & -\frac{\sqrt{6}i}{9} & 0 & 0 & 0 & -\frac{\sqrt{30}i}{45} & 0 \\ -\frac{\sqrt{30}i}{60} & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}i}{45} & 0 & 0 & 0 & -\frac{\sqrt{6}i}{9} \\ 0 & 0 & -\frac{\sqrt{15}i}{15} & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}i}{60} & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{15}i}{15} & \frac{\sqrt{3}i}{18} & 0 & 0 & 0 & -\frac{\sqrt{15}i}{45} & 0 \\ -\frac{\sqrt{15}i}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{45} & 0 & 0 & 0 & -\frac{\sqrt{3}i}{18} \\ 0 & -\frac{\sqrt{15}i}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{60} & 0 & 0 & 0 \end{bmatrix}$
212	symmetry	$\sqrt{3}yz$
	$\mathbb{G}_{2,1}^{(1,0;a)}(T_{2u})$	$\begin{bmatrix} \frac{\sqrt{30}}{120} & 0 & \frac{\sqrt{10}}{40} & 0 & 0 & -\frac{2\sqrt{30}}{45} & 0 & -\frac{2\sqrt{15}}{45} & 0 & 0 \\ 0 & -\frac{\sqrt{10}}{40} & 0 & -\frac{\sqrt{30}}{120} & 0 & 0 & -\frac{2\sqrt{15}}{45} & 0 & -\frac{2\sqrt{30}}{45} & 0 \\ 0 & -\frac{\sqrt{15}}{15} & 0 & 0 & -\frac{1}{12} & 0 & -\frac{\sqrt{10}}{40} & 0 & 0 & 0 \\ \frac{\sqrt{15}}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{180} & 0 & -\frac{\sqrt{30}}{72} & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{15}}{15} & 0 & 0 & \frac{\sqrt{30}}{72} & 0 & -\frac{\sqrt{15}}{180} & 0 \\ 0 & 0 & -\frac{\sqrt{15}}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{40} & 0 & \frac{1}{12} \end{bmatrix}$
213	symmetry	$\sqrt{3}xz$

continued ...

Table 6

No.	multipole	matrix
	$\mathbb{G}_{2,2}^{(1,0;a)}(T_{2u})$	$\begin{bmatrix} -\frac{\sqrt{30}i}{120} & 0 & \frac{\sqrt{10}i}{40} & 0 & 0 & \frac{2\sqrt{30}i}{45} & 0 & -\frac{2\sqrt{15}i}{45} & 0 & 0 \\ 0 & \frac{\sqrt{10}i}{40} & 0 & -\frac{\sqrt{30}i}{120} & 0 & 0 & \frac{2\sqrt{15}i}{45} & 0 & -\frac{2\sqrt{30}i}{45} & 0 \\ 0 & -\frac{\sqrt{15}i}{15} & 0 & 0 & \frac{i}{12} & 0 & -\frac{\sqrt{10}i}{40} & 0 & 0 & 0 \\ -\frac{\sqrt{15}i}{15} & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}i}{180} & 0 & -\frac{\sqrt{30}i}{72} & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{15}i}{15} & 0 & 0 & -\frac{\sqrt{30}i}{72} & 0 & -\frac{\sqrt{15}i}{180} & 0 \\ 0 & 0 & \frac{\sqrt{15}i}{15} & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}i}{40} & 0 & \frac{i}{12} \end{bmatrix}$
214	symmetry	$\sqrt{3}xy$ $\mathbb{G}_{2,3}^{(1,0;a)}(T_{2u}) \begin{bmatrix} 0 & 0 & 0 & \frac{\sqrt{30}}{60} & \frac{\sqrt{6}}{9} & 0 & 0 & 0 & -\frac{\sqrt{30}}{45} & 0 \\ \frac{\sqrt{30}}{60} & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{45} & 0 & 0 & 0 & -\frac{\sqrt{6}}{9} \\ 0 & 0 & -\frac{\sqrt{15}}{15} & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}}{60} & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{15}}{15} & -\frac{\sqrt{3}}{18} & 0 & 0 & 0 & -\frac{\sqrt{15}}{45} & 0 \\ \frac{\sqrt{15}}{15} & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{45} & 0 & 0 & 0 & -\frac{\sqrt{3}}{18} \\ 0 & \frac{\sqrt{15}}{15} & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}}{60} & 0 & 0 & 0 \end{bmatrix}$
215	symmetry	$1$ $\mathbb{G}_0^{(1,1;a)}(A_{1u}) \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
216	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$ $\mathbb{G}_{2,1}^{(1,1;a)}(E_u) \begin{bmatrix} 0 & \frac{\sqrt{42}i}{15} & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}i}{30} & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{42}i}{15} & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}i}{30} & 0 & 0 \\ \frac{\sqrt{21}i}{30} & 0 & 0 & 0 & 0 & -\frac{2\sqrt{21}i}{105} & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{21}i}{30} & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}i}{105} & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{21}i}{30} & 0 & 0 & 0 & 0 & \frac{\sqrt{14}i}{105} & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{21}i}{30} & 0 & 0 & 0 & 0 & \frac{2\sqrt{21}i}{105} & 0 \end{bmatrix}$
217	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$

continued ...

Table 6

No.	multipole	matrix									
	$\mathbb{G}_{2,2}^{(1,1;a)}(E_u)$	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
218	symmetry	$\sqrt{3}yz$									
	$\mathbb{G}_{2,1}^{(1,1;a)}(T_{2u})$	$\frac{\sqrt{42}}{30}$	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	$\frac{\sqrt{35}}{105}$
219	symmetry	$\sqrt{3}xz$									
	$\mathbb{G}_{2,2}^{(1,1;a)}(T_{2u})$	$-\frac{\sqrt{42}i}{30}$	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	$\frac{\sqrt{35}i}{105}$
220	symmetry	$\sqrt{3}xy$									
	$\mathbb{G}_{2,3}^{(1,1;a)}(T_{2u})$	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
221	symmetry	$x$									

continued ...

Table 6

No.	multipole	matrix									
	$T_{1,1}^{(a)}(T_{1u})$	$-\frac{i}{4}$	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	$\frac{\sqrt{30}i}{20}$
222	symmetry	$y$									
	$T_{1,2}^{(a)}(T_{1u})$	$\frac{1}{4}$	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	$\frac{\sqrt{3}}{20}$	0	$\frac{\sqrt{30}}{20}$	0
223	symmetry	$z$									
	$T_{1,3}^{(a)}(T_{1u})$	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
224	symmetry	$\sqrt{15}xyz$									
	$T_3^{(a)}(A_{2u})$	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
225	symmetry	$\frac{x(2x^2-3y^2-3z^2)}{2}$									

continued ...



Table 6

No.	multipole	matrix									
	$T_{3,1}^{(a)}(T_{1u})$	0	0	0	0	0	$-\frac{\sqrt{6}i}{24}$	0	$\frac{\sqrt{3}i}{12}$	0	$-\frac{\sqrt{30}i}{24}$
		0	0	0	0	$-\frac{\sqrt{30}i}{24}$	0	$\frac{\sqrt{3}i}{12}$	0	$-\frac{\sqrt{6}i}{24}$	0
		0	$-\frac{\sqrt{3}i}{20}$	0	$\frac{i}{4}$	$-\frac{\sqrt{5}i}{40}$	0	$\frac{3\sqrt{2}i}{40}$	0	$-\frac{i}{8}$	0
		$-\frac{\sqrt{3}i}{20}$	0	$\frac{3i}{20}$	0	0	$\frac{7\sqrt{3}i}{120}$	0	$-\frac{\sqrt{6}i}{120}$	0	$-\frac{\sqrt{15}i}{24}$
		0	$\frac{3i}{20}$	0	$-\frac{\sqrt{3}i}{20}$	$\frac{\sqrt{15}i}{24}$	0	$\frac{\sqrt{6}i}{120}$	0	$-\frac{7\sqrt{3}i}{120}$	0
		$\frac{i}{4}$	0	$-\frac{\sqrt{3}i}{20}$	0	0	$\frac{i}{8}$	0	$-\frac{3\sqrt{2}i}{40}$	0	$\frac{\sqrt{5}i}{40}$
226	symmetry	$-\frac{y(3x^2-2y^2+3z^2)}{2}$									
	$T_{3,2}^{(a)}(T_{1u})$	0	0	0	0	0	$\frac{\sqrt{6}}{24}$	0	$\frac{\sqrt{3}}{12}$	0	$\frac{\sqrt{30}}{24}$
		0	0	0	0	$-\frac{\sqrt{30}}{24}$	0	$-\frac{\sqrt{3}}{12}$	0	$-\frac{\sqrt{6}}{24}$	0
		0	$-\frac{\sqrt{3}}{20}$	0	$-\frac{1}{4}$	$\frac{\sqrt{5}}{40}$	0	$\frac{3\sqrt{2}}{40}$	0	$\frac{1}{8}$	0
		$\frac{\sqrt{3}}{20}$	0	$\frac{3}{20}$	0	0	$-\frac{7\sqrt{3}}{120}$	0	$-\frac{\sqrt{6}}{120}$	0	$\frac{\sqrt{15}}{24}$
		0	$-\frac{3}{20}$	0	$-\frac{\sqrt{3}}{20}$	$\frac{\sqrt{15}}{24}$	0	$-\frac{\sqrt{6}}{120}$	0	$-\frac{7\sqrt{3}}{120}$	0
		$\frac{1}{4}$	0	$\frac{\sqrt{3}}{20}$	0	0	$\frac{1}{8}$	0	$\frac{3\sqrt{2}}{40}$	0	$\frac{\sqrt{5}}{40}$
227	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$									
	$T_{3,3}^{(a)}(T_{1u})$	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
228	symmetry	$\frac{\sqrt{15}x(y-z)(y+z)}{2}$									
	$T_{3,1}^{(a)}(T_{2u})$	0	0	0	0	0	$-\frac{\sqrt{10}i}{24}$	0	$\frac{\sqrt{5}i}{12}$	0	$\frac{\sqrt{2}i}{8}$
		0	0	0	0	$\frac{\sqrt{2}i}{8}$	0	$\frac{\sqrt{5}i}{12}$	0	$-\frac{\sqrt{10}i}{24}$	0
		0	$-\frac{\sqrt{5}i}{20}$	0	$-\frac{\sqrt{15}i}{20}$	$-\frac{\sqrt{3}i}{24}$	0	$\frac{\sqrt{30}i}{40}$	0	$\frac{\sqrt{15}i}{40}$	0
		$-\frac{\sqrt{5}i}{20}$	0	$\frac{\sqrt{15}i}{20}$	0	0	$\frac{7\sqrt{5}i}{120}$	0	$-\frac{\sqrt{10}i}{120}$	0	$\frac{i}{8}$
		0	$\frac{\sqrt{15}i}{20}$	0	$-\frac{\sqrt{5}i}{20}$	$-\frac{i}{8}$	0	$\frac{\sqrt{10}i}{120}$	0	$-\frac{7\sqrt{5}i}{120}$	0
		$-\frac{\sqrt{15}i}{20}$	0	$-\frac{\sqrt{5}i}{20}$	0	0	$-\frac{\sqrt{15}i}{40}$	0	$-\frac{\sqrt{30}i}{40}$	0	$\frac{\sqrt{3}i}{24}$
229	symmetry	$-\frac{\sqrt{15}y(x-z)(x+z)}{2}$									

continued ...

Table 6

No.	multipole	matrix									
	$\mathbb{T}_{3,2}^{(a)}(T_{2u})$	0	0	0	0	0	$-\frac{\sqrt{10}}{24}$	0	$-\frac{\sqrt{5}}{12}$	0	$\frac{\sqrt{2}}{8}$
		0	0	0	0	$-\frac{\sqrt{2}}{8}$	0	$\frac{\sqrt{5}}{12}$	0	$\frac{\sqrt{10}}{24}$	0
		0	$\frac{\sqrt{5}}{20}$	0	$-\frac{\sqrt{15}}{20}$	$-\frac{\sqrt{3}}{24}$	0	$-\frac{\sqrt{30}}{40}$	0	$\frac{\sqrt{15}}{40}$	0
		$-\frac{\sqrt{5}}{20}$	0	$-\frac{\sqrt{15}}{20}$	0	0	$\frac{7\sqrt{5}}{120}$	0	$\frac{\sqrt{10}}{120}$	0	$\frac{1}{8}$
		0	$\frac{\sqrt{15}}{20}$	0	$\frac{\sqrt{5}}{20}$	$\frac{1}{8}$	0	$\frac{\sqrt{10}}{120}$	0	$\frac{7\sqrt{5}}{120}$	0
		$\frac{\sqrt{15}}{20}$	0	$-\frac{\sqrt{5}}{20}$	0	0	$\frac{\sqrt{15}}{40}$	0	$-\frac{\sqrt{30}}{40}$	0	$-\frac{\sqrt{3}}{24}$
230	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$									
	$\mathbb{T}_{3,3}^{(a)}(T_{2u})$	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
231	symmetry	$\sqrt{15}xyz$									
	$\mathbb{T}_3^{(1,-1;a)}(A_{2u})$	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
232	symmetry	$\frac{x(2x^2-3y^2-3z^2)}{2}$									
	$\mathbb{T}_{3,1}^{(1,-1;a)}(T_{1u})$	0	0	0	0	0	$-\frac{i}{12}$	0	$\frac{\sqrt{2}i}{12}$	0	$-\frac{\sqrt{5}i}{12}$
		0	0	0	0	$-\frac{\sqrt{5}i}{12}$	0	$\frac{\sqrt{2}i}{12}$	0	$-\frac{i}{12}$	0
		0	$-\frac{\sqrt{2}i}{40}$	0	$\frac{\sqrt{6}i}{24}$	$\frac{\sqrt{30}i}{60}$	0	$-\frac{\sqrt{3}i}{10}$	0	$\frac{\sqrt{6}i}{12}$	0
		$-\frac{\sqrt{2}i}{40}$	0	$\frac{\sqrt{6}i}{40}$	0	0	$-\frac{7\sqrt{2}i}{60}$	0	$\frac{i}{30}$	0	$\frac{\sqrt{10}i}{12}$
		0	$\frac{\sqrt{6}i}{40}$	0	$-\frac{\sqrt{2}i}{40}$	$-\frac{\sqrt{10}i}{12}$	0	$-\frac{i}{30}$	0	$\frac{7\sqrt{2}i}{60}$	0
		$\frac{\sqrt{6}i}{24}$	0	$-\frac{\sqrt{2}i}{40}$	0	0	$-\frac{\sqrt{6}i}{12}$	0	$\frac{\sqrt{3}i}{10}$	0	$-\frac{\sqrt{30}i}{60}$
233	symmetry	$-\frac{y(3x^2-2y^2+3z^2)}{2}$									

continued ...

Table 6

No.	multipole	matrix
	$\mathbb{T}_{3,2}^{(1,-1;a)}(T_{1u})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{1}{12} & 0 & \frac{\sqrt{2}}{12} & 0 & \frac{\sqrt{5}}{12} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{12} & 0 & -\frac{\sqrt{2}}{12} & 0 & -\frac{1}{12} & 0 \\ 0 & -\frac{\sqrt{2}}{40} & 0 & -\frac{\sqrt{6}}{24} & -\frac{\sqrt{30}}{60} & 0 & -\frac{\sqrt{3}}{10} & 0 & -\frac{\sqrt{6}}{12} & 0 \\ \frac{\sqrt{2}}{40} & 0 & \frac{\sqrt{6}}{40} & 0 & 0 & \frac{7\sqrt{2}}{60} & 0 & \frac{1}{30} & 0 & -\frac{\sqrt{10}}{12} \\ 0 & -\frac{\sqrt{6}}{40} & 0 & -\frac{\sqrt{2}}{40} & -\frac{\sqrt{10}}{12} & 0 & \frac{1}{30} & 0 & \frac{7\sqrt{2}}{60} & 0 \\ \frac{\sqrt{6}}{24} & 0 & \frac{\sqrt{2}}{40} & 0 & 0 & -\frac{\sqrt{6}}{12} & 0 & -\frac{\sqrt{3}}{10} & 0 & -\frac{\sqrt{30}}{60} \end{bmatrix}$
234	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$
	$\mathbb{T}_{3,3}^{(1,-1;a)}(T_{1u})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{6} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{6} & 0 & 0 \\ \frac{\sqrt{6}i}{60} & 0 & 0 & 0 & 0 & \frac{2\sqrt{6}i}{15} & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{6}i}{20} & 0 & 0 & 0 & 0 & -\frac{4i}{15} & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{6}i}{20} & 0 & 0 & 0 & 0 & -\frac{4i}{15} & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{6}i}{60} & 0 & 0 & 0 & 0 & \frac{2\sqrt{6}i}{15} & 0 \end{bmatrix}$
235	symmetry	$\frac{\sqrt{15}x(y-z)(y+z)}{2}$
	$\mathbb{T}_{3,1}^{(1,-1;a)}(T_{2u})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}i}{36} & 0 & \frac{\sqrt{30}i}{36} & 0 & \frac{\sqrt{3}i}{12} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{3}i}{12} & 0 & \frac{\sqrt{30}i}{36} & 0 & -\frac{\sqrt{15}i}{36} & 0 \\ 0 & -\frac{\sqrt{30}i}{120} & 0 & -\frac{\sqrt{10}i}{40} & \frac{\sqrt{2}i}{12} & 0 & -\frac{\sqrt{5}i}{10} & 0 & -\frac{\sqrt{10}i}{20} & 0 \\ -\frac{\sqrt{30}i}{120} & 0 & \frac{\sqrt{10}i}{40} & 0 & 0 & -\frac{7\sqrt{30}i}{180} & 0 & \frac{\sqrt{15}i}{90} & 0 & -\frac{\sqrt{6}i}{12} \\ 0 & \frac{\sqrt{10}i}{40} & 0 & -\frac{\sqrt{30}i}{120} & \frac{\sqrt{6}i}{12} & 0 & -\frac{\sqrt{15}i}{90} & 0 & \frac{7\sqrt{30}i}{180} & 0 \\ -\frac{\sqrt{10}i}{40} & 0 & -\frac{\sqrt{30}i}{120} & 0 & 0 & \frac{\sqrt{10}i}{20} & 0 & \frac{\sqrt{5}i}{10} & 0 & -\frac{\sqrt{2}i}{12} \end{bmatrix}$
236	symmetry	$-\frac{\sqrt{15}y(x-z)(x+z)}{2}$
	$\mathbb{T}_{3,2}^{(1,-1;a)}(T_{2u})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{36} & 0 & -\frac{\sqrt{30}}{36} & 0 & \frac{\sqrt{3}}{12} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{12} & 0 & \frac{\sqrt{30}}{36} & 0 & \frac{\sqrt{15}}{36} & 0 \\ 0 & \frac{\sqrt{30}}{120} & 0 & -\frac{\sqrt{10}}{40} & \frac{\sqrt{2}}{12} & 0 & \frac{\sqrt{5}}{10} & 0 & -\frac{\sqrt{10}}{20} & 0 \\ -\frac{\sqrt{30}}{120} & 0 & -\frac{\sqrt{10}}{40} & 0 & 0 & -\frac{7\sqrt{30}}{180} & 0 & -\frac{\sqrt{15}}{90} & 0 & -\frac{\sqrt{6}}{12} \\ 0 & \frac{\sqrt{10}}{40} & 0 & \frac{\sqrt{30}}{120} & -\frac{\sqrt{6}}{12} & 0 & -\frac{\sqrt{15}}{90} & 0 & -\frac{7\sqrt{30}}{180} & 0 \\ \frac{\sqrt{10}}{40} & 0 & -\frac{\sqrt{30}}{120} & 0 & 0 & -\frac{\sqrt{10}}{20} & 0 & \frac{\sqrt{5}}{10} & 0 & \frac{\sqrt{2}}{12} \end{bmatrix}$
237	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$

continued ...

Table 6

No.	multipole	matrix									
	$\mathbb{T}_{3,3}^{(1,-1;a)}(T_{2u})$	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	$x$									
	$\mathbb{T}_{1,1}^{(1,0;a)}(T_{1u})$	$-\frac{\sqrt{2}i}{8}$	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	$-\frac{\sqrt{15}i}{20}$
239	symmetry	$y$									
	$\mathbb{T}_{1,2}^{(1,0;a)}(T_{1u})$	$\frac{\sqrt{2}}{8}$	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	$-\frac{\sqrt{15}}{20}$
240	symmetry	$z$									
	$\mathbb{T}_{1,3}^{(1,0;a)}(T_{1u})$	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
241	symmetry	$\sqrt{15}xyz$									

continued ...

Table 6

No.	multipole	matrix
	$\mathbb{T}_3^{(1,0;a)}(A_{2u})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{18} & 0 & 0 & 0 & \frac{\sqrt{30}}{18} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{18} & 0 & 0 & 0 & -\frac{\sqrt{6}}{18} \\ 0 & 0 & \frac{\sqrt{15}}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{60} & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{15}}{15} & \frac{\sqrt{3}}{36} & 0 & 0 & 0 & \frac{\sqrt{15}}{180} & 0 \\ -\frac{\sqrt{15}}{15} & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{180} & 0 & 0 & 0 & -\frac{\sqrt{3}}{36} \\ 0 & \frac{\sqrt{15}}{15} & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}}{60} & 0 & 0 & 0 \end{bmatrix}$
242	symmetry	$\frac{x(2x^2-3y^2-3z^2)}{2}$ $\mathbb{T}_{3,1}^{(1,0;a)}(T_{1u}) \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{12} & 0 & -\frac{i}{6} & 0 & \frac{\sqrt{10}i}{12} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{12} & 0 & -\frac{i}{6} & 0 & \frac{\sqrt{2}i}{12} & 0 \\ 0 & -\frac{i}{10} & 0 & \frac{\sqrt{3}i}{6} & \frac{\sqrt{15}i}{240} & 0 & -\frac{\sqrt{6}i}{80} & 0 & \frac{\sqrt{3}i}{48} & 0 \\ -\frac{i}{10} & 0 & \frac{\sqrt{3}i}{10} & 0 & 0 & -\frac{7i}{240} & 0 & \frac{\sqrt{2}i}{240} & 0 & \frac{\sqrt{5}i}{48} \\ 0 & \frac{\sqrt{3}i}{10} & 0 & -\frac{i}{10} & -\frac{\sqrt{5}i}{48} & 0 & -\frac{\sqrt{2}i}{240} & 0 & \frac{7i}{240} & 0 \\ \frac{\sqrt{3}i}{6} & 0 & -\frac{i}{10} & 0 & 0 & -\frac{\sqrt{3}i}{48} & 0 & \frac{\sqrt{6}i}{80} & 0 & -\frac{\sqrt{15}i}{240} \end{bmatrix}$
243	symmetry	$-\frac{y(3x^2-2y^2+3z^2)}{2}$ $\mathbb{T}_{3,2}^{(1,0;a)}(T_{1u}) \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{12} & 0 & -\frac{1}{6} & 0 & -\frac{\sqrt{10}}{12} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{12} & 0 & \frac{1}{6} & 0 & \frac{\sqrt{2}}{12} & 0 \\ 0 & -\frac{1}{10} & 0 & -\frac{\sqrt{3}}{6} & -\frac{\sqrt{15}}{240} & 0 & -\frac{\sqrt{6}}{80} & 0 & -\frac{\sqrt{3}}{48} & 0 \\ \frac{1}{10} & 0 & \frac{\sqrt{3}}{10} & 0 & 0 & \frac{7}{240} & 0 & \frac{\sqrt{2}}{240} & 0 & -\frac{\sqrt{5}}{48} \\ 0 & -\frac{\sqrt{3}}{10} & 0 & -\frac{1}{10} & -\frac{\sqrt{5}}{48} & 0 & \frac{\sqrt{2}}{240} & 0 & \frac{7}{240} & 0 \\ \frac{\sqrt{3}}{6} & 0 & \frac{1}{10} & 0 & 0 & -\frac{\sqrt{3}}{48} & 0 & -\frac{\sqrt{6}}{80} & 0 & -\frac{\sqrt{15}}{240} \end{bmatrix}$
244	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$ $\mathbb{T}_{3,3}^{(1,0;a)}(T_{1u}) \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & \frac{i}{3} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{i}{3} & 0 & 0 \\ \frac{\sqrt{3}i}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{3}i}{30} & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{3}i}{5} & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{30} & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{3}i}{5} & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{30} & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{3}i}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{3}i}{30} & 0 \end{bmatrix}$
245	symmetry	$\frac{\sqrt{15}x(y-z)(y+z)}{2}$

continued ...

Table 6

No.	multipole	matrix									
	$\mathbb{T}_{3,1}^{(1,0;a)}(T_{2u})$	0	0	0	0	0	$\frac{\sqrt{30}i}{36}$	0	$-\frac{\sqrt{15}i}{18}$	0	$-\frac{\sqrt{6}i}{12}$
		0	0	0	0	$-\frac{\sqrt{6}i}{12}$	0	$-\frac{\sqrt{15}i}{18}$	0	$\frac{\sqrt{30}i}{36}$	0
		0	$-\frac{\sqrt{15}i}{30}$	0	$-\frac{\sqrt{5}i}{10}$	$\frac{i}{48}$	0	$-\frac{\sqrt{10}i}{80}$	0	$-\frac{\sqrt{5}i}{80}$	0
		$-\frac{\sqrt{15}i}{30}$	0	$\frac{\sqrt{5}i}{10}$	0	0	$-\frac{7\sqrt{15}i}{720}$	0	$\frac{\sqrt{30}i}{720}$	0	$-\frac{\sqrt{3}i}{48}$
		0	$\frac{\sqrt{5}i}{10}$	0	$-\frac{\sqrt{15}i}{30}$	$\frac{\sqrt{3}i}{48}$	0	$-\frac{\sqrt{30}i}{720}$	0	$\frac{7\sqrt{15}i}{720}$	0
		$-\frac{\sqrt{5}i}{10}$	0	$-\frac{\sqrt{15}i}{30}$	0	0	$\frac{\sqrt{5}i}{80}$	0	$\frac{\sqrt{10}i}{80}$	0	$-\frac{i}{48}$
246	symmetry	$-\frac{\sqrt{15}y(x-z)(x+z)}{2}$									
	$\mathbb{T}_{3,2}^{(1,0;a)}(T_{2u})$	0	0	0	0	0	$\frac{\sqrt{30}}{36}$	0	$\frac{\sqrt{15}}{18}$	0	$-\frac{\sqrt{6}}{12}$
		0	0	0	0	$\frac{\sqrt{6}}{12}$	0	$-\frac{\sqrt{15}}{18}$	0	$-\frac{\sqrt{30}}{36}$	0
		0	$\frac{\sqrt{15}}{30}$	0	$-\frac{\sqrt{5}}{10}$	$\frac{1}{48}$	0	$\frac{\sqrt{10}}{80}$	0	$-\frac{\sqrt{5}}{80}$	0
		$-\frac{\sqrt{15}}{30}$	0	$-\frac{\sqrt{5}}{10}$	0	0	$-\frac{7\sqrt{15}}{720}$	0	$-\frac{\sqrt{30}}{720}$	0	$-\frac{\sqrt{3}}{48}$
		0	$\frac{\sqrt{5}}{10}$	0	$\frac{\sqrt{15}}{30}$	$-\frac{\sqrt{3}}{48}$	0	$-\frac{\sqrt{30}}{720}$	0	$-\frac{7\sqrt{15}}{720}$	0
		$\frac{\sqrt{5}}{10}$	0	$-\frac{\sqrt{15}}{30}$	0	0	$-\frac{\sqrt{5}}{80}$	0	$\frac{\sqrt{10}}{80}$	0	$\frac{1}{48}$
247	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$									
	$\mathbb{T}_{3,3}^{(1,0;a)}(T_{2u})$	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
248	symmetry	$x$									
	$\mathbb{T}_{1,1}^{(1,1;a)}(T_{1u})$	$\frac{\sqrt{6}i}{8}$	0	$-\frac{\sqrt{2}i}{8}$	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	$-\frac{\sqrt{3}i}{10}$	0	0	$-\frac{\sqrt{5}i}{20}$	0	$\frac{\sqrt{2}i}{40}$	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	$-\frac{i}{5}$	0	$-\frac{\sqrt{3}i}{10}$	0	0	$-\frac{\sqrt{6}i}{40}$	0	$\frac{\sqrt{3}i}{20}$	0
		0	0	$-\frac{\sqrt{3}i}{10}$	0	0	0	0	$-\frac{\sqrt{2}i}{40}$	0	$\frac{\sqrt{5}i}{20}$
249	symmetry	$y$									

continued ...

Table 6

No.	multipole	matrix
	$\mathbb{T}_{1,2}^{(1,1;a)}(T_{1u})$	$\begin{bmatrix} -\frac{\sqrt{6}}{8} & 0 & -\frac{\sqrt{2}}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{2}}{8} & 0 & -\frac{\sqrt{6}}{8} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{3}}{10} & 0 & 0 & \frac{\sqrt{5}}{20} & 0 & \frac{\sqrt{2}}{40} & 0 & 0 & 0 & 0 \\ \frac{\sqrt{3}}{10} & 0 & -\frac{1}{5} & 0 & 0 & \frac{\sqrt{3}}{20} & 0 & \frac{\sqrt{6}}{40} & 0 & 0 & 0 \\ 0 & \frac{1}{5} & 0 & -\frac{\sqrt{3}}{10} & 0 & 0 & \frac{\sqrt{6}}{40} & 0 & \frac{\sqrt{3}}{20} & 0 & 0 \\ 0 & 0 & \frac{\sqrt{3}}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{40} & 0 & \frac{\sqrt{5}}{20} & 0 \end{bmatrix}$
250	symmetry	$\begin{matrix} z \\ \mathbb{T}_{1,3}^{(1,1;a)}(T_{1u}) \end{matrix} \begin{bmatrix} 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{3i}{10} & 0 & 0 & 0 & 0 & \frac{i}{10} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{i}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{20} & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{i}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{20} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{3i}{10} & 0 & 0 & 0 & 0 & \frac{i}{10} & 0 & 0 \end{bmatrix}$
251	symmetry	$\begin{matrix} -\frac{x^2}{2} - \frac{y^2}{2} + z^2 \\ \mathbb{M}_{2,1}^{(a)}(E_u) \end{matrix} \begin{bmatrix} 0 & \frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{30} & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{30} & 0 & 0 & 0 \\ -\frac{\sqrt{10}}{20} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{10} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{10}}{20} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{30} & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{10}}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{30} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{10}}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}}{10} & 0 & 0 \end{bmatrix}$
252	symmetry	$\begin{matrix} \frac{\sqrt{3}(x-y)(x+y)}{2} \\ \mathbb{M}_{2,2}^{(a)}(E_u) \end{matrix} \begin{bmatrix} 0 & 0 & 0 & \frac{\sqrt{5}}{10} & \frac{1}{6} & 0 & 0 & 0 & \frac{\sqrt{5}}{30} & 0 & 0 \\ -\frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{5}}{30} & 0 & 0 & 0 & \frac{1}{6} & 0 \\ 0 & 0 & -\frac{\sqrt{10}}{20} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{30} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{10}}{20} & -\frac{\sqrt{2}}{6} & 0 & 0 & 0 & \frac{\sqrt{10}}{15} & 0 & 0 \\ -\frac{\sqrt{10}}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}}{15} & 0 & 0 & 0 & \frac{\sqrt{2}}{6} & 0 \\ 0 & -\frac{\sqrt{10}}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{30} & 0 & 0 & 0 & 0 \end{bmatrix}$
253	symmetry	$\sqrt{3}yz$

continued ...

Table 6

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

continued ...



Table 6

No.	multipole	matrix
	$\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)$	$\begin{bmatrix} 0 & 0 & 0 & -\frac{\sqrt{2}}{20} & -\frac{\sqrt{10}}{10} & 0 & 0 & 0 & -\frac{\sqrt{2}}{10} & 0 \\ \frac{\sqrt{2}}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{10} & 0 & 0 & 0 & -\frac{\sqrt{10}}{10} \\ 0 & 0 & \frac{1}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{20} & 0 & 0 \\ 0 & 0 & 0 & \frac{1}{10} & -\frac{\sqrt{5}}{10} & 0 & 0 & 0 & \frac{1}{5} & 0 \\ \frac{1}{10} & 0 & 0 & 0 & 0 & -\frac{1}{5} & 0 & 0 & 0 & \frac{\sqrt{5}}{10} \\ 0 & \frac{1}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{20} & 0 & 0 & 0 \end{bmatrix}$
258	symmetry	$\begin{array}{c} \sqrt{3}yz \\ \mathbb{M}_{2,1}^{(1,-1;a)}(T_{2u}) \end{array}$ $\begin{bmatrix} \frac{\sqrt{2}i}{40} & 0 & \frac{\sqrt{6}i}{40} & 0 & 0 & \frac{\sqrt{2}i}{5} & 0 & \frac{i}{5} & 0 & 0 \\ 0 & -\frac{\sqrt{6}i}{40} & 0 & -\frac{\sqrt{2}i}{40} & 0 & 0 & \frac{i}{5} & 0 & \frac{\sqrt{2}i}{5} & 0 \\ 0 & -\frac{i}{10} & 0 & 0 & -\frac{\sqrt{15}i}{20} & 0 & -\frac{3\sqrt{6}i}{40} & 0 & 0 & 0 \\ \frac{i}{10} & 0 & 0 & 0 & 0 & \frac{i}{20} & 0 & -\frac{\sqrt{2}i}{8} & 0 & 0 \\ 0 & 0 & 0 & \frac{i}{10} & 0 & 0 & \frac{\sqrt{2}i}{8} & 0 & -\frac{i}{20} & 0 \\ 0 & 0 & -\frac{i}{10} & 0 & 0 & 0 & 0 & \frac{3\sqrt{6}i}{40} & 0 & \frac{\sqrt{15}i}{20} \end{bmatrix}$
259	symmetry	$\begin{array}{c} \sqrt{3}xz \\ \mathbb{M}_{2,2}^{(1,-1;a)}(T_{2u}) \end{array}$ $\begin{bmatrix} \frac{\sqrt{2}}{40} & 0 & -\frac{\sqrt{6}}{40} & 0 & 0 & \frac{\sqrt{2}}{5} & 0 & -\frac{1}{5} & 0 & 0 \\ 0 & -\frac{\sqrt{6}}{40} & 0 & \frac{\sqrt{2}}{40} & 0 & 0 & \frac{1}{5} & 0 & -\frac{\sqrt{2}}{5} & 0 \\ 0 & \frac{1}{10} & 0 & 0 & -\frac{\sqrt{15}}{20} & 0 & \frac{3\sqrt{6}}{40} & 0 & 0 & 0 \\ \frac{1}{10} & 0 & 0 & 0 & 0 & \frac{1}{20} & 0 & \frac{\sqrt{2}}{8} & 0 & 0 \\ 0 & 0 & 0 & -\frac{1}{10} & 0 & 0 & \frac{\sqrt{2}}{8} & 0 & \frac{1}{20} & 0 \\ 0 & 0 & -\frac{1}{10} & 0 & 0 & 0 & 0 & \frac{3\sqrt{6}}{40} & 0 & -\frac{\sqrt{15}}{20} \end{bmatrix}$
260	symmetry	$\begin{array}{c} \sqrt{3}xy \\ \mathbb{M}_{2,3}^{(1,-1;a)}(T_{2u}) \end{array}$ $\begin{bmatrix} 0 & 0 & 0 & \frac{\sqrt{2}i}{20} & -\frac{\sqrt{10}i}{10} & 0 & 0 & 0 & \frac{\sqrt{2}i}{10} & 0 \\ \frac{\sqrt{2}i}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{10} & 0 & 0 & 0 & \frac{\sqrt{10}i}{10} \\ 0 & 0 & -\frac{i}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{20} & 0 & 0 \\ 0 & 0 & 0 & -\frac{i}{10} & -\frac{\sqrt{5}i}{10} & 0 & 0 & 0 & -\frac{i}{5} & 0 \\ \frac{i}{10} & 0 & 0 & 0 & 0 & -\frac{i}{5} & 0 & 0 & 0 & -\frac{\sqrt{5}i}{10} \\ 0 & \frac{i}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{20} & 0 & 0 & 0 \end{bmatrix}$
261	symmetry	$\frac{\sqrt{21}(x^4 - 3x^2y^2 - 3x^2z^2 + y^4 - 3y^2z^2 + z^4)}{6}$

continued ...

Table 6

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 & -\frac{\sqrt{3}}{12} & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{12} \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{12} & 0 & 0 & 0 & \frac{\sqrt{3}}{12} & 0 & 0 \end{bmatrix} $
262	symmetry	$ -\frac{\sqrt{15}(x^4-12x^2y^2+6x^2z^2+y^4+6y^2z^2-2z^4)}{12} $ $ \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{105}}{84} & 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{12} \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{70}}{28} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}}{28} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{21}}{12} & 0 & 0 & 0 & 0 & \frac{\sqrt{105}}{84} & 0 \end{bmatrix} $
263	symmetry	$ \frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4} $ $ \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \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 & 0 & \frac{\sqrt{21}}{28} \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}}{28} & 0 & 0 & 0 & 0 \end{bmatrix} $
264	symmetry	$ \frac{\sqrt{35}yz(y-z)(y+z)}{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 & -\frac{i}{16} & 0 & -\frac{\sqrt{10}i}{16} & 0 & -\frac{\sqrt{5}i}{16} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{16} & 0 & \frac{\sqrt{30}i}{16} & 0 & \frac{\sqrt{3}i}{16} & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{16} & 0 & -\frac{\sqrt{30}i}{16} & 0 & -\frac{\sqrt{15}i}{16} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{5}i}{16} & 0 & \frac{\sqrt{10}i}{16} & 0 & \frac{i}{16} & 0 \end{bmatrix} $
265	symmetry	$ -\frac{\sqrt{35}xz(x-z)(x+z)}{2} $

continued ...

Table 6

No.	multipole	matrix
	$\mathbb{M}_{4,2}^{(1,-1;a)}(T_{1u})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{1}{16} & 0 & -\frac{\sqrt{10}}{16} & 0 & \frac{\sqrt{5}}{16} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{16} & 0 & \frac{\sqrt{30}}{16} & 0 & -\frac{\sqrt{3}}{16} & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{16} & 0 & \frac{\sqrt{30}}{16} & 0 & -\frac{\sqrt{15}}{16} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{5}}{16} & 0 & -\frac{\sqrt{10}}{16} & 0 & \frac{1}{16} & 0 \end{bmatrix}$
266	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{i}{2} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{i}{2} & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
267	symmetry	$\frac{\sqrt{5}yz(6x^2-y^2-z^2)}{2}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{7}i}{112} & 0 & -\frac{\sqrt{70}i}{112} & 0 & \frac{\sqrt{35}i}{16} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{105}i}{112} & 0 & \frac{\sqrt{210}i}{112} & 0 & -\frac{\sqrt{21}i}{16} & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{21}i}{16} & 0 & -\frac{\sqrt{210}i}{112} & 0 & -\frac{\sqrt{105}i}{112} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{35}i}{16} & 0 & \frac{\sqrt{70}i}{112} & 0 & \frac{\sqrt{7}i}{112} & 0 \end{bmatrix}$
268	symmetry	$-\frac{\sqrt{5}xz(x^2-6y^2+z^2)}{2}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{7}}{112} & 0 & \frac{\sqrt{70}}{112} & 0 & \frac{\sqrt{35}}{16} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{105}}{112} & 0 & -\frac{\sqrt{210}}{112} & 0 & -\frac{\sqrt{21}}{16} & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{21}}{16} & 0 & -\frac{\sqrt{210}}{112} & 0 & \frac{\sqrt{105}}{112} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{35}}{16} & 0 & \frac{\sqrt{70}}{112} & 0 & -\frac{\sqrt{7}}{112} & 0 \end{bmatrix}$
269	symmetry	$-\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$

continued ...

Table 6

No.	multipole	matrix
	$\mathbb{M}_{4,3}^{(1,-1;a)}(T_{2u})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{70}i}{28} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{21}i}{28} & 0 & 0 & 0 & -\frac{\sqrt{105}i}{28} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}i}{28} & 0 & 0 & 0 & 0 & \frac{\sqrt{21}i}{28} \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{70}i}{28} & 0 & 0 & 0 & 0 \end{bmatrix}$
270	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$
	$\mathbb{M}_{2,1}^{(1,0;a)}(E_u)$	$\begin{bmatrix} 0 & -\frac{\sqrt{30}}{60} & 0 & 0 & 0 & 0 & \frac{2\sqrt{5}}{15} & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{30}}{60} & 0 & 0 & 0 & 0 & \frac{2\sqrt{5}}{15} & 0 & 0 & 0 \\ \frac{\sqrt{15}}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{30} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{15}}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{60} & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{15}}{15} & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}}{60} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{15}}{15} & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{30} & 0 & 0 \end{bmatrix}$
271	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$
	$\mathbb{M}_{2,2}^{(1,0;a)}(E_u)$	$\begin{bmatrix} 0 & 0 & 0 & -\frac{\sqrt{30}}{60} & \frac{\sqrt{6}}{9} & 0 & 0 & 0 & \frac{\sqrt{30}}{45} & 0 & 0 \\ \frac{\sqrt{30}}{60} & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{45} & 0 & 0 & 0 & \frac{\sqrt{6}}{9} & 0 \\ 0 & 0 & \frac{\sqrt{15}}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{60} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{15}}{15} & -\frac{\sqrt{3}}{18} & 0 & 0 & 0 & \frac{\sqrt{15}}{45} & 0 & 0 \\ \frac{\sqrt{15}}{15} & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{45} & 0 & 0 & 0 & \frac{\sqrt{3}}{18} & 0 \\ 0 & \frac{\sqrt{15}}{15} & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}}{60} & 0 & 0 & 0 & 0 \end{bmatrix}$
272	symmetry	$\sqrt{3}yz$
	$\mathbb{M}_{2,1}^{(1,0;a)}(T_{2u})$	$\begin{bmatrix} \frac{\sqrt{30}i}{120} & 0 & \frac{\sqrt{10}i}{40} & 0 & 0 & -\frac{2\sqrt{30}i}{45} & 0 & -\frac{2\sqrt{15}i}{45} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{10}i}{40} & 0 & -\frac{\sqrt{30}i}{120} & 0 & 0 & -\frac{2\sqrt{15}i}{45} & 0 & -\frac{2\sqrt{30}i}{45} & 0 & 0 \\ 0 & -\frac{\sqrt{15}i}{15} & 0 & 0 & -\frac{i}{12} & 0 & -\frac{\sqrt{10}i}{40} & 0 & 0 & 0 & 0 \\ \frac{\sqrt{15}i}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{180} & 0 & -\frac{\sqrt{30}i}{72} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{15}i}{15} & 0 & 0 & \frac{\sqrt{30}i}{72} & 0 & -\frac{\sqrt{15}i}{180} & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{15}i}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{40} & 0 & \frac{i}{12} & 0 \end{bmatrix}$
273	symmetry	$\sqrt{3}xz$

continued ...

Table 6

No.	multipole	matrix
	$\mathbb{M}_{2,2}^{(1,0;a)}(T_{2u})$	$\begin{bmatrix} \frac{\sqrt{30}}{120} & 0 & -\frac{\sqrt{10}}{40} & 0 & 0 & -\frac{2\sqrt{30}}{45} & 0 & \frac{2\sqrt{15}}{45} & 0 & 0 \\ 0 & -\frac{\sqrt{10}}{40} & 0 & \frac{\sqrt{30}}{120} & 0 & 0 & -\frac{2\sqrt{15}}{45} & 0 & \frac{2\sqrt{30}}{45} & 0 \\ 0 & \frac{\sqrt{15}}{15} & 0 & 0 & -\frac{1}{12} & 0 & \frac{\sqrt{10}}{40} & 0 & 0 & 0 \\ \frac{\sqrt{15}}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{180} & 0 & \frac{\sqrt{30}}{72} & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{15}}{15} & 0 & 0 & \frac{\sqrt{30}}{72} & 0 & \frac{\sqrt{15}}{180} & 0 \\ 0 & 0 & -\frac{\sqrt{15}}{15} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{40} & 0 & -\frac{1}{12} \end{bmatrix}$
274	symmetry	$\begin{matrix} \sqrt{3}xy \\ \mathbb{M}_{2,3}^{(1,0;a)}(T_{2u}) \end{matrix}$ $\begin{bmatrix} 0 & 0 & 0 & \frac{\sqrt{30}i}{60} & \frac{\sqrt{6}i}{9} & 0 & 0 & 0 & -\frac{\sqrt{30}i}{45} & 0 \\ \frac{\sqrt{30}i}{60} & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{45} & 0 & 0 & 0 & -\frac{\sqrt{6}i}{9} \\ 0 & 0 & -\frac{\sqrt{15}i}{15} & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}i}{60} & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{15}i}{15} & -\frac{\sqrt{3}i}{18} & 0 & 0 & 0 & -\frac{\sqrt{15}i}{45} & 0 \\ \frac{\sqrt{15}i}{15} & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}i}{45} & 0 & 0 & 0 & -\frac{\sqrt{3}i}{18} \\ 0 & \frac{\sqrt{15}i}{15} & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}i}{60} & 0 & 0 & 0 \end{bmatrix}$
275	symmetry	$\begin{matrix} 1 \\ \mathbb{M}_0^{(1,1;a)}(A_{1u}) \end{matrix}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
276	symmetry	$\begin{matrix} -\frac{x^2}{2} - \frac{y^2}{2} + z^2 \\ \mathbb{M}_{2,1}^{(1,1;a)}(E_u) \end{matrix}$ $\begin{bmatrix} 0 & \frac{\sqrt{42}}{15} & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}}{30} & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{42}}{15} & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}}{30} & 0 & 0 \\ \frac{\sqrt{21}}{30} & 0 & 0 & 0 & 0 & -\frac{2\sqrt{21}}{105} & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{21}}{30} & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}}{105} & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{21}}{30} & 0 & 0 & 0 & 0 & \frac{\sqrt{14}}{105} & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{21}}{30} & 0 & 0 & 0 & 0 & \frac{2\sqrt{21}}{105} & 0 \end{bmatrix}$
277	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$

continued ...

Table 6

No.	multipole	matrix									
	$\mathbb{M}_{2,2}^{(1,1;a)}(E_u)$	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
278	symmetry	$\sqrt{3}yz$									
	$\mathbb{M}_{2,1}^{(1,1;a)}(T_{2u})$	$-\frac{\sqrt{42}i}{30}$	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	$-\frac{\sqrt{35}i}{105}$
279	symmetry	$\sqrt{3}xz$									
	$\mathbb{M}_{2,2}^{(1,1;a)}(T_{2u})$	$-\frac{\sqrt{42}}{30}$	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	$\frac{\sqrt{35}}{105}$
280	symmetry	$\sqrt{3}xy$									
	$\mathbb{M}_{2,3}^{(1,1;a)}(T_{2u})$	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	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$ $\mathbb{Q}_{2,1}^{(a)}(E_g)$ $\begin{bmatrix} 0 & 0 & \frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{1}{7} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{14} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{6}}{42} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{3\sqrt{2}}{14} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{6}}{42} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{3\sqrt{2}}{14} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{1}{7} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{14} & 0 & 0 \end{bmatrix}$
282	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$ $\mathbb{Q}_{2,2}^{(a)}(E_g)$ $\begin{bmatrix} \frac{\sqrt{10}}{12} & 0 & 0 & 0 & \frac{\sqrt{2}}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{2}}{12} & 0 & 0 & 0 & \frac{\sqrt{10}}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{6}}{42} & 0 & 0 & \frac{\sqrt{70}}{28} & 0 & 0 & 0 & \frac{\sqrt{2}}{28} & 0 & 0 & 0 \\ \frac{\sqrt{5}}{21} & 0 & 0 & 0 & -\frac{2}{21} & 0 & 0 & \frac{\sqrt{30}}{28} & 0 & 0 & 0 & \frac{\sqrt{10}}{28} & 0 & 0 \\ 0 & \frac{2}{21} & 0 & 0 & 0 & -\frac{\sqrt{5}}{21} & 0 & 0 & \frac{\sqrt{10}}{28} & 0 & 0 & 0 & \frac{\sqrt{30}}{28} & 0 \\ 0 & 0 & \frac{\sqrt{6}}{42} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{28} & 0 & 0 & 0 & \frac{\sqrt{70}}{28} \end{bmatrix}$
283	symmetry	$\sqrt{3}yz$ $\mathbb{Q}_{2,1}^{(a)}(T_{2g})$ $\begin{bmatrix} 0 & -\frac{\sqrt{2}i}{6} & 0 & -\frac{i}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{i}{6} & 0 & -\frac{\sqrt{2}i}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{15}i}{42} & 0 & \frac{\sqrt{6}i}{28} & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}i}{14} & 0 & -\frac{\sqrt{2}i}{14} & 0 & 0 & 0 & 0 \\ 0 & -\frac{i}{42} & 0 & \frac{5\sqrt{2}i}{84} & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}i}{14} & 0 & -\frac{\sqrt{6}i}{14} & 0 & 0 & 0 \\ 0 & 0 & -\frac{5\sqrt{2}i}{84} & 0 & \frac{i}{42} & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{14} & 0 & -\frac{\sqrt{10}i}{14} & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{6}i}{28} & 0 & -\frac{\sqrt{15}i}{42} & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{14} & 0 & -\frac{\sqrt{10}i}{14} & 0 \end{bmatrix}$
284	symmetry	$\sqrt{3}xz$

continued ...

Table 7

No.	multipole	matrix													
	$\mathbb{Q}_{2,2}^{(a)}(T_{2g})$	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	$-\frac{\sqrt{10}}{14}$	0	$\frac{\sqrt{2}}{14}$	0	0	0	0	0
		0	$-\frac{1}{42}$	0	$-\frac{5\sqrt{2}}{84}$	0	0	0	$-\frac{\sqrt{10}}{14}$	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	$-\frac{\sqrt{6}}{28}$	0	$\frac{\sqrt{15}}{42}$	0	0	0	0	$-\frac{\sqrt{2}}{14}$	0	$\frac{\sqrt{10}}{14}$	0
285	symmetry	$\sqrt{3}xy$													
	$\mathbb{Q}_{2,3}^{(a)}(T_{2g})$	$\frac{\sqrt{10}i}{12}$	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	$\frac{\sqrt{2}i}{28}$	0	0	0	$-\frac{\sqrt{70}i}{28}$	0
286	symmetry	$\frac{\sqrt{21}(x^4-3x^2y^2-3x^2z^2+y^4-3y^2z^2+z^4)}{6}$													
	$\mathbb{Q}_4^{(a)}(A_{1g})$	0	0	0	0	0	0	0	0	$-\frac{\sqrt{7}}{12}$	0	0	0	$-\frac{\sqrt{5}}{12}$	0
		0	0	0	0	0	0	$\frac{\sqrt{5}}{12}$	0	0	0	$\frac{\sqrt{7}}{12}$	0	0	0
		0	$\frac{\sqrt{7}}{28}$	0	0	0	$\frac{\sqrt{35}}{28}$	0	0	$-\frac{\sqrt{70}}{56}$	0	0	0	$-\frac{\sqrt{210}}{168}$	0
		0	0	$-\frac{\sqrt{42}}{28}$	0	0	0	0	0	$\frac{5\sqrt{14}}{168}$	0	0	0	$-\frac{\sqrt{10}}{24}$	0
		0	0	0	$\frac{\sqrt{42}}{28}$	0	0	$-\frac{\sqrt{10}}{24}$	0	0	0	$\frac{5\sqrt{14}}{168}$	0	0	0
		$-\frac{\sqrt{35}}{28}$	0	0	0	$-\frac{\sqrt{7}}{28}$	0	0	$-\frac{\sqrt{210}}{168}$	0	0	0	$-\frac{\sqrt{70}}{56}$	0	0
287	symmetry	$-\frac{\sqrt{15}(x^4-12x^2y^2+6x^2z^2+y^4+6y^2z^2-2z^4)}{12}$													
	$\mathbb{Q}_{4,1}^{(a)}(E_g)$	0	0	0	0	0	0	0	0	$-\frac{\sqrt{5}}{12}$	0	0	0	$\frac{\sqrt{7}}{12}$	0
		0	0	0	0	0	0	$-\frac{\sqrt{7}}{12}$	0	0	0	$\frac{\sqrt{5}}{12}$	0	0	0
		0	$\frac{\sqrt{5}}{28}$	0	0	0	$-\frac{1}{4}$	0	0	$-\frac{5\sqrt{2}}{56}$	0	0	0	$\frac{\sqrt{6}}{24}$	0
		0	0	$-\frac{\sqrt{30}}{28}$	0	0	0	0	0	$\frac{5\sqrt{10}}{168}$	0	0	0	$\frac{\sqrt{14}}{24}$	0
		0	0	0	$\frac{\sqrt{30}}{28}$	0	0	$\frac{\sqrt{14}}{24}$	0	0	0	$\frac{5\sqrt{10}}{168}$	0	0	0
		$\frac{1}{4}$	0	0	0	$-\frac{\sqrt{5}}{28}$	0	0	$\frac{\sqrt{6}}{24}$	0	0	0	$-\frac{5\sqrt{2}}{56}$	0	0
288	symmetry	$\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$													

continued ...



Table 7

No.	multipole	matrix													
	$\mathbb{Q}_{4,2}^{(a)}(E_g)$	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	$\frac{\sqrt{14}}{56}$
289	symmetry	$\frac{\sqrt{35}yz(y-z)(y+z)}{2}$													
	$\mathbb{Q}_{4,1}^{(a)}(T_{1g})$	0	0	0	0	0	0	$-\frac{\sqrt{3}i}{48}$	0	$-\frac{\sqrt{7}i}{16}$	0	$-\frac{\sqrt{105}i}{48}$	0	$-\frac{\sqrt{21}i}{48}$	0
		0	0	0	0	0	0	0	$\frac{\sqrt{21}i}{48}$	0	$\frac{\sqrt{105}i}{48}$	0	$\frac{\sqrt{7}i}{16}$	0	$\frac{\sqrt{3}i}{48}$
		$\frac{\sqrt{21}i}{112}$	0	$\frac{\sqrt{210}i}{112}$	0	$\frac{\sqrt{105}i}{112}$	0	0	$-\frac{3\sqrt{14}i}{112}$	0	$-\frac{\sqrt{70}i}{56}$	0	$-\frac{\sqrt{42}i}{112}$	0	0
		0	$-\frac{3\sqrt{35}i}{112}$	0	$-\frac{3\sqrt{70}i}{112}$	0	$-\frac{3\sqrt{7}i}{112}$	$\frac{\sqrt{6}i}{48}$	0	$\frac{\sqrt{14}i}{28}$	0	$\frac{\sqrt{210}i}{336}$	0	$-\frac{\sqrt{42}i}{168}$	0
		$\frac{3\sqrt{7}i}{112}$	0	$\frac{3\sqrt{70}i}{112}$	0	$\frac{3\sqrt{35}i}{112}$	0	0	$-\frac{\sqrt{42}i}{168}$	0	$\frac{\sqrt{210}i}{336}$	0	$\frac{\sqrt{14}i}{28}$	0	$\frac{\sqrt{6}i}{48}$
		0	$-\frac{\sqrt{105}i}{112}$	0	$-\frac{\sqrt{210}i}{112}$	0	$-\frac{\sqrt{21}i}{112}$	0	0	$-\frac{\sqrt{42}i}{112}$	0	$-\frac{\sqrt{70}i}{56}$	0	$-\frac{3\sqrt{14}i}{112}$	0
290	symmetry	$-\frac{\sqrt{35}xz(x-z)(x+z)}{2}$													
	$\mathbb{Q}_{4,2}^{(a)}(T_{1g})$	0	0	0	0	0	0	$-\frac{\sqrt{3}}{48}$	0	$\frac{\sqrt{7}}{16}$	0	$-\frac{\sqrt{105}}{48}$	0	$\frac{\sqrt{21}}{48}$	0
		0	0	0	0	0	0	0	$\frac{\sqrt{21}}{48}$	0	$-\frac{\sqrt{105}}{48}$	0	$\frac{\sqrt{7}}{16}$	0	$-\frac{\sqrt{3}}{48}$
		$-\frac{\sqrt{21}}{112}$	0	$\frac{\sqrt{210}}{112}$	0	$-\frac{\sqrt{105}}{112}$	0	0	$\frac{3\sqrt{14}}{112}$	0	$-\frac{\sqrt{70}}{56}$	0	$\frac{\sqrt{42}}{112}$	0	0
		0	$\frac{3\sqrt{35}}{112}$	0	$-\frac{3\sqrt{70}}{112}$	0	$\frac{3\sqrt{7}}{112}$	$\frac{\sqrt{6}}{48}$	0	$-\frac{\sqrt{14}}{28}$	0	$\frac{\sqrt{210}}{336}$	0	$\frac{\sqrt{42}}{168}$	0
		$\frac{3\sqrt{7}}{112}$	0	$-\frac{3\sqrt{70}}{112}$	0	$\frac{3\sqrt{35}}{112}$	0	0	$-\frac{\sqrt{42}}{168}$	0	$-\frac{\sqrt{210}}{336}$	0	$\frac{\sqrt{14}}{28}$	0	$-\frac{\sqrt{6}}{48}$
		0	$-\frac{\sqrt{105}}{112}$	0	$\frac{\sqrt{210}}{112}$	0	$-\frac{\sqrt{21}}{112}$	0	0	$-\frac{\sqrt{42}}{112}$	0	$\frac{\sqrt{70}}{56}$	0	$-\frac{3\sqrt{14}}{112}$	0
291	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$													
	$\mathbb{Q}_{4,3}^{(a)}(T_{1g})$	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{3}i}{6}$	0
		0	0	0	0	0	0	$\frac{\sqrt{3}i}{6}$	0	0	0	0	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{21}i}{14}$	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	$-\frac{\sqrt{14}i}{28}$	0	0	0	0	0	0
292	symmetry	$\frac{\sqrt{5}yz(6x^2-y^2-z^2)}{2}$													

continued ...

Table 7

No.	multipole	matrix													
	$\mathbb{Q}_{4,1}^{(a)}(T_{2g})$	0	0	0	0	0	0	$\frac{\sqrt{21}i}{48}$	0	$-\frac{i}{16}$	0	$-\frac{\sqrt{15}i}{48}$	0	$\frac{7\sqrt{3}i}{48}$	0
		0	0	0	0	0	0	$-\frac{7\sqrt{3}i}{48}$	0	$\frac{\sqrt{15}i}{48}$	0	$\frac{i}{16}$	0	$-\frac{\sqrt{21}i}{48}$	0
		$\frac{\sqrt{3}i}{112}$	0	$\frac{\sqrt{30}i}{112}$	0	$-\frac{\sqrt{15}i}{16}$	0	$-\frac{3\sqrt{2}i}{112}$	0	$-\frac{\sqrt{10}i}{56}$	0	$\frac{\sqrt{6}i}{16}$	0	0	0
		0	$-\frac{3\sqrt{5}i}{112}$	0	$-\frac{3\sqrt{10}i}{112}$	0	$\frac{3i}{16}$	$-\frac{\sqrt{42}i}{48}$	0	$\frac{\sqrt{2}i}{28}$	0	$\frac{\sqrt{30}i}{336}$	0	$\frac{\sqrt{6}i}{24}$	0
		$-\frac{3i}{16}$	0	$\frac{3\sqrt{10}i}{112}$	0	$\frac{3\sqrt{5}i}{112}$	0	0	$\frac{\sqrt{6}i}{24}$	0	$\frac{\sqrt{30}i}{336}$	0	$\frac{\sqrt{2}i}{28}$	0	$-\frac{\sqrt{42}i}{48}$
		0	$\frac{\sqrt{15}i}{16}$	0	$-\frac{\sqrt{30}i}{112}$	0	$-\frac{\sqrt{3}i}{112}$	0	0	$\frac{\sqrt{6}i}{16}$	0	$-\frac{\sqrt{10}i}{56}$	0	$-\frac{3\sqrt{2}i}{112}$	0
293	symmetry	$-\frac{\sqrt{5}xz(x^2-6y^2+z^2)}{2}$													
	$\mathbb{Q}_{4,2}^{(a)}(T_{2g})$	0	0	0	0	0	0	$-\frac{\sqrt{21}}{48}$	0	$-\frac{1}{16}$	0	$\frac{\sqrt{15}}{48}$	0	$\frac{7\sqrt{3}}{48}$	0
		0	0	0	0	0	0	$\frac{7\sqrt{3}}{48}$	0	$\frac{\sqrt{15}}{48}$	0	$-\frac{1}{16}$	0	$-\frac{\sqrt{21}}{48}$	0
		$\frac{\sqrt{3}}{112}$	0	$-\frac{\sqrt{30}}{112}$	0	$-\frac{\sqrt{15}}{16}$	0	$-\frac{3\sqrt{2}}{112}$	0	$\frac{\sqrt{10}}{56}$	0	$\frac{\sqrt{6}}{16}$	0	0	0
		0	$-\frac{3\sqrt{5}}{112}$	0	$\frac{3\sqrt{10}}{112}$	0	$\frac{3}{16}$	$\frac{\sqrt{42}}{48}$	0	$\frac{\sqrt{2}}{28}$	0	$-\frac{\sqrt{30}}{336}$	0	$\frac{\sqrt{6}}{24}$	0
		$\frac{3}{16}$	0	$\frac{3\sqrt{10}}{112}$	0	$-\frac{3\sqrt{5}}{112}$	0	$-\frac{\sqrt{6}}{24}$	0	$\frac{\sqrt{30}}{336}$	0	$-\frac{\sqrt{2}}{28}$	0	$-\frac{\sqrt{42}}{48}$	0
		0	$-\frac{\sqrt{15}}{16}$	0	$-\frac{\sqrt{30}}{112}$	0	$\frac{\sqrt{3}}{112}$	0	0	$-\frac{\sqrt{6}}{16}$	0	$-\frac{\sqrt{10}}{56}$	0	$\frac{3\sqrt{2}}{112}$	0
294	symmetry	$-\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$													
	$\mathbb{Q}_{4,3}^{(a)}(T_{2g})$	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	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	$-\frac{3\sqrt{10}i}{56}$	0	0	0	0	$\frac{\sqrt{14}i}{56}$
295	symmetry	$\frac{\sqrt{21}(x^4-3x^2y^2-3x^2z^2+y^4-3y^2z^2+z^4)}{6}$													
	$\mathbb{Q}_4^{(1,-1;a)}(A_{1g})$	0	0	0	0	0	0	0	0	$-\frac{\sqrt{21}}{24}$	0	0	0	$-\frac{\sqrt{15}}{24}$	0
		0	0	0	0	0	0	$\frac{\sqrt{15}}{24}$	0	0	0	$\frac{\sqrt{21}}{24}$	0	0	0
		0	$\frac{\sqrt{21}}{168}$	0	0	0	$\frac{\sqrt{105}}{168}$	0	0	$\frac{\sqrt{210}}{56}$	0	0	0	$\frac{\sqrt{70}}{56}$	0
		0	0	$-\frac{\sqrt{14}}{56}$	0	0	0	0	0	$-\frac{5\sqrt{42}}{168}$	0	0	0	0	$\frac{\sqrt{30}}{24}$
		0	0	0	$\frac{\sqrt{14}}{56}$	0	0	$\frac{\sqrt{30}}{24}$	0	0	0	$-\frac{5\sqrt{42}}{168}$	0	0	0
		$-\frac{\sqrt{105}}{168}$	0	0	0	$-\frac{\sqrt{21}}{168}$	0	0	$\frac{\sqrt{70}}{56}$	0	0	0	$\frac{\sqrt{210}}{56}$	0	0
296	symmetry	$-\frac{\sqrt{15}(x^4-12x^2y^2+6x^2z^2+y^4+6y^2z^2-2z^4)}{12}$													

continued ...

Table 7

No.	multipole	matrix													
	$\mathbb{Q}_{4,1}^{(1,-1;a)}(E_g)$	0	0	0	0	0	0	0	0	$-\frac{\sqrt{15}}{24}$	0	0	0	$\frac{\sqrt{21}}{24}$	
		0	0	0	0	0	0	$-\frac{\sqrt{21}}{24}$	0	0	0	$\frac{\sqrt{15}}{24}$	0	0	
		0	$\frac{\sqrt{15}}{168}$	0	0	0	$-\frac{\sqrt{3}}{24}$	0	0	$\frac{5\sqrt{6}}{56}$	0	0	$-\frac{\sqrt{2}}{8}$	0	
		0	0	$-\frac{\sqrt{10}}{56}$	0	0	0	0	0	$-\frac{5\sqrt{30}}{168}$	0	0	0	$-\frac{\sqrt{42}}{24}$	
		0	0	0	$\frac{\sqrt{10}}{56}$	0	0	$-\frac{\sqrt{42}}{24}$	0	0	0	$-\frac{5\sqrt{30}}{168}$	0	0	
		$\frac{\sqrt{3}}{24}$	0	0	0	$-\frac{\sqrt{15}}{168}$	0	0	$-\frac{\sqrt{2}}{8}$	0	0	0	$\frac{5\sqrt{6}}{56}$	0	
297	symmetry	$\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$													
	$\mathbb{Q}_{4,2}^{(1,-1;a)}(E_g)$	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	$-\frac{\sqrt{3}}{8}$	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	
		$\frac{\sqrt{3}}{56}$	0	0	0	$\frac{\sqrt{15}}{56}$	0	0	$\frac{11\sqrt{2}}{56}$	0	0	0	$-\frac{\sqrt{6}}{56}$	0	
		0	$-\frac{\sqrt{15}}{56}$	0	0	0	$-\frac{\sqrt{3}}{56}$	0	0	$-\frac{\sqrt{6}}{56}$	0	0	0	$\frac{11\sqrt{2}}{56}$	
		0	0	$\frac{\sqrt{10}}{56}$	0	0	0	0	0	$-\frac{3\sqrt{30}}{56}$	0	0	0	$-\frac{\sqrt{42}}{56}$	
298	symmetry	$\frac{\sqrt{35}yz(y-z)(y+z)}{2}$													
	$\mathbb{Q}_{4,1}^{(1,-1;a)}(T_{1g})$	0	0	0	0	0	0	$-\frac{i}{32}$	0	$-\frac{\sqrt{21}i}{32}$	0	$-\frac{\sqrt{35}i}{32}$	0	$-\frac{\sqrt{7}i}{32}$	
		0	0	0	0	0	0	0	$\frac{\sqrt{7}i}{32}$	0	$\frac{\sqrt{35}i}{32}$	0	$\frac{\sqrt{21}i}{32}$	$\frac{i}{32}$	
		$\frac{\sqrt{7}i}{224}$	0	$\frac{\sqrt{70}i}{224}$	0	$\frac{\sqrt{35}i}{224}$	0	0	$\frac{3\sqrt{42}i}{112}$	0	$\frac{\sqrt{210}i}{56}$	0	$\frac{3\sqrt{14}i}{112}$	0	
		0	$-\frac{\sqrt{105}i}{224}$	0	$-\frac{\sqrt{210}i}{224}$	0	$-\frac{\sqrt{21}i}{224}$	$-\frac{\sqrt{2}i}{16}$	0	$-\frac{\sqrt{42}i}{28}$	0	$-\frac{\sqrt{70}i}{112}$	0	$\frac{\sqrt{14}i}{56}$	
		$\frac{\sqrt{21}i}{224}$	0	$\frac{\sqrt{210}i}{224}$	0	$\frac{\sqrt{105}i}{224}$	0	0	$\frac{\sqrt{14}i}{56}$	0	$-\frac{\sqrt{70}i}{112}$	0	$-\frac{\sqrt{42}i}{28}$	$-\frac{\sqrt{2}i}{16}$	
		0	$-\frac{\sqrt{35}i}{224}$	0	$-\frac{\sqrt{70}i}{224}$	0	$-\frac{\sqrt{7}i}{224}$	0	0	$\frac{3\sqrt{14}i}{112}$	0	$\frac{\sqrt{210}i}{56}$	0	$\frac{3\sqrt{42}i}{112}$	
299	symmetry	$-\frac{\sqrt{35}xz(x-z)(x+z)}{2}$													
	$\mathbb{Q}_{4,2}^{(1,-1;a)}(T_{1g})$	0	0	0	0	0	0	$-\frac{1}{32}$	0	$\frac{\sqrt{21}}{32}$	0	$-\frac{\sqrt{35}}{32}$	0	$\frac{\sqrt{7}}{32}$	
		0	0	0	0	0	0	0	$\frac{\sqrt{7}}{32}$	0	$-\frac{\sqrt{35}}{32}$	0	$\frac{\sqrt{21}}{32}$	$-\frac{1}{32}$	
		$-\frac{\sqrt{7}}{224}$	0	$\frac{\sqrt{70}}{224}$	0	$-\frac{\sqrt{35}}{224}$	0	0	$-\frac{3\sqrt{42}}{112}$	0	$\frac{\sqrt{210}}{56}$	0	$-\frac{3\sqrt{14}}{112}$	0	
		0	$\frac{\sqrt{105}}{224}$	0	$-\frac{\sqrt{210}}{224}$	0	$\frac{\sqrt{21}}{224}$	$-\frac{\sqrt{2}}{16}$	0	$\frac{\sqrt{42}}{28}$	0	$-\frac{\sqrt{70}}{112}$	0	$-\frac{\sqrt{14}}{56}$	
		$\frac{\sqrt{21}}{224}$	0	$-\frac{\sqrt{210}}{224}$	0	$\frac{\sqrt{105}}{224}$	0	0	$\frac{\sqrt{14}}{56}$	0	$\frac{\sqrt{70}}{112}$	0	$-\frac{\sqrt{42}}{28}$	$\frac{\sqrt{2}}{16}$	
		0	$-\frac{\sqrt{35}}{224}$	0	$\frac{\sqrt{70}}{224}$	0	$-\frac{\sqrt{7}}{224}$	0	0	$\frac{3\sqrt{14}}{112}$	0	$-\frac{\sqrt{210}}{56}$	0	$\frac{3\sqrt{42}}{112}$	
300	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$													

continued ...

Table 7

No.	multipole	matrix
	$\mathbb{Q}_{4,3}^{(1,-1;a)}(T_{1g})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{i}{4} \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}i}{28} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}i}{28} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{7}i}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}i}{28} & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
301	symmetry	$\frac{\sqrt{5}yz(6x^2-y^2-z^2)}{2}$
	$\mathbb{Q}_{4,1}^{(1,-1;a)}(T_{2g})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}i}{32} & 0 & -\frac{\sqrt{3}i}{32} & 0 & -\frac{\sqrt{5}i}{32} & 0 & \frac{7i}{32} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{7i}{32} & 0 & \frac{\sqrt{5}i}{32} & 0 & \frac{\sqrt{3}i}{32} & 0 & -\frac{\sqrt{7}i}{32} \\ \frac{i}{224} & 0 & \frac{\sqrt{10}i}{224} & 0 & -\frac{\sqrt{5}i}{32} & 0 & 0 & \frac{3\sqrt{6}i}{112} & 0 & \frac{\sqrt{30}i}{56} & 0 & -\frac{3\sqrt{2}i}{16} & 0 & 0 \\ 0 & -\frac{\sqrt{15}i}{224} & 0 & -\frac{\sqrt{30}i}{224} & 0 & \frac{\sqrt{3}i}{32} & \frac{\sqrt{14}i}{16} & 0 & -\frac{\sqrt{6}i}{28} & 0 & -\frac{\sqrt{10}i}{112} & 0 & -\frac{\sqrt{2}i}{8} & 0 \\ -\frac{\sqrt{3}i}{32} & 0 & \frac{\sqrt{30}i}{224} & 0 & \frac{\sqrt{15}i}{224} & 0 & 0 & -\frac{\sqrt{2}i}{8} & 0 & -\frac{\sqrt{10}i}{112} & 0 & -\frac{\sqrt{6}i}{28} & 0 & \frac{\sqrt{14}i}{16} \\ 0 & \frac{\sqrt{5}i}{32} & 0 & -\frac{\sqrt{10}i}{224} & 0 & -\frac{i}{224} & 0 & 0 & -\frac{3\sqrt{2}i}{16} & 0 & \frac{\sqrt{30}i}{56} & 0 & \frac{3\sqrt{6}i}{112} & 0 \end{bmatrix}$
302	symmetry	$-\frac{\sqrt{5}xz(x^2-6y^2+z^2)}{2}$
	$\mathbb{Q}_{4,2}^{(1,-1;a)}(T_{2g})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}}{32} & 0 & -\frac{\sqrt{3}}{32} & 0 & \frac{\sqrt{5}}{32} & 0 & \frac{7}{32} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{7}{32} & 0 & \frac{\sqrt{5}}{32} & 0 & -\frac{\sqrt{3}}{32} & 0 & -\frac{\sqrt{7}}{32} \\ \frac{1}{224} & 0 & -\frac{\sqrt{10}}{224} & 0 & -\frac{\sqrt{5}}{32} & 0 & 0 & \frac{3\sqrt{6}}{112} & 0 & -\frac{\sqrt{30}}{56} & 0 & -\frac{3\sqrt{2}}{16} & 0 & 0 \\ 0 & -\frac{\sqrt{15}}{224} & 0 & \frac{\sqrt{30}}{224} & 0 & \frac{\sqrt{3}}{32} & -\frac{\sqrt{14}}{16} & 0 & -\frac{\sqrt{6}}{28} & 0 & \frac{\sqrt{10}}{112} & 0 & -\frac{\sqrt{2}}{8} & 0 \\ \frac{\sqrt{3}}{32} & 0 & \frac{\sqrt{30}}{224} & 0 & -\frac{\sqrt{15}}{224} & 0 & 0 & \frac{\sqrt{2}}{8} & 0 & -\frac{\sqrt{10}}{112} & 0 & \frac{\sqrt{6}}{28} & 0 & \frac{\sqrt{14}}{16} \\ 0 & -\frac{\sqrt{5}}{32} & 0 & -\frac{\sqrt{10}}{224} & 0 & \frac{1}{224} & 0 & 0 & \frac{3\sqrt{2}}{16} & 0 & \frac{\sqrt{30}}{56} & 0 & -\frac{3\sqrt{6}}{112} & 0 \end{bmatrix}$
303	symmetry	$-\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$
	$\mathbb{Q}_{4,3}^{(1,-1;a)}(T_{2g})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{i}{8} & 0 & 0 & 0 & \frac{\sqrt{3}i}{8} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}i}{8} & 0 & 0 & 0 & -\frac{i}{8} & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{10}i}{56} & 0 & 0 & \frac{\sqrt{42}i}{56} & 0 & 0 & 0 & -\frac{3\sqrt{30}i}{56} & 0 & 0 & 0 \\ -\frac{\sqrt{3}i}{56} & 0 & 0 & 0 & \frac{\sqrt{15}i}{56} & 0 & 0 & -\frac{11\sqrt{2}i}{56} & 0 & 0 & 0 & -\frac{\sqrt{6}i}{56} & 0 & 0 \\ 0 & \frac{\sqrt{15}i}{56} & 0 & 0 & 0 & -\frac{\sqrt{3}i}{56} & 0 & 0 & \frac{\sqrt{6}i}{56} & 0 & 0 & 0 & \frac{11\sqrt{2}i}{56} & 0 \\ 0 & 0 & -\frac{\sqrt{10}i}{56} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{3\sqrt{30}i}{56} & 0 & 0 & 0 & -\frac{\sqrt{42}i}{56} \end{bmatrix}$
304	symmetry	$-\frac{x^2}{2}-\frac{y^2}{2}+z^2$

continued ...

Table 7

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

continued ...

Table 7

No.	multipole	matrix													
	$\mathbb{Q}_{2,3}^{(1,0;a)}(T_{2g})$	$-\frac{\sqrt{15}i}{18}$	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	$-\frac{\sqrt{105}i}{42}$
309	symmetry	$\frac{\sqrt{21}(x^4-3x^2y^2-3x^2z^2+y^4-3y^2z^2+z^4)}{6}$													
	$\mathbb{Q}_4^{(1,0;a)}(A_{1g})$	0	0	0	0	0	0	0	0	$-\frac{\sqrt{35}}{24}$	0	0	0	$-\frac{5}{24}$	
		0	0	0	0	0	0	$\frac{5}{24}$	0	0	0	$\frac{\sqrt{35}}{24}$	0	0	0
		0	$-\frac{\sqrt{35}}{56}$	0	0	0	$-\frac{5\sqrt{7}}{56}$	0	0	$-\frac{\sqrt{14}}{56}$	0	0	0	$-\frac{\sqrt{42}}{168}$	0
		0	0	$\frac{\sqrt{210}}{56}$	0	0	0	0	0	$\frac{\sqrt{70}}{168}$	0	0	0	$-\frac{\sqrt{2}}{24}$	
		0	0	0	$-\frac{\sqrt{210}}{56}$	0	0	$-\frac{\sqrt{2}}{24}$	0	0	0	$\frac{\sqrt{70}}{168}$	0	0	0
		$\frac{5\sqrt{7}}{56}$	0	0	0	$\frac{\sqrt{35}}{56}$	0	0	$-\frac{\sqrt{42}}{168}$	0	0	0	$-\frac{\sqrt{14}}{56}$	0	0
310	symmetry	$-\frac{\sqrt{15}(x^4-12x^2y^2+6x^2z^2+y^4+6y^2z^2-2z^4)}{12}$													
	$\mathbb{Q}_{4,1}^{(1,0;a)}(E_g)$	0	0	0	0	0	0	0	0	$-\frac{5}{24}$	0	0	0	$\frac{\sqrt{35}}{24}$	
		0	0	0	0	0	0	$-\frac{\sqrt{35}}{24}$	0	0	0	$\frac{5}{24}$	0	0	0
		0	$-\frac{5}{56}$	0	0	0	$\frac{\sqrt{5}}{8}$	0	0	$-\frac{\sqrt{10}}{56}$	0	0	0	$\frac{\sqrt{30}}{120}$	0
		0	0	$\frac{5\sqrt{6}}{56}$	0	0	0	0	0	$\frac{5\sqrt{2}}{168}$	0	0	0	$\frac{\sqrt{70}}{120}$	
		0	0	0	$-\frac{5\sqrt{6}}{56}$	0	0	$\frac{\sqrt{70}}{120}$	0	0	0	$\frac{5\sqrt{2}}{168}$	0	0	0
		$-\frac{\sqrt{5}}{8}$	0	0	0	$\frac{5}{56}$	0	0	$\frac{\sqrt{30}}{120}$	0	0	0	$-\frac{\sqrt{10}}{56}$	0	0
311	symmetry	$\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$													
	$\mathbb{Q}_{4,2}^{(1,0;a)}(E_g)$	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	$-\frac{\sqrt{5}}{8}$	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	$\frac{3\sqrt{2}}{56}$	0	0	0	$\frac{\sqrt{70}}{280}$	
312	symmetry	$\frac{\sqrt{35}yz(y-z)(y+z)}{2}$													

continued ...

Table 7

No.	multipole	matrix													
	$\mathbb{Q}_{4,1}^{(1,0;a)}(T_{1g})$	0	0	0	0	0	0	$-\frac{\sqrt{15}i}{96}$	0	$-\frac{\sqrt{35}i}{32}$	0	$-\frac{5\sqrt{21}i}{96}$	0	$-\frac{\sqrt{105}i}{96}$	0
		0	0	0	0	0	0	$\frac{\sqrt{105}i}{96}$	0	$\frac{5\sqrt{21}i}{96}$	0	$\frac{\sqrt{35}i}{32}$	0	$\frac{\sqrt{15}i}{96}$	
		$-\frac{\sqrt{105}i}{224}$	0	$-\frac{5\sqrt{42}i}{224}$	0	$-\frac{5\sqrt{21}i}{224}$	0	0	$-\frac{3\sqrt{70}i}{560}$	0	$-\frac{\sqrt{14}i}{56}$	0	$-\frac{\sqrt{210}i}{560}$	0	0
		0	$\frac{15\sqrt{7}i}{224}$	0	$\frac{15\sqrt{14}i}{224}$	0	$\frac{3\sqrt{35}i}{224}$	$\frac{\sqrt{30}i}{240}$	0	$\frac{\sqrt{70}i}{140}$	0	$\frac{\sqrt{42}i}{336}$	0	$-\frac{\sqrt{210}i}{840}$	0
		$-\frac{3\sqrt{35}i}{224}$	0	$-\frac{15\sqrt{14}i}{224}$	0	$-\frac{15\sqrt{7}i}{224}$	0	0	$-\frac{\sqrt{210}i}{840}$	0	$\frac{\sqrt{42}i}{336}$	0	$\frac{\sqrt{70}i}{140}$	0	$\frac{\sqrt{30}i}{240}$
		0	$\frac{5\sqrt{21}i}{224}$	0	$\frac{5\sqrt{42}i}{224}$	0	$\frac{\sqrt{105}i}{224}$	0	0	$-\frac{\sqrt{210}i}{560}$	0	$-\frac{\sqrt{14}i}{56}$	0	$-\frac{3\sqrt{70}i}{560}$	0
313	symmetry	$-\frac{\sqrt{35}xz(x-z)(x+z)}{2}$													
	$\mathbb{Q}_{4,2}^{(1,0;a)}(T_{1g})$	0	0	0	0	0	0	$-\frac{\sqrt{15}}{96}$	0	$\frac{\sqrt{35}}{32}$	0	$-\frac{5\sqrt{21}}{96}$	0	$\frac{\sqrt{105}}{96}$	0
		0	0	0	0	0	0	$\frac{\sqrt{105}}{96}$	0	$-\frac{5\sqrt{21}}{96}$	0	$\frac{\sqrt{35}}{32}$	0	$-\frac{\sqrt{15}}{96}$	
		$\frac{\sqrt{105}}{224}$	0	$-\frac{5\sqrt{42}}{224}$	0	$\frac{5\sqrt{21}}{224}$	0	0	$\frac{3\sqrt{70}}{560}$	0	$-\frac{\sqrt{14}}{56}$	0	$\frac{\sqrt{210}}{560}$	0	0
		0	$-\frac{15\sqrt{7}}{224}$	0	$\frac{15\sqrt{14}}{224}$	0	$-\frac{3\sqrt{35}}{224}$	$\frac{\sqrt{30}}{240}$	0	$-\frac{\sqrt{70}}{140}$	0	$\frac{\sqrt{42}}{336}$	0	$\frac{\sqrt{210}}{840}$	0
		$-\frac{3\sqrt{35}}{224}$	0	$\frac{15\sqrt{14}}{224}$	0	$-\frac{15\sqrt{7}}{224}$	0	0	$-\frac{\sqrt{210}}{840}$	0	$-\frac{\sqrt{42}}{336}$	0	$\frac{\sqrt{70}}{140}$	0	$-\frac{\sqrt{30}}{240}$
		0	$\frac{5\sqrt{21}}{224}$	0	$-\frac{5\sqrt{42}}{224}$	0	$\frac{\sqrt{105}}{224}$	0	0	$-\frac{\sqrt{210}}{560}$	0	$\frac{\sqrt{14}}{56}$	0	$-\frac{3\sqrt{70}}{560}$	0
314	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$													
	$\mathbb{Q}_{4,3}^{(1,0;a)}(T_{1g})$	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	$\frac{\sqrt{105}i}{28}$	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	$-\frac{\sqrt{30}i}{60}$	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	
315	symmetry	$\frac{\sqrt{5}yz(6x^2-y^2-z^2)}{2}$													
	$\mathbb{Q}_{4,1}^{(1,0;a)}(T_{2g})$	0	0	0	0	0	0	$\frac{\sqrt{105}i}{96}$	0	$-\frac{\sqrt{5}i}{32}$	0	$-\frac{5\sqrt{3}i}{96}$	0	$\frac{7\sqrt{15}i}{96}$	0
		0	0	0	0	0	0	$-\frac{7\sqrt{15}i}{96}$	0	$\frac{5\sqrt{3}i}{96}$	0	$\frac{\sqrt{5}i}{32}$	0	$-\frac{\sqrt{105}i}{96}$	
		$-\frac{\sqrt{15}i}{224}$	0	$-\frac{5\sqrt{6}i}{224}$	0	$\frac{5\sqrt{3}i}{32}$	0	0	$-\frac{3\sqrt{10}i}{560}$	0	$-\frac{\sqrt{2}i}{56}$	0	$\frac{\sqrt{30}i}{80}$	0	0
		0	$\frac{15i}{224}$	0	$\frac{15\sqrt{2}i}{224}$	0	$-\frac{3\sqrt{5}i}{32}$	$-\frac{\sqrt{210}i}{240}$	0	$\frac{\sqrt{10}i}{140}$	0	$\frac{\sqrt{6}i}{336}$	0	$\frac{\sqrt{30}i}{120}$	0
		$\frac{3\sqrt{5}i}{32}$	0	$-\frac{15\sqrt{2}i}{224}$	0	$-\frac{15i}{224}$	0	0	$\frac{\sqrt{30}i}{120}$	0	$\frac{\sqrt{6}i}{336}$	0	$\frac{\sqrt{10}i}{140}$	0	$-\frac{\sqrt{210}i}{240}$
		0	$-\frac{5\sqrt{3}i}{32}$	0	$\frac{5\sqrt{6}i}{224}$	0	$\frac{\sqrt{15}i}{224}$	0	0	$\frac{\sqrt{30}i}{80}$	0	$-\frac{\sqrt{2}i}{56}$	0	$-\frac{3\sqrt{10}i}{560}$	0
316	symmetry	$-\frac{\sqrt{5}xz(x^2-6y^2+z^2)}{2}$													

continued ...

Table 7

No.	multipole	matrix													
	$\mathbb{Q}_{4,2}^{(1,0;a)}(T_{2g})$	0	0	0	0	0	0	$-\frac{\sqrt{105}}{96}$	0	$-\frac{\sqrt{5}}{32}$	0	$\frac{5\sqrt{3}}{96}$	0	$\frac{7\sqrt{15}}{96}$	0
		0	0	0	0	0	0	$\frac{7\sqrt{15}}{96}$	0	$\frac{5\sqrt{3}}{96}$	0	$-\frac{\sqrt{5}}{32}$	0	$-\frac{\sqrt{105}}{96}$	
		$-\frac{\sqrt{15}}{224}$	0	$\frac{5\sqrt{6}}{224}$	0	$\frac{5\sqrt{3}}{32}$	0	0	$-\frac{3\sqrt{10}}{560}$	0	$\frac{\sqrt{2}}{56}$	0	$\frac{\sqrt{30}}{80}$	0	0
		0	$\frac{15}{224}$	0	$-\frac{15\sqrt{2}}{224}$	0	$-\frac{3\sqrt{5}}{32}$	$\frac{\sqrt{210}}{240}$	0	$\frac{\sqrt{10}}{140}$	0	$-\frac{\sqrt{6}}{336}$	0	$\frac{\sqrt{30}}{120}$	0
		$-\frac{3\sqrt{5}}{32}$	0	$-\frac{15\sqrt{2}}{224}$	0	$\frac{15}{224}$	0	0	$-\frac{\sqrt{30}}{120}$	0	$\frac{\sqrt{6}}{336}$	0	$-\frac{\sqrt{10}}{140}$	0	$-\frac{\sqrt{210}}{240}$
		0	$\frac{5\sqrt{3}}{32}$	0	$\frac{5\sqrt{6}}{224}$	0	$-\frac{\sqrt{15}}{224}$	0	0	$-\frac{\sqrt{30}}{80}$	0	$-\frac{\sqrt{2}}{56}$	0	$\frac{3\sqrt{10}}{560}$	0
317	symmetry	$-\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$													
	$\mathbb{Q}_{4,3}^{(1,0;a)}(T_{2g})$	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	$\frac{\sqrt{5}i}{8}$	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	$-\frac{3\sqrt{2}i}{56}$	0	0	0	0	$\frac{\sqrt{70}i}{280}$
318	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$													
	$\mathbb{Q}_{2,1}^{(1,1;a)}(E_g)$	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	0	$\frac{\sqrt{30}}{84}$	0	0	0	0	0
		0	0	$-\frac{2\sqrt{2}}{21}$	0	0	0	0	0	0	$\frac{\sqrt{6}}{28}$	0	0	0	0
		0	0	0	$\frac{2\sqrt{2}}{21}$	0	0	0	0	0	0	$\frac{\sqrt{6}}{28}$	0	0	0
		0	0	0	0	$\frac{4\sqrt{3}}{21}$	0	0	0	0	0	0	$\frac{\sqrt{30}}{84}$	0	0
319	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$													
	$\mathbb{Q}_{2,2}^{(1,1;a)}(E_g)$	$-\frac{\sqrt{30}}{18}$	0	0	0	$-\frac{\sqrt{6}}{18}$	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	$-\frac{2\sqrt{2}}{21}$	0	0	$\frac{\sqrt{210}}{168}$	0	0	0	$\frac{\sqrt{6}}{168}$	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	$\frac{8\sqrt{3}}{63}$	0	0	0	$-\frac{4\sqrt{15}}{63}$	0	0	$\frac{\sqrt{30}}{168}$	0	0	0	$\frac{\sqrt{10}}{56}$	0
		0	0	$\frac{2\sqrt{2}}{21}$	0	0	0	0	0	0	$\frac{\sqrt{6}}{168}$	0	0	0	$\frac{\sqrt{210}}{168}$
320	symmetry	$\sqrt{3}yz$													

continued ...



Table 7

No.	multipole	matrix													
	$\mathbb{Q}_{2,1}^{(1,1;a)}(T_{2g})$	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
321	symmetry	$\sqrt{3}xz$													
	$\mathbb{Q}_{2,2}^{(1,1;a)}(T_{2g})$	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
322	symmetry	$\sqrt{3}xy$													
	$\mathbb{Q}_{2,3}^{(1,1;a)}(T_{2g})$	$-\frac{\sqrt{30}i}{18}$	0	0	0	$\frac{\sqrt{6}i}{18}$	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	$\frac{2\sqrt{2}i}{21}$	0	0	$\frac{\sqrt{210}i}{168}$	0	0	0	$-\frac{\sqrt{6}i}{168}$	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	$\frac{8\sqrt{3}i}{63}$	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	$\frac{2\sqrt{2}i}{21}$	0	0	0	0	0	$\frac{\sqrt{6}i}{168}$	0	0	0	0	$-\frac{\sqrt{210}i}{168}$
323	symmetry	$\sqrt{15}xyz$													
	$\mathbb{G}_3^{(a)}(A_{2g})$	$-\frac{\sqrt{14}}{42}$	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	$-\frac{\sqrt{2}}{8}$
324	symmetry	$\frac{x(2x^2-3y^2-3z^2)}{2}$													

continued ...

Table 7

No.	multipole	matrix													
	$\mathbb{G}_{3,1}^{(a)}(T_{1g})$	0	$\frac{\sqrt{42}i}{84}$	0	$-\frac{\sqrt{21}i}{42}$	0	$\frac{\sqrt{210}i}{84}$	$-\frac{\sqrt{5}i}{16}$	0	$\frac{\sqrt{105}i}{112}$	0	$-\frac{3\sqrt{7}i}{112}$	0	$\frac{\sqrt{35}i}{112}$	0
		$\frac{\sqrt{210}i}{84}$	0	$-\frac{\sqrt{21}i}{42}$	0	$\frac{\sqrt{42}i}{84}$	0	0	$-\frac{\sqrt{35}i}{112}$	0	$\frac{3\sqrt{7}i}{112}$	0	$-\frac{\sqrt{105}i}{112}$	0	$\frac{\sqrt{5}i}{16}$
		$-\frac{\sqrt{35}i}{112}$	0	$\frac{3\sqrt{14}i}{112}$	0	$-\frac{5\sqrt{7}i}{112}$	0	0	$\frac{\sqrt{210}i}{112}$	0	$-\frac{\sqrt{42}i}{56}$	0	$\frac{\sqrt{70}i}{112}$	0	0
		0	$\frac{\sqrt{21}i}{48}$	0	$-\frac{\sqrt{42}i}{336}$	0	$-\frac{5\sqrt{105}i}{336}$	$\frac{\sqrt{10}i}{16}$	0	0	0	$-\frac{3\sqrt{14}i}{112}$	0	$\frac{\sqrt{70}i}{56}$	0
		$\frac{5\sqrt{105}i}{336}$	0	$\frac{\sqrt{42}i}{336}$	0	$-\frac{\sqrt{21}i}{48}$	0	0	$\frac{\sqrt{70}i}{56}$	0	$-\frac{3\sqrt{14}i}{112}$	0	0	0	$\frac{\sqrt{10}i}{16}$
		0	$\frac{5\sqrt{7}i}{112}$	0	$-\frac{3\sqrt{14}i}{112}$	0	$\frac{\sqrt{35}i}{112}$	0	0	$\frac{\sqrt{70}i}{112}$	0	$-\frac{\sqrt{42}i}{56}$	0	$\frac{\sqrt{210}i}{112}$	0
325	symmetry	$-\frac{y(3x^2-2y^2+3z^2)}{2}$													
	$\mathbb{G}_{3,2}^{(a)}(T_{1g})$	0	$-\frac{\sqrt{42}}{84}$	0	$-\frac{\sqrt{21}}{42}$	0	$-\frac{\sqrt{210}}{84}$	$-\frac{\sqrt{5}}{16}$	0	$-\frac{\sqrt{105}}{112}$	0	$-\frac{3\sqrt{7}}{112}$	0	$-\frac{\sqrt{35}}{112}$	0
		$\frac{\sqrt{210}}{84}$	0	$\frac{\sqrt{21}}{42}$	0	$\frac{\sqrt{42}}{84}$	0	0	$-\frac{\sqrt{35}}{112}$	0	$-\frac{3\sqrt{7}}{112}$	0	$-\frac{\sqrt{105}}{112}$	0	$-\frac{\sqrt{5}}{16}$
		$\frac{\sqrt{35}}{112}$	0	$\frac{3\sqrt{14}}{112}$	0	$\frac{5\sqrt{7}}{112}$	0	0	$-\frac{\sqrt{210}}{112}$	0	$-\frac{\sqrt{42}}{56}$	0	$-\frac{\sqrt{70}}{112}$	0	0
		0	$-\frac{\sqrt{21}}{48}$	0	$-\frac{\sqrt{42}}{336}$	0	$\frac{5\sqrt{105}}{336}$	$\frac{\sqrt{10}}{16}$	0	0	0	$-\frac{3\sqrt{14}}{112}$	0	$-\frac{\sqrt{70}}{56}$	0
		$\frac{5\sqrt{105}}{336}$	0	$-\frac{\sqrt{42}}{336}$	0	$-\frac{\sqrt{21}}{48}$	0	0	$\frac{\sqrt{70}}{56}$	0	$\frac{3\sqrt{14}}{112}$	0	0	0	$-\frac{\sqrt{10}}{16}$
		0	$\frac{5\sqrt{7}}{112}$	0	$\frac{3\sqrt{14}}{112}$	0	$\frac{\sqrt{35}}{112}$	0	0	$\frac{\sqrt{70}}{112}$	0	$\frac{\sqrt{42}}{56}$	0	$\frac{\sqrt{210}}{112}$	0
326	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$													
	$\mathbb{G}_{3,3}^{(a)}(T_{1g})$	0	0	$\frac{\sqrt{21}i}{21}$	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	$\frac{\sqrt{7}i}{14}$	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	$\frac{\sqrt{42}i}{42}$	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	$-\frac{\sqrt{14}i}{28}$	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{7}i}{14}$	0	0	0	0	0	$-\frac{\sqrt{70}i}{28}$	0	0	0
327	symmetry	$\frac{\sqrt{15}x(y-z)(y+z)}{2}$													
	$\mathbb{G}_{3,1}^{(a)}(T_{2g})$	0	$\frac{\sqrt{70}i}{84}$	0	$-\frac{\sqrt{35}i}{42}$	0	$-\frac{\sqrt{14}i}{28}$	$\frac{\sqrt{3}i}{16}$	0	$\frac{5\sqrt{7}i}{112}$	0	$-\frac{\sqrt{105}i}{112}$	0	$-\frac{\sqrt{21}i}{112}$	0
		$-\frac{\sqrt{14}i}{28}$	0	$-\frac{\sqrt{35}i}{42}$	0	$\frac{\sqrt{70}i}{84}$	0	0	$\frac{\sqrt{21}i}{112}$	0	$\frac{\sqrt{105}i}{112}$	0	$-\frac{5\sqrt{7}i}{112}$	0	$-\frac{\sqrt{3}i}{16}$
		$-\frac{5\sqrt{21}i}{336}$	0	$\frac{\sqrt{210}i}{112}$	0	$\frac{\sqrt{105}i}{112}$	0	0	$\frac{5\sqrt{14}i}{112}$	0	$-\frac{\sqrt{70}i}{56}$	0	$-\frac{\sqrt{42}i}{112}$	0	0
		0	$\frac{\sqrt{35}i}{48}$	0	$-\frac{\sqrt{70}i}{336}$	0	$\frac{5\sqrt{7}i}{112}$	$-\frac{\sqrt{6}i}{16}$	0	0	0	$-\frac{\sqrt{210}i}{112}$	0	$-\frac{\sqrt{42}i}{56}$	0
		$-\frac{5\sqrt{7}i}{112}$	0	$\frac{\sqrt{70}i}{336}$	0	$-\frac{\sqrt{35}i}{48}$	0	0	$-\frac{\sqrt{42}i}{56}$	0	$-\frac{\sqrt{210}i}{112}$	0	0	0	$-\frac{\sqrt{6}i}{16}$
		0	$-\frac{\sqrt{105}i}{112}$	0	$-\frac{\sqrt{210}i}{112}$	0	$\frac{5\sqrt{21}i}{336}$	0	0	$-\frac{\sqrt{42}i}{112}$	0	$-\frac{\sqrt{70}i}{56}$	0	$\frac{5\sqrt{14}i}{112}$	0
328	symmetry	$-\frac{\sqrt{15}y(x-z)(x+z)}{2}$													

continued ...

Table 7

No.	multipole	matrix													
	$\mathbb{G}_{3,2}^{(a)}(T_{2g})$	0	$\frac{\sqrt{70}}{84}$	0	$\frac{\sqrt{35}}{42}$	0	$-\frac{\sqrt{14}}{28}$	$-\frac{\sqrt{3}}{16}$	0	$\frac{5\sqrt{7}}{112}$	0	$\frac{\sqrt{105}}{112}$	0	$-\frac{\sqrt{21}}{112}$	0
		$\frac{\sqrt{14}}{28}$	0	$-\frac{\sqrt{35}}{42}$	0	$-\frac{\sqrt{70}}{84}$	0	0	$-\frac{\sqrt{21}}{112}$	0	$\frac{\sqrt{105}}{112}$	0	$\frac{5\sqrt{7}}{112}$	0	$-\frac{\sqrt{3}}{16}$
		$-\frac{5\sqrt{21}}{336}$	0	$-\frac{\sqrt{210}}{112}$	0	$\frac{\sqrt{105}}{112}$	0	0	$\frac{5\sqrt{14}}{112}$	0	$\frac{\sqrt{70}}{56}$	0	$-\frac{\sqrt{42}}{112}$	0	0
		0	$\frac{\sqrt{35}}{48}$	0	$\frac{\sqrt{70}}{336}$	0	$\frac{5\sqrt{7}}{112}$	$\frac{\sqrt{6}}{16}$	0	0	0	$\frac{\sqrt{210}}{112}$	0	$-\frac{\sqrt{42}}{56}$	0
		$\frac{5\sqrt{7}}{112}$	0	$\frac{\sqrt{70}}{336}$	0	$\frac{\sqrt{35}}{48}$	0	0	$\frac{\sqrt{42}}{56}$	0	$-\frac{\sqrt{210}}{112}$	0	0	0	$-\frac{\sqrt{6}}{16}$
		0	$\frac{\sqrt{105}}{112}$	0	$-\frac{\sqrt{210}}{112}$	0	$-\frac{5\sqrt{21}}{336}$	0	0	$\frac{\sqrt{42}}{112}$	0	$-\frac{\sqrt{70}}{56}$	0	$-\frac{5\sqrt{14}}{112}$	0
329	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$													
	$\mathbb{G}_{3,3}^{(a)}(T_{2g})$	$\frac{\sqrt{14}i}{42}$	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	$\sqrt{15}xyz$													
	$\mathbb{G}_3^{(1,-1;a)}(A_{2g})$	$\frac{\sqrt{30}}{252}$	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	$-\frac{\sqrt{210}}{84}$
331	symmetry	$\frac{x(2x^2-3y^2-3z^2)}{2}$													
	$\mathbb{G}_{3,1}^{(1,-1;a)}(T_{1g})$	0	$-\frac{\sqrt{10}i}{168}$	0	$\frac{\sqrt{5}i}{84}$	0	$-\frac{5\sqrt{2}i}{168}$	$\frac{5\sqrt{21}i}{84}$	0	$-\frac{5i}{28}$	0	$\frac{\sqrt{15}i}{28}$	0	$-\frac{5\sqrt{3}i}{84}$	0
		$-\frac{5\sqrt{2}i}{168}$	0	$\frac{\sqrt{5}i}{84}$	0	$-\frac{\sqrt{10}i}{168}$	0	0	$\frac{5\sqrt{3}i}{84}$	0	$-\frac{\sqrt{15}i}{28}$	0	$\frac{5i}{28}$	0	$-\frac{5\sqrt{21}i}{84}$
		$\frac{\sqrt{3}i}{84}$	0	$-\frac{\sqrt{30}i}{140}$	0	$\frac{\sqrt{15}i}{84}$	0	0	$\frac{5\sqrt{2}i}{56}$	0	$-\frac{\sqrt{10}i}{28}$	0	$\frac{5\sqrt{6}i}{168}$	0	0
		0	$-\frac{\sqrt{5}i}{60}$	0	$\frac{\sqrt{10}i}{420}$	0	$\frac{5i}{84}$	$\frac{5\sqrt{42}i}{168}$	0	0	0	$-\frac{\sqrt{30}i}{56}$	0	$\frac{5\sqrt{6}i}{84}$	0
		$-\frac{5i}{84}$	0	$-\frac{\sqrt{10}i}{420}$	0	$\frac{\sqrt{5}i}{60}$	0	0	$\frac{5\sqrt{6}i}{84}$	0	$-\frac{\sqrt{30}i}{56}$	0	0	0	$\frac{5\sqrt{42}i}{168}$
		0	$-\frac{\sqrt{15}i}{84}$	0	$\frac{\sqrt{30}i}{140}$	0	$-\frac{\sqrt{3}i}{84}$	0	0	$\frac{5\sqrt{6}i}{168}$	0	$-\frac{\sqrt{10}i}{28}$	0	$\frac{5\sqrt{2}i}{56}$	0
332	symmetry	$-\frac{y(3x^2-2y^2+3z^2)}{2}$													

continued ...

Table 7

No.	multipole	matrix													
	$\mathbb{G}_{3,2}^{(1,-1;a)}(T_{1g})$	0	$\frac{\sqrt{10}}{168}$	0	$\frac{\sqrt{5}}{84}$	0	$\frac{5\sqrt{2}}{168}$	$\frac{5\sqrt{21}}{84}$	0	$\frac{5}{28}$	0	$\frac{\sqrt{15}}{28}$	0	$\frac{5\sqrt{3}}{84}$	0
		$-\frac{5\sqrt{2}}{168}$	0	$-\frac{\sqrt{5}}{84}$	0	$-\frac{\sqrt{10}}{168}$	0	0	$\frac{5\sqrt{3}}{84}$	0	$\frac{\sqrt{15}}{28}$	0	$\frac{5}{28}$	0	$\frac{5\sqrt{21}}{84}$
		$-\frac{\sqrt{3}}{84}$	0	$-\frac{\sqrt{30}}{140}$	0	$-\frac{\sqrt{15}}{84}$	0	0	$-\frac{5\sqrt{2}}{56}$	0	$-\frac{\sqrt{10}}{28}$	0	$-\frac{5\sqrt{6}}{168}$	0	0
		0	$\frac{\sqrt{5}}{60}$	0	$\frac{\sqrt{10}}{420}$	0	$-\frac{5}{84}$	$\frac{5\sqrt{42}}{168}$	0	0	0	$-\frac{\sqrt{30}}{56}$	0	$-\frac{5\sqrt{6}}{84}$	0
		$-\frac{5}{84}$	0	$\frac{\sqrt{10}}{420}$	0	$\frac{\sqrt{5}}{60}$	0	0	$\frac{5\sqrt{6}}{84}$	0	$\frac{\sqrt{30}}{56}$	0	0	0	$-\frac{5\sqrt{42}}{168}$
		0	$-\frac{\sqrt{15}}{84}$	0	$-\frac{\sqrt{30}}{140}$	0	$-\frac{\sqrt{3}}{84}$	0	0	$\frac{5\sqrt{6}}{168}$	0	$\frac{\sqrt{10}}{28}$	0	$\frac{5\sqrt{2}}{56}$	0
333	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$													
	$\mathbb{G}_{3,3}^{(1,-1;a)}(T_{1g})$	0	0	$-\frac{\sqrt{5}i}{42}$	0	0	0	0	0	0	$-\frac{2\sqrt{15}i}{21}$	0	0	0	0
		0	0	0	$\frac{\sqrt{5}i}{42}$	0	0	0	0	0	0	$-\frac{2\sqrt{15}i}{21}$	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
334	symmetry	$\frac{\sqrt{15}x(y-z)(y+z)}{2}$													
	$\mathbb{G}_{3,1}^{(1,-1;a)}(T_{2g})$	0	$-\frac{5\sqrt{6}i}{504}$	0	$\frac{5\sqrt{3}i}{252}$	0	$\frac{\sqrt{30}i}{168}$	$-\frac{\sqrt{35}i}{28}$	0	$-\frac{5\sqrt{15}i}{84}$	0	$\frac{5i}{28}$	0	$\frac{\sqrt{5}i}{28}$	0
		$\frac{\sqrt{30}i}{168}$	0	$\frac{5\sqrt{3}i}{252}$	0	$-\frac{5\sqrt{6}i}{504}$	0	0	$-\frac{\sqrt{5}i}{28}$	0	$-\frac{5i}{28}$	0	$\frac{5\sqrt{15}i}{84}$	0	$\frac{\sqrt{35}i}{28}$
		$\frac{\sqrt{5}i}{84}$	0	$-\frac{\sqrt{2}i}{28}$	0	$-\frac{i}{28}$	0	0	$\frac{5\sqrt{30}i}{168}$	0	$-\frac{5\sqrt{6}i}{84}$	0	$-\frac{\sqrt{10}i}{56}$	0	0
		0	$-\frac{\sqrt{3}i}{36}$	0	$\frac{\sqrt{6}i}{252}$	0	$-\frac{\sqrt{15}i}{84}$	$-\frac{\sqrt{70}i}{56}$	0	0	0	$-\frac{5\sqrt{2}i}{56}$	0	$-\frac{\sqrt{10}i}{28}$	0
		$\frac{\sqrt{15}i}{84}$	0	$-\frac{\sqrt{6}i}{252}$	0	$\frac{\sqrt{3}i}{36}$	0	0	$-\frac{\sqrt{10}i}{28}$	0	$-\frac{5\sqrt{2}i}{56}$	0	0	0	$-\frac{\sqrt{70}i}{56}$
		0	$\frac{i}{28}$	0	$\frac{\sqrt{2}i}{28}$	0	$-\frac{\sqrt{5}i}{84}$	0	0	$-\frac{\sqrt{10}i}{56}$	0	$-\frac{5\sqrt{6}i}{84}$	0	$\frac{5\sqrt{30}i}{168}$	0
335	symmetry	$-\frac{\sqrt{15}y(x-z)(x+z)}{2}$													
	$\mathbb{G}_{3,2}^{(1,-1;a)}(T_{2g})$	0	$-\frac{5\sqrt{6}}{504}$	0	$-\frac{5\sqrt{3}}{252}$	0	$\frac{\sqrt{30}}{168}$	$\frac{\sqrt{35}}{28}$	0	$-\frac{5\sqrt{15}}{84}$	0	$-\frac{5}{28}$	0	$\frac{\sqrt{5}}{28}$	0
		$-\frac{\sqrt{30}}{168}$	0	$\frac{5\sqrt{3}}{252}$	0	$\frac{5\sqrt{6}}{504}$	0	0	$\frac{\sqrt{5}}{28}$	0	$-\frac{5}{28}$	0	$-\frac{5\sqrt{15}}{84}$	0	$\frac{\sqrt{35}}{28}$
		$\frac{\sqrt{5}}{84}$	0	$\frac{\sqrt{2}}{28}$	0	$-\frac{1}{28}$	0	0	$\frac{5\sqrt{30}}{168}$	0	$\frac{5\sqrt{6}}{84}$	0	$-\frac{\sqrt{10}}{56}$	0	0
		0	$-\frac{\sqrt{3}}{36}$	0	$-\frac{\sqrt{6}}{252}$	0	$-\frac{\sqrt{15}}{84}$	$\frac{\sqrt{70}}{56}$	0	0	0	$\frac{5\sqrt{2}}{56}$	0	$-\frac{\sqrt{10}}{28}$	0
		$-\frac{\sqrt{15}}{84}$	0	$-\frac{\sqrt{6}}{252}$	0	$-\frac{\sqrt{3}}{36}$	0	0	$\frac{\sqrt{10}}{28}$	0	$-\frac{5\sqrt{2}}{56}$	0	0	0	$-\frac{\sqrt{70}}{56}$
		0	$-\frac{1}{28}$	0	$\frac{\sqrt{2}}{28}$	0	$\frac{\sqrt{5}}{84}$	0	0	$\frac{\sqrt{10}}{56}$	0	$-\frac{5\sqrt{6}}{84}$	0	$-\frac{5\sqrt{30}}{168}$	0
336	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$													

continued ...

Table 7

No.	multipole	matrix													
	$\mathbb{G}_{3,3}^{(1,-1;a)}(T_{2g})$	$-\frac{\sqrt{30}i}{252}$	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	$-\frac{\sqrt{210}i}{84}$
337	symmetry	$\frac{3\sqrt{35}xyz(x-y)(x+y)}{2}$													
	$\mathbb{G}_{5,1}^{(1,-1;a)}(E_g)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}}{20} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{20} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$													
338	symmetry	$\frac{\sqrt{105}xyz(x^2+y^2-2z^2)}{2}$													
	$\mathbb{G}_{5,2}^{(1,-1;a)}(E_g)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{120} & 0 & 0 & 0 & \frac{\sqrt{42}}{24} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{70}}{40} & 0 & 0 & 0 & -\frac{\sqrt{210}}{40} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{210}}{40} & 0 & 0 & 0 & \frac{\sqrt{70}}{40} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}}{24} & 0 & 0 & 0 & -\frac{\sqrt{30}}{120} & 0 \end{bmatrix}$													
339	symmetry	$\frac{x(8x^4-40x^2y^2-40x^2z^2+15y^4+30y^2z^2+15z^4)}{8}$													
	$\mathbb{G}_{5,1}^{(1,-1;a)}(T_{1g}, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{32} & 0 & -\frac{\sqrt{10}i}{32} & 0 & \frac{7\sqrt{6}i}{96} & 0 & -\frac{3\sqrt{14}i}{32} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}i}{96} & 0 & -\frac{3\sqrt{2}i}{32} & 0 & \frac{\sqrt{30}i}{32} & 0 & -\frac{7\sqrt{6}i}{96} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{7\sqrt{6}i}{96} & 0 & \frac{\sqrt{30}i}{32} & 0 & -\frac{3\sqrt{2}i}{32} & 0 & \frac{\sqrt{42}i}{96} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{3\sqrt{14}i}{32} & 0 & \frac{7\sqrt{6}i}{96} & 0 & -\frac{\sqrt{10}i}{32} & 0 & \frac{\sqrt{2}i}{32} & 0 & 0 \end{bmatrix}$													
340	symmetry	$\frac{y(15x^4-40x^2y^2+30x^2z^2+8y^4-40y^2z^2+15z^4)}{8}$													

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 & -\frac{\sqrt{2}}{32} & 0 & -\frac{\sqrt{10}}{32} & 0 & -\frac{7\sqrt{6}}{96} & 0 & -\frac{3\sqrt{14}}{32} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}}{96} & 0 & \frac{3\sqrt{2}}{32} & 0 & \frac{\sqrt{30}}{32} & 0 & \frac{7\sqrt{6}}{96} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{7\sqrt{6}}{96} & 0 & -\frac{\sqrt{30}}{32} & 0 & -\frac{3\sqrt{2}}{32} & 0 & -\frac{\sqrt{42}}{96} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{3\sqrt{14}}{32} & 0 & \frac{7\sqrt{6}}{96} & 0 & \frac{\sqrt{10}}{32} & 0 & \frac{\sqrt{2}}{32} & 0 & 0 \end{bmatrix} $
341	symmetry	$ \frac{z(15x^4+30x^2y^2-40x^2z^2+15y^4-40y^2z^2+8z^4)}{8} $
	$\mathbb{G}_{5,3}^{(1,-1;a)}(T_{1g}, 1)$	$ \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 & -\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} $
342	symmetry	$ \frac{3\sqrt{35}x(y^2-2yz-z^2)(y^2+2yz-z^2)}{8} $
	$\mathbb{G}_{5,1}^{(1,-1;a)}(T_{1g}, 2)$	$ \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{70}i}{160} & 0 & -\frac{\sqrt{14}i}{32} & 0 & -\frac{3\sqrt{210}i}{160} & 0 & -\frac{\sqrt{10}i}{32} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{3\sqrt{30}i}{160} & 0 & -\frac{3\sqrt{70}i}{160} & 0 & \frac{\sqrt{42}i}{32} & 0 & \frac{3\sqrt{210}i}{160} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{3\sqrt{210}i}{160} & 0 & \frac{\sqrt{42}i}{32} & 0 & -\frac{3\sqrt{70}i}{160} & 0 & -\frac{3\sqrt{30}i}{160} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}i}{32} & 0 & -\frac{3\sqrt{210}i}{160} & 0 & -\frac{\sqrt{14}i}{32} & 0 & \frac{\sqrt{70}i}{160} & 0 & 0 \end{bmatrix} $
343	symmetry	$ \frac{3\sqrt{35}y(x^2-2xz-z^2)(x^2+2xz-z^2)}{8} $
	$\mathbb{G}_{5,2}^{(1,-1;a)}(T_{1g}, 2)$	$ \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{70}}{160} & 0 & -\frac{\sqrt{14}}{32} & 0 & \frac{3\sqrt{210}}{160} & 0 & -\frac{\sqrt{10}}{32} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{3\sqrt{30}}{160} & 0 & \frac{3\sqrt{70}}{160} & 0 & \frac{\sqrt{42}}{32} & 0 & -\frac{3\sqrt{210}}{160} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{3\sqrt{210}}{160} & 0 & -\frac{\sqrt{42}}{32} & 0 & -\frac{3\sqrt{70}}{160} & 0 & \frac{3\sqrt{30}}{160} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{32} & 0 & -\frac{3\sqrt{210}}{160} & 0 & \frac{\sqrt{14}}{32} & 0 & \frac{\sqrt{70}}{160} & 0 & 0 \end{bmatrix} $
344	symmetry	$ \frac{3\sqrt{35}z(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 & 0 \\ 0 & 0 & 0 & 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} $
345	symmetry	$ \frac{\sqrt{105}x(y-z)(y+z)(2x^2-y^2-z^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 & \frac{\sqrt{210}i}{240} & 0 & -\frac{\sqrt{42}i}{48} & 0 & \frac{\sqrt{70}i}{80} & 0 & \frac{\sqrt{30}i}{16} \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{80} & 0 & -\frac{\sqrt{210}i}{80} & 0 & \frac{\sqrt{14}i}{16} & 0 & -\frac{\sqrt{70}i}{80} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}i}{80} & 0 & \frac{\sqrt{14}i}{16} & 0 & -\frac{\sqrt{210}i}{80} & 0 & \frac{\sqrt{10}i}{80} \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{16} & 0 & \frac{\sqrt{70}i}{80} & 0 & -\frac{\sqrt{42}i}{48} & 0 & \frac{\sqrt{210}i}{240} & 0 \end{bmatrix} $
346	symmetry	$ \frac{\sqrt{105}y(x-z)(x+z)(x^2-2y^2+z^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 & \frac{\sqrt{210}}{240} & 0 & \frac{\sqrt{42}}{48} & 0 & \frac{\sqrt{70}}{80} & 0 & -\frac{\sqrt{30}}{16} \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}}{80} & 0 & -\frac{\sqrt{210}}{80} & 0 & -\frac{\sqrt{14}}{16} & 0 & -\frac{\sqrt{70}}{80} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{70}}{80} & 0 & \frac{\sqrt{14}}{16} & 0 & \frac{\sqrt{210}}{80} & 0 & \frac{\sqrt{10}}{80} \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{16} & 0 & -\frac{\sqrt{70}}{80} & 0 & -\frac{\sqrt{42}}{48} & 0 & -\frac{\sqrt{210}}{240} & 0 \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	$ \sqrt{15}xyz $

continued ...

Table 7

No.	multipole	matrix													
	$\mathbb{G}_3^{(1,0;a)}(A_{2g})$	$-\frac{\sqrt{42}}{126}$	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	$\frac{\sqrt{6}}{24}$
349	symmetry	$\frac{x(2x^2-3y^2-3z^2)}{2}$													
	$\mathbb{G}_{3,1}^{(1,0;a)}(T_{1g})$	0	$\frac{\sqrt{14}i}{84}$	0	$-\frac{\sqrt{7}i}{42}$	0	$\frac{\sqrt{70}i}{84}$	$\frac{5\sqrt{15}i}{96}$	0	$-\frac{5\sqrt{35}i}{224}$	0	$\frac{5\sqrt{21}i}{224}$	0	$-\frac{5\sqrt{105}i}{672}$	0
		$\frac{\sqrt{70}i}{84}$	0	$-\frac{\sqrt{7}i}{42}$	0	$\frac{\sqrt{14}i}{84}$	0	0	$\frac{5\sqrt{105}i}{672}$	0	$-\frac{5\sqrt{21}i}{224}$	0	$\frac{5\sqrt{35}i}{224}$	0	$-\frac{5\sqrt{15}i}{96}$
		$-\frac{5\sqrt{105}i}{672}$	0	$\frac{5\sqrt{42}i}{224}$	0	$-\frac{25\sqrt{21}i}{672}$	0	0	$-\frac{\sqrt{70}i}{112}$	0	$\frac{\sqrt{14}i}{56}$	0	$-\frac{\sqrt{210}i}{336}$	0	0
		0	$\frac{5\sqrt{7}i}{96}$	0	$-\frac{5\sqrt{14}i}{672}$	0	$-\frac{25\sqrt{35}i}{672}$	$-\frac{\sqrt{30}i}{48}$	0	0	0	$\frac{\sqrt{42}i}{112}$	0	$-\frac{\sqrt{210}i}{168}$	0
		$\frac{25\sqrt{35}i}{672}$	0	$\frac{5\sqrt{14}i}{672}$	0	$-\frac{5\sqrt{7}i}{96}$	0	0	$-\frac{\sqrt{210}i}{168}$	0	$\frac{\sqrt{42}i}{112}$	0	0	0	$-\frac{\sqrt{30}i}{48}$
		0	$\frac{25\sqrt{21}i}{672}$	0	$-\frac{5\sqrt{42}i}{224}$	0	$\frac{5\sqrt{105}i}{672}$	0	0	$-\frac{\sqrt{210}i}{336}$	0	$\frac{\sqrt{14}i}{56}$	0	$-\frac{\sqrt{70}i}{112}$	0
350	symmetry	$-\frac{y(3x^2-2y^2+3z^2)}{2}$													
	$\mathbb{G}_{3,2}^{(1,0;a)}(T_{1g})$	0	$-\frac{\sqrt{14}}{84}$	0	$-\frac{\sqrt{7}}{42}$	0	$-\frac{\sqrt{70}}{84}$	$\frac{5\sqrt{15}}{96}$	0	$\frac{5\sqrt{35}}{224}$	0	$\frac{5\sqrt{21}}{224}$	0	$\frac{5\sqrt{105}}{672}$	0
		$\frac{\sqrt{70}}{84}$	0	$\frac{\sqrt{7}}{42}$	0	$\frac{\sqrt{14}}{84}$	0	0	$\frac{5\sqrt{105}}{672}$	0	$\frac{5\sqrt{21}}{224}$	0	$\frac{5\sqrt{35}}{224}$	0	$\frac{5\sqrt{15}}{96}$
		$\frac{5\sqrt{105}}{672}$	0	$\frac{5\sqrt{42}}{224}$	0	$\frac{25\sqrt{21}}{672}$	0	0	$\frac{\sqrt{70}}{112}$	0	$\frac{\sqrt{14}}{56}$	0	$\frac{\sqrt{210}}{336}$	0	0
		0	$-\frac{5\sqrt{7}}{96}$	0	$-\frac{5\sqrt{14}}{672}$	0	$\frac{25\sqrt{35}}{672}$	$-\frac{\sqrt{30}}{48}$	0	0	0	$\frac{\sqrt{42}}{112}$	0	$\frac{\sqrt{210}}{168}$	0
		$\frac{25\sqrt{35}}{672}$	0	$-\frac{5\sqrt{14}}{672}$	0	$-\frac{5\sqrt{7}}{96}$	0	0	$-\frac{\sqrt{210}}{168}$	0	$-\frac{\sqrt{42}}{112}$	0	0	0	$\frac{\sqrt{30}}{48}$
		0	$\frac{25\sqrt{21}}{672}$	0	$\frac{5\sqrt{42}}{224}$	0	$\frac{5\sqrt{105}}{672}$	0	0	$-\frac{\sqrt{210}}{336}$	0	$-\frac{\sqrt{14}}{56}$	0	$-\frac{\sqrt{70}}{112}$	0
351	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$													
	$\mathbb{G}_{3,3}^{(1,0;a)}(T_{1g})$	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	0	$-\frac{\sqrt{7}i}{21}$	0	0	0	0	0	$-\frac{5\sqrt{21}i}{84}$	0	0	0	0
		0	$-\frac{5\sqrt{21}i}{84}$	0	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	0	$\frac{5\sqrt{14}i}{84}$	0	0	0	0	0	$\frac{\sqrt{42}i}{84}$	0	0	0	0
		0	0	0	0	$-\frac{5\sqrt{21}i}{84}$	0	0	0	0	0	$\frac{\sqrt{210}i}{84}$	0	0	0
352	symmetry	$\frac{\sqrt{15}x(y-z)(y+z)}{2}$													

continued ...



Table 7

No.	multipole	matrix													
	$\mathbb{G}_{3,1}^{(1,0;a)}(T_{2g})$	0	$\frac{\sqrt{210}i}{252}$	0	$-\frac{\sqrt{105}i}{126}$	0	$-\frac{\sqrt{42}i}{84}$	$-\frac{5i}{32}$	0	$-\frac{25\sqrt{21}i}{672}$	0	$\frac{5\sqrt{35}i}{224}$	0	$\frac{5\sqrt{7}i}{224}$	0
		$-\frac{\sqrt{42}i}{84}$	0	$-\frac{\sqrt{105}i}{126}$	0	$\frac{\sqrt{210}i}{252}$	0	0	$-\frac{5\sqrt{7}i}{224}$	0	$-\frac{5\sqrt{35}i}{224}$	0	$\frac{25\sqrt{21}i}{672}$	0	$\frac{5i}{32}$
		$-\frac{25\sqrt{7}i}{672}$	0	$\frac{5\sqrt{70}i}{224}$	0	$\frac{5\sqrt{35}i}{224}$	0	0	$-\frac{5\sqrt{42}i}{336}$	0	$\frac{\sqrt{210}i}{168}$	0	$\frac{\sqrt{14}i}{112}$	0	0
		0	$\frac{5\sqrt{105}i}{288}$	0	$-\frac{5\sqrt{210}i}{2016}$	0	$\frac{25\sqrt{21}i}{672}$	$\frac{\sqrt{2}i}{16}$	0	0	0	$\frac{\sqrt{70}i}{112}$	0	$\frac{\sqrt{14}i}{56}$	0
		$-\frac{25\sqrt{21}i}{672}$	0	$\frac{5\sqrt{210}i}{2016}$	0	$-\frac{5\sqrt{105}i}{288}$	0	0	$\frac{\sqrt{14}i}{56}$	0	$\frac{\sqrt{70}i}{112}$	0	0	0	$\frac{\sqrt{2}i}{16}$
		0	$-\frac{5\sqrt{35}i}{224}$	0	$-\frac{5\sqrt{70}i}{224}$	0	$\frac{25\sqrt{7}i}{672}$	0	0	$\frac{\sqrt{14}i}{112}$	0	$\frac{\sqrt{210}i}{168}$	0	$-\frac{5\sqrt{42}i}{336}$	0
353	symmetry	$-\frac{\sqrt{15}y(x-z)(x+z)}{2}$													
	$\mathbb{G}_{3,2}^{(1,0;a)}(T_{2g})$	0	$\frac{\sqrt{210}}{252}$	0	$\frac{\sqrt{105}}{126}$	0	$-\frac{\sqrt{42}}{84}$	$\frac{5}{32}$	0	$-\frac{25\sqrt{21}}{672}$	0	$-\frac{5\sqrt{35}}{224}$	0	$\frac{5\sqrt{7}}{224}$	0
		$\frac{\sqrt{42}}{84}$	0	$-\frac{\sqrt{105}}{126}$	0	$-\frac{\sqrt{210}}{252}$	0	0	$\frac{5\sqrt{7}}{224}$	0	$-\frac{5\sqrt{35}}{224}$	0	$-\frac{25\sqrt{21}}{672}$	0	$\frac{5}{32}$
		$-\frac{25\sqrt{7}}{672}$	0	$-\frac{5\sqrt{70}}{224}$	0	$\frac{5\sqrt{35}}{224}$	0	0	$-\frac{5\sqrt{42}}{336}$	0	$-\frac{\sqrt{210}}{168}$	0	$\frac{\sqrt{14}}{112}$	0	0
		0	$\frac{5\sqrt{105}}{288}$	0	$\frac{5\sqrt{210}}{2016}$	0	$\frac{25\sqrt{21}}{672}$	$-\frac{\sqrt{2}}{16}$	0	0	0	$-\frac{\sqrt{70}}{112}$	0	$\frac{\sqrt{14}}{56}$	0
		$\frac{25\sqrt{21}}{672}$	0	$\frac{5\sqrt{210}}{2016}$	0	$\frac{5\sqrt{105}}{288}$	0	0	$-\frac{\sqrt{14}}{56}$	0	$\frac{\sqrt{70}}{112}$	0	0	0	$\frac{\sqrt{2}}{16}$
		0	$\frac{5\sqrt{35}}{224}$	0	$-\frac{5\sqrt{70}}{224}$	0	$-\frac{25\sqrt{7}}{672}$	0	0	$-\frac{\sqrt{14}}{112}$	0	$\frac{\sqrt{210}}{168}$	0	$\frac{5\sqrt{42}}{336}$	0
354	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$													
	$\mathbb{G}_{3,3}^{(1,0;a)}(T_{2g})$	$\frac{\sqrt{42}i}{126}$	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	$x$													
	$\mathbb{G}_{1,1}^{(1,1;a)}(T_{1g})$	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
		$\frac{\sqrt{2}i}{4}$	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
356	symmetry	$y$													

continued ...

Table 7

No.	multipole	matrix
	$\mathbb{G}_{1,2}^{(1,1;a)}(T_{1g})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{2}}{4} & 0 & -\frac{\sqrt{5}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{30}}{20} & 0 & -\frac{\sqrt{15}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{15}}{20} & 0 & -\frac{\sqrt{30}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{5}}{20} & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
357	symmetry	$\begin{matrix} z \\ \mathbb{G}_{1,3}^{(1,1;a)}(T_{1g}) \end{matrix} \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{10}i}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{15}i}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{15}i}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{10}i}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
358	symmetry	$\begin{matrix} \sqrt{15}xyz \\ \mathbb{G}_3^{(1,1;a)}(A_{2g}) \end{matrix} \begin{bmatrix} -\frac{\sqrt{6}}{14} & 0 & 0 & 0 & \frac{\sqrt{30}}{14} & 0 & 0 & \frac{3}{56} & 0 & 0 & 0 & -\frac{\sqrt{3}}{56} & 0 & 0 \\ 0 & \frac{\sqrt{30}}{14} & 0 & 0 & 0 & -\frac{\sqrt{6}}{14} & 0 & 0 & \frac{\sqrt{3}}{56} & 0 & 0 & 0 & -\frac{3}{56} & 0 \\ 0 & 0 & 0 & \frac{3\sqrt{10}}{56} & 0 & 0 & \frac{\sqrt{42}}{168} & 0 & 0 & 0 & -\frac{\sqrt{30}}{168} & 0 & 0 & 0 \\ \frac{5\sqrt{3}}{56} & 0 & 0 & 0 & \frac{\sqrt{15}}{56} & 0 & 0 & -\frac{\sqrt{2}}{56} & 0 & 0 & 0 & -\frac{\sqrt{6}}{56} & 0 & 0 \\ 0 & -\frac{\sqrt{15}}{56} & 0 & 0 & 0 & -\frac{5\sqrt{3}}{56} & 0 & 0 & -\frac{\sqrt{6}}{56} & 0 & 0 & 0 & -\frac{\sqrt{2}}{56} & 0 \\ 0 & 0 & -\frac{3\sqrt{10}}{56} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{168} & 0 & 0 & 0 & \frac{\sqrt{42}}{168} \end{bmatrix}$
359	symmetry	$\begin{matrix} \frac{x(2x^2-3y^2-3z^2)}{2} \\ \mathbb{G}_{3,1}^{(1,1;a)}(T_{1g}) \end{matrix} \begin{bmatrix} 0 & \frac{3\sqrt{2}i}{28} & 0 & -\frac{3i}{14} & 0 & \frac{3\sqrt{10}i}{28} & \frac{\sqrt{105}i}{224} & 0 & -\frac{3\sqrt{5}i}{224} & 0 & \frac{3\sqrt{3}i}{224} & 0 & -\frac{\sqrt{15}i}{224} & 0 \\ \frac{3\sqrt{10}i}{28} & 0 & -\frac{3i}{14} & 0 & \frac{3\sqrt{2}i}{28} & 0 & 0 & \frac{\sqrt{15}i}{224} & 0 & -\frac{3\sqrt{3}i}{224} & 0 & \frac{3\sqrt{5}i}{224} & 0 & -\frac{\sqrt{105}i}{224} \\ \frac{3\sqrt{15}i}{224} & 0 & -\frac{9\sqrt{6}i}{224} & 0 & \frac{15\sqrt{3}i}{224} & 0 & 0 & -\frac{\sqrt{10}i}{112} & 0 & \frac{\sqrt{2}i}{56} & 0 & -\frac{\sqrt{30}i}{336} & 0 & 0 \\ 0 & -\frac{3i}{32} & 0 & \frac{3\sqrt{2}i}{224} & 0 & \frac{15\sqrt{5}i}{224} & -\frac{\sqrt{210}i}{336} & 0 & 0 & 0 & \frac{\sqrt{6}i}{112} & 0 & -\frac{\sqrt{30}i}{168} & 0 \\ -\frac{15\sqrt{5}i}{224} & 0 & -\frac{3\sqrt{2}i}{224} & 0 & \frac{3i}{32} & 0 & 0 & -\frac{\sqrt{30}i}{168} & 0 & \frac{\sqrt{6}i}{112} & 0 & 0 & 0 & -\frac{\sqrt{210}i}{336} \\ 0 & -\frac{15\sqrt{3}i}{224} & 0 & \frac{9\sqrt{6}i}{224} & 0 & -\frac{3\sqrt{15}i}{224} & 0 & 0 & -\frac{\sqrt{30}i}{336} & 0 & \frac{\sqrt{2}i}{56} & 0 & -\frac{\sqrt{10}i}{112} & 0 \end{bmatrix}$
360	symmetry	$-\frac{y(3x^2-2y^2+3z^2)}{2}$

continued ...

Table 7

No.	multipole	matrix													
	$\mathbb{G}_{3,2}^{(1,1;a)}(T_{1g})$	0	$-\frac{3\sqrt{2}}{28}$	0	$-\frac{3}{14}$	0	$-\frac{3\sqrt{10}}{28}$	$\frac{\sqrt{105}}{224}$	0	$\frac{3\sqrt{5}}{224}$	0	$\frac{3\sqrt{3}}{224}$	0	$\frac{\sqrt{15}}{224}$	0
		$\frac{3\sqrt{10}}{28}$	0	$\frac{3}{14}$	0	$\frac{3\sqrt{2}}{28}$	0	0	$\frac{\sqrt{15}}{224}$	0	$\frac{3\sqrt{3}}{224}$	0	$\frac{3\sqrt{5}}{224}$	0	$\frac{\sqrt{105}}{224}$
		$-\frac{3\sqrt{15}}{224}$	0	$-\frac{9\sqrt{6}}{224}$	0	$-\frac{15\sqrt{3}}{224}$	0	0	$\frac{\sqrt{10}}{112}$	0	$\frac{\sqrt{2}}{56}$	0	$\frac{\sqrt{30}}{336}$	0	0
		0	$\frac{3}{32}$	0	$\frac{3\sqrt{2}}{224}$	0	$-\frac{15\sqrt{5}}{224}$	$-\frac{\sqrt{210}}{336}$	0	0	0	$\frac{\sqrt{6}}{112}$	0	$\frac{\sqrt{30}}{168}$	0
		$-\frac{15\sqrt{5}}{224}$	0	$\frac{3\sqrt{2}}{224}$	0	$\frac{3}{32}$	0	0	$-\frac{\sqrt{30}}{168}$	0	$-\frac{\sqrt{6}}{112}$	0	0	0	$\frac{\sqrt{210}}{336}$
		0	$-\frac{15\sqrt{3}}{224}$	0	$-\frac{9\sqrt{6}}{224}$	0	$-\frac{3\sqrt{15}}{224}$	0	0	$-\frac{\sqrt{30}}{336}$	0	$-\frac{\sqrt{2}}{56}$	0	$-\frac{\sqrt{10}}{112}$	0
361	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$													
	$\mathbb{G}_{3,3}^{(1,1;a)}(T_{1g})$	$\begin{bmatrix} 0 & 0 & \frac{3i}{7} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{28} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{3i}{7} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{28} & 0 & 0 & 0 \\ 0 & \frac{3\sqrt{3}i}{28} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}i}{84} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{3\sqrt{2}i}{28} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{84} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{3\sqrt{2}i}{28} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{84} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{3\sqrt{3}i}{28} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{84} & 0 & 0 \end{bmatrix}$													
362	symmetry	$\frac{\sqrt{15}x(y-z)(y+z)}{2}$													
	$\mathbb{G}_{3,1}^{(1,1;a)}(T_{2g})$	$\begin{bmatrix} 0 & \frac{\sqrt{30}i}{28} & 0 & -\frac{\sqrt{15}i}{14} & 0 & -\frac{3\sqrt{6}i}{28} & -\frac{3\sqrt{7}i}{224} & 0 & -\frac{5\sqrt{3}i}{224} & 0 & \frac{3\sqrt{5}i}{224} & 0 & \frac{3i}{224} & 0 \\ -\frac{3\sqrt{6}i}{28} & 0 & -\frac{\sqrt{15}i}{14} & 0 & \frac{\sqrt{30}i}{28} & 0 & 0 & -\frac{3i}{224} & 0 & -\frac{3\sqrt{5}i}{224} & 0 & \frac{5\sqrt{3}i}{224} & 0 & \frac{3\sqrt{7}i}{224} \\ \frac{15i}{224} & 0 & -\frac{9\sqrt{10}i}{224} & 0 & -\frac{9\sqrt{5}i}{224} & 0 & 0 & -\frac{5\sqrt{6}i}{336} & 0 & \frac{\sqrt{30}i}{168} & 0 & \frac{\sqrt{2}i}{112} & 0 & 0 \\ 0 & -\frac{\sqrt{15}i}{32} & 0 & \frac{\sqrt{30}i}{224} & 0 & -\frac{15\sqrt{3}i}{224} & \frac{\sqrt{14}i}{112} & 0 & 0 & 0 & \frac{\sqrt{10}i}{112} & 0 & \frac{\sqrt{2}i}{56} & 0 \\ \frac{15\sqrt{3}i}{224} & 0 & -\frac{\sqrt{30}i}{224} & 0 & \frac{\sqrt{15}i}{32} & 0 & 0 & \frac{\sqrt{2}i}{56} & 0 & \frac{\sqrt{10}i}{112} & 0 & 0 & 0 & \frac{\sqrt{14}i}{112} \\ 0 & \frac{9\sqrt{5}i}{224} & 0 & \frac{9\sqrt{10}i}{224} & 0 & -\frac{15i}{224} & 0 & 0 & \frac{\sqrt{2}i}{112} & 0 & \frac{\sqrt{30}i}{168} & 0 & -\frac{5\sqrt{6}i}{336} & 0 \end{bmatrix}$													
363	symmetry	$-\frac{\sqrt{15}y(x-z)(x+z)}{2}$													
	$\mathbb{G}_{3,2}^{(1,1;a)}(T_{2g})$	$\begin{bmatrix} 0 & \frac{\sqrt{30}}{28} & 0 & \frac{\sqrt{15}}{14} & 0 & -\frac{3\sqrt{6}}{28} & \frac{3\sqrt{7}}{224} & 0 & -\frac{5\sqrt{3}}{224} & 0 & -\frac{3\sqrt{5}}{224} & 0 & \frac{3}{224} & 0 \\ \frac{3\sqrt{6}}{28} & 0 & -\frac{\sqrt{15}}{14} & 0 & -\frac{\sqrt{30}}{28} & 0 & 0 & \frac{3}{224} & 0 & -\frac{3\sqrt{5}}{224} & 0 & -\frac{5\sqrt{3}}{224} & 0 & \frac{3\sqrt{7}}{224} \\ \frac{15}{224} & 0 & \frac{9\sqrt{10}}{224} & 0 & -\frac{9\sqrt{5}}{224} & 0 & 0 & -\frac{5\sqrt{6}}{336} & 0 & -\frac{\sqrt{30}}{168} & 0 & \frac{\sqrt{2}}{112} & 0 & 0 \\ 0 & -\frac{\sqrt{15}}{32} & 0 & -\frac{\sqrt{30}}{224} & 0 & -\frac{15\sqrt{3}}{224} & -\frac{\sqrt{14}}{112} & 0 & 0 & 0 & -\frac{\sqrt{10}}{112} & 0 & \frac{\sqrt{2}}{56} & 0 \\ -\frac{15\sqrt{3}}{224} & 0 & -\frac{\sqrt{30}}{224} & 0 & -\frac{\sqrt{15}}{32} & 0 & 0 & -\frac{\sqrt{2}}{56} & 0 & \frac{\sqrt{10}}{112} & 0 & 0 & 0 & \frac{\sqrt{14}}{112} \\ 0 & -\frac{9\sqrt{5}}{224} & 0 & \frac{9\sqrt{10}}{224} & 0 & \frac{15}{224} & 0 & 0 & -\frac{\sqrt{2}}{112} & 0 & \frac{\sqrt{30}}{168} & 0 & \frac{5\sqrt{6}}{336} & 0 \end{bmatrix}$													
364	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$													

continued ...

Table 7

No.	multipole	matrix													
	$\mathbb{G}_{3,3}^{(1,1;a)}(T_{2g})$	$\frac{\sqrt{6}i}{14}$	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	0	$\frac{\sqrt{42}i}{168}$
365	symmetry	$-\frac{x^2}{2}-\frac{y^2}{2}+z^2$													
	$\mathbb{T}_{2,1}^{(a)}(E_g)$	$\begin{bmatrix} 0 & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{i}{7} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{14} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{6}i}{42} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{3\sqrt{2}i}{14} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{6}i}{42} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{3\sqrt{2}i}{14} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{i}{7} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{14} & 0 & 0 & 0 \end{bmatrix}$													
366	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$													
	$\mathbb{T}_{2,2}^{(a)}(E_g)$	$\begin{bmatrix} \frac{\sqrt{10}i}{12} & 0 & 0 & 0 & \frac{\sqrt{2}i}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{2}i}{12} & 0 & 0 & 0 & \frac{\sqrt{10}i}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{6}i}{42} & 0 & 0 & \frac{\sqrt{70}i}{28} & 0 & 0 & 0 & \frac{\sqrt{2}i}{28} & 0 & 0 & 0 & 0 \\ \frac{\sqrt{5}i}{21} & 0 & 0 & 0 & -\frac{2i}{21} & 0 & 0 & \frac{\sqrt{30}i}{28} & 0 & 0 & 0 & \frac{\sqrt{10}i}{28} & 0 & 0 & 0 \\ 0 & \frac{2i}{21} & 0 & 0 & 0 & -\frac{\sqrt{5}i}{21} & 0 & 0 & \frac{\sqrt{10}i}{28} & 0 & 0 & 0 & \frac{\sqrt{30}i}{28} & 0 & 0 \\ 0 & 0 & \frac{\sqrt{6}i}{42} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{28} & 0 & 0 & 0 & \frac{\sqrt{70}i}{28} & 0 \end{bmatrix}$													
367	symmetry	$\sqrt{3}yz$													
	$\mathbb{T}_{2,1}^{(a)}(T_{2g})$	$\begin{bmatrix} 0 & \frac{\sqrt{2}}{6} & 0 & \frac{1}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{1}{6} & 0 & \frac{\sqrt{2}}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{15}}{42} & 0 & -\frac{\sqrt{6}}{28} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{14} & 0 & \frac{\sqrt{2}}{14} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{1}{42} & 0 & -\frac{5\sqrt{2}}{84} & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{14} & 0 & \frac{\sqrt{6}}{14} & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{5\sqrt{2}}{84} & 0 & -\frac{1}{42} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{14} & 0 & \frac{\sqrt{10}}{14} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{6}}{28} & 0 & \frac{\sqrt{15}}{42} & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{14} & 0 & \frac{\sqrt{10}}{14} & 0 & 0 \end{bmatrix}$													
368	symmetry	$\sqrt{3}xz$													

continued ...

Table 7

No.	multipole	matrix
	$\mathbb{T}_{2,2}^{(a)}(T_{2g})$	$\begin{bmatrix} 0 & -\frac{\sqrt{2}i}{6} & 0 & \frac{i}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{i}{6} & 0 & \frac{\sqrt{2}i}{6} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{15}i}{42} & 0 & -\frac{\sqrt{6}i}{28} & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}i}{14} & 0 & \frac{\sqrt{2}i}{14} & 0 & 0 & 0 & 0 \\ 0 & -\frac{i}{42} & 0 & -\frac{5\sqrt{2}i}{84} & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}i}{14} & 0 & \frac{\sqrt{6}i}{14} & 0 & 0 & 0 \\ 0 & 0 & -\frac{5\sqrt{2}i}{84} & 0 & -\frac{i}{42} & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{14} & 0 & \frac{\sqrt{10}i}{14} & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{6}i}{28} & 0 & \frac{\sqrt{15}i}{42} & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{14} & 0 & \frac{\sqrt{10}i}{14} & 0 \end{bmatrix}$
369	symmetry	$\sqrt{3}xy$ $\mathbb{T}_{2,3}^{(a)}(T_{2g}) \begin{bmatrix} -\frac{\sqrt{10}}{12} & 0 & 0 & 0 & \frac{\sqrt{2}}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{2}}{12} & 0 & 0 & 0 & \frac{\sqrt{10}}{12} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{6}}{42} & 0 & 0 & -\frac{\sqrt{70}}{28} & 0 & 0 & 0 & \frac{\sqrt{2}}{28} & 0 & 0 & 0 \\ -\frac{\sqrt{5}}{21} & 0 & 0 & 0 & -\frac{2}{21} & 0 & 0 & -\frac{\sqrt{30}}{28} & 0 & 0 & 0 & \frac{\sqrt{10}}{28} & 0 & 0 \\ 0 & -\frac{2}{21} & 0 & 0 & 0 & -\frac{\sqrt{5}}{21} & 0 & 0 & -\frac{\sqrt{10}}{28} & 0 & 0 & 0 & \frac{\sqrt{30}}{28} & 0 \\ 0 & 0 & -\frac{\sqrt{6}}{42} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{28} & 0 & 0 & 0 & \frac{\sqrt{70}}{28} \end{bmatrix}$
370	symmetry	$\frac{\sqrt{21}(x^4-3x^2y^2-3x^2z^2+y^4-3y^2z^2+z^4)}{6}$ $\mathbb{T}_4^{(a)}(A_{1g}) \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}i}{12} & 0 & 0 & 0 & -\frac{\sqrt{5}i}{12} \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{5}i}{12} & 0 & 0 & 0 & \frac{\sqrt{7}i}{12} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{7}i}{28} & 0 & 0 & 0 & \frac{\sqrt{35}i}{28} & 0 & 0 & -\frac{\sqrt{70}i}{56} & 0 & 0 & 0 & -\frac{\sqrt{210}i}{168} & 0 \\ 0 & 0 & -\frac{\sqrt{42}i}{28} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{5\sqrt{14}i}{168} & 0 & 0 & 0 & -\frac{\sqrt{10}i}{24} \\ 0 & 0 & 0 & \frac{\sqrt{42}i}{28} & 0 & 0 & -\frac{\sqrt{10}i}{24} & 0 & 0 & 0 & \frac{5\sqrt{14}i}{168} & 0 & 0 & 0 \\ -\frac{\sqrt{35}i}{28} & 0 & 0 & 0 & -\frac{\sqrt{7}i}{28} & 0 & 0 & -\frac{\sqrt{210}i}{168} & 0 & 0 & 0 & -\frac{\sqrt{70}i}{56} & 0 & 0 \end{bmatrix}$
371	symmetry	$-\frac{\sqrt{15}(x^4-12x^2y^2+6x^2z^2+y^4+6y^2z^2-2z^4)}{12}$ $\mathbb{T}_{4,1}^{(a)}(E_g) \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{12} & 0 & 0 & 0 & \frac{\sqrt{7}i}{12} \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}i}{12} & 0 & 0 & 0 & \frac{\sqrt{5}i}{12} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{5}i}{28} & 0 & 0 & 0 & -\frac{i}{4} & 0 & 0 & -\frac{5\sqrt{2}i}{56} & 0 & 0 & 0 & \frac{\sqrt{6}i}{24} & 0 \\ 0 & 0 & -\frac{\sqrt{30}i}{28} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{5\sqrt{10}i}{168} & 0 & 0 & 0 & \frac{\sqrt{14}i}{24} \\ 0 & 0 & 0 & \frac{\sqrt{30}i}{28} & 0 & 0 & \frac{\sqrt{14}i}{24} & 0 & 0 & 0 & \frac{5\sqrt{10}i}{168} & 0 & 0 & 0 \\ \frac{i}{4} & 0 & 0 & 0 & -\frac{\sqrt{5}i}{28} & 0 & 0 & \frac{\sqrt{6}i}{24} & 0 & 0 & 0 & -\frac{5\sqrt{2}i}{56} & 0 & 0 \end{bmatrix}$
372	symmetry	$\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$

continued ...

Table 7

No.	multipole	matrix													
	$\mathbb{T}_{4,2}^{(a)}(E_g)$	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	$\frac{\sqrt{14}i}{56}$
373	symmetry	$\frac{\sqrt{35}yz(y-z)(y+z)}{2}$													
	$\mathbb{T}_{4,1}^{(a)}(T_{1g})$	0	0	0	0	0	0	$\frac{\sqrt{3}}{48}$	0	$\frac{\sqrt{7}}{16}$	0	$\frac{\sqrt{105}}{48}$	0	$\frac{\sqrt{21}}{48}$	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{21}}{48}$	0	$-\frac{\sqrt{105}}{48}$	0	$-\frac{\sqrt{7}}{16}$	0	$-\frac{\sqrt{3}}{48}$
		$-\frac{\sqrt{21}}{112}$	0	$-\frac{\sqrt{210}}{112}$	0	$-\frac{\sqrt{105}}{112}$	0	0	$\frac{3\sqrt{14}}{112}$	0	$\frac{\sqrt{70}}{56}$	0	$\frac{\sqrt{42}}{112}$	0	0
		0	$\frac{3\sqrt{35}}{112}$	0	$\frac{3\sqrt{70}}{112}$	0	$\frac{3\sqrt{7}}{112}$	$-\frac{\sqrt{6}}{48}$	0	$-\frac{\sqrt{14}}{28}$	0	$-\frac{\sqrt{210}}{336}$	0	$\frac{\sqrt{42}}{168}$	0
		$-\frac{3\sqrt{7}}{112}$	0	$-\frac{3\sqrt{70}}{112}$	0	$-\frac{3\sqrt{35}}{112}$	0	0	$\frac{\sqrt{42}}{168}$	0	$-\frac{\sqrt{210}}{336}$	0	$-\frac{\sqrt{14}}{28}$	0	$-\frac{\sqrt{6}}{48}$
		0	$\frac{\sqrt{105}}{112}$	0	$\frac{\sqrt{210}}{112}$	0	$\frac{\sqrt{21}}{112}$	0	0	$\frac{\sqrt{42}}{112}$	0	$\frac{\sqrt{70}}{56}$	0	$\frac{3\sqrt{14}}{112}$	0
374	symmetry	$-\frac{\sqrt{35}xz(x-z)(x+z)}{2}$													
	$\mathbb{T}_{4,2}^{(a)}(T_{1g})$	0	0	0	0	0	0	$-\frac{\sqrt{3}i}{48}$	0	$\frac{\sqrt{7}i}{16}$	0	$-\frac{\sqrt{105}i}{48}$	0	$\frac{\sqrt{21}i}{48}$	0
		0	0	0	0	0	0	0	$\frac{\sqrt{21}i}{48}$	0	$-\frac{\sqrt{105}i}{48}$	0	$\frac{\sqrt{7}i}{16}$	0	$-\frac{\sqrt{3}i}{48}$
		$-\frac{\sqrt{21}i}{112}$	0	$\frac{\sqrt{210}i}{112}$	0	$-\frac{\sqrt{105}i}{112}$	0	0	$\frac{3\sqrt{14}i}{112}$	0	$-\frac{\sqrt{70}i}{56}$	0	$\frac{\sqrt{42}i}{112}$	0	0
		0	$\frac{3\sqrt{35}i}{112}$	0	$-\frac{3\sqrt{70}i}{112}$	0	$\frac{3\sqrt{7}i}{112}$	$\frac{\sqrt{6}i}{48}$	0	$-\frac{\sqrt{14}i}{28}$	0	$\frac{\sqrt{210}i}{336}$	0	$\frac{\sqrt{42}i}{168}$	0
		$\frac{3\sqrt{7}i}{112}$	0	$-\frac{3\sqrt{70}i}{112}$	0	$\frac{3\sqrt{35}i}{112}$	0	0	$-\frac{\sqrt{42}i}{168}$	0	$-\frac{\sqrt{210}i}{336}$	0	$\frac{\sqrt{14}i}{28}$	0	$-\frac{\sqrt{6}i}{48}$
		0	$-\frac{\sqrt{105}i}{112}$	0	$\frac{\sqrt{210}i}{112}$	0	$-\frac{\sqrt{21}i}{112}$	0	0	$-\frac{\sqrt{42}i}{112}$	0	$\frac{\sqrt{70}i}{56}$	0	$-\frac{3\sqrt{14}i}{112}$	0
375	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$													
	$\mathbb{T}_{4,3}^{(a)}(T_{1g})$	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	
376	symmetry	$\frac{\sqrt{5}yz(6x^2-y^2-z^2)}{2}$													

continued ...

Table 7

No.	multipole	matrix													
	$\mathbb{T}_{4,1}^{(a)}(T_{2g})$	0	0	0	0	0	0	$-\frac{\sqrt{21}}{48}$	0	$\frac{1}{16}$	0	$\frac{\sqrt{15}}{48}$	0	$-\frac{7\sqrt{3}}{48}$	0
		0	0	0	0	0	0	0	$\frac{7\sqrt{3}}{48}$	0	$-\frac{\sqrt{15}}{48}$	0	$-\frac{1}{16}$	0	$\frac{\sqrt{21}}{48}$
		$-\frac{\sqrt{3}}{112}$	0	$-\frac{\sqrt{30}}{112}$	0	$\frac{\sqrt{15}}{16}$	0	0	$\frac{3\sqrt{2}}{112}$	0	$\frac{\sqrt{10}}{56}$	0	$-\frac{\sqrt{6}}{16}$	0	0
		0	$\frac{3\sqrt{5}}{112}$	0	$\frac{3\sqrt{10}}{112}$	0	$-\frac{3}{16}$	$\frac{\sqrt{42}}{48}$	0	$-\frac{\sqrt{2}}{28}$	0	$-\frac{\sqrt{30}}{336}$	0	$-\frac{\sqrt{6}}{24}$	0
		$\frac{3}{16}$	0	$-\frac{3\sqrt{10}}{112}$	0	$-\frac{3\sqrt{5}}{112}$	0	0	$-\frac{\sqrt{6}}{24}$	0	$-\frac{\sqrt{30}}{336}$	0	$-\frac{\sqrt{2}}{28}$	0	$\frac{\sqrt{42}}{48}$
		0	$-\frac{\sqrt{15}}{16}$	0	$\frac{\sqrt{30}}{112}$	0	$\frac{\sqrt{3}}{112}$	0	0	$-\frac{\sqrt{6}}{16}$	0	$\frac{\sqrt{10}}{56}$	0	$\frac{3\sqrt{2}}{112}$	0
377	symmetry	$-\frac{\sqrt{5}xz(x^2-6y^2+z^2)}{2}$													
	$\mathbb{T}_{4,2}^{(a)}(T_{2g})$	0	0	0	0	0	0	$-\frac{\sqrt{21}i}{48}$	0	$-\frac{i}{16}$	0	$\frac{\sqrt{15}i}{48}$	0	$\frac{7\sqrt{3}i}{48}$	0
		0	0	0	0	0	0	0	$\frac{7\sqrt{3}i}{48}$	0	$\frac{\sqrt{15}i}{48}$	0	$-\frac{i}{16}$	0	$-\frac{\sqrt{21}i}{48}$
		$\frac{\sqrt{3}i}{112}$	0	$-\frac{\sqrt{30}i}{112}$	0	$-\frac{\sqrt{15}i}{16}$	0	0	$-\frac{3\sqrt{2}i}{112}$	0	$\frac{\sqrt{10}i}{56}$	0	$\frac{\sqrt{6}i}{16}$	0	0
		0	$-\frac{3\sqrt{5}i}{112}$	0	$\frac{3\sqrt{10}i}{112}$	0	$\frac{3i}{16}$	$\frac{\sqrt{42}i}{48}$	0	$\frac{\sqrt{2}i}{28}$	0	$-\frac{\sqrt{30}i}{336}$	0	$\frac{\sqrt{6}i}{24}$	0
		$\frac{3i}{16}$	0	$\frac{3\sqrt{10}i}{112}$	0	$-\frac{3\sqrt{5}i}{112}$	0	0	$-\frac{\sqrt{6}i}{24}$	0	$\frac{\sqrt{30}i}{336}$	0	$-\frac{\sqrt{2}i}{28}$	0	$-\frac{\sqrt{42}i}{48}$
		0	$-\frac{\sqrt{15}i}{16}$	0	$-\frac{\sqrt{30}i}{112}$	0	$\frac{\sqrt{3}i}{112}$	0	0	$-\frac{\sqrt{6}i}{16}$	0	$-\frac{\sqrt{10}i}{56}$	0	$\frac{3\sqrt{2}i}{112}$	0
378	symmetry	$-\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$													
	$\mathbb{T}_{4,3}^{(a)}(T_{2g})$	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	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	$\frac{3\sqrt{10}}{56}$	0	0	0	0	$-\frac{\sqrt{14}}{56}$
379	symmetry	$\frac{\sqrt{21}(x^4-3x^2y^2-3x^2z^2+y^4-3y^2z^2+z^4)}{6}$													
	$\mathbb{T}_4^{(1,-1;a)}(A_{1g})$	0	0	0	0	0	0	0	0	$-\frac{\sqrt{21}i}{24}$	0	0	0	$-\frac{\sqrt{15}i}{24}$	0
		0	0	0	0	0	0	$\frac{\sqrt{15}i}{24}$	0	0	0	$\frac{\sqrt{21}i}{24}$	0	0	0
		0	$\frac{\sqrt{21}i}{168}$	0	0	0	$\frac{\sqrt{105}i}{168}$	0	0	$\frac{\sqrt{210}i}{56}$	0	0	0	$\frac{\sqrt{70}i}{56}$	0
		0	0	$-\frac{\sqrt{14}i}{56}$	0	0	0	0	0	$-\frac{5\sqrt{42}i}{168}$	0	0	0	0	$\frac{\sqrt{30}i}{24}$
		0	0	0	$\frac{\sqrt{14}i}{56}$	0	0	$\frac{\sqrt{30}i}{24}$	0	0	0	$-\frac{5\sqrt{42}i}{168}$	0	0	0
		$-\frac{\sqrt{105}i}{168}$	0	0	0	$-\frac{\sqrt{21}i}{168}$	0	0	$\frac{\sqrt{70}i}{56}$	0	0	0	$\frac{\sqrt{210}i}{56}$	0	0
380	symmetry	$-\frac{\sqrt{15}(x^4-12x^2y^2+6x^2z^2+y^4+6y^2z^2-2z^4)}{12}$													

continued ...

Table 7

No.	multipole	matrix												
	$\mathbb{T}_{4,1}^{(1,-1;a)}(E_g)$	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{15}i}{24}$	0	0	$\frac{\sqrt{21}i}{24}$
		0	0	0	0	0	0	$-\frac{\sqrt{21}i}{24}$	0	0	0	$\frac{\sqrt{15}i}{24}$	0	0
		0	$\frac{\sqrt{15}i}{168}$	0	0	0	$-\frac{\sqrt{3}i}{24}$	0	0	$\frac{5\sqrt{6}i}{56}$	0	0	0	$-\frac{\sqrt{2}i}{8}$
		0	0	$-\frac{\sqrt{10}i}{56}$	0	0	0	0	0	$-\frac{5\sqrt{30}i}{168}$	0	0	0	$-\frac{\sqrt{42}i}{24}$
		0	0	0	$\frac{\sqrt{10}i}{56}$	0	0	$-\frac{\sqrt{42}i}{24}$	0	0	0	$-\frac{5\sqrt{30}i}{168}$	0	0
		$\frac{\sqrt{3}i}{24}$	0	0	0	$-\frac{\sqrt{15}i}{168}$	0	0	$-\frac{\sqrt{2}i}{8}$	0	0	0	$\frac{5\sqrt{6}i}{56}$	0
381	symmetry	$\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$												
	$\mathbb{T}_{4,2}^{(1,-1;a)}(E_g)$	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	$-\frac{\sqrt{3}i}{8}$	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
		$\frac{\sqrt{3}i}{56}$	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	$-\frac{\sqrt{15}i}{56}$	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	$\frac{\sqrt{10}i}{56}$	0	0	0	0	0	$-\frac{3\sqrt{30}i}{56}$	0	0	0	$-\frac{\sqrt{42}i}{56}$
382	symmetry	$\frac{\sqrt{35}yz(y-z)(y+z)}{2}$												
	$\mathbb{T}_{4,1}^{(1,-1;a)}(T_{1g})$	0	0	0	0	0	0	$\frac{1}{32}$	0	$\frac{\sqrt{21}}{32}$	0	$\frac{\sqrt{35}}{32}$	0	$\frac{\sqrt{7}}{32}$
		0	0	0	0	0	0	0	$-\frac{\sqrt{7}}{32}$	0	$-\frac{\sqrt{35}}{32}$	0	$-\frac{\sqrt{21}}{32}$	$-\frac{1}{32}$
		$-\frac{\sqrt{7}}{224}$	0	$-\frac{\sqrt{70}}{224}$	0	$-\frac{\sqrt{35}}{224}$	0	0	$-\frac{3\sqrt{42}}{112}$	0	$-\frac{\sqrt{210}}{56}$	0	$-\frac{3\sqrt{14}}{112}$	0
		0	$\frac{\sqrt{105}}{224}$	0	$\frac{\sqrt{210}}{224}$	0	$\frac{\sqrt{21}}{224}$	$\frac{\sqrt{2}}{16}$	0	$\frac{\sqrt{42}}{28}$	0	$\frac{\sqrt{70}}{112}$	0	$-\frac{\sqrt{14}}{56}$
		$-\frac{\sqrt{21}}{224}$	0	$-\frac{\sqrt{210}}{224}$	0	$-\frac{\sqrt{105}}{224}$	0	0	$-\frac{\sqrt{14}}{56}$	0	$\frac{\sqrt{70}}{112}$	0	$\frac{\sqrt{42}}{28}$	$\frac{\sqrt{2}}{16}$
		0	$\frac{\sqrt{35}}{224}$	0	$\frac{\sqrt{70}}{224}$	0	$\frac{\sqrt{7}}{224}$	0	0	$-\frac{3\sqrt{14}}{112}$	0	$-\frac{\sqrt{210}}{56}$	0	$-\frac{3\sqrt{42}}{112}$
383	symmetry	$-\frac{\sqrt{35}xz(x-z)(x+z)}{2}$												
	$\mathbb{T}_{4,2}^{(1,-1;a)}(T_{1g})$	0	0	0	0	0	0	$-\frac{i}{32}$	0	$\frac{\sqrt{21}i}{32}$	0	$-\frac{\sqrt{35}i}{32}$	0	$\frac{\sqrt{7}i}{32}$
		0	0	0	0	0	0	0	$\frac{\sqrt{7}i}{32}$	0	$-\frac{\sqrt{35}i}{32}$	0	$\frac{\sqrt{21}i}{32}$	$-\frac{i}{32}$
		$-\frac{\sqrt{7}i}{224}$	0	$\frac{\sqrt{70}i}{224}$	0	$-\frac{\sqrt{35}i}{224}$	0	0	$-\frac{3\sqrt{42}i}{112}$	0	$\frac{\sqrt{210}i}{56}$	0	$-\frac{3\sqrt{14}i}{112}$	0
		0	$\frac{\sqrt{105}i}{224}$	0	$-\frac{\sqrt{210}i}{224}$	0	$\frac{\sqrt{21}i}{224}$	$-\frac{\sqrt{2}i}{16}$	0	$\frac{\sqrt{42}i}{28}$	0	$-\frac{\sqrt{70}i}{112}$	0	$-\frac{\sqrt{14}i}{56}$
		$\frac{\sqrt{21}i}{224}$	0	$-\frac{\sqrt{210}i}{224}$	0	$\frac{\sqrt{105}i}{224}$	0	0	$\frac{\sqrt{14}i}{56}$	0	$\frac{\sqrt{70}i}{112}$	0	$-\frac{\sqrt{42}i}{28}$	$\frac{\sqrt{2}i}{16}$
		0	$-\frac{\sqrt{35}i}{224}$	0	$\frac{\sqrt{70}i}{224}$	0	$-\frac{\sqrt{7}i}{224}$	0	0	$\frac{3\sqrt{14}i}{112}$	0	$-\frac{\sqrt{210}i}{56}$	0	$\frac{3\sqrt{42}i}{112}$
384	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$												

continued ...



Table 7

No.	multipole	matrix														
		$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{1}{4} \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{1}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}}{28} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{7}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}}{28} & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$														
385	symmetry	$\frac{\sqrt{5}yz(6x^2-y^2-z^2)}{2}$														
	$\mathbb{T}_{4,1}^{(1,-1;a)}(T_{2g})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}}{32} & 0 & \frac{\sqrt{3}}{32} & 0 & \frac{\sqrt{5}}{32} & 0 & -\frac{7}{32} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{7}{32} & 0 & -\frac{\sqrt{5}}{32} & 0 & -\frac{\sqrt{3}}{32} & 0 & \frac{\sqrt{7}}{32} & 0 \\ -\frac{1}{224} & 0 & -\frac{\sqrt{10}}{224} & 0 & \frac{\sqrt{5}}{32} & 0 & 0 & -\frac{3\sqrt{6}}{112} & 0 & -\frac{\sqrt{30}}{56} & 0 & \frac{3\sqrt{2}}{16} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{15}}{224} & 0 & \frac{\sqrt{30}}{224} & 0 & -\frac{\sqrt{3}}{32} & -\frac{\sqrt{14}}{16} & 0 & \frac{\sqrt{6}}{28} & 0 & \frac{\sqrt{10}}{112} & 0 & \frac{\sqrt{2}}{8} & 0 & 0 \\ \frac{\sqrt{3}}{32} & 0 & -\frac{\sqrt{30}}{224} & 0 & -\frac{\sqrt{15}}{224} & 0 & 0 & \frac{\sqrt{2}}{8} & 0 & \frac{\sqrt{10}}{112} & 0 & \frac{\sqrt{6}}{28} & 0 & -\frac{\sqrt{14}}{16} & 0 \\ 0 & -\frac{\sqrt{5}}{32} & 0 & \frac{\sqrt{10}}{224} & 0 & \frac{1}{224} & 0 & 0 & \frac{3\sqrt{2}}{16} & 0 & -\frac{\sqrt{30}}{56} & 0 & -\frac{3\sqrt{6}}{112} & 0 & 0 \end{bmatrix}$														
386	symmetry	$-\frac{\sqrt{5}xz(x^2-6y^2+z^2)}{2}$														
	$\mathbb{T}_{4,2}^{(1,-1;a)}(T_{2g})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}i}{32} & 0 & -\frac{\sqrt{3}i}{32} & 0 & \frac{\sqrt{5}i}{32} & 0 & \frac{7i}{32} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{7i}{32} & 0 & \frac{\sqrt{5}i}{32} & 0 & -\frac{\sqrt{3}i}{32} & 0 & -\frac{\sqrt{7}i}{32} & 0 \\ \frac{i}{224} & 0 & -\frac{\sqrt{10}i}{224} & 0 & -\frac{\sqrt{5}i}{32} & 0 & 0 & \frac{3\sqrt{6}i}{112} & 0 & -\frac{\sqrt{30}i}{56} & 0 & -\frac{3\sqrt{2}i}{16} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{15}i}{224} & 0 & \frac{\sqrt{30}i}{224} & 0 & \frac{\sqrt{3}i}{32} & -\frac{\sqrt{14}i}{16} & 0 & -\frac{\sqrt{6}i}{28} & 0 & \frac{\sqrt{10}i}{112} & 0 & -\frac{\sqrt{2}i}{8} & 0 & 0 \\ \frac{\sqrt{3}i}{32} & 0 & \frac{\sqrt{30}i}{224} & 0 & -\frac{\sqrt{15}i}{224} & 0 & 0 & \frac{\sqrt{2}i}{8} & 0 & -\frac{\sqrt{10}i}{112} & 0 & \frac{\sqrt{6}i}{28} & 0 & \frac{\sqrt{14}i}{16} & 0 \\ 0 & -\frac{\sqrt{5}i}{32} & 0 & -\frac{\sqrt{10}i}{224} & 0 & \frac{i}{224} & 0 & 0 & \frac{3\sqrt{2}i}{16} & 0 & \frac{\sqrt{30}i}{56} & 0 & -\frac{3\sqrt{6}i}{112} & 0 & 0 \end{bmatrix}$														
387	symmetry	$-\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$														
	$\mathbb{T}_{4,3}^{(1,-1;a)}(T_{2g})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{1}{8} & 0 & 0 & 0 & -\frac{\sqrt{3}}{8} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{8} & 0 & 0 & 0 & \frac{1}{8} & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{10}}{56} & 0 & 0 & -\frac{\sqrt{42}}{56} & 0 & 0 & 0 & \frac{3\sqrt{30}}{56} & 0 & 0 & 0 & 0 \\ \frac{\sqrt{3}}{56} & 0 & 0 & 0 & -\frac{\sqrt{15}}{56} & 0 & 0 & \frac{11\sqrt{2}}{56} & 0 & 0 & 0 & \frac{\sqrt{6}}{56} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{15}}{56} & 0 & 0 & 0 & \frac{\sqrt{3}}{56} & 0 & 0 & -\frac{\sqrt{6}}{56} & 0 & 0 & 0 & -\frac{11\sqrt{2}}{56} & 0 & 0 \\ 0 & 0 & \frac{\sqrt{10}}{56} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{3\sqrt{30}}{56} & 0 & 0 & 0 & \frac{\sqrt{42}}{56} & 0 \end{bmatrix}$														
388	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$														

continued ...

Table 7

No.	multipole	matrix													
	$\mathbb{T}_{2,1}^{(1,0;a)}(E_g)$	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	$\frac{\sqrt{3}(x-y)(x+y)}{2}$													
	$\mathbb{T}_{2,2}^{(1,0;a)}(E_g)$	$\frac{\sqrt{15}i}{18}$	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	$-\frac{\sqrt{105}i}{42}$
390	symmetry	$\sqrt{3}yz$													
	$\mathbb{T}_{2,1}^{(1,0;a)}(T_{2g})$	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	$-\frac{\sqrt{15}}{21}$	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	$\frac{25\sqrt{3}}{252}$	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
391	symmetry	$\sqrt{3}xz$													
	$\mathbb{T}_{2,2}^{(1,0;a)}(T_{2g})$	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	$\frac{\sqrt{15}i}{21}$	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	$-\frac{25\sqrt{3}i}{252}$	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
392	symmetry	$\sqrt{3}xy$													

continued ...

Table 7

No.	multipole	matrix													
	$\mathbb{T}_{2,3}^{(1,0;a)}(T_{2g})$	$-\frac{\sqrt{15}}{18}$	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	$\frac{\sqrt{3}}{42}$	0	0	0	0	$-\frac{\sqrt{105}}{42}$
393	symmetry	$\frac{\sqrt{21}(x^4-3x^2y^2-3x^2z^2+y^4-3y^2z^2+z^4)}{6}$													
	$\mathbb{T}_4^{(1,0;a)}(A_{1g})$	0	0	0	0	0	0	0	0	$\frac{\sqrt{35}i}{24}$	0	0	0	$\frac{5i}{24}$	
		0	0	0	0	0	0	$-\frac{5i}{24}$	0	0	0	$-\frac{\sqrt{35}i}{24}$	0	0	0
		0	$\frac{\sqrt{35}i}{56}$	0	0	0	$\frac{5\sqrt{7}i}{56}$	0	0	$\frac{\sqrt{14}i}{56}$	0	0	0	$\frac{\sqrt{42}i}{168}$	0
		0	0	$-\frac{\sqrt{210}i}{56}$	0	0	0	0	0	$-\frac{\sqrt{70}i}{168}$	0	0	0	0	$\frac{\sqrt{2}i}{24}$
		0	0	0	$\frac{\sqrt{210}i}{56}$	0	0	$\frac{\sqrt{2}i}{24}$	0	0	0	$-\frac{\sqrt{70}i}{168}$	0	0	0
		$-\frac{5\sqrt{7}i}{56}$	0	0	0	$-\frac{\sqrt{35}i}{56}$	0	0	$\frac{\sqrt{42}i}{168}$	0	0	0	$\frac{\sqrt{14}i}{56}$	0	0
394	symmetry	$-\frac{\sqrt{15}(x^4-12x^2y^2+6x^2z^2+y^4+6y^2z^2-2z^4)}{12}$													
	$\mathbb{T}_{4,1}^{(1,0;a)}(E_g)$	0	0	0	0	0	0	0	0	$\frac{5i}{24}$	0	0	0	$-\frac{\sqrt{35}i}{24}$	
		0	0	0	0	0	0	$\frac{\sqrt{35}i}{24}$	0	0	0	$-\frac{5i}{24}$	0	0	0
		0	$\frac{5i}{56}$	0	0	0	$-\frac{\sqrt{5}i}{8}$	0	0	$\frac{\sqrt{10}i}{56}$	0	0	0	$-\frac{\sqrt{30}i}{120}$	0
		0	0	$-\frac{5\sqrt{6}i}{56}$	0	0	0	0	0	$-\frac{5\sqrt{2}i}{168}$	0	0	0	0	$-\frac{\sqrt{70}i}{120}$
		0	0	0	$\frac{5\sqrt{6}i}{56}$	0	0	$-\frac{\sqrt{70}i}{120}$	0	0	0	$-\frac{5\sqrt{2}i}{168}$	0	0	0
		$\frac{\sqrt{5}i}{8}$	0	0	0	$-\frac{5i}{56}$	0	0	$-\frac{\sqrt{30}i}{120}$	0	0	0	$\frac{\sqrt{10}i}{56}$	0	0
395	symmetry	$\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$													
	$\mathbb{T}_{4,2}^{(1,0;a)}(E_g)$	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	$\frac{\sqrt{5}i}{8}$	0	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	$-\frac{3\sqrt{2}i}{56}$	0	0	0	0	$-\frac{\sqrt{70}i}{280}$
396	symmetry	$\frac{\sqrt{35}yz(y-z)(y+z)}{2}$													

continued ...

Table 7

No.	multipole	matrix													
	$\mathbb{T}_{4,1}^{(1,0;a)}(T_{1g})$	0	0	0	0	0	0	$-\frac{\sqrt{15}}{96}$	0	$-\frac{\sqrt{35}}{32}$	0	$-\frac{5\sqrt{21}}{96}$	0	$-\frac{\sqrt{105}}{96}$	0
		0	0	0	0	0	0	$\frac{\sqrt{105}}{96}$	0	$\frac{5\sqrt{21}}{96}$	0	$\frac{\sqrt{35}}{32}$	0	$\frac{\sqrt{15}}{96}$	
		$-\frac{\sqrt{105}}{224}$	0	$-\frac{5\sqrt{42}}{224}$	0	$-\frac{5\sqrt{21}}{224}$	0	0	$-\frac{3\sqrt{70}}{560}$	0	$-\frac{\sqrt{14}}{56}$	0	$-\frac{\sqrt{210}}{560}$	0	0
		0	$\frac{15\sqrt{7}}{224}$	0	$\frac{15\sqrt{14}}{224}$	0	$\frac{3\sqrt{35}}{224}$	$\frac{\sqrt{30}}{240}$	0	$\frac{\sqrt{70}}{140}$	0	$\frac{\sqrt{42}}{336}$	0	$-\frac{\sqrt{210}}{840}$	0
		$-\frac{3\sqrt{35}}{224}$	0	$-\frac{15\sqrt{14}}{224}$	0	$-\frac{15\sqrt{7}}{224}$	0	0	$-\frac{\sqrt{210}}{840}$	0	$\frac{\sqrt{42}}{336}$	0	$\frac{\sqrt{70}}{140}$	0	$\frac{\sqrt{30}}{240}$
		0	$\frac{5\sqrt{21}}{224}$	0	$\frac{5\sqrt{42}}{224}$	0	$\frac{\sqrt{105}}{224}$	0	0	$-\frac{\sqrt{210}}{560}$	0	$-\frac{\sqrt{14}}{56}$	0	$-\frac{3\sqrt{70}}{560}$	0
397	symmetry	$-\frac{\sqrt{35}xz(x-z)(x+z)}{2}$													
	$\mathbb{T}_{4,2}^{(1,0;a)}(T_{1g})$	0	0	0	0	0	0	$\frac{\sqrt{15}i}{96}$	0	$-\frac{\sqrt{35}i}{32}$	0	$\frac{5\sqrt{21}i}{96}$	0	$-\frac{\sqrt{105}i}{96}$	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{105}i}{96}$	0	$\frac{5\sqrt{21}i}{96}$	0	$-\frac{\sqrt{35}i}{32}$	0	$\frac{\sqrt{15}i}{96}$
		$-\frac{\sqrt{105}i}{224}$	0	$\frac{5\sqrt{42}i}{224}$	0	$-\frac{5\sqrt{21}i}{224}$	0	0	$-\frac{3\sqrt{70}i}{560}$	0	$\frac{\sqrt{14}i}{56}$	0	$-\frac{\sqrt{210}i}{560}$	0	0
		0	$\frac{15\sqrt{7}i}{224}$	0	$-\frac{15\sqrt{14}i}{224}$	0	$\frac{3\sqrt{35}i}{224}$	$-\frac{\sqrt{30}i}{240}$	0	$\frac{\sqrt{70}i}{140}$	0	$-\frac{\sqrt{42}i}{336}$	0	$-\frac{\sqrt{210}i}{840}$	0
		$\frac{3\sqrt{35}i}{224}$	0	$-\frac{15\sqrt{14}i}{224}$	0	$\frac{15\sqrt{7}i}{224}$	0	0	$\frac{\sqrt{210}i}{840}$	0	$\frac{\sqrt{42}i}{336}$	0	$-\frac{\sqrt{70}i}{140}$	0	$\frac{\sqrt{30}i}{240}$
		0	$-\frac{5\sqrt{21}i}{224}$	0	$\frac{5\sqrt{42}i}{224}$	0	$-\frac{\sqrt{105}i}{224}$	0	0	$\frac{\sqrt{210}i}{560}$	0	$-\frac{\sqrt{14}i}{56}$	0	$\frac{3\sqrt{70}i}{560}$	0
398	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$													
	$\mathbb{T}_{4,3}^{(1,0;a)}(T_{1g})$	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	$\frac{\sqrt{105}}{28}$	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	$-\frac{\sqrt{30}}{60}$	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	
399	symmetry	$\frac{\sqrt{5}yz(6x^2-y^2-z^2)}{2}$													
	$\mathbb{T}_{4,1}^{(1,0;a)}(T_{2g})$	0	0	0	0	0	0	$\frac{\sqrt{105}}{96}$	0	$-\frac{\sqrt{5}}{32}$	0	$-\frac{5\sqrt{3}}{96}$	0	$\frac{7\sqrt{15}}{96}$	0
		0	0	0	0	0	0	0	$-\frac{7\sqrt{15}}{96}$	0	$\frac{5\sqrt{3}}{96}$	0	$\frac{\sqrt{5}}{32}$	0	$-\frac{\sqrt{105}}{96}$
		$-\frac{\sqrt{15}}{224}$	0	$-\frac{5\sqrt{6}}{224}$	0	$\frac{5\sqrt{3}}{32}$	0	0	$-\frac{3\sqrt{10}}{560}$	0	$-\frac{\sqrt{2}}{56}$	0	$\frac{\sqrt{30}}{80}$	0	0
		0	$\frac{15}{224}$	0	$\frac{15\sqrt{2}}{224}$	0	$-\frac{3\sqrt{5}}{32}$	$-\frac{\sqrt{210}}{240}$	0	$\frac{\sqrt{10}}{140}$	0	$\frac{\sqrt{6}}{336}$	0	$\frac{\sqrt{30}}{120}$	0
		$\frac{3\sqrt{5}}{32}$	0	$-\frac{15\sqrt{2}}{224}$	0	$-\frac{15}{224}$	0	0	$\frac{\sqrt{30}}{120}$	0	$\frac{\sqrt{6}}{336}$	0	$\frac{\sqrt{10}}{140}$	0	$-\frac{\sqrt{210}}{240}$
		0	$-\frac{5\sqrt{3}}{32}$	0	$\frac{5\sqrt{6}}{224}$	0	$\frac{\sqrt{15}}{224}$	0	0	$\frac{\sqrt{30}}{80}$	0	$-\frac{\sqrt{2}}{56}$	0	$-\frac{3\sqrt{10}}{560}$	0
400	symmetry	$-\frac{\sqrt{5}xz(x^2-6y^2+z^2)}{2}$													

continued ...

Table 7

No.	multipole	matrix														
	$\mathbb{T}_{4,2}^{(1,0;a)}(T_{2g})$	0	0	0	0	0	0	$\frac{\sqrt{105i}}{96}$	0	$\frac{\sqrt{5i}}{32}$	0	$-\frac{5\sqrt{3i}}{96}$	0	$-\frac{7\sqrt{15i}}{96}$	0	
		0	0	0	0	0	0	$-\frac{7\sqrt{15i}}{96}$	0	$-\frac{5\sqrt{3i}}{96}$	0	$\frac{\sqrt{5i}}{32}$	0	$\frac{\sqrt{105i}}{96}$		
		$\frac{\sqrt{15i}}{224}$	0	$-\frac{5\sqrt{6i}}{224}$	0	$-\frac{5\sqrt{3i}}{32}$	0	0	$\frac{3\sqrt{10i}}{560}$	0	$-\frac{\sqrt{2i}}{56}$	0	$-\frac{\sqrt{30i}}{80}$	0	0	
		0	$-\frac{15i}{224}$	0	$\frac{15\sqrt{2i}}{224}$	0	$\frac{3\sqrt{5i}}{32}$	$-\frac{\sqrt{210i}}{240}$	0	$-\frac{\sqrt{10i}}{140}$	0	$\frac{\sqrt{6i}}{336}$	0	$-\frac{\sqrt{30i}}{120}$	0	
		$\frac{3\sqrt{5i}}{32}$	0	$\frac{15\sqrt{2i}}{224}$	0	$-\frac{15i}{224}$	0	0	$\frac{\sqrt{30i}}{120}$	0	$-\frac{\sqrt{6i}}{336}$	0	$\frac{\sqrt{10i}}{140}$	0	$\frac{\sqrt{210i}}{240}$	
		0	$-\frac{5\sqrt{3i}}{32}$	0	$-\frac{5\sqrt{6i}}{224}$	0	$\frac{\sqrt{15i}}{224}$	0	0	$\frac{\sqrt{30i}}{80}$	0	$\frac{\sqrt{2i}}{56}$	0	$-\frac{3\sqrt{10i}}{560}$	0	
401	symmetry	$-\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$														
	$\mathbb{T}_{4,3}^{(1,0;a)}(T_{2g})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{24} & 0 & 0 & 0 & \frac{\sqrt{5}}{8} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{5}}{8} & 0 & 0 & 0 & -\frac{\sqrt{15}}{24} & 0 \\ 0 & 0 & 0 & \frac{5\sqrt{6}}{56} & 0 & 0 & -\frac{\sqrt{70}}{280} & 0 & 0 & 0 & \frac{3\sqrt{2}}{56} & 0 & 0 & 0 & 0 \\ \frac{3\sqrt{5}}{56} & 0 & 0 & 0 & -\frac{15}{56} & 0 & 0 & \frac{11\sqrt{30}}{840} & 0 & 0 & 0 & \frac{\sqrt{10}}{280} & 0 & 0 & 0 \\ 0 & -\frac{15}{56} & 0 & 0 & 0 & \frac{3\sqrt{5}}{56} & 0 & 0 & -\frac{\sqrt{10}}{280} & 0 & 0 & 0 & -\frac{11\sqrt{30}}{840} & 0 & 0 \\ 0 & 0 & \frac{5\sqrt{6}}{56} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{3\sqrt{2}}{56} & 0 & 0 & 0 & \frac{\sqrt{70}}{280} & 0 \end{bmatrix}$														
402	symmetry	$-\frac{x^2}{2}-\frac{y^2}{2}+z^2$														
	$\mathbb{T}_{2,1}^{(1,1;a)}(E_g)$	$\begin{bmatrix} 0 & 0 & -\frac{i}{3} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{i}{3} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{4\sqrt{3i}}{21} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30i}}{84} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{2\sqrt{2i}}{21} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6i}}{28} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{2\sqrt{2i}}{21} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6i}}{28} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{4\sqrt{3i}}{21} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30i}}{84} & 0 & 0 & 0 \end{bmatrix}$														
403	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$														
	$\mathbb{T}_{2,2}^{(1,1;a)}(E_g)$	$\begin{bmatrix} -\frac{\sqrt{30i}}{18} & 0 & 0 & 0 & -\frac{\sqrt{6i}}{18} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{6i}}{18} & 0 & 0 & 0 & -\frac{\sqrt{30i}}{18} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{2\sqrt{2i}}{21} & 0 & 0 & \frac{\sqrt{210i}}{168} & 0 & 0 & 0 & \frac{\sqrt{6i}}{168} & 0 & 0 & 0 & 0 \\ \frac{4\sqrt{15i}}{63} & 0 & 0 & 0 & -\frac{8\sqrt{3i}}{63} & 0 & 0 & \frac{\sqrt{10i}}{56} & 0 & 0 & 0 & \frac{\sqrt{30i}}{168} & 0 & 0 & 0 \\ 0 & \frac{8\sqrt{3i}}{63} & 0 & 0 & 0 & -\frac{4\sqrt{15i}}{63} & 0 & 0 & \frac{\sqrt{30i}}{168} & 0 & 0 & 0 & \frac{\sqrt{10i}}{56} & 0 & 0 \\ 0 & 0 & \frac{2\sqrt{2i}}{21} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6i}}{168} & 0 & 0 & 0 & \frac{\sqrt{210i}}{168} & 0 \end{bmatrix}$														
404	symmetry	$\sqrt{3}yz$														

continued ...

Table 7

No.	multipole	matrix													
	$\mathbb{T}_{2,1}^{(1,1;a)}(T_{2g})$	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
405	symmetry	$\sqrt{3}xz$													
	$\mathbb{T}_{2,2}^{(1,1;a)}(T_{2g})$	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
406	symmetry	$\sqrt{3}xy$													
	$\mathbb{T}_{2,3}^{(1,1;a)}(T_{2g})$	$\frac{\sqrt{30}}{18}$	0	0	0	$-\frac{\sqrt{6}}{18}$	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	$-\frac{2\sqrt{2}}{21}$	0	0	$-\frac{\sqrt{210}}{168}$	0	0	0	$\frac{\sqrt{6}}{168}$	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	$-\frac{8\sqrt{3}}{63}$	0	0	0	$-\frac{4\sqrt{15}}{63}$	0	0	$-\frac{\sqrt{30}}{168}$	0	0	0	$\frac{\sqrt{10}}{56}$	0
		0	0	$-\frac{2\sqrt{2}}{21}$	0	0	0	0	0	0	$-\frac{\sqrt{6}}{168}$	0	0	0	$\frac{\sqrt{210}}{168}$
407	symmetry	$\sqrt{15}xyz$													
	$\mathbb{M}_3^{(a)}(A_{2g})$	$\frac{\sqrt{14}i}{42}$	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	$\frac{\sqrt{2}i}{8}$
408	symmetry	$\frac{x(2x^2-3y^2-3z^2)}{2}$													

continued ...

Table 7

No.	multipole	matrix
	$\mathbb{M}_{3,1}^{(a)}(T_{1g})$	$ \begin{bmatrix} 0 & \frac{\sqrt{42}}{84} & 0 & -\frac{\sqrt{21}}{42} & 0 & \frac{\sqrt{210}}{84} & -\frac{\sqrt{5}}{16} & 0 & \frac{\sqrt{105}}{112} & 0 & -\frac{3\sqrt{7}}{112} & 0 & \frac{\sqrt{35}}{112} & 0 \\ \frac{\sqrt{210}}{84} & 0 & -\frac{\sqrt{21}}{42} & 0 & \frac{\sqrt{42}}{84} & 0 & 0 & -\frac{\sqrt{35}}{112} & 0 & \frac{3\sqrt{7}}{112} & 0 & -\frac{\sqrt{105}}{112} & 0 & \frac{\sqrt{5}}{16} \\ -\frac{\sqrt{35}}{112} & 0 & \frac{3\sqrt{14}}{112} & 0 & -\frac{5\sqrt{7}}{112} & 0 & 0 & \frac{\sqrt{210}}{112} & 0 & -\frac{\sqrt{42}}{56} & 0 & \frac{\sqrt{70}}{112} & 0 & 0 \\ 0 & \frac{\sqrt{21}}{48} & 0 & -\frac{\sqrt{42}}{336} & 0 & -\frac{5\sqrt{105}}{336} & \frac{\sqrt{10}}{16} & 0 & 0 & 0 & -\frac{3\sqrt{14}}{112} & 0 & \frac{\sqrt{70}}{56} & 0 \\ \frac{5\sqrt{105}}{336} & 0 & \frac{\sqrt{42}}{336} & 0 & -\frac{\sqrt{21}}{48} & 0 & 0 & \frac{\sqrt{70}}{56} & 0 & -\frac{3\sqrt{14}}{112} & 0 & 0 & 0 & \frac{\sqrt{10}}{16} \\ 0 & \frac{5\sqrt{7}}{112} & 0 & -\frac{3\sqrt{14}}{112} & 0 & \frac{\sqrt{35}}{112} & 0 & 0 & \frac{\sqrt{70}}{112} & 0 & -\frac{\sqrt{42}}{56} & 0 & \frac{\sqrt{210}}{112} & 0 \end{bmatrix} $
409	symmetry	$ -\frac{y(3x^2-2y^2+3z^2)}{2} $
	$\mathbb{M}_{3,2}^{(a)}(T_{1g})$	$ \begin{bmatrix} 0 & \frac{\sqrt{42}i}{84} & 0 & \frac{\sqrt{21}i}{42} & 0 & \frac{\sqrt{210}i}{84} & \frac{\sqrt{5}i}{16} & 0 & \frac{\sqrt{105}i}{112} & 0 & \frac{3\sqrt{7}i}{112} & 0 & \frac{\sqrt{35}i}{112} & 0 \\ -\frac{\sqrt{210}i}{84} & 0 & -\frac{\sqrt{21}i}{42} & 0 & -\frac{\sqrt{42}i}{84} & 0 & 0 & \frac{\sqrt{35}i}{112} & 0 & \frac{3\sqrt{7}i}{112} & 0 & \frac{\sqrt{105}i}{112} & 0 & \frac{\sqrt{5}i}{16} \\ -\frac{\sqrt{35}i}{112} & 0 & -\frac{3\sqrt{14}i}{112} & 0 & -\frac{5\sqrt{7}i}{112} & 0 & 0 & \frac{\sqrt{210}i}{112} & 0 & \frac{\sqrt{42}i}{56} & 0 & \frac{\sqrt{70}i}{112} & 0 & 0 \\ 0 & \frac{\sqrt{21}i}{48} & 0 & \frac{\sqrt{42}i}{336} & 0 & -\frac{5\sqrt{105}i}{336} & -\frac{\sqrt{10}i}{16} & 0 & 0 & 0 & \frac{3\sqrt{14}i}{112} & 0 & \frac{\sqrt{70}i}{56} & 0 \\ -\frac{5\sqrt{105}i}{336} & 0 & \frac{\sqrt{42}i}{336} & 0 & \frac{\sqrt{21}i}{48} & 0 & 0 & -\frac{\sqrt{70}i}{56} & 0 & -\frac{3\sqrt{14}i}{112} & 0 & 0 & 0 & \frac{\sqrt{10}i}{16} \\ 0 & -\frac{5\sqrt{7}i}{112} & 0 & -\frac{3\sqrt{14}i}{112} & 0 & -\frac{\sqrt{35}i}{112} & 0 & 0 & -\frac{\sqrt{70}i}{112} & 0 & -\frac{\sqrt{42}i}{56} & 0 & -\frac{\sqrt{210}i}{112} & 0 \end{bmatrix} $
410	symmetry	$ -\frac{z(3x^2+3y^2-2z^2)}{2} $
	$\mathbb{M}_{3,3}^{(a)}(T_{1g})$	$ \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 & -\frac{\sqrt{21}}{21} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{14} & 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 & \frac{\sqrt{42}}{42} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{14}}{28} & 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 & -\frac{\sqrt{7}}{14} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}}{28} & 0 & 0 \end{bmatrix} $
411	symmetry	$ \frac{\sqrt{15}x(y-z)(y+z)}{2} $
	$\mathbb{M}_{3,1}^{(a)}(T_{2g})$	$ \begin{bmatrix} 0 & \frac{\sqrt{70}}{84} & 0 & -\frac{\sqrt{35}}{42} & 0 & -\frac{\sqrt{14}}{28} & \frac{\sqrt{3}}{16} & 0 & \frac{5\sqrt{7}}{112} & 0 & -\frac{\sqrt{105}}{112} & 0 & -\frac{\sqrt{21}}{112} & 0 \\ -\frac{\sqrt{14}}{28} & 0 & -\frac{\sqrt{35}}{42} & 0 & \frac{\sqrt{70}}{84} & 0 & 0 & \frac{\sqrt{21}}{112} & 0 & \frac{\sqrt{105}}{112} & 0 & -\frac{5\sqrt{7}}{112} & 0 & -\frac{\sqrt{3}}{16} \\ -\frac{5\sqrt{21}}{336} & 0 & \frac{\sqrt{210}}{112} & 0 & \frac{\sqrt{105}}{112} & 0 & 0 & \frac{5\sqrt{14}}{112} & 0 & -\frac{\sqrt{70}}{56} & 0 & -\frac{\sqrt{42}}{112} & 0 & 0 \\ 0 & \frac{\sqrt{35}}{48} & 0 & -\frac{\sqrt{70}}{336} & 0 & \frac{5\sqrt{7}}{112} & -\frac{\sqrt{6}}{16} & 0 & 0 & 0 & -\frac{\sqrt{210}}{112} & 0 & -\frac{\sqrt{42}}{56} & 0 \\ -\frac{5\sqrt{7}}{112} & 0 & \frac{\sqrt{70}}{336} & 0 & -\frac{\sqrt{35}}{48} & 0 & 0 & -\frac{\sqrt{42}}{56} & 0 & -\frac{\sqrt{210}}{112} & 0 & 0 & 0 & -\frac{\sqrt{6}}{16} \\ 0 & -\frac{\sqrt{105}}{112} & 0 & -\frac{\sqrt{210}}{112} & 0 & \frac{5\sqrt{21}}{336} & 0 & 0 & -\frac{\sqrt{42}}{112} & 0 & -\frac{\sqrt{70}}{56} & 0 & \frac{5\sqrt{14}}{112} & 0 \end{bmatrix} $
412	symmetry	$ -\frac{\sqrt{15}y(x-z)(x+z)}{2} $

continued ...

Table 7

No.	multipole	matrix													
	$\mathbb{M}_{3,2}^{(a)}(T_{2g})$	0	$-\frac{\sqrt{70}i}{84}$	0	$-\frac{\sqrt{35}i}{42}$	0	$\frac{\sqrt{14}i}{28}$	$\frac{\sqrt{3}i}{16}$	0	$-\frac{5\sqrt{7}i}{112}$	0	$-\frac{\sqrt{105}i}{112}$	0	$\frac{\sqrt{21}i}{112}$	0
		$-\frac{\sqrt{14}i}{28}$	0	$\frac{\sqrt{35}i}{42}$	0	$\frac{\sqrt{70}i}{84}$	0	0	$\frac{\sqrt{21}i}{112}$	0	$-\frac{\sqrt{105}i}{112}$	0	$-\frac{5\sqrt{7}i}{112}$	0	$\frac{\sqrt{3}i}{16}$
		$\frac{5\sqrt{21}i}{336}$	0	$\frac{\sqrt{210}i}{112}$	0	$-\frac{\sqrt{105}i}{112}$	0	0	$-\frac{5\sqrt{14}i}{112}$	0	$-\frac{\sqrt{70}i}{56}$	0	$\frac{\sqrt{42}i}{112}$	0	0
		0	$-\frac{\sqrt{35}i}{48}$	0	$-\frac{\sqrt{70}i}{336}$	0	$-\frac{5\sqrt{7}i}{112}$	$-\frac{\sqrt{6}i}{16}$	0	0	0	$-\frac{\sqrt{210}i}{112}$	0	$\frac{\sqrt{42}i}{56}$	0
		$-\frac{5\sqrt{7}i}{112}$	0	$-\frac{\sqrt{70}i}{336}$	0	$-\frac{\sqrt{35}i}{48}$	0	0	$-\frac{\sqrt{42}i}{56}$	0	$\frac{\sqrt{210}i}{112}$	0	0	0	$\frac{\sqrt{6}i}{16}$
		0	$-\frac{\sqrt{105}i}{112}$	0	$\frac{\sqrt{210}i}{112}$	0	$\frac{5\sqrt{21}i}{336}$	0	0	$-\frac{\sqrt{42}i}{112}$	0	$\frac{\sqrt{70}i}{56}$	0	$\frac{5\sqrt{14}i}{112}$	0
413	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$													
	$\mathbb{M}_{3,3}^{(a)}(T_{2g})$	$\frac{\sqrt{14}}{42}$	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	$-\frac{\sqrt{2}}{8}$
414	symmetry	$\sqrt{15}xyz$													
	$\mathbb{M}_3^{(1,-1;a)}(A_{2g})$	$-\frac{\sqrt{30}i}{252}$	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	$-\frac{5\sqrt{6}i}{84}$	0	0	0	0	$\frac{\sqrt{210}i}{84}$
415	symmetry	$\frac{x(2x^2-3y^2-3z^2)}{2}$													
	$\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})$	0	$-\frac{\sqrt{10}}{168}$	0	$\frac{\sqrt{5}}{84}$	0	$-\frac{5\sqrt{2}}{168}$	$\frac{5\sqrt{21}}{84}$	0	$-\frac{5}{28}$	0	$\frac{\sqrt{15}}{28}$	0	$-\frac{5\sqrt{3}}{84}$	0
		$-\frac{5\sqrt{2}}{168}$	0	$\frac{\sqrt{5}}{84}$	0	$-\frac{\sqrt{10}}{168}$	0	0	$\frac{5\sqrt{3}}{84}$	0	$-\frac{\sqrt{15}}{28}$	0	$\frac{5}{28}$	0	$-\frac{5\sqrt{21}}{84}$
		$\frac{\sqrt{3}}{84}$	0	$-\frac{\sqrt{30}}{140}$	0	$\frac{\sqrt{15}}{84}$	0	0	$\frac{5\sqrt{2}}{56}$	0	$-\frac{\sqrt{10}}{28}$	0	$\frac{5\sqrt{6}}{168}$	0	0
		0	$-\frac{\sqrt{5}}{60}$	0	$\frac{\sqrt{10}}{420}$	0	$\frac{5}{84}$	$\frac{5\sqrt{42}}{168}$	0	0	0	$-\frac{\sqrt{30}}{56}$	0	$\frac{5\sqrt{6}}{84}$	0
		$-\frac{5}{84}$	0	$-\frac{\sqrt{10}}{420}$	0	$\frac{\sqrt{5}}{60}$	0	0	$\frac{5\sqrt{6}}{84}$	0	$-\frac{\sqrt{30}}{56}$	0	0	0	$\frac{5\sqrt{42}}{168}$
		0	$-\frac{\sqrt{15}}{84}$	0	$\frac{\sqrt{30}}{140}$	0	$-\frac{\sqrt{3}}{84}$	0	0	$\frac{5\sqrt{6}}{168}$	0	$-\frac{\sqrt{10}}{28}$	0	$\frac{5\sqrt{2}}{56}$	0
416	symmetry	$-\frac{y(3x^2-2y^2+3z^2)}{2}$													

continued ...



Table 7

No.	multipole	matrix													
	$M_{3,2}^{(1,-1;a)}(T_{1g})$	0	$-\frac{\sqrt{10}i}{168}$	0	$-\frac{\sqrt{5}i}{84}$	0	$-\frac{5\sqrt{2}i}{168}$	$-\frac{5\sqrt{21}i}{84}$	0	$-\frac{5i}{28}$	0	$-\frac{\sqrt{15}i}{28}$	0	$-\frac{5\sqrt{3}i}{84}$	0
		$\frac{5\sqrt{2}i}{168}$	0	$\frac{\sqrt{5}i}{84}$	0	$\frac{\sqrt{10}i}{168}$	0	0	$-\frac{5\sqrt{3}i}{84}$	0	$-\frac{\sqrt{15}i}{28}$	0	$-\frac{5i}{28}$	0	$-\frac{5\sqrt{21}i}{84}$
		$\frac{\sqrt{3}i}{84}$	0	$\frac{\sqrt{30}i}{140}$	0	$\frac{\sqrt{15}i}{84}$	0	0	$\frac{5\sqrt{2}i}{56}$	0	$\frac{\sqrt{10}i}{28}$	0	$\frac{5\sqrt{6}i}{168}$	0	0
		0	$-\frac{\sqrt{5}i}{60}$	0	$-\frac{\sqrt{10}i}{420}$	0	$\frac{5i}{84}$	$-\frac{5\sqrt{42}i}{168}$	0	0	0	$\frac{\sqrt{30}i}{56}$	0	$\frac{5\sqrt{6}i}{84}$	0
		$\frac{5i}{84}$	0	$-\frac{\sqrt{10}i}{420}$	0	$-\frac{\sqrt{5}i}{60}$	0	0	$-\frac{5\sqrt{6}i}{84}$	0	$-\frac{\sqrt{30}i}{56}$	0	0	0	$\frac{5\sqrt{42}i}{168}$
		0	$\frac{\sqrt{15}i}{84}$	0	$\frac{\sqrt{30}i}{140}$	0	$\frac{\sqrt{3}i}{84}$	0	0	$-\frac{5\sqrt{6}i}{168}$	0	$-\frac{\sqrt{10}i}{28}$	0	$-\frac{5\sqrt{2}i}{56}$	0
417	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$													
	$M_{3,3}^{(1,-1;a)}(T_{1g})$	$\begin{bmatrix} 0 & 0 & -\frac{\sqrt{5}}{42} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{2\sqrt{15}}{21} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{5}}{42} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{2\sqrt{15}}{21} & 0 & 0 & 0 & 0 \\ 0 & \frac{2\sqrt{15}}{105} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{5\sqrt{6}}{42} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{2\sqrt{10}}{105} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{42} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{2\sqrt{10}}{105} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{42} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{2\sqrt{15}}{105} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{5\sqrt{6}}{42} & 0 & 0 & 0 \end{bmatrix}$													
418	symmetry	$\frac{\sqrt{15}x(y-z)(y+z)}{2}$													
	$M_{3,1}^{(1,-1;a)}(T_{2g})$	$\begin{bmatrix} 0 & -\frac{5\sqrt{6}}{504} & 0 & \frac{5\sqrt{3}}{252} & 0 & \frac{\sqrt{30}}{168} & -\frac{\sqrt{35}}{28} & 0 & -\frac{5\sqrt{15}}{84} & 0 & \frac{5}{28} & 0 & \frac{\sqrt{5}}{28} & 0 \\ \frac{\sqrt{30}}{168} & 0 & \frac{5\sqrt{3}}{252} & 0 & -\frac{5\sqrt{6}}{504} & 0 & 0 & -\frac{\sqrt{5}}{28} & 0 & -\frac{5}{28} & 0 & \frac{5\sqrt{15}}{84} & 0 & \frac{\sqrt{35}}{28} \\ \frac{\sqrt{5}}{84} & 0 & -\frac{\sqrt{2}}{28} & 0 & -\frac{1}{28} & 0 & 0 & \frac{5\sqrt{30}}{168} & 0 & -\frac{5\sqrt{6}}{84} & 0 & -\frac{\sqrt{10}}{56} & 0 & 0 \\ 0 & -\frac{\sqrt{3}}{36} & 0 & \frac{\sqrt{6}}{252} & 0 & -\frac{\sqrt{15}}{84} & -\frac{\sqrt{70}}{56} & 0 & 0 & 0 & -\frac{5\sqrt{2}}{56} & 0 & -\frac{\sqrt{10}}{28} & 0 \\ \frac{\sqrt{15}}{84} & 0 & -\frac{\sqrt{6}}{252} & 0 & \frac{\sqrt{3}}{36} & 0 & 0 & -\frac{\sqrt{10}}{28} & 0 & -\frac{5\sqrt{2}}{56} & 0 & 0 & 0 & -\frac{\sqrt{70}}{56} \\ 0 & \frac{1}{28} & 0 & \frac{\sqrt{2}}{28} & 0 & -\frac{\sqrt{5}}{84} & 0 & 0 & -\frac{\sqrt{10}}{56} & 0 & -\frac{5\sqrt{6}}{84} & 0 & \frac{5\sqrt{30}}{168} & 0 \end{bmatrix}$													
419	symmetry	$-\frac{\sqrt{15}y(x-z)(x+z)}{2}$													
	$M_{3,2}^{(1,-1;a)}(T_{2g})$	$\begin{bmatrix} 0 & \frac{5\sqrt{6}i}{504} & 0 & \frac{5\sqrt{3}i}{252} & 0 & -\frac{\sqrt{30}i}{168} & -\frac{\sqrt{35}i}{28} & 0 & \frac{5\sqrt{15}i}{84} & 0 & \frac{5i}{28} & 0 & -\frac{\sqrt{5}i}{28} & 0 \\ \frac{\sqrt{30}i}{168} & 0 & -\frac{5\sqrt{3}i}{252} & 0 & -\frac{5\sqrt{6}i}{504} & 0 & 0 & -\frac{\sqrt{5}i}{28} & 0 & \frac{5i}{28} & 0 & \frac{5\sqrt{15}i}{84} & 0 & -\frac{\sqrt{35}i}{28} \\ -\frac{\sqrt{5}i}{84} & 0 & -\frac{\sqrt{2}i}{28} & 0 & \frac{i}{28} & 0 & 0 & -\frac{5\sqrt{30}i}{168} & 0 & -\frac{5\sqrt{6}i}{84} & 0 & \frac{\sqrt{10}i}{56} & 0 & 0 \\ 0 & \frac{\sqrt{3}i}{36} & 0 & \frac{\sqrt{6}i}{252} & 0 & \frac{\sqrt{15}i}{84} & -\frac{\sqrt{70}i}{56} & 0 & 0 & 0 & -\frac{5\sqrt{2}i}{56} & 0 & \frac{\sqrt{10}i}{28} & 0 \\ \frac{\sqrt{15}i}{84} & 0 & \frac{\sqrt{6}i}{252} & 0 & \frac{\sqrt{3}i}{36} & 0 & 0 & -\frac{\sqrt{10}i}{28} & 0 & \frac{5\sqrt{2}i}{56} & 0 & 0 & 0 & \frac{\sqrt{70}i}{56} \\ 0 & \frac{i}{28} & 0 & -\frac{\sqrt{2}i}{28} & 0 & -\frac{\sqrt{5}i}{84} & 0 & 0 & -\frac{\sqrt{10}i}{56} & 0 & \frac{5\sqrt{6}i}{84} & 0 & \frac{5\sqrt{30}i}{168} & 0 \end{bmatrix}$													
420	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$													

continued ...

Table 7

No.	multipole	matrix													
	$\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})$	$-\frac{\sqrt{30}}{252}$	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	$-\frac{5\sqrt{6}}{84}$	0	0	0	$-\frac{\sqrt{210}}{84}$	
421	symmetry	$\frac{3\sqrt{35}xyz(x-y)(x+y)}{2}$													
	$\mathbb{M}_{5,1}^{(1,-1;a)}(E_g)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{70}i}{20} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}i}{20} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{70}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$													
422	symmetry	$\frac{\sqrt{105}xyz(x^2+y^2-2z^2)}{2}$													
	$\mathbb{M}_{5,2}^{(1,-1;a)}(E_g)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{120} & 0 & 0 & 0 & -\frac{\sqrt{42}i}{24} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}i}{40} & 0 & 0 & 0 & \frac{\sqrt{210}i}{40} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{210}i}{40} & 0 & 0 & 0 & -\frac{\sqrt{70}i}{40} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}i}{24} & 0 & 0 & 0 & \frac{\sqrt{30}i}{120} & 0 \end{bmatrix}$													
423	symmetry	$\frac{x(8x^4-40x^2y^2-40x^2z^2+15y^4+30y^2z^2+15z^4)}{8}$													
	$\mathbb{M}_{5,1}^{(1,-1;a)}(T_{1g}, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{32} & 0 & -\frac{\sqrt{10}}{32} & 0 & \frac{7\sqrt{6}}{96} & 0 & -\frac{3\sqrt{14}}{32} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}}{96} & 0 & -\frac{3\sqrt{2}}{32} & 0 & \frac{\sqrt{30}}{32} & 0 & -\frac{7\sqrt{6}}{96} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{7\sqrt{6}}{96} & 0 & \frac{\sqrt{30}}{32} & 0 & -\frac{3\sqrt{2}}{32} & 0 & \frac{\sqrt{42}}{96} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{3\sqrt{14}}{32} & 0 & \frac{7\sqrt{6}}{96} & 0 & -\frac{\sqrt{10}}{32} & 0 & \frac{\sqrt{2}}{32} & 0 & 0 \end{bmatrix}$													
424	symmetry	$\frac{y(15x^4-40x^2y^2+30x^2z^2+8y^4-40y^2z^2+15z^4)}{8}$													

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 & \frac{\sqrt{2}i}{32} & 0 & \frac{\sqrt{10}i}{32} & 0 & \frac{7\sqrt{6}i}{96} & 0 & \frac{3\sqrt{14}i}{32} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}i}{96} & 0 & -\frac{3\sqrt{2}i}{32} & 0 & -\frac{\sqrt{30}i}{32} & 0 & -\frac{7\sqrt{6}i}{96} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{7\sqrt{6}i}{96} & 0 & \frac{\sqrt{30}i}{32} & 0 & \frac{3\sqrt{2}i}{32} & 0 & \frac{\sqrt{42}i}{96} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{3\sqrt{14}i}{32} & 0 & -\frac{7\sqrt{6}i}{96} & 0 & -\frac{\sqrt{10}i}{32} & 0 & -\frac{\sqrt{2}i}{32} & 0 & 0 \end{bmatrix} $
425	symmetry	$ \frac{z(15x^4+30x^2y^2-40x^2z^2+15y^4-40y^2z^2+8z^4)}{8} $
	$\mathbb{M}_{5,3}^{(1,-1;a)}(T_{1g}, 1)$	$ \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 & -\frac{\sqrt{6}}{12} & 0 & 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 & 0 & -\frac{\sqrt{30}}{12} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{12} & 0 & 0 \end{bmatrix} $
426	symmetry	$ \frac{3\sqrt{35}x(y^2-2yz-z^2)(y^2+2yz-z^2)}{8} $
	$\mathbb{M}_{5,1}^{(1,-1;a)}(T_{1g}, 2)$	$ \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{70}}{160} & 0 & -\frac{\sqrt{14}}{32} & 0 & -\frac{3\sqrt{210}}{160} & 0 & -\frac{\sqrt{10}}{32} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{3\sqrt{30}}{160} & 0 & -\frac{3\sqrt{70}}{160} & 0 & \frac{\sqrt{42}}{32} & 0 & \frac{3\sqrt{210}}{160} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{3\sqrt{210}}{160} & 0 & \frac{\sqrt{42}}{32} & 0 & -\frac{3\sqrt{70}}{160} & 0 & -\frac{3\sqrt{30}}{160} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}}{32} & 0 & -\frac{3\sqrt{210}}{160} & 0 & -\frac{\sqrt{14}}{32} & 0 & \frac{\sqrt{70}}{160} & 0 & 0 \end{bmatrix} $
427	symmetry	$ \frac{3\sqrt{35}y(x^2-2xz-z^2)(x^2+2xz-z^2)}{8} $
	$\mathbb{M}_{5,2}^{(1,-1;a)}(T_{1g}, 2)$	$ \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{70}i}{160} & 0 & \frac{\sqrt{14}i}{32} & 0 & -\frac{3\sqrt{210}i}{160} & 0 & \frac{\sqrt{10}i}{32} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{3\sqrt{30}i}{160} & 0 & -\frac{3\sqrt{70}i}{160} & 0 & -\frac{\sqrt{42}i}{32} & 0 & \frac{3\sqrt{210}i}{160} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{3\sqrt{210}i}{160} & 0 & \frac{\sqrt{42}i}{32} & 0 & \frac{3\sqrt{70}i}{160} & 0 & -\frac{3\sqrt{30}i}{160} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}i}{32} & 0 & \frac{3\sqrt{210}i}{160} & 0 & -\frac{\sqrt{14}i}{32} & 0 & -\frac{\sqrt{70}i}{160} & 0 & 0 \end{bmatrix} $
428	symmetry	$ \frac{3\sqrt{35}z(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 & 0 & 0 \\ 0 & 0 & 0 & 0 & 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 & 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 & 0 & \frac{\sqrt{70}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} $
429	symmetry	$ \frac{\sqrt{105}x(y-z)(y+z)(2x^2-y^2-z^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 & \frac{\sqrt{210}}{240} & 0 & -\frac{\sqrt{42}}{48} & 0 & \frac{\sqrt{70}}{80} & 0 & \frac{\sqrt{30}}{16} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{80} & 0 & -\frac{\sqrt{210}}{80} & 0 & \frac{\sqrt{14}}{16} & 0 & -\frac{\sqrt{70}}{80} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}}{80} & 0 & \frac{\sqrt{14}}{16} & 0 & -\frac{\sqrt{210}}{80} & 0 & \frac{\sqrt{10}}{80} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{16} & 0 & \frac{\sqrt{70}}{80} & 0 & -\frac{\sqrt{42}}{48} & 0 & \frac{\sqrt{210}}{240} & 0 & 0 \end{bmatrix} $
430	symmetry	$ \frac{\sqrt{105}y(x-z)(x+z)(x^2-2y^2+z^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 & -\frac{\sqrt{210}i}{240} & 0 & -\frac{\sqrt{42}i}{48} & 0 & -\frac{\sqrt{70}i}{80} & 0 & \frac{\sqrt{30}i}{16} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{80} & 0 & \frac{\sqrt{210}i}{80} & 0 & \frac{\sqrt{14}i}{16} & 0 & \frac{\sqrt{70}i}{80} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{70}i}{80} & 0 & -\frac{\sqrt{14}i}{16} & 0 & -\frac{\sqrt{210}i}{80} & 0 & -\frac{\sqrt{10}i}{80} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}i}{16} & 0 & \frac{\sqrt{70}i}{80} & 0 & \frac{\sqrt{42}i}{48} & 0 & \frac{\sqrt{210}i}{240} & 0 & 0 \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 & 0 & 0 & -\frac{\sqrt{30}}{120} & 0 & 0 & 0 & -\frac{\sqrt{42}}{24} & 0 & 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 & 0 & -\frac{\sqrt{210}}{40} & 0 & 0 & 0 & -\frac{\sqrt{70}}{40} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}}{24} & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{120} \end{bmatrix} $
432	symmetry	$\sqrt{15}xyz$

continued ...

Table 7

No.	multipole	matrix													
	$\mathbb{M}_3^{(1,0;a)}(A_{2g})$	$-\frac{\sqrt{42}i}{126}$	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	$-\frac{\sqrt{210}i}{168}$	0	0	0	0	$\frac{\sqrt{6}i}{24}$
433	symmetry	$\frac{x(2x^2-3y^2-3z^2)}{2}$													
	$\mathbb{M}_{3,1}^{(1,0;a)}(T_{1g})$	0	$-\frac{\sqrt{14}}{84}$	0	$\frac{\sqrt{7}}{42}$	0	$-\frac{\sqrt{70}}{84}$	$-\frac{5\sqrt{15}}{96}$	0	$\frac{5\sqrt{35}}{224}$	0	$-\frac{5\sqrt{21}}{224}$	0	$\frac{5\sqrt{105}}{672}$	0
		$-\frac{\sqrt{70}}{84}$	0	$\frac{\sqrt{7}}{42}$	0	$-\frac{\sqrt{14}}{84}$	0	0	$-\frac{5\sqrt{105}}{672}$	0	$\frac{5\sqrt{21}}{224}$	0	$-\frac{5\sqrt{35}}{224}$	0	$\frac{5\sqrt{15}}{96}$
		$\frac{5\sqrt{105}}{672}$	0	$-\frac{5\sqrt{42}}{224}$	0	$\frac{25\sqrt{21}}{672}$	0	0	$\frac{\sqrt{70}}{112}$	0	$-\frac{\sqrt{14}}{56}$	0	$\frac{\sqrt{210}}{336}$	0	0
		0	$-\frac{5\sqrt{7}}{96}$	0	$\frac{5\sqrt{14}}{672}$	0	$\frac{25\sqrt{35}}{672}$	$\frac{\sqrt{30}}{48}$	0	0	0	$-\frac{\sqrt{42}}{112}$	0	$\frac{\sqrt{210}}{168}$	0
		$-\frac{25\sqrt{35}}{672}$	0	$-\frac{5\sqrt{14}}{672}$	0	$\frac{5\sqrt{7}}{96}$	0	0	$\frac{\sqrt{210}}{168}$	0	$-\frac{\sqrt{42}}{112}$	0	0	0	$\frac{\sqrt{30}}{48}$
		0	$-\frac{25\sqrt{21}}{672}$	0	$\frac{5\sqrt{42}}{224}$	0	$-\frac{5\sqrt{105}}{672}$	0	0	$\frac{\sqrt{210}}{336}$	0	$-\frac{\sqrt{14}}{56}$	0	$\frac{\sqrt{70}}{112}$	0
434	symmetry	$-\frac{y(3x^2-2y^2+3z^2)}{2}$													
	$\mathbb{M}_{3,2}^{(1,0;a)}(T_{1g})$	0	$-\frac{\sqrt{14}i}{84}$	0	$-\frac{\sqrt{7}i}{42}$	0	$-\frac{\sqrt{70}i}{84}$	$\frac{5\sqrt{15}i}{96}$	0	$\frac{5\sqrt{35}i}{224}$	0	$\frac{5\sqrt{21}i}{224}$	0	$\frac{5\sqrt{105}i}{672}$	0
		$\frac{\sqrt{70}i}{84}$	0	$\frac{\sqrt{7}i}{42}$	0	$\frac{\sqrt{14}i}{84}$	0	0	$\frac{5\sqrt{105}i}{672}$	0	$\frac{5\sqrt{21}i}{224}$	0	$\frac{5\sqrt{35}i}{224}$	0	$\frac{5\sqrt{15}i}{96}$
		$\frac{5\sqrt{105}i}{672}$	0	$\frac{5\sqrt{42}i}{224}$	0	$\frac{25\sqrt{21}i}{672}$	0	0	$\frac{\sqrt{70}i}{112}$	0	$\frac{\sqrt{14}i}{56}$	0	$\frac{\sqrt{210}i}{336}$	0	0
		0	$-\frac{5\sqrt{7}i}{96}$	0	$-\frac{5\sqrt{14}i}{672}$	0	$\frac{25\sqrt{35}i}{672}$	$-\frac{\sqrt{30}i}{48}$	0	0	0	$\frac{\sqrt{42}i}{112}$	0	$\frac{\sqrt{210}i}{168}$	0
		$\frac{25\sqrt{35}i}{672}$	0	$-\frac{5\sqrt{14}i}{672}$	0	$-\frac{5\sqrt{7}i}{96}$	0	0	$-\frac{\sqrt{210}i}{168}$	0	$-\frac{\sqrt{42}i}{112}$	0	0	0	$\frac{\sqrt{30}i}{48}$
		0	$\frac{25\sqrt{21}i}{672}$	0	$\frac{5\sqrt{42}i}{224}$	0	$\frac{5\sqrt{105}i}{672}$	0	0	$-\frac{\sqrt{210}i}{336}$	0	$-\frac{\sqrt{14}i}{56}$	0	$-\frac{\sqrt{70}i}{112}$	0
435	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$													
	$\mathbb{M}_{3,3}^{(1,0;a)}(T_{1g})$	0	0	$-\frac{\sqrt{7}}{21}$	0	0	0	0	0	$\frac{5\sqrt{21}}{84}$	0	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
		0	$\frac{5\sqrt{21}}{84}$	0	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	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	0	$\frac{5\sqrt{21}}{84}$	0	0	0	0	0	$-\frac{\sqrt{210}}{84}$	0	0	0
436	symmetry	$\frac{\sqrt{15}x(y-z)(y+z)}{2}$													

continued ...

Table 7

No.	multipole	matrix													
	$\mathbb{M}_{3,1}^{(1,0;a)}(T_{2g})$	0	$-\frac{\sqrt{210}}{252}$	0	$\frac{\sqrt{105}}{126}$	0	$\frac{\sqrt{42}}{84}$	$\frac{5}{32}$	0	$\frac{25\sqrt{21}}{672}$	0	$-\frac{5\sqrt{35}}{224}$	0	$-\frac{5\sqrt{7}}{224}$	0
		$\frac{\sqrt{42}}{84}$	0	$\frac{\sqrt{105}}{126}$	0	$-\frac{\sqrt{210}}{252}$	0	0	$\frac{5\sqrt{7}}{224}$	0	$\frac{5\sqrt{35}}{224}$	0	$-\frac{25\sqrt{21}}{672}$	0	$-\frac{5}{32}$
		$\frac{25\sqrt{7}}{672}$	0	$-\frac{5\sqrt{70}}{224}$	0	$-\frac{5\sqrt{35}}{224}$	0	0	$\frac{5\sqrt{42}}{336}$	0	$-\frac{\sqrt{210}}{168}$	0	$-\frac{\sqrt{14}}{112}$	0	0
		0	$-\frac{5\sqrt{105}}{288}$	0	$\frac{5\sqrt{210}}{2016}$	0	$-\frac{25\sqrt{21}}{672}$	$-\frac{\sqrt{2}}{16}$	0	0	0	$-\frac{\sqrt{70}}{112}$	0	$-\frac{\sqrt{14}}{56}$	0
		$\frac{25\sqrt{21}}{672}$	0	$-\frac{5\sqrt{210}}{2016}$	0	$\frac{5\sqrt{105}}{288}$	0	0	$-\frac{\sqrt{14}}{56}$	0	$-\frac{\sqrt{70}}{112}$	0	0	0	$-\frac{\sqrt{2}}{16}$
		0	$\frac{5\sqrt{35}}{224}$	0	$\frac{5\sqrt{70}}{224}$	0	$-\frac{25\sqrt{7}}{672}$	0	0	$-\frac{\sqrt{14}}{112}$	0	$-\frac{\sqrt{210}}{168}$	0	$\frac{5\sqrt{42}}{336}$	0
437	symmetry	$-\frac{\sqrt{15}y(x-z)(x+z)}{2}$													
	$\mathbb{M}_{3,2}^{(1,0;a)}(T_{2g})$	0	$\frac{\sqrt{210}i}{252}$	0	$\frac{\sqrt{105}i}{126}$	0	$-\frac{\sqrt{42}i}{84}$	$\frac{5i}{32}$	0	$-\frac{25\sqrt{21}i}{672}$	0	$-\frac{5\sqrt{35}i}{224}$	0	$\frac{5\sqrt{7}i}{224}$	0
		$\frac{\sqrt{42}i}{84}$	0	$-\frac{\sqrt{105}i}{126}$	0	$-\frac{\sqrt{210}i}{252}$	0	0	$\frac{5\sqrt{7}i}{224}$	0	$-\frac{5\sqrt{35}i}{224}$	0	$-\frac{25\sqrt{21}i}{672}$	0	$\frac{5i}{32}$
		$-\frac{25\sqrt{7}i}{672}$	0	$-\frac{5\sqrt{70}i}{224}$	0	$\frac{5\sqrt{35}i}{224}$	0	0	$-\frac{5\sqrt{42}i}{336}$	0	$-\frac{\sqrt{210}i}{168}$	0	$\frac{\sqrt{14}i}{112}$	0	0
		0	$\frac{5\sqrt{105}i}{288}$	0	$\frac{5\sqrt{210}i}{2016}$	0	$\frac{25\sqrt{21}i}{672}$	$-\frac{\sqrt{2}i}{16}$	0	0	0	$-\frac{\sqrt{70}i}{112}$	0	$\frac{\sqrt{14}i}{56}$	0
		$\frac{25\sqrt{21}i}{672}$	0	$\frac{5\sqrt{210}i}{2016}$	0	$\frac{5\sqrt{105}i}{288}$	0	0	$-\frac{\sqrt{14}i}{56}$	0	$\frac{\sqrt{70}i}{112}$	0	0	0	$\frac{\sqrt{2}i}{16}$
		0	$\frac{5\sqrt{35}i}{224}$	0	$-\frac{5\sqrt{70}i}{224}$	0	$-\frac{25\sqrt{7}i}{672}$	0	0	$-\frac{\sqrt{14}i}{112}$	0	$\frac{\sqrt{210}i}{168}$	0	$\frac{5\sqrt{42}i}{336}$	0
438	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$													
	$\mathbb{M}_{3,3}^{(1,0;a)}(T_{2g})$	$-\frac{\sqrt{42}}{126}$	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	$-\frac{\sqrt{6}}{24}$
439	symmetry	$x$													
	$\mathbb{M}_{1,1}^{(1,1;a)}(T_{1g})$	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
		$\frac{\sqrt{2}}{4}$	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
440	symmetry	$y$													

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 \\ \frac{\sqrt{2}i}{4} & 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 & \frac{\sqrt{15}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{15}i}{20} & 0 & \frac{\sqrt{30}i}{20} & 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 \end{bmatrix} $
441	symmetry	$ \begin{matrix} z \\ \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}}{10} & 0 & 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 & 0 & -\frac{\sqrt{15}}{10} & 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 \end{bmatrix} \end{matrix} $
442	symmetry	$ \begin{matrix} \sqrt{15}xyz \\ \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 \\ 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 & 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 & 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 \\ 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 & 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} & 0 \end{bmatrix} \end{matrix} $
443	symmetry	$ \begin{matrix} \frac{x(2x^2-3y^2-3z^2)}{2} \\ \begin{bmatrix} 0 & \frac{3\sqrt{2}}{28} & 0 & -\frac{3}{14} & 0 & \frac{3\sqrt{10}}{28} & \frac{\sqrt{105}}{224} & 0 & -\frac{3\sqrt{5}}{224} & 0 & \frac{3\sqrt{3}}{224} & 0 & -\frac{\sqrt{15}}{224} & 0 & 0 \\ \frac{3\sqrt{10}}{28} & 0 & -\frac{3}{14} & 0 & \frac{3\sqrt{2}}{28} & 0 & 0 & \frac{\sqrt{15}}{224} & 0 & -\frac{3\sqrt{3}}{224} & 0 & \frac{3\sqrt{5}}{224} & 0 & -\frac{\sqrt{105}}{224} & 0 \\ \frac{3\sqrt{15}}{224} & 0 & -\frac{9\sqrt{6}}{224} & 0 & \frac{15\sqrt{3}}{224} & 0 & 0 & -\frac{\sqrt{10}}{112} & 0 & \frac{\sqrt{2}}{56} & 0 & -\frac{\sqrt{30}}{336} & 0 & 0 & 0 \\ 0 & -\frac{3}{32} & 0 & \frac{3\sqrt{2}}{224} & 0 & \frac{15\sqrt{5}}{224} & -\frac{\sqrt{210}}{336} & 0 & 0 & 0 & \frac{\sqrt{6}}{112} & 0 & -\frac{\sqrt{30}}{168} & 0 & 0 \\ -\frac{15\sqrt{5}}{224} & 0 & -\frac{3\sqrt{2}}{224} & 0 & \frac{3}{32} & 0 & 0 & -\frac{\sqrt{30}}{168} & 0 & \frac{\sqrt{6}}{112} & 0 & 0 & 0 & -\frac{\sqrt{210}}{336} & 0 \\ 0 & -\frac{15\sqrt{3}}{224} & 0 & \frac{9\sqrt{6}}{224} & 0 & -\frac{3\sqrt{15}}{224} & 0 & 0 & -\frac{\sqrt{30}}{336} & 0 & \frac{\sqrt{2}}{56} & 0 & -\frac{\sqrt{10}}{112} & 0 & 0 \end{bmatrix} \end{matrix} $
444	symmetry	$ -\frac{y(3x^2-2y^2+3z^2)}{2} $

continued ...

Table 7

No.	multipole	matrix													
	$\mathbb{M}_{3,2}^{(1,1;a)}(T_{1g})$	0	$\frac{3\sqrt{2}i}{28}$	0	$\frac{3i}{14}$	0	$\frac{3\sqrt{10}i}{28}$	$-\frac{\sqrt{105}i}{224}$	0	$-\frac{3\sqrt{5}i}{224}$	0	$-\frac{3\sqrt{3}i}{224}$	0	$-\frac{\sqrt{15}i}{224}$	0
		$-\frac{3\sqrt{10}i}{28}$	0	$-\frac{3i}{14}$	0	$-\frac{3\sqrt{2}i}{28}$	0	0	$-\frac{\sqrt{15}i}{224}$	0	$-\frac{3\sqrt{3}i}{224}$	0	$-\frac{3\sqrt{5}i}{224}$	0	$-\frac{\sqrt{105}i}{224}$
		$\frac{3\sqrt{15}i}{224}$	0	$\frac{9\sqrt{6}i}{224}$	0	$\frac{15\sqrt{3}i}{224}$	0	0	$-\frac{\sqrt{10}i}{112}$	0	$-\frac{\sqrt{2}i}{56}$	0	$-\frac{\sqrt{30}i}{336}$	0	0
		0	$-\frac{3i}{32}$	0	$-\frac{3\sqrt{2}i}{224}$	0	$\frac{15\sqrt{5}i}{224}$	$\frac{\sqrt{210}i}{336}$	0	0	0	$-\frac{\sqrt{6}i}{112}$	0	$-\frac{\sqrt{30}i}{168}$	0
		$\frac{15\sqrt{5}i}{224}$	0	$-\frac{3\sqrt{2}i}{224}$	0	$-\frac{3i}{32}$	0	0	$\frac{\sqrt{30}i}{168}$	0	$\frac{\sqrt{6}i}{112}$	0	0	0	$-\frac{\sqrt{210}i}{336}$
		0	$\frac{15\sqrt{3}i}{224}$	0	$\frac{9\sqrt{6}i}{224}$	0	$\frac{3\sqrt{15}i}{224}$	0	0	$\frac{\sqrt{30}i}{336}$	0	$\frac{\sqrt{2}i}{56}$	0	$\frac{\sqrt{10}i}{112}$	0
445	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$													
	$\mathbb{M}_{3,3}^{(1,1;a)}(T_{1g})$	$\begin{bmatrix} 0 & 0 & \frac{3}{7} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{28} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{3}{7} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{28} & 0 & 0 & 0 \\ 0 & \frac{3\sqrt{3}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{84} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{3\sqrt{2}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{84} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{3\sqrt{2}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{84} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{3\sqrt{3}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{84} & 0 & 0 \end{bmatrix}$													
446	symmetry	$\frac{\sqrt{15}x(y-z)(y+z)}{2}$													
	$\mathbb{M}_{3,1}^{(1,1;a)}(T_{2g})$	$\begin{bmatrix} 0 & \frac{\sqrt{30}}{28} & 0 & -\frac{\sqrt{15}}{14} & 0 & -\frac{3\sqrt{6}}{28} & -\frac{3\sqrt{7}}{224} & 0 & -\frac{5\sqrt{3}}{224} & 0 & \frac{3\sqrt{5}}{224} & 0 & \frac{3}{224} & 0 \\ -\frac{3\sqrt{6}}{28} & 0 & -\frac{\sqrt{15}}{14} & 0 & \frac{\sqrt{30}}{28} & 0 & 0 & -\frac{3}{224} & 0 & -\frac{3\sqrt{5}}{224} & 0 & \frac{5\sqrt{3}}{224} & 0 & \frac{3\sqrt{7}}{224} \\ \frac{15}{224} & 0 & -\frac{9\sqrt{10}}{224} & 0 & -\frac{9\sqrt{5}}{224} & 0 & 0 & -\frac{5\sqrt{6}}{336} & 0 & \frac{\sqrt{30}}{168} & 0 & \frac{\sqrt{2}}{112} & 0 & 0 \\ 0 & -\frac{\sqrt{15}}{32} & 0 & \frac{\sqrt{30}}{224} & 0 & -\frac{15\sqrt{3}}{224} & \frac{\sqrt{14}}{112} & 0 & 0 & 0 & \frac{\sqrt{10}}{112} & 0 & \frac{\sqrt{2}}{56} & 0 \\ \frac{15\sqrt{3}}{224} & 0 & -\frac{\sqrt{30}}{224} & 0 & \frac{\sqrt{15}}{32} & 0 & 0 & \frac{\sqrt{2}}{56} & 0 & \frac{\sqrt{10}}{112} & 0 & 0 & 0 & \frac{\sqrt{14}}{112} \\ 0 & \frac{9\sqrt{5}}{224} & 0 & \frac{9\sqrt{10}}{224} & 0 & -\frac{15}{224} & 0 & 0 & \frac{\sqrt{2}}{112} & 0 & \frac{\sqrt{30}}{168} & 0 & -\frac{5\sqrt{6}}{336} & 0 \end{bmatrix}$													
447	symmetry	$-\frac{\sqrt{15}y(x-z)(x+z)}{2}$													
	$\mathbb{M}_{3,2}^{(1,1;a)}(T_{2g})$	$\begin{bmatrix} 0 & -\frac{\sqrt{30}i}{28} & 0 & -\frac{\sqrt{15}i}{14} & 0 & \frac{3\sqrt{6}i}{28} & -\frac{3\sqrt{7}i}{224} & 0 & \frac{5\sqrt{3}i}{224} & 0 & \frac{3\sqrt{5}i}{224} & 0 & -\frac{3i}{224} & 0 \\ -\frac{3\sqrt{6}i}{28} & 0 & \frac{\sqrt{15}i}{14} & 0 & \frac{\sqrt{30}i}{28} & 0 & 0 & -\frac{3i}{224} & 0 & \frac{3\sqrt{5}i}{224} & 0 & \frac{5\sqrt{3}i}{224} & 0 & -\frac{3\sqrt{7}i}{224} \\ -\frac{15i}{224} & 0 & -\frac{9\sqrt{10}i}{224} & 0 & \frac{9\sqrt{5}i}{224} & 0 & 0 & \frac{5\sqrt{6}i}{336} & 0 & \frac{\sqrt{30}i}{168} & 0 & -\frac{\sqrt{2}i}{112} & 0 & 0 \\ 0 & \frac{\sqrt{15}i}{32} & 0 & \frac{\sqrt{30}i}{224} & 0 & \frac{15\sqrt{3}i}{224} & \frac{\sqrt{14}i}{112} & 0 & 0 & 0 & \frac{\sqrt{10}i}{112} & 0 & -\frac{\sqrt{2}i}{56} & 0 \\ \frac{15\sqrt{3}i}{224} & 0 & \frac{\sqrt{30}i}{224} & 0 & \frac{\sqrt{15}i}{32} & 0 & 0 & \frac{\sqrt{2}i}{56} & 0 & -\frac{\sqrt{10}i}{112} & 0 & 0 & 0 & -\frac{\sqrt{14}i}{112} \\ 0 & \frac{9\sqrt{5}i}{224} & 0 & -\frac{9\sqrt{10}i}{224} & 0 & -\frac{15i}{224} & 0 & 0 & \frac{\sqrt{2}i}{112} & 0 & -\frac{\sqrt{30}i}{168} & 0 & -\frac{5\sqrt{6}i}{336} & 0 \end{bmatrix}$													
448	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$													

continued ...



Table 7

No.	multipole	matrix													
$\mathbb{M}_{3,3}^{(1,1;a)}(T_{2g})$		$\frac{\sqrt{6}}{14}$	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										
	$\mathbb{Q}_0^{(a)}(A_{1g})$	$\frac{\sqrt{10}}{10}$	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
450	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$										

continued ...

Table 8

No.	multipole	matrix									
	$\mathbb{Q}_{2,1}^{(a)}(E_g)$	$ \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	$ \frac{\sqrt{3}(x-y)(x+y)}{2} $									
	$\mathbb{Q}_{2,2}^{(a)}(E_g)$	$ \begin{bmatrix} 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 \end{bmatrix} $									
452	symmetry	$\sqrt{3}yz$									

*continued ...*

Table 8

No.	multipole	matrix									
	$\mathbb{Q}_{2,1}^{(a)}(T_{2g})$	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
453	symmetry	$\sqrt{3}xz$									
	$\mathbb{Q}_{2,2}^{(a)}(T_{2g})$	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
454	symmetry	$\sqrt{3}xy$									

*continued ...*

Table 8

No.	multipole	matrix									
	$\mathbb{Q}_{2,3}^{(a)}(T_{2g})$	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	$\frac{\sqrt{21}(x^4-3x^2y^2-3x^2z^2+y^4-3y^2z^2+z^4)}{6}$									
	$\mathbb{Q}_4^{(a)}(A_{1g})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{30} & 0 & 0 & 0 & \frac{\sqrt{3}}{6} \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}}{10} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{10} & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & 0 & -\frac{\sqrt{15}}{30} & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{3}}{6} & \frac{\sqrt{15}}{60} & 0 & 0 & 0 & \frac{\sqrt{3}}{12} & 0 \\ \frac{\sqrt{15}}{30} & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{20} & 0 & 0 & 0 & \frac{\sqrt{3}}{12} \\ 0 & -\frac{\sqrt{10}}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{30} & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{10}}{10} & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{30} & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{15}}{30} & \frac{\sqrt{3}}{12} & 0 & 0 & 0 & -\frac{\sqrt{15}}{20} & 0 \\ \frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{12} & 0 & 0 & 0 & \frac{\sqrt{15}}{60} \end{bmatrix}$									
456	symmetry	$-\frac{\sqrt{15}(x^4-12x^2y^2+6x^2z^2+y^4+6y^2z^2-2z^4)}{12}$									

continued ...

Table 8

No.	multipole	matrix									
	$\mathbb{Q}_{4,1}^{(a)}(E_g)$	0	0	0	0	0	$\frac{\sqrt{21}}{42}$	0	0	0	$-\frac{\sqrt{105}}{30}$
		0	0	0	0	0	0	$-\frac{\sqrt{14}}{14}$	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{14}}{14}$	0	0
		0	0	0	0	$\frac{\sqrt{105}}{30}$	0	0	0	$-\frac{\sqrt{21}}{42}$	0
		0	0	0	$\frac{\sqrt{105}}{30}$	$\frac{\sqrt{21}}{84}$	0	0	0	$-\frac{\sqrt{105}}{60}$	0
		$\frac{\sqrt{21}}{42}$	0	0	0	0	$-\frac{\sqrt{21}}{28}$	0	0	0	$-\frac{\sqrt{105}}{60}$
		0	$-\frac{\sqrt{14}}{14}$	0	0	0	0	$\frac{\sqrt{21}}{42}$	0	0	0
		0	0	$\frac{\sqrt{14}}{14}$	0	0	0	0	$\frac{\sqrt{21}}{42}$	0	0
		0	0	0	$-\frac{\sqrt{21}}{42}$	$-\frac{\sqrt{105}}{60}$	0	0	0	$-\frac{\sqrt{21}}{28}$	0
		$-\frac{\sqrt{105}}{30}$	0	0	0	0	$-\frac{\sqrt{105}}{60}$	0	0	0	$\frac{\sqrt{21}}{84}$
457	symmetry	$\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$									
	$\mathbb{Q}_{4,2}^{(a)}(E_g)$	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
458	symmetry	$\frac{\sqrt{35}yz(y-z)(y+z)}{2}$									

*continued ...*

Table 8

No.	multipole	matrix									
	$\mathbb{Q}_{4,1}^{(a)}(T_{1g})$	0	0	0	0	$\frac{\sqrt{5}i}{40}$	0	$\frac{\sqrt{2}i}{8}$	0	$\frac{i}{8}$	0
		0	0	0	0	0	$-\frac{\sqrt{3}i}{8}$	0	$-\frac{\sqrt{6}i}{8}$	0	$-\frac{\sqrt{15}i}{40}$
		0	0	0	0	$\frac{\sqrt{15}i}{40}$	0	$\frac{\sqrt{6}i}{8}$	0	$\frac{\sqrt{3}i}{8}$	0
		0	0	0	0	0	$-\frac{i}{8}$	0	$-\frac{\sqrt{2}i}{8}$	0	$-\frac{\sqrt{5}i}{40}$
		$-\frac{\sqrt{5}i}{40}$	0	$-\frac{\sqrt{15}i}{40}$	0	0	$\frac{\sqrt{5}i}{20}$	0	$\frac{\sqrt{10}i}{40}$	0	0
		0	$\frac{\sqrt{3}i}{8}$	0	$\frac{i}{8}$	$-\frac{\sqrt{5}i}{20}$	0	$-\frac{\sqrt{2}i}{8}$	0	0	0
		$-\frac{\sqrt{2}i}{8}$	0	$-\frac{\sqrt{6}i}{8}$	0	0	$\frac{\sqrt{2}i}{8}$	0	0	0	$-\frac{\sqrt{10}i}{40}$
		0	$\frac{\sqrt{6}i}{8}$	0	$\frac{\sqrt{2}i}{8}$	$-\frac{\sqrt{10}i}{40}$	0	0	0	$\frac{\sqrt{2}i}{8}$	0
		$-\frac{i}{8}$	0	$-\frac{\sqrt{3}i}{8}$	0	0	0	0	$-\frac{\sqrt{2}i}{8}$	0	$-\frac{\sqrt{5}i}{20}$
		0	$\frac{\sqrt{15}i}{40}$	0	$\frac{\sqrt{5}i}{40}$	0	0	$\frac{\sqrt{10}i}{40}$	0	$\frac{\sqrt{5}i}{20}$	0
459	symmetry	$-\frac{\sqrt{35}xz(x-z)(x+z)}{2}$									
	$\mathbb{Q}_{4,2}^{(a)}(T_{1g})$	0	0	0	0	$-\frac{\sqrt{5}}{40}$	0	$\frac{\sqrt{2}}{8}$	0	$-\frac{1}{8}$	0
		0	0	0	0	0	$\frac{\sqrt{3}}{8}$	0	$-\frac{\sqrt{6}}{8}$	0	$\frac{\sqrt{15}}{40}$
		0	0	0	0	$\frac{\sqrt{15}}{40}$	0	$-\frac{\sqrt{6}}{8}$	0	$\frac{\sqrt{3}}{8}$	0
		0	0	0	0	0	$-\frac{1}{8}$	0	$\frac{\sqrt{2}}{8}$	0	$-\frac{\sqrt{5}}{40}$
		$-\frac{\sqrt{5}}{40}$	0	$\frac{\sqrt{15}}{40}$	0	0	$\frac{\sqrt{5}}{20}$	0	$-\frac{\sqrt{10}}{40}$	0	0
		0	$\frac{\sqrt{3}}{8}$	0	$-\frac{1}{8}$	$\frac{\sqrt{5}}{20}$	0	$-\frac{\sqrt{2}}{8}$	0	0	0
		$\frac{\sqrt{2}}{8}$	0	$-\frac{\sqrt{6}}{8}$	0	0	$-\frac{\sqrt{2}}{8}$	0	0	0	$\frac{\sqrt{10}}{40}$
		0	$-\frac{\sqrt{6}}{8}$	0	$\frac{\sqrt{2}}{8}$	$-\frac{\sqrt{10}}{40}$	0	0	0	$\frac{\sqrt{2}}{8}$	0
		$-\frac{1}{8}$	0	$\frac{\sqrt{3}}{8}$	0	0	0	0	$\frac{\sqrt{2}}{8}$	0	$-\frac{\sqrt{5}}{20}$
		0	$\frac{\sqrt{15}}{40}$	0	$-\frac{\sqrt{5}}{40}$	0	0	$\frac{\sqrt{10}}{40}$	0	$-\frac{\sqrt{5}}{20}$	0
460	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$									

continued ...

Table 8

No.	multipole	matrix									
	$\mathbb{Q}_{4,3}^{(a)}(T_{1g})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{5} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{5} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{5}i}{5} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{10} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{10} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{5}i}{10} & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{5}i}{5} & 0 & 0 & 0 & 0 & \frac{\sqrt{5}i}{10} & 0 & 0 & 0 & 0 \end{bmatrix}$									
461	symmetry	$\frac{\sqrt{5}yz(6x^2-y^2-z^2)}{2}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & \frac{\sqrt{35}i}{280} & 0 & \frac{\sqrt{14}i}{56} & 0 & -\frac{\sqrt{7}i}{8} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}i}{56} & 0 & -\frac{\sqrt{42}i}{56} & 0 & \frac{\sqrt{105}i}{40} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{105}i}{40} & 0 & \frac{\sqrt{42}i}{56} & 0 & \frac{\sqrt{21}i}{56} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}i}{8} & 0 & -\frac{\sqrt{14}i}{56} & 0 & -\frac{\sqrt{35}i}{280} \\ -\frac{\sqrt{35}i}{280} & 0 & \frac{\sqrt{105}i}{40} & 0 & 0 & \frac{\sqrt{35}i}{140} & 0 & -\frac{\sqrt{70}i}{40} & 0 & 0 \\ 0 & \frac{\sqrt{21}i}{56} & 0 & -\frac{\sqrt{7}i}{8} & -\frac{\sqrt{35}i}{140} & 0 & -\frac{\sqrt{14}i}{56} & 0 & 0 & 0 \\ -\frac{\sqrt{14}i}{56} & 0 & -\frac{\sqrt{42}i}{56} & 0 & 0 & \frac{\sqrt{14}i}{56} & 0 & 0 & 0 & \frac{\sqrt{70}i}{40} \\ 0 & \frac{\sqrt{42}i}{56} & 0 & \frac{\sqrt{14}i}{56} & \frac{\sqrt{70}i}{40} & 0 & 0 & 0 & \frac{\sqrt{14}i}{56} & 0 \\ \frac{\sqrt{7}i}{8} & 0 & -\frac{\sqrt{21}i}{56} & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}i}{56} & 0 & -\frac{\sqrt{35}i}{140} \\ 0 & -\frac{\sqrt{105}i}{40} & 0 & \frac{\sqrt{35}i}{280} & 0 & 0 & -\frac{\sqrt{70}i}{40} & 0 & \frac{\sqrt{35}i}{140} & 0 \end{bmatrix}$									
462	symmetry	$-\frac{\sqrt{5}xz(x^2-6y^2+z^2)}{2}$									

continued ...

Table 8

No.	multipole	matrix									
	$\mathbb{Q}_{4,2}^{(a)}(T_{2g})$	0	0	0	0	$\frac{\sqrt{35}}{280}$	0	$-\frac{\sqrt{14}}{56}$	0	$-\frac{\sqrt{7}}{8}$	0
		0	0	0	0	0	$-\frac{\sqrt{21}}{56}$	0	$\frac{\sqrt{42}}{56}$	0	$\frac{\sqrt{105}}{40}$
		0	0	0	0	$\frac{\sqrt{105}}{40}$	0	$\frac{\sqrt{42}}{56}$	0	$-\frac{\sqrt{21}}{56}$	0
		0	0	0	0	0	$-\frac{\sqrt{7}}{8}$	0	$-\frac{\sqrt{14}}{56}$	0	$\frac{\sqrt{35}}{280}$
		$\frac{\sqrt{35}}{280}$	0	$\frac{\sqrt{105}}{40}$	0	0	$-\frac{\sqrt{35}}{140}$	0	$-\frac{\sqrt{70}}{40}$	0	0
		0	$-\frac{\sqrt{21}}{56}$	0	$-\frac{\sqrt{7}}{8}$	$-\frac{\sqrt{35}}{140}$	0	$\frac{\sqrt{14}}{56}$	0	0	0
		$-\frac{\sqrt{14}}{56}$	0	$\frac{\sqrt{42}}{56}$	0	0	$\frac{\sqrt{14}}{56}$	0	0	0	$\frac{\sqrt{70}}{40}$
		0	$\frac{\sqrt{42}}{56}$	0	$-\frac{\sqrt{14}}{56}$	$-\frac{\sqrt{70}}{40}$	0	0	0	$-\frac{\sqrt{14}}{56}$	0
		$-\frac{\sqrt{7}}{8}$	0	$-\frac{\sqrt{21}}{56}$	0	0	0	0	$-\frac{\sqrt{14}}{56}$	0	$\frac{\sqrt{35}}{140}$
		0	$\frac{\sqrt{105}}{40}$	0	$\frac{\sqrt{35}}{280}$	0	0	$\frac{\sqrt{70}}{40}$	0	$\frac{\sqrt{35}}{140}$	0
463	symmetry	$-\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$									
	$\mathbb{Q}_{4,3}^{(a)}(T_{2g})$	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									
	$\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)$	$-\frac{\sqrt{30}}{50}$	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	$\frac{\sqrt{30}}{15}$
465	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$									
	$\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)$	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
466	symmetry	$\sqrt{3}yz$									

*continued ...*

Table 8

No.	multipole	matrix									
	$\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})$	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
467	symmetry	$\sqrt{3}xz$									
	$\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})$	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
468	symmetry	$\sqrt{3}xy$									

*continued ...*

Table 8

No.	multipole	matrix									
	$\mathbb{Q}_{2,3}^{(1,-1;a)}(T_{2g})$	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	$\frac{\sqrt{21}(x^4-3x^2y^2-3x^2z^2+y^4-3y^2z^2+z^4)}{6}$									
	$\mathbb{Q}_4^{(1,-1;a)}(A_{1g})$	0	0	0	0	0	$\frac{\sqrt{15}}{60}$	0	0	0	$\frac{\sqrt{3}}{12}$
		0	0	0	0	0	0	$-\frac{\sqrt{10}}{20}$	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{10}}{20}$	0	0
		0	0	0	0	$-\frac{\sqrt{3}}{12}$	0	0	0	$-\frac{\sqrt{15}}{60}$	0
		0	0	0	$-\frac{\sqrt{3}}{12}$	$-\frac{\sqrt{15}}{30}$	0	0	0	$-\frac{\sqrt{3}}{6}$	0
		$\frac{\sqrt{15}}{60}$	0	0	0	0	$\frac{\sqrt{15}}{10}$	0	0	0	$-\frac{\sqrt{3}}{6}$
		0	$-\frac{\sqrt{10}}{20}$	0	0	0	0	$-\frac{\sqrt{15}}{15}$	0	0	0
		0	0	$\frac{\sqrt{10}}{20}$	0	0	0	0	$-\frac{\sqrt{15}}{15}$	0	0
		0	0	0	$-\frac{\sqrt{15}}{60}$	$-\frac{\sqrt{3}}{6}$	0	0	0	$\frac{\sqrt{15}}{10}$	0
		$\frac{\sqrt{3}}{12}$	0	0	0	0	$-\frac{\sqrt{3}}{6}$	0	0	0	$-\frac{\sqrt{15}}{30}$
470	symmetry	$-\frac{\sqrt{15}(x^4-12x^2y^2+6x^2z^2+y^4+6y^2z^2-2z^4)}{12}$									

continued ...

Table 8

No.	multipole	matrix									
	$\mathbb{Q}_{4,1}^{(1,-1;a)}(E_g)$	0	0	0	0	0	$\frac{\sqrt{21}}{84}$	0	0	0	$-\frac{\sqrt{105}}{60}$
		0	0	0	0	0	0	$-\frac{\sqrt{14}}{28}$	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{14}}{28}$	0	0
		0	0	0	0	$\frac{\sqrt{105}}{60}$	0	0	0	$-\frac{\sqrt{21}}{84}$	0
		0	0	0	$\frac{\sqrt{105}}{60}$	$-\frac{\sqrt{21}}{42}$	0	0	0	$\frac{\sqrt{105}}{30}$	0
		$\frac{\sqrt{21}}{84}$	0	0	0	0	$\frac{\sqrt{21}}{14}$	0	0	0	$\frac{\sqrt{105}}{30}$
		0	$-\frac{\sqrt{14}}{28}$	0	0	0	0	$-\frac{\sqrt{21}}{21}$	0	0	0
		0	0	$\frac{\sqrt{14}}{28}$	0	0	0	0	$-\frac{\sqrt{21}}{21}$	0	0
		0	0	0	$-\frac{\sqrt{21}}{84}$	$\frac{\sqrt{105}}{30}$	0	0	0	$\frac{\sqrt{21}}{14}$	0
		$-\frac{\sqrt{105}}{60}$	0	0	0	0	$\frac{\sqrt{105}}{30}$	0	0	0	$-\frac{\sqrt{21}}{42}$
471	symmetry	$\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$									
	$\mathbb{Q}_{4,2}^{(1,-1;a)}(E_g)$	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
472	symmetry	$\frac{\sqrt{35}yz(y-z)(y+z)}{2}$									

continued ...

Table 8

No.	multipole	matrix									
	$\mathbb{Q}_{4,1}^{(1,-1;a)}(T_{1g})$	0	0	0	0	$\frac{\sqrt{5}i}{80}$	0	$\frac{\sqrt{2}i}{16}$	0	$\frac{i}{16}$	0
		0	0	0	0	0	$-\frac{\sqrt{3}i}{16}$	0	$-\frac{\sqrt{6}i}{16}$	0	$-\frac{\sqrt{15}i}{80}$
		0	0	0	0	$\frac{\sqrt{15}i}{80}$	0	$\frac{\sqrt{6}i}{16}$	0	$\frac{\sqrt{3}i}{16}$	0
		0	0	0	0	0	$-\frac{i}{16}$	0	$-\frac{\sqrt{2}i}{16}$	0	$-\frac{\sqrt{5}i}{80}$
		$-\frac{\sqrt{5}i}{80}$	0	$-\frac{\sqrt{15}i}{80}$	0	0	$-\frac{\sqrt{5}i}{10}$	0	$-\frac{\sqrt{10}i}{20}$	0	0
		0	$\frac{\sqrt{3}i}{16}$	0	$\frac{i}{16}$	$\frac{\sqrt{5}i}{10}$	0	$\frac{\sqrt{2}i}{4}$	0	0	0
		$-\frac{\sqrt{2}i}{16}$	0	$-\frac{\sqrt{6}i}{16}$	0	0	$-\frac{\sqrt{2}i}{4}$	0	0	0	$\frac{\sqrt{10}i}{20}$
		0	$\frac{\sqrt{6}i}{16}$	0	$\frac{\sqrt{2}i}{16}$	$\frac{\sqrt{10}i}{20}$	0	0	0	$-\frac{\sqrt{2}i}{4}$	0
		$-\frac{i}{16}$	0	$-\frac{\sqrt{3}i}{16}$	0	0	0	0	$\frac{\sqrt{2}i}{4}$	0	$\frac{\sqrt{5}i}{10}$
		0	$\frac{\sqrt{15}i}{80}$	0	$\frac{\sqrt{5}i}{80}$	0	0	$-\frac{\sqrt{10}i}{20}$	0	$-\frac{\sqrt{5}i}{10}$	0
473	symmetry	$-\frac{\sqrt{35}xz(x-z)(x+z)}{2}$									
	$\mathbb{Q}_{4,2}^{(1,-1;a)}(T_{1g})$	0	0	0	0	$-\frac{\sqrt{5}}{80}$	0	$\frac{\sqrt{2}}{16}$	0	$-\frac{1}{16}$	0
		0	0	0	0	0	$\frac{\sqrt{3}}{16}$	0	$-\frac{\sqrt{6}}{16}$	0	$\frac{\sqrt{15}}{80}$
		0	0	0	0	$\frac{\sqrt{15}}{80}$	0	$-\frac{\sqrt{6}}{16}$	0	$\frac{\sqrt{3}}{16}$	0
		0	0	0	0	0	$-\frac{1}{16}$	0	$\frac{\sqrt{2}}{16}$	0	$-\frac{\sqrt{5}}{80}$
		$-\frac{\sqrt{5}}{80}$	0	$\frac{\sqrt{15}}{80}$	0	0	$-\frac{\sqrt{5}}{10}$	0	$\frac{\sqrt{10}}{20}$	0	0
		0	$\frac{\sqrt{3}}{16}$	0	$-\frac{1}{16}$	$-\frac{\sqrt{5}}{10}$	0	$\frac{\sqrt{2}}{4}$	0	0	0
		$\frac{\sqrt{2}}{16}$	0	$-\frac{\sqrt{6}}{16}$	0	0	$\frac{\sqrt{2}}{4}$	0	0	0	$-\frac{\sqrt{10}}{20}$
		0	$-\frac{\sqrt{6}}{16}$	0	$\frac{\sqrt{2}}{16}$	$\frac{\sqrt{10}}{20}$	0	0	0	$-\frac{\sqrt{2}}{4}$	0
		$-\frac{1}{16}$	0	$\frac{\sqrt{3}}{16}$	0	0	0	0	$-\frac{\sqrt{2}}{4}$	0	$\frac{\sqrt{5}}{10}$
		0	$\frac{\sqrt{15}}{80}$	0	$-\frac{\sqrt{5}}{80}$	0	0	$-\frac{\sqrt{10}}{20}$	0	$\frac{\sqrt{5}}{10}$	0
474	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$									

continued ...

Table 8

No.	multipole	matrix									
	$\mathbb{Q}_{4,3}^{(1,-1;a)}(T_{1g})$	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
475	symmetry	$\frac{\sqrt{5}yz(6x^2-y^2-z^2)}{2}$									
	$\mathbb{Q}_{4,1}^{(1,-1;a)}(T_{2g})$	0	0	0	0	$\frac{\sqrt{35}i}{560}$	0	$\frac{\sqrt{14}i}{112}$	0	$-\frac{\sqrt{7}i}{16}$	0
		0	0	0	0	0	$-\frac{\sqrt{21}i}{112}$	0	$-\frac{\sqrt{42}i}{112}$	0	$\frac{\sqrt{105}i}{80}$
		0	0	0	0	$-\frac{\sqrt{105}i}{80}$	0	$\frac{\sqrt{42}i}{112}$	0	$\frac{\sqrt{21}i}{112}$	0
		0	0	0	0	0	$\frac{\sqrt{7}i}{16}$	0	$-\frac{\sqrt{14}i}{112}$	0	$-\frac{\sqrt{35}i}{560}$
		$-\frac{\sqrt{35}i}{560}$	0	$\frac{\sqrt{105}i}{80}$	0	0	$-\frac{\sqrt{35}i}{70}$	0	$\frac{\sqrt{70}i}{20}$	0	0
		0	$\frac{\sqrt{21}i}{112}$	0	$-\frac{\sqrt{7}i}{16}$	$\frac{\sqrt{35}i}{70}$	0	$\frac{\sqrt{14}i}{28}$	0	0	0
		$-\frac{\sqrt{14}i}{112}$	0	$-\frac{\sqrt{42}i}{112}$	0	0	$-\frac{\sqrt{14}i}{28}$	0	0	0	$-\frac{\sqrt{70}i}{20}$
		0	$\frac{\sqrt{42}i}{112}$	0	$\frac{\sqrt{14}i}{112}$	$-\frac{\sqrt{70}i}{20}$	0	0	0	$-\frac{\sqrt{14}i}{28}$	0
		$\frac{\sqrt{7}i}{16}$	0	$-\frac{\sqrt{21}i}{112}$	0	0	0	0	$\frac{\sqrt{14}i}{28}$	0	$\frac{\sqrt{35}i}{70}$
		0	$-\frac{\sqrt{105}i}{80}$	0	$\frac{\sqrt{35}i}{560}$	0	0	$\frac{\sqrt{70}i}{20}$	0	$-\frac{\sqrt{35}i}{70}$	0
476	symmetry	$-\frac{\sqrt{5}xz(x^2-6y^2+z^2)}{2}$									

continued ...

Table 8

No.	multipole	matrix									
	$\mathbb{Q}_{4,2}^{(1,-1;a)}(T_{2g})$	0	0	0	0	$\frac{\sqrt{35}}{560}$	0	$-\frac{\sqrt{14}}{112}$	0	$-\frac{\sqrt{7}}{16}$	0
		0	0	0	0	0	$-\frac{\sqrt{21}}{112}$	0	$\frac{\sqrt{42}}{112}$	0	$\frac{\sqrt{105}}{80}$
		0	0	0	0	$\frac{\sqrt{105}}{80}$	0	$\frac{\sqrt{42}}{112}$	0	$-\frac{\sqrt{21}}{112}$	0
		0	0	0	0	0	$-\frac{\sqrt{7}}{16}$	0	$-\frac{\sqrt{14}}{112}$	0	$\frac{\sqrt{35}}{560}$
		$\frac{\sqrt{35}}{560}$	0	$\frac{\sqrt{105}}{80}$	0	0	$\frac{\sqrt{35}}{70}$	0	$\frac{\sqrt{70}}{20}$	0	0
		0	$-\frac{\sqrt{21}}{112}$	0	$-\frac{\sqrt{7}}{16}$	$\frac{\sqrt{35}}{70}$	0	$-\frac{\sqrt{14}}{28}$	0	0	0
		$-\frac{\sqrt{14}}{112}$	0	$\frac{\sqrt{42}}{112}$	0	0	$-\frac{\sqrt{14}}{28}$	0	0	0	$-\frac{\sqrt{70}}{20}$
		0	$\frac{\sqrt{42}}{112}$	0	$-\frac{\sqrt{14}}{112}$	$\frac{\sqrt{70}}{20}$	0	0	0	$\frac{\sqrt{14}}{28}$	0
		$-\frac{\sqrt{7}}{16}$	0	$-\frac{\sqrt{21}}{112}$	0	0	0	0	$\frac{\sqrt{14}}{28}$	0	$-\frac{\sqrt{35}}{70}$
		0	$\frac{\sqrt{105}}{80}$	0	$\frac{\sqrt{35}}{560}$	0	0	$-\frac{\sqrt{70}}{20}$	0	$-\frac{\sqrt{35}}{70}$	0
477	symmetry	$-\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$									
	$\mathbb{Q}_{4,3}^{(1,-1;a)}(T_{2g})$	0	0	0	0	0	0	$-\frac{\sqrt{14}i}{28}$	0	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									
	$\mathbb{Q}_0^{(1,1;a)}(A_{1g})$	$ \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 $									
	$\mathbb{Q}_{2,1}^{(1,1;a)}(E_g)$	$ \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 & -\frac{\sqrt{105}}{70} & 0 \end{bmatrix} $									
480	symmetry	$ \frac{\sqrt{3}(x-y)(x+y)}{2} $									

continued ...



Table 8

No.	multipole	matrix									
	$\mathbb{Q}_{2,2}^{(1,1;a)}(E_g)$	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
481	symmetry	$\sqrt{3}yz$									
	$\mathbb{Q}_{2,1}^{(1,1;a)}(T_{2g})$	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
482	symmetry	$\sqrt{3}xz$									

continued ...

Table 8

No.	multipole	matrix									
	$\mathbb{Q}_{2,2}^{(1,1;a)}(T_{2g})$	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
483	symmetry	$\sqrt{3}xy$									
	$\mathbb{Q}_{2,3}^{(1,1;a)}(T_{2g})$	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	$x$									

*continued ...*

Table 8

No.	multipole	matrix									
	$\mathbb{G}_{1,1}^{(1,0;a)}(T_{1g})$	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
		0	0	0	0	0	0	0	0	0	0
485	symmetry	$y$									
	$\mathbb{G}_{1,2}^{(1,0;a)}(T_{1g})$	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
		0	0	0	0	0	0	0	0	0	0
486	symmetry	$z$									

*continued ...*

Table 8

No.	multipole	matrix									
	$\mathbb{G}_{1,3}^{(1,0;a)}(T_{1g})$	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
487	symmetry	$\sqrt{15}xyz$									
	$\mathbb{G}_3^{(1,0;a)}(A_{2g})$	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
488	symmetry	$\frac{x(2x^2-3y^2-3z^2)}{2}$									

continued ...

Table 8

No.	multipole	matrix									
	$\mathbb{G}_{3,1}^{(1,0;a)}(T_{1g})$	0	0	0	0	$\frac{\sqrt{3}i}{16}$	0	$-\frac{3\sqrt{30}i}{80}$	0	$\frac{\sqrt{15}i}{16}$	0
		0	0	0	0	0	$-\frac{7\sqrt{5}i}{80}$	0	$\frac{\sqrt{10}i}{80}$	0	$\frac{5i}{16}$
		0	0	0	0	$-\frac{5i}{16}$	0	$-\frac{\sqrt{10}i}{80}$	0	$\frac{7\sqrt{5}i}{80}$	0
		0	0	0	0	0	$-\frac{\sqrt{15}i}{16}$	0	$\frac{3\sqrt{30}i}{80}$	0	$-\frac{\sqrt{3}i}{16}$
		$-\frac{\sqrt{3}i}{16}$	0	$\frac{5i}{16}$	0	0	0	0	0	0	0
		0	$\frac{7\sqrt{5}i}{80}$	0	$\frac{\sqrt{15}i}{16}$	0	0	0	0	0	0
		$\frac{3\sqrt{30}i}{80}$	0	$\frac{\sqrt{10}i}{80}$	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{10}i}{80}$	0	$-\frac{3\sqrt{30}i}{80}$	0	0	0	0	0	0
		$-\frac{\sqrt{15}i}{16}$	0	$-\frac{7\sqrt{5}i}{80}$	0	0	0	0	0	0	0
		0	$-\frac{5i}{16}$	0	$\frac{\sqrt{3}i}{16}$	0	0	0	0	0	0
489	symmetry	$-\frac{y(3x^2-2y^2+3z^2)}{2}$									
	$\mathbb{G}_{3,2}^{(1,0;a)}(T_{1g})$	0	0	0	0	$-\frac{\sqrt{3}}{16}$	0	$-\frac{3\sqrt{30}}{80}$	0	$-\frac{\sqrt{15}}{16}$	0
		0	0	0	0	0	$\frac{7\sqrt{5}}{80}$	0	$\frac{\sqrt{10}}{80}$	0	$-\frac{5}{16}$
		0	0	0	0	$-\frac{5}{16}$	0	$\frac{\sqrt{10}}{80}$	0	$\frac{7\sqrt{5}}{80}$	0
		0	0	0	0	0	$-\frac{\sqrt{15}}{16}$	0	$-\frac{3\sqrt{30}}{80}$	0	$-\frac{\sqrt{3}}{16}$
		$-\frac{\sqrt{3}}{16}$	0	$-\frac{5}{16}$	0	0	0	0	0	0	0
		0	$\frac{7\sqrt{5}}{80}$	0	$-\frac{\sqrt{15}}{16}$	0	0	0	0	0	0
		$-\frac{3\sqrt{30}}{80}$	0	$\frac{\sqrt{10}}{80}$	0	0	0	0	0	0	0
		0	$\frac{\sqrt{10}}{80}$	0	$-\frac{3\sqrt{30}}{80}$	0	0	0	0	0	0
		$-\frac{\sqrt{15}}{16}$	0	$\frac{7\sqrt{5}}{80}$	0	0	0	0	0	0	0
		0	$-\frac{5}{16}$	0	$-\frac{\sqrt{3}}{16}$	0	0	0	0	0	0
490	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$									

*continued ...*

Table 8

No.	multipole	matrix
	$\mathbb{G}_{3,3}^{(1,0;a)}(T_{1g})$	$ \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} $
491	symmetry	$ \frac{\sqrt{15}x(y-z)(y+z)}{2} \begin{bmatrix} 0 & 0 & 0 & 0 & \frac{\sqrt{5}i}{16} & 0 & -\frac{3\sqrt{2}i}{16} & 0 & -\frac{3i}{16} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{7\sqrt{3}i}{48} & 0 & \frac{\sqrt{6}i}{48} & 0 & -\frac{\sqrt{15}i}{16} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{16} & 0 & -\frac{\sqrt{6}i}{48} & 0 & \frac{7\sqrt{3}i}{48} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{3i}{16} & 0 & \frac{3\sqrt{2}i}{16} & 0 & -\frac{\sqrt{5}i}{16} \\ -\frac{\sqrt{5}i}{16} & 0 & -\frac{\sqrt{15}i}{16} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{7\sqrt{3}i}{48} & 0 & -\frac{3i}{16} & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{3\sqrt{2}i}{16} & 0 & \frac{\sqrt{6}i}{48} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{6}i}{48} & 0 & -\frac{3\sqrt{2}i}{16} & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{3i}{16} & 0 & -\frac{7\sqrt{3}i}{48} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{15}i}{16} & 0 & \frac{\sqrt{5}i}{16} & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} $
492	symmetry	$ -\frac{\sqrt{15}y(x-z)(x+z)}{2} $

continued ...

Table 8

No.	multipole	matrix									
	$\mathbb{G}_{3,2}^{(1,0;a)}(T_{2g})$	0	0	0	0	$\frac{\sqrt{5}}{16}$	0	$\frac{3\sqrt{2}}{16}$	0	$-\frac{3}{16}$	0
		0	0	0	0	0	$-\frac{7\sqrt{3}}{48}$	0	$-\frac{\sqrt{6}}{48}$	0	$-\frac{\sqrt{15}}{16}$
		0	0	0	0	$-\frac{\sqrt{15}}{16}$	0	$-\frac{\sqrt{6}}{48}$	0	$-\frac{7\sqrt{3}}{48}$	0
		0	0	0	0	0	$-\frac{3}{16}$	0	$\frac{3\sqrt{2}}{16}$	0	$\frac{\sqrt{5}}{16}$
		$\frac{\sqrt{5}}{16}$	0	$-\frac{\sqrt{15}}{16}$	0	0	0	0	0	0	0
		0	$-\frac{7\sqrt{3}}{48}$	0	$-\frac{3}{16}$	0	0	0	0	0	0
		$\frac{3\sqrt{2}}{16}$	0	$-\frac{\sqrt{6}}{48}$	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{6}}{48}$	0	$\frac{3\sqrt{2}}{16}$	0	0	0	0	0	0
		$-\frac{3}{16}$	0	$-\frac{7\sqrt{3}}{48}$	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{15}}{16}$	0	$\frac{\sqrt{5}}{16}$	0	0	0	0	0	0
493	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$									
	$\mathbb{G}_{3,3}^{(1,0;a)}(T_{2g})$	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									
	$\mathbb{T}_{2,1}^{(1,0;a)}(E_g)$	$ \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	$ \frac{\sqrt{3}(x-y)(x+y)}{2} $									
	$\mathbb{T}_{2,2}^{(1,0;a)}(E_g)$	$ \begin{bmatrix} 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 \end{bmatrix} $									
496	symmetry	$ \sqrt{3}yz $									

continued ...



Table 8

No.	multipole	matrix									
	$\mathbb{T}_{2,1}^{(1,0;a)}(T_{2g})$	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
497	symmetry	$\sqrt{3}xz$									
	$\mathbb{T}_{2,2}^{(1,0;a)}(T_{2g})$	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
498	symmetry	$\sqrt{3}xy$									

*continued ...*

Table 8

No.	multipole	matrix									
	$\mathbb{T}_{2,3}^{(1,0;a)}(T_{2g})$	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	$\frac{\sqrt{21}(x^4-3x^2y^2-3x^2z^2+y^4-3y^2z^2+z^4)}{6}$									
	$\mathbb{T}_4^{(1,0;a)}(A_{1g})$	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	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	$-\frac{\sqrt{15}i}{12}$	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	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
		$\frac{\sqrt{15}i}{12}$	0	0	0	0	0	0	0	0	0
500	symmetry	$-\frac{\sqrt{15}(x^4-12x^2y^2+6x^2z^2+y^4+6y^2z^2-2z^4)}{12}$									

continued ...

Table 8

No.	multipole	matrix									
	$\mathbb{T}_{4,1}^{(1,0;a)}(E_g)$	0	0	0	0	0	$-\frac{\sqrt{105}i}{84}$	0	0	0	$\frac{\sqrt{21}i}{12}$
		0	0	0	0	0	0	$\frac{\sqrt{70}i}{28}$	0	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{70}i}{28}$	0	0
		0	0	0	0	$-\frac{\sqrt{21}i}{12}$	0	0	0	$\frac{\sqrt{105}i}{84}$	0
		0	0	0	$\frac{\sqrt{21}i}{12}$	0	0	0	0	0	0
		$\frac{\sqrt{105}i}{84}$	0	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{70}i}{28}$	0	0	0	0	0	0	0	0
		0	0	$\frac{\sqrt{70}i}{28}$	0	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{105}i}{84}$	0	0	0	0	0	0
		$-\frac{\sqrt{21}i}{12}$	0	0	0	0	0	0	0	0	0
501	symmetry	$\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$									
	$\mathbb{T}_{4,2}^{(1,0;a)}(E_g)$	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
502	symmetry	$\frac{\sqrt{35}yz(y-z)(y+z)}{2}$									

continued ...

Table 8

No.	multipole	matrix									
	$\mathbb{T}_{4,1}^{(1,0;a)}(T_{1g})$	0	0	0	0	$\frac{1}{16}$	0	$\frac{\sqrt{10}}{16}$	0	$\frac{\sqrt{5}}{16}$	0
		0	0	0	0	0	$-\frac{\sqrt{15}}{16}$	0	$-\frac{\sqrt{30}}{16}$	0	$-\frac{\sqrt{3}}{16}$
		0	0	0	0	$\frac{\sqrt{3}}{16}$	0	$\frac{\sqrt{30}}{16}$	0	$\frac{\sqrt{15}}{16}$	0
		0	0	0	0	0	$-\frac{\sqrt{5}}{16}$	0	$-\frac{\sqrt{10}}{16}$	0	$-\frac{1}{16}$
		$\frac{1}{16}$	0	$\frac{\sqrt{3}}{16}$	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{15}}{16}$	0	$-\frac{\sqrt{5}}{16}$	0	0	0	0	0	0
		$\frac{\sqrt{10}}{16}$	0	$\frac{\sqrt{30}}{16}$	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{30}}{16}$	0	$-\frac{\sqrt{10}}{16}$	0	0	0	0	0	0
		$\frac{\sqrt{5}}{16}$	0	$\frac{\sqrt{15}}{16}$	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{3}}{16}$	0	$-\frac{1}{16}$	0	0	0	0	0	0
503	symmetry	$-\frac{\sqrt{35}xz(x-z)(x+z)}{2}$									
	$\mathbb{T}_{4,2}^{(1,0;a)}(T_{1g})$	0	0	0	0	$\frac{i}{16}$	0	$-\frac{\sqrt{10}i}{16}$	0	$\frac{\sqrt{5}i}{16}$	0
		0	0	0	0	0	$-\frac{\sqrt{15}i}{16}$	0	$\frac{\sqrt{30}i}{16}$	0	$-\frac{\sqrt{3}i}{16}$
		0	0	0	0	$-\frac{\sqrt{3}i}{16}$	0	$\frac{\sqrt{30}i}{16}$	0	$-\frac{\sqrt{15}i}{16}$	0
		0	0	0	0	0	$\frac{\sqrt{5}i}{16}$	0	$-\frac{\sqrt{10}i}{16}$	0	$\frac{i}{16}$
		$-\frac{i}{16}$	0	$\frac{\sqrt{3}i}{16}$	0	0	0	0	0	0	0
		0	$\frac{\sqrt{15}i}{16}$	0	$-\frac{\sqrt{5}i}{16}$	0	0	0	0	0	0
		$\frac{\sqrt{10}i}{16}$	0	$-\frac{\sqrt{30}i}{16}$	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{30}i}{16}$	0	$\frac{\sqrt{10}i}{16}$	0	0	0	0	0	0
		$-\frac{\sqrt{5}i}{16}$	0	$\frac{\sqrt{15}i}{16}$	0	0	0	0	0	0	0
		0	$\frac{\sqrt{3}i}{16}$	0	$-\frac{i}{16}$	0	0	0	0	0	0
504	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$									

*continued ...*

Table 8

No.	multipole	matrix
	$\mathbb{T}_{4,3}^{(1,0;a)}(T_{1g})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{1}{2} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{1}{2} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{1}{2} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{1}{2} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
505	symmetry	$\frac{\sqrt{5}yz(6x^2-y^2-z^2)}{2}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{112} & 0 & \frac{\sqrt{70}}{112} & 0 & -\frac{\sqrt{35}}{16} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{105}}{112} & 0 & -\frac{\sqrt{210}}{112} & 0 & \frac{\sqrt{21}}{16} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{21}}{16} & 0 & \frac{\sqrt{210}}{112} & 0 & \frac{\sqrt{105}}{112} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{35}}{16} & 0 & -\frac{\sqrt{70}}{112} & 0 & -\frac{\sqrt{7}}{112} \\ \frac{\sqrt{7}}{112} & 0 & -\frac{\sqrt{21}}{16} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{105}}{112} & 0 & \frac{\sqrt{35}}{16} & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{70}}{112} & 0 & \frac{\sqrt{210}}{112} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{210}}{112} & 0 & -\frac{\sqrt{70}}{112} & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{35}}{16} & 0 & \frac{\sqrt{105}}{112} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{21}}{16} & 0 & -\frac{\sqrt{7}}{112} & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
506	symmetry	$-\frac{\sqrt{5}xz(x^2-6y^2+z^2)}{2}$

continued ...

Table 8

No.	multipole	matrix									
	$\mathbb{T}_{4,2}^{(1,0;a)}(T_{2g})$	0	0	0	0	$-\frac{\sqrt{7}i}{112}$	0	$\frac{\sqrt{70}i}{112}$	0	$\frac{\sqrt{35}i}{16}$	0
		0	0	0	0	0	$\frac{\sqrt{105}i}{112}$	0	$-\frac{\sqrt{210}i}{112}$	0	$-\frac{\sqrt{21}i}{16}$
		0	0	0	0	$-\frac{\sqrt{21}i}{16}$	0	$-\frac{\sqrt{210}i}{112}$	0	$\frac{\sqrt{105}i}{112}$	0
		0	0	0	0	0	$\frac{\sqrt{35}i}{16}$	0	$\frac{\sqrt{70}i}{112}$	0	$-\frac{\sqrt{7}i}{112}$
		$\frac{\sqrt{7}i}{112}$	0	$\frac{\sqrt{21}i}{16}$	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{105}i}{112}$	0	$-\frac{\sqrt{35}i}{16}$	0	0	0	0	0	0
		$-\frac{\sqrt{70}i}{112}$	0	$\frac{\sqrt{210}i}{112}$	0	0	0	0	0	0	0
		0	$\frac{\sqrt{210}i}{112}$	0	$-\frac{\sqrt{70}i}{112}$	0	0	0	0	0	0
		$-\frac{\sqrt{35}i}{16}$	0	$-\frac{\sqrt{105}i}{112}$	0	0	0	0	0	0	0
		0	$\frac{\sqrt{21}i}{16}$	0	$\frac{\sqrt{7}i}{112}$	0	0	0	0	0	0
507	symmetry	$-\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$									
	$\mathbb{T}_{4,3}^{(1,0;a)}(T_{2g})$	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	$x$									

continued ...

Table 8

No.	multipole	matrix									
	$\mathbb{M}_{1,1}^{(a)}(T_{1g})$	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
509	symmetry	$y$									
	$\mathbb{M}_{1,2}^{(a)}(T_{1g})$	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	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
510	symmetry	$z$									

*continued ...*

Table 8

No.	multipole	matrix									
	$\mathbb{M}_{1,3}^{(a)}(T_{1g})$	$ \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} $									
511	symmetry	$ \begin{matrix} \sqrt{15}xyz \\ \begin{bmatrix} 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 \end{bmatrix} \end{matrix} $									
512	symmetry	$ \frac{x(2x^2-3y^2-3z^2)}{2} $									

continued ...



Table 8

No.	multipole	matrix									
	$\mathbb{M}_{3,1}^{(a)}(T_{1g})$	0	$\frac{\sqrt{15}}{50}$	0	$-\frac{\sqrt{5}}{10}$	$-\frac{3}{40}$	0	$\frac{9\sqrt{10}}{200}$	0	$-\frac{3\sqrt{5}}{40}$	0
		$\frac{\sqrt{15}}{50}$	0	$-\frac{3\sqrt{5}}{50}$	0	0	$\frac{7\sqrt{15}}{200}$	0	$-\frac{\sqrt{30}}{200}$	0	$-\frac{\sqrt{3}}{8}$
		0	$-\frac{3\sqrt{5}}{50}$	0	$\frac{\sqrt{15}}{50}$	$\frac{\sqrt{3}}{8}$	0	$\frac{\sqrt{30}}{200}$	0	$-\frac{7\sqrt{15}}{200}$	0
		$-\frac{\sqrt{5}}{10}$	0	$\frac{\sqrt{15}}{50}$	0	0	$\frac{3\sqrt{5}}{40}$	0	$-\frac{9\sqrt{10}}{200}$	0	$\frac{3}{40}$
		$-\frac{3}{40}$	0	$\frac{\sqrt{3}}{8}$	0	0	$\frac{3}{20}$	0	$-\frac{\sqrt{2}}{8}$	0	0
		0	$\frac{7\sqrt{15}}{200}$	0	$\frac{3\sqrt{5}}{40}$	$\frac{3}{20}$	0	$-\frac{3\sqrt{10}}{200}$	0	$-\frac{\sqrt{5}}{10}$	0
		$\frac{9\sqrt{10}}{200}$	0	$\frac{\sqrt{30}}{200}$	0	0	$-\frac{3\sqrt{10}}{200}$	0	$-\frac{3\sqrt{5}}{50}$	0	$-\frac{\sqrt{2}}{8}$
		0	$-\frac{\sqrt{30}}{200}$	0	$-\frac{9\sqrt{10}}{200}$	$-\frac{\sqrt{2}}{8}$	0	$-\frac{3\sqrt{5}}{50}$	0	$-\frac{3\sqrt{10}}{200}$	0
		$-\frac{3\sqrt{5}}{40}$	0	$-\frac{7\sqrt{15}}{200}$	0	0	$-\frac{\sqrt{5}}{10}$	0	$-\frac{3\sqrt{10}}{200}$	0	$\frac{3}{20}$
		0	$-\frac{\sqrt{3}}{8}$	0	$\frac{3}{40}$	0	0	$-\frac{\sqrt{2}}{8}$	0	$\frac{3}{20}$	0
513	symmetry	$-\frac{y(3x^2-2y^2+3z^2)}{2}$									
	$\mathbb{M}_{3,2}^{(a)}(T_{1g})$	0	$-\frac{\sqrt{15}i}{50}$	0	$-\frac{\sqrt{5}i}{10}$	$-\frac{3i}{40}$	0	$-\frac{9\sqrt{10}i}{200}$	0	$-\frac{3\sqrt{5}i}{40}$	0
		$\frac{\sqrt{15}i}{50}$	0	$\frac{3\sqrt{5}i}{50}$	0	0	$\frac{7\sqrt{15}i}{200}$	0	$\frac{\sqrt{30}i}{200}$	0	$-\frac{\sqrt{3}i}{8}$
		0	$-\frac{3\sqrt{5}i}{50}$	0	$-\frac{\sqrt{15}i}{50}$	$-\frac{\sqrt{3}i}{8}$	0	$\frac{\sqrt{30}i}{200}$	0	$\frac{7\sqrt{15}i}{200}$	0
		$\frac{\sqrt{5}i}{10}$	0	$\frac{\sqrt{15}i}{50}$	0	0	$-\frac{3\sqrt{5}i}{40}$	0	$-\frac{9\sqrt{10}i}{200}$	0	$-\frac{3i}{40}$
		$\frac{3i}{40}$	0	$\frac{\sqrt{3}i}{8}$	0	0	$-\frac{3i}{20}$	0	$-\frac{\sqrt{2}i}{8}$	0	0
		0	$-\frac{7\sqrt{15}i}{200}$	0	$\frac{3\sqrt{5}i}{40}$	$\frac{3i}{20}$	0	$\frac{3\sqrt{10}i}{200}$	0	$-\frac{\sqrt{5}i}{10}$	0
		$\frac{9\sqrt{10}i}{200}$	0	$-\frac{\sqrt{30}i}{200}$	0	0	$-\frac{3\sqrt{10}i}{200}$	0	$\frac{3\sqrt{5}i}{50}$	0	$-\frac{\sqrt{2}i}{8}$
		0	$-\frac{\sqrt{30}i}{200}$	0	$\frac{9\sqrt{10}i}{200}$	$\frac{\sqrt{2}i}{8}$	0	$-\frac{3\sqrt{5}i}{50}$	0	$\frac{3\sqrt{10}i}{200}$	0
		$\frac{3\sqrt{5}i}{40}$	0	$-\frac{7\sqrt{15}i}{200}$	0	0	$\frac{\sqrt{5}i}{10}$	0	$-\frac{3\sqrt{10}i}{200}$	0	$-\frac{3i}{20}$
		0	$\frac{\sqrt{3}i}{8}$	0	$\frac{3i}{40}$	0	0	$\frac{\sqrt{2}i}{8}$	0	$\frac{3i}{20}$	0
514	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$									

continued ...

Table 8

No.	multipole	matrix									
	$\mathbb{M}_{3,3}^{(a)}(T_{1g})$	$-\frac{\sqrt{5}}{25}$	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	$\frac{\sqrt{5}}{10}$
515	symmetry	$\frac{\sqrt{15}x(y-z)(y+z)}{2}$									
	$\mathbb{M}_{3,1}^{(a)}(T_{2g})$	0	$\frac{1}{10}$	0	$\frac{\sqrt{3}}{10}$	$-\frac{\sqrt{15}}{40}$	0	$\frac{3\sqrt{6}}{40}$	0	$\frac{3\sqrt{3}}{40}$	0
		$\frac{1}{10}$	0	$-\frac{\sqrt{3}}{10}$	0	0	$\frac{7}{40}$	0	$-\frac{\sqrt{2}}{40}$	0	$\frac{3\sqrt{5}}{40}$
		0	$-\frac{\sqrt{3}}{10}$	0	$\frac{1}{10}$	$-\frac{3\sqrt{5}}{40}$	0	$\frac{\sqrt{2}}{40}$	0	$-\frac{7}{40}$	0
		$\frac{\sqrt{3}}{10}$	0	$\frac{1}{10}$	0	0	$-\frac{3\sqrt{3}}{40}$	0	$-\frac{3\sqrt{6}}{40}$	0	$\frac{\sqrt{15}}{40}$
		$-\frac{\sqrt{15}}{40}$	0	$-\frac{3\sqrt{5}}{40}$	0	0	$\frac{\sqrt{15}}{20}$	0	$\frac{\sqrt{30}}{40}$	0	0
		0	$\frac{7}{40}$	0	$-\frac{3\sqrt{3}}{40}$	$\frac{\sqrt{15}}{20}$	0	$-\frac{\sqrt{6}}{40}$	0	$\frac{\sqrt{3}}{10}$	0
		$\frac{3\sqrt{6}}{40}$	0	$\frac{\sqrt{2}}{40}$	0	0	$-\frac{\sqrt{6}}{40}$	0	$-\frac{\sqrt{3}}{10}$	0	$\frac{\sqrt{30}}{40}$
		0	$-\frac{\sqrt{2}}{40}$	0	$-\frac{3\sqrt{6}}{40}$	$\frac{\sqrt{30}}{40}$	0	$-\frac{\sqrt{3}}{10}$	0	$-\frac{\sqrt{6}}{40}$	0
		$\frac{3\sqrt{3}}{40}$	0	$-\frac{7}{40}$	0	0	$\frac{\sqrt{3}}{10}$	0	$-\frac{\sqrt{6}}{40}$	0	$\frac{\sqrt{15}}{20}$
		0	$\frac{3\sqrt{5}}{40}$	0	$\frac{\sqrt{15}}{40}$	0	0	$\frac{\sqrt{30}}{40}$	0	$\frac{\sqrt{15}}{20}$	0
516	symmetry	$-\frac{\sqrt{15}y(x-z)(x+z)}{2}$									

*continued ...*

Table 8

No.	multipole	matrix									
	$\mathbb{M}_{3,2}^{(a)}(T_{2g})$	0	$\frac{i}{10}$	0	$-\frac{\sqrt{3}i}{10}$	$\frac{\sqrt{15}i}{40}$	0	$\frac{3\sqrt{6}i}{40}$	0	$-\frac{3\sqrt{3}i}{40}$	0
		$-\frac{i}{10}$	0	$-\frac{\sqrt{3}i}{10}$	0	0	$-\frac{7i}{40}$	0	$-\frac{\sqrt{2}i}{40}$	0	$-\frac{3\sqrt{5}i}{40}$
		0	$\frac{\sqrt{3}i}{10}$	0	$\frac{i}{10}$	$-\frac{3\sqrt{5}i}{40}$	0	$-\frac{\sqrt{2}i}{40}$	0	$-\frac{7i}{40}$	0
		$\frac{\sqrt{3}i}{10}$	0	$-\frac{i}{10}$	0	0	$-\frac{3\sqrt{3}i}{40}$	0	$\frac{3\sqrt{6}i}{40}$	0	$\frac{\sqrt{15}i}{40}$
		$-\frac{\sqrt{15}i}{40}$	0	$\frac{3\sqrt{5}i}{40}$	0	0	$\frac{\sqrt{15}i}{20}$	0	$-\frac{\sqrt{30}i}{40}$	0	0
		0	$\frac{7i}{40}$	0	$\frac{3\sqrt{3}i}{40}$	$-\frac{\sqrt{15}i}{20}$	0	$-\frac{\sqrt{6}i}{40}$	0	$-\frac{\sqrt{3}i}{10}$	0
		$-\frac{3\sqrt{6}i}{40}$	0	$\frac{\sqrt{2}i}{40}$	0	0	$\frac{\sqrt{6}i}{40}$	0	$-\frac{\sqrt{3}i}{10}$	0	$-\frac{\sqrt{30}i}{40}$
		0	$\frac{\sqrt{2}i}{40}$	0	$-\frac{3\sqrt{6}i}{40}$	$\frac{\sqrt{30}i}{40}$	0	$\frac{\sqrt{3}i}{10}$	0	$-\frac{\sqrt{6}i}{40}$	0
		$\frac{3\sqrt{3}i}{40}$	0	$\frac{7i}{40}$	0	0	$\frac{\sqrt{3}i}{10}$	0	$\frac{\sqrt{6}i}{40}$	0	$\frac{\sqrt{15}i}{20}$
		0	$\frac{3\sqrt{5}i}{40}$	0	$-\frac{\sqrt{15}i}{40}$	0	0	$\frac{\sqrt{30}i}{40}$	0	$-\frac{\sqrt{15}i}{20}$	0
517	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$									
	$\mathbb{M}_{3,3}^{(a)}(T_{2g})$	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	$x$									

continued ...

Table 8

No.	multipole	matrix									
	$M_{1,1}^{(1,-1;a)}(T_{1g})$	$ \begin{bmatrix} 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 \end{bmatrix} $									
519	symmetry	$ \begin{matrix} y \\ \left[ \begin{array}{cccccccccc} 0 & \frac{\sqrt{30}i}{50} & 0 & 0 & \frac{\sqrt{2}i}{5} & 0 & \frac{\sqrt{5}i}{25} & 0 & 0 & 0 \\ -\frac{\sqrt{30}i}{50} & 0 & \frac{\sqrt{10}i}{25} & 0 & 0 & \frac{\sqrt{30}i}{25} & 0 & \frac{\sqrt{15}i}{25} & 0 & 0 \\ 0 & -\frac{\sqrt{10}i}{25} & 0 & \frac{\sqrt{30}i}{50} & 0 & 0 & \frac{\sqrt{15}i}{25} & 0 & \frac{\sqrt{30}i}{25} & 0 \\ 0 & 0 & -\frac{\sqrt{30}i}{50} & 0 & 0 & 0 & 0 & \frac{\sqrt{5}i}{25} & 0 & \frac{\sqrt{2}i}{5} \\ -\frac{\sqrt{2}i}{5} & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{10} & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{30}i}{25} & 0 & 0 & \frac{\sqrt{2}i}{10} & 0 & -\frac{2\sqrt{5}i}{25} & 0 & 0 & 0 \\ -\frac{\sqrt{5}i}{25} & 0 & -\frac{\sqrt{15}i}{25} & 0 & 0 & \frac{2\sqrt{5}i}{25} & 0 & -\frac{3\sqrt{10}i}{50} & 0 & 0 \\ 0 & -\frac{\sqrt{15}i}{25} & 0 & -\frac{\sqrt{5}i}{25} & 0 & 0 & \frac{3\sqrt{10}i}{50} & 0 & -\frac{2\sqrt{5}i}{25} & 0 \\ 0 & 0 & -\frac{\sqrt{30}i}{25} & 0 & 0 & 0 & 0 & \frac{2\sqrt{5}i}{25} & 0 & -\frac{\sqrt{2}i}{10} \\ 0 & 0 & 0 & -\frac{\sqrt{2}i}{5} & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{10} & 0 \end{array} \right] \end{matrix} $									
520	symmetry	$ \begin{matrix} z \\ \left[ \begin{array}{cccccccccc} 0 & \frac{\sqrt{30}i}{50} & 0 & 0 & \frac{\sqrt{2}i}{5} & 0 & \frac{\sqrt{5}i}{25} & 0 & 0 & 0 \\ -\frac{\sqrt{30}i}{50} & 0 & \frac{\sqrt{10}i}{25} & 0 & 0 & \frac{\sqrt{30}i}{25} & 0 & \frac{\sqrt{15}i}{25} & 0 & 0 \\ 0 & -\frac{\sqrt{10}i}{25} & 0 & \frac{\sqrt{30}i}{50} & 0 & 0 & \frac{\sqrt{15}i}{25} & 0 & \frac{\sqrt{30}i}{25} & 0 \\ 0 & 0 & -\frac{\sqrt{30}i}{50} & 0 & 0 & 0 & 0 & \frac{\sqrt{5}i}{25} & 0 & \frac{\sqrt{2}i}{5} \\ -\frac{\sqrt{2}i}{5} & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{10} & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{30}i}{25} & 0 & 0 & \frac{\sqrt{2}i}{10} & 0 & -\frac{2\sqrt{5}i}{25} & 0 & 0 & 0 \\ -\frac{\sqrt{5}i}{25} & 0 & -\frac{\sqrt{15}i}{25} & 0 & 0 & \frac{2\sqrt{5}i}{25} & 0 & -\frac{3\sqrt{10}i}{50} & 0 & 0 \\ 0 & -\frac{\sqrt{15}i}{25} & 0 & -\frac{\sqrt{5}i}{25} & 0 & 0 & \frac{3\sqrt{10}i}{50} & 0 & -\frac{2\sqrt{5}i}{25} & 0 \\ 0 & 0 & -\frac{\sqrt{30}i}{25} & 0 & 0 & 0 & 0 & \frac{2\sqrt{5}i}{25} & 0 & -\frac{\sqrt{2}i}{10} \\ 0 & 0 & 0 & -\frac{\sqrt{2}i}{5} & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{10} & 0 \end{array} \right] \end{matrix} $									

continued ...

Table 8

No.	multipole	matrix									
	$\mathbb{M}_{1,3}^{(1,-1;a)}(T_{1g})$	$-\frac{3\sqrt{10}}{50}$	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	$-\frac{\sqrt{10}}{10}$
521	symmetry	$\sqrt{15}xyz$									
	$\mathbb{M}_3^{(1,-1;a)}(A_{2g})$	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
522	symmetry	$\frac{x(2x^2-3y^2-3z^2)}{2}$									

continued ...

Table 8

No.	multipole	matrix									
	$M_{3,1}^{(1,-1;a)}(T_{1g})$	0	$-\frac{3\sqrt{35}}{700}$	0	$\frac{\sqrt{105}}{140}$	$\frac{\sqrt{21}}{70}$	0	$-\frac{3\sqrt{210}}{350}$	0	$\frac{\sqrt{105}}{70}$	0
		$-\frac{3\sqrt{35}}{700}$	0	$\frac{3\sqrt{105}}{700}$	0	0	$-\frac{\sqrt{35}}{50}$	0	$\frac{\sqrt{70}}{350}$	0	$\frac{\sqrt{7}}{14}$
		0	$\frac{3\sqrt{105}}{700}$	0	$-\frac{3\sqrt{35}}{700}$	$-\frac{\sqrt{7}}{14}$	0	$-\frac{\sqrt{70}}{350}$	0	$\frac{\sqrt{35}}{50}$	0
		$\frac{\sqrt{105}}{140}$	0	$-\frac{3\sqrt{35}}{700}$	0	0	$-\frac{\sqrt{105}}{70}$	0	$\frac{3\sqrt{210}}{350}$	0	$-\frac{\sqrt{21}}{70}$
		$\frac{\sqrt{21}}{70}$	0	$-\frac{\sqrt{7}}{14}$	0	0	$\frac{3\sqrt{21}}{70}$	0	$-\frac{\sqrt{42}}{28}$	0	0
		0	$-\frac{\sqrt{35}}{50}$	0	$-\frac{\sqrt{105}}{70}$	$\frac{3\sqrt{21}}{70}$	0	$-\frac{3\sqrt{210}}{700}$	0	$-\frac{\sqrt{105}}{35}$	0
		$-\frac{3\sqrt{210}}{350}$	0	$-\frac{\sqrt{70}}{350}$	0	0	$-\frac{3\sqrt{210}}{700}$	0	$-\frac{3\sqrt{105}}{175}$	0	$-\frac{\sqrt{42}}{28}$
		0	$\frac{\sqrt{70}}{350}$	0	$\frac{3\sqrt{210}}{350}$	$-\frac{\sqrt{42}}{28}$	0	$-\frac{3\sqrt{105}}{175}$	0	$-\frac{3\sqrt{210}}{700}$	0
		$\frac{\sqrt{105}}{70}$	0	$\frac{\sqrt{35}}{50}$	0	0	$-\frac{\sqrt{105}}{35}$	0	$-\frac{3\sqrt{210}}{700}$	0	$\frac{3\sqrt{21}}{70}$
		0	$\frac{\sqrt{7}}{14}$	0	$-\frac{\sqrt{21}}{70}$	0	0	$-\frac{\sqrt{42}}{28}$	0	$\frac{3\sqrt{21}}{70}$	0
523	symmetry	$-\frac{y(3x^2-2y^2+3z^2)}{2}$									
	$M_{3,2}^{(1,-1;a)}(T_{1g})$	0	$\frac{3\sqrt{35}i}{700}$	0	$\frac{\sqrt{105}i}{140}$	$\frac{\sqrt{21}i}{70}$	0	$\frac{3\sqrt{210}i}{350}$	0	$\frac{\sqrt{105}i}{70}$	0
		$-\frac{3\sqrt{35}i}{700}$	0	$-\frac{3\sqrt{105}i}{700}$	0	0	$-\frac{\sqrt{35}i}{50}$	0	$-\frac{\sqrt{70}i}{350}$	0	$\frac{\sqrt{7}i}{14}$
		0	$\frac{3\sqrt{105}i}{700}$	0	$\frac{3\sqrt{35}i}{700}$	$\frac{\sqrt{7}i}{14}$	0	$-\frac{\sqrt{70}i}{350}$	0	$-\frac{\sqrt{35}i}{50}$	0
		$-\frac{\sqrt{105}i}{140}$	0	$-\frac{3\sqrt{35}i}{700}$	0	0	$\frac{\sqrt{105}i}{70}$	0	$\frac{3\sqrt{210}i}{350}$	0	$\frac{\sqrt{21}i}{70}$
		$-\frac{\sqrt{21}i}{70}$	0	$-\frac{\sqrt{7}i}{14}$	0	0	$-\frac{3\sqrt{21}i}{70}$	0	$-\frac{\sqrt{42}i}{28}$	0	0
		0	$\frac{\sqrt{35}i}{50}$	0	$-\frac{\sqrt{105}i}{70}$	$\frac{3\sqrt{21}i}{70}$	0	$\frac{3\sqrt{210}i}{700}$	0	$-\frac{\sqrt{105}i}{35}$	0
		$-\frac{3\sqrt{210}i}{350}$	0	$\frac{\sqrt{70}i}{350}$	0	0	$-\frac{3\sqrt{210}i}{700}$	0	$\frac{3\sqrt{105}i}{175}$	0	$-\frac{\sqrt{42}i}{28}$
		0	$\frac{\sqrt{70}i}{350}$	0	$-\frac{3\sqrt{210}i}{350}$	$\frac{\sqrt{42}i}{28}$	0	$-\frac{3\sqrt{105}i}{175}$	0	$\frac{3\sqrt{210}i}{700}$	0
		$-\frac{\sqrt{105}i}{70}$	0	$\frac{\sqrt{35}i}{50}$	0	0	$\frac{\sqrt{105}i}{35}$	0	$-\frac{3\sqrt{210}i}{700}$	0	$-\frac{3\sqrt{21}i}{70}$
		0	$-\frac{\sqrt{7}i}{14}$	0	$-\frac{\sqrt{21}i}{70}$	0	0	$\frac{\sqrt{42}i}{28}$	0	$\frac{3\sqrt{21}i}{70}$	0
524	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$									

continued ...

Table 8

No.	multipole	matrix									
	$\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})$	$\frac{\sqrt{105}}{350}$	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	$\frac{\sqrt{105}}{35}$
525	symmetry	$\frac{\sqrt{15}x(y-z)(y+z)}{2}$									
	$\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})$	0	$-\frac{\sqrt{21}}{140}$	0	$-\frac{3\sqrt{7}}{140}$	$\frac{\sqrt{35}}{70}$	0	$-\frac{3\sqrt{14}}{70}$	0	$-\frac{3\sqrt{7}}{70}$	0
		$-\frac{\sqrt{21}}{140}$	0	$\frac{3\sqrt{7}}{140}$	0	0	$-\frac{\sqrt{21}}{30}$	0	$\frac{\sqrt{42}}{210}$	0	$-\frac{\sqrt{105}}{70}$
		0	$\frac{3\sqrt{7}}{140}$	0	$-\frac{\sqrt{21}}{140}$	$\frac{\sqrt{105}}{70}$	0	$-\frac{\sqrt{42}}{210}$	0	$\frac{\sqrt{21}}{30}$	0
		$-\frac{3\sqrt{7}}{140}$	0	$-\frac{\sqrt{21}}{140}$	0	0	$\frac{3\sqrt{7}}{70}$	0	$\frac{3\sqrt{14}}{70}$	0	$-\frac{\sqrt{35}}{70}$
		$\frac{\sqrt{35}}{70}$	0	$\frac{\sqrt{105}}{70}$	0	0	$\frac{3\sqrt{35}}{70}$	0	$\frac{3\sqrt{70}}{140}$	0	0
		0	$-\frac{\sqrt{21}}{30}$	0	$\frac{3\sqrt{7}}{70}$	$\frac{3\sqrt{35}}{70}$	0	$-\frac{3\sqrt{14}}{140}$	0	$\frac{3\sqrt{7}}{35}$	0
		$-\frac{3\sqrt{14}}{70}$	0	$-\frac{\sqrt{42}}{210}$	0	0	$-\frac{3\sqrt{14}}{140}$	0	$-\frac{3\sqrt{7}}{35}$	0	$\frac{3\sqrt{70}}{140}$
		0	$\frac{\sqrt{42}}{210}$	0	$\frac{3\sqrt{14}}{70}$	$\frac{3\sqrt{70}}{140}$	0	$-\frac{3\sqrt{7}}{35}$	0	$-\frac{3\sqrt{14}}{140}$	0
		$-\frac{3\sqrt{7}}{70}$	0	$\frac{\sqrt{21}}{30}$	0	0	$\frac{3\sqrt{7}}{35}$	0	$-\frac{3\sqrt{14}}{140}$	0	$\frac{3\sqrt{35}}{70}$
		0	$-\frac{\sqrt{105}}{70}$	0	$-\frac{\sqrt{35}}{70}$	0	0	$\frac{3\sqrt{70}}{140}$	0	$\frac{3\sqrt{35}}{70}$	0
526	symmetry	$-\frac{\sqrt{15}y(x-z)(x+z)}{2}$									

*continued ...*

Table 8

No.	multipole	matrix									
	$M_{3,2}^{(1,-1;a)}(T_{2g})$	0	$-\frac{\sqrt{21}i}{140}$	0	$\frac{3\sqrt{7}i}{140}$	$-\frac{\sqrt{35}i}{70}$	0	$-\frac{3\sqrt{14}i}{70}$	0	$\frac{3\sqrt{7}i}{70}$	0
		$\frac{\sqrt{21}i}{140}$	0	$\frac{3\sqrt{7}i}{140}$	0	0	$\frac{\sqrt{21}i}{30}$	0	$\frac{\sqrt{42}i}{210}$	0	$\frac{\sqrt{105}i}{70}$
		0	$-\frac{3\sqrt{7}i}{140}$	0	$-\frac{\sqrt{21}i}{140}$	$\frac{\sqrt{105}i}{70}$	0	$\frac{\sqrt{42}i}{210}$	0	$\frac{\sqrt{21}i}{30}$	0
		$-\frac{3\sqrt{7}i}{140}$	0	$\frac{\sqrt{21}i}{140}$	0	0	$\frac{3\sqrt{7}i}{70}$	0	$-\frac{3\sqrt{14}i}{70}$	0	$-\frac{\sqrt{35}i}{70}$
		$\frac{\sqrt{35}i}{70}$	0	$-\frac{\sqrt{105}i}{70}$	0	0	$\frac{3\sqrt{35}i}{70}$	0	$-\frac{3\sqrt{70}i}{140}$	0	0
		0	$-\frac{\sqrt{21}i}{30}$	0	$-\frac{3\sqrt{7}i}{70}$	$-\frac{3\sqrt{35}i}{70}$	0	$-\frac{3\sqrt{14}i}{140}$	0	$-\frac{3\sqrt{7}i}{35}$	0
		$\frac{3\sqrt{14}i}{70}$	0	$-\frac{\sqrt{42}i}{210}$	0	0	$\frac{3\sqrt{14}i}{140}$	0	$-\frac{3\sqrt{7}i}{35}$	0	$-\frac{3\sqrt{70}i}{140}$
		0	$-\frac{\sqrt{42}i}{210}$	0	$\frac{3\sqrt{14}i}{70}$	$\frac{3\sqrt{70}i}{140}$	0	$\frac{3\sqrt{7}i}{35}$	0	$-\frac{3\sqrt{14}i}{140}$	0
		$-\frac{3\sqrt{7}i}{70}$	0	$-\frac{\sqrt{21}i}{30}$	0	0	$\frac{3\sqrt{7}i}{35}$	0	$\frac{3\sqrt{14}i}{140}$	0	$\frac{3\sqrt{35}i}{70}$
		0	$-\frac{\sqrt{105}i}{70}$	0	$\frac{\sqrt{35}i}{70}$	0	0	$\frac{3\sqrt{70}i}{140}$	0	$-\frac{3\sqrt{35}i}{70}$	0
527	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$									
	$M_{3,3}^{(1,-1;a)}(T_{2g})$	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	$\frac{3\sqrt{35}xyz(x-y)(x+y)}{2}$									

continued ...



Table 8

No.	multipole	matrix
	$\mathbb{M}_{5,1}^{(1,-1;a)}(E_g)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{i}{2} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{i}{2} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{i}{2} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{i}{2} & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
529	symmetry	$\frac{\sqrt{105}xyz(x^2+y^2-2z^2)}{2}$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{12} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}i}{12} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{12} & 0 & 0 & 0 & \frac{\sqrt{30}i}{12} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{12} & 0 & 0 & 0 & -\frac{\sqrt{6}i}{12} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}i}{12} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{12} & 0 & 0 & 0 \end{bmatrix}$
530	symmetry	$\frac{x(8x^4-40x^2y^2-40x^2z^2+15y^4+30y^2z^2+15z^4)}{8}$

*continued ...*

Table 8

No.	multipole	matrix									
	$\mathbb{M}_{5,1}^{(1,-1;a)}(T_{1g}, 1)$	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	$\frac{\sqrt{35}}{112}$	0	$-\frac{\sqrt{70}}{48}$	0	$\frac{3\sqrt{7}}{16}$
		0	0	0	0	$\frac{\sqrt{35}}{112}$	0	$-\frac{5\sqrt{14}}{112}$	0	$\frac{5\sqrt{7}}{48}$	0
		0	0	0	0	0	$-\frac{5\sqrt{14}}{112}$	0	$\frac{5\sqrt{7}}{56}$	0	$-\frac{\sqrt{70}}{48}$
		0	0	0	0	$-\frac{\sqrt{70}}{48}$	0	$\frac{5\sqrt{7}}{56}$	0	$-\frac{5\sqrt{14}}{112}$	0
		0	0	0	0	0	$\frac{5\sqrt{7}}{48}$	0	$-\frac{5\sqrt{14}}{112}$	0	$\frac{\sqrt{35}}{112}$
		0	0	0	0	$\frac{3\sqrt{7}}{16}$	0	$-\frac{\sqrt{70}}{48}$	0	$\frac{\sqrt{35}}{112}$	0
531	symmetry	$\frac{y(15x^4-40x^2y^2+30x^2z^2+8y^4-40y^2z^2+15z^4)}{8}$									
	$\mathbb{M}_{5,2}^{(1,-1;a)}(T_{1g}, 1)$	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	$-\frac{\sqrt{35}i}{112}$	0	$-\frac{\sqrt{70}i}{48}$	0	$-\frac{3\sqrt{7}i}{16}$
		0	0	0	0	$\frac{\sqrt{35}i}{112}$	0	$\frac{5\sqrt{14}i}{112}$	0	$\frac{5\sqrt{7}i}{48}$	0
		0	0	0	0	0	$-\frac{5\sqrt{14}i}{112}$	0	$-\frac{5\sqrt{7}i}{56}$	0	$-\frac{\sqrt{70}i}{48}$
		0	0	0	0	$\frac{\sqrt{70}i}{48}$	0	$\frac{5\sqrt{7}i}{56}$	0	$\frac{5\sqrt{14}i}{112}$	0
		0	0	0	0	0	$-\frac{5\sqrt{7}i}{48}$	0	$-\frac{5\sqrt{14}i}{112}$	0	$-\frac{\sqrt{35}i}{112}$
		0	0	0	0	$\frac{3\sqrt{7}i}{16}$	0	$\frac{\sqrt{70}i}{48}$	0	$\frac{\sqrt{35}i}{112}$	0
532	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
	$\mathbb{M}_{5,3}^{(1,-1;a)}(T_{1g}, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{42} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{5\sqrt{7}}{42} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{5\sqrt{7}}{21} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{5\sqrt{7}}{21} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{5\sqrt{7}}{42} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}}{42} & 0 \end{bmatrix}$
533	symmetry	$\frac{3\sqrt{35}x(y^2-2yz-z^2)(y^2+2yz-z^2)}{8}$ $\mathbb{M}_{5,1}^{(1,-1;a)}(T_{1g}, 2)$ $\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{1}{16} & 0 & \frac{3\sqrt{2}}{16} & 0 & \frac{\sqrt{5}}{16} & 0 \\ 0 & 0 & 0 & 0 & \frac{1}{16} & 0 & -\frac{\sqrt{10}}{16} & 0 & -\frac{3\sqrt{5}}{16} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}}{16} & 0 & \frac{\sqrt{5}}{8} & 0 & \frac{3\sqrt{2}}{16} & 0 \\ 0 & 0 & 0 & 0 & \frac{3\sqrt{2}}{16} & 0 & \frac{\sqrt{5}}{8} & 0 & -\frac{\sqrt{10}}{16} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{3\sqrt{5}}{16} & 0 & -\frac{\sqrt{10}}{16} & 0 & \frac{1}{16} & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{5}}{16} & 0 & \frac{3\sqrt{2}}{16} & 0 & \frac{1}{16} & 0 & 0 \end{bmatrix}$
534	symmetry	$\frac{3\sqrt{35}y(x^2-2xz-z^2)(x^2+2xz-z^2)}{8}$

*continued ...*

Table 8

No.	multipole	matrix
	$\mathbb{M}_{5,2}^{(1,-1;a)}(T_{1g}, 2)$	$ \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 & -\frac{i}{16} & 0 & \frac{3\sqrt{2}i}{16} & 0 & -\frac{\sqrt{5}i}{16} \\ 0 & 0 & 0 & 0 & \frac{i}{16} & 0 & \frac{\sqrt{10}i}{16} & 0 & -\frac{3\sqrt{5}i}{16} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{10}i}{16} & 0 & -\frac{\sqrt{5}i}{8} & 0 & \frac{3\sqrt{2}i}{16} \\ 0 & 0 & 0 & 0 & -\frac{3\sqrt{2}i}{16} & 0 & \frac{\sqrt{5}i}{8} & 0 & \frac{\sqrt{10}i}{16} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{3\sqrt{5}i}{16} & 0 & -\frac{\sqrt{10}i}{16} & 0 & -\frac{i}{16} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{5}i}{16} & 0 & -\frac{3\sqrt{2}i}{16} & 0 & \frac{i}{16} & 0 \end{bmatrix} $
535	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 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{1}{2} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{1}{2} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{1}{2} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{1}{2} & 0 & 0 & 0 & 0 \end{bmatrix} $
536	symmetry	$ \frac{\sqrt{105}x(y-z)(y+z)(2x^2-y^2-z^2)}{4} $

continued ...

Table 8

No.	multipole	matrix
	$M_{5,1}^{(1,-1;a)}(T_{2g})$	$ \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 & \frac{\sqrt{3}}{24} & 0 & -\frac{\sqrt{6}}{24} & 0 & -\frac{\sqrt{15}}{8} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{24} & 0 & -\frac{\sqrt{30}}{24} & 0 & \frac{\sqrt{15}}{24} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{24} & 0 & \frac{\sqrt{15}}{12} & 0 & -\frac{\sqrt{6}}{24} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{24} & 0 & \frac{\sqrt{15}}{12} & 0 & -\frac{\sqrt{30}}{24} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{24} & 0 & -\frac{\sqrt{30}}{24} & 0 & \frac{\sqrt{3}}{24} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{8} & 0 & -\frac{\sqrt{6}}{24} & 0 & \frac{\sqrt{3}}{24} & 0 \end{bmatrix} $
537	symmetry	$ \frac{\sqrt{105}y(x-z)(x+z)(x^2-2y^2+z^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 & \frac{\sqrt{3}i}{24} & 0 & \frac{\sqrt{6}i}{24} & 0 & -\frac{\sqrt{15}i}{8} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{24} & 0 & -\frac{\sqrt{30}i}{24} & 0 & -\frac{\sqrt{15}i}{24} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{30}i}{24} & 0 & \frac{\sqrt{15}i}{12} & 0 & \frac{\sqrt{6}i}{24} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{24} & 0 & -\frac{\sqrt{15}i}{12} & 0 & -\frac{\sqrt{30}i}{24} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{24} & 0 & \frac{\sqrt{30}i}{24} & 0 & \frac{\sqrt{3}i}{24} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{8} & 0 & -\frac{\sqrt{6}i}{24} & 0 & -\frac{\sqrt{3}i}{24} & 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
	$M_{5,3}^{(1,-1;a)}(T_{2g})$	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	$x$									
	$M_{1,1}^{(1,1;a)}(T_{1g})$	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
540	symmetry	$y$									

*continued ...*

Table 8

No.	multipole	matrix									
	$M_{1,2}^{(1,1;a)}(T_{1g})$	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
541	symmetry	$z$									
	$M_{1,3}^{(1,1;a)}(T_{1g})$	$\frac{3\sqrt{70}}{50}$	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	$\frac{\sqrt{70}}{35}$
542	symmetry	$\sqrt{15}xyz$									

*continued ...*

Table 8

No.	multipole	matrix									
	$\mathbb{M}_3^{(1,1;a)}(A_{2g})$	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
543	symmetry	$\frac{x(2x^2-3y^2-3z^2)}{2}$									
	$\mathbb{M}_{3,1}^{(1,1;a)}(T_{1g})$	0	$\frac{3\sqrt{105}}{175}$	0	$-\frac{3\sqrt{35}}{35}$	$\frac{9\sqrt{7}}{560}$	0	$-\frac{27\sqrt{70}}{2800}$	0	$\frac{9\sqrt{35}}{560}$	0
		$\frac{3\sqrt{105}}{175}$	0	$-\frac{9\sqrt{35}}{175}$	0	0	$-\frac{3\sqrt{105}}{400}$	0	$\frac{3\sqrt{210}}{2800}$	0	$\frac{3\sqrt{21}}{112}$
		0	$-\frac{9\sqrt{35}}{175}$	0	$\frac{3\sqrt{105}}{175}$	$-\frac{3\sqrt{21}}{112}$	0	$-\frac{3\sqrt{210}}{2800}$	0	$\frac{3\sqrt{105}}{400}$	0
		$-\frac{3\sqrt{35}}{35}$	0	$\frac{3\sqrt{105}}{175}$	0	0	$-\frac{9\sqrt{35}}{560}$	0	$\frac{27\sqrt{70}}{2800}$	0	$-\frac{9\sqrt{7}}{560}$
		$\frac{9\sqrt{7}}{560}$	0	$-\frac{3\sqrt{21}}{112}$	0	0	$-\frac{\sqrt{7}}{70}$	0	$\frac{\sqrt{14}}{84}$	0	0
		0	$-\frac{3\sqrt{105}}{400}$	0	$-\frac{9\sqrt{35}}{560}$	$-\frac{\sqrt{7}}{70}$	0	$\frac{\sqrt{70}}{700}$	0	$\frac{\sqrt{35}}{105}$	0
		$-\frac{27\sqrt{70}}{2800}$	0	$-\frac{3\sqrt{210}}{2800}$	0	0	$\frac{\sqrt{70}}{700}$	0	$\frac{\sqrt{35}}{175}$	0	$\frac{\sqrt{14}}{84}$
		0	$\frac{3\sqrt{210}}{2800}$	0	$\frac{27\sqrt{70}}{2800}$	$\frac{\sqrt{14}}{84}$	0	$\frac{\sqrt{35}}{175}$	0	$\frac{\sqrt{70}}{700}$	0
		$\frac{9\sqrt{35}}{560}$	0	$\frac{3\sqrt{105}}{400}$	0	0	$\frac{\sqrt{35}}{105}$	0	$\frac{\sqrt{70}}{700}$	0	$-\frac{\sqrt{7}}{70}$
		0	$\frac{3\sqrt{21}}{112}$	0	$-\frac{9\sqrt{7}}{560}$	0	0	$\frac{\sqrt{14}}{84}$	0	$-\frac{\sqrt{7}}{70}$	0
544	symmetry	$-\frac{y(3x^2-2y^2+3z^2)}{2}$									

continued ...



Table 8

No.	multipole	matrix									
	$\mathbb{M}_{3,2}^{(1,1;a)}(T_{1g})$	0	$-\frac{3\sqrt{105}i}{175}$	0	$-\frac{3\sqrt{35}i}{35}$	$\frac{9\sqrt{7}i}{560}$	0	$\frac{27\sqrt{70}i}{2800}$	0	$\frac{9\sqrt{35}i}{560}$	0
		$\frac{3\sqrt{105}i}{175}$	0	$\frac{9\sqrt{35}i}{175}$	0	0	$-\frac{3\sqrt{105}i}{400}$	0	$-\frac{3\sqrt{210}i}{2800}$	0	$\frac{3\sqrt{21}i}{112}$
		0	$-\frac{9\sqrt{35}i}{175}$	0	$-\frac{3\sqrt{105}i}{175}$	$\frac{3\sqrt{21}i}{112}$	0	$-\frac{3\sqrt{210}i}{2800}$	0	$-\frac{3\sqrt{105}i}{400}$	0
		$\frac{3\sqrt{35}i}{35}$	0	$\frac{3\sqrt{105}i}{175}$	0	0	$\frac{9\sqrt{35}i}{560}$	0	$\frac{27\sqrt{70}i}{2800}$	0	$\frac{9\sqrt{7}i}{560}$
		$-\frac{9\sqrt{7}i}{560}$	0	$-\frac{3\sqrt{21}i}{112}$	0	0	$\frac{\sqrt{7}i}{70}$	0	$\frac{\sqrt{14}i}{84}$	0	0
		0	$\frac{3\sqrt{105}i}{400}$	0	$-\frac{9\sqrt{35}i}{560}$	$-\frac{\sqrt{7}i}{70}$	0	$-\frac{\sqrt{70}i}{700}$	0	$\frac{\sqrt{35}i}{105}$	0
		$-\frac{27\sqrt{70}i}{2800}$	0	$\frac{3\sqrt{210}i}{2800}$	0	0	$\frac{\sqrt{70}i}{700}$	0	$-\frac{\sqrt{35}i}{175}$	0	$\frac{\sqrt{14}i}{84}$
		0	$\frac{3\sqrt{210}i}{2800}$	0	$-\frac{27\sqrt{70}i}{2800}$	$-\frac{\sqrt{14}i}{84}$	0	$\frac{\sqrt{35}i}{175}$	0	$-\frac{\sqrt{70}i}{700}$	0
		$-\frac{9\sqrt{35}i}{560}$	0	$\frac{3\sqrt{105}i}{400}$	0	0	$-\frac{\sqrt{35}i}{105}$	0	$\frac{\sqrt{70}i}{700}$	0	$\frac{\sqrt{7}i}{70}$
		0	$-\frac{3\sqrt{21}i}{112}$	0	$-\frac{9\sqrt{7}i}{560}$	0	0	$-\frac{\sqrt{14}i}{84}$	0	$-\frac{\sqrt{7}i}{70}$	0
545	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$									
	$\mathbb{M}_{3,3}^{(1,1;a)}(T_{1g})$	$-\frac{6\sqrt{35}}{175}$	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	$-\frac{\sqrt{35}}{105}$
546	symmetry	$\frac{\sqrt{15}x(y-z)(y+z)}{2}$									

continued ...

Table 8

No.	multipole	matrix									
	$\mathbb{M}_{3,1}^{(1,1;a)}(T_{2g})$	0	$\frac{3\sqrt{7}}{35}$	0	$\frac{3\sqrt{21}}{35}$	$\frac{3\sqrt{105}}{560}$	0	$-\frac{9\sqrt{42}}{560}$	0	$-\frac{9\sqrt{21}}{560}$	0
		$\frac{3\sqrt{7}}{35}$	0	$-\frac{3\sqrt{21}}{35}$	0	0	$-\frac{3\sqrt{7}}{80}$	0	$\frac{3\sqrt{14}}{560}$	0	$-\frac{9\sqrt{35}}{560}$
		0	$-\frac{3\sqrt{21}}{35}$	0	$\frac{3\sqrt{7}}{35}$	$\frac{9\sqrt{35}}{560}$	0	$-\frac{3\sqrt{14}}{560}$	0	$\frac{3\sqrt{7}}{80}$	0
		$\frac{3\sqrt{21}}{35}$	0	$\frac{3\sqrt{7}}{35}$	0	0	$\frac{9\sqrt{21}}{560}$	0	$\frac{9\sqrt{42}}{560}$	0	$-\frac{3\sqrt{105}}{560}$
		$\frac{3\sqrt{105}}{560}$	0	$\frac{9\sqrt{35}}{560}$	0	0	$-\frac{\sqrt{105}}{210}$	0	$-\frac{\sqrt{210}}{420}$	0	0
		0	$-\frac{3\sqrt{7}}{80}$	0	$\frac{9\sqrt{21}}{560}$	$-\frac{\sqrt{105}}{210}$	0	$\frac{\sqrt{42}}{420}$	0	$-\frac{\sqrt{21}}{105}$	0
		$-\frac{9\sqrt{42}}{560}$	0	$-\frac{3\sqrt{14}}{560}$	0	0	$\frac{\sqrt{42}}{420}$	0	$\frac{\sqrt{21}}{105}$	0	$-\frac{\sqrt{210}}{420}$
		0	$\frac{3\sqrt{14}}{560}$	0	$\frac{9\sqrt{42}}{560}$	$-\frac{\sqrt{210}}{420}$	0	$\frac{\sqrt{21}}{105}$	0	$\frac{\sqrt{42}}{420}$	0
		$-\frac{9\sqrt{21}}{560}$	0	$\frac{3\sqrt{7}}{80}$	0	0	$-\frac{\sqrt{21}}{105}$	0	$\frac{\sqrt{42}}{420}$	0	$-\frac{\sqrt{105}}{210}$
		0	$-\frac{9\sqrt{35}}{560}$	0	$-\frac{3\sqrt{105}}{560}$	0	0	$-\frac{\sqrt{210}}{420}$	0	$-\frac{\sqrt{105}}{210}$	0
547	symmetry	$-\frac{\sqrt{15}y(x-z)(x+z)}{2}$									
	$\mathbb{M}_{3,2}^{(1,1;a)}(T_{2g})$	0	$\frac{3\sqrt{7}i}{35}$	0	$-\frac{3\sqrt{21}i}{35}$	$-\frac{3\sqrt{105}i}{560}$	0	$-\frac{9\sqrt{42}i}{560}$	0	$\frac{9\sqrt{21}i}{560}$	0
		$-\frac{3\sqrt{7}i}{35}$	0	$-\frac{3\sqrt{21}i}{35}$	0	0	$\frac{3\sqrt{7}i}{80}$	0	$\frac{3\sqrt{14}i}{560}$	0	$\frac{9\sqrt{35}i}{560}$
		0	$\frac{3\sqrt{21}i}{35}$	0	$\frac{3\sqrt{7}i}{35}$	$\frac{9\sqrt{35}i}{560}$	0	$\frac{3\sqrt{14}i}{560}$	0	$\frac{3\sqrt{7}i}{80}$	0
		$\frac{3\sqrt{21}i}{35}$	0	$-\frac{3\sqrt{7}i}{35}$	0	0	$\frac{9\sqrt{21}i}{560}$	0	$-\frac{9\sqrt{42}i}{560}$	0	$-\frac{3\sqrt{105}i}{560}$
		$\frac{3\sqrt{105}i}{560}$	0	$-\frac{9\sqrt{35}i}{560}$	0	0	$-\frac{\sqrt{105}i}{210}$	0	$\frac{\sqrt{210}i}{420}$	0	0
		0	$-\frac{3\sqrt{7}i}{80}$	0	$-\frac{9\sqrt{21}i}{560}$	$\frac{\sqrt{105}i}{210}$	0	$\frac{\sqrt{42}i}{420}$	0	$\frac{\sqrt{21}i}{105}$	0
		$\frac{9\sqrt{42}i}{560}$	0	$-\frac{3\sqrt{14}i}{560}$	0	0	$-\frac{\sqrt{42}i}{420}$	0	$\frac{\sqrt{21}i}{105}$	0	$\frac{\sqrt{210}i}{420}$
		0	$-\frac{3\sqrt{14}i}{560}$	0	$\frac{9\sqrt{42}i}{560}$	$-\frac{\sqrt{210}i}{420}$	0	$-\frac{\sqrt{21}i}{105}$	0	$\frac{\sqrt{42}i}{420}$	0
		$-\frac{9\sqrt{21}i}{560}$	0	$-\frac{3\sqrt{7}i}{80}$	0	0	$-\frac{\sqrt{21}i}{105}$	0	$-\frac{\sqrt{42}i}{420}$	0	$-\frac{\sqrt{105}i}{210}$
		0	$-\frac{9\sqrt{35}i}{560}$	0	$\frac{3\sqrt{105}i}{560}$	0	0	$-\frac{\sqrt{210}i}{420}$	0	$\frac{\sqrt{105}i}{210}$	0
548	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$									

continued ...

Table 8

No.	multipole	matrix									
$\mathbb{M}_{3,3}^{(1,1;a)}(T_{2g})$		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	$x$														
$\mathbb{Q}_{1,1}^{(a)}(T_{1u})$		$\begin{bmatrix} -\frac{\sqrt{5}}{10} & 0 & \frac{\sqrt{2}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{3}}{10} & 0 & \frac{\sqrt{6}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{6}}{20} & 0 & \frac{\sqrt{3}}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{2}}{20} & 0 & \frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{5}}{70} & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}}{28} & 0 & \frac{\sqrt{2}}{28} & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{5}}{70} & 0 & -\frac{\sqrt{2}}{35} & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{28} & 0 & \frac{\sqrt{6}}{28} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{2}}{35} & 0 & -\frac{3}{70} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{14} & 0 & \frac{\sqrt{3}}{14} & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{3}{70} & 0 & -\frac{\sqrt{2}}{35} & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{14} & 0 & \frac{\sqrt{5}}{14} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{2}}{35} & 0 & -\frac{\sqrt{5}}{70} & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{28} & 0 & \frac{\sqrt{30}}{28} & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{70} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{28} & 0 & \frac{\sqrt{42}}{28} & 0 \end{bmatrix}$														

continued ...

Table 9

No.	multipole	matrix
550	symmetry	$y$ $\begin{bmatrix} -\frac{\sqrt{5}i}{10} & 0 & -\frac{\sqrt{2}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{3}i}{10} & 0 & -\frac{\sqrt{6}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{6}i}{20} & 0 & -\frac{\sqrt{3}i}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{2}i}{20} & 0 & -\frac{\sqrt{5}i}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{5}i}{70} & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}i}{28} & 0 & -\frac{\sqrt{2}i}{28} & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{5}i}{70} & 0 & \frac{\sqrt{2}i}{35} & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}i}{28} & 0 & -\frac{\sqrt{6}i}{28} & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{2}i}{35} & 0 & \frac{3i}{70} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{14} & 0 & -\frac{\sqrt{3}i}{14} & 0 & 0 & 0 \\ 0 & 0 & -\frac{3i}{70} & 0 & \frac{\sqrt{2}i}{35} & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{14} & 0 & -\frac{\sqrt{5}i}{14} & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{2}i}{35} & 0 & \frac{\sqrt{5}i}{70} & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{28} & 0 & -\frac{\sqrt{30}i}{28} & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{70} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{28} & 0 & -\frac{\sqrt{42}i}{28} \end{bmatrix}$
551	symmetry	$z$ $\begin{bmatrix} 0 & \frac{1}{5} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{6}}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{6}}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{1}{5} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{1}{14} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{14} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{3}{70} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{14} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{1}{70} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{7} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{1}{70} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{7} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{3}{70} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{14} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{1}{14} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{14} & 0 \end{bmatrix}$
552	symmetry	$\sqrt{15}xyz$

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{Q}_3^{(a)}(A_{2u})$	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
553	symmetry	$\frac{x(2x^2-3y^2-3z^2)}{2}$													
	$\mathbb{Q}_{3,1}^{(a)}(T_{1u})$	$-\frac{3\sqrt{105}}{560}$	0	$\frac{9\sqrt{42}}{560}$	0	$-\frac{3\sqrt{21}}{112}$	0	0	$-\frac{\sqrt{70}}{112}$	0	$\frac{\sqrt{14}}{56}$	0	$-\frac{\sqrt{210}}{336}$	0	0
		0	$\frac{3\sqrt{7}}{80}$	0	$-\frac{3\sqrt{14}}{560}$	0	$-\frac{3\sqrt{35}}{112}$	$-\frac{\sqrt{30}}{48}$	0	0	0	$\frac{\sqrt{42}}{112}$	0	$-\frac{\sqrt{210}}{168}$	0
		$\frac{3\sqrt{35}}{112}$	0	$\frac{3\sqrt{14}}{560}$	0	$-\frac{3\sqrt{7}}{80}$	0	0	$-\frac{\sqrt{210}}{168}$	0	$\frac{\sqrt{42}}{112}$	0	0	0	$-\frac{\sqrt{30}}{48}$
		0	$\frac{3\sqrt{21}}{112}$	0	$-\frac{9\sqrt{42}}{560}$	0	$\frac{3\sqrt{105}}{560}$	0	0	$-\frac{\sqrt{210}}{336}$	0	$\frac{\sqrt{14}}{56}$	0	$-\frac{\sqrt{70}}{112}$	0
		0	$-\frac{\sqrt{105}}{140}$	0	$\frac{\sqrt{210}}{168}$	0	0	$-\frac{\sqrt{2}}{16}$	0	$\frac{\sqrt{42}}{56}$	0	$-\frac{\sqrt{70}}{112}$	0	0	0
		$-\frac{\sqrt{105}}{140}$	0	$\frac{\sqrt{42}}{280}$	0	$\frac{\sqrt{21}}{42}$	0	0	$\frac{\sqrt{70}}{112}$	0	$\frac{\sqrt{14}}{56}$	0	$-\frac{\sqrt{210}}{112}$	0	0
		0	$\frac{\sqrt{42}}{280}$	0	$\frac{\sqrt{21}}{70}$	0	$\frac{\sqrt{210}}{168}$	$\frac{\sqrt{5}}{16}$	0	$\frac{\sqrt{105}}{112}$	0	$-\frac{\sqrt{7}}{112}$	0	$-\frac{3\sqrt{35}}{112}$	0
		$\frac{\sqrt{210}}{168}$	0	$\frac{\sqrt{21}}{70}$	0	$\frac{\sqrt{42}}{280}$	0	0	$\frac{3\sqrt{35}}{112}$	0	$\frac{\sqrt{7}}{112}$	0	$-\frac{\sqrt{105}}{112}$	0	$-\frac{\sqrt{5}}{16}$
		0	$\frac{\sqrt{21}}{42}$	0	$\frac{\sqrt{42}}{280}$	0	$-\frac{\sqrt{105}}{140}$	0	0	$\frac{\sqrt{210}}{112}$	0	$-\frac{\sqrt{14}}{56}$	0	$-\frac{\sqrt{70}}{112}$	0
		0	0	$\frac{\sqrt{210}}{168}$	0	$-\frac{\sqrt{105}}{140}$	0	0	0	0	$\frac{\sqrt{70}}{112}$	0	$-\frac{\sqrt{42}}{56}$	0	$\frac{\sqrt{2}}{16}$
554	symmetry	$-\frac{y(3x^2-2y^2+3z^2)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
554	$\mathbb{Q}_{3,2}^{(a)}(T_{1u})$	$-\frac{3\sqrt{105}i}{560}$	0	$-\frac{9\sqrt{42}i}{560}$	0	$-\frac{3\sqrt{21}i}{112}$	0	0	$-\frac{\sqrt{70}i}{112}$	0	$-\frac{\sqrt{14}i}{56}$	0	$-\frac{\sqrt{210}i}{336}$	0	0
		0	$\frac{3\sqrt{7}i}{80}$	0	$\frac{3\sqrt{14}i}{560}$	0	$-\frac{3\sqrt{35}i}{112}$	$\frac{\sqrt{30}i}{48}$	0	0	0	$-\frac{\sqrt{42}i}{112}$	0	$-\frac{\sqrt{210}i}{168}$	0
		$-\frac{3\sqrt{35}i}{112}$	0	$\frac{3\sqrt{14}i}{560}$	0	$\frac{3\sqrt{7}i}{80}$	0	0	$\frac{\sqrt{210}i}{168}$	0	$\frac{\sqrt{42}i}{112}$	0	0	0	$-\frac{\sqrt{30}i}{48}$
		0	$-\frac{3\sqrt{21}i}{112}$	0	$-\frac{9\sqrt{42}i}{560}$	0	$-\frac{3\sqrt{105}i}{560}$	0	0	$\frac{\sqrt{210}i}{336}$	0	$\frac{\sqrt{14}i}{56}$	0	$\frac{\sqrt{70}i}{112}$	0
		0	$\frac{\sqrt{105}i}{140}$	0	$\frac{\sqrt{210}i}{168}$	0	0	$-\frac{\sqrt{2}i}{16}$	0	$-\frac{\sqrt{42}i}{56}$	0	$-\frac{\sqrt{70}i}{112}$	0	0	0
		$-\frac{\sqrt{105}i}{140}$	0	$-\frac{\sqrt{42}i}{280}$	0	$\frac{\sqrt{21}i}{42}$	0	0	$\frac{\sqrt{70}i}{112}$	0	$-\frac{\sqrt{14}i}{56}$	0	$-\frac{\sqrt{210}i}{112}$	0	0
		0	$\frac{\sqrt{42}i}{280}$	0	$-\frac{\sqrt{21}i}{70}$	0	$\frac{\sqrt{210}i}{168}$	$-\frac{\sqrt{5}i}{16}$	0	$\frac{\sqrt{105}i}{112}$	0	$\frac{\sqrt{7}i}{112}$	0	$-\frac{3\sqrt{35}i}{112}$	0
		$-\frac{\sqrt{210}i}{168}$	0	$\frac{\sqrt{21}i}{70}$	0	$-\frac{\sqrt{42}i}{280}$	0	0	$-\frac{3\sqrt{35}i}{112}$	0	$\frac{\sqrt{7}i}{112}$	0	$\frac{\sqrt{105}i}{112}$	0	$-\frac{\sqrt{5}i}{16}$
		0	$-\frac{\sqrt{21}i}{42}$	0	$\frac{\sqrt{42}i}{280}$	0	$\frac{\sqrt{105}i}{140}$	0	0	$-\frac{\sqrt{210}i}{112}$	0	$-\frac{\sqrt{14}i}{56}$	0	$\frac{\sqrt{70}i}{112}$	0
		0	0	$-\frac{\sqrt{210}i}{168}$	0	$-\frac{\sqrt{105}i}{140}$	0	0	0	0	$-\frac{\sqrt{70}i}{112}$	0	$-\frac{\sqrt{42}i}{56}$	0	$-\frac{\sqrt{2}i}{16}$
555	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$													
555	$\mathbb{Q}_{3,3}^{(a)}(T_{1u})$	$\begin{bmatrix} 0 & -\frac{3\sqrt{21}}{70} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{210}}{84} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{3\sqrt{14}}{70} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}}{84} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{3\sqrt{14}}{70} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}}{84} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{3\sqrt{21}}{70} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{210}}{84} & 0 & 0 \\ \frac{\sqrt{21}}{42} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}}{14} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{21}}{30} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{2\sqrt{21}}{105} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{14} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{2\sqrt{21}}{105} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{14} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{21}}{30} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{21}}{42} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}}{14} & 0 \end{bmatrix}$													
556	symmetry	$\frac{\sqrt{15}x(y-z)(y+z)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{Q}_{3,1}^{(a)}(T_{2u})$	$-\frac{3\sqrt{7}}{112}$	0	$\frac{9\sqrt{70}}{560}$	0	$\frac{9\sqrt{35}}{560}$	0	0	$-\frac{5\sqrt{42}}{336}$	0	$\frac{\sqrt{210}}{168}$	0	$\frac{\sqrt{14}}{112}$	0	0
		0	$\frac{\sqrt{105}}{80}$	0	$-\frac{\sqrt{210}}{560}$	0	$\frac{3\sqrt{21}}{112}$	$\frac{\sqrt{2}}{16}$	0	0	0	$\frac{\sqrt{70}}{112}$	0	$\frac{\sqrt{14}}{56}$	0
		$-\frac{3\sqrt{21}}{112}$	0	$\frac{\sqrt{210}}{560}$	0	$-\frac{\sqrt{105}}{80}$	0	0	$\frac{\sqrt{14}}{56}$	0	$\frac{\sqrt{70}}{112}$	0	0	0	$\frac{\sqrt{2}}{16}$
		0	$-\frac{9\sqrt{35}}{560}$	0	$-\frac{9\sqrt{70}}{560}$	0	$\frac{3\sqrt{7}}{112}$	0	0	$\frac{\sqrt{14}}{112}$	0	$\frac{\sqrt{210}}{168}$	0	$-\frac{5\sqrt{42}}{336}$	0
		0	$-\frac{\sqrt{7}}{28}$	0	$-\frac{\sqrt{14}}{56}$	0	0	$-\frac{\sqrt{30}}{48}$	0	$\frac{\sqrt{70}}{56}$	0	$\frac{\sqrt{42}}{112}$	0	0	0
		$-\frac{\sqrt{7}}{28}$	0	$\frac{\sqrt{70}}{280}$	0	$-\frac{\sqrt{35}}{70}$	0	0	$\frac{5\sqrt{42}}{336}$	0	$\frac{\sqrt{210}}{168}$	0	$\frac{3\sqrt{14}}{112}$	0	0
		0	$\frac{\sqrt{70}}{280}$	0	$\frac{\sqrt{35}}{70}$	0	$-\frac{\sqrt{14}}{56}$	$-\frac{\sqrt{3}}{16}$	0	$\frac{5\sqrt{7}}{112}$	0	$-\frac{\sqrt{105}}{336}$	0	$\frac{3\sqrt{21}}{112}$	0
		$-\frac{\sqrt{14}}{56}$	0	$\frac{\sqrt{35}}{70}$	0	$\frac{\sqrt{70}}{280}$	0	0	$-\frac{3\sqrt{21}}{112}$	0	$\frac{\sqrt{105}}{336}$	0	$-\frac{5\sqrt{7}}{112}$	0	$\frac{\sqrt{3}}{16}$
		0	$-\frac{\sqrt{35}}{70}$	0	$\frac{\sqrt{70}}{280}$	0	$-\frac{\sqrt{7}}{28}$	0	0	$-\frac{3\sqrt{14}}{112}$	0	$-\frac{\sqrt{210}}{168}$	0	$-\frac{5\sqrt{42}}{336}$	0
		0	0	$-\frac{\sqrt{14}}{56}$	0	$-\frac{\sqrt{7}}{28}$	0	0	0	0	$-\frac{\sqrt{42}}{112}$	0	$-\frac{\sqrt{70}}{56}$	0	$\frac{\sqrt{30}}{48}$
557	symmetry	$-\frac{\sqrt{15}y(x-z)(x+z)}{2}$													
	$\mathbb{Q}_{3,2}^{(a)}(T_{2u})$	$\frac{3\sqrt{7}i}{112}$	0	$\frac{9\sqrt{70}i}{560}$	0	$-\frac{9\sqrt{35}i}{560}$	0	0	$\frac{5\sqrt{42}i}{336}$	0	$\frac{\sqrt{210}i}{168}$	0	$-\frac{\sqrt{14}i}{112}$	0	0
		0	$-\frac{\sqrt{105}i}{80}$	0	$-\frac{\sqrt{210}i}{560}$	0	$-\frac{3\sqrt{21}i}{112}$	$\frac{\sqrt{2}i}{16}$	0	0	0	$\frac{\sqrt{70}i}{112}$	0	$-\frac{\sqrt{14}i}{56}$	0
		$-\frac{3\sqrt{21}i}{112}$	0	$-\frac{\sqrt{210}i}{560}$	0	$-\frac{\sqrt{105}i}{80}$	0	0	$\frac{\sqrt{14}i}{56}$	0	$-\frac{\sqrt{70}i}{112}$	0	0	0	$-\frac{\sqrt{2}i}{16}$
		0	$-\frac{9\sqrt{35}i}{560}$	0	$\frac{9\sqrt{70}i}{560}$	0	$\frac{3\sqrt{7}i}{112}$	0	0	$\frac{\sqrt{14}i}{112}$	0	$-\frac{\sqrt{210}i}{168}$	0	$-\frac{5\sqrt{42}i}{336}$	0
		0	$-\frac{\sqrt{7}i}{28}$	0	$\frac{\sqrt{14}i}{56}$	0	0	$\frac{\sqrt{30}i}{48}$	0	$\frac{\sqrt{70}i}{56}$	0	$-\frac{\sqrt{42}i}{112}$	0	0	0
		$\frac{\sqrt{7}i}{28}$	0	$\frac{\sqrt{70}i}{280}$	0	$\frac{\sqrt{35}i}{70}$	0	0	$-\frac{5\sqrt{42}i}{336}$	0	$\frac{\sqrt{210}i}{168}$	0	$-\frac{3\sqrt{14}i}{112}$	0	0
		0	$-\frac{\sqrt{70}i}{280}$	0	$\frac{\sqrt{35}i}{70}$	0	$\frac{\sqrt{14}i}{56}$	$-\frac{\sqrt{3}i}{16}$	0	$-\frac{5\sqrt{7}i}{112}$	0	$-\frac{\sqrt{105}i}{336}$	0	$-\frac{3\sqrt{21}i}{112}$	0
		$-\frac{\sqrt{14}i}{56}$	0	$-\frac{\sqrt{35}i}{70}$	0	$\frac{\sqrt{70}i}{280}$	0	0	$-\frac{3\sqrt{21}i}{112}$	0	$-\frac{\sqrt{105}i}{336}$	0	$-\frac{5\sqrt{7}i}{112}$	0	$-\frac{\sqrt{3}i}{16}$
		0	$-\frac{\sqrt{35}i}{70}$	0	$-\frac{\sqrt{70}i}{280}$	0	$-\frac{\sqrt{7}i}{28}$	0	0	$-\frac{3\sqrt{14}i}{112}$	0	$\frac{\sqrt{210}i}{168}$	0	$-\frac{5\sqrt{42}i}{336}$	0
		0	0	$-\frac{\sqrt{14}i}{56}$	0	$\frac{\sqrt{7}i}{28}$	0	0	0	0	$-\frac{\sqrt{42}i}{112}$	0	$\frac{\sqrt{70}i}{56}$	0	$\frac{\sqrt{30}i}{48}$
558	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$													

continued ...

Table 9

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

continued ...



Table 9

No.	multipole	matrix													
	$\mathbb{Q}_{5,2}^{(a)}(E_u)$	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
561	symmetry	$\frac{x(8x^4-40x^2y^2-40x^2z^2+15y^4+30y^2z^2+15z^4)}{8}$													
	$\mathbb{Q}_{5,1}^{(a)}(T_{1u}, 1)$	0	0	0	0	0	0	0	$-\frac{\sqrt{5}}{80}$	0	$\frac{1}{16}$	0	$-\frac{7\sqrt{15}}{240}$	0	$\frac{3\sqrt{35}}{80}$
		0	0	0	0	0	0	$-\frac{\sqrt{105}}{240}$	0	$\frac{3\sqrt{5}}{80}$	0	$-\frac{\sqrt{3}}{16}$	0	$\frac{7\sqrt{15}}{240}$	0
		0	0	0	0	0	0	0	$\frac{7\sqrt{15}}{240}$	0	$-\frac{\sqrt{3}}{16}$	0	$\frac{3\sqrt{5}}{80}$	0	$-\frac{\sqrt{105}}{240}$
		0	0	0	0	0	0	$\frac{3\sqrt{35}}{80}$	0	$-\frac{7\sqrt{15}}{240}$	0	$\frac{1}{16}$	0	$-\frac{\sqrt{5}}{80}$	0
		0	$-\frac{\sqrt{30}}{224}$	0	$\frac{\sqrt{15}}{48}$	0	$-\frac{3\sqrt{6}}{32}$	$-\frac{\sqrt{7}}{224}$	0	$\frac{5\sqrt{3}}{224}$	0	$-\frac{\sqrt{5}}{32}$	0	$\frac{3}{32}$	0
		$-\frac{\sqrt{30}}{224}$	0	$\frac{5\sqrt{3}}{112}$	0	$-\frac{5\sqrt{6}}{96}$	0	0	$\frac{23\sqrt{5}}{1120}$	0	$-\frac{13}{224}$	0	$\frac{\sqrt{15}}{160}$	0	$\frac{3\sqrt{35}}{160}$
		0	$\frac{5\sqrt{3}}{112}$	0	$-\frac{5\sqrt{6}}{112}$	0	$\frac{\sqrt{15}}{48}$	$\frac{\sqrt{70}}{160}$	0	$-\frac{11\sqrt{30}}{1120}$	0	$\frac{\sqrt{2}}{224}$	0	$\frac{3\sqrt{10}}{160}$	0
		$\frac{\sqrt{15}}{48}$	0	$-\frac{5\sqrt{6}}{112}$	0	$\frac{5\sqrt{3}}{112}$	0	0	$-\frac{3\sqrt{10}}{160}$	0	$-\frac{\sqrt{2}}{224}$	0	$\frac{11\sqrt{30}}{1120}$	0	$-\frac{\sqrt{70}}{160}$
		0	$-\frac{5\sqrt{6}}{96}$	0	$\frac{5\sqrt{3}}{112}$	0	$-\frac{\sqrt{30}}{224}$	$-\frac{3\sqrt{35}}{160}$	0	$-\frac{\sqrt{15}}{160}$	0	$\frac{13}{224}$	0	$-\frac{23\sqrt{5}}{1120}$	0
		$-\frac{3\sqrt{6}}{32}$	0	$\frac{\sqrt{15}}{48}$	0	$-\frac{\sqrt{30}}{224}$	0	0	$-\frac{3}{32}$	0	$\frac{\sqrt{5}}{32}$	0	$-\frac{5\sqrt{3}}{224}$	0	$\frac{\sqrt{7}}{224}$
562	symmetry	$\frac{y(15x^4-40x^2y^2+30x^2z^2+8y^4-40y^2z^2+15z^4)}{8}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{Q}_{5,2}^{(a)}(T_{1u}, 1)$	0	0	0	0	0	0	0	$-\frac{\sqrt{5}i}{80}$	0	$-\frac{i}{16}$	0	$-\frac{7\sqrt{15}i}{240}$	0	$-\frac{3\sqrt{35}i}{80}$
		0	0	0	0	0	0	$\frac{\sqrt{105}i}{240}$	0	$\frac{3\sqrt{5}i}{80}$	0	$\frac{\sqrt{3}i}{16}$	0	$\frac{7\sqrt{15}i}{240}$	0
		0	0	0	0	0	0	0	$-\frac{7\sqrt{15}i}{240}$	0	$-\frac{\sqrt{3}i}{16}$	0	$-\frac{3\sqrt{5}i}{80}$	0	$-\frac{\sqrt{105}i}{240}$
		0	0	0	0	0	0	$\frac{3\sqrt{35}i}{80}$	0	$\frac{7\sqrt{15}i}{240}$	0	$\frac{i}{16}$	0	$\frac{\sqrt{5}i}{80}$	0
		0	$\frac{\sqrt{30}i}{224}$	0	$\frac{\sqrt{15}i}{48}$	0	$\frac{3\sqrt{6}i}{32}$	$-\frac{\sqrt{7}i}{224}$	0	$-\frac{5\sqrt{3}i}{224}$	0	$-\frac{\sqrt{5}i}{32}$	0	$-\frac{3i}{32}$	0
		$-\frac{\sqrt{30}i}{224}$	0	$-\frac{5\sqrt{3}i}{112}$	0	$-\frac{5\sqrt{6}i}{96}$	0	0	$\frac{23\sqrt{5}i}{1120}$	0	$\frac{13i}{224}$	0	$\frac{\sqrt{15}i}{160}$	0	$-\frac{3\sqrt{35}i}{160}$
		0	$\frac{5\sqrt{3}i}{112}$	0	$\frac{5\sqrt{6}i}{112}$	0	$\frac{\sqrt{15}i}{48}$	$-\frac{\sqrt{70}i}{160}$	0	$-\frac{11\sqrt{30}i}{1120}$	0	$-\frac{\sqrt{2}i}{224}$	0	$\frac{3\sqrt{10}i}{160}$	0
		$-\frac{\sqrt{15}i}{48}$	0	$-\frac{5\sqrt{6}i}{112}$	0	$-\frac{5\sqrt{3}i}{112}$	0	0	$\frac{3\sqrt{10}i}{160}$	0	$-\frac{\sqrt{2}i}{224}$	0	$-\frac{11\sqrt{30}i}{1120}$	0	$-\frac{\sqrt{70}i}{160}$
		0	$\frac{5\sqrt{6}i}{96}$	0	$\frac{5\sqrt{3}i}{112}$	0	$\frac{\sqrt{30}i}{224}$	$-\frac{3\sqrt{35}i}{160}$	0	$\frac{\sqrt{15}i}{160}$	0	$\frac{13i}{224}$	0	$\frac{23\sqrt{5}i}{1120}$	0
		$-\frac{3\sqrt{6}i}{32}$	0	$-\frac{\sqrt{15}i}{48}$	0	$-\frac{\sqrt{30}i}{224}$	0	0	$-\frac{3i}{32}$	0	$-\frac{\sqrt{5}i}{32}$	0	$-\frac{5\sqrt{3}i}{224}$	0	$-\frac{\sqrt{7}i}{224}$
563	symmetry	$\frac{z\left(15x^4+30x^2y^2-40x^2z^2+15y^4-40y^2z^2+8z^4\right)}{8}$													
	$\mathbb{Q}_{5,3}^{(a)}(T_{1u}, 1)$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{30} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{30} & 0 & 0 & 0 \\ -\frac{\sqrt{6}}{84} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{1}{14} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{5\sqrt{6}}{84} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{3\sqrt{15}}{70} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{5\sqrt{6}}{42} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{14} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{5\sqrt{6}}{42} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{14} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{5\sqrt{6}}{84} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{3\sqrt{15}}{70} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{84} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{1}{14} & 0 \end{bmatrix}$													
564	symmetry	$\frac{3\sqrt{35}x\left(y^2-2yz-z^2\right)\left(y^2+2yz-z^2\right)}{8}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{Q}_{5,1}^{(a)}(T_{1u}, 2)$	0	0	0	0	0	0	0	$-\frac{\sqrt{7}}{80}$	0	$\frac{\sqrt{35}}{80}$	0	$\frac{3\sqrt{21}}{80}$	0	$\frac{1}{16}$
		0	0	0	0	0	0	$\frac{3\sqrt{3}}{80}$	0	$\frac{3\sqrt{7}}{80}$	0	$-\frac{\sqrt{105}}{80}$	0	$-\frac{3\sqrt{21}}{80}$	0
		0	0	0	0	0	0	0	$-\frac{3\sqrt{21}}{80}$	0	$-\frac{\sqrt{105}}{80}$	0	$\frac{3\sqrt{7}}{80}$	0	$\frac{3\sqrt{3}}{80}$
		0	0	0	0	0	0	$\frac{1}{16}$	0	$\frac{3\sqrt{21}}{80}$	0	$\frac{\sqrt{35}}{80}$	0	$-\frac{\sqrt{7}}{80}$	0
		0	$-\frac{\sqrt{42}}{224}$	0	$-\frac{3\sqrt{21}}{112}$	0	$-\frac{\sqrt{210}}{224}$	$-\frac{\sqrt{5}}{160}$	0	$\frac{\sqrt{105}}{224}$	0	$\frac{9\sqrt{7}}{224}$	0	$\frac{\sqrt{35}}{224}$	0
		$-\frac{\sqrt{42}}{224}$	0	$\frac{\sqrt{105}}{112}$	0	$\frac{3\sqrt{210}}{224}$	0	0	$\frac{23\sqrt{7}}{1120}$	0	$-\frac{13\sqrt{35}}{1120}$	0	$-\frac{9\sqrt{21}}{1120}$	0	$\frac{1}{32}$
		0	$\frac{\sqrt{105}}{112}$	0	$-\frac{\sqrt{210}}{112}$	0	$-\frac{3\sqrt{21}}{112}$	$-\frac{9\sqrt{2}}{160}$	0	$-\frac{11\sqrt{42}}{1120}$	0	$\frac{\sqrt{70}}{1120}$	0	$-\frac{27\sqrt{14}}{1120}$	0
		$-\frac{3\sqrt{21}}{112}$	0	$-\frac{\sqrt{210}}{112}$	0	$\frac{\sqrt{105}}{112}$	0	0	$\frac{27\sqrt{14}}{1120}$	0	$-\frac{\sqrt{70}}{1120}$	0	$\frac{11\sqrt{42}}{1120}$	0	$\frac{9\sqrt{2}}{160}$
		0	$\frac{3\sqrt{210}}{224}$	0	$\frac{\sqrt{105}}{112}$	0	$-\frac{\sqrt{42}}{224}$	$-\frac{1}{32}$	0	$\frac{9\sqrt{21}}{1120}$	0	$\frac{13\sqrt{35}}{1120}$	0	$-\frac{23\sqrt{7}}{1120}$	0
		$-\frac{\sqrt{210}}{224}$	0	$-\frac{3\sqrt{21}}{112}$	0	$-\frac{\sqrt{42}}{224}$	0	0	$-\frac{\sqrt{35}}{224}$	0	$-\frac{9\sqrt{7}}{224}$	0	$-\frac{\sqrt{105}}{224}$	0	$\frac{\sqrt{5}}{160}$
565	symmetry	$\frac{3\sqrt{35}y(x^2-2xz-z^2)(x^2+2xz-z^2)}{8}$													
	$\mathbb{Q}_{5,2}^{(a)}(T_{1u}, 2)$	0	0	0	0	0	0	0	$-\frac{\sqrt{7}i}{80}$	0	$-\frac{\sqrt{35}i}{80}$	0	$\frac{3\sqrt{21}i}{80}$	0	$-\frac{i}{16}$
		0	0	0	0	0	0	$-\frac{3\sqrt{3}i}{80}$	0	$\frac{3\sqrt{7}i}{80}$	0	$\frac{\sqrt{105}i}{80}$	0	$-\frac{3\sqrt{21}i}{80}$	0
		0	0	0	0	0	0	0	$\frac{3\sqrt{21}i}{80}$	0	$-\frac{\sqrt{105}i}{80}$	0	$-\frac{3\sqrt{7}i}{80}$	0	$\frac{3\sqrt{3}i}{80}$
		0	0	0	0	0	0	$\frac{i}{16}$	0	$-\frac{3\sqrt{21}i}{80}$	0	$\frac{\sqrt{35}i}{80}$	0	$\frac{\sqrt{7}i}{80}$	0
		0	$\frac{\sqrt{42}i}{224}$	0	$-\frac{3\sqrt{21}i}{112}$	0	$\frac{\sqrt{210}i}{224}$	$-\frac{\sqrt{5}i}{160}$	0	$-\frac{\sqrt{105}i}{224}$	0	$\frac{9\sqrt{7}i}{224}$	0	$-\frac{\sqrt{35}i}{224}$	0
		$-\frac{\sqrt{42}i}{224}$	0	$-\frac{\sqrt{105}i}{112}$	0	$\frac{3\sqrt{210}i}{224}$	0	0	$\frac{23\sqrt{7}i}{1120}$	0	$\frac{13\sqrt{35}i}{1120}$	0	$-\frac{9\sqrt{21}i}{1120}$	0	$-\frac{i}{32}$
		0	$\frac{\sqrt{105}i}{112}$	0	$\frac{\sqrt{210}i}{112}$	0	$-\frac{3\sqrt{21}i}{112}$	$\frac{9\sqrt{2}i}{160}$	0	$-\frac{11\sqrt{42}i}{1120}$	0	$-\frac{\sqrt{70}i}{1120}$	0	$-\frac{27\sqrt{14}i}{1120}$	0
		$\frac{3\sqrt{21}i}{112}$	0	$-\frac{\sqrt{210}i}{112}$	0	$-\frac{\sqrt{105}i}{112}$	0	0	$-\frac{27\sqrt{14}i}{1120}$	0	$-\frac{\sqrt{70}i}{1120}$	0	$-\frac{11\sqrt{42}i}{1120}$	0	$\frac{9\sqrt{2}i}{160}$
		0	$-\frac{3\sqrt{210}i}{224}$	0	$\frac{\sqrt{105}i}{112}$	0	$\frac{\sqrt{42}i}{224}$	$-\frac{i}{32}$	0	$-\frac{9\sqrt{21}i}{1120}$	0	$\frac{13\sqrt{35}i}{1120}$	0	$\frac{23\sqrt{7}i}{1120}$	0
		$-\frac{\sqrt{210}i}{224}$	0	$\frac{3\sqrt{21}i}{112}$	0	$-\frac{\sqrt{42}i}{224}$	0	0	$-\frac{\sqrt{35}i}{224}$	0	$\frac{9\sqrt{7}i}{224}$	0	$-\frac{\sqrt{105}i}{224}$	0	$-\frac{\sqrt{5}i}{160}$
566	symmetry	$\frac{3\sqrt{35}z(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$													

continued ...

Table 9

No.	multipole	matrix														
	$\mathbb{Q}_{5,3}^{(a)}(T_{1u}, 2)$	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	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	$-\frac{\sqrt{42}}{28}$	0	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	0	$\frac{\sqrt{7}}{70}$	0	
		0	0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{2}}{10}$	
		0	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	0	$\frac{\sqrt{7}}{70}$	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	
567	symmetry	$\frac{\sqrt{105}x(y-z)(y+z)(2x^2-y^2-z^2)}{4}$														
	$\mathbb{Q}_{5,1}^{(a)}(T_{2u})$	0	0	0	0	0	0	$-\frac{\sqrt{21}}{120}$	0	$\frac{\sqrt{105}}{120}$	0	$-\frac{\sqrt{7}}{40}$	0	$-\frac{\sqrt{3}}{8}$		
		0	0	0	0	0	0	$-\frac{1}{40}$	0	$\frac{\sqrt{21}}{40}$	0	$-\frac{\sqrt{35}}{40}$	0	$\frac{\sqrt{7}}{40}$	0	
		0	0	0	0	0	0	$\frac{\sqrt{7}}{40}$	0	$-\frac{\sqrt{35}}{40}$	0	$\frac{\sqrt{21}}{40}$	0	$-\frac{1}{40}$		
		0	0	0	0	0	0	$-\frac{\sqrt{3}}{8}$	0	$-\frac{\sqrt{7}}{40}$	0	$\frac{\sqrt{105}}{120}$	0	$-\frac{\sqrt{21}}{120}$	0	
		0	$-\frac{\sqrt{14}}{112}$	0	$\frac{\sqrt{7}}{56}$	0	$\frac{3\sqrt{70}}{112}$	$-\frac{\sqrt{15}}{240}$	0	$\frac{\sqrt{35}}{112}$	0	$-\frac{\sqrt{21}}{112}$	0	$-\frac{\sqrt{105}}{112}$	0	
		$-\frac{\sqrt{14}}{112}$	0	$\frac{\sqrt{35}}{56}$	0	$-\frac{\sqrt{70}}{112}$	0	0	$\frac{23\sqrt{21}}{1680}$	0	$-\frac{13\sqrt{105}}{1680}$	0	$\frac{3\sqrt{7}}{560}$	0	$-\frac{\sqrt{3}}{16}$	
		0	$\frac{\sqrt{35}}{56}$	0	$-\frac{\sqrt{70}}{56}$	0	$\frac{\sqrt{7}}{56}$	$\frac{\sqrt{6}}{80}$	0	$-\frac{11\sqrt{14}}{560}$	0	$\frac{\sqrt{210}}{1680}$	0	$\frac{3\sqrt{42}}{560}$	0	
		$\frac{\sqrt{7}}{56}$	0	$-\frac{\sqrt{70}}{56}$	0	$\frac{\sqrt{35}}{56}$	0	0	$-\frac{3\sqrt{42}}{560}$	0	$-\frac{\sqrt{210}}{1680}$	0	$\frac{11\sqrt{14}}{560}$	0	$-\frac{\sqrt{6}}{80}$	
		0	$-\frac{\sqrt{70}}{112}$	0	$\frac{\sqrt{35}}{56}$	0	$-\frac{\sqrt{14}}{112}$	$\frac{\sqrt{3}}{16}$	0	$-\frac{3\sqrt{7}}{560}$	0	$\frac{13\sqrt{105}}{1680}$	0	$-\frac{23\sqrt{21}}{1680}$	0	
		$\frac{3\sqrt{70}}{112}$	0	$\frac{\sqrt{7}}{56}$	0	$-\frac{\sqrt{14}}{112}$	0	0	$\frac{\sqrt{105}}{112}$	0	$\frac{\sqrt{21}}{112}$	0	$-\frac{\sqrt{35}}{112}$	0	$\frac{\sqrt{15}}{240}$	
568	symmetry	$\frac{\sqrt{105}y(x-z)(x+z)(x^2-2y^2+z^2)}{4}$														

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{Q}_{5,2}^{(a)}(T_{2u})$	0	0	0	0	0	0	0	$\frac{\sqrt{21}i}{120}$	0	$\frac{\sqrt{105}i}{120}$	0	$\frac{\sqrt{7}i}{40}$	0	$-\frac{\sqrt{3}i}{8}$
		0	0	0	0	0	0	$-\frac{i}{40}$	0	$-\frac{\sqrt{21}i}{40}$	0	$-\frac{\sqrt{35}i}{40}$	0	$-\frac{\sqrt{7}i}{40}$	0
		0	0	0	0	0	0	0	$\frac{\sqrt{7}i}{40}$	0	$\frac{\sqrt{35}i}{40}$	0	$\frac{\sqrt{21}i}{40}$	0	$\frac{i}{40}$
		0	0	0	0	0	0	$\frac{\sqrt{3}i}{8}$	0	$-\frac{\sqrt{7}i}{40}$	0	$-\frac{\sqrt{105}i}{120}$	0	$-\frac{\sqrt{21}i}{120}$	0
		0	$-\frac{\sqrt{14}i}{112}$	0	$-\frac{\sqrt{7}i}{56}$	0	$\frac{3\sqrt{70}i}{112}$	$\frac{\sqrt{15}i}{240}$	0	$\frac{\sqrt{35}i}{112}$	0	$\frac{\sqrt{21}i}{112}$	0	$-\frac{\sqrt{105}i}{112}$	0
		$\frac{\sqrt{14}i}{112}$	0	$\frac{\sqrt{35}i}{56}$	0	$\frac{\sqrt{70}i}{112}$	0	0	$-\frac{23\sqrt{21}i}{1680}$	0	$-\frac{13\sqrt{105}i}{1680}$	0	$-\frac{3\sqrt{7}i}{560}$	0	$-\frac{\sqrt{3}i}{16}$
		0	$-\frac{\sqrt{35}i}{56}$	0	$-\frac{\sqrt{70}i}{56}$	0	$-\frac{\sqrt{7}i}{56}$	$\frac{\sqrt{6}i}{80}$	0	$\frac{11\sqrt{14}i}{560}$	0	$\frac{\sqrt{210}i}{1680}$	0	$-\frac{3\sqrt{42}i}{560}$	0
		$\frac{\sqrt{7}i}{56}$	0	$\frac{\sqrt{70}i}{56}$	0	$\frac{\sqrt{35}i}{56}$	0	0	$-\frac{3\sqrt{42}i}{560}$	0	$\frac{\sqrt{210}i}{1680}$	0	$\frac{11\sqrt{14}i}{560}$	0	$\frac{\sqrt{6}i}{80}$
		0	$-\frac{\sqrt{70}i}{112}$	0	$-\frac{\sqrt{35}i}{56}$	0	$-\frac{\sqrt{14}i}{112}$	$-\frac{\sqrt{3}i}{16}$	0	$-\frac{3\sqrt{7}i}{560}$	0	$-\frac{13\sqrt{105}i}{1680}$	0	$-\frac{23\sqrt{21}i}{1680}$	0
		$-\frac{3\sqrt{70}i}{112}$	0	$\frac{\sqrt{7}i}{56}$	0	$\frac{\sqrt{14}i}{112}$	0	0	$-\frac{\sqrt{105}i}{112}$	0	$\frac{\sqrt{21}i}{112}$	0	$\frac{\sqrt{35}i}{112}$	0	$\frac{\sqrt{15}i}{240}$
569	symmetry	$-\frac{\sqrt{105}z(x-y)(x+y)(x^2+y^2-2z^2)}{4}$													
	$\mathbb{Q}_{5,3}^{(a)}(T_{2u})$	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	$\sqrt{15}xyz$													

continued ...

Table 9

No.	multipole	matrix														
	$\mathbb{Q}_3^{(1,-1;a)}(A_{2u})$	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	
571	symmetry	$\frac{x(2x^2-3y^2-3z^2)}{2}$														
	$\mathbb{Q}_{3,1}^{(1,-1;a)}(T_{1u})$	$-\frac{\sqrt{30}}{280}$	0	$\frac{3\sqrt{3}}{140}$	0	$-\frac{\sqrt{6}}{56}$	0	0	$-\frac{3\sqrt{5}}{56}$	0	$\frac{3}{28}$	0	$-\frac{\sqrt{15}}{56}$	0	0	
		0	$\frac{\sqrt{2}}{40}$	0	$-\frac{1}{140}$	0	$-\frac{\sqrt{10}}{56}$	$-\frac{\sqrt{105}}{56}$	0	0	0	$\frac{3\sqrt{3}}{56}$	0	$-\frac{\sqrt{15}}{28}$	0	
		$\frac{\sqrt{10}}{56}$	0	$\frac{1}{140}$	0	$-\frac{\sqrt{2}}{40}$	0	0	$-\frac{\sqrt{15}}{28}$	0	$\frac{3\sqrt{3}}{56}$	0	0	0	$-\frac{\sqrt{105}}{56}$	
		0	$\frac{\sqrt{6}}{56}$	0	$-\frac{3\sqrt{3}}{140}$	0	$\frac{\sqrt{30}}{280}$	0	0	$-\frac{\sqrt{15}}{56}$	0	$\frac{3}{28}$	0	$-\frac{3\sqrt{5}}{56}$	0	
		0	$-\frac{3\sqrt{30}}{280}$	0	$\frac{\sqrt{15}}{56}$	0	0	$\frac{\sqrt{7}}{28}$	0	$-\frac{\sqrt{3}}{14}$	0	$\frac{\sqrt{5}}{28}$	0	0	0	
		$-\frac{3\sqrt{30}}{280}$	0	$\frac{3\sqrt{3}}{280}$	0	$\frac{\sqrt{6}}{28}$	0	0	$-\frac{\sqrt{5}}{28}$	0	$-\frac{1}{14}$	0	$\frac{\sqrt{15}}{28}$	0	0	
		0	$\frac{3\sqrt{3}}{280}$	0	$\frac{3\sqrt{6}}{140}$	0	$\frac{\sqrt{15}}{56}$	$-\frac{\sqrt{70}}{56}$	0	$-\frac{\sqrt{30}}{56}$	0	$\frac{\sqrt{2}}{56}$	0	$\frac{3\sqrt{10}}{56}$	0	
		$\frac{\sqrt{15}}{56}$	0	$\frac{3\sqrt{6}}{140}$	0	$\frac{3\sqrt{3}}{280}$	0	0	$-\frac{3\sqrt{10}}{56}$	0	$-\frac{\sqrt{2}}{56}$	0	$\frac{\sqrt{30}}{56}$	0	$\frac{\sqrt{70}}{56}$	
		0	$\frac{\sqrt{6}}{28}$	0	$\frac{3\sqrt{3}}{280}$	0	$-\frac{3\sqrt{30}}{280}$	0	0	$-\frac{\sqrt{15}}{28}$	0	$\frac{1}{14}$	0	$\frac{\sqrt{5}}{28}$	0	
		0	0	$\frac{\sqrt{15}}{56}$	0	$-\frac{3\sqrt{30}}{280}$	0	0	0	0	$-\frac{\sqrt{5}}{28}$	0	$\frac{\sqrt{3}}{14}$	0	$-\frac{\sqrt{7}}{28}$	
572	symmetry	$-\frac{y(3x^2-2y^2+3z^2)}{2}$														

continued ...

Table 9

No.	multipole	matrix														
	$\mathbb{Q}_{3,2}^{(1,-1;a)}(T_{1u})$	$-\frac{\sqrt{30}i}{280}$	0	$-\frac{3\sqrt{3}i}{140}$	0	$-\frac{\sqrt{6}i}{56}$	0	0	$-\frac{3\sqrt{5}i}{56}$	0	$-\frac{3i}{28}$	0	$-\frac{\sqrt{15}i}{56}$	0	0	
		0	$\frac{\sqrt{2}i}{40}$	0	$\frac{i}{140}$	0	$-\frac{\sqrt{10}i}{56}$	$\frac{\sqrt{105}i}{56}$	0	0	0	$-\frac{3\sqrt{3}i}{56}$	0	$-\frac{\sqrt{15}i}{28}$	0	
		$-\frac{\sqrt{10}i}{56}$	0	$\frac{i}{140}$	0	$\frac{\sqrt{2}i}{40}$	0	0	$\frac{\sqrt{15}i}{28}$	0	$\frac{3\sqrt{3}i}{56}$	0	0	0	$-\frac{\sqrt{105}i}{56}$	
		0	$-\frac{\sqrt{6}i}{56}$	0	$-\frac{3\sqrt{3}i}{140}$	0	$-\frac{\sqrt{30}i}{280}$	0	0	$\frac{\sqrt{15}i}{56}$	0	$\frac{3i}{28}$	0	$\frac{3\sqrt{5}i}{56}$	0	
		0	$\frac{3\sqrt{30}i}{280}$	0	$\frac{\sqrt{15}i}{56}$	0	0	$\frac{\sqrt{7}i}{28}$	0	$\frac{\sqrt{3}i}{14}$	0	$\frac{\sqrt{5}i}{28}$	0	0	0	
		$-\frac{3\sqrt{30}i}{280}$	0	$-\frac{3\sqrt{3}i}{280}$	0	$\frac{\sqrt{6}i}{28}$	0	0	$-\frac{\sqrt{5}i}{28}$	0	$\frac{i}{14}$	0	$\frac{\sqrt{15}i}{28}$	0	0	
		0	$\frac{3\sqrt{3}i}{280}$	0	$-\frac{3\sqrt{6}i}{140}$	0	$\frac{\sqrt{15}i}{56}$	$\frac{\sqrt{70}i}{56}$	0	$-\frac{\sqrt{30}i}{56}$	0	$-\frac{\sqrt{2}i}{56}$	0	$\frac{3\sqrt{10}i}{56}$	0	
		$-\frac{\sqrt{15}i}{56}$	0	$\frac{3\sqrt{6}i}{140}$	0	$-\frac{3\sqrt{3}i}{280}$	0	0	$\frac{3\sqrt{10}i}{56}$	0	$-\frac{\sqrt{2}i}{56}$	0	$-\frac{\sqrt{30}i}{56}$	0	$\frac{\sqrt{70}i}{56}$	
		0	$-\frac{\sqrt{6}i}{28}$	0	$\frac{3\sqrt{3}i}{280}$	0	$\frac{3\sqrt{30}i}{280}$	0	0	$\frac{\sqrt{15}i}{28}$	0	$\frac{i}{14}$	0	$-\frac{\sqrt{5}i}{28}$	0	
		0	0	$-\frac{\sqrt{15}i}{56}$	0	$-\frac{3\sqrt{30}i}{280}$	0	0	0	0	$\frac{\sqrt{5}i}{28}$	0	$\frac{\sqrt{3}i}{14}$	0	$\frac{\sqrt{7}i}{28}$	
573	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$														
	$\mathbb{Q}_{3,3}^{(1,-1;a)}(T_{1u})$	$\begin{bmatrix} 0 & -\frac{\sqrt{6}}{35} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{15}}{14} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{2}{35} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{14} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{2}{35} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{14} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{35} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{14} & 0 & 0 & 0 \\ \frac{\sqrt{6}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{2}{7} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{6}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{6}}{35} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{7} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{6}}{35} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{7} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{2}{7} & 0 \end{bmatrix}$														
574	symmetry	$\frac{\sqrt{15}x(y-z)(y+z)}{2}$														

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{Q}_{3,1}^{(1,-1;a)}(T_{2u})$	$-\frac{\sqrt{2}}{56}$	0	$\frac{3\sqrt{5}}{140}$	0	$\frac{3\sqrt{10}}{280}$	0	0	$-\frac{5\sqrt{3}}{56}$	0	$\frac{\sqrt{15}}{28}$	0	$\frac{3}{56}$	0	0
		0	$\frac{\sqrt{30}}{120}$	0	$-\frac{\sqrt{15}}{420}$	0	$\frac{\sqrt{6}}{56}$	$\frac{3\sqrt{7}}{56}$	0	0	0	$\frac{3\sqrt{5}}{56}$	0	$\frac{3}{28}$	0
		$-\frac{\sqrt{6}}{56}$	0	$\frac{\sqrt{15}}{420}$	0	$-\frac{\sqrt{30}}{120}$	0	0	$\frac{3}{28}$	0	$\frac{3\sqrt{5}}{56}$	0	0	0	$\frac{3\sqrt{7}}{56}$
		0	$-\frac{3\sqrt{10}}{280}$	0	$-\frac{3\sqrt{5}}{140}$	0	$\frac{\sqrt{2}}{56}$	0	0	$\frac{3}{56}$	0	$\frac{\sqrt{15}}{28}$	0	$-\frac{5\sqrt{3}}{56}$	0
		0	$-\frac{3\sqrt{2}}{56}$	0	$-\frac{3}{56}$	0	0	$\frac{\sqrt{105}}{84}$	0	$-\frac{\sqrt{5}}{14}$	0	$-\frac{\sqrt{3}}{28}$	0	0	0
		$-\frac{3\sqrt{2}}{56}$	0	$\frac{3\sqrt{5}}{280}$	0	$-\frac{3\sqrt{10}}{140}$	0	0	$-\frac{5\sqrt{3}}{84}$	0	$-\frac{\sqrt{15}}{42}$	0	$-\frac{3}{28}$	0	0
		0	$\frac{3\sqrt{5}}{280}$	0	$\frac{3\sqrt{10}}{140}$	0	$-\frac{3}{56}$	$\frac{\sqrt{42}}{56}$	0	$-\frac{5\sqrt{2}}{56}$	0	$\frac{\sqrt{30}}{168}$	0	$-\frac{3\sqrt{6}}{56}$	0
		$-\frac{3}{56}$	0	$\frac{3\sqrt{10}}{140}$	0	$\frac{3\sqrt{5}}{280}$	0	0	$\frac{3\sqrt{6}}{56}$	0	$-\frac{\sqrt{30}}{168}$	0	$\frac{5\sqrt{2}}{56}$	0	$-\frac{\sqrt{42}}{56}$
		0	$-\frac{3\sqrt{10}}{140}$	0	$\frac{3\sqrt{5}}{280}$	0	$-\frac{3\sqrt{2}}{56}$	0	0	$\frac{3}{28}$	0	$\frac{\sqrt{15}}{42}$	0	$\frac{5\sqrt{3}}{84}$	0
		0	0	$-\frac{3}{56}$	0	$-\frac{3\sqrt{2}}{56}$	0	0	0	0	$\frac{\sqrt{3}}{28}$	0	$\frac{\sqrt{5}}{14}$	0	$-\frac{\sqrt{105}}{84}$
575	symmetry	$-\frac{\sqrt{15}y(x-z)(x+z)}{2}$													
	$\mathbb{Q}_{3,2}^{(1,-1;a)}(T_{2u})$	$\frac{\sqrt{2}i}{56}$	0	$\frac{3\sqrt{5}i}{140}$	0	$-\frac{3\sqrt{10}i}{280}$	0	0	$\frac{5\sqrt{3}i}{56}$	0	$\frac{\sqrt{15}i}{28}$	0	$-\frac{3i}{56}$	0	0
		0	$-\frac{\sqrt{30}i}{120}$	0	$-\frac{\sqrt{15}i}{420}$	0	$-\frac{\sqrt{6}i}{56}$	$\frac{3\sqrt{7}i}{56}$	0	0	0	$\frac{3\sqrt{5}i}{56}$	0	$-\frac{3i}{28}$	0
		$-\frac{\sqrt{6}i}{56}$	0	$-\frac{\sqrt{15}i}{420}$	0	$-\frac{\sqrt{30}i}{120}$	0	0	$\frac{3i}{28}$	0	$-\frac{3\sqrt{5}i}{56}$	0	0	0	$-\frac{3\sqrt{7}i}{56}$
		0	$-\frac{3\sqrt{10}i}{280}$	0	$\frac{3\sqrt{5}i}{140}$	0	$\frac{\sqrt{2}i}{56}$	0	0	$\frac{3i}{56}$	0	$-\frac{\sqrt{15}i}{28}$	0	$-\frac{5\sqrt{3}i}{56}$	0
		0	$-\frac{3\sqrt{2}i}{56}$	0	$\frac{3i}{56}$	0	0	$-\frac{\sqrt{105}i}{84}$	0	$-\frac{\sqrt{5}i}{14}$	0	$\frac{\sqrt{3}i}{28}$	0	0	0
		$\frac{3\sqrt{2}i}{56}$	0	$\frac{3\sqrt{5}i}{280}$	0	$\frac{3\sqrt{10}i}{140}$	0	0	$\frac{5\sqrt{3}i}{84}$	0	$-\frac{\sqrt{15}i}{42}$	0	$\frac{3i}{28}$	0	0
		0	$-\frac{3\sqrt{5}i}{280}$	0	$\frac{3\sqrt{10}i}{140}$	0	$\frac{3i}{56}$	$\frac{\sqrt{42}i}{56}$	0	$\frac{5\sqrt{2}i}{56}$	0	$\frac{\sqrt{30}i}{168}$	0	$\frac{3\sqrt{6}i}{56}$	0
		$-\frac{3i}{56}$	0	$-\frac{3\sqrt{10}i}{140}$	0	$\frac{3\sqrt{5}i}{280}$	0	0	$\frac{3\sqrt{6}i}{56}$	0	$\frac{\sqrt{30}i}{168}$	0	$\frac{5\sqrt{2}i}{56}$	0	$\frac{\sqrt{42}i}{56}$
		0	$-\frac{3\sqrt{10}i}{140}$	0	$-\frac{3\sqrt{5}i}{280}$	0	$-\frac{3\sqrt{2}i}{56}$	0	0	$\frac{3i}{28}$	0	$-\frac{\sqrt{15}i}{42}$	0	$\frac{5\sqrt{3}i}{84}$	0
		0	0	$-\frac{3i}{56}$	0	$\frac{3\sqrt{2}i}{56}$	0	0	0	0	$\frac{\sqrt{3}i}{28}$	0	$-\frac{\sqrt{5}i}{14}$	0	$-\frac{\sqrt{105}i}{84}$
576	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$													

continued ...



Table 9

No.	multipole	matrix													
	$\mathbb{Q}_{3,3}^{(1,-1;a)}(T_{2u})$	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
577	symmetry	$\frac{3\sqrt{35}xyz(x-y)(x+y)}{2}$													
	$\mathbb{Q}_{5,1}^{(1,-1;a)}(E_u)$	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	0	$\frac{3\sqrt{10}i}{100}$	0
		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	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	0	0	$-\frac{2\sqrt{15}i}{25}$	0
		0	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	$-\frac{\sqrt{210}i}{175}$	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
578	symmetry	$\frac{\sqrt{105}xyz(x^2+y^2-2z^2)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{Q}_{5,2}^{(1,-1;a)}(E_u)$	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
579	symmetry	$\frac{x(8x^4-40x^2y^2-40x^2z^2+15y^4+30y^2z^2+15z^4)}{8}$													
	$\mathbb{Q}_{5,1}^{(1,-1;a)}(T_{1u}, 1)$	0	0	0	0	0	0	$-\frac{\sqrt{6}}{160}$	0	$\frac{\sqrt{30}}{160}$	0	$-\frac{7\sqrt{2}}{160}$	0	$\frac{3\sqrt{42}}{160}$	0
		0	0	0	0	0	0	$-\frac{\sqrt{14}}{160}$	0	$\frac{3\sqrt{6}}{160}$	0	$-\frac{3\sqrt{10}}{160}$	0	$\frac{7\sqrt{2}}{160}$	0
		0	0	0	0	0	0	$\frac{7\sqrt{2}}{160}$	0	$-\frac{3\sqrt{10}}{160}$	0	$\frac{3\sqrt{6}}{160}$	0	$-\frac{\sqrt{14}}{160}$	0
		0	0	0	0	0	0	$\frac{3\sqrt{42}}{160}$	0	$-\frac{7\sqrt{2}}{160}$	0	$\frac{\sqrt{30}}{160}$	0	$-\frac{\sqrt{6}}{160}$	0
		0	$-\frac{1}{112}$	0	$\frac{\sqrt{2}}{48}$	0	$-\frac{3\sqrt{5}}{80}$	$\frac{\sqrt{210}}{560}$	0	$-\frac{3\sqrt{10}}{112}$	0	$\frac{\sqrt{6}}{16}$	0	$-\frac{3\sqrt{30}}{80}$	0
		$-\frac{1}{112}$	0	$\frac{\sqrt{10}}{112}$	0	$-\frac{\sqrt{5}}{48}$	0	0	$-\frac{23\sqrt{6}}{560}$	0	$\frac{13\sqrt{30}}{560}$	0	$-\frac{3\sqrt{2}}{80}$	0	$-\frac{3\sqrt{42}}{80}$
		0	$\frac{\sqrt{10}}{112}$	0	$-\frac{\sqrt{5}}{56}$	0	$\frac{\sqrt{2}}{48}$	$-\frac{\sqrt{21}}{40}$	0	$\frac{33}{280}$	0	$-\frac{\sqrt{15}}{280}$	0	$-\frac{3\sqrt{3}}{40}$	0
		$\frac{\sqrt{2}}{48}$	0	$-\frac{\sqrt{5}}{56}$	0	$\frac{\sqrt{10}}{112}$	0	0	$\frac{3\sqrt{3}}{40}$	0	$\frac{\sqrt{15}}{280}$	0	$-\frac{33}{280}$	0	$\frac{\sqrt{21}}{40}$
		0	$-\frac{\sqrt{5}}{48}$	0	$\frac{\sqrt{10}}{112}$	0	$-\frac{1}{112}$	$\frac{3\sqrt{42}}{80}$	0	$\frac{3\sqrt{2}}{80}$	0	$-\frac{13\sqrt{30}}{560}$	0	$\frac{23\sqrt{6}}{560}$	0
		$-\frac{3\sqrt{5}}{80}$	0	$\frac{\sqrt{2}}{48}$	0	$-\frac{1}{112}$	0	0	$\frac{3\sqrt{30}}{80}$	0	$-\frac{\sqrt{6}}{16}$	0	$\frac{3\sqrt{10}}{112}$	0	$-\frac{\sqrt{210}}{560}$
580	symmetry	$\frac{y(15x^4-40x^2y^2+30x^2z^2+8y^4-40y^2z^2+15z^4)}{8}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{Q}_{5,2}^{(1,-1;a)}(T_{1u}, 1)$	0	0	0	0	0	0	0	$-\frac{\sqrt{6}i}{160}$	0	$-\frac{\sqrt{30}i}{160}$	0	$-\frac{7\sqrt{2}i}{160}$	0	$-\frac{3\sqrt{42}i}{160}$
		0	0	0	0	0	0	$\frac{\sqrt{14}i}{160}$	0	$\frac{3\sqrt{6}i}{160}$	0	$\frac{3\sqrt{10}i}{160}$	0	$\frac{7\sqrt{2}i}{160}$	0
		0	0	0	0	0	0	0	$-\frac{7\sqrt{2}i}{160}$	0	$-\frac{3\sqrt{10}i}{160}$	0	$-\frac{3\sqrt{6}i}{160}$	0	$-\frac{\sqrt{14}i}{160}$
		0	0	0	0	0	0	$\frac{3\sqrt{42}i}{160}$	0	$\frac{7\sqrt{2}i}{160}$	0	$\frac{\sqrt{30}i}{160}$	0	$\frac{\sqrt{6}i}{160}$	0
		0	$\frac{i}{112}$	0	$\frac{\sqrt{2}i}{48}$	0	$\frac{3\sqrt{5}i}{80}$	$\frac{\sqrt{210}i}{560}$	0	$\frac{3\sqrt{10}i}{112}$	0	$\frac{\sqrt{6}i}{16}$	0	$\frac{3\sqrt{30}i}{80}$	0
		$-\frac{i}{112}$	0	$-\frac{\sqrt{10}i}{112}$	0	$-\frac{\sqrt{5}i}{48}$	0	0	$-\frac{23\sqrt{6}i}{560}$	0	$-\frac{13\sqrt{30}i}{560}$	0	$-\frac{3\sqrt{2}i}{80}$	0	$\frac{3\sqrt{42}i}{80}$
		0	$\frac{\sqrt{10}i}{112}$	0	$\frac{\sqrt{5}i}{56}$	0	$\frac{\sqrt{2}i}{48}$	$\frac{\sqrt{21}i}{40}$	0	$\frac{33i}{280}$	0	$\frac{\sqrt{15}i}{280}$	0	$-\frac{3\sqrt{3}i}{40}$	0
		$-\frac{\sqrt{2}i}{48}$	0	$-\frac{\sqrt{5}i}{56}$	0	$-\frac{\sqrt{10}i}{112}$	0	0	$-\frac{3\sqrt{3}i}{40}$	0	$\frac{\sqrt{15}i}{280}$	0	$\frac{33i}{280}$	0	$\frac{\sqrt{21}i}{40}$
		0	$\frac{\sqrt{5}i}{48}$	0	$\frac{\sqrt{10}i}{112}$	0	$\frac{i}{112}$	$\frac{3\sqrt{42}i}{80}$	0	$-\frac{3\sqrt{2}i}{80}$	0	$-\frac{13\sqrt{30}i}{560}$	0	$-\frac{23\sqrt{6}i}{560}$	0
		$-\frac{3\sqrt{5}i}{80}$	0	$-\frac{\sqrt{2}i}{48}$	0	$-\frac{i}{112}$	0	0	$\frac{3\sqrt{30}i}{80}$	0	$\frac{\sqrt{6}i}{16}$	0	$\frac{3\sqrt{10}i}{112}$	0	$\frac{\sqrt{210}i}{560}$
581	symmetry	$\frac{z(15x^4+30x^2y^2-40x^2z^2+15y^4-40y^2z^2+8z^4)}{8}$													
	$\mathbb{Q}_{5,3}^{(1,-1;a)}(T_{1u}, 1)$	0	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
		$-\frac{\sqrt{5}}{210}$	0	0	0	0	0	0	$-\frac{\sqrt{30}}{35}$	0	0	0	0	0	0
		0	$\frac{\sqrt{5}}{42}$	0	0	0	0	0	0	$\frac{9\sqrt{2}}{35}$	0	0	0	0	0
		0	0	$-\frac{\sqrt{5}}{21}$	0	0	0	0	0	0	$-\frac{2\sqrt{15}}{35}$	0	0	0	0
		0	0	0	$\frac{\sqrt{5}}{21}$	0	0	0	0	0	0	$-\frac{2\sqrt{15}}{35}$	0	0	0
		0	0	0	0	$-\frac{\sqrt{5}}{42}$	0	0	0	0	0	0	$\frac{9\sqrt{2}}{35}$	0	0
		0	0	0	0	0	$\frac{\sqrt{5}}{210}$	0	0	0	0	0	0	$-\frac{\sqrt{30}}{35}$	0
582	symmetry	$\frac{3\sqrt{35}x(y^2-2yz-z^2)(y^2+2yz-z^2)}{8}$													

continued ...

Table 9

No.	multipole	matrix													
583	$\mathbb{Q}_{5,1}^{(1,-1;a)}(T_{1u}, 2)$	0	0	0	0	0	0	0	$-\frac{\sqrt{210}}{800}$	0	$\frac{\sqrt{42}}{160}$	0	$\frac{9\sqrt{70}}{800}$	0	$\frac{\sqrt{30}}{160}$
		0	0	0	0	0	0	$\frac{9\sqrt{10}}{800}$	0	$\frac{3\sqrt{210}}{800}$	0	$-\frac{3\sqrt{14}}{160}$	0	$-\frac{9\sqrt{70}}{800}$	0
		0	0	0	0	0	0	0	$-\frac{9\sqrt{70}}{800}$	0	$-\frac{3\sqrt{14}}{160}$	0	$\frac{3\sqrt{210}}{800}$	0	$\frac{9\sqrt{10}}{800}$
		0	0	0	0	0	0	$\frac{\sqrt{30}}{160}$	0	$\frac{9\sqrt{70}}{800}$	0	$\frac{\sqrt{42}}{160}$	0	$-\frac{\sqrt{210}}{800}$	0
		0	$-\frac{\sqrt{35}}{560}$	0	$-\frac{3\sqrt{70}}{560}$	0	$-\frac{\sqrt{7}}{112}$	$\frac{\sqrt{6}}{80}$	0	$-\frac{3\sqrt{14}}{112}$	0	$-\frac{9\sqrt{210}}{560}$	0	$-\frac{\sqrt{42}}{112}$	0
		$-\frac{\sqrt{35}}{560}$	0	$\frac{\sqrt{14}}{112}$	0	$\frac{3\sqrt{7}}{112}$	0	0	$-\frac{23\sqrt{210}}{2800}$	0	$\frac{13\sqrt{42}}{560}$	0	$\frac{27\sqrt{70}}{2800}$	0	$-\frac{\sqrt{30}}{80}$
		0	$\frac{\sqrt{14}}{112}$	0	$-\frac{\sqrt{7}}{56}$	0	$-\frac{3\sqrt{70}}{560}$	$\frac{9\sqrt{15}}{200}$	0	$\frac{33\sqrt{35}}{1400}$	0	$-\frac{\sqrt{21}}{280}$	0	$\frac{27\sqrt{105}}{1400}$	0
		$-\frac{3\sqrt{70}}{560}$	0	$-\frac{\sqrt{7}}{56}$	0	$\frac{\sqrt{14}}{112}$	0	0	$-\frac{27\sqrt{105}}{1400}$	0	$\frac{\sqrt{21}}{280}$	0	$-\frac{33\sqrt{35}}{1400}$	0	$-\frac{9\sqrt{15}}{200}$
		0	$\frac{3\sqrt{7}}{112}$	0	$\frac{\sqrt{14}}{112}$	0	$-\frac{\sqrt{35}}{560}$	$\frac{\sqrt{30}}{80}$	0	$-\frac{27\sqrt{70}}{2800}$	0	$-\frac{13\sqrt{42}}{560}$	0	$\frac{23\sqrt{210}}{2800}$	0
		$-\frac{\sqrt{7}}{112}$	0	$-\frac{3\sqrt{70}}{560}$	0	$-\frac{\sqrt{35}}{560}$	0	0	$\frac{\sqrt{42}}{112}$	0	$\frac{9\sqrt{210}}{560}$	0	$\frac{3\sqrt{14}}{112}$	0	$-\frac{\sqrt{6}}{80}$
583	symmetry	$\frac{3\sqrt{35}y(x^2-2xz-z^2)(x^2+2xz-z^2)}{8}$													
584	$\mathbb{Q}_{5,2}^{(1,-1;a)}(T_{1u}, 2)$	0	0	0	0	0	0	0	$-\frac{\sqrt{210}i}{800}$	0	$-\frac{\sqrt{42}i}{160}$	0	$\frac{9\sqrt{70}i}{800}$	0	$-\frac{\sqrt{30}i}{160}$
		0	0	0	0	0	0	$-\frac{9\sqrt{10}i}{800}$	0	$\frac{3\sqrt{210}i}{800}$	0	$\frac{3\sqrt{14}i}{160}$	0	$-\frac{9\sqrt{70}i}{800}$	0
		0	0	0	0	0	0	0	$\frac{9\sqrt{70}i}{800}$	0	$-\frac{3\sqrt{14}i}{160}$	0	$-\frac{3\sqrt{210}i}{800}$	0	$\frac{9\sqrt{10}i}{800}$
		0	0	0	0	0	0	$\frac{\sqrt{30}i}{160}$	0	$-\frac{9\sqrt{70}i}{800}$	0	$\frac{\sqrt{42}i}{160}$	0	$\frac{\sqrt{210}i}{800}$	0
		0	$\frac{\sqrt{35}i}{560}$	0	$-\frac{3\sqrt{70}i}{560}$	0	$\frac{\sqrt{7}i}{112}$	$\frac{\sqrt{6}i}{80}$	0	$\frac{3\sqrt{14}i}{112}$	0	$-\frac{9\sqrt{210}i}{560}$	0	$\frac{\sqrt{42}i}{112}$	0
		$-\frac{\sqrt{35}i}{560}$	0	$-\frac{\sqrt{14}i}{112}$	0	$\frac{3\sqrt{7}i}{112}$	0	0	$-\frac{23\sqrt{210}i}{2800}$	0	$-\frac{13\sqrt{42}i}{560}$	0	$\frac{27\sqrt{70}i}{2800}$	0	$\frac{\sqrt{30}i}{80}$
		0	$\frac{\sqrt{14}i}{112}$	0	$\frac{\sqrt{7}i}{56}$	0	$-\frac{3\sqrt{70}i}{560}$	$-\frac{9\sqrt{15}i}{200}$	0	$\frac{33\sqrt{35}i}{1400}$	0	$\frac{\sqrt{21}i}{280}$	0	$\frac{27\sqrt{105}i}{1400}$	0
		$\frac{3\sqrt{70}i}{560}$	0	$-\frac{\sqrt{7}i}{56}$	0	$-\frac{\sqrt{14}i}{112}$	0	0	$\frac{27\sqrt{105}i}{1400}$	0	$\frac{\sqrt{21}i}{280}$	0	$\frac{33\sqrt{35}i}{1400}$	0	$-\frac{9\sqrt{15}i}{200}$
		0	$-\frac{3\sqrt{7}i}{112}$	0	$\frac{\sqrt{14}i}{112}$	0	$\frac{\sqrt{35}i}{560}$	$\frac{\sqrt{30}i}{80}$	0	$\frac{27\sqrt{70}i}{2800}$	0	$-\frac{13\sqrt{42}i}{560}$	0	$-\frac{23\sqrt{210}i}{2800}$	0
		$-\frac{\sqrt{7}i}{112}$	0	$\frac{3\sqrt{70}i}{560}$	0	$-\frac{\sqrt{35}i}{560}$	0	0	$\frac{\sqrt{42}i}{112}$	0	$-\frac{9\sqrt{210}i}{560}$	0	$\frac{3\sqrt{14}i}{112}$	0	$\frac{\sqrt{6}i}{80}$
584	symmetry	$\frac{3\sqrt{35}z(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$													

continued ...

Table 9

No.	multipole	matrix															
$\mathbb{Q}_{5,3}^{(1,-1;a)}(T_{1u}, 2)$	<div><div></div><div><div></div><div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div><div><math>\frac{\sqrt{210}}{100}</math></div><div>0</div></div><div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div><div><math>-\frac{3\sqrt{10}}{100}</math></div></div><div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div><div><math>\frac{3\sqrt{10}}{100}</math></div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div></div><div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div><div><math>-\frac{\sqrt{210}}{100}</math></div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div></div><div><div>0</div><div>0</div><div>0</div><div>0</div><div><math>-\frac{\sqrt{35}}{70}</math></div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div><div><math>-\frac{3\sqrt{14}}{35}</math></div><div>0</div><div>0</div></div><div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div><div><math>\frac{\sqrt{35}}{70}</math></div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div><div><math>-\frac{\sqrt{210}}{175}</math></div><div>0</div></div><div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div><div><math>\frac{2\sqrt{15}}{25}</math></div></div><div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div><div><math>\frac{2\sqrt{15}}{25}</math></div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div></div><div><div><math>-\frac{\sqrt{35}}{70}</math></div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div><div><math>-\frac{\sqrt{210}}{175}</math></div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div></div><div><div>0</div><div><math>\frac{\sqrt{35}}{70}</math></div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div><div><math>-\frac{3\sqrt{14}}{35}</math></div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div></div></div></div>																
	585	symmetry	<div><math display="block">\frac{\sqrt{105}x(y-z)(y+z)(2x^2-y^2-z^2)}{4}</math><div><div></div><div><div></div><div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div><div><math>-\frac{\sqrt{70}}{400}</math></div><div>0</div><div><math>\frac{\sqrt{14}}{80}</math></div><div>0</div><div><math>-\frac{\sqrt{210}}{400}</math></div><div>0</div><div><math>-\frac{3\sqrt{10}}{80}</math></div></div><div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div><div><math>-\frac{\sqrt{30}}{400}</math></div><div>0</div><div><math>\frac{3\sqrt{70}}{400}</math></div><div>0</div><div><math>-\frac{\sqrt{42}}{80}</math></div><div>0</div><div><math>\frac{\sqrt{210}}{400}</math></div><div>0</div></div><div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div><div><math>\frac{\sqrt{210}}{400}</math></div><div>0</div><div><math>-\frac{\sqrt{42}}{80}</math></div><div>0</div><div><math>\frac{3\sqrt{70}}{400}</math></div><div>0</div><div><math>-\frac{\sqrt{30}}{400}</math></div></div><div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div><div>0</div><div><math>-\frac{3\sqrt{10}}{80}</math></div><div>0</div><div><math>-\frac{\sqrt{210}}{400}</math></div><div>0</div><div><math>\frac{\sqrt{14}}{80}</math></div><div>0</div><div><math>-\frac{\sqrt{70}}{400}</math></div><div>0</div></div><div><div>0</div><div><math>-\frac{\sqrt{105}}{840}</math></div><div>0</div><div><math>\frac{\sqrt{210}}{840}</math></div><div>0</div><div><math>\frac{\sqrt{21}}{56}</math></div><div><math>\frac{\sqrt{2}}{40}</math></div><div>0</div><div><math>-\frac{\sqrt{42}}{56}</math></div><div>0</div><div><math>\frac{3\sqrt{70}}{280}</math></div><div>0</div><div><math>\frac{3\sqrt{14}}{56}</math></div><div>0</div></div><div><div><math>-\frac{\sqrt{105}}{840}</math></div><div>0</div><div><math>\frac{\sqrt{42}}{168}</math></div><div>0</div><div><math>-\frac{\sqrt{21}}{168}</math></div><div>0</div><div>0</div><div><math>-\frac{23\sqrt{70}}{1400}</math></div><div>0</div><div><math>\frac{13\sqrt{14}}{280}</math></div><div>0</div><div><math>-\frac{3\sqrt{210}}{1400}</math></div><div>0</div><div><math>\frac{3\sqrt{10}}{40}</math></div></div><div><div>0</div><div><math>\frac{\sqrt{42}}{168}</math></div><div>0</div><div><math>-\frac{\sqrt{21}}{84}</math></div><div>0</div><div><math>\frac{\sqrt{210}}{840}</math></div><div><math>-\frac{3\sqrt{5}}{100}</math></div><div>0</div><div><math>\frac{11\sqrt{105}}{700}</math></div><div>0</div><div><math>-\frac{\sqrt{7}}{140}</math></div><div>0</div><div><math>-\frac{9\sqrt{35}}{700}</math></div><div>0</div></div><div><div><math>\frac{\sqrt{210}}{840}</math></div><div>0</div><div><math>-\frac{\sqrt{21}}{84}</math></div><div>0</div><div><math>\frac{\sqrt{42}}{168}</math></div><div>0</div><div>0</div><div><math>\frac{9\sqrt{35}}{700}</math></div><div>0</div><div><math>\frac{\sqrt{7}}{140}</math></div><div>0</div><div><math>-\frac{11\sqrt{105}}{700}</math></div><div>0</div><div><math>\frac{3\sqrt{5}}{100}</math></div></div><div><div>0</div><div><math>-\frac{\sqrt{21}}{168}</math></div><div>0</div><div><math>\frac{\sqrt{42}}{168}</math></div><div>0</div><div><math>-\frac{\sqrt{105}}{840}</math></div><div><math>-\frac{3\sqrt{10}}{40}</math></div><div>0</div><div><math>\frac{3\sqrt{210}}{1400}</math></div><div>0</div><div><math>-\frac{13\sqrt{14}}{280}</math></div><div>0</div><div><math>\frac{23\sqrt{70}}{1400}</math></div><div>0</div></div><div><div><math>\frac{\sqrt{21}}{56}</math></div><div>0</div><div><math>\frac{\sqrt{210}}{840}</math></div><div>0</div><div><math>-\frac{\sqrt{105}}{840}</math></div><div>0</div><div>0</div><div><math>-\frac{3\sqrt{14}}{56}</math></div><div>0</div><div><math>-\frac{3\sqrt{70}}{280}</math></div><div>0</div><div><math>\frac{\sqrt{42}}{56}</math></div><div>0</div><div><math>-\frac{\sqrt{2}}{40}</math></div></div></div></div></div>														
	586	symmetry	<div><math display="block">\frac{\sqrt{105}y(x-z)(x+z)(x^2-2y^2+z^2)}{4}</math></div>														

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{Q}_{5,2}^{(1,-1;a)}(T_{2u})$	0	0	0	0	0	0	0	$\frac{\sqrt{70}i}{400}$	0	$\frac{\sqrt{14}i}{80}$	0	$\frac{\sqrt{210}i}{400}$	0	$-\frac{3\sqrt{10}i}{80}$
		0	0	0	0	0	0	$-\frac{\sqrt{30}i}{400}$	0	$-\frac{3\sqrt{70}i}{400}$	0	$-\frac{\sqrt{42}i}{80}$	0	$-\frac{\sqrt{210}i}{400}$	0
		0	0	0	0	0	0	0	$\frac{\sqrt{210}i}{400}$	0	$\frac{\sqrt{42}i}{80}$	0	$\frac{3\sqrt{70}i}{400}$	0	$\frac{\sqrt{30}i}{400}$
		0	0	0	0	0	0	$\frac{3\sqrt{10}i}{80}$	0	$-\frac{\sqrt{210}i}{400}$	0	$-\frac{\sqrt{14}i}{80}$	0	$-\frac{\sqrt{70}i}{400}$	0
		0	$-\frac{\sqrt{105}i}{840}$	0	$-\frac{\sqrt{210}i}{840}$	0	$\frac{\sqrt{21}i}{56}$	$-\frac{\sqrt{2}i}{40}$	0	$-\frac{\sqrt{42}i}{56}$	0	$-\frac{3\sqrt{70}i}{280}$	0	$\frac{3\sqrt{14}i}{56}$	0
		$\frac{\sqrt{105}i}{840}$	0	$\frac{\sqrt{42}i}{168}$	0	$\frac{\sqrt{21}i}{168}$	0	0	$\frac{23\sqrt{70}i}{1400}$	0	$\frac{13\sqrt{14}i}{280}$	0	$\frac{3\sqrt{210}i}{1400}$	0	$\frac{3\sqrt{10}i}{40}$
		0	$-\frac{\sqrt{42}i}{168}$	0	$-\frac{\sqrt{21}i}{84}$	0	$-\frac{\sqrt{210}i}{840}$	$-\frac{3\sqrt{5}i}{100}$	0	$-\frac{11\sqrt{105}i}{700}$	0	$-\frac{\sqrt{7}i}{140}$	0	$\frac{9\sqrt{35}i}{700}$	0
		$\frac{\sqrt{210}i}{840}$	0	$\frac{\sqrt{21}i}{84}$	0	$\frac{\sqrt{42}i}{168}$	0	0	$\frac{9\sqrt{35}i}{700}$	0	$-\frac{\sqrt{7}i}{140}$	0	$-\frac{11\sqrt{105}i}{700}$	0	$-\frac{3\sqrt{5}i}{100}$
		0	$-\frac{\sqrt{21}i}{168}$	0	$-\frac{\sqrt{42}i}{168}$	0	$-\frac{\sqrt{105}i}{840}$	$\frac{3\sqrt{10}i}{40}$	0	$\frac{3\sqrt{210}i}{1400}$	0	$\frac{13\sqrt{14}i}{280}$	0	$\frac{23\sqrt{70}i}{1400}$	0
		$-\frac{\sqrt{21}i}{56}$	0	$\frac{\sqrt{210}i}{840}$	0	$\frac{\sqrt{105}i}{840}$	0	0	$\frac{3\sqrt{14}i}{56}$	0	$-\frac{3\sqrt{70}i}{280}$	0	$-\frac{\sqrt{42}i}{56}$	0	$-\frac{\sqrt{2}i}{40}$
587	symmetry	$-\frac{\sqrt{105}z(x-y)(x+y)(x^2+y^2-2z^2)}{4}$													
	$\mathbb{Q}_{5,3}^{(1,-1;a)}(T_{2u})$	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
588	symmetry	$x$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{Q}_{1,1}^{(1,0;a)}(T_{1u})$	$\frac{\sqrt{10}}{20}$	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	0	$-\frac{\sqrt{10}}{28}$	0	$\frac{\sqrt{6}}{28}$	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
589	symmetry	$y$													
	$\mathbb{Q}_{1,2}^{(1,0;a)}(T_{1u})$	$\frac{\sqrt{10}i}{20}$	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	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	$-\frac{\sqrt{6}i}{28}$	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
590	symmetry	$z$													

continued ...

Table 9

No.	multipole	matrix														
	$\mathbb{Q}_{1,3}^{(1,0;a)}(T_{1u})$	$ \begin{bmatrix} 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 & 0 & \frac{\sqrt{6}}{14} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{3\sqrt{2}}{70} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{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}}{14} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{14} & 0 & 0 \end{bmatrix} $														
591	symmetry	$ \begin{matrix} \sqrt{15}xyz \\ \begin{bmatrix} 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 \end{bmatrix} \end{matrix} $														
592	symmetry	$ \frac{x(2x^2-3y^2-3z^2)}{2} $														

continued ...



Table 9

No.	multipole	matrix													
	$\mathbb{Q}_{3,1}^{(1,0;a)}(T_{1u})$	$\frac{3\sqrt{35}}{1120}$	0	$-\frac{9\sqrt{14}}{1120}$	0	$\frac{3\sqrt{7}}{224}$	0	0	$-\frac{\sqrt{210}}{112}$	0	$\frac{\sqrt{42}}{56}$	0	$-\frac{\sqrt{70}}{112}$	0	0
		0	$-\frac{\sqrt{21}}{160}$	0	$\frac{\sqrt{42}}{1120}$	0	$\frac{\sqrt{105}}{224}$	$-\frac{\sqrt{10}}{16}$	0	0	0	$\frac{3\sqrt{14}}{112}$	0	$-\frac{\sqrt{70}}{56}$	0
		$-\frac{\sqrt{105}}{224}$	0	$-\frac{\sqrt{42}}{1120}$	0	$\frac{\sqrt{21}}{160}$	0	0	$-\frac{\sqrt{70}}{56}$	0	$\frac{3\sqrt{14}}{112}$	0	0	0	$-\frac{\sqrt{10}}{16}$
		0	$-\frac{3\sqrt{7}}{224}$	0	$\frac{9\sqrt{14}}{1120}$	0	$-\frac{3\sqrt{35}}{1120}$	0	0	$-\frac{\sqrt{70}}{112}$	0	$\frac{\sqrt{42}}{56}$	0	$-\frac{\sqrt{210}}{112}$	0
		0	$\frac{3\sqrt{35}}{140}$	0	$-\frac{\sqrt{70}}{56}$	0	0	$-\frac{\sqrt{6}}{96}$	0	$\frac{\sqrt{14}}{112}$	0	$-\frac{\sqrt{210}}{672}$	0	0	0
		$\frac{3\sqrt{35}}{140}$	0	$-\frac{3\sqrt{14}}{280}$	0	$-\frac{\sqrt{7}}{14}$	0	0	$\frac{\sqrt{210}}{672}$	0	$\frac{\sqrt{42}}{336}$	0	$-\frac{\sqrt{70}}{224}$	0	0
		0	$-\frac{3\sqrt{14}}{280}$	0	$-\frac{3\sqrt{7}}{70}$	0	$-\frac{\sqrt{70}}{56}$	$\frac{\sqrt{15}}{96}$	0	$\frac{\sqrt{35}}{224}$	0	$-\frac{\sqrt{21}}{672}$	0	$-\frac{\sqrt{105}}{224}$	0
		$-\frac{\sqrt{70}}{56}$	0	$-\frac{3\sqrt{7}}{70}$	0	$-\frac{3\sqrt{14}}{280}$	0	0	$\frac{\sqrt{105}}{224}$	0	$\frac{\sqrt{21}}{672}$	0	$-\frac{\sqrt{35}}{224}$	0	$-\frac{\sqrt{15}}{96}$
		0	$-\frac{\sqrt{7}}{14}$	0	$-\frac{3\sqrt{14}}{280}$	0	$\frac{3\sqrt{35}}{140}$	0	0	$\frac{\sqrt{70}}{224}$	0	$-\frac{\sqrt{42}}{336}$	0	$-\frac{\sqrt{210}}{672}$	0
		0	0	$-\frac{\sqrt{70}}{56}$	0	$\frac{3\sqrt{35}}{140}$	0	0	0	0	$\frac{\sqrt{210}}{672}$	0	$-\frac{\sqrt{14}}{112}$	0	$\frac{\sqrt{6}}{96}$
593	symmetry	$-\frac{y(3x^2-2y^2+3z^2)}{2}$													
	$\mathbb{Q}_{3,2}^{(1,0;a)}(T_{1u})$	$\frac{3\sqrt{35}i}{1120}$	0	$\frac{9\sqrt{14}i}{1120}$	0	$\frac{3\sqrt{7}i}{224}$	0	0	$-\frac{\sqrt{210}i}{112}$	0	$-\frac{\sqrt{42}i}{56}$	0	$-\frac{\sqrt{70}i}{112}$	0	0
		0	$-\frac{\sqrt{21}i}{160}$	0	$-\frac{\sqrt{42}i}{1120}$	0	$\frac{\sqrt{105}i}{224}$	$\frac{\sqrt{10}i}{16}$	0	0	0	$-\frac{3\sqrt{14}i}{112}$	0	$-\frac{\sqrt{70}i}{56}$	0
		$\frac{\sqrt{105}i}{224}$	0	$-\frac{\sqrt{42}i}{1120}$	0	$-\frac{\sqrt{21}i}{160}$	0	0	$\frac{\sqrt{70}i}{56}$	0	$\frac{3\sqrt{14}i}{112}$	0	0	0	$-\frac{\sqrt{10}i}{16}$
		0	$\frac{3\sqrt{7}i}{224}$	0	$\frac{9\sqrt{14}i}{1120}$	0	$\frac{3\sqrt{35}i}{1120}$	0	0	$\frac{\sqrt{70}i}{112}$	0	$\frac{\sqrt{42}i}{56}$	0	$\frac{\sqrt{210}i}{112}$	0
		0	$-\frac{3\sqrt{35}i}{140}$	0	$-\frac{\sqrt{70}i}{56}$	0	0	$-\frac{\sqrt{6}i}{96}$	0	$-\frac{\sqrt{14}i}{112}$	0	$-\frac{\sqrt{210}i}{672}$	0	0	0
		$\frac{3\sqrt{35}i}{140}$	0	$\frac{3\sqrt{14}i}{280}$	0	$-\frac{\sqrt{7}i}{14}$	0	0	$\frac{\sqrt{210}i}{672}$	0	$-\frac{\sqrt{42}i}{336}$	0	$-\frac{\sqrt{70}i}{224}$	0	0
		0	$-\frac{3\sqrt{14}i}{280}$	0	$\frac{3\sqrt{7}i}{70}$	0	$-\frac{\sqrt{70}i}{56}$	$-\frac{\sqrt{15}i}{96}$	0	$\frac{\sqrt{35}i}{224}$	0	$\frac{\sqrt{21}i}{672}$	0	$-\frac{\sqrt{105}i}{224}$	0
		$\frac{\sqrt{70}i}{56}$	0	$-\frac{3\sqrt{7}i}{70}$	0	$\frac{3\sqrt{14}i}{280}$	0	0	$-\frac{\sqrt{105}i}{224}$	0	$\frac{\sqrt{21}i}{672}$	0	$\frac{\sqrt{35}i}{224}$	0	$-\frac{\sqrt{15}i}{96}$
		0	$\frac{\sqrt{7}i}{14}$	0	$-\frac{3\sqrt{14}i}{280}$	0	$-\frac{3\sqrt{35}i}{140}$	0	0	$-\frac{\sqrt{70}i}{224}$	0	$-\frac{\sqrt{42}i}{336}$	0	$\frac{\sqrt{210}i}{672}$	0
		0	0	$\frac{\sqrt{70}i}{56}$	0	$\frac{3\sqrt{35}i}{140}$	0	0	0	0	$-\frac{\sqrt{210}i}{672}$	0	$-\frac{\sqrt{14}i}{112}$	0	$-\frac{\sqrt{6}i}{96}$
594	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{Q}_{3,3}^{(1,0;a)}(T_{1u})$	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
595	symmetry	$\frac{\sqrt{15}x(y-z)(y+z)}{2}$													
	$\mathbb{Q}_{3,1}^{(1,0;a)}(T_{2u})$	$\frac{\sqrt{21}}{224}$	0	$-\frac{3\sqrt{210}}{1120}$	0	$-\frac{3\sqrt{105}}{1120}$	0	0	$-\frac{5\sqrt{14}}{112}$	0	$\frac{\sqrt{70}}{56}$	0	$\frac{\sqrt{42}}{112}$	0	0
		0	$-\frac{\sqrt{35}}{160}$	0	$\frac{\sqrt{70}}{1120}$	0	$-\frac{3\sqrt{7}}{224}$	$\frac{\sqrt{6}}{16}$	0	0	0	$\frac{\sqrt{210}}{112}$	0	$\frac{\sqrt{42}}{56}$	0
		$\frac{3\sqrt{7}}{224}$	0	$-\frac{\sqrt{70}}{1120}$	0	$\frac{\sqrt{35}}{160}$	0	0	$\frac{\sqrt{42}}{56}$	0	$\frac{\sqrt{210}}{112}$	0	0	0	$\frac{\sqrt{6}}{16}$
		0	$\frac{3\sqrt{105}}{1120}$	0	$\frac{3\sqrt{210}}{1120}$	0	$-\frac{\sqrt{21}}{224}$	0	0	$\frac{\sqrt{42}}{112}$	0	$\frac{\sqrt{70}}{56}$	0	$-\frac{5\sqrt{14}}{112}$	0
		0	$\frac{\sqrt{21}}{28}$	0	$\frac{\sqrt{42}}{56}$	0	0	$-\frac{\sqrt{10}}{96}$	0	$\frac{\sqrt{210}}{336}$	0	$\frac{\sqrt{14}}{224}$	0	0	0
		$\frac{\sqrt{21}}{28}$	0	$-\frac{\sqrt{210}}{280}$	0	$\frac{\sqrt{105}}{70}$	0	0	$\frac{5\sqrt{14}}{672}$	0	$\frac{\sqrt{70}}{336}$	0	$\frac{\sqrt{42}}{224}$	0	0
		0	$-\frac{\sqrt{210}}{280}$	0	$-\frac{\sqrt{105}}{70}$	0	$\frac{\sqrt{42}}{56}$	$-\frac{1}{32}$	0	$\frac{5\sqrt{21}}{672}$	0	$-\frac{\sqrt{35}}{672}$	0	$\frac{3\sqrt{7}}{224}$	0
		$\frac{\sqrt{42}}{56}$	0	$-\frac{\sqrt{105}}{70}$	0	$-\frac{\sqrt{210}}{280}$	0	0	$-\frac{3\sqrt{7}}{224}$	0	$\frac{\sqrt{35}}{672}$	0	$-\frac{5\sqrt{21}}{672}$	0	$\frac{1}{32}$
		0	$\frac{\sqrt{105}}{70}$	0	$-\frac{\sqrt{210}}{280}$	0	$\frac{\sqrt{21}}{28}$	0	0	$-\frac{\sqrt{42}}{224}$	0	$-\frac{\sqrt{70}}{336}$	0	$-\frac{5\sqrt{14}}{672}$	0
		0	0	$\frac{\sqrt{42}}{56}$	0	$\frac{\sqrt{21}}{28}$	0	0	0	0	$-\frac{\sqrt{14}}{224}$	0	$-\frac{\sqrt{210}}{336}$	0	$\frac{\sqrt{10}}{96}$
596	symmetry	$-\frac{\sqrt{15}y(x-z)(x+z)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{Q}_{3,2}^{(1,0;a)}(T_{2u})$	$-\frac{\sqrt{21}i}{224}$	0	$-\frac{3\sqrt{210}i}{1120}$	0	$\frac{3\sqrt{105}i}{1120}$	0	0	$\frac{5\sqrt{14}i}{112}$	0	$\frac{\sqrt{70}i}{56}$	0	$-\frac{\sqrt{42}i}{112}$	0	0
		0	$\frac{\sqrt{35}i}{160}$	0	$\frac{\sqrt{70}i}{1120}$	0	$\frac{3\sqrt{7}i}{224}$	$\frac{\sqrt{6}i}{16}$	0	0	0	$\frac{\sqrt{210}i}{112}$	0	$-\frac{\sqrt{42}i}{56}$	0
		$\frac{3\sqrt{7}i}{224}$	0	$\frac{\sqrt{70}i}{1120}$	0	$\frac{\sqrt{35}i}{160}$	0	0	$\frac{\sqrt{42}i}{56}$	0	$-\frac{\sqrt{210}i}{112}$	0	0	0	$-\frac{\sqrt{6}i}{16}$
		0	$\frac{3\sqrt{105}i}{1120}$	0	$-\frac{3\sqrt{210}i}{1120}$	0	$-\frac{\sqrt{21}i}{224}$	0	0	$\frac{\sqrt{42}i}{112}$	0	$-\frac{\sqrt{70}i}{56}$	0	$-\frac{5\sqrt{14}i}{112}$	0
		0	$\frac{\sqrt{21}i}{28}$	0	$-\frac{\sqrt{42}i}{56}$	0	0	$\frac{\sqrt{10}i}{96}$	0	$\frac{\sqrt{210}i}{336}$	0	$-\frac{\sqrt{14}i}{224}$	0	0	0
		$-\frac{\sqrt{21}i}{28}$	0	$-\frac{\sqrt{210}i}{280}$	0	$-\frac{\sqrt{105}i}{70}$	0	0	$-\frac{5\sqrt{14}i}{672}$	0	$\frac{\sqrt{70}i}{336}$	0	$-\frac{\sqrt{42}i}{224}$	0	0
		0	$\frac{\sqrt{210}i}{280}$	0	$-\frac{\sqrt{105}i}{70}$	0	$-\frac{\sqrt{42}i}{56}$	$-\frac{i}{32}$	0	$-\frac{5\sqrt{21}i}{672}$	0	$-\frac{\sqrt{35}i}{672}$	0	$-\frac{3\sqrt{7}i}{224}$	0
		$\frac{\sqrt{42}i}{56}$	0	$\frac{\sqrt{105}i}{70}$	0	$-\frac{\sqrt{210}i}{280}$	0	0	$-\frac{3\sqrt{7}i}{224}$	0	$-\frac{\sqrt{35}i}{672}$	0	$-\frac{5\sqrt{21}i}{672}$	0	$-\frac{i}{32}$
		0	$\frac{\sqrt{105}i}{70}$	0	$\frac{\sqrt{210}i}{280}$	0	$\frac{\sqrt{21}i}{28}$	0	0	$-\frac{\sqrt{42}i}{224}$	0	$\frac{\sqrt{70}i}{336}$	0	$-\frac{5\sqrt{14}i}{672}$	0
		0	0	$\frac{\sqrt{42}i}{56}$	0	$-\frac{\sqrt{21}i}{28}$	0	0	0	0	$-\frac{\sqrt{14}i}{224}$	0	$\frac{\sqrt{210}i}{336}$	0	$\frac{\sqrt{10}i}{96}$
597	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$													
	$\mathbb{Q}_{3,3}^{(1,0;a)}(T_{2u})$	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	$\frac{3\sqrt{35}xyz(x-y)(x+y)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{Q}_{5,1}^{(1,0;a)}(E_u)$	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	
599	symmetry	$\frac{\sqrt{105}xyz(x^2+y^2-2z^2)}{2}$													
	$\mathbb{Q}_{5,2}^{(1,0;a)}(E_u)$	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	$-\frac{2\sqrt{35}i}{525}$	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	$-\frac{\sqrt{42}i}{28}$	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	
600	symmetry	$\frac{x(8x^4-40x^2y^2-40x^2z^2+15y^4+30y^2z^2+15z^4)}{8}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{Q}_{5,1}^{(1,0;a)}(T_{1u}, 1)$	0	0	0	0	0	0	0	$-\frac{\sqrt{6}}{80}$	0	$\frac{\sqrt{30}}{80}$	0	$-\frac{7\sqrt{2}}{80}$	0	$\frac{3\sqrt{42}}{80}$
		0	0	0	0	0	0	$-\frac{\sqrt{14}}{80}$	0	$\frac{3\sqrt{6}}{80}$	0	$-\frac{3\sqrt{10}}{80}$	0	$\frac{7\sqrt{2}}{80}$	0
		0	0	0	0	0	0	0	$\frac{7\sqrt{2}}{80}$	0	$-\frac{3\sqrt{10}}{80}$	0	$\frac{3\sqrt{6}}{80}$	0	$-\frac{\sqrt{14}}{80}$
		0	0	0	0	0	0	$\frac{3\sqrt{42}}{80}$	0	$-\frac{7\sqrt{2}}{80}$	0	$\frac{\sqrt{30}}{80}$	0	$-\frac{\sqrt{6}}{80}$	0
		0	$\frac{3}{112}$	0	$-\frac{\sqrt{2}}{16}$	0	$\frac{9\sqrt{5}}{80}$	$-\frac{\sqrt{210}}{6720}$	0	$\frac{\sqrt{10}}{448}$	0	$-\frac{\sqrt{6}}{192}$	0	$\frac{\sqrt{30}}{320}$	0
		$\frac{3}{112}$	0	$-\frac{3\sqrt{10}}{112}$	0	$\frac{\sqrt{5}}{16}$	0	0	$\frac{23\sqrt{6}}{6720}$	0	$-\frac{13\sqrt{30}}{6720}$	0	$\frac{\sqrt{2}}{320}$	0	$\frac{\sqrt{42}}{320}$
		0	$-\frac{3\sqrt{10}}{112}$	0	$\frac{3\sqrt{5}}{56}$	0	$-\frac{\sqrt{2}}{16}$	$\frac{\sqrt{21}}{480}$	0	$-\frac{11}{1120}$	0	$\frac{\sqrt{15}}{3360}$	0	$\frac{\sqrt{3}}{160}$	0
		$-\frac{\sqrt{2}}{16}$	0	$\frac{3\sqrt{5}}{56}$	0	$-\frac{3\sqrt{10}}{112}$	0	0	$-\frac{\sqrt{3}}{160}$	0	$-\frac{\sqrt{15}}{3360}$	0	$\frac{11}{1120}$	0	$-\frac{\sqrt{21}}{480}$
		0	$\frac{\sqrt{5}}{16}$	0	$-\frac{3\sqrt{10}}{112}$	0	$\frac{3}{112}$	$-\frac{\sqrt{42}}{320}$	0	$-\frac{\sqrt{2}}{320}$	0	$\frac{13\sqrt{30}}{6720}$	0	$-\frac{23\sqrt{6}}{6720}$	0
		$\frac{9\sqrt{5}}{80}$	0	$-\frac{\sqrt{2}}{16}$	0	$\frac{3}{112}$	0	0	$-\frac{\sqrt{30}}{320}$	0	$\frac{\sqrt{6}}{192}$	0	$-\frac{\sqrt{10}}{448}$	0	$\frac{\sqrt{210}}{6720}$
601	symmetry	$\frac{y(15x^4 - 40x^2y^2 + 30x^2z^2 + 8y^4 - 40y^2z^2 + 15z^4)}{8}$													
	$\mathbb{Q}_{5,2}^{(1,0;a)}(T_{1u}, 1)$	0	0	0	0	0	0	0	$-\frac{\sqrt{6}i}{80}$	0	$-\frac{\sqrt{30}i}{80}$	0	$-\frac{7\sqrt{2}i}{80}$	0	$-\frac{3\sqrt{42}i}{80}$
		0	0	0	0	0	0	$\frac{\sqrt{14}i}{80}$	0	$\frac{3\sqrt{6}i}{80}$	0	$\frac{3\sqrt{10}i}{80}$	0	$\frac{7\sqrt{2}i}{80}$	0
		0	0	0	0	0	0	0	$-\frac{7\sqrt{2}i}{80}$	0	$-\frac{3\sqrt{10}i}{80}$	0	$-\frac{3\sqrt{6}i}{80}$	0	$-\frac{\sqrt{14}i}{80}$
		0	0	0	0	0	0	$\frac{3\sqrt{42}i}{80}$	0	$\frac{7\sqrt{2}i}{80}$	0	$\frac{\sqrt{30}i}{80}$	0	$\frac{\sqrt{6}i}{80}$	0
		0	$-\frac{3i}{112}$	0	$-\frac{\sqrt{2}i}{16}$	0	$-\frac{9\sqrt{5}i}{80}$	$-\frac{\sqrt{210}i}{6720}$	0	$-\frac{\sqrt{10}i}{448}$	0	$-\frac{\sqrt{6}i}{192}$	0	$-\frac{\sqrt{30}i}{320}$	0
		$\frac{3i}{112}$	0	$\frac{3\sqrt{10}i}{112}$	0	$\frac{\sqrt{5}i}{16}$	0	0	$\frac{23\sqrt{6}i}{6720}$	0	$\frac{13\sqrt{30}i}{6720}$	0	$\frac{\sqrt{2}i}{320}$	0	$-\frac{\sqrt{42}i}{320}$
		0	$-\frac{3\sqrt{10}i}{112}$	0	$-\frac{3\sqrt{5}i}{56}$	0	$-\frac{\sqrt{2}i}{16}$	$-\frac{\sqrt{21}i}{480}$	0	$-\frac{11i}{1120}$	0	$-\frac{\sqrt{15}i}{3360}$	0	$\frac{\sqrt{3}i}{160}$	0
		$\frac{\sqrt{2}i}{16}$	0	$\frac{3\sqrt{5}i}{56}$	0	$\frac{3\sqrt{10}i}{112}$	0	0	$\frac{\sqrt{3}i}{160}$	0	$-\frac{\sqrt{15}i}{3360}$	0	$-\frac{11i}{1120}$	0	$-\frac{\sqrt{21}i}{480}$
		0	$-\frac{\sqrt{5}i}{16}$	0	$-\frac{3\sqrt{10}i}{112}$	0	$-\frac{3i}{112}$	$-\frac{\sqrt{42}i}{320}$	0	$\frac{\sqrt{2}i}{320}$	0	$\frac{13\sqrt{30}i}{6720}$	0	$\frac{23\sqrt{6}i}{6720}$	0
		$\frac{9\sqrt{5}i}{80}$	0	$\frac{\sqrt{2}i}{16}$	0	$\frac{3i}{112}$	0	0	$-\frac{\sqrt{30}i}{320}$	0	$-\frac{\sqrt{6}i}{192}$	0	$-\frac{\sqrt{10}i}{448}$	0	$-\frac{\sqrt{210}i}{6720}$
602	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													
	$\mathbb{Q}_{5,3}^{(1,0;a)}(T_{1u}, 1)$	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
603	symmetry	$\frac{3\sqrt{35}x(y^2-2yz-z^2)(y^2+2yz-z^2)}{8}$													
	$\mathbb{Q}_{5,1}^{(1,0;a)}(T_{1u}, 2)$	0	0	0	0	0	0	0	$-\frac{\sqrt{210}}{400}$	0	$\frac{\sqrt{42}}{80}$	0	$\frac{9\sqrt{70}}{400}$	0	$\frac{\sqrt{30}}{80}$
		0	0	0	0	0	0	$\frac{9\sqrt{10}}{400}$	0	$\frac{3\sqrt{210}}{400}$	0	$-\frac{3\sqrt{14}}{80}$	0	$-\frac{9\sqrt{70}}{400}$	0
		0	0	0	0	0	0	0	$-\frac{9\sqrt{70}}{400}$	0	$-\frac{3\sqrt{14}}{80}$	0	$\frac{3\sqrt{210}}{400}$	0	$\frac{9\sqrt{10}}{400}$
		0	0	0	0	0	0	$\frac{\sqrt{30}}{80}$	0	$\frac{9\sqrt{70}}{400}$	0	$\frac{\sqrt{42}}{80}$	0	$-\frac{\sqrt{210}}{400}$	0
		0	$\frac{3\sqrt{35}}{560}$	0	$\frac{9\sqrt{70}}{560}$	0	$\frac{3\sqrt{7}}{112}$	$-\frac{\sqrt{6}}{960}$	0	$\frac{\sqrt{14}}{448}$	0	$\frac{3\sqrt{210}}{2240}$	0	$\frac{\sqrt{42}}{1344}$	0
		$\frac{3\sqrt{35}}{560}$	0	$-\frac{3\sqrt{14}}{112}$	0	$-\frac{9\sqrt{7}}{112}$	0	0	$\frac{23\sqrt{210}}{33600}$	0	$-\frac{13\sqrt{42}}{6720}$	0	$-\frac{9\sqrt{70}}{11200}$	0	$\frac{\sqrt{30}}{960}$
		0	$-\frac{3\sqrt{14}}{112}$	0	$\frac{3\sqrt{7}}{56}$	0	$\frac{9\sqrt{70}}{560}$	$-\frac{3\sqrt{15}}{800}$	0	$-\frac{11\sqrt{35}}{5600}$	0	$\frac{\sqrt{21}}{3360}$	0	$-\frac{9\sqrt{105}}{5600}$	0
		$\frac{9\sqrt{70}}{560}$	0	$\frac{3\sqrt{7}}{56}$	0	$-\frac{3\sqrt{14}}{112}$	0	0	$\frac{9\sqrt{105}}{5600}$	0	$-\frac{\sqrt{21}}{3360}$	0	$\frac{11\sqrt{35}}{5600}$	0	$\frac{3\sqrt{15}}{800}$
		0	$-\frac{9\sqrt{7}}{112}$	0	$-\frac{3\sqrt{14}}{112}$	0	$\frac{3\sqrt{35}}{560}$	$-\frac{\sqrt{30}}{960}$	0	$\frac{9\sqrt{70}}{11200}$	0	$\frac{13\sqrt{42}}{6720}$	0	$-\frac{23\sqrt{210}}{33600}$	0
		$\frac{3\sqrt{7}}{112}$	0	$\frac{9\sqrt{70}}{560}$	0	$\frac{3\sqrt{35}}{560}$	0	0	$-\frac{\sqrt{42}}{1344}$	0	$-\frac{3\sqrt{210}}{2240}$	0	$-\frac{\sqrt{14}}{448}$	0	$\frac{\sqrt{6}}{960}$
604	symmetry	$\frac{3\sqrt{35}y(x^2-2xz-z^2)(x^2+2xz-z^2)}{8}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{Q}_{5,2}^{(1,0;a)}(T_{1u}, 2)$	0	0	0	0	0	0	0	$-\frac{\sqrt{210}i}{400}$	0	$-\frac{\sqrt{42}i}{80}$	0	$\frac{9\sqrt{70}i}{400}$	0	$-\frac{\sqrt{30}i}{80}$
		0	0	0	0	0	0	$-\frac{9\sqrt{10}i}{400}$	0	$\frac{3\sqrt{210}i}{400}$	0	$\frac{3\sqrt{14}i}{80}$	0	$-\frac{9\sqrt{70}i}{400}$	0
		0	0	0	0	0	0	$\frac{9\sqrt{70}i}{400}$	0	$-\frac{3\sqrt{14}i}{80}$	0	$-\frac{3\sqrt{210}i}{400}$	0	$\frac{9\sqrt{10}i}{400}$	
		0	0	0	0	0	0	$\frac{\sqrt{30}i}{80}$	0	$-\frac{9\sqrt{70}i}{400}$	0	$\frac{\sqrt{42}i}{80}$	0	$\frac{\sqrt{210}i}{400}$	0
		0	$-\frac{3\sqrt{35}i}{560}$	0	$\frac{9\sqrt{70}i}{560}$	0	$-\frac{3\sqrt{7}i}{112}$	$-\frac{\sqrt{6}i}{960}$	0	$-\frac{\sqrt{14}i}{448}$	0	$\frac{3\sqrt{210}i}{2240}$	0	$-\frac{\sqrt{42}i}{1344}$	0
		$\frac{3\sqrt{35}i}{560}$	0	$\frac{3\sqrt{14}i}{112}$	0	$-\frac{9\sqrt{7}i}{112}$	0	0	$\frac{23\sqrt{210}i}{33600}$	0	$\frac{13\sqrt{42}i}{6720}$	0	$-\frac{9\sqrt{70}i}{11200}$	0	$-\frac{\sqrt{30}i}{960}$
		0	$-\frac{3\sqrt{14}i}{112}$	0	$-\frac{3\sqrt{7}i}{56}$	0	$\frac{9\sqrt{70}i}{560}$	$\frac{3\sqrt{15}i}{800}$	0	$-\frac{11\sqrt{35}i}{5600}$	0	$-\frac{\sqrt{21}i}{3360}$	0	$-\frac{9\sqrt{105}i}{5600}$	0
		$-\frac{9\sqrt{70}i}{560}$	0	$\frac{3\sqrt{7}i}{56}$	0	$\frac{3\sqrt{14}i}{112}$	0	0	$-\frac{9\sqrt{105}i}{5600}$	0	$-\frac{\sqrt{21}i}{3360}$	0	$-\frac{11\sqrt{35}i}{5600}$	0	$\frac{3\sqrt{15}i}{800}$
		0	$\frac{9\sqrt{7}i}{112}$	0	$-\frac{3\sqrt{14}i}{112}$	0	$-\frac{3\sqrt{35}i}{560}$	$-\frac{\sqrt{30}i}{960}$	0	$-\frac{9\sqrt{70}i}{11200}$	0	$\frac{13\sqrt{42}i}{6720}$	0	$\frac{23\sqrt{210}i}{33600}$	0
		$\frac{3\sqrt{7}i}{112}$	0	$-\frac{9\sqrt{70}i}{560}$	0	$\frac{3\sqrt{35}i}{560}$	0	0	$-\frac{\sqrt{42}i}{1344}$	0	$\frac{3\sqrt{210}i}{2240}$	0	$-\frac{\sqrt{14}i}{448}$	0	$-\frac{\sqrt{6}i}{960}$
605	symmetry	$\frac{3\sqrt{35}z(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$													
	$\mathbb{Q}_{5,3}^{(1,0;a)}(T_{1u}, 2)$	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	$-\frac{\sqrt{210}}{50}$	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	0	$-\frac{\sqrt{15}}{150}$	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	$-\frac{3\sqrt{35}}{70}$	0	0	0	0	0	0	$\frac{\sqrt{14}}{140}$	0	0	0	0	
606	symmetry	$\frac{\sqrt{105}x(y-z)(y+z)(2x^2-y^2-z^2)}{4}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{Q}_{5,1}^{(1,0;a)}(T_{2u})$	0	0	0	0	0	0	0	$-\frac{\sqrt{70}}{200}$	0	$\frac{\sqrt{14}}{40}$	0	$-\frac{\sqrt{210}}{200}$	0	$-\frac{3\sqrt{10}}{40}$
		0	0	0	0	0	0	$-\frac{\sqrt{30}}{200}$	0	$\frac{3\sqrt{70}}{200}$	0	$-\frac{\sqrt{42}}{40}$	0	$\frac{\sqrt{210}}{200}$	0
		0	0	0	0	0	0	0	$\frac{\sqrt{210}}{200}$	0	$-\frac{\sqrt{42}}{40}$	0	$\frac{3\sqrt{70}}{200}$	0	$-\frac{\sqrt{30}}{200}$
		0	0	0	0	0	0	$-\frac{3\sqrt{10}}{40}$	0	$-\frac{\sqrt{210}}{200}$	0	$\frac{\sqrt{14}}{40}$	0	$-\frac{\sqrt{70}}{200}$	0
		0	$\frac{\sqrt{105}}{280}$	0	$-\frac{\sqrt{210}}{280}$	0	$-\frac{3\sqrt{21}}{56}$	$-\frac{\sqrt{2}}{480}$	0	$\frac{\sqrt{42}}{672}$	0	$-\frac{\sqrt{70}}{1120}$	0	$-\frac{\sqrt{14}}{224}$	0
		$\frac{\sqrt{105}}{280}$	0	$-\frac{\sqrt{42}}{56}$	0	$\frac{\sqrt{21}}{56}$	0	0	$\frac{23\sqrt{70}}{16800}$	0	$-\frac{13\sqrt{14}}{3360}$	0	$\frac{\sqrt{210}}{5600}$	0	$-\frac{\sqrt{10}}{160}$
		0	$-\frac{\sqrt{42}}{56}$	0	$\frac{\sqrt{21}}{28}$	0	$-\frac{\sqrt{210}}{280}$	$\frac{\sqrt{5}}{400}$	0	$-\frac{11\sqrt{105}}{8400}$	0	$\frac{\sqrt{7}}{1680}$	0	$\frac{3\sqrt{35}}{2800}$	0
		$-\frac{\sqrt{210}}{280}$	0	$\frac{\sqrt{21}}{28}$	0	$-\frac{\sqrt{42}}{56}$	0	0	$-\frac{3\sqrt{35}}{2800}$	0	$-\frac{\sqrt{7}}{1680}$	0	$\frac{11\sqrt{105}}{8400}$	0	$-\frac{\sqrt{5}}{400}$
		0	$\frac{\sqrt{21}}{56}$	0	$-\frac{\sqrt{42}}{56}$	0	$\frac{\sqrt{105}}{280}$	$\frac{\sqrt{10}}{160}$	0	$-\frac{\sqrt{210}}{5600}$	0	$\frac{13\sqrt{14}}{3360}$	0	$-\frac{23\sqrt{70}}{16800}$	0
		$-\frac{3\sqrt{21}}{56}$	0	$-\frac{\sqrt{210}}{280}$	0	$\frac{\sqrt{105}}{280}$	0	0	$\frac{\sqrt{14}}{224}$	0	$\frac{\sqrt{70}}{1120}$	0	$-\frac{\sqrt{42}}{672}$	0	$\frac{\sqrt{2}}{480}$
607	symmetry	$\frac{\sqrt{105}y(x-z)(x+z)(x^2-2y^2+z^2)}{4}$													
	$\mathbb{Q}_{5,2}^{(1,0;a)}(T_{2u})$	0	0	0	0	0	0	0	$\frac{\sqrt{70}i}{200}$	0	$\frac{\sqrt{14}i}{40}$	0	$\frac{\sqrt{210}i}{200}$	0	$-\frac{3\sqrt{10}i}{40}$
		0	0	0	0	0	0	$-\frac{\sqrt{30}i}{200}$	0	$-\frac{3\sqrt{70}i}{200}$	0	$-\frac{\sqrt{42}i}{40}$	0	$-\frac{\sqrt{210}i}{200}$	0
		0	0	0	0	0	0	0	$\frac{\sqrt{210}i}{200}$	0	$\frac{\sqrt{42}i}{40}$	0	$\frac{3\sqrt{70}i}{200}$	0	$\frac{\sqrt{30}i}{200}$
		0	0	0	0	0	0	$\frac{3\sqrt{10}i}{40}$	0	$-\frac{\sqrt{210}i}{200}$	0	$-\frac{\sqrt{14}i}{40}$	0	$-\frac{\sqrt{70}i}{200}$	0
		0	$\frac{\sqrt{105}i}{280}$	0	$\frac{\sqrt{210}i}{280}$	0	$-\frac{3\sqrt{21}i}{56}$	$\frac{\sqrt{2}i}{480}$	0	$\frac{\sqrt{42}i}{672}$	0	$\frac{\sqrt{70}i}{1120}$	0	$-\frac{\sqrt{14}i}{224}$	0
		$-\frac{\sqrt{105}i}{280}$	0	$-\frac{\sqrt{42}i}{56}$	0	$-\frac{\sqrt{21}i}{56}$	0	0	$-\frac{23\sqrt{70}i}{16800}$	0	$-\frac{13\sqrt{14}i}{3360}$	0	$-\frac{\sqrt{210}i}{5600}$	0	$-\frac{\sqrt{10}i}{160}$
		0	$\frac{\sqrt{42}i}{56}$	0	$\frac{\sqrt{21}i}{28}$	0	$\frac{\sqrt{210}i}{280}$	$\frac{\sqrt{5}i}{400}$	0	$\frac{11\sqrt{105}i}{8400}$	0	$\frac{\sqrt{7}i}{1680}$	0	$-\frac{3\sqrt{35}i}{2800}$	0
		$-\frac{\sqrt{210}i}{280}$	0	$-\frac{\sqrt{21}i}{28}$	0	$-\frac{\sqrt{42}i}{56}$	0	0	$-\frac{3\sqrt{35}i}{2800}$	0	$\frac{\sqrt{7}i}{1680}$	0	$\frac{11\sqrt{105}i}{8400}$	0	$\frac{\sqrt{5}i}{400}$
		0	$\frac{\sqrt{21}i}{56}$	0	$\frac{\sqrt{42}i}{56}$	0	$\frac{\sqrt{105}i}{280}$	$-\frac{\sqrt{10}i}{160}$	0	$-\frac{\sqrt{210}i}{5600}$	0	$-\frac{13\sqrt{14}i}{3360}$	0	$-\frac{23\sqrt{70}i}{16800}$	0
		$\frac{3\sqrt{21}i}{56}$	0	$-\frac{\sqrt{210}i}{280}$	0	$-\frac{\sqrt{105}i}{280}$	0	0	$-\frac{\sqrt{14}i}{224}$	0	$\frac{\sqrt{70}i}{1120}$	0	$\frac{\sqrt{42}i}{672}$	0	$\frac{\sqrt{2}i}{480}$
608	symmetry	$-\frac{\sqrt{105}z(x-y)(x+y)(x^2+y^2-2z^2)}{4}$													

continued ...



Table 9

No.	multipole	matrix													
	$\mathbb{Q}_{5,3}^{(1,0;a)}(T_{2u})$	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	$x$													
	$\mathbb{Q}_{1,1}^{(1,1;a)}(T_{1u})$	$\frac{\sqrt{5}}{10}$	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	$\frac{\sqrt{42}}{56}$
610	symmetry	$y$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{Q}_{1,2}^{(1,1;a)}(T_{1u})$	$\frac{\sqrt{5}i}{10}$	0	$\frac{\sqrt{2}i}{20}$	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	$\frac{\sqrt{6}i}{20}$	0	$\frac{\sqrt{3}i}{10}$	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	$\frac{2\sqrt{5}i}{35}$	0	0	0	0	$-\frac{\sqrt{42}i}{56}$	0	$-\frac{\sqrt{2}i}{56}$	0	0	0	0	
		$-\frac{2\sqrt{5}i}{35}$	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	$-\frac{4\sqrt{2}i}{35}$	0	$\frac{6i}{35}$	0	0	0	0	$-\frac{\sqrt{5}i}{28}$	0	$-\frac{\sqrt{3}i}{28}$	0	0	
		0	0	$-\frac{6i}{35}$	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	$-\frac{4\sqrt{2}i}{35}$	0	$\frac{2\sqrt{5}i}{35}$	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	$-\frac{\sqrt{42}i}{56}$	
611	symmetry	$z$													
	$\mathbb{Q}_{1,3}^{(1,1;a)}(T_{1u})$	$\begin{bmatrix} 0 & -\frac{1}{5} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{6}}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{6}}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{1}{5} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{2}{7} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{28} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{6}{35} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{28} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{2}{35} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{14} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{2}{35} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{14} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{6}{35} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{10}}{28} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{2}{7} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{28} & 0 & 0 \end{bmatrix}$													
612	symmetry	$\sqrt{15}xyz$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{Q}_3^{(1,1;a)}(A_{2u})$	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
613	symmetry	$\frac{x(2x^2-3y^2-3z^2)}{2}$													
	$\mathbb{Q}_{3,1}^{(1,1;a)}(T_{1u})$	$\frac{9\sqrt{5}}{224}$	0	$-\frac{27\sqrt{2}}{224}$	0	$\frac{45}{224}$	0	0	$-\frac{\sqrt{30}}{112}$	0	$\frac{\sqrt{6}}{56}$	0	$-\frac{\sqrt{10}}{112}$	0	0
		0	$-\frac{3\sqrt{3}}{32}$	0	$\frac{3\sqrt{6}}{224}$	0	$\frac{15\sqrt{15}}{224}$	$-\frac{\sqrt{70}}{112}$	0	0	0	$\frac{3\sqrt{2}}{112}$	0	$-\frac{\sqrt{10}}{56}$	0
		$-\frac{15\sqrt{15}}{224}$	0	$-\frac{3\sqrt{6}}{224}$	0	$\frac{3\sqrt{3}}{32}$	0	0	$-\frac{\sqrt{10}}{56}$	0	$\frac{3\sqrt{2}}{112}$	0	0	0	$-\frac{\sqrt{70}}{112}$
		0	$-\frac{45}{224}$	0	$\frac{27\sqrt{2}}{224}$	0	$-\frac{9\sqrt{5}}{224}$	0	0	$-\frac{\sqrt{10}}{112}$	0	$\frac{\sqrt{6}}{56}$	0	$-\frac{\sqrt{30}}{112}$	0
		0	$-\frac{\sqrt{5}}{28}$	0	$\frac{5\sqrt{10}}{168}$	0	0	$-\frac{\sqrt{42}}{224}$	0	$\frac{3\sqrt{2}}{112}$	0	$-\frac{\sqrt{30}}{224}$	0	0	0
		$-\frac{\sqrt{5}}{28}$	0	$\frac{\sqrt{2}}{56}$	0	$\frac{5}{42}$	0	0	$\frac{\sqrt{30}}{224}$	0	$\frac{\sqrt{6}}{112}$	0	$-\frac{3\sqrt{10}}{224}$	0	0
		0	$\frac{\sqrt{2}}{56}$	0	$\frac{1}{14}$	0	$\frac{5\sqrt{10}}{168}$	$\frac{\sqrt{105}}{224}$	0	$\frac{3\sqrt{5}}{224}$	0	$-\frac{\sqrt{3}}{224}$	0	$-\frac{3\sqrt{15}}{224}$	0
		$\frac{5\sqrt{10}}{168}$	0	$\frac{1}{14}$	0	$\frac{\sqrt{2}}{56}$	0	0	$\frac{3\sqrt{15}}{224}$	0	$\frac{\sqrt{3}}{224}$	0	$-\frac{3\sqrt{5}}{224}$	0	$-\frac{\sqrt{105}}{224}$
		0	$\frac{5}{42}$	0	$\frac{\sqrt{2}}{56}$	0	$-\frac{\sqrt{5}}{28}$	0	0	$\frac{3\sqrt{10}}{224}$	0	$-\frac{\sqrt{6}}{112}$	0	$-\frac{\sqrt{30}}{224}$	0
		0	0	$\frac{5\sqrt{10}}{168}$	0	$-\frac{\sqrt{5}}{28}$	0	0	0	0	$\frac{\sqrt{30}}{224}$	0	$-\frac{3\sqrt{2}}{112}$	0	$\frac{\sqrt{42}}{224}$
614	symmetry	$-\frac{y(3x^2-2y^2+3z^2)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{Q}_{3,2}^{(1,1;a)}(T_{1u})$	$\frac{9\sqrt{5}i}{224}$	0	$\frac{27\sqrt{2}i}{224}$	0	$\frac{45i}{224}$	0	0	$-\frac{\sqrt{30}i}{112}$	0	$-\frac{\sqrt{6}i}{56}$	0	$-\frac{\sqrt{10}i}{112}$	0	0
		0	$-\frac{3\sqrt{3}i}{32}$	0	$-\frac{3\sqrt{6}i}{224}$	0	$\frac{15\sqrt{15}i}{224}$	$\frac{\sqrt{70}i}{112}$	0	0	0	$-\frac{3\sqrt{2}i}{112}$	0	$-\frac{\sqrt{10}i}{56}$	0
		$\frac{15\sqrt{15}i}{224}$	0	$-\frac{3\sqrt{6}i}{224}$	0	$-\frac{3\sqrt{3}i}{32}$	0	0	$\frac{\sqrt{10}i}{56}$	0	$\frac{3\sqrt{2}i}{112}$	0	0	0	$-\frac{\sqrt{70}i}{112}$
		0	$\frac{45i}{224}$	0	$\frac{27\sqrt{2}i}{224}$	0	$\frac{9\sqrt{5}i}{224}$	0	0	$\frac{\sqrt{10}i}{112}$	0	$\frac{\sqrt{6}i}{56}$	0	$\frac{\sqrt{30}i}{112}$	0
		0	$\frac{\sqrt{5}i}{28}$	0	$\frac{5\sqrt{10}i}{168}$	0	0	$-\frac{\sqrt{42}i}{224}$	0	$-\frac{3\sqrt{2}i}{112}$	0	$-\frac{\sqrt{30}i}{224}$	0	0	0
		$-\frac{\sqrt{5}i}{28}$	0	$-\frac{\sqrt{2}i}{56}$	0	$\frac{5i}{42}$	0	0	$\frac{\sqrt{30}i}{224}$	0	$-\frac{\sqrt{6}i}{112}$	0	$-\frac{3\sqrt{10}i}{224}$	0	0
		0	$\frac{\sqrt{2}i}{56}$	0	$-\frac{i}{14}$	0	$\frac{5\sqrt{10}i}{168}$	$-\frac{\sqrt{105}i}{224}$	0	$\frac{3\sqrt{5}i}{224}$	0	$\frac{\sqrt{3}i}{224}$	0	$-\frac{3\sqrt{15}i}{224}$	0
		$-\frac{5\sqrt{10}i}{168}$	0	$\frac{i}{14}$	0	$-\frac{\sqrt{2}i}{56}$	0	0	$-\frac{3\sqrt{15}i}{224}$	0	$\frac{\sqrt{3}i}{224}$	0	$\frac{3\sqrt{5}i}{224}$	0	$-\frac{\sqrt{105}i}{224}$
		0	$-\frac{5i}{42}$	0	$\frac{\sqrt{2}i}{56}$	0	$\frac{\sqrt{5}i}{28}$	0	0	$-\frac{3\sqrt{10}i}{224}$	0	$-\frac{\sqrt{6}i}{112}$	0	$\frac{\sqrt{30}i}{224}$	0
		0	0	$-\frac{5\sqrt{10}i}{168}$	0	$-\frac{\sqrt{5}i}{28}$	0	0	0	$-\frac{\sqrt{30}i}{224}$	0	$-\frac{3\sqrt{2}i}{112}$	0	$-\frac{\sqrt{42}i}{224}$	0
615	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$													
	$\mathbb{Q}_{3,3}^{(1,1;a)}(T_{1u})$	0	$\frac{9}{28}$	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	$-\frac{\sqrt{2}}{28}$	0	0	0	0	0
		0	0	0	$-\frac{3\sqrt{6}}{28}$	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	$\frac{\sqrt{10}}{28}$	0	0	0
		$\frac{5}{42}$	0	0	0	0	0	0	$-\frac{\sqrt{6}}{28}$	0	0	0	0	0	0
		0	$-\frac{1}{6}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	$-\frac{2}{21}$	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	$\frac{\sqrt{3}}{28}$	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	$-\frac{5}{42}$	0	0	0	0	0	0	$-\frac{\sqrt{6}}{28}$	0
616	symmetry	$\frac{\sqrt{15}x(y-z)(y+z)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{Q}_{3,1}^{(1,1;a)}(T_{2u})$	$\frac{15\sqrt{3}}{224}$	0	$-\frac{9\sqrt{30}}{224}$	0	$-\frac{9\sqrt{15}}{224}$	0	0	$-\frac{5\sqrt{2}}{112}$	0	$\frac{\sqrt{10}}{56}$	0	$\frac{\sqrt{6}}{112}$	0	0
		0	$-\frac{3\sqrt{5}}{32}$	0	$\frac{3\sqrt{10}}{224}$	0	$-\frac{45}{224}$	$\frac{\sqrt{42}}{112}$	0	0	0	$\frac{\sqrt{30}}{112}$	0	$\frac{\sqrt{6}}{56}$	0
		$\frac{45}{224}$	0	$-\frac{3\sqrt{10}}{224}$	0	$\frac{3\sqrt{5}}{32}$	0	0	$\frac{\sqrt{6}}{56}$	0	$\frac{\sqrt{30}}{112}$	0	0	0	$\frac{\sqrt{42}}{112}$
		0	$\frac{9\sqrt{15}}{224}$	0	$\frac{9\sqrt{30}}{224}$	0	$-\frac{15\sqrt{3}}{224}$	0	0	$\frac{\sqrt{6}}{112}$	0	$\frac{\sqrt{10}}{56}$	0	$-\frac{5\sqrt{2}}{112}$	0
		0	$-\frac{5\sqrt{3}}{84}$	0	$-\frac{5\sqrt{6}}{168}$	0	0	$-\frac{\sqrt{70}}{224}$	0	$\frac{\sqrt{30}}{112}$	0	$\frac{3\sqrt{2}}{224}$	0	0	0
		$-\frac{5\sqrt{3}}{84}$	0	$\frac{\sqrt{30}}{168}$	0	$-\frac{\sqrt{15}}{42}$	0	0	$\frac{5\sqrt{2}}{224}$	0	$\frac{\sqrt{10}}{112}$	0	$\frac{3\sqrt{6}}{224}$	0	0
		0	$\frac{\sqrt{30}}{168}$	0	$\frac{\sqrt{15}}{42}$	0	$-\frac{5\sqrt{6}}{168}$	$-\frac{3\sqrt{7}}{224}$	0	$\frac{5\sqrt{3}}{224}$	0	$-\frac{\sqrt{5}}{224}$	0	$\frac{9}{224}$	0
		$-\frac{5\sqrt{6}}{168}$	0	$\frac{\sqrt{15}}{42}$	0	$\frac{\sqrt{30}}{168}$	0	0	$-\frac{9}{224}$	0	$\frac{\sqrt{5}}{224}$	0	$-\frac{5\sqrt{3}}{224}$	0	$\frac{3\sqrt{7}}{224}$
		0	$-\frac{\sqrt{15}}{42}$	0	$\frac{\sqrt{30}}{168}$	0	$-\frac{5\sqrt{3}}{84}$	0	0	$-\frac{3\sqrt{6}}{224}$	0	$-\frac{\sqrt{10}}{112}$	0	$-\frac{5\sqrt{2}}{224}$	0
		0	0	$-\frac{5\sqrt{6}}{168}$	0	$-\frac{5\sqrt{3}}{84}$	0	0	0	$-\frac{3\sqrt{2}}{224}$	0	$-\frac{\sqrt{30}}{112}$	0	$\frac{\sqrt{70}}{224}$	
617	symmetry	$-\frac{\sqrt{15}y(x-z)(x+z)}{2}$													
	$\mathbb{Q}_{3,2}^{(1,1;a)}(T_{2u})$	$-\frac{15\sqrt{3}i}{224}$	0	$-\frac{9\sqrt{30}i}{224}$	0	$\frac{9\sqrt{15}i}{224}$	0	0	$\frac{5\sqrt{2}i}{112}$	0	$\frac{\sqrt{10}i}{56}$	0	$-\frac{\sqrt{6}i}{112}$	0	0
		0	$\frac{3\sqrt{5}i}{32}$	0	$\frac{3\sqrt{10}i}{224}$	0	$\frac{45i}{224}$	$\frac{\sqrt{42}i}{112}$	0	0	0	$\frac{\sqrt{30}i}{112}$	0	$-\frac{\sqrt{6}i}{56}$	0
		$\frac{45i}{224}$	0	$\frac{3\sqrt{10}i}{224}$	0	$\frac{3\sqrt{5}i}{32}$	0	0	$\frac{\sqrt{6}i}{56}$	0	$-\frac{\sqrt{30}i}{112}$	0	0	0	$-\frac{\sqrt{42}i}{112}$
		0	$\frac{9\sqrt{15}i}{224}$	0	$-\frac{9\sqrt{30}i}{224}$	0	$-\frac{15\sqrt{3}i}{224}$	0	0	$\frac{\sqrt{6}i}{112}$	0	$-\frac{\sqrt{10}i}{56}$	0	$-\frac{5\sqrt{2}i}{112}$	0
		0	$-\frac{5\sqrt{3}i}{84}$	0	$\frac{5\sqrt{6}i}{168}$	0	0	$\frac{\sqrt{70}i}{224}$	0	$\frac{\sqrt{30}i}{112}$	0	$-\frac{3\sqrt{2}i}{224}$	0	0	0
		$\frac{5\sqrt{3}i}{84}$	0	$\frac{\sqrt{30}i}{168}$	0	$\frac{\sqrt{15}i}{42}$	0	0	$-\frac{5\sqrt{2}i}{224}$	0	$\frac{\sqrt{10}i}{112}$	0	$-\frac{3\sqrt{6}i}{224}$	0	0
		0	$-\frac{\sqrt{30}i}{168}$	0	$\frac{\sqrt{15}i}{42}$	0	$\frac{5\sqrt{6}i}{168}$	$-\frac{3\sqrt{7}i}{224}$	0	$-\frac{5\sqrt{3}i}{224}$	0	$-\frac{\sqrt{5}i}{224}$	0	$-\frac{9i}{224}$	0
		$-\frac{5\sqrt{6}i}{168}$	0	$-\frac{\sqrt{15}i}{42}$	0	$\frac{\sqrt{30}i}{168}$	0	0	$-\frac{9i}{224}$	0	$-\frac{\sqrt{5}i}{224}$	0	$-\frac{5\sqrt{3}i}{224}$	0	$-\frac{3\sqrt{7}i}{224}$
		0	$-\frac{\sqrt{15}i}{42}$	0	$-\frac{\sqrt{30}i}{168}$	0	$-\frac{5\sqrt{3}i}{84}$	0	0	$-\frac{3\sqrt{6}i}{224}$	0	$\frac{\sqrt{10}i}{112}$	0	$-\frac{5\sqrt{2}i}{224}$	0
		0	0	$-\frac{5\sqrt{6}i}{168}$	0	$\frac{5\sqrt{3}i}{84}$	0	0	0	$-\frac{3\sqrt{2}i}{224}$	0	$\frac{\sqrt{30}i}{112}$	0	$\frac{\sqrt{70}i}{224}$	
618	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$													

continued ...

Table 9

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

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{G}_{2,2}^{(a)}(E_u)$	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	$\frac{i}{14}$	0	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
621	symmetry	$\sqrt{3}yz$													
	$\mathbb{G}_{2,1}^{(a)}(T_{2u})$	$\frac{\sqrt{6}}{14}$	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	$-\frac{\sqrt{35}}{28}$
622	symmetry	$\sqrt{3}xz$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{G}_{2,2}^{(a)}(T_{2u})$	$-\frac{\sqrt{6}i}{14}$	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	$-\frac{\sqrt{35}i}{28}$	
623	symmetry	$\sqrt{3}xy$													
	$\mathbb{G}_{2,3}^{(a)}(T_{2u})$	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	$\frac{\sqrt{21}(x^4-3x^2y^2-3x^2z^2+y^4-3y^2z^2+z^4)}{6}$													

continued ...



Table 9

No.	multipole	matrix													
	$\mathbb{G}_4^{(a)}(A_{1u})$	0	$-\frac{\sqrt{21}i}{84}$	0	0	0	$-\frac{\sqrt{105}i}{84}$	0	0	$-\frac{3\sqrt{210}i}{280}$	0	0	0	$-\frac{3\sqrt{70}i}{280}$	0
		0	0	$\frac{\sqrt{14}i}{28}$	0	0	0	0	0	0	$\frac{\sqrt{42}i}{56}$	0	0	0	$-\frac{\sqrt{30}i}{40}$
		0	0	0	$-\frac{\sqrt{14}i}{28}$	0	0	$-\frac{\sqrt{30}i}{40}$	0	0	0	$\frac{\sqrt{42}i}{56}$	0	0	0
		$\frac{\sqrt{105}i}{84}$	0	0	0	$\frac{\sqrt{21}i}{84}$	0	0	$-\frac{3\sqrt{70}i}{280}$	0	0	0	$-\frac{3\sqrt{210}i}{280}$	0	0
		$\frac{\sqrt{21}i}{84}$	0	0	0	$\frac{\sqrt{105}i}{84}$	0	0	$-\frac{\sqrt{14}i}{28}$	0	0	0	$-\frac{\sqrt{42}i}{84}$	0	0
		0	$-\frac{\sqrt{21}i}{28}$	0	0	0	$\frac{\sqrt{105}i}{84}$	0	0	$\frac{\sqrt{210}i}{105}$	0	0	0	$-\frac{\sqrt{70}i}{70}$	0
		0	0	$\frac{\sqrt{21}i}{42}$	0	0	0	0	0	0	$\frac{\sqrt{7}i}{28}$	0	0	0	$-\frac{\sqrt{5}i}{20}$
		0	0	0	$\frac{\sqrt{21}i}{42}$	0	0	$\frac{\sqrt{5}i}{20}$	0	0	0	$-\frac{\sqrt{7}i}{28}$	0	0	0
		$\frac{\sqrt{105}i}{84}$	0	0	0	$-\frac{\sqrt{21}i}{28}$	0	0	$\frac{\sqrt{70}i}{70}$	0	0	0	$-\frac{\sqrt{210}i}{105}$	0	0
		0	$\frac{\sqrt{105}i}{84}$	0	0	0	$\frac{\sqrt{21}i}{84}$	0	0	$\frac{\sqrt{42}i}{84}$	0	0	0	$\frac{\sqrt{14}i}{28}$	0
625	symmetry	$-\frac{\sqrt{15}(x^4-12x^2y^2+6x^2z^2+y^4+6y^2z^2-2z^4)}{12}$													
	$\mathbb{G}_{4,1}^{(a)}(E_u)$	0	$-\frac{\sqrt{15}i}{84}$	0	0	0	$\frac{\sqrt{3}i}{12}$	0	0	$-\frac{3\sqrt{6}i}{56}$	0	0	0	$\frac{3\sqrt{2}i}{40}$	0
		0	0	$\frac{\sqrt{10}i}{28}$	0	0	0	0	0	0	$\frac{\sqrt{30}i}{56}$	0	0	0	$\frac{\sqrt{42}i}{40}$
		0	0	0	$-\frac{\sqrt{10}i}{28}$	0	0	$\frac{\sqrt{42}i}{40}$	0	0	0	$\frac{\sqrt{30}i}{56}$	0	0	0
		$-\frac{\sqrt{3}i}{12}$	0	0	0	$\frac{\sqrt{15}i}{84}$	0	0	$\frac{3\sqrt{2}i}{40}$	0	0	0	$-\frac{3\sqrt{6}i}{56}$	0	0
		$\frac{\sqrt{15}i}{84}$	0	0	0	$-\frac{\sqrt{3}i}{12}$	0	0	$-\frac{\sqrt{10}i}{28}$	0	0	0	$\frac{\sqrt{30}i}{60}$	0	0
		0	$-\frac{\sqrt{15}i}{28}$	0	0	0	$-\frac{\sqrt{3}i}{12}$	0	0	$\frac{\sqrt{6}i}{21}$	0	0	0	$\frac{\sqrt{2}i}{10}$	0
		0	0	$\frac{\sqrt{15}i}{42}$	0	0	0	0	0	0	$\frac{\sqrt{5}i}{28}$	0	0	0	$\frac{\sqrt{7}i}{20}$
		0	0	0	$\frac{\sqrt{15}i}{42}$	0	0	$-\frac{\sqrt{7}i}{20}$	0	0	0	$-\frac{\sqrt{5}i}{28}$	0	0	0
		$-\frac{\sqrt{3}i}{12}$	0	0	0	$-\frac{\sqrt{15}i}{28}$	0	0	$-\frac{\sqrt{2}i}{10}$	0	0	0	$-\frac{\sqrt{6}i}{21}$	0	0
		0	$-\frac{\sqrt{3}i}{12}$	0	0	0	$\frac{\sqrt{15}i}{84}$	0	0	$-\frac{\sqrt{30}i}{60}$	0	0	0	$\frac{\sqrt{10}i}{28}$	0
626	symmetry	$\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{G}_{4,2}^{(a)}(E_u)$	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
627	symmetry	$\frac{\sqrt{35}yz(y-z)(y+z)}{2}$													
	$\mathbb{G}_{4,1}^{(a)}(T_{1u})$	$\frac{\sqrt{7}}{112}$	0	$\frac{\sqrt{70}}{112}$	0	$\frac{\sqrt{35}}{112}$	0	0	$\frac{9\sqrt{42}}{560}$	0	$\frac{3\sqrt{210}}{280}$	0	$\frac{9\sqrt{14}}{560}$	0	0
		0	$-\frac{\sqrt{105}}{112}$	0	$-\frac{\sqrt{210}}{112}$	0	$-\frac{\sqrt{21}}{112}$	$-\frac{3\sqrt{2}}{80}$	0	$-\frac{3\sqrt{42}}{140}$	0	$-\frac{3\sqrt{70}}{560}$	0	$\frac{3\sqrt{14}}{280}$	0
		$\frac{\sqrt{21}}{112}$	0	$\frac{\sqrt{210}}{112}$	0	$\frac{\sqrt{105}}{112}$	0	0	$\frac{3\sqrt{14}}{280}$	0	$-\frac{3\sqrt{70}}{560}$	0	$-\frac{3\sqrt{42}}{140}$	0	$-\frac{3\sqrt{2}}{80}$
		0	$-\frac{\sqrt{35}}{112}$	0	$-\frac{\sqrt{70}}{112}$	0	$-\frac{\sqrt{7}}{112}$	0	0	$\frac{9\sqrt{14}}{560}$	0	$\frac{3\sqrt{210}}{280}$	0	$\frac{9\sqrt{42}}{560}$	0
		0	$-\frac{\sqrt{7}}{28}$	0	$-\frac{\sqrt{14}}{56}$	0	0	$\frac{\sqrt{30}}{80}$	0	$\frac{\sqrt{70}}{56}$	0	$\frac{\sqrt{42}}{112}$	0	0	0
		$\frac{\sqrt{7}}{28}$	0	$\frac{\sqrt{70}}{56}$	0	0	0	0	$-\frac{13\sqrt{42}}{560}$	0	$-\frac{\sqrt{210}}{280}$	0	$\frac{\sqrt{14}}{80}$	0	0
		0	$-\frac{\sqrt{70}}{56}$	0	0	0	$\frac{\sqrt{14}}{56}$	$\frac{3\sqrt{3}}{80}$	0	$\frac{\sqrt{7}}{560}$	0	$-\frac{\sqrt{105}}{80}$	0	$-\frac{\sqrt{21}}{560}$	0
		$\frac{\sqrt{14}}{56}$	0	0	0	$-\frac{\sqrt{70}}{56}$	0	0	$\frac{\sqrt{21}}{560}$	0	$\frac{\sqrt{105}}{80}$	0	$-\frac{\sqrt{7}}{560}$	0	$-\frac{3\sqrt{3}}{80}$
		0	0	0	$\frac{\sqrt{70}}{56}$	0	$\frac{\sqrt{7}}{28}$	0	0	$-\frac{\sqrt{14}}{80}$	0	$\frac{\sqrt{210}}{280}$	0	$\frac{13\sqrt{42}}{560}$	0
		0	0	$-\frac{\sqrt{14}}{56}$	0	$-\frac{\sqrt{7}}{28}$	0	0	0	0	$-\frac{\sqrt{42}}{112}$	0	$-\frac{\sqrt{70}}{56}$	0	$-\frac{\sqrt{30}}{80}$
628	symmetry	$-\frac{\sqrt{35}xz(x-z)(x+z)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{G}_{4,2}^{(a)}(T_{1u})$	$\frac{\sqrt{7}i}{112}$	0	$-\frac{\sqrt{70}i}{112}$	0	$\frac{\sqrt{35}i}{112}$	0	0	$\frac{9\sqrt{42}i}{560}$	0	$-\frac{3\sqrt{210}i}{280}$	0	$\frac{9\sqrt{14}i}{560}$	0	0
		0	$-\frac{\sqrt{105}i}{112}$	0	$\frac{\sqrt{210}i}{112}$	0	$-\frac{\sqrt{21}i}{112}$	$\frac{3\sqrt{2}i}{80}$	0	$-\frac{3\sqrt{42}i}{140}$	0	$\frac{3\sqrt{70}i}{560}$	0	$\frac{3\sqrt{14}i}{280}$	0
		$-\frac{\sqrt{21}i}{112}$	0	$\frac{\sqrt{210}i}{112}$	0	$-\frac{\sqrt{105}i}{112}$	0	0	$-\frac{3\sqrt{14}i}{280}$	0	$-\frac{3\sqrt{70}i}{560}$	0	$\frac{3\sqrt{42}i}{140}$	0	$-\frac{3\sqrt{2}i}{80}$
		0	$\frac{\sqrt{35}i}{112}$	0	$-\frac{\sqrt{70}i}{112}$	0	$\frac{\sqrt{7}i}{112}$	0	0	$-\frac{9\sqrt{14}i}{560}$	0	$\frac{3\sqrt{210}i}{280}$	0	$-\frac{9\sqrt{42}i}{560}$	0
		0	$\frac{\sqrt{7}i}{28}$	0	$-\frac{\sqrt{14}i}{56}$	0	0	$\frac{\sqrt{30}i}{80}$	0	$-\frac{\sqrt{70}i}{56}$	0	$\frac{\sqrt{42}i}{112}$	0	0	0
		$\frac{\sqrt{7}i}{28}$	0	$-\frac{\sqrt{70}i}{56}$	0	0	0	0	$-\frac{13\sqrt{42}i}{560}$	0	$\frac{\sqrt{210}i}{280}$	0	$\frac{\sqrt{14}i}{80}$	0	0
		0	$-\frac{\sqrt{70}i}{56}$	0	0	0	$\frac{\sqrt{14}i}{56}$	$-\frac{3\sqrt{3}i}{80}$	0	$\frac{\sqrt{7}i}{560}$	0	$\frac{\sqrt{105}i}{80}$	0	$-\frac{\sqrt{21}i}{560}$	0
		$-\frac{\sqrt{14}i}{56}$	0	0	0	$\frac{\sqrt{70}i}{56}$	0	0	$-\frac{\sqrt{21}i}{560}$	0	$\frac{\sqrt{105}i}{80}$	0	$\frac{\sqrt{7}i}{560}$	0	$-\frac{3\sqrt{3}i}{80}$
		0	0	0	$\frac{\sqrt{70}i}{56}$	0	$-\frac{\sqrt{7}i}{28}$	0	0	$\frac{\sqrt{14}i}{80}$	0	$\frac{\sqrt{210}i}{280}$	0	$-\frac{13\sqrt{42}i}{560}$	0
		0	0	$\frac{\sqrt{14}i}{56}$	0	$-\frac{\sqrt{7}i}{28}$	0	0	0	0	$\frac{\sqrt{42}i}{112}$	0	$-\frac{\sqrt{70}i}{56}$	0	$\frac{\sqrt{30}i}{80}$
629	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$													
	$\mathbb{G}_{4,3}^{(a)}(T_{1u})$	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	
630	symmetry	$\frac{\sqrt{5}yz(6x^2-y^2-z^2)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{G}_{4,1}^{(a)}(T_{2u})$	$\frac{1}{112}$	0	$\frac{\sqrt{10}}{112}$	0	$-\frac{\sqrt{5}}{16}$	0	0	$\frac{9\sqrt{6}}{560}$	0	$\frac{3\sqrt{30}}{280}$	0	$-\frac{9\sqrt{2}}{80}$	0	0
		0	$-\frac{\sqrt{15}}{112}$	0	$-\frac{\sqrt{30}}{112}$	0	$\frac{\sqrt{3}}{16}$	$\frac{3\sqrt{14}}{80}$	0	$-\frac{3\sqrt{6}}{140}$	0	$-\frac{3\sqrt{10}}{560}$	0	$-\frac{3\sqrt{2}}{40}$	0
		$-\frac{\sqrt{3}}{16}$	0	$\frac{\sqrt{30}}{112}$	0	$\frac{\sqrt{15}}{112}$	0	0	$-\frac{3\sqrt{2}}{40}$	0	$-\frac{3\sqrt{10}}{560}$	0	$-\frac{3\sqrt{6}}{140}$	0	$\frac{3\sqrt{14}}{80}$
		0	$\frac{\sqrt{5}}{16}$	0	$-\frac{\sqrt{10}}{112}$	0	$-\frac{1}{112}$	0	0	$-\frac{9\sqrt{2}}{80}$	0	$\frac{3\sqrt{30}}{280}$	0	$\frac{9\sqrt{6}}{560}$	0
		0	$-\frac{1}{28}$	0	$\frac{\sqrt{2}}{8}$	0	0	$\frac{\sqrt{210}}{560}$	0	$\frac{\sqrt{10}}{56}$	0	$-\frac{\sqrt{6}}{16}$	0	0	0
		$\frac{1}{28}$	0	$\frac{\sqrt{10}}{56}$	0	0	0	0	$-\frac{13\sqrt{6}}{560}$	0	$-\frac{\sqrt{30}}{280}$	0	$-\frac{7\sqrt{2}}{80}$	0	0
		0	$-\frac{\sqrt{10}}{56}$	0	0	0	$-\frac{\sqrt{2}}{8}$	$-\frac{3\sqrt{21}}{80}$	0	$\frac{1}{560}$	0	$-\frac{\sqrt{15}}{80}$	0	$\frac{\sqrt{3}}{80}$	0
		$-\frac{\sqrt{2}}{8}$	0	0	0	$-\frac{\sqrt{10}}{56}$	0	0	$-\frac{\sqrt{3}}{80}$	0	$\frac{\sqrt{15}}{80}$	0	$-\frac{1}{560}$	0	$\frac{3\sqrt{21}}{80}$
		0	0	0	$\frac{\sqrt{10}}{56}$	0	$\frac{1}{28}$	0	0	$\frac{7\sqrt{2}}{80}$	0	$\frac{\sqrt{30}}{280}$	0	$\frac{13\sqrt{6}}{560}$	0
		0	0	$\frac{\sqrt{2}}{8}$	0	$-\frac{1}{28}$	0	0	0	0	$\frac{\sqrt{6}}{16}$	0	$-\frac{\sqrt{10}}{56}$	0	$-\frac{\sqrt{210}}{560}$
631	symmetry	$-\frac{\sqrt{5}xz(x^2-6y^2+z^2)}{2}$													
	$\mathbb{G}_{4,2}^{(a)}(T_{2u})$	$-\frac{i}{112}$	0	$\frac{\sqrt{10}i}{112}$	0	$\frac{\sqrt{5}i}{16}$	0	0	$-\frac{9\sqrt{6}i}{560}$	0	$\frac{3\sqrt{30}i}{280}$	0	$\frac{9\sqrt{2}i}{80}$	0	0
		0	$\frac{\sqrt{15}i}{112}$	0	$-\frac{\sqrt{30}i}{112}$	0	$-\frac{\sqrt{3}i}{16}$	$\frac{3\sqrt{14}i}{80}$	0	$\frac{3\sqrt{6}i}{140}$	0	$-\frac{3\sqrt{10}i}{560}$	0	$\frac{3\sqrt{2}i}{40}$	0
		$-\frac{\sqrt{3}i}{16}$	0	$-\frac{\sqrt{30}i}{112}$	0	$\frac{\sqrt{15}i}{112}$	0	0	$-\frac{3\sqrt{2}i}{40}$	0	$\frac{3\sqrt{10}i}{560}$	0	$-\frac{3\sqrt{6}i}{140}$	0	$-\frac{3\sqrt{14}i}{80}$
		0	$\frac{\sqrt{5}i}{16}$	0	$\frac{\sqrt{10}i}{112}$	0	$-\frac{i}{112}$	0	0	$-\frac{9\sqrt{2}i}{80}$	0	$-\frac{3\sqrt{30}i}{280}$	0	$\frac{9\sqrt{6}i}{560}$	0
		0	$-\frac{i}{28}$	0	$-\frac{\sqrt{2}i}{8}$	0	0	$-\frac{\sqrt{210}i}{560}$	0	$\frac{\sqrt{10}i}{56}$	0	$\frac{\sqrt{6}i}{16}$	0	0	0
		$-\frac{i}{28}$	0	$\frac{\sqrt{10}i}{56}$	0	0	0	0	$\frac{13\sqrt{6}i}{560}$	0	$-\frac{\sqrt{30}i}{280}$	0	$\frac{7\sqrt{2}i}{80}$	0	0
		0	$\frac{\sqrt{10}i}{56}$	0	0	0	$\frac{\sqrt{2}i}{8}$	$-\frac{3\sqrt{21}i}{80}$	0	$-\frac{i}{560}$	0	$-\frac{\sqrt{15}i}{80}$	0	$-\frac{\sqrt{3}i}{80}$	0
		$-\frac{\sqrt{2}i}{8}$	0	0	0	$-\frac{\sqrt{10}i}{56}$	0	0	$-\frac{\sqrt{3}i}{80}$	0	$-\frac{\sqrt{15}i}{80}$	0	$-\frac{i}{560}$	0	$-\frac{3\sqrt{21}i}{80}$
		0	0	0	$-\frac{\sqrt{10}i}{56}$	0	$\frac{i}{28}$	0	0	$\frac{7\sqrt{2}i}{80}$	0	$-\frac{\sqrt{30}i}{280}$	0	$\frac{13\sqrt{6}i}{560}$	0
		0	0	$\frac{\sqrt{2}i}{8}$	0	$\frac{i}{28}$	0	0	0	0	$\frac{\sqrt{6}i}{16}$	0	$\frac{\sqrt{10}i}{56}$	0	$-\frac{\sqrt{210}i}{560}$
632	symmetry	$-\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{G}_{4,3}^{(a)}(T_{2u})$	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	0	$\frac{9\sqrt{30}}{280}$	0	0	0	$-\frac{3\sqrt{42}}{280}$
		0	0	$\frac{3\sqrt{2}}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{6}}{14}$	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
633	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$													
	$\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)$	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	$\frac{\sqrt{3}(x-y)(x+y)}{2}$													

continued ...

Table 9

No.	multipole	matrix												
	$\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)$	0	0	0	$-\frac{3i}{70}$	0	0	$-\frac{\sqrt{105}i}{35}$	0	0	0	$-\frac{\sqrt{3}i}{35}$	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	$\frac{\sqrt{6}i}{35}$	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	$\frac{3i}{70}$	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	$\frac{\sqrt{15}i}{70}$	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
		$\frac{\sqrt{5}i}{35}$	0	0	0	$\frac{3i}{35}$	0	0	$-\frac{\sqrt{30}i}{35}$	0	0	0	$\frac{3\sqrt{10}i}{70}$	0
		0	$\frac{3i}{35}$	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	$\frac{3i}{35}$	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	$-\frac{\sqrt{15}i}{70}$	0	0	0
635	symmetry	$\sqrt{3}yz$												
	$\mathbb{G}_{2,1}^{(1,-1;a)}(T_{2u})$	$-\frac{3\sqrt{10}}{140}$	0	$-\frac{9}{140}$	0	0	0	0	$-\frac{2\sqrt{15}}{35}$	0	$-\frac{2\sqrt{3}}{35}$	0	0	0
		0	$\frac{\sqrt{6}}{140}$	0	$-\frac{\sqrt{3}}{28}$	0	0	0	0	$-\frac{2\sqrt{15}}{35}$	0	$-\frac{6}{35}$	0	0
		0	0	$\frac{\sqrt{3}}{28}$	0	$-\frac{\sqrt{6}}{140}$	0	0	0	0	$-\frac{6}{35}$	0	$-\frac{2\sqrt{15}}{35}$	0
		0	0	0	$\frac{9}{140}$	0	$\frac{3\sqrt{10}}{140}$	0	0	0	0	$-\frac{2\sqrt{3}}{35}$	0	$-\frac{2\sqrt{15}}{35}$
		0	$\frac{\sqrt{10}}{35}$	0	0	0	0	$\frac{\sqrt{21}}{28}$	0	$\frac{3}{28}$	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	$-\frac{2}{35}$	0	0	0	0	0	0	$-\frac{3\sqrt{10}}{140}$	0	$\frac{\sqrt{6}}{20}$	0	0
		0	0	0	0	$-\frac{2}{35}$	0	0	0	0	$-\frac{\sqrt{6}}{20}$	0	$\frac{3\sqrt{10}}{140}$	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	$\frac{\sqrt{10}}{35}$	0	0	0	0	0	0	$-\frac{3}{28}$	$-\frac{\sqrt{21}}{28}$
636	symmetry	$\sqrt{3}xz$												

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{G}_{2,2}^{(1,-1;a)}(T_{2u})$	$\frac{3\sqrt{10}i}{140}$	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	$-\frac{\sqrt{21}i}{28}$
637	symmetry	$\sqrt{3}xy$													
	$\mathbb{G}_{2,3}^{(1,-1;a)}(T_{2u})$	$\begin{bmatrix} 0 & 0 & 0 & -\frac{3}{70} & 0 & 0 & \frac{\sqrt{105}}{35} & 0 & 0 & 0 & -\frac{\sqrt{3}}{35} & 0 & 0 & 0 \\ -\frac{\sqrt{30}}{70} & 0 & 0 & 0 & -\frac{\sqrt{6}}{35} & 0 & 0 & \frac{3\sqrt{5}}{35} & 0 & 0 & 0 & -\frac{\sqrt{15}}{35} & 0 & 0 \\ 0 & -\frac{\sqrt{6}}{35} & 0 & 0 & 0 & -\frac{\sqrt{30}}{70} & 0 & 0 & \frac{\sqrt{15}}{35} & 0 & 0 & 0 & -\frac{3\sqrt{5}}{35} & 0 \\ 0 & 0 & -\frac{3}{70} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{35} & 0 & 0 & 0 & -\frac{\sqrt{105}}{35} \\ 0 & 0 & \frac{\sqrt{5}}{35} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{70} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{3}{35} & 0 & 0 & \frac{\sqrt{105}}{70} & 0 & 0 & 0 & \frac{2\sqrt{3}}{35} & 0 & 0 & 0 \\ -\frac{\sqrt{5}}{35} & 0 & 0 & 0 & \frac{3}{35} & 0 & 0 & \frac{\sqrt{30}}{35} & 0 & 0 & 0 & \frac{3\sqrt{10}}{70} & 0 & 0 \\ 0 & -\frac{3}{35} & 0 & 0 & 0 & \frac{\sqrt{5}}{35} & 0 & 0 & \frac{3\sqrt{10}}{70} & 0 & 0 & 0 & \frac{\sqrt{30}}{35} & 0 \\ 0 & 0 & -\frac{3}{35} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{2\sqrt{3}}{35} & 0 & 0 & 0 & \frac{\sqrt{105}}{70} \\ 0 & 0 & 0 & -\frac{\sqrt{5}}{35} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{15}}{70} & 0 & 0 & 0 \end{bmatrix}$													
638	symmetry	$\frac{\sqrt{21}(x^4-3x^2y^2-3x^2z^2+y^4-3y^2z^2+z^4)}{6}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{G}_4^{(1,-1;a)}(A_{1u})$	0	$\frac{\sqrt{7}i}{168}$	0	0	0	$\frac{\sqrt{35}i}{168}$	0	0	$\frac{\sqrt{70}i}{56}$	0	0	0	$\frac{\sqrt{210}i}{168}$	0
		0	0	$-\frac{\sqrt{42}i}{168}$	0	0	0	0	0	$-\frac{5\sqrt{14}i}{168}$	0	0	0	0	$\frac{\sqrt{10}i}{24}$
		0	0	0	$\frac{\sqrt{42}i}{168}$	0	0	$\frac{\sqrt{10}i}{24}$	0	0	0	$-\frac{5\sqrt{14}i}{168}$	0	0	0
		$-\frac{\sqrt{35}i}{168}$	0	0	0	$-\frac{\sqrt{7}i}{168}$	0	0	$\frac{\sqrt{210}i}{168}$	0	0	0	$\frac{\sqrt{70}i}{56}$	0	0
		$-\frac{\sqrt{7}i}{84}$	0	0	0	$-\frac{\sqrt{35}i}{84}$	0	0	$-\frac{5\sqrt{42}i}{168}$	0	0	0	$-\frac{5\sqrt{14}i}{168}$	0	0
		0	$\frac{\sqrt{7}i}{28}$	0	0	0	$-\frac{\sqrt{35}i}{84}$	0	0	$\frac{\sqrt{70}i}{42}$	0	0	0	$-\frac{\sqrt{210}i}{84}$	0
		0	0	$-\frac{\sqrt{7}i}{42}$	0	0	0	0	0	$\frac{5\sqrt{21}i}{168}$	0	0	0	0	$-\frac{\sqrt{15}i}{24}$
		0	0	0	$-\frac{\sqrt{7}i}{42}$	0	0	$\frac{\sqrt{15}i}{24}$	0	0	0	$-\frac{5\sqrt{21}i}{168}$	0	0	0
		$-\frac{\sqrt{35}i}{84}$	0	0	0	$\frac{\sqrt{7}i}{28}$	0	0	$\frac{\sqrt{210}i}{84}$	0	0	0	$-\frac{\sqrt{70}i}{42}$	0	0
		0	$-\frac{\sqrt{35}i}{84}$	0	0	0	$-\frac{\sqrt{7}i}{84}$	0	0	$\frac{5\sqrt{14}i}{168}$	0	0	0	$\frac{5\sqrt{42}i}{168}$	0
639	symmetry	$-\frac{\sqrt{15}(x^4-12x^2y^2+6x^2z^2+y^4+6y^2z^2-2z^4)}{12}$													
	$\mathbb{G}_{4,1}^{(1,-1;a)}(E_u)$	0	$\frac{\sqrt{5}i}{168}$	0	0	0	$-\frac{i}{24}$	0	0	$\frac{5\sqrt{2}i}{56}$	0	0	0	$-\frac{\sqrt{6}i}{24}$	0
		0	0	$-\frac{\sqrt{30}i}{168}$	0	0	0	0	0	$-\frac{5\sqrt{10}i}{168}$	0	0	0	0	$-\frac{\sqrt{14}i}{24}$
		0	0	0	$\frac{\sqrt{30}i}{168}$	0	0	$-\frac{\sqrt{14}i}{24}$	0	0	0	$-\frac{5\sqrt{10}i}{168}$	0	0	0
		$\frac{i}{24}$	0	0	0	$-\frac{\sqrt{5}i}{168}$	0	0	$-\frac{\sqrt{6}i}{24}$	0	0	0	$\frac{5\sqrt{2}i}{56}$	0	0
		$-\frac{\sqrt{5}i}{84}$	0	0	0	$\frac{i}{12}$	0	0	$-\frac{5\sqrt{30}i}{168}$	0	0	0	$\frac{\sqrt{10}i}{24}$	0	0
		0	$\frac{\sqrt{5}i}{28}$	0	0	0	$\frac{i}{12}$	0	0	$\frac{5\sqrt{2}i}{42}$	0	0	0	$\frac{\sqrt{6}i}{12}$	0
		0	0	$-\frac{\sqrt{5}i}{42}$	0	0	0	0	0	$\frac{5\sqrt{15}i}{168}$	0	0	0	0	$\frac{\sqrt{21}i}{24}$
		0	0	0	$-\frac{\sqrt{5}i}{42}$	0	0	$-\frac{\sqrt{21}i}{24}$	0	0	0	$-\frac{5\sqrt{15}i}{168}$	0	0	0
		$\frac{i}{12}$	0	0	0	$\frac{\sqrt{5}i}{28}$	0	0	$-\frac{\sqrt{6}i}{12}$	0	0	0	$-\frac{5\sqrt{2}i}{42}$	0	0
		0	$\frac{i}{12}$	0	0	0	$-\frac{\sqrt{5}i}{84}$	0	0	$-\frac{\sqrt{10}i}{24}$	0	0	0	$\frac{5\sqrt{30}i}{168}$	0
640	symmetry	$\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$													

continued ...



Table 9

No.	multipole	matrix													
	$\mathbb{G}_{4,2}^{(1,-1;a)}(E_u)$	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	$-\frac{3\sqrt{10i}}{56}$	0	0	0	0	$-\frac{\sqrt{14i}}{56}$
		0	0	$\frac{\sqrt{6i}}{28}$	0	0	0	0	0	$\frac{5\sqrt{2i}}{28}$	0	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	$-\frac{\sqrt{10i}}{56}$	0	0	0	0	$\frac{3\sqrt{14i}}{56}$
		0	0	0	$\frac{\sqrt{6i}}{28}$	0	0	0	0	0	$-\frac{5\sqrt{2i}}{28}$	0	0	0	0
641	symmetry	$\frac{\sqrt{35}yz(y-z)(y+z)}{2}$													
	$\mathbb{G}_{4,1}^{(1,-1;a)}(T_{1u})$	$-\frac{\sqrt{21}}{672}$	0	$-\frac{\sqrt{210}}{672}$	0	$-\frac{\sqrt{105}}{672}$	0	0	$-\frac{3\sqrt{14}}{112}$	0	$-\frac{\sqrt{70}}{56}$	0	$-\frac{\sqrt{42}}{112}$	0	0
		0	$\frac{\sqrt{35}}{224}$	0	$\frac{\sqrt{70}}{224}$	0	$\frac{\sqrt{7}}{224}$	$\frac{\sqrt{6}}{48}$	0	$\frac{\sqrt{14}}{28}$	0	$\frac{\sqrt{210}}{336}$	0	$-\frac{\sqrt{42}}{168}$	0
		$-\frac{\sqrt{7}}{224}$	0	$-\frac{\sqrt{70}}{224}$	0	$-\frac{\sqrt{35}}{224}$	0	0	$-\frac{\sqrt{42}}{168}$	0	$\frac{\sqrt{210}}{336}$	0	$\frac{\sqrt{14}}{28}$	0	$\frac{\sqrt{6}}{48}$
		0	$\frac{\sqrt{105}}{672}$	0	$\frac{\sqrt{210}}{672}$	0	$\frac{\sqrt{21}}{672}$	0	0	$-\frac{\sqrt{42}}{112}$	0	$-\frac{\sqrt{70}}{56}$	0	$-\frac{3\sqrt{14}}{112}$	0
		0	$\frac{\sqrt{21}}{84}$	0	$\frac{\sqrt{42}}{168}$	0	0	$\frac{\sqrt{10}}{32}$	0	$\frac{5\sqrt{210}}{336}$	0	$\frac{5\sqrt{14}}{224}$	0	0	0
		$-\frac{\sqrt{21}}{84}$	0	$-\frac{\sqrt{210}}{168}$	0	0	0	0	$-\frac{13\sqrt{14}}{224}$	0	$-\frac{\sqrt{70}}{112}$	0	$\frac{\sqrt{42}}{96}$	0	0
		0	$\frac{\sqrt{210}}{168}$	0	0	0	$-\frac{\sqrt{42}}{168}$	$\frac{3}{32}$	0	$\frac{\sqrt{21}}{672}$	0	$-\frac{\sqrt{35}}{32}$	0	$-\frac{\sqrt{7}}{224}$	0
		$-\frac{\sqrt{42}}{168}$	0	0	0	$\frac{\sqrt{210}}{168}$	0	0	$\frac{\sqrt{7}}{224}$	0	$\frac{\sqrt{35}}{32}$	0	$-\frac{\sqrt{21}}{672}$	0	$-\frac{3}{32}$
		0	0	0	$-\frac{\sqrt{210}}{168}$	0	$-\frac{\sqrt{21}}{84}$	0	0	$-\frac{\sqrt{42}}{96}$	0	$\frac{\sqrt{70}}{112}$	0	$\frac{13\sqrt{14}}{224}$	0
		0	0	$\frac{\sqrt{42}}{168}$	0	$\frac{\sqrt{21}}{84}$	0	0	0	$-\frac{5\sqrt{14}}{224}$	0	$-\frac{5\sqrt{210}}{336}$	0	$-\frac{\sqrt{10}}{32}$	0
642	symmetry	$-\frac{\sqrt{35}xz(x-z)(x+z)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{G}_{4,2}^{(1,-1;a)}(T_{1u})$	$-\frac{\sqrt{21}i}{672}$	0	$\frac{\sqrt{210}i}{672}$	0	$-\frac{\sqrt{105}i}{672}$	0	0	$-\frac{3\sqrt{14}i}{112}$	0	$\frac{\sqrt{70}i}{56}$	0	$-\frac{\sqrt{42}i}{112}$	0	0
		0	$\frac{\sqrt{35}i}{224}$	0	$-\frac{\sqrt{70}i}{224}$	0	$\frac{\sqrt{7}i}{224}$	$-\frac{\sqrt{6}i}{48}$	0	$\frac{\sqrt{14}i}{28}$	0	$-\frac{\sqrt{210}i}{336}$	0	$-\frac{\sqrt{42}i}{168}$	0
		$\frac{\sqrt{7}i}{224}$	0	$-\frac{\sqrt{70}i}{224}$	0	$\frac{\sqrt{35}i}{224}$	0	0	$\frac{\sqrt{42}i}{168}$	0	$\frac{\sqrt{210}i}{336}$	0	$-\frac{\sqrt{14}i}{28}$	0	$\frac{\sqrt{6}i}{48}$
		0	$-\frac{\sqrt{105}i}{672}$	0	$\frac{\sqrt{210}i}{672}$	0	$-\frac{\sqrt{21}i}{672}$	0	0	$\frac{\sqrt{42}i}{112}$	0	$-\frac{\sqrt{70}i}{56}$	0	$\frac{3\sqrt{14}i}{112}$	0
		0	$-\frac{\sqrt{21}i}{84}$	0	$\frac{\sqrt{42}i}{168}$	0	0	$\frac{\sqrt{10}i}{32}$	0	$-\frac{5\sqrt{210}i}{336}$	0	$\frac{5\sqrt{14}i}{224}$	0	0	0
		$-\frac{\sqrt{21}i}{84}$	0	$\frac{\sqrt{210}i}{168}$	0	0	0	0	$-\frac{13\sqrt{14}i}{224}$	0	$\frac{\sqrt{70}i}{112}$	0	$\frac{\sqrt{42}i}{96}$	0	0
		0	$\frac{\sqrt{210}i}{168}$	0	0	0	$-\frac{\sqrt{42}i}{168}$	$-\frac{3i}{32}$	0	$\frac{\sqrt{21}i}{672}$	0	$\frac{\sqrt{35}i}{32}$	0	$-\frac{\sqrt{7}i}{224}$	0
		$\frac{\sqrt{42}i}{168}$	0	0	0	$-\frac{\sqrt{210}i}{168}$	0	0	$-\frac{\sqrt{7}i}{224}$	0	$\frac{\sqrt{35}i}{32}$	0	$\frac{\sqrt{21}i}{672}$	0	$-\frac{3i}{32}$
		0	0	0	$-\frac{\sqrt{210}i}{168}$	0	$\frac{\sqrt{21}i}{84}$	0	0	$\frac{\sqrt{42}i}{96}$	0	$\frac{\sqrt{70}i}{112}$	0	$-\frac{13\sqrt{14}i}{224}$	0
		0	0	$-\frac{\sqrt{42}i}{168}$	0	$\frac{\sqrt{21}i}{84}$	0	0	0	0	$\frac{5\sqrt{14}i}{224}$	0	$-\frac{5\sqrt{210}i}{336}$	0	$\frac{\sqrt{10}i}{32}$
643	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$													
	$\mathbb{G}_{4,3}^{(1,-1;a)}(T_{1u})$	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	$\frac{\sqrt{6}}{12}$	
		0	0	0	0	0	0	$-\frac{\sqrt{6}}{12}$	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	$-\frac{\sqrt{21}}{42}$	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	$-\frac{\sqrt{14}}{14}$	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	
		$\frac{\sqrt{21}}{42}$	0	0	0	0	0	0	$-\frac{\sqrt{14}}{14}$	0	0	0	0	0	
		0	$\frac{\sqrt{21}}{42}$	0	0	0	0	0	0	$-\frac{\sqrt{210}}{84}$	0	0	0	0	
644	symmetry	$\frac{\sqrt{5}yz(6x^2-y^2-z^2)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{G}_{4,1}^{(1,-1;a)}(T_{2u})$	$-\frac{\sqrt{3}}{672}$	0	$-\frac{\sqrt{30}}{672}$	0	$\frac{\sqrt{15}}{96}$	0	0	$-\frac{3\sqrt{2}}{112}$	0	$-\frac{\sqrt{10}}{56}$	0	$\frac{\sqrt{6}}{16}$	0	0
		0	$\frac{\sqrt{5}}{224}$	0	$\frac{\sqrt{10}}{224}$	0	$-\frac{1}{32}$	$-\frac{\sqrt{42}}{48}$	0	$\frac{\sqrt{2}}{28}$	0	$\frac{\sqrt{30}}{336}$	0	$\frac{\sqrt{6}}{24}$	0
		$\frac{1}{32}$	0	$-\frac{\sqrt{10}}{224}$	0	$-\frac{\sqrt{5}}{224}$	0	0	$\frac{\sqrt{6}}{24}$	0	$\frac{\sqrt{30}}{336}$	0	$\frac{\sqrt{2}}{28}$	0	$-\frac{\sqrt{42}}{48}$
		0	$-\frac{\sqrt{15}}{96}$	0	$\frac{\sqrt{30}}{672}$	0	$\frac{\sqrt{3}}{672}$	0	0	$\frac{\sqrt{6}}{16}$	0	$-\frac{\sqrt{10}}{56}$	0	$-\frac{3\sqrt{2}}{112}$	0
		0	$\frac{\sqrt{3}}{84}$	0	$-\frac{\sqrt{6}}{24}$	0	0	$\frac{\sqrt{70}}{224}$	0	$\frac{5\sqrt{30}}{336}$	0	$-\frac{5\sqrt{2}}{32}$	0	0	0
		$-\frac{\sqrt{3}}{84}$	0	$-\frac{\sqrt{30}}{168}$	0	0	0	$-\frac{13\sqrt{2}}{224}$	0	$-\frac{\sqrt{10}}{112}$	0	$-\frac{7\sqrt{6}}{96}$	0	0	0
		0	$\frac{\sqrt{30}}{168}$	0	0	0	$\frac{\sqrt{6}}{24}$	$-\frac{3\sqrt{7}}{32}$	0	$\frac{\sqrt{3}}{672}$	0	$-\frac{\sqrt{5}}{32}$	0	$\frac{1}{32}$	0
		$\frac{\sqrt{6}}{24}$	0	0	0	$\frac{\sqrt{30}}{168}$	0	0	$-\frac{1}{32}$	0	$\frac{\sqrt{5}}{32}$	0	$-\frac{\sqrt{3}}{672}$	0	$\frac{3\sqrt{7}}{32}$
		0	0	0	$-\frac{\sqrt{30}}{168}$	0	$-\frac{\sqrt{3}}{84}$	0	0	$\frac{7\sqrt{6}}{96}$	0	$\frac{\sqrt{10}}{112}$	0	$\frac{13\sqrt{2}}{224}$	0
		0	0	$-\frac{\sqrt{6}}{24}$	0	$\frac{\sqrt{3}}{84}$	0	0	0	$\frac{5\sqrt{2}}{32}$	0	$-\frac{5\sqrt{30}}{336}$	0	$-\frac{\sqrt{70}}{224}$	0
645	symmetry	$-\frac{\sqrt{5}xz(x^2-6y^2+z^2)}{2}$													
	$\mathbb{G}_{4,2}^{(1,-1;a)}(T_{2u})$	$\frac{\sqrt{3}i}{672}$	0	$-\frac{\sqrt{30}i}{672}$	0	$-\frac{\sqrt{15}i}{96}$	0	0	$\frac{3\sqrt{2}i}{112}$	0	$-\frac{\sqrt{10}i}{56}$	0	$-\frac{\sqrt{6}i}{16}$	0	0
		0	$-\frac{\sqrt{5}i}{224}$	0	$\frac{\sqrt{10}i}{224}$	0	$\frac{i}{32}$	$-\frac{\sqrt{42}i}{48}$	0	$-\frac{\sqrt{2}i}{28}$	0	$\frac{\sqrt{30}i}{336}$	0	$-\frac{\sqrt{6}i}{24}$	0
		$\frac{i}{32}$	0	$\frac{\sqrt{10}i}{224}$	0	$-\frac{\sqrt{5}i}{224}$	0	0	$\frac{\sqrt{6}i}{24}$	0	$-\frac{\sqrt{30}i}{336}$	0	$\frac{\sqrt{2}i}{28}$	0	$\frac{\sqrt{42}i}{48}$
		0	$-\frac{\sqrt{15}i}{96}$	0	$-\frac{\sqrt{30}i}{672}$	0	$\frac{\sqrt{3}i}{672}$	0	0	$\frac{\sqrt{6}i}{16}$	0	$\frac{\sqrt{10}i}{56}$	0	$-\frac{3\sqrt{2}i}{112}$	0
		0	$\frac{\sqrt{3}i}{84}$	0	$\frac{\sqrt{6}i}{24}$	0	0	$-\frac{\sqrt{70}i}{224}$	0	$\frac{5\sqrt{30}i}{336}$	0	$\frac{5\sqrt{2}i}{32}$	0	0	0
		$\frac{\sqrt{3}i}{84}$	0	$-\frac{\sqrt{30}i}{168}$	0	0	0	$\frac{13\sqrt{2}i}{224}$	0	$-\frac{\sqrt{10}i}{112}$	0	$\frac{7\sqrt{6}i}{96}$	0	0	0
		0	$-\frac{\sqrt{30}i}{168}$	0	0	0	$-\frac{\sqrt{6}i}{24}$	$-\frac{3\sqrt{7}i}{32}$	0	$-\frac{\sqrt{3}i}{672}$	0	$-\frac{\sqrt{5}i}{32}$	0	$-\frac{i}{32}$	0
		$\frac{\sqrt{6}i}{24}$	0	0	0	$\frac{\sqrt{30}i}{168}$	0	0	$-\frac{i}{32}$	0	$-\frac{\sqrt{5}i}{32}$	0	$-\frac{\sqrt{3}i}{672}$	0	$-\frac{3\sqrt{7}i}{32}$
		0	0	0	$\frac{\sqrt{30}i}{168}$	0	$-\frac{\sqrt{3}i}{84}$	0	0	$\frac{7\sqrt{6}i}{96}$	0	$-\frac{\sqrt{10}i}{112}$	0	$\frac{13\sqrt{2}i}{224}$	0
		0	0	$-\frac{\sqrt{6}i}{24}$	0	$-\frac{\sqrt{3}i}{84}$	0	0	0	$\frac{5\sqrt{2}i}{32}$	0	$\frac{5\sqrt{30}i}{336}$	0	$-\frac{\sqrt{70}i}{224}$	0
646	symmetry	$-\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
647	$\mathbb{G}_{4,3}^{(1,-1;a)}(T_{2u})$	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
		$\frac{\sqrt{2}(2x^6-15x^4y^2-15x^4z^2-15x^2y^4+180x^2y^2z^2-15x^2z^4+2y^6-15y^4z^2-15y^2z^4+2z^6)}{8}$													
648	$\mathbb{G}_6^{(1,-1;a)}(A_{1u})$	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	$\frac{\sqrt{33}i}{264}$	0	0	0	$-\frac{7\sqrt{11}i}{88}$	0	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{55}i}{88}$	0	0	0	0	$\frac{7\sqrt{165}i}{264}$	0	0
		0	0	0	0	0	0	0	$\frac{5\sqrt{66}i}{264}$	0	0	0	0	$-\frac{\sqrt{2310}i}{264}$	0
		0	0	0	0	0	$\frac{\sqrt{2310}i}{264}$	0	0	0	$-\frac{5\sqrt{66}i}{264}$	0	0	0	0
		0	0	0	0	0	0	$-\frac{7\sqrt{165}i}{264}$	0	0	0	$\frac{\sqrt{55}i}{88}$	0	0	0
		0	0	0	0	0	0	0	$\frac{7\sqrt{11}i}{88}$	0	0	0	$-\frac{\sqrt{33}i}{264}$	0	0
		$-\frac{\sqrt{2310}(x-y)(x+y)(x-z)(x+z)(y-z)(y+z)}{8}$													

continued ...

Table 9

No.	multipole	matrix
	$\mathbb{G}_6^{(1,-1;a)}(A_{2u})$	$ \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{7}i}{24} & 0 & 0 & 0 & \frac{\sqrt{5}i}{8} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{i}{24} & 0 & 0 & 0 & \frac{\sqrt{35}i}{24} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}i}{24} & 0 & 0 & 0 & -\frac{\sqrt{42}i}{24} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}i}{24} & 0 & 0 & 0 & \frac{\sqrt{14}i}{24} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{35}i}{24} & 0 & 0 & 0 & -\frac{i}{24} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}i}{8} & 0 & 0 & 0 & \frac{\sqrt{7}i}{24} & 0 & 0 & 0 & 0 \end{bmatrix} $
649	symmetry	$ -\frac{\sqrt{14}(x^6-15x^4z^2+15x^2z^4+y^6-15y^4z^2+15y^2z^4-2z^6)}{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 & 0 & 0 & 0 & 0 & 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}{264} & 0 & 0 & 0 & \frac{\sqrt{77}i}{88} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{385}i}{88} & 0 & 0 & 0 & -\frac{\sqrt{1155}i}{264} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{5\sqrt{462}i}{264} & 0 & 0 & 0 & \frac{\sqrt{330}i}{264} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{330}i}{264} & 0 & 0 & 0 & -\frac{5\sqrt{462}i}{264} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{1155}i}{264} & 0 & 0 & 0 & \frac{\sqrt{385}i}{88} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{77}i}{88} & 0 & 0 & 0 & -\frac{\sqrt{231}i}{264} & 0 & 0 \end{bmatrix} $
650	symmetry	$ \frac{\sqrt{42}(x-y)(x+y)(x^4-9x^2y^2-5x^2z^2+y^4-5y^2z^2+5z^4)}{8} $

continued ...

Table 9

No.	multipole	matrix													
651	$\mathbb{G}_{6,2}^{(1,-1;a)}(E_u)$	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	0	0	0	0	$\frac{\sqrt{385}i}{264}$	0	0	0	$\frac{\sqrt{11}i}{8}$	
		0	0	0	0	0	0	$-\frac{\sqrt{55}i}{264}$	0	0	0	$-\frac{5\sqrt{77}i}{264}$	0	0	0
		0	0	0	0	0	0	$\frac{\sqrt{770}i}{264}$	0	0	0	$\frac{\sqrt{2310}i}{264}$	0	0	
		0	0	0	0	0	0	0	$-\frac{\sqrt{2310}i}{264}$	0	0	0	$-\frac{\sqrt{770}i}{264}$	0	
		0	0	0	0	0	0	0	0	$\frac{5\sqrt{77}i}{264}$	0	0	0	$\frac{\sqrt{55}i}{264}$	
		0	0	0	0	0	0	$-\frac{\sqrt{11}i}{8}$	0	0	$-\frac{\sqrt{385}i}{264}$	0	0	0	
651	symmetry	$\frac{3\sqrt{7}yz(y-z)(y+z)(10x^2-y^2-z^2)}{4}$													
652	$\mathbb{G}_{6,1}^{(1,-1;a)}(T_{1u})$	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	$\frac{\sqrt{66}}{1056}$	0	$\frac{\sqrt{154}}{352}$	0	$-\frac{\sqrt{2310}}{352}$	0	$-\frac{\sqrt{462}}{96}$	0
		0	0	0	0	0	0	$-\frac{\sqrt{2310}}{1056}$	0	$-\frac{5\sqrt{462}}{1056}$	0	$\frac{3\sqrt{770}}{352}$	0	$\frac{\sqrt{330}}{96}$	
		0	0	0	0	0	0	$-\frac{\sqrt{165}}{176}$	0	$\frac{\sqrt{385}}{176}$	0	$\frac{5\sqrt{231}}{528}$	0	$-\frac{\sqrt{1155}}{176}$	0
		0	0	0	0	0	0	$\frac{\sqrt{1155}}{176}$	0	$-\frac{5\sqrt{231}}{528}$	0	$-\frac{\sqrt{385}}{176}$	0	$\frac{\sqrt{165}}{176}$	
		0	0	0	0	0	0	$-\frac{\sqrt{330}}{96}$	0	$-\frac{3\sqrt{770}}{352}$	0	$\frac{5\sqrt{462}}{1056}$	0	$\frac{\sqrt{2310}}{1056}$	0
		0	0	0	0	0	0	$\frac{\sqrt{462}}{96}$	0	$\frac{\sqrt{2310}}{352}$	0	$-\frac{\sqrt{154}}{352}$	0	$-\frac{\sqrt{66}}{1056}$	
652	symmetry	$\frac{3\sqrt{7}xz(x-z)(x+z)(x^2-10y^2+z^2)}{4}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{G}_{6,2}^{(1,-1;a)}(T_{1u})$	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{154}i}{352}$	0	$-\frac{\sqrt{2310}i}{352}$	0	$\frac{\sqrt{462}i}{96}$	0		
		0	0	0	0	0	0	$-\frac{\sqrt{2310}i}{1056}$	0	$\frac{5\sqrt{462}i}{1056}$	0	$\frac{3\sqrt{770}i}{352}$	0	$-\frac{\sqrt{330}i}{96}$	
		0	0	0	0	0	0	$\frac{\sqrt{165}i}{176}$	0	$\frac{\sqrt{385}i}{176}$	0	$-\frac{5\sqrt{231}i}{528}$	0	$-\frac{\sqrt{1155}i}{176}$	0
		0	0	0	0	0	0	$-\frac{\sqrt{1155}i}{176}$	0	$-\frac{5\sqrt{231}i}{528}$	0	$\frac{\sqrt{385}i}{176}$	0	$\frac{\sqrt{165}i}{176}$	
		0	0	0	0	0	0	$-\frac{\sqrt{330}i}{96}$	0	$\frac{3\sqrt{770}i}{352}$	0	$\frac{5\sqrt{462}i}{1056}$	0	$-\frac{\sqrt{2310}i}{1056}$	0
		0	0	0	0	0	0	$\frac{\sqrt{462}i}{96}$	0	$-\frac{\sqrt{2310}i}{352}$	0	$-\frac{\sqrt{154}i}{352}$	0	$\frac{\sqrt{66}i}{1056}$	
653	symmetry	$-\frac{3\sqrt{7}xy(x-y)(x+y)(x^2+y^2-10z^2)}{4}$													
	$\mathbb{G}_{6,3}^{(1,-1;a)}(T_{1u})$	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	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
654	symmetry	$\frac{\sqrt{462}yz(y^2-3z^2)(3y^2-z^2)}{16}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{G}_{6,1}^{(1,-1;a)}(T_{2u}, 1)$	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	$\frac{1}{64}$	0	$\frac{\sqrt{21}}{64}$	0	$\frac{\sqrt{35}}{64}$	0	$\frac{\sqrt{7}}{64}$	0
		0	0	0	0	0	0	$-\frac{\sqrt{35}}{64}$	0	$-\frac{5\sqrt{7}}{64}$	0	$-\frac{\sqrt{105}}{64}$	0	$-\frac{\sqrt{5}}{64}$	0
		0	0	0	0	0	0	$\frac{\sqrt{10}}{64}$	0	$\frac{\sqrt{210}}{64}$	0	$\frac{5\sqrt{14}}{64}$	0	$\frac{\sqrt{70}}{64}$	0
		0	0	0	0	0	0	$-\frac{\sqrt{70}}{64}$	0	$-\frac{5\sqrt{14}}{64}$	0	$-\frac{\sqrt{210}}{64}$	0	$-\frac{\sqrt{10}}{64}$	0
		0	0	0	0	0	0	$\frac{\sqrt{5}}{64}$	0	$\frac{\sqrt{105}}{64}$	0	$\frac{5\sqrt{7}}{64}$	0	$\frac{\sqrt{35}}{64}$	0
		0	0	0	0	0	0	$-\frac{\sqrt{7}}{64}$	0	$-\frac{\sqrt{35}}{64}$	0	$-\frac{\sqrt{21}}{64}$	0	$-\frac{1}{64}$	0
655	symmetry	$\frac{\sqrt{462}xz(x^2-3z^2)(3x^2-z^2)}{16}$													
	$\mathbb{G}_{6,2}^{(1,-1;a)}(T_{2u}, 1)$	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	$-\frac{i}{64}$	0	$\frac{\sqrt{21}i}{64}$	0	$-\frac{\sqrt{35}i}{64}$	0	$\frac{\sqrt{7}i}{64}$	0
		0	0	0	0	0	0	$\frac{\sqrt{35}i}{64}$	0	$-\frac{5\sqrt{7}i}{64}$	0	$\frac{\sqrt{105}i}{64}$	0	$-\frac{\sqrt{5}i}{64}$	0
		0	0	0	0	0	0	$\frac{\sqrt{10}i}{64}$	0	$-\frac{\sqrt{210}i}{64}$	0	$\frac{5\sqrt{14}i}{64}$	0	$-\frac{\sqrt{70}i}{64}$	0
		0	0	0	0	0	0	$-\frac{\sqrt{70}i}{64}$	0	$\frac{5\sqrt{14}i}{64}$	0	$-\frac{\sqrt{210}i}{64}$	0	$\frac{\sqrt{10}i}{64}$	0
		0	0	0	0	0	0	$-\frac{\sqrt{5}i}{64}$	0	$\frac{\sqrt{105}i}{64}$	0	$-\frac{5\sqrt{7}i}{64}$	0	$\frac{\sqrt{35}i}{64}$	0
		0	0	0	0	0	0	$\frac{\sqrt{7}i}{64}$	0	$-\frac{\sqrt{35}i}{64}$	0	$\frac{\sqrt{21}i}{64}$	0	$-\frac{i}{64}$	0
656	symmetry	$\frac{\sqrt{462}xy(x^2-3y^2)(3x^2-y^2)}{16}$													

continued ...



Table 9

No.	multipole	matrix														
		$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{1}{2} \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{1}{2} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$														
657	symmetry	$\frac{\sqrt{210}yz(16x^4-16x^2y^2-16x^2z^2+y^4+2y^2z^2+z^4)}{16}$														
		$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{55}}{2112} & 0 & \frac{\sqrt{1155}}{2112} & 0 & -\frac{9\sqrt{77}}{704} & 0 & \frac{\sqrt{385}}{64} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{5\sqrt{77}}{2112} & 0 & -\frac{5\sqrt{385}}{2112} & 0 & \frac{9\sqrt{231}}{704} & 0 & -\frac{5\sqrt{11}}{64} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{9\sqrt{22}}{704} & 0 & \frac{5\sqrt{462}}{2112} & 0 & \frac{5\sqrt{770}}{2112} & 0 & -\frac{9\sqrt{154}}{704} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{9\sqrt{154}}{704} & 0 & -\frac{5\sqrt{770}}{2112} & 0 & -\frac{5\sqrt{462}}{2112} & 0 & \frac{9\sqrt{22}}{704} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{5\sqrt{11}}{64} & 0 & -\frac{9\sqrt{231}}{704} & 0 & \frac{5\sqrt{385}}{2112} & 0 & \frac{5\sqrt{77}}{2112} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{385}}{64} & 0 & \frac{9\sqrt{77}}{704} & 0 & -\frac{\sqrt{1155}}{2112} & 0 & -\frac{\sqrt{55}}{2112} & 0 \end{bmatrix}$														
658	symmetry	$\frac{\sqrt{210}xz(x^4-16x^2y^2+2x^2z^2+16y^4-16y^2z^2+z^4)}{16}$														

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{G}_{6,2}^{(1,-1;a)}(T_{2u}, 2)$	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	$-\frac{\sqrt{55}i}{2112}$	0	$\frac{\sqrt{1155}i}{2112}$	0	$\frac{9\sqrt{77}i}{704}$	0	$\frac{\sqrt{385}i}{64}$	0
		0	0	0	0	0	0	$\frac{5\sqrt{77}i}{2112}$	0	$-\frac{5\sqrt{385}i}{2112}$	0	$-\frac{9\sqrt{231}i}{704}$	0	$-\frac{5\sqrt{11}i}{64}$	0
		0	0	0	0	0	0	$-\frac{9\sqrt{22}i}{704}$	0	$-\frac{5\sqrt{462}i}{2112}$	0	$\frac{5\sqrt{770}i}{2112}$	0	$\frac{9\sqrt{154}i}{704}$	0
		0	0	0	0	0	0	$\frac{9\sqrt{154}i}{704}$	0	$\frac{5\sqrt{770}i}{2112}$	0	$-\frac{5\sqrt{462}i}{2112}$	0	$-\frac{9\sqrt{22}i}{704}$	0
		0	0	0	0	0	0	$-\frac{5\sqrt{11}i}{64}$	0	$-\frac{9\sqrt{231}i}{704}$	0	$-\frac{5\sqrt{385}i}{2112}$	0	$\frac{5\sqrt{77}i}{2112}$	0
		0	0	0	0	0	0	$\frac{\sqrt{385}i}{64}$	0	$\frac{9\sqrt{77}i}{704}$	0	$\frac{\sqrt{1155}i}{2112}$	0	$-\frac{\sqrt{55}i}{2112}$	0
659	symmetry	$\frac{\sqrt{210}xy(x^4+2x^2y^2-16x^2z^2+y^4-16y^2z^2+16z^4)}{16}$													
	$\mathbb{G}_{6,3}^{(1,-1;a)}(T_{2u}, 2)$	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	$\frac{\sqrt{77}}{66}$	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	$-\frac{\sqrt{154}}{66}$	0	0	0	$\frac{\sqrt{462}}{66}$	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	$-\frac{\sqrt{385}}{66}$	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
660	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{G}_{2,1}^{(1,0;a)}(E_u)$	0	$\frac{\sqrt{15}i}{35}$	0	0	0	0	0	0	$-\frac{\sqrt{6}i}{14}$	0	0	0	0	0
		0	0	$\frac{\sqrt{10}i}{70}$	0	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	0	$-\frac{3\sqrt{30}i}{70}$	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
		$-\frac{\sqrt{15}i}{14}$	0	0	0	0	0	0	$-\frac{\sqrt{10}i}{28}$	0	0	0	0	0	0
		0	$\frac{\sqrt{15}i}{70}$	0	0	0	0	0	0	$-\frac{\sqrt{6}i}{28}$	0	0	0	0	0
		0	0	$\frac{2\sqrt{15}i}{35}$	0	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	0	$\frac{\sqrt{5}i}{70}$	0	0	0
		0	0	0	0	$\frac{\sqrt{15}i}{70}$	0	0	0	0	0	0	$\frac{\sqrt{6}i}{28}$	0	0
		0	0	0	0	0	$-\frac{\sqrt{15}i}{14}$	0	0	0	0	0	0	$\frac{\sqrt{10}i}{28}$	0
661	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$													
	$\mathbb{G}_{2,2}^{(1,0;a)}(E_u)$	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
662	symmetry	$\sqrt{3}yz$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{G}_{2,1}^{(1,0;a)}(T_{2u})$	$\frac{1}{14}$	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	$\frac{\sqrt{210}}{168}$
663	symmetry	$\sqrt{3}xz$													
	$\mathbb{G}_{2,2}^{(1,0;a)}(T_{2u})$	$-\frac{i}{14}$	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	$\frac{\sqrt{210}i}{168}$
664	symmetry	$\sqrt{3}xy$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{G}_{2,3}^{(1,0;a)}(T_{2u})$	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	$\frac{\sqrt{21}(x^4-3x^2y^2-3x^2z^2+y^4-3y^2z^2+z^4)}{6}$													
	$\mathbb{G}_4^{(1,0;a)}(A_{1u})$	0	$-\frac{\sqrt{105}i}{840}$	0	0	0	$-\frac{\sqrt{21}i}{168}$	0	0	$\frac{9\sqrt{42}i}{280}$	0	0	0	$\frac{9\sqrt{14}i}{280}$	0
		0	0	$\frac{\sqrt{70}i}{280}$	0	0	0	0	0	$-\frac{3\sqrt{210}i}{280}$	0	0	0	0	$\frac{3\sqrt{6}i}{40}$
		0	0	0	$-\frac{\sqrt{70}i}{280}$	0	0	$\frac{3\sqrt{6}i}{40}$	0	0	0	$-\frac{3\sqrt{210}i}{280}$	0	0	0
		$\frac{\sqrt{21}i}{168}$	0	0	0	$\frac{\sqrt{105}i}{840}$	0	0	$\frac{9\sqrt{14}i}{280}$	0	0	0	$\frac{9\sqrt{42}i}{280}$	0	0
		$\frac{\sqrt{105}i}{140}$	0	0	0	$\frac{\sqrt{21}i}{28}$	0	0	$\frac{\sqrt{70}i}{280}$	0	0	0	$\frac{\sqrt{210}i}{840}$	0	0
		0	$-\frac{3\sqrt{105}i}{140}$	0	0	0	$\frac{\sqrt{21}i}{28}$	0	0	$-\frac{\sqrt{42}i}{210}$	0	0	0	$\frac{\sqrt{14}i}{140}$	0
		0	0	$\frac{\sqrt{105}i}{70}$	0	0	0	0	0	$-\frac{\sqrt{35}i}{280}$	0	0	0	0	$\frac{i}{40}$
		0	0	0	$\frac{\sqrt{105}i}{70}$	0	0	$-\frac{i}{40}$	0	0	0	$\frac{\sqrt{35}i}{280}$	0	0	0
		$\frac{\sqrt{21}i}{28}$	0	0	0	$-\frac{3\sqrt{105}i}{140}$	0	0	$-\frac{\sqrt{14}i}{140}$	0	0	0	$\frac{\sqrt{42}i}{210}$	0	0
		0	$\frac{\sqrt{21}i}{28}$	0	0	0	$\frac{\sqrt{105}i}{140}$	0	0	$-\frac{\sqrt{210}i}{840}$	0	0	0	$-\frac{\sqrt{70}i}{280}$	0
666	symmetry	$-\frac{\sqrt{15}(x^4-12x^2y^2+6x^2z^2+y^4+6y^2z^2-2z^4)}{12}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{G}_{4,1}^{(1,0;a)}(E_u)$	0	$-\frac{\sqrt{3}i}{168}$	0	0	0	$\frac{\sqrt{15}i}{120}$	0	0	$\frac{9\sqrt{30}i}{280}$	0	0	0	$-\frac{9\sqrt{10}i}{200}$	0
		0	0	$\frac{\sqrt{2}i}{56}$	0	0	0	0	0	0	$-\frac{3\sqrt{6}i}{56}$	0	0	0	$-\frac{3\sqrt{210}i}{200}$
		0	0	0	$-\frac{\sqrt{2}i}{56}$	0	0	$-\frac{3\sqrt{210}i}{200}$	0	0	0	$-\frac{3\sqrt{6}i}{56}$	0	0	0
		$-\frac{\sqrt{15}i}{120}$	0	0	0	$\frac{\sqrt{3}i}{168}$	0	0	$-\frac{9\sqrt{10}i}{200}$	0	0	0	$\frac{9\sqrt{30}i}{280}$	0	0
		$\frac{\sqrt{3}i}{28}$	0	0	0	$-\frac{\sqrt{15}i}{20}$	0	0	$\frac{\sqrt{2}i}{56}$	0	0	0	$-\frac{\sqrt{6}i}{120}$	0	0
		0	$-\frac{3\sqrt{3}i}{28}$	0	0	0	$-\frac{\sqrt{15}i}{20}$	0	0	$-\frac{\sqrt{30}i}{210}$	0	0	0	$-\frac{\sqrt{10}i}{100}$	0
		0	0	$\frac{\sqrt{3}i}{14}$	0	0	0	0	0	0	$-\frac{i}{56}$	0	0	0	$-\frac{\sqrt{35}i}{200}$
		0	0	0	$\frac{\sqrt{3}i}{14}$	0	0	$\frac{\sqrt{35}i}{200}$	0	0	0	$\frac{i}{56}$	0	0	0
		$-\frac{\sqrt{15}i}{20}$	0	0	0	$-\frac{3\sqrt{3}i}{28}$	0	0	$\frac{\sqrt{10}i}{100}$	0	0	0	$\frac{\sqrt{30}i}{210}$	0	0
		0	$-\frac{\sqrt{15}i}{20}$	0	0	0	$\frac{\sqrt{3}i}{28}$	0	0	$\frac{\sqrt{6}i}{120}$	0	0	0	$-\frac{\sqrt{2}i}{56}$	0
667	symmetry	$\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$													
	$\mathbb{G}_{4,2}^{(1,0;a)}(E_u)$	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	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
668	symmetry	$\frac{\sqrt{35}yz(y-z)(y+z)}{2}$													

continued ...

Table 9

No.	multipole	matrix														
	$\mathbb{G}_{4,1}^{(1,0;a)}(T_{1u})$	$\frac{\sqrt{35}}{1120}$	0	$\frac{\sqrt{14}}{224}$	0	$\frac{\sqrt{7}}{224}$	0	0	$-\frac{27\sqrt{210}}{2800}$	0	$-\frac{9\sqrt{42}}{280}$	0	$-\frac{27\sqrt{70}}{2800}$	0	0	
		0	$-\frac{\sqrt{21}}{224}$	0	$-\frac{\sqrt{42}}{224}$	0	$-\frac{\sqrt{105}}{1120}$	$\frac{9\sqrt{10}}{400}$	0	$\frac{9\sqrt{210}}{700}$	0	$\frac{9\sqrt{14}}{560}$	0	$-\frac{9\sqrt{70}}{1400}$	0	
		$\frac{\sqrt{105}}{1120}$	0	$\frac{\sqrt{42}}{224}$	0	$\frac{\sqrt{21}}{224}$	0	0	$-\frac{9\sqrt{70}}{1400}$	0	$\frac{9\sqrt{14}}{560}$	0	$\frac{9\sqrt{210}}{700}$	0	$\frac{9\sqrt{10}}{400}$	
		0	$-\frac{\sqrt{7}}{224}$	0	$-\frac{\sqrt{14}}{224}$	0	$-\frac{\sqrt{35}}{1120}$	0	0	$-\frac{27\sqrt{70}}{2800}$	0	$-\frac{9\sqrt{42}}{280}$	0	$-\frac{27\sqrt{210}}{2800}$	0	
		0	$-\frac{3\sqrt{35}}{140}$	0	$-\frac{3\sqrt{70}}{280}$	0	0	$-\frac{\sqrt{6}}{160}$	0	$-\frac{\sqrt{14}}{112}$	0	$-\frac{\sqrt{210}}{1120}$	0	0	0	
		$\frac{3\sqrt{35}}{140}$	0	$\frac{3\sqrt{14}}{56}$	0	0	0	0	$\frac{13\sqrt{210}}{5600}$	0	$\frac{\sqrt{42}}{560}$	0	$-\frac{\sqrt{70}}{800}$	0	0	
		0	$-\frac{3\sqrt{14}}{56}$	0	0	0	$\frac{3\sqrt{70}}{280}$	$-\frac{3\sqrt{15}}{800}$	0	$-\frac{\sqrt{35}}{5600}$	0	$\frac{\sqrt{21}}{160}$	0	$\frac{\sqrt{105}}{5600}$	0	
		$\frac{3\sqrt{70}}{280}$	0	0	0	$-\frac{3\sqrt{14}}{56}$	0	0	$-\frac{\sqrt{105}}{5600}$	0	$-\frac{\sqrt{21}}{160}$	0	$\frac{\sqrt{35}}{5600}$	0	$\frac{3\sqrt{15}}{800}$	
		0	0	0	$\frac{3\sqrt{14}}{56}$	0	$\frac{3\sqrt{35}}{140}$	0	0	$\frac{\sqrt{70}}{800}$	0	$-\frac{\sqrt{42}}{560}$	0	$-\frac{13\sqrt{210}}{5600}$	0	
		0	0	$-\frac{3\sqrt{70}}{280}$	0	$-\frac{3\sqrt{35}}{140}$	0	0	0	0	$\frac{\sqrt{210}}{1120}$	0	$\frac{\sqrt{14}}{112}$	0	$\frac{\sqrt{6}}{160}$	
669	symmetry	$-\frac{\sqrt{35}xz(x-z)(x+z)}{2}$														
	$\mathbb{G}_{4,2}^{(1,0;a)}(T_{1u})$	$\frac{\sqrt{35}i}{1120}$	0	$-\frac{\sqrt{14}i}{224}$	0	$\frac{\sqrt{7}i}{224}$	0	0	$-\frac{27\sqrt{210}i}{2800}$	0	$\frac{9\sqrt{42}i}{280}$	0	$-\frac{27\sqrt{70}i}{2800}$	0	0	
		0	$-\frac{\sqrt{21}i}{224}$	0	$\frac{\sqrt{42}i}{224}$	0	$-\frac{\sqrt{105}i}{1120}$	$-\frac{9\sqrt{10}i}{400}$	0	$\frac{9\sqrt{210}i}{700}$	0	$-\frac{9\sqrt{14}i}{560}$	0	$-\frac{9\sqrt{70}i}{1400}$	0	
		$-\frac{\sqrt{105}i}{1120}$	0	$\frac{\sqrt{42}i}{224}$	0	$-\frac{\sqrt{21}i}{224}$	0	0	$\frac{9\sqrt{70}i}{1400}$	0	$\frac{9\sqrt{14}i}{560}$	0	$-\frac{9\sqrt{210}i}{700}$	0	$\frac{9\sqrt{10}i}{400}$	
		0	$\frac{\sqrt{7}i}{224}$	0	$-\frac{\sqrt{14}i}{224}$	0	$\frac{\sqrt{35}i}{1120}$	0	0	$\frac{27\sqrt{70}i}{2800}$	0	$-\frac{9\sqrt{42}i}{280}$	0	$\frac{27\sqrt{210}i}{2800}$	0	
		0	$\frac{3\sqrt{35}i}{140}$	0	$-\frac{3\sqrt{70}i}{280}$	0	0	$-\frac{\sqrt{6}i}{160}$	0	$\frac{\sqrt{14}i}{112}$	0	$-\frac{\sqrt{210}i}{1120}$	0	0	0	
		$\frac{3\sqrt{35}i}{140}$	0	$-\frac{3\sqrt{14}i}{56}$	0	0	0	0	$\frac{13\sqrt{210}i}{5600}$	0	$-\frac{\sqrt{42}i}{560}$	0	$-\frac{\sqrt{70}i}{800}$	0	0	
		0	$-\frac{3\sqrt{14}i}{56}$	0	0	0	$\frac{3\sqrt{70}i}{280}$	$\frac{3\sqrt{15}i}{800}$	0	$-\frac{\sqrt{35}i}{5600}$	0	$-\frac{\sqrt{21}i}{160}$	0	$\frac{\sqrt{105}i}{5600}$	0	
		$-\frac{3\sqrt{70}i}{280}$	0	0	0	$\frac{3\sqrt{14}i}{56}$	0	0	$\frac{\sqrt{105}i}{5600}$	0	$-\frac{\sqrt{21}i}{160}$	0	$-\frac{\sqrt{35}i}{5600}$	0	$\frac{3\sqrt{15}i}{800}$	
		0	0	0	$\frac{3\sqrt{14}i}{56}$	0	$-\frac{3\sqrt{35}i}{140}$	0	0	$-\frac{\sqrt{70}i}{800}$	0	$-\frac{\sqrt{42}i}{560}$	0	$\frac{13\sqrt{210}i}{5600}$	0	
		0	0	$\frac{3\sqrt{70}i}{280}$	0	$-\frac{3\sqrt{35}i}{140}$	0	0	0	0	$-\frac{\sqrt{210}i}{1120}$	0	$\frac{\sqrt{14}i}{112}$	0	$-\frac{\sqrt{6}i}{160}$	
670	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$														

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{G}_{4,3}^{(1,0;a)}(T_{1u})$	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
671	symmetry	$\frac{\sqrt{5}yz(6x^2-y^2-z^2)}{2}$													
	$\mathbb{G}_{4,1}^{(1,0;a)}(T_{2u})$	$\frac{\sqrt{5}}{1120}$	0	$\frac{\sqrt{2}}{224}$	0	$-\frac{1}{32}$	0	0	$-\frac{27\sqrt{30}}{2800}$	0	$-\frac{9\sqrt{6}}{280}$	0	$\frac{27\sqrt{10}}{400}$	0	0
		0	$-\frac{\sqrt{3}}{224}$	0	$-\frac{\sqrt{6}}{224}$	0	$\frac{\sqrt{15}}{160}$	$-\frac{9\sqrt{70}}{400}$	0	$\frac{9\sqrt{30}}{700}$	0	$\frac{9\sqrt{2}}{560}$	0	$\frac{9\sqrt{10}}{200}$	0
		$-\frac{\sqrt{15}}{160}$	0	$\frac{\sqrt{6}}{224}$	0	$\frac{\sqrt{3}}{224}$	0	0	$\frac{9\sqrt{10}}{200}$	0	$\frac{9\sqrt{2}}{560}$	0	$\frac{9\sqrt{30}}{700}$	0	$-\frac{9\sqrt{70}}{400}$
		0	$\frac{1}{32}$	0	$-\frac{\sqrt{2}}{224}$	0	$-\frac{\sqrt{5}}{1120}$	0	0	$\frac{27\sqrt{10}}{400}$	0	$-\frac{9\sqrt{6}}{280}$	0	$-\frac{27\sqrt{30}}{2800}$	0
		0	$-\frac{3\sqrt{5}}{140}$	0	$\frac{3\sqrt{10}}{40}$	0	0	$-\frac{\sqrt{42}}{1120}$	0	$-\frac{\sqrt{2}}{112}$	0	$\frac{\sqrt{30}}{160}$	0	0	0
		$\frac{3\sqrt{5}}{140}$	0	$\frac{3\sqrt{2}}{56}$	0	0	0	0	$\frac{13\sqrt{30}}{5600}$	0	$\frac{\sqrt{6}}{560}$	0	$\frac{7\sqrt{10}}{800}$	0	0
		0	$-\frac{3\sqrt{2}}{56}$	0	0	0	$-\frac{3\sqrt{10}}{40}$	$\frac{3\sqrt{105}}{800}$	0	$-\frac{\sqrt{5}}{5600}$	0	$\frac{\sqrt{3}}{160}$	0	$-\frac{\sqrt{15}}{800}$	0
		$-\frac{3\sqrt{10}}{40}$	0	0	0	$-\frac{3\sqrt{2}}{56}$	0	0	$\frac{\sqrt{15}}{800}$	0	$-\frac{\sqrt{3}}{160}$	0	$\frac{\sqrt{5}}{5600}$	0	$-\frac{3\sqrt{105}}{800}$
		0	0	0	$\frac{3\sqrt{2}}{56}$	0	$\frac{3\sqrt{5}}{140}$	0	0	$-\frac{7\sqrt{10}}{800}$	0	$-\frac{\sqrt{6}}{560}$	0	$-\frac{13\sqrt{30}}{5600}$	0
		0	0	$\frac{3\sqrt{10}}{40}$	0	$-\frac{3\sqrt{5}}{140}$	0	0	0	0	$-\frac{\sqrt{30}}{160}$	0	$\frac{\sqrt{2}}{112}$	0	$\frac{\sqrt{42}}{1120}$
672	symmetry	$-\frac{\sqrt{5}xz(x^2-6y^2+z^2)}{2}$													

continued ...



Table 9

No.	multipole	matrix													
	$\mathbb{G}_{4,2}^{(1,0;a)}(T_{2u})$	$-\frac{\sqrt{5}i}{1120}$	0	$\frac{\sqrt{2}i}{224}$	0	$\frac{i}{32}$	0	0	$\frac{27\sqrt{30}i}{2800}$	0	$-\frac{9\sqrt{6}i}{280}$	0	$-\frac{27\sqrt{10}i}{400}$	0	0
		0	$\frac{\sqrt{3}i}{224}$	0	$-\frac{\sqrt{6}i}{224}$	0	$-\frac{\sqrt{15}i}{160}$	$-\frac{9\sqrt{70}i}{400}$	0	$-\frac{9\sqrt{30}i}{700}$	0	$\frac{9\sqrt{2}i}{560}$	0	$-\frac{9\sqrt{10}i}{200}$	0
		$-\frac{\sqrt{15}i}{160}$	0	$-\frac{\sqrt{6}i}{224}$	0	$\frac{\sqrt{3}i}{224}$	0	0	$\frac{9\sqrt{10}i}{200}$	0	$-\frac{9\sqrt{2}i}{560}$	0	$\frac{9\sqrt{30}i}{700}$	0	$\frac{9\sqrt{70}i}{400}$
		0	$\frac{i}{32}$	0	$\frac{\sqrt{2}i}{224}$	0	$-\frac{\sqrt{5}i}{1120}$	0	0	$\frac{27\sqrt{10}i}{400}$	0	$\frac{9\sqrt{6}i}{280}$	0	$-\frac{27\sqrt{30}i}{2800}$	0
		0	$-\frac{3\sqrt{5}i}{140}$	0	$-\frac{3\sqrt{10}i}{40}$	0	0	$\frac{\sqrt{42}i}{1120}$	0	$-\frac{\sqrt{2}i}{112}$	0	$-\frac{\sqrt{30}i}{160}$	0	0	0
		$-\frac{3\sqrt{5}i}{140}$	0	$\frac{3\sqrt{2}i}{56}$	0	0	0	0	$-\frac{13\sqrt{30}i}{5600}$	0	$\frac{\sqrt{6}i}{560}$	0	$-\frac{7\sqrt{10}i}{800}$	0	0
		0	$\frac{3\sqrt{2}i}{56}$	0	0	0	$\frac{3\sqrt{10}i}{40}$	$\frac{3\sqrt{105}i}{800}$	0	$\frac{\sqrt{5}i}{5600}$	0	$\frac{\sqrt{3}i}{160}$	0	$\frac{\sqrt{15}i}{800}$	0
		$-\frac{3\sqrt{10}i}{40}$	0	0	0	$-\frac{3\sqrt{2}i}{56}$	0	0	$\frac{\sqrt{15}i}{800}$	0	$\frac{\sqrt{3}i}{160}$	0	$\frac{\sqrt{5}i}{5600}$	0	$\frac{3\sqrt{105}i}{800}$
		0	0	0	$-\frac{3\sqrt{2}i}{56}$	0	$\frac{3\sqrt{5}i}{140}$	0	0	$-\frac{7\sqrt{10}i}{800}$	0	$\frac{\sqrt{6}i}{560}$	0	$-\frac{13\sqrt{30}i}{5600}$	0
		0	0	$\frac{3\sqrt{10}i}{40}$	0	$\frac{3\sqrt{5}i}{140}$	0	0	0	0	$-\frac{\sqrt{30}i}{160}$	0	$-\frac{\sqrt{2}i}{112}$	0	$\frac{\sqrt{42}i}{1120}$
673	symmetry	$-\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$													
	$\mathbb{G}_{4,3}^{(1,0;a)}(T_{2u})$	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													
	$\mathbb{G}_0^{(1,1;a)}(A_{1u})$	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{3}i}{6}$	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{3}i}{6}$	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{3}i}{6}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{3}i}{6}$	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	$-\frac{\sqrt{3}i}{6}$	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	$-\frac{\sqrt{3}i}{6}$	0	0	0	0	0	0	0	0
675	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$													
	$\mathbb{G}_{2,1}^{(1,1;a)}(E_u)$	0	$\frac{12i}{35}$	0	0	0	0	0	$-\frac{3\sqrt{10}i}{140}$	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	$-\frac{2\sqrt{6}i}{35}$	0	0	0	0	0	$-\frac{9\sqrt{2}i}{140}$	0	0	0	0
		0	0	0	0	$-\frac{12i}{35}$	0	0	0	0	0	$-\frac{3\sqrt{10}i}{140}$	0	0	0
		$\frac{3i}{14}$	0	0	0	0	0	0	$-\frac{\sqrt{6}i}{21}$	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	$-\frac{6i}{35}$	0	0	0	0	0	$-\frac{2\sqrt{3}i}{105}$	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	$-\frac{3i}{70}$	0	0	0	0	0	$\frac{\sqrt{10}i}{35}$	0	0	0
		0	0	0	0	0	$\frac{3i}{14}$	0	0	0	0	0	$\frac{\sqrt{6}i}{21}$	0	0
676	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{G}_{2,2}^{(1,1;a)}(E_u)$	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
677	symmetry	$\sqrt{3}yz$													
	$\mathbb{G}_{2,1}^{(1,1;a)}(T_{2u})$	$\frac{2\sqrt{15}}{35}$	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	$\frac{\sqrt{14}}{42}$
678	symmetry	$\sqrt{3}xz$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{G}_{2,2}^{(1,1;a)}(T_{2u})$	$-\frac{2\sqrt{15}i}{35}$	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	$\frac{\sqrt{14}i}{42}$
679	symmetry	$\sqrt{3}xy$													
	$\mathbb{G}_{2,3}^{(1,1;a)}(T_{2u})$	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	0	$\frac{3\sqrt{2}}{280}$	0	0	0	$-\frac{3\sqrt{70}}{280}$
		0	0	$\frac{3\sqrt{30}}{140}$	0	0	0	0	0	0	$-\frac{\sqrt{10}}{105}$	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	0	$-\frac{4\sqrt{2}}{105}$	0	0	0	$-\frac{\sqrt{70}}{105}$
		0	0	0	$-\frac{3\sqrt{30}}{140}$	0	0	0	0	0	0	$-\frac{\sqrt{10}}{105}$	0	0	0
680	symmetry	$\frac{\sqrt{21}(x^4-3x^2y^2-3x^2z^2+y^4-3y^2z^2+z^4)}{6}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{G}_4^{(1,1;a)}(A_{1u})$	0	$-\frac{\sqrt{770i}}{210}$	0	0	0	$-\frac{\sqrt{154i}}{42}$	0	0	$\frac{\sqrt{77i}}{140}$	0	0	0	$\frac{\sqrt{231i}}{420}$	0
		0	0	$\frac{\sqrt{1155i}}{105}$	0	0	0	0	0	0	$-\frac{\sqrt{385i}}{420}$	0	0	0	$\frac{\sqrt{11i}}{60}$
		0	0	0	$-\frac{\sqrt{1155i}}{105}$	0	0	$\frac{\sqrt{11i}}{60}$	0	0	0	$-\frac{\sqrt{385i}}{420}$	0	0	0
		$\frac{\sqrt{154i}}{42}$	0	0	0	$\frac{\sqrt{770i}}{210}$	0	0	$\frac{\sqrt{231i}}{420}$	0	0	0	$\frac{\sqrt{77i}}{140}$	0	0
		$-\frac{\sqrt{770i}}{840}$	0	0	0	$-\frac{\sqrt{154i}}{168}$	0	0	$\frac{\sqrt{1155i}}{1155}$	0	0	0	$\frac{\sqrt{385i}}{1155}$	0	0
		0	$\frac{\sqrt{770i}}{280}$	0	0	0	$-\frac{\sqrt{154i}}{168}$	0	0	$-\frac{4\sqrt{77i}}{1155}$	0	0	0	$\frac{2\sqrt{231i}}{1155}$	0
		0	0	$-\frac{\sqrt{770i}}{420}$	0	0	0	0	0	0	$-\frac{\sqrt{2310i}}{2310}$	0	0	0	$\frac{\sqrt{66i}}{330}$
		0	0	0	$-\frac{\sqrt{770i}}{420}$	0	0	$-\frac{\sqrt{66i}}{330}$	0	0	0	$\frac{\sqrt{2310i}}{2310}$	0	0	0
		$-\frac{\sqrt{154i}}{168}$	0	0	0	$\frac{\sqrt{770i}}{280}$	0	0	$-\frac{2\sqrt{231i}}{1155}$	0	0	0	$\frac{4\sqrt{77i}}{1155}$	0	0
		0	$-\frac{\sqrt{154i}}{168}$	0	0	0	$-\frac{\sqrt{770i}}{840}$	0	0	$-\frac{\sqrt{385i}}{1155}$	0	0	0	$-\frac{\sqrt{1155i}}{1155}$	0
681	symmetry	$-\frac{\sqrt{15}(x^4-12x^2y^2+6x^2z^2+y^4+6y^2z^2-2z^4)}{12}$													
	$\mathbb{G}_{4,1}^{(1,1;a)}(E_u)$	0	$-\frac{\sqrt{22i}}{42}$	0	0	0	$\frac{\sqrt{110i}}{30}$	0	0	$\frac{\sqrt{55i}}{140}$	0	0	0	$-\frac{\sqrt{165i}}{300}$	0
		0	0	$\frac{\sqrt{33i}}{21}$	0	0	0	0	0	0	$-\frac{\sqrt{11i}}{84}$	0	0	0	$-\frac{\sqrt{385i}}{300}$
		0	0	0	$-\frac{\sqrt{33i}}{21}$	0	0	$-\frac{\sqrt{385i}}{300}$	0	0	0	$-\frac{\sqrt{11i}}{84}$	0	0	0
		$-\frac{\sqrt{110i}}{30}$	0	0	0	$\frac{\sqrt{22i}}{42}$	0	0	$-\frac{\sqrt{165i}}{300}$	0	0	0	$\frac{\sqrt{55i}}{140}$	0	0
		$-\frac{\sqrt{22i}}{168}$	0	0	0	$\frac{\sqrt{110i}}{120}$	0	0	$\frac{\sqrt{33i}}{231}$	0	0	0	$-\frac{\sqrt{11i}}{165}$	0	0
		0	$\frac{\sqrt{22i}}{56}$	0	0	0	$\frac{\sqrt{110i}}{120}$	0	0	$-\frac{4\sqrt{55i}}{1155}$	0	0	0	$-\frac{2\sqrt{165i}}{825}$	0
		0	0	$-\frac{\sqrt{22i}}{84}$	0	0	0	0	0	$-\frac{\sqrt{66i}}{462}$	0	0	0	0	$-\frac{\sqrt{2310i}}{1650}$
		0	0	0	$-\frac{\sqrt{22i}}{84}$	0	0	$\frac{\sqrt{2310i}}{1650}$	0	0	0	$\frac{\sqrt{66i}}{462}$	0	0	0
		$\frac{\sqrt{110i}}{120}$	0	0	0	$\frac{\sqrt{22i}}{56}$	0	0	$\frac{2\sqrt{165i}}{825}$	0	0	0	$\frac{4\sqrt{55i}}{1155}$	0	0
		0	$\frac{\sqrt{110i}}{120}$	0	0	0	$-\frac{\sqrt{22i}}{168}$	0	0	$\frac{\sqrt{11i}}{165}$	0	0	0	$-\frac{\sqrt{33i}}{231}$	0
682	symmetry	$\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{G}_{4,2}^{(1,1;a)}(E_u)$	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
683	symmetry	$\frac{\sqrt{35}yz(y-z)(y+z)}{2}$													
	$\mathbb{G}_{4,1}^{(1,1;a)}(T_{1u})$	$\frac{\sqrt{2310}}{840}$	0	$\frac{\sqrt{231}}{84}$	0	$\frac{\sqrt{462}}{168}$	0	0	$-\frac{3\sqrt{385}}{1400}$	0	$-\frac{\sqrt{77}}{140}$	0	$-\frac{\sqrt{1155}}{1400}$	0	0
		0	$-\frac{\sqrt{154}}{56}$	0	$-\frac{\sqrt{77}}{28}$	0	$-\frac{\sqrt{770}}{280}$	$\frac{\sqrt{165}}{600}$	0	$\frac{\sqrt{385}}{350}$	0	$\frac{\sqrt{231}}{840}$	0	$-\frac{\sqrt{1155}}{2100}$	0
		$\frac{\sqrt{770}}{280}$	0	$\frac{\sqrt{77}}{28}$	0	$\frac{\sqrt{154}}{56}$	0	0	$-\frac{\sqrt{1155}}{2100}$	0	$\frac{\sqrt{231}}{840}$	0	$\frac{\sqrt{385}}{350}$	0	$\frac{\sqrt{165}}{600}$
		0	$-\frac{\sqrt{462}}{168}$	0	$-\frac{\sqrt{231}}{84}$	0	$-\frac{\sqrt{2310}}{840}$	0	0	$-\frac{\sqrt{1155}}{1400}$	0	$-\frac{\sqrt{77}}{140}$	0	$-\frac{3\sqrt{385}}{1400}$	0
		0	$\frac{\sqrt{2310}}{840}$	0	$\frac{\sqrt{1155}}{840}$	0	0	$-\frac{\sqrt{11}}{220}$	0	$-\frac{\sqrt{231}}{462}$	0	$-\frac{\sqrt{385}}{1540}$	0	0	0
		$-\frac{\sqrt{2310}}{840}$	0	$-\frac{\sqrt{231}}{168}$	0	0	0	0	$\frac{13\sqrt{385}}{7700}$	0	$\frac{\sqrt{77}}{770}$	0	$-\frac{\sqrt{1155}}{3300}$	0	0
		0	$\frac{\sqrt{231}}{168}$	0	0	0	$-\frac{\sqrt{1155}}{840}$	$-\frac{3\sqrt{110}}{2200}$	0	$-\frac{\sqrt{2310}}{46200}$	0	$\frac{\sqrt{154}}{440}$	0	$\frac{\sqrt{770}}{15400}$	0
		$-\frac{\sqrt{1155}}{840}$	0	0	0	$\frac{\sqrt{231}}{168}$	0	0	$-\frac{\sqrt{770}}{15400}$	0	$-\frac{\sqrt{154}}{440}$	0	$\frac{\sqrt{2310}}{46200}$	0	$\frac{3\sqrt{110}}{2200}$
		0	0	0	$-\frac{\sqrt{231}}{168}$	0	$-\frac{\sqrt{2310}}{840}$	0	0	$\frac{\sqrt{1155}}{3300}$	0	$-\frac{\sqrt{77}}{770}$	0	$-\frac{13\sqrt{385}}{7700}$	0
		0	0	$\frac{\sqrt{1155}}{840}$	0	$\frac{\sqrt{2310}}{840}$	0	0	0	0	$\frac{\sqrt{385}}{1540}$	0	$\frac{\sqrt{231}}{462}$	0	$\frac{\sqrt{11}}{220}$
684	symmetry	$-\frac{\sqrt{35}xz(x-z)(x+z)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
685	$\mathbb{G}_{4,2}^{(1,1;a)}(T_{1u})$	$\frac{\sqrt{2310}i}{840}$	0	$-\frac{\sqrt{231}i}{84}$	0	$\frac{\sqrt{462}i}{168}$	0	0	$-\frac{3\sqrt{385}i}{1400}$	0	$\frac{\sqrt{77}i}{140}$	0	$-\frac{\sqrt{1155}i}{1400}$	0	0
		0	$-\frac{\sqrt{154}i}{56}$	0	$\frac{\sqrt{77}i}{28}$	0	$-\frac{\sqrt{770}i}{280}$	$-\frac{\sqrt{165}i}{600}$	0	$\frac{\sqrt{385}i}{350}$	0	$-\frac{\sqrt{231}i}{840}$	0	$-\frac{\sqrt{1155}i}{2100}$	0
		$-\frac{\sqrt{770}i}{280}$	0	$\frac{\sqrt{77}i}{28}$	0	$-\frac{\sqrt{154}i}{56}$	0	0	$\frac{\sqrt{1155}i}{2100}$	0	$\frac{\sqrt{231}i}{840}$	0	$-\frac{\sqrt{385}i}{350}$	0	$\frac{\sqrt{165}i}{600}$
		0	$\frac{\sqrt{462}i}{168}$	0	$-\frac{\sqrt{231}i}{84}$	0	$\frac{\sqrt{2310}i}{840}$	0	0	$\frac{\sqrt{1155}i}{1400}$	0	$-\frac{\sqrt{77}i}{140}$	0	$\frac{3\sqrt{385}i}{1400}$	0
		0	$-\frac{\sqrt{2310}i}{840}$	0	$\frac{\sqrt{1155}i}{840}$	0	0	$-\frac{\sqrt{11}i}{220}$	0	$\frac{\sqrt{231}i}{462}$	0	$-\frac{\sqrt{385}i}{1540}$	0	0	0
		$-\frac{\sqrt{2310}i}{840}$	0	$\frac{\sqrt{231}i}{168}$	0	0	0	0	$\frac{13\sqrt{385}i}{7700}$	0	$-\frac{\sqrt{77}i}{770}$	0	$-\frac{\sqrt{1155}i}{3300}$	0	0
		0	$\frac{\sqrt{231}i}{168}$	0	0	0	$-\frac{\sqrt{1155}i}{840}$	$\frac{3\sqrt{110}i}{2200}$	0	$-\frac{\sqrt{2310}i}{46200}$	0	$-\frac{\sqrt{154}i}{440}$	0	$\frac{\sqrt{770}i}{15400}$	0
		$\frac{\sqrt{1155}i}{840}$	0	0	0	$-\frac{\sqrt{231}i}{168}$	0	0	$\frac{\sqrt{770}i}{15400}$	0	$-\frac{\sqrt{154}i}{440}$	0	$-\frac{\sqrt{2310}i}{46200}$	0	$\frac{3\sqrt{110}i}{2200}$
		0	0	0	$-\frac{\sqrt{231}i}{168}$	0	$\frac{\sqrt{2310}i}{840}$	0	0	$-\frac{\sqrt{1155}i}{3300}$	0	$-\frac{\sqrt{77}i}{770}$	0	$\frac{13\sqrt{385}i}{7700}$	0
		0	0	$-\frac{\sqrt{1155}i}{840}$	0	$\frac{\sqrt{2310}i}{840}$	0	0	0	$-\frac{\sqrt{385}i}{1540}$	0	$\frac{\sqrt{231}i}{462}$	0	$-\frac{\sqrt{11}i}{220}$	0
685	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$													
686	$\mathbb{G}_{4,3}^{(1,1;a)}(T_{1u})$	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
686	symmetry	$\frac{\sqrt{5}yz(6x^2-y^2-z^2)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{G}_{4,1}^{(1,1;a)}(T_{2u})$	$\frac{\sqrt{330}}{840}$	0	$\frac{\sqrt{33}}{84}$	0	$-\frac{\sqrt{66}}{24}$	0	0	$-\frac{3\sqrt{55}}{1400}$	0	$-\frac{\sqrt{11}}{140}$	0	$\frac{\sqrt{165}}{200}$	0	0
		0	$-\frac{\sqrt{22}}{56}$	0	$-\frac{\sqrt{11}}{28}$	0	$\frac{\sqrt{110}}{40}$	$-\frac{\sqrt{1155}}{600}$	0	$\frac{\sqrt{55}}{350}$	0	$\frac{\sqrt{33}}{840}$	0	$\frac{\sqrt{165}}{300}$	0
		$-\frac{\sqrt{110}}{40}$	0	$\frac{\sqrt{11}}{28}$	0	$\frac{\sqrt{22}}{56}$	0	0	$\frac{\sqrt{165}}{300}$	0	$\frac{\sqrt{33}}{840}$	0	$\frac{\sqrt{55}}{350}$	0	$-\frac{\sqrt{1155}}{600}$
		0	$\frac{\sqrt{66}}{24}$	0	$-\frac{\sqrt{33}}{84}$	0	$-\frac{\sqrt{330}}{840}$	0	0	$\frac{\sqrt{165}}{200}$	0	$-\frac{\sqrt{11}}{140}$	0	$-\frac{3\sqrt{55}}{1400}$	0
		0	$\frac{\sqrt{330}}{840}$	0	$-\frac{\sqrt{165}}{120}$	0	0	$-\frac{\sqrt{77}}{1540}$	0	$-\frac{\sqrt{33}}{462}$	0	$\frac{\sqrt{55}}{220}$	0	0	0
		$-\frac{\sqrt{330}}{840}$	0	$-\frac{\sqrt{33}}{168}$	0	0	0	0	$\frac{13\sqrt{55}}{7700}$	0	$\frac{\sqrt{11}}{770}$	0	$\frac{7\sqrt{165}}{3300}$	0	0
		0	$\frac{\sqrt{33}}{168}$	0	0	0	$\frac{\sqrt{165}}{120}$	$\frac{3\sqrt{770}}{2200}$	0	$-\frac{\sqrt{330}}{46200}$	0	$\frac{\sqrt{22}}{440}$	0	$-\frac{\sqrt{110}}{2200}$	0
		$\frac{\sqrt{165}}{120}$	0	0	0	$\frac{\sqrt{33}}{168}$	0	0	$\frac{\sqrt{110}}{2200}$	0	$-\frac{\sqrt{22}}{440}$	0	$\frac{\sqrt{330}}{46200}$	0	$-\frac{3\sqrt{770}}{2200}$
		0	0	0	$-\frac{\sqrt{33}}{168}$	0	$-\frac{\sqrt{330}}{840}$	0	0	$-\frac{7\sqrt{165}}{3300}$	0	$-\frac{\sqrt{11}}{770}$	0	$-\frac{13\sqrt{55}}{7700}$	0
		0	0	$-\frac{\sqrt{165}}{120}$	0	$\frac{\sqrt{330}}{840}$	0	0	0	0	$-\frac{\sqrt{55}}{220}$	0	$\frac{\sqrt{33}}{462}$	0	$\frac{\sqrt{77}}{1540}$
687	symmetry	$-\frac{\sqrt{5}xz(x^2-6y^2+z^2)}{2}$													
	$\mathbb{G}_{4,2}^{(1,1;a)}(T_{2u})$	$-\frac{\sqrt{330}i}{840}$	0	$\frac{\sqrt{33}i}{84}$	0	$\frac{\sqrt{66}i}{24}$	0	0	$\frac{3\sqrt{55}i}{1400}$	0	$-\frac{\sqrt{11}i}{140}$	0	$-\frac{\sqrt{165}i}{200}$	0	0
		0	$\frac{\sqrt{22}i}{56}$	0	$-\frac{\sqrt{11}i}{28}$	0	$-\frac{\sqrt{110}i}{40}$	$-\frac{\sqrt{1155}i}{600}$	0	$-\frac{\sqrt{55}i}{350}$	0	$\frac{\sqrt{33}i}{840}$	0	$-\frac{\sqrt{165}i}{300}$	0
		$-\frac{\sqrt{110}i}{40}$	0	$-\frac{\sqrt{11}i}{28}$	0	$\frac{\sqrt{22}i}{56}$	0	0	$\frac{\sqrt{165}i}{300}$	0	$-\frac{\sqrt{33}i}{840}$	0	$\frac{\sqrt{55}i}{350}$	0	$\frac{\sqrt{1155}i}{600}$
		0	$\frac{\sqrt{66}i}{24}$	0	$\frac{\sqrt{33}i}{84}$	0	$-\frac{\sqrt{330}i}{840}$	0	0	$\frac{\sqrt{165}i}{200}$	0	$\frac{\sqrt{11}i}{140}$	0	$-\frac{3\sqrt{55}i}{1400}$	0
		0	$\frac{\sqrt{330}i}{840}$	0	$\frac{\sqrt{165}i}{120}$	0	0	$\frac{\sqrt{77}i}{1540}$	0	$-\frac{\sqrt{33}i}{462}$	0	$-\frac{\sqrt{55}i}{220}$	0	0	0
		$\frac{\sqrt{330}i}{840}$	0	$-\frac{\sqrt{33}i}{168}$	0	0	0	0	$-\frac{13\sqrt{55}i}{7700}$	0	$\frac{\sqrt{11}i}{770}$	0	$-\frac{7\sqrt{165}i}{3300}$	0	0
		0	$-\frac{\sqrt{33}i}{168}$	0	0	0	$-\frac{\sqrt{165}i}{120}$	$\frac{3\sqrt{770}i}{2200}$	0	$\frac{\sqrt{330}i}{46200}$	0	$\frac{\sqrt{22}i}{440}$	0	$\frac{\sqrt{110}i}{2200}$	0
		$\frac{\sqrt{165}i}{120}$	0	0	0	$\frac{\sqrt{33}i}{168}$	0	0	$\frac{\sqrt{110}i}{2200}$	0	$\frac{\sqrt{22}i}{440}$	0	$\frac{\sqrt{330}i}{46200}$	0	$\frac{3\sqrt{770}i}{2200}$
		0	0	0	$\frac{\sqrt{33}i}{168}$	0	$-\frac{\sqrt{330}i}{840}$	0	0	$-\frac{7\sqrt{165}i}{3300}$	0	$\frac{\sqrt{11}i}{770}$	0	$-\frac{13\sqrt{55}i}{7700}$	0
		0	0	$-\frac{\sqrt{165}i}{120}$	0	$-\frac{\sqrt{330}i}{840}$	0	0	0	0	$-\frac{\sqrt{55}i}{220}$	0	$-\frac{\sqrt{33}i}{462}$	0	$\frac{\sqrt{77}i}{1540}$
688	symmetry	$-\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$													

continued ...



Table 9

No.	multipole	matrix													
	$\mathbb{G}_{4,3}^{(1,1;a)}(T_{2u})$	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	$x$													
	$\mathbb{T}_{1,1}^{(a)}(T_{1u})$	$-\frac{\sqrt{5}i}{10}$	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	$-\frac{\sqrt{30}i}{28}$	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	$-\frac{3i}{70}$	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	$-\frac{\sqrt{2}i}{28}$	0	$\frac{\sqrt{42}i}{28}$	0
690	symmetry	$y$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{T}_{1,2}^{(a)}(T_{1u})$	$\frac{\sqrt{5}}{10}$	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	$\frac{\sqrt{42}}{28}$
691	symmetry	$z$													
	$\mathbb{T}_{1,3}^{(a)}(T_{1u})$	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
		$-\frac{i}{14}$	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	$\frac{\sqrt{10}i}{14}$	0	0	0	0	0	0
		0	0	$-\frac{i}{70}$	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	$\frac{\sqrt{3}i}{7}$	0	0	0	0
		0	0	0	0	$\frac{3i}{70}$	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
692	symmetry	$\sqrt{15}xyz$													

*continued ...*

Table 9

No.	multipole	matrix													
	$\mathbb{T}_3^{(a)}(A_{2u})$	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
693	symmetry	$\frac{x(2x^2-3y^2-3z^2)}{2}$													
	$\mathbb{T}_{3,1}^{(a)}(T_{1u})$	$-\frac{3\sqrt{105}i}{560}$	0	$\frac{9\sqrt{42}i}{560}$	0	$-\frac{3\sqrt{21}i}{112}$	0	0	$-\frac{\sqrt{70}i}{112}$	0	$\frac{\sqrt{14}i}{56}$	0	$-\frac{\sqrt{210}i}{336}$	0	0
		0	$\frac{3\sqrt{7}i}{80}$	0	$-\frac{3\sqrt{14}i}{560}$	0	$-\frac{3\sqrt{35}i}{112}$	$-\frac{\sqrt{30}i}{48}$	0	0	0	$\frac{\sqrt{42}i}{112}$	0	$-\frac{\sqrt{210}i}{168}$	0
		$\frac{3\sqrt{35}i}{112}$	0	$\frac{3\sqrt{14}i}{560}$	0	$-\frac{3\sqrt{7}i}{80}$	0	0	$-\frac{\sqrt{210}i}{168}$	0	$\frac{\sqrt{42}i}{112}$	0	0	0	$-\frac{\sqrt{30}i}{48}$
		0	$\frac{3\sqrt{21}i}{112}$	0	$-\frac{9\sqrt{42}i}{560}$	0	$\frac{3\sqrt{105}i}{560}$	0	0	$-\frac{\sqrt{210}i}{336}$	0	$\frac{\sqrt{14}i}{56}$	0	$-\frac{\sqrt{70}i}{112}$	0
		0	$-\frac{\sqrt{105}i}{140}$	0	$\frac{\sqrt{210}i}{168}$	0	0	$-\frac{\sqrt{2}i}{16}$	0	$\frac{\sqrt{42}i}{56}$	0	$-\frac{\sqrt{70}i}{112}$	0	0	0
		$-\frac{\sqrt{105}i}{140}$	0	$\frac{\sqrt{42}i}{280}$	0	$\frac{\sqrt{21}i}{42}$	0	0	$\frac{\sqrt{70}i}{112}$	0	$\frac{\sqrt{14}i}{56}$	0	$-\frac{\sqrt{210}i}{112}$	0	0
		0	$\frac{\sqrt{42}i}{280}$	0	$\frac{\sqrt{21}i}{70}$	0	$\frac{\sqrt{210}i}{168}$	$\frac{\sqrt{5}i}{16}$	0	$\frac{\sqrt{105}i}{112}$	0	$-\frac{\sqrt{7}i}{112}$	0	$-\frac{3\sqrt{35}i}{112}$	0
		$\frac{\sqrt{210}i}{168}$	0	$\frac{\sqrt{21}i}{70}$	0	$\frac{\sqrt{42}i}{280}$	0	0	$\frac{3\sqrt{35}i}{112}$	0	$\frac{\sqrt{7}i}{112}$	0	$-\frac{\sqrt{105}i}{112}$	0	$-\frac{\sqrt{5}i}{16}$
		0	$\frac{\sqrt{21}i}{42}$	0	$\frac{\sqrt{42}i}{280}$	0	$-\frac{\sqrt{105}i}{140}$	0	0	$\frac{\sqrt{210}i}{112}$	0	$-\frac{\sqrt{14}i}{56}$	0	$-\frac{\sqrt{70}i}{112}$	0
		0	0	$\frac{\sqrt{210}i}{168}$	0	$-\frac{\sqrt{105}i}{140}$	0	0	0	0	$\frac{\sqrt{70}i}{112}$	0	$-\frac{\sqrt{42}i}{56}$	0	$\frac{\sqrt{2}i}{16}$
694	symmetry	$-\frac{y(3x^2-2y^2+3z^2)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{T}_{3,2}^{(a)}(T_{1u})$	$\frac{3\sqrt{105}}{560}$	0	$\frac{9\sqrt{42}}{560}$	0	$\frac{3\sqrt{21}}{112}$	0	0	$\frac{\sqrt{70}}{112}$	0	$\frac{\sqrt{14}}{56}$	0	$\frac{\sqrt{210}}{336}$	0	0
		0	$-\frac{3\sqrt{7}}{80}$	0	$-\frac{3\sqrt{14}}{560}$	0	$\frac{3\sqrt{35}}{112}$	$-\frac{\sqrt{30}}{48}$	0	0	0	$\frac{\sqrt{42}}{112}$	0	$\frac{\sqrt{210}}{168}$	0
		$\frac{3\sqrt{35}}{112}$	0	$-\frac{3\sqrt{14}}{560}$	0	$-\frac{3\sqrt{7}}{80}$	0	0	$-\frac{\sqrt{210}}{168}$	0	$-\frac{\sqrt{42}}{112}$	0	0	0	$\frac{\sqrt{30}}{48}$
		0	$\frac{3\sqrt{21}}{112}$	0	$\frac{9\sqrt{42}}{560}$	0	$\frac{3\sqrt{105}}{560}$	0	0	$-\frac{\sqrt{210}}{336}$	0	$-\frac{\sqrt{14}}{56}$	0	$-\frac{\sqrt{70}}{112}$	0
		0	$-\frac{\sqrt{105}}{140}$	0	$-\frac{\sqrt{210}}{168}$	0	0	$\frac{\sqrt{2}}{16}$	0	$\frac{\sqrt{42}}{56}$	0	$\frac{\sqrt{70}}{112}$	0	0	0
		$\frac{\sqrt{105}}{140}$	0	$\frac{\sqrt{42}}{280}$	0	$-\frac{\sqrt{21}}{42}$	0	0	$-\frac{\sqrt{70}}{112}$	0	$\frac{\sqrt{14}}{56}$	0	$\frac{\sqrt{210}}{112}$	0	0
		0	$-\frac{\sqrt{42}}{280}$	0	$\frac{\sqrt{21}}{70}$	0	$-\frac{\sqrt{210}}{168}$	$\frac{\sqrt{5}}{16}$	0	$-\frac{\sqrt{105}}{112}$	0	$-\frac{\sqrt{7}}{112}$	0	$\frac{3\sqrt{35}}{112}$	0
		$\frac{\sqrt{210}}{168}$	0	$-\frac{\sqrt{21}}{70}$	0	$\frac{\sqrt{42}}{280}$	0	0	$\frac{3\sqrt{35}}{112}$	0	$-\frac{\sqrt{7}}{112}$	0	$-\frac{\sqrt{105}}{112}$	0	$\frac{\sqrt{5}}{16}$
		0	$\frac{\sqrt{21}}{42}$	0	$-\frac{\sqrt{42}}{280}$	0	$-\frac{\sqrt{105}}{140}$	0	0	$\frac{\sqrt{210}}{112}$	0	$\frac{\sqrt{14}}{56}$	0	$-\frac{\sqrt{70}}{112}$	0
		0	0	$\frac{\sqrt{210}}{168}$	0	$\frac{\sqrt{105}}{140}$	0	0	0	0	$\frac{\sqrt{70}}{112}$	0	$\frac{\sqrt{42}}{56}$	0	$\frac{\sqrt{2}}{16}$
695	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$													
	$\mathbb{T}_{3,3}^{(a)}(T_{1u})$	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	0	$-\frac{\sqrt{42}i}{84}$	0	0	0	0
		0	0	0	$\frac{3\sqrt{14}i}{70}$	0	0	0	0	0	0	$\frac{\sqrt{42}i}{84}$	0	0	0
		0	0	0	0	$-\frac{3\sqrt{21}i}{70}$	0	0	0	0	0	0	$\frac{\sqrt{210}i}{84}$	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	$-\frac{\sqrt{21}i}{30}$	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	0	$\frac{\sqrt{7}i}{14}$	0	0	0	0
		0	0	0	$\frac{2\sqrt{21}i}{105}$	0	0	0	0	0	0	$\frac{\sqrt{7}i}{14}$	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
696	symmetry	$\frac{\sqrt{15}x(y-z)(y+z)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{T}_{3,1}^{(a)}(T_{2u})$	$-\frac{3\sqrt{7}i}{112}$	0	$\frac{9\sqrt{70}i}{560}$	0	$\frac{9\sqrt{35}i}{560}$	0	0	$-\frac{5\sqrt{42}i}{336}$	0	$\frac{\sqrt{210}i}{168}$	0	$\frac{\sqrt{14}i}{112}$	0	0
		0	$\frac{\sqrt{105}i}{80}$	0	$-\frac{\sqrt{210}i}{560}$	0	$\frac{3\sqrt{21}i}{112}$	$\frac{\sqrt{2}i}{16}$	0	0	0	$\frac{\sqrt{70}i}{112}$	0	$\frac{\sqrt{14}i}{56}$	0
		$-\frac{3\sqrt{21}i}{112}$	0	$\frac{\sqrt{210}i}{560}$	0	$-\frac{\sqrt{105}i}{80}$	0	0	$\frac{\sqrt{14}i}{56}$	0	$\frac{\sqrt{70}i}{112}$	0	0	0	$\frac{\sqrt{2}i}{16}$
		0	$-\frac{9\sqrt{35}i}{560}$	0	$-\frac{9\sqrt{70}i}{560}$	0	$\frac{3\sqrt{7}i}{112}$	0	0	$\frac{\sqrt{14}i}{112}$	0	$\frac{\sqrt{210}i}{168}$	0	$-\frac{5\sqrt{42}i}{336}$	0
		0	$-\frac{\sqrt{7}i}{28}$	0	$-\frac{\sqrt{14}i}{56}$	0	0	$-\frac{\sqrt{30}i}{48}$	0	$\frac{\sqrt{70}i}{56}$	0	$\frac{\sqrt{42}i}{112}$	0	0	0
		$-\frac{\sqrt{7}i}{28}$	0	$\frac{\sqrt{70}i}{280}$	0	$-\frac{\sqrt{35}i}{70}$	0	0	$\frac{5\sqrt{42}i}{336}$	0	$\frac{\sqrt{210}i}{168}$	0	$\frac{3\sqrt{14}i}{112}$	0	0
		0	$\frac{\sqrt{70}i}{280}$	0	$\frac{\sqrt{35}i}{70}$	0	$-\frac{\sqrt{14}i}{56}$	$-\frac{\sqrt{3}i}{16}$	0	$\frac{5\sqrt{7}i}{112}$	0	$-\frac{\sqrt{105}i}{336}$	0	$\frac{3\sqrt{21}i}{112}$	0
		$-\frac{\sqrt{14}i}{56}$	0	$\frac{\sqrt{35}i}{70}$	0	$\frac{\sqrt{70}i}{280}$	0	0	$-\frac{3\sqrt{21}i}{112}$	0	$\frac{\sqrt{105}i}{336}$	0	$-\frac{5\sqrt{7}i}{112}$	0	$\frac{\sqrt{3}i}{16}$
		0	$-\frac{\sqrt{35}i}{70}$	0	$\frac{\sqrt{70}i}{280}$	0	$-\frac{\sqrt{7}i}{28}$	0	0	$-\frac{3\sqrt{14}i}{112}$	0	$-\frac{\sqrt{210}i}{168}$	0	$-\frac{5\sqrt{42}i}{336}$	0
		0	0	$-\frac{\sqrt{14}i}{56}$	0	$-\frac{\sqrt{7}i}{28}$	0	0	0	0	$-\frac{\sqrt{42}i}{112}$	0	$-\frac{\sqrt{70}i}{56}$	0	$\frac{\sqrt{30}i}{48}$
697	symmetry	$-\frac{\sqrt{15}y(x-z)(x+z)}{2}$													
	$\mathbb{T}_{3,2}^{(a)}(T_{2u})$	$-\frac{3\sqrt{7}}{112}$	0	$-\frac{9\sqrt{70}}{560}$	0	$\frac{9\sqrt{35}}{560}$	0	0	$-\frac{5\sqrt{42}}{336}$	0	$-\frac{\sqrt{210}}{168}$	0	$\frac{\sqrt{14}}{112}$	0	0
		0	$\frac{\sqrt{105}}{80}$	0	$\frac{\sqrt{210}}{560}$	0	$\frac{3\sqrt{21}}{112}$	$-\frac{\sqrt{2}}{16}$	0	0	0	$-\frac{\sqrt{70}}{112}$	0	$\frac{\sqrt{14}}{56}$	0
		$\frac{3\sqrt{21}}{112}$	0	$\frac{\sqrt{210}}{560}$	0	$\frac{\sqrt{105}}{80}$	0	0	$-\frac{\sqrt{14}}{56}$	0	$\frac{\sqrt{70}}{112}$	0	0	0	$\frac{\sqrt{2}}{16}$
		0	$\frac{9\sqrt{35}}{560}$	0	$-\frac{9\sqrt{70}}{560}$	0	$-\frac{3\sqrt{7}}{112}$	0	0	$-\frac{\sqrt{14}}{112}$	0	$\frac{\sqrt{210}}{168}$	0	$\frac{5\sqrt{42}}{336}$	0
		0	$\frac{\sqrt{7}}{28}$	0	$-\frac{\sqrt{14}}{56}$	0	0	$-\frac{\sqrt{30}}{48}$	0	$-\frac{\sqrt{70}}{56}$	0	$\frac{\sqrt{42}}{112}$	0	0	0
		$-\frac{\sqrt{7}}{28}$	0	$-\frac{\sqrt{70}}{280}$	0	$-\frac{\sqrt{35}}{70}$	0	0	$\frac{5\sqrt{42}}{336}$	0	$-\frac{\sqrt{210}}{168}$	0	$\frac{3\sqrt{14}}{112}$	0	0
		0	$\frac{\sqrt{70}}{280}$	0	$-\frac{\sqrt{35}}{70}$	0	$-\frac{\sqrt{14}}{56}$	$\frac{\sqrt{3}}{16}$	0	$\frac{5\sqrt{7}}{112}$	0	$\frac{\sqrt{105}}{336}$	0	$\frac{3\sqrt{21}}{112}$	0
		$\frac{\sqrt{14}}{56}$	0	$\frac{\sqrt{35}}{70}$	0	$-\frac{\sqrt{70}}{280}$	0	0	$\frac{3\sqrt{21}}{112}$	0	$\frac{\sqrt{105}}{336}$	0	$\frac{5\sqrt{7}}{112}$	0	$\frac{\sqrt{3}}{16}$
		0	$\frac{\sqrt{35}}{70}$	0	$\frac{\sqrt{70}}{280}$	0	$\frac{\sqrt{7}}{28}$	0	0	$\frac{3\sqrt{14}}{112}$	0	$-\frac{\sqrt{210}}{168}$	0	$\frac{5\sqrt{42}}{336}$	0
		0	0	$\frac{\sqrt{14}}{56}$	0	$-\frac{\sqrt{7}}{28}$	0	0	0	0	$\frac{\sqrt{42}}{112}$	0	$-\frac{\sqrt{70}}{56}$	0	$-\frac{\sqrt{30}}{48}$
698	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{T}_{3,3}^{(a)}(T_{2u})$	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	$\frac{\sqrt{210}i}{168}$	0	0	0	$\frac{\sqrt{6}i}{24}$	
		0	0	$\frac{\sqrt{14}i}{28}$	0	0	0	0	0	$-\frac{\sqrt{42}i}{42}$	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	$-\frac{\sqrt{210}i}{84}$	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	$\frac{3\sqrt{35}xyz(x-y)(x+y)}{2}$													
	$\mathbb{T}_{5,1}^{(a)}(E_u)$	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	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	$-\frac{\sqrt{42}}{28}$	0	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	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	0	$\frac{\sqrt{2}}{10}$	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	$-\frac{\sqrt{42}}{28}$	0	0	0	0	0	0	$-\frac{\sqrt{105}}{70}$	0	0	0	0	0
700	symmetry	$\frac{\sqrt{105}xyz(x^2+y^2-2z^2)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{T}_{5,2}^{(a)}(E_u)$	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	$-\frac{\sqrt{7}}{20}$	0	0	0	0	$\frac{\sqrt{21}}{20}$	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{21}}{20}$	0	0	0	0	$-\frac{\sqrt{7}}{20}$	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{105}}{60}$	0	0	0	0	$\frac{\sqrt{3}}{60}$
		0	0	$\frac{\sqrt{7}}{28}$	0	0	0	0	0	$-\frac{\sqrt{21}}{42}$	0	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	$-\frac{\sqrt{105}}{105}$	0	0	0	0	$\frac{\sqrt{3}}{30}$
		0	0	0	$\frac{\sqrt{7}}{28}$	0	0	0	0	0	$\frac{\sqrt{21}}{42}$	0	0	0	0
701	symmetry	$\frac{x(8x^4-40x^2y^2-40x^2z^2+15y^4+30y^2z^2+15z^4)}{8}$													
	$\mathbb{T}_{5,1}^{(a)}(T_{1u}, 1)$	0	0	0	0	0	0	$-\frac{\sqrt{5}i}{80}$	0	$\frac{i}{16}$	0	$-\frac{7\sqrt{15}i}{240}$	0	$\frac{3\sqrt{35}i}{80}$	
		0	0	0	0	0	0	$-\frac{\sqrt{105}i}{240}$	0	$\frac{3\sqrt{5}i}{80}$	0	$-\frac{\sqrt{3}i}{16}$	0	$\frac{7\sqrt{15}i}{240}$	0
		0	0	0	0	0	0	$\frac{7\sqrt{15}i}{240}$	0	$-\frac{\sqrt{3}i}{16}$	0	$\frac{3\sqrt{5}i}{80}$	0	$-\frac{\sqrt{105}i}{240}$	
		0	0	0	0	0	0	$\frac{3\sqrt{35}i}{80}$	0	$-\frac{7\sqrt{15}i}{240}$	0	$\frac{i}{16}$	0	$-\frac{\sqrt{5}i}{80}$	0
		0	$-\frac{\sqrt{30}i}{224}$	0	$\frac{\sqrt{15}i}{48}$	0	$-\frac{3\sqrt{6}i}{32}$	$-\frac{\sqrt{7}i}{224}$	0	$\frac{5\sqrt{3}i}{224}$	0	$-\frac{\sqrt{5}i}{32}$	0	$\frac{3i}{32}$	0
		$-\frac{\sqrt{30}i}{224}$	0	$\frac{5\sqrt{3}i}{112}$	0	$-\frac{5\sqrt{6}i}{96}$	0	0	$\frac{23\sqrt{5}i}{1120}$	0	$-\frac{13i}{224}$	0	$\frac{\sqrt{15}i}{160}$	0	$\frac{3\sqrt{35}i}{160}$
		0	$\frac{5\sqrt{3}i}{112}$	0	$-\frac{5\sqrt{6}i}{112}$	0	$\frac{\sqrt{15}i}{48}$	$\frac{\sqrt{70}i}{160}$	0	$-\frac{11\sqrt{30}i}{1120}$	0	$\frac{\sqrt{2}i}{224}$	0	$\frac{3\sqrt{10}i}{160}$	0
		$\frac{\sqrt{15}i}{48}$	0	$-\frac{5\sqrt{6}i}{112}$	0	$\frac{5\sqrt{3}i}{112}$	0	0	$-\frac{3\sqrt{10}i}{160}$	0	$-\frac{\sqrt{2}i}{224}$	0	$\frac{11\sqrt{30}i}{1120}$	0	$-\frac{\sqrt{70}i}{160}$
		0	$-\frac{5\sqrt{6}i}{96}$	0	$\frac{5\sqrt{3}i}{112}$	0	$-\frac{\sqrt{30}i}{224}$	$-\frac{3\sqrt{35}i}{160}$	0	$-\frac{\sqrt{15}i}{160}$	0	$\frac{13i}{224}$	0	$-\frac{23\sqrt{5}i}{1120}$	0
		$-\frac{3\sqrt{6}i}{32}$	0	$\frac{\sqrt{15}i}{48}$	0	$-\frac{\sqrt{30}i}{224}$	0	0	$-\frac{3i}{32}$	0	$\frac{\sqrt{5}i}{32}$	0	$-\frac{5\sqrt{3}i}{224}$	0	$\frac{\sqrt{7}i}{224}$
702	symmetry	$\frac{y(15x^4-40x^2y^2+30x^2z^2+8y^4-40y^2z^2+15z^4)}{8}$													

continued ...

Table 9

No.	multipole	matrix														
	$\mathbb{T}_{5,2}^{(a)}(T_{1u}, 1)$	0	0	0	0	0	0	0	$\frac{\sqrt{5}}{80}$	0	$\frac{1}{16}$	0	$\frac{7\sqrt{15}}{240}$	0	$\frac{3\sqrt{35}}{80}$	
		0	0	0	0	0	0	$-\frac{\sqrt{105}}{240}$	0	$-\frac{3\sqrt{5}}{80}$	0	$-\frac{\sqrt{3}}{16}$	0	$-\frac{7\sqrt{15}}{240}$	0	
		0	0	0	0	0	0	0	$\frac{7\sqrt{15}}{240}$	0	$\frac{\sqrt{3}}{16}$	0	$\frac{3\sqrt{5}}{80}$	0	$\frac{\sqrt{105}}{240}$	
		0	0	0	0	0	0	$-\frac{3\sqrt{35}}{80}$	0	$-\frac{7\sqrt{15}}{240}$	0	$-\frac{1}{16}$	0	$-\frac{\sqrt{5}}{80}$	0	
		0	$-\frac{\sqrt{30}}{224}$	0	$-\frac{\sqrt{15}}{48}$	0	$-\frac{3\sqrt{6}}{32}$	$\frac{\sqrt{7}}{224}$	0	$\frac{5\sqrt{3}}{224}$	0	$\frac{\sqrt{5}}{32}$	0	$\frac{3}{32}$	0	
		$\frac{\sqrt{30}}{224}$	0	$\frac{5\sqrt{3}}{112}$	0	$\frac{5\sqrt{6}}{96}$	0	0	$-\frac{23\sqrt{5}}{1120}$	0	$-\frac{13}{224}$	0	$-\frac{\sqrt{15}}{160}$	0	$\frac{3\sqrt{35}}{160}$	
		0	$-\frac{5\sqrt{3}}{112}$	0	$-\frac{5\sqrt{6}}{112}$	0	$-\frac{\sqrt{15}}{48}$	$\frac{\sqrt{70}}{160}$	0	$\frac{11\sqrt{30}}{1120}$	0	$\frac{\sqrt{2}}{224}$	0	$-\frac{3\sqrt{10}}{160}$	0	
		$\frac{\sqrt{15}}{48}$	0	$\frac{5\sqrt{6}}{112}$	0	$\frac{5\sqrt{3}}{112}$	0	0	$-\frac{3\sqrt{10}}{160}$	0	$\frac{\sqrt{2}}{224}$	0	$\frac{11\sqrt{30}}{1120}$	0	$\frac{\sqrt{70}}{160}$	
		0	$-\frac{5\sqrt{6}}{96}$	0	$-\frac{5\sqrt{3}}{112}$	0	$-\frac{\sqrt{30}}{224}$	$\frac{3\sqrt{35}}{160}$	0	$-\frac{\sqrt{15}}{160}$	0	$-\frac{13}{224}$	0	$-\frac{23\sqrt{5}}{1120}$	0	
		$\frac{3\sqrt{6}}{32}$	0	$\frac{\sqrt{15}}{48}$	0	$\frac{\sqrt{30}}{224}$	0	0	$\frac{3}{32}$	0	$\frac{\sqrt{5}}{32}$	0	$\frac{5\sqrt{3}}{224}$	0	$\frac{\sqrt{7}}{224}$	
703	symmetry	$\frac{z\left(15x^4+30x^2y^2-40x^2z^2+15y^4-40y^2z^2+8z^4\right)}{8}$														
	$\mathbb{T}_{5,3}^{(a)}(T_{1u}, 1)$	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	0	$\frac{\sqrt{2}i}{14}$	0	0	0	0	
		0	0	0	$\frac{5\sqrt{6}i}{42}$	0	0	0	0	0	0	$\frac{\sqrt{2}i}{14}$	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	
704	symmetry	$\frac{3\sqrt{35}x\left(y^2-2yz-z^2\right)\left(y^2+2yz-z^2\right)}{8}$														

continued ...



Table 9

No.	multipole	matrix													
	$\mathbb{T}_{5,1}^{(a)}(T_{1u}, 2)$	0	0	0	0	0	0	0	$-\frac{\sqrt{7}i}{80}$	0	$\frac{\sqrt{35}i}{80}$	0	$\frac{3\sqrt{21}i}{80}$	0	$\frac{i}{16}$
		0	0	0	0	0	0	$\frac{3\sqrt{3}i}{80}$	0	$\frac{3\sqrt{7}i}{80}$	0	$-\frac{\sqrt{105}i}{80}$	0	$-\frac{3\sqrt{21}i}{80}$	0
		0	0	0	0	0	0	0	$-\frac{3\sqrt{21}i}{80}$	0	$-\frac{\sqrt{105}i}{80}$	0	$\frac{3\sqrt{7}i}{80}$	0	$\frac{3\sqrt{3}i}{80}$
		0	0	0	0	0	0	$\frac{i}{16}$	0	$\frac{3\sqrt{21}i}{80}$	0	$\frac{\sqrt{35}i}{80}$	0	$-\frac{\sqrt{7}i}{80}$	0
		0	$-\frac{\sqrt{42}i}{224}$	0	$-\frac{3\sqrt{21}i}{112}$	0	$-\frac{\sqrt{210}i}{224}$	$-\frac{\sqrt{5}i}{160}$	0	$\frac{\sqrt{105}i}{224}$	0	$\frac{9\sqrt{7}i}{224}$	0	$\frac{\sqrt{35}i}{224}$	0
		$-\frac{\sqrt{42}i}{224}$	0	$\frac{\sqrt{105}i}{112}$	0	$\frac{3\sqrt{210}i}{224}$	0	0	$\frac{23\sqrt{7}i}{1120}$	0	$-\frac{13\sqrt{35}i}{1120}$	0	$-\frac{9\sqrt{21}i}{1120}$	0	$\frac{i}{32}$
		0	$\frac{\sqrt{105}i}{112}$	0	$-\frac{\sqrt{210}i}{112}$	0	$-\frac{3\sqrt{21}i}{112}$	$-\frac{9\sqrt{2}i}{160}$	0	$-\frac{11\sqrt{42}i}{1120}$	0	$\frac{\sqrt{70}i}{1120}$	0	$-\frac{27\sqrt{14}i}{1120}$	0
		$-\frac{3\sqrt{21}i}{112}$	0	$-\frac{\sqrt{210}i}{112}$	0	$\frac{\sqrt{105}i}{112}$	0	0	$\frac{27\sqrt{14}i}{1120}$	0	$-\frac{\sqrt{70}i}{1120}$	0	$\frac{11\sqrt{42}i}{1120}$	0	$\frac{9\sqrt{2}i}{160}$
		0	$\frac{3\sqrt{210}i}{224}$	0	$\frac{\sqrt{105}i}{112}$	0	$-\frac{\sqrt{42}i}{224}$	$-\frac{i}{32}$	0	$\frac{9\sqrt{21}i}{1120}$	0	$\frac{13\sqrt{35}i}{1120}$	0	$-\frac{23\sqrt{7}i}{1120}$	0
		$-\frac{\sqrt{210}i}{224}$	0	$-\frac{3\sqrt{21}i}{112}$	0	$-\frac{\sqrt{42}i}{224}$	0	0	$-\frac{\sqrt{35}i}{224}$	0	$-\frac{9\sqrt{7}i}{224}$	0	$-\frac{\sqrt{105}i}{224}$	0	$\frac{\sqrt{5}i}{160}$
705	symmetry	$\frac{3\sqrt{35}y(x^2-2xz-z^2)(x^2+2xz-z^2)}{8}$													
	$\mathbb{T}_{5,2}^{(a)}(T_{1u}, 2)$	0	0	0	0	0	0	0	$\frac{\sqrt{7}}{80}$	0	$\frac{\sqrt{35}}{80}$	0	$-\frac{3\sqrt{21}}{80}$	0	$\frac{1}{16}$
		0	0	0	0	0	0	$\frac{3\sqrt{3}}{80}$	0	$-\frac{3\sqrt{7}}{80}$	0	$-\frac{\sqrt{105}}{80}$	0	$\frac{3\sqrt{21}}{80}$	0
		0	0	0	0	0	0	0	$-\frac{3\sqrt{21}}{80}$	0	$\frac{\sqrt{105}}{80}$	0	$\frac{3\sqrt{7}}{80}$	0	$-\frac{3\sqrt{3}}{80}$
		0	0	0	0	0	0	$-\frac{1}{16}$	0	$\frac{3\sqrt{21}}{80}$	0	$-\frac{\sqrt{35}}{80}$	0	$-\frac{\sqrt{7}}{80}$	0
		0	$-\frac{\sqrt{42}}{224}$	0	$\frac{3\sqrt{21}}{112}$	0	$-\frac{\sqrt{210}}{224}$	$\frac{\sqrt{5}}{160}$	0	$\frac{\sqrt{105}}{224}$	0	$-\frac{9\sqrt{7}}{224}$	0	$\frac{\sqrt{35}}{224}$	0
		$\frac{\sqrt{42}}{224}$	0	$\frac{\sqrt{105}}{112}$	0	$-\frac{3\sqrt{210}}{224}$	0	0	$-\frac{23\sqrt{7}}{1120}$	0	$-\frac{13\sqrt{35}}{1120}$	0	$\frac{9\sqrt{21}}{1120}$	0	$\frac{1}{32}$
		0	$-\frac{\sqrt{105}}{112}$	0	$-\frac{\sqrt{210}}{112}$	0	$\frac{3\sqrt{21}}{112}$	$-\frac{9\sqrt{2}}{160}$	0	$\frac{11\sqrt{42}}{1120}$	0	$\frac{\sqrt{70}}{1120}$	0	$\frac{27\sqrt{14}}{1120}$	0
		$-\frac{3\sqrt{21}}{112}$	0	$\frac{\sqrt{210}}{112}$	0	$\frac{\sqrt{105}}{112}$	0	0	$\frac{27\sqrt{14}}{1120}$	0	$\frac{\sqrt{70}}{1120}$	0	$\frac{11\sqrt{42}}{1120}$	0	$-\frac{9\sqrt{2}}{160}$
		0	$\frac{3\sqrt{210}}{224}$	0	$-\frac{\sqrt{105}}{112}$	0	$-\frac{\sqrt{42}}{224}$	$\frac{1}{32}$	0	$\frac{9\sqrt{21}}{1120}$	0	$-\frac{13\sqrt{35}}{1120}$	0	$-\frac{23\sqrt{7}}{1120}$	0
		$\frac{\sqrt{210}}{224}$	0	$-\frac{3\sqrt{21}}{112}$	0	$\frac{\sqrt{42}}{224}$	0	0	$\frac{\sqrt{35}}{224}$	0	$-\frac{9\sqrt{7}}{224}$	0	$\frac{\sqrt{105}}{224}$	0	$\frac{\sqrt{5}}{160}$
706	symmetry	$\frac{3\sqrt{35}z(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{T}_{5,3}^{(a)}(T_{1u}, 2)$	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	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	$-\frac{\sqrt{42}i}{28}$	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	0	$-\frac{\sqrt{2}i}{10}$	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	$\frac{\sqrt{42}i}{28}$	0	0	0	0	0	0	$\frac{\sqrt{105}i}{70}$	0	0	0	0	
707	symmetry	$\frac{\sqrt{105}x(y-z)(y+z)(2x^2-y^2-z^2)}{4}$													
$\mathbb{T}_{5,1}^{(a)}(T_{2u})$	0	0	0	0	0	0	0	$-\frac{\sqrt{21}i}{120}$	0	$\frac{\sqrt{105}i}{120}$	0	$-\frac{\sqrt{7}i}{40}$	0	$-\frac{\sqrt{3}i}{8}$	
	0	0	0	0	0	0	$-\frac{i}{40}$	0	$\frac{\sqrt{21}i}{40}$	0	$-\frac{\sqrt{35}i}{40}$	0	$\frac{\sqrt{7}i}{40}$	0	
	0	0	0	0	0	0	0	$\frac{\sqrt{7}i}{40}$	0	$-\frac{\sqrt{35}i}{40}$	0	$\frac{\sqrt{21}i}{40}$	0	$-\frac{i}{40}$	
	0	0	0	0	0	0	$-\frac{\sqrt{3}i}{8}$	0	$-\frac{\sqrt{7}i}{40}$	0	$\frac{\sqrt{105}i}{120}$	0	$-\frac{\sqrt{21}i}{120}$	0	
	0	$-\frac{\sqrt{14}i}{112}$	0	$\frac{\sqrt{7}i}{56}$	0	$\frac{3\sqrt{70}i}{112}$	$-\frac{\sqrt{15}i}{240}$	0	$\frac{\sqrt{35}i}{112}$	0	$-\frac{\sqrt{21}i}{112}$	0	$-\frac{\sqrt{105}i}{112}$	0	
	$-\frac{\sqrt{14}i}{112}$	0	$\frac{\sqrt{35}i}{56}$	0	$-\frac{\sqrt{70}i}{112}$	0	0	$\frac{23\sqrt{21}i}{1680}$	0	$-\frac{13\sqrt{105}i}{1680}$	0	$\frac{3\sqrt{7}i}{560}$	0	$-\frac{\sqrt{3}i}{16}$	
	0	$\frac{\sqrt{35}i}{56}$	0	$-\frac{\sqrt{70}i}{56}$	0	$\frac{\sqrt{7}i}{56}$	$\frac{\sqrt{6}i}{80}$	0	$-\frac{11\sqrt{14}i}{560}$	0	$\frac{\sqrt{210}i}{1680}$	0	$\frac{3\sqrt{42}i}{560}$	0	
	$\frac{\sqrt{7}i}{56}$	0	$-\frac{\sqrt{70}i}{56}$	0	$\frac{\sqrt{35}i}{56}$	0	0	$-\frac{3\sqrt{42}i}{560}$	0	$-\frac{\sqrt{210}i}{1680}$	0	$\frac{11\sqrt{14}i}{560}$	0	$-\frac{\sqrt{6}i}{80}$	
	0	$-\frac{\sqrt{70}i}{112}$	0	$\frac{\sqrt{35}i}{56}$	0	$-\frac{\sqrt{14}i}{112}$	$\frac{\sqrt{3}i}{16}$	0	$-\frac{3\sqrt{7}i}{560}$	0	$\frac{13\sqrt{105}i}{1680}$	0	$-\frac{23\sqrt{21}i}{1680}$	0	
	$\frac{3\sqrt{70}i}{112}$	0	$\frac{\sqrt{7}i}{56}$	0	$-\frac{\sqrt{14}i}{112}$	0	0	$\frac{\sqrt{105}i}{112}$	0	$\frac{\sqrt{21}i}{112}$	0	$-\frac{\sqrt{35}i}{112}$	0	$\frac{\sqrt{15}i}{240}$	
708	symmetry	$\frac{\sqrt{105}y(x-z)(x+z)(x^2-2y^2+z^2)}{4}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{T}_{5,2}^{(a)}(T_{2u})$	0	0	0	0	0	0	0	$-\frac{\sqrt{21}}{120}$	0	$-\frac{\sqrt{105}}{120}$	0	$-\frac{\sqrt{7}}{40}$	0	$\frac{\sqrt{3}}{8}$
		0	0	0	0	0	0	$\frac{1}{40}$	0	$\frac{\sqrt{21}}{40}$	0	$\frac{\sqrt{35}}{40}$	0	$\frac{\sqrt{7}}{40}$	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{7}}{40}$	0	$-\frac{\sqrt{35}}{40}$	0	$-\frac{\sqrt{21}}{40}$	0	$-\frac{1}{40}$
		0	0	0	0	0	0	$-\frac{\sqrt{3}}{8}$	0	$\frac{\sqrt{7}}{40}$	0	$\frac{\sqrt{105}}{120}$	0	$\frac{\sqrt{21}}{120}$	0
		0	$\frac{\sqrt{14}}{112}$	0	$\frac{\sqrt{7}}{56}$	0	$-\frac{3\sqrt{70}}{112}$	$-\frac{\sqrt{15}}{240}$	0	$-\frac{\sqrt{35}}{112}$	0	$-\frac{\sqrt{21}}{112}$	0	$\frac{\sqrt{105}}{112}$	0
		$-\frac{\sqrt{14}}{112}$	0	$-\frac{\sqrt{35}}{56}$	0	$-\frac{\sqrt{70}}{112}$	0	0	$\frac{23\sqrt{21}}{1680}$	0	$\frac{13\sqrt{105}}{1680}$	0	$\frac{3\sqrt{7}}{560}$	0	$\frac{\sqrt{3}}{16}$
		0	$\frac{\sqrt{35}}{56}$	0	$\frac{\sqrt{70}}{56}$	0	$\frac{\sqrt{7}}{56}$	$-\frac{\sqrt{6}}{80}$	0	$-\frac{11\sqrt{14}}{560}$	0	$-\frac{\sqrt{210}}{1680}$	0	$\frac{3\sqrt{42}}{560}$	0
		$-\frac{\sqrt{7}}{56}$	0	$-\frac{\sqrt{70}}{56}$	0	$-\frac{\sqrt{35}}{56}$	0	0	$\frac{3\sqrt{42}}{560}$	0	$-\frac{\sqrt{210}}{1680}$	0	$-\frac{11\sqrt{14}}{560}$	0	$-\frac{\sqrt{6}}{80}$
		0	$\frac{\sqrt{70}}{112}$	0	$\frac{\sqrt{35}}{56}$	0	$\frac{\sqrt{14}}{112}$	$\frac{\sqrt{3}}{16}$	0	$\frac{3\sqrt{7}}{560}$	0	$\frac{13\sqrt{105}}{1680}$	0	$\frac{23\sqrt{21}}{1680}$	0
		$\frac{3\sqrt{70}}{112}$	0	$-\frac{\sqrt{7}}{56}$	0	$-\frac{\sqrt{14}}{112}$	0	0	$\frac{\sqrt{105}}{112}$	0	$-\frac{\sqrt{21}}{112}$	0	$-\frac{\sqrt{35}}{112}$	0	$-\frac{\sqrt{15}}{240}$
709	symmetry	$-\frac{\sqrt{105}z(x-y)(x+y)(x^2+y^2-2z^2)}{4}$													
	$\mathbb{T}_{5,3}^{(a)}(T_{2u})$	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	$\sqrt{15}xyz$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{T}_3^{(1,-1;a)}(A_{2u})$	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
711	symmetry	$\frac{x(2x^2-3y^2-3z^2)}{2}$													
	$\mathbb{T}_{3,1}^{(1,-1;a)}(T_{1u})$	$-\frac{\sqrt{30}i}{280}$	0	$\frac{3\sqrt{3}i}{140}$	0	$-\frac{\sqrt{6}i}{56}$	0	0	$-\frac{3\sqrt{5}i}{56}$	0	$\frac{3i}{28}$	0	$-\frac{\sqrt{15}i}{56}$	0	0
		0	$\frac{\sqrt{2}i}{40}$	0	$-\frac{i}{140}$	0	$-\frac{\sqrt{10}i}{56}$	$-\frac{\sqrt{105}i}{56}$	0	0	0	$\frac{3\sqrt{3}i}{56}$	0	$-\frac{\sqrt{15}i}{28}$	0
		$\frac{\sqrt{10}i}{56}$	0	$\frac{i}{140}$	0	$-\frac{\sqrt{2}i}{40}$	0	0	$-\frac{\sqrt{15}i}{28}$	0	$\frac{3\sqrt{3}i}{56}$	0	0	0	$-\frac{\sqrt{105}i}{56}$
		0	$\frac{\sqrt{6}i}{56}$	0	$-\frac{3\sqrt{3}i}{140}$	0	$\frac{\sqrt{30}i}{280}$	0	0	$-\frac{\sqrt{15}i}{56}$	0	$\frac{3i}{28}$	0	$-\frac{3\sqrt{5}i}{56}$	0
		0	$-\frac{3\sqrt{30}i}{280}$	0	$\frac{\sqrt{15}i}{56}$	0	0	$\frac{\sqrt{7}i}{28}$	0	$-\frac{\sqrt{3}i}{14}$	0	$\frac{\sqrt{5}i}{28}$	0	0	0
		$-\frac{3\sqrt{30}i}{280}$	0	$\frac{3\sqrt{3}i}{280}$	0	$\frac{\sqrt{6}i}{28}$	0	0	$-\frac{\sqrt{5}i}{28}$	0	$-\frac{i}{14}$	0	$\frac{\sqrt{15}i}{28}$	0	0
		0	$\frac{3\sqrt{3}i}{280}$	0	$\frac{3\sqrt{6}i}{140}$	0	$\frac{\sqrt{15}i}{56}$	$-\frac{\sqrt{70}i}{56}$	0	$-\frac{\sqrt{30}i}{56}$	0	$\frac{\sqrt{2}i}{56}$	0	$\frac{3\sqrt{10}i}{56}$	0
		$\frac{\sqrt{15}i}{56}$	0	$\frac{3\sqrt{6}i}{140}$	0	$\frac{3\sqrt{3}i}{280}$	0	0	$-\frac{3\sqrt{10}i}{56}$	0	$-\frac{\sqrt{2}i}{56}$	0	$\frac{\sqrt{30}i}{56}$	0	$\frac{\sqrt{70}i}{56}$
		0	$\frac{\sqrt{6}i}{28}$	0	$\frac{3\sqrt{3}i}{280}$	0	$-\frac{3\sqrt{30}i}{280}$	0	0	$-\frac{\sqrt{15}i}{28}$	0	$\frac{i}{14}$	0	$\frac{\sqrt{5}i}{28}$	0
		0	0	$\frac{\sqrt{15}i}{56}$	0	$-\frac{3\sqrt{30}i}{280}$	0	0	0	0	$-\frac{\sqrt{5}i}{28}$	0	$\frac{\sqrt{3}i}{14}$	0	$-\frac{\sqrt{7}i}{28}$
712	symmetry	$-\frac{y(3x^2-2y^2+3z^2)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{T}_{3,2}^{(1,-1;a)}(T_{1u})$	$\frac{\sqrt{30}}{280}$	0	$\frac{3\sqrt{3}}{140}$	0	$\frac{\sqrt{6}}{56}$	0	0	$\frac{3\sqrt{5}}{56}$	0	$\frac{3}{28}$	0	$\frac{\sqrt{15}}{56}$	0	0
		0	$-\frac{\sqrt{2}}{40}$	0	$-\frac{1}{140}$	0	$\frac{\sqrt{10}}{56}$	$-\frac{\sqrt{105}}{56}$	0	0	0	$\frac{3\sqrt{3}}{56}$	0	$\frac{\sqrt{15}}{28}$	0
		$\frac{\sqrt{10}}{56}$	0	$-\frac{1}{140}$	0	$-\frac{\sqrt{2}}{40}$	0	0	$-\frac{\sqrt{15}}{28}$	0	$-\frac{3\sqrt{3}}{56}$	0	0	0	$\frac{\sqrt{105}}{56}$
		0	$\frac{\sqrt{6}}{56}$	0	$\frac{3\sqrt{3}}{140}$	0	$\frac{\sqrt{30}}{280}$	0	0	$-\frac{\sqrt{15}}{56}$	0	$-\frac{3}{28}$	0	$-\frac{3\sqrt{5}}{56}$	0
		0	$-\frac{3\sqrt{30}}{280}$	0	$-\frac{\sqrt{15}}{56}$	0	0	$-\frac{\sqrt{7}}{28}$	0	$-\frac{\sqrt{3}}{14}$	0	$-\frac{\sqrt{5}}{28}$	0	0	0
		$\frac{3\sqrt{30}}{280}$	0	$\frac{3\sqrt{3}}{280}$	0	$-\frac{\sqrt{6}}{28}$	0	0	$\frac{\sqrt{5}}{28}$	0	$-\frac{1}{14}$	0	$-\frac{\sqrt{15}}{28}$	0	0
		0	$-\frac{3\sqrt{3}}{280}$	0	$\frac{3\sqrt{6}}{140}$	0	$-\frac{\sqrt{15}}{56}$	$-\frac{\sqrt{70}}{56}$	0	$\frac{\sqrt{30}}{56}$	0	$\frac{\sqrt{2}}{56}$	0	$-\frac{3\sqrt{10}}{56}$	0
		$\frac{\sqrt{15}}{56}$	0	$-\frac{3\sqrt{6}}{140}$	0	$\frac{3\sqrt{3}}{280}$	0	0	$-\frac{3\sqrt{10}}{56}$	0	$\frac{\sqrt{2}}{56}$	0	$\frac{\sqrt{30}}{56}$	0	$-\frac{\sqrt{70}}{56}$
		0	$\frac{\sqrt{6}}{28}$	0	$-\frac{3\sqrt{3}}{280}$	0	$-\frac{3\sqrt{30}}{280}$	0	0	$-\frac{\sqrt{15}}{28}$	0	$-\frac{1}{14}$	0	$\frac{\sqrt{5}}{28}$	0
		0	0	$\frac{\sqrt{15}}{56}$	0	$\frac{3\sqrt{30}}{280}$	0	0	0	0	$-\frac{\sqrt{5}}{28}$	0	$-\frac{\sqrt{3}}{14}$	0	$-\frac{\sqrt{7}}{28}$
713	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$													
	$\mathbb{T}_{3,3}^{(1,-1;a)}(T_{1u})$	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	0	$-\frac{\sqrt{3}i}{14}$	0	0	0	0
		0	0	0	$\frac{2i}{35}$	0	0	0	0	0	0	$\frac{\sqrt{3}i}{14}$	0	0	0
		0	0	0	0	$-\frac{\sqrt{6}i}{35}$	0	0	0	0	0	0	$\frac{\sqrt{15}i}{14}$	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	0	$-\frac{\sqrt{2}i}{7}$	0	0	0	0
		0	0	0	$\frac{\sqrt{6}i}{35}$	0	0	0	0	0	0	$-\frac{\sqrt{2}i}{7}$	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	$-\frac{\sqrt{6}i}{28}$	0	0	0	0	0	0	$\frac{2i}{7}$	0
714	symmetry	$\frac{\sqrt{15}x(y-z)(y+z)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{T}_{3,1}^{(1,-1;a)}(T_{2u})$	$-\frac{\sqrt{2}i}{56}$	0	$\frac{3\sqrt{5}i}{140}$	0	$\frac{3\sqrt{10}i}{280}$	0	0	$-\frac{5\sqrt{3}i}{56}$	0	$\frac{\sqrt{15}i}{28}$	0	$\frac{3i}{56}$	0	0
		0	$\frac{\sqrt{30}i}{120}$	0	$-\frac{\sqrt{15}i}{420}$	0	$\frac{\sqrt{6}i}{56}$	$\frac{3\sqrt{7}i}{56}$	0	0	0	$\frac{3\sqrt{5}i}{56}$	0	$\frac{3i}{28}$	0
		$-\frac{\sqrt{6}i}{56}$	0	$\frac{\sqrt{15}i}{420}$	0	$-\frac{\sqrt{30}i}{120}$	0	0	$\frac{3i}{28}$	0	$\frac{3\sqrt{5}i}{56}$	0	0	0	$\frac{3\sqrt{7}i}{56}$
		0	$-\frac{3\sqrt{10}i}{280}$	0	$-\frac{3\sqrt{5}i}{140}$	0	$\frac{\sqrt{2}i}{56}$	0	0	$\frac{3i}{56}$	0	$\frac{\sqrt{15}i}{28}$	0	$-\frac{5\sqrt{3}i}{56}$	0
		0	$-\frac{3\sqrt{2}i}{56}$	0	$-\frac{3i}{56}$	0	0	$\frac{\sqrt{105}i}{84}$	0	$-\frac{\sqrt{5}i}{14}$	0	$-\frac{\sqrt{3}i}{28}$	0	0	0
		$-\frac{3\sqrt{2}i}{56}$	0	$\frac{3\sqrt{5}i}{280}$	0	$-\frac{3\sqrt{10}i}{140}$	0	0	$-\frac{5\sqrt{3}i}{84}$	0	$-\frac{\sqrt{15}i}{42}$	0	$-\frac{3i}{28}$	0	0
		0	$\frac{3\sqrt{5}i}{280}$	0	$\frac{3\sqrt{10}i}{140}$	0	$-\frac{3i}{56}$	$\frac{\sqrt{42}i}{56}$	0	$-\frac{5\sqrt{2}i}{56}$	0	$\frac{\sqrt{30}i}{168}$	0	$-\frac{3\sqrt{6}i}{56}$	0
		$-\frac{3i}{56}$	0	$\frac{3\sqrt{10}i}{140}$	0	$\frac{3\sqrt{5}i}{280}$	0	0	$\frac{3\sqrt{6}i}{56}$	0	$-\frac{\sqrt{30}i}{168}$	0	$\frac{5\sqrt{2}i}{56}$	0	$-\frac{\sqrt{42}i}{56}$
		0	$-\frac{3\sqrt{10}i}{140}$	0	$\frac{3\sqrt{5}i}{280}$	0	$-\frac{3\sqrt{2}i}{56}$	0	0	$\frac{3i}{28}$	0	$\frac{\sqrt{15}i}{42}$	0	$\frac{5\sqrt{3}i}{84}$	0
		0	0	$-\frac{3i}{56}$	0	$-\frac{3\sqrt{2}i}{56}$	0	0	0	0	$\frac{\sqrt{3}i}{28}$	0	$\frac{\sqrt{5}i}{14}$	0	$-\frac{\sqrt{105}i}{84}$
715	symmetry	$-\frac{\sqrt{15}y(x-z)(x+z)}{2}$													
	$\mathbb{T}_{3,2}^{(1,-1;a)}(T_{2u})$	$-\frac{\sqrt{2}}{56}$	0	$-\frac{3\sqrt{5}}{140}$	0	$\frac{3\sqrt{10}}{280}$	0	0	$-\frac{5\sqrt{3}}{56}$	0	$-\frac{\sqrt{15}}{28}$	0	$\frac{3}{56}$	0	0
		0	$\frac{\sqrt{30}}{120}$	0	$\frac{\sqrt{15}}{420}$	0	$\frac{\sqrt{6}}{56}$	$-\frac{3\sqrt{7}}{56}$	0	0	0	$-\frac{3\sqrt{5}}{56}$	0	$\frac{3}{28}$	0
		$\frac{\sqrt{6}}{56}$	0	$\frac{\sqrt{15}}{420}$	0	$\frac{\sqrt{30}}{120}$	0	0	$-\frac{3}{28}$	0	$\frac{3\sqrt{5}}{56}$	0	0	0	$\frac{3\sqrt{7}}{56}$
		0	$\frac{3\sqrt{10}}{280}$	0	$-\frac{3\sqrt{5}}{140}$	0	$-\frac{\sqrt{2}}{56}$	0	0	$-\frac{3}{56}$	0	$\frac{\sqrt{15}}{28}$	0	$\frac{5\sqrt{3}}{56}$	0
		0	$\frac{3\sqrt{2}}{56}$	0	$-\frac{3}{56}$	0	0	$\frac{\sqrt{105}}{84}$	0	$\frac{\sqrt{5}}{14}$	0	$-\frac{\sqrt{3}}{28}$	0	0	0
		$-\frac{3\sqrt{2}}{56}$	0	$-\frac{3\sqrt{5}}{280}$	0	$-\frac{3\sqrt{10}}{140}$	0	0	$-\frac{5\sqrt{3}}{84}$	0	$\frac{\sqrt{15}}{42}$	0	$-\frac{3}{28}$	0	0
		0	$\frac{3\sqrt{5}}{280}$	0	$-\frac{3\sqrt{10}}{140}$	0	$-\frac{3}{56}$	$-\frac{\sqrt{42}}{56}$	0	$-\frac{5\sqrt{2}}{56}$	0	$-\frac{\sqrt{30}}{168}$	0	$-\frac{3\sqrt{6}}{56}$	0
		$\frac{3}{56}$	0	$\frac{3\sqrt{10}}{140}$	0	$-\frac{3\sqrt{5}}{280}$	0	0	$-\frac{3\sqrt{6}}{56}$	0	$-\frac{\sqrt{30}}{168}$	0	$-\frac{5\sqrt{2}}{56}$	0	$-\frac{\sqrt{42}}{56}$
		0	$\frac{3\sqrt{10}}{140}$	0	$\frac{3\sqrt{5}}{280}$	0	$\frac{3\sqrt{2}}{56}$	0	0	$-\frac{3}{28}$	0	$\frac{\sqrt{15}}{42}$	0	$-\frac{5\sqrt{3}}{84}$	0
		0	0	$\frac{3}{56}$	0	$-\frac{3\sqrt{2}}{56}$	0	0	0	0	$-\frac{\sqrt{3}}{28}$	0	$\frac{\sqrt{5}}{14}$	0	$\frac{\sqrt{105}}{84}$
716	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{T}_{3,3}^{(1,-1;a)}(T_{2u})$	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	$\frac{3\sqrt{35}xyz(x-y)(x+y)}{2}$													
	$\mathbb{T}_{5,1}^{(1,-1;a)}(E_u)$	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	$-\frac{3\sqrt{10}}{100}$		
		0	0	0	0	0	$-\frac{3\sqrt{10}}{100}$	0	0	0	0	0	0		
		0	0	0	0	0	0	$\frac{\sqrt{210}}{100}$	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	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	
718	symmetry	$\frac{\sqrt{105}xyz(x^2+y^2-2z^2)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{T}_{5,2}^{(1,-1;a)}(E_u)$	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
719	symmetry	$\frac{x(8x^4-40x^2y^2-40x^2z^2+15y^4+30y^2z^2+15z^4)}{8}$													
	$\mathbb{T}_{5,1}^{(1,-1;a)}(T_{1u}, 1)$	0	0	0	0	0	0	0	$-\frac{\sqrt{6}i}{160}$	0	$\frac{\sqrt{30}i}{160}$	0	$-\frac{7\sqrt{2}i}{160}$	0	$\frac{3\sqrt{42}i}{160}$
		0	0	0	0	0	0	$-\frac{\sqrt{14}i}{160}$	0	$\frac{3\sqrt{6}i}{160}$	0	$-\frac{3\sqrt{10}i}{160}$	0	$\frac{7\sqrt{2}i}{160}$	0
		0	0	0	0	0	0	0	$\frac{7\sqrt{2}i}{160}$	0	$-\frac{3\sqrt{10}i}{160}$	0	$\frac{3\sqrt{6}i}{160}$	0	$-\frac{\sqrt{14}i}{160}$
		0	0	0	0	0	0	$\frac{3\sqrt{42}i}{160}$	0	$-\frac{7\sqrt{2}i}{160}$	0	$\frac{\sqrt{30}i}{160}$	0	$-\frac{\sqrt{6}i}{160}$	0
		0	$-\frac{i}{112}$	0	$\frac{\sqrt{2}i}{48}$	0	$-\frac{3\sqrt{5}i}{80}$	$\frac{\sqrt{210}i}{560}$	0	$-\frac{3\sqrt{10}i}{112}$	0	$\frac{\sqrt{6}i}{16}$	0	$-\frac{3\sqrt{30}i}{80}$	0
		$-\frac{i}{112}$	0	$\frac{\sqrt{10}i}{112}$	0	$-\frac{\sqrt{5}i}{48}$	0	0	$-\frac{23\sqrt{6}i}{560}$	0	$\frac{13\sqrt{30}i}{560}$	0	$-\frac{3\sqrt{2}i}{80}$	0	$-\frac{3\sqrt{42}i}{80}$
		0	$\frac{\sqrt{10}i}{112}$	0	$-\frac{\sqrt{5}i}{56}$	0	$\frac{\sqrt{2}i}{48}$	$-\frac{\sqrt{21}i}{40}$	0	$\frac{33i}{280}$	0	$-\frac{\sqrt{15}i}{280}$	0	$-\frac{3\sqrt{3}i}{40}$	0
		$\frac{\sqrt{2}i}{48}$	0	$-\frac{\sqrt{5}i}{56}$	0	$\frac{\sqrt{10}i}{112}$	0	0	$\frac{3\sqrt{3}i}{40}$	0	$\frac{\sqrt{15}i}{280}$	0	$-\frac{33i}{280}$	0	$\frac{\sqrt{21}i}{40}$
		0	$-\frac{\sqrt{5}i}{48}$	0	$\frac{\sqrt{10}i}{112}$	0	$-\frac{i}{112}$	$\frac{3\sqrt{42}i}{80}$	0	$\frac{3\sqrt{2}i}{80}$	0	$-\frac{13\sqrt{30}i}{560}$	0	$\frac{23\sqrt{6}i}{560}$	0
		$-\frac{3\sqrt{5}i}{80}$	0	$\frac{\sqrt{2}i}{48}$	0	$-\frac{i}{112}$	0	0	$\frac{3\sqrt{30}i}{80}$	0	$-\frac{\sqrt{6}i}{16}$	0	$\frac{3\sqrt{10}i}{112}$	0	$-\frac{\sqrt{210}i}{560}$
720	symmetry	$\frac{y(15x^4-40x^2y^2+30x^2z^2+8y^4-40y^2z^2+15z^4)}{8}$													

continued ...



Table 9

No.	multipole	matrix													
	$\mathbb{T}_{5,2}^{(1,-1;a)}(T_{1u}, 1)$	0	0	0	0	0	0	0	$\frac{\sqrt{6}}{160}$	0	$\frac{\sqrt{30}}{160}$	0	$\frac{7\sqrt{2}}{160}$	0	$\frac{3\sqrt{42}}{160}$
		0	0	0	0	0	0	$-\frac{\sqrt{14}}{160}$	0	$-\frac{3\sqrt{6}}{160}$	0	$-\frac{3\sqrt{10}}{160}$	0	$-\frac{7\sqrt{2}}{160}$	0
		0	0	0	0	0	0	0	$\frac{7\sqrt{2}}{160}$	0	$\frac{3\sqrt{10}}{160}$	0	$\frac{3\sqrt{6}}{160}$	0	$\frac{\sqrt{14}}{160}$
		0	0	0	0	0	0	$-\frac{3\sqrt{42}}{160}$	0	$-\frac{7\sqrt{2}}{160}$	0	$-\frac{\sqrt{30}}{160}$	0	$-\frac{\sqrt{6}}{160}$	0
		0	$-\frac{1}{112}$	0	$-\frac{\sqrt{2}}{48}$	0	$-\frac{3\sqrt{5}}{80}$	$-\frac{\sqrt{210}}{560}$	0	$-\frac{3\sqrt{10}}{112}$	0	$-\frac{\sqrt{6}}{16}$	0	$-\frac{3\sqrt{30}}{80}$	0
		$\frac{1}{112}$	0	$\frac{\sqrt{10}}{112}$	0	$\frac{\sqrt{5}}{48}$	0	0	$\frac{23\sqrt{6}}{560}$	0	$\frac{13\sqrt{30}}{560}$	0	$\frac{3\sqrt{2}}{80}$	0	$-\frac{3\sqrt{42}}{80}$
		0	$-\frac{\sqrt{10}}{112}$	0	$-\frac{\sqrt{5}}{56}$	0	$-\frac{\sqrt{2}}{48}$	$-\frac{\sqrt{21}}{40}$	0	$-\frac{33}{280}$	0	$-\frac{\sqrt{15}}{280}$	0	$\frac{3\sqrt{3}}{40}$	0
		$\frac{\sqrt{2}}{48}$	0	$\frac{\sqrt{5}}{56}$	0	$\frac{\sqrt{10}}{112}$	0	0	$\frac{3\sqrt{3}}{40}$	0	$-\frac{\sqrt{15}}{280}$	0	$-\frac{33}{280}$	0	$-\frac{\sqrt{21}}{40}$
		0	$-\frac{\sqrt{5}}{48}$	0	$-\frac{\sqrt{10}}{112}$	0	$-\frac{1}{112}$	$-\frac{3\sqrt{42}}{80}$	0	$\frac{3\sqrt{2}}{80}$	0	$\frac{13\sqrt{30}}{560}$	0	$\frac{23\sqrt{6}}{560}$	0
		$\frac{3\sqrt{5}}{80}$	0	$\frac{\sqrt{2}}{48}$	0	$\frac{1}{112}$	0	0	$-\frac{3\sqrt{30}}{80}$	0	$-\frac{\sqrt{6}}{16}$	0	$-\frac{3\sqrt{10}}{112}$	0	$-\frac{\sqrt{210}}{560}$
721	symmetry	$\frac{z(15x^4+30x^2y^2-40x^2z^2+15y^4-40y^2z^2+8z^4)}{8}$													
	$\mathbb{T}_{5,3}^{(1,-1;a)}(T_{1u}, 1)$	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	0	$-\frac{\sqrt{30}i}{35}$	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
722	symmetry	$\frac{3\sqrt{35}x(y^2-2yz-z^2)(y^2+2yz-z^2)}{8}$													

continued ...

Table 9

No.	multipole	matrix													
723	$\mathbb{T}_{5,1}^{(1,-1;a)}(T_{1u}, 2)$	0	0	0	0	0	0	0	$-\frac{\sqrt{210i}}{800}$	0	$\frac{\sqrt{42i}}{160}$	0	$\frac{9\sqrt{70i}}{800}$	0	$\frac{\sqrt{30i}}{160}$
		0	0	0	0	0	0	$\frac{9\sqrt{10i}}{800}$	0	$\frac{3\sqrt{210i}}{800}$	0	$-\frac{3\sqrt{14i}}{160}$	0	$-\frac{9\sqrt{70i}}{800}$	0
		0	0	0	0	0	0	$-\frac{9\sqrt{70i}}{800}$	0	$-\frac{3\sqrt{14i}}{160}$	0	$\frac{3\sqrt{210i}}{800}$	0	$\frac{9\sqrt{10i}}{800}$	0
		0	0	0	0	0	0	$\frac{\sqrt{30i}}{160}$	0	$\frac{9\sqrt{70i}}{800}$	0	$\frac{\sqrt{42i}}{160}$	0	$-\frac{\sqrt{210i}}{800}$	0
		0	$-\frac{\sqrt{35i}}{560}$	0	$-\frac{3\sqrt{70i}}{560}$	0	$-\frac{\sqrt{7i}}{112}$	$\frac{\sqrt{6i}}{80}$	0	$-\frac{3\sqrt{14i}}{112}$	0	$-\frac{9\sqrt{210i}}{560}$	0	$-\frac{\sqrt{42i}}{112}$	0
		$-\frac{\sqrt{35i}}{560}$	0	$\frac{\sqrt{14i}}{112}$	0	$\frac{3\sqrt{7i}}{112}$	0	0	$-\frac{23\sqrt{210i}}{2800}$	0	$\frac{13\sqrt{42i}}{560}$	0	$\frac{27\sqrt{70i}}{2800}$	0	$-\frac{\sqrt{30i}}{80}$
		0	$\frac{\sqrt{14i}}{112}$	0	$-\frac{\sqrt{7i}}{56}$	0	$-\frac{3\sqrt{70i}}{560}$	$\frac{9\sqrt{15i}}{200}$	0	$\frac{33\sqrt{35i}}{1400}$	0	$-\frac{\sqrt{21i}}{280}$	0	$\frac{27\sqrt{105i}}{1400}$	0
		$-\frac{3\sqrt{70i}}{560}$	0	$-\frac{\sqrt{7i}}{56}$	0	$\frac{\sqrt{14i}}{112}$	0	0	$-\frac{27\sqrt{105i}}{1400}$	0	$\frac{\sqrt{21i}}{280}$	0	$-\frac{33\sqrt{35i}}{1400}$	0	$-\frac{9\sqrt{15i}}{200}$
		0	$\frac{3\sqrt{7i}}{112}$	0	$\frac{\sqrt{14i}}{112}$	0	$-\frac{\sqrt{35i}}{560}$	$\frac{\sqrt{30i}}{80}$	0	$-\frac{27\sqrt{70i}}{2800}$	0	$-\frac{13\sqrt{42i}}{560}$	0	$\frac{23\sqrt{210i}}{2800}$	0
		$-\frac{\sqrt{7i}}{112}$	0	$-\frac{3\sqrt{70i}}{560}$	0	$-\frac{\sqrt{35i}}{560}$	0	0	$\frac{\sqrt{42i}}{112}$	0	$\frac{9\sqrt{210i}}{560}$	0	$\frac{3\sqrt{14i}}{112}$	0	$-\frac{\sqrt{6i}}{80}$
724	symmetry	$\frac{3\sqrt{35}y(x^2-2xz-z^2)(x^2+2xz-z^2)}{8}$													
725	$\mathbb{T}_{5,2}^{(1,-1;a)}(T_{1u}, 2)$	0	0	0	0	0	0	0	$\frac{\sqrt{210}}{800}$	0	$\frac{\sqrt{42}}{160}$	0	$-\frac{9\sqrt{70}}{800}$	0	$\frac{\sqrt{30}}{160}$
		0	0	0	0	0	0	$\frac{9\sqrt{10}}{800}$	0	$-\frac{3\sqrt{210}}{800}$	0	$-\frac{3\sqrt{14}}{160}$	0	$\frac{9\sqrt{70}}{800}$	0
		0	0	0	0	0	0	$-\frac{9\sqrt{70}}{800}$	0	$\frac{3\sqrt{14}}{160}$	0	$\frac{3\sqrt{210}}{800}$	0	$-\frac{9\sqrt{10}}{800}$	0
		0	0	0	0	0	0	$-\frac{\sqrt{30}}{160}$	0	$\frac{9\sqrt{70}}{800}$	0	$-\frac{\sqrt{42}}{160}$	0	$-\frac{\sqrt{210}}{800}$	0
		0	$-\frac{\sqrt{35}}{560}$	0	$\frac{3\sqrt{70}}{560}$	0	$-\frac{\sqrt{7}}{112}$	$-\frac{\sqrt{6}}{80}$	0	$-\frac{3\sqrt{14}}{112}$	0	$\frac{9\sqrt{210}}{560}$	0	$-\frac{\sqrt{42}}{112}$	0
		$\frac{\sqrt{35}}{560}$	0	$\frac{\sqrt{14}}{112}$	0	$-\frac{3\sqrt{7}}{112}$	0	0	$\frac{23\sqrt{210}}{2800}$	0	$\frac{13\sqrt{42}}{560}$	0	$-\frac{27\sqrt{70}}{2800}$	0	$-\frac{\sqrt{30}}{80}$
		0	$-\frac{\sqrt{14}}{112}$	0	$-\frac{\sqrt{7}}{56}$	0	$\frac{3\sqrt{70}}{560}$	$\frac{9\sqrt{15}}{200}$	0	$-\frac{33\sqrt{35}}{1400}$	0	$-\frac{\sqrt{21}}{280}$	0	$-\frac{27\sqrt{105}}{1400}$	0
		$-\frac{3\sqrt{70}}{560}$	0	$\frac{\sqrt{7}}{56}$	0	$\frac{\sqrt{14}}{112}$	0	0	$-\frac{27\sqrt{105}}{1400}$	0	$-\frac{\sqrt{21}}{280}$	0	$-\frac{33\sqrt{35}}{1400}$	0	$\frac{9\sqrt{15}}{200}$
		0	$\frac{3\sqrt{7}}{112}$	0	$-\frac{\sqrt{14}}{112}$	0	$-\frac{\sqrt{35}}{560}$	$-\frac{\sqrt{30}}{80}$	0	$-\frac{27\sqrt{70}}{2800}$	0	$\frac{13\sqrt{42}}{560}$	0	$\frac{23\sqrt{210}}{2800}$	0
		$\frac{\sqrt{7}}{112}$	0	$-\frac{3\sqrt{70}}{560}$	0	$\frac{\sqrt{35}}{560}$	0	0	$-\frac{\sqrt{42}}{112}$	0	$\frac{9\sqrt{210}}{560}$	0	$-\frac{3\sqrt{14}}{112}$	0	$-\frac{\sqrt{6}}{80}$
726	symmetry	$\frac{3\sqrt{35}z(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$													

continued ...

Table 9

No.	multipole	matrix														
	$\mathbb{T}_{5,3}^{(1,-1;a)}(T_{1u}, 2)$	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{210i}}{100}$	0		
		0	0	0	0	0	0	0	0	0	0	0	0	$-\frac{3\sqrt{10i}}{100}$		
		0	0	0	0	0	0	$\frac{3\sqrt{10i}}{100}$	0	0	0	0	0	0		
		0	0	0	0	0	0	$-\frac{\sqrt{210i}}{100}$	0	0	0	0	0	0		
		0	0	0	0	$-\frac{\sqrt{35i}}{70}$	0	0	0	0	0	0	$-\frac{3\sqrt{14i}}{35}$	0	0	
		0	0	0	0	0	$\frac{\sqrt{35i}}{70}$	0	0	0	0	0	0	$-\frac{\sqrt{210i}}{175}$	0	
		0	0	0	0	0	0	0	0	0	0	0	0	$\frac{2\sqrt{15i}}{25}$		
		0	0	0	0	0	0	$\frac{2\sqrt{15i}}{25}$	0	0	0	0	0	0		
		$-\frac{\sqrt{35i}}{70}$	0	0	0	0	0	0	$-\frac{\sqrt{210i}}{175}$	0	0	0	0	0	0	
		0	$\frac{\sqrt{35i}}{70}$	0	0	0	0	0	0	$-\frac{3\sqrt{14i}}{35}$	0	0	0	0	0	
725	symmetry	$\frac{\sqrt{105}x(y-z)(y+z)(2x^2-y^2-z^2)}{4}$														
	$\mathbb{T}_{5,1}^{(1,-1;a)}(T_{2u})$	0	0	0	0	0	0	0	$-\frac{\sqrt{70i}}{400}$	0	$\frac{\sqrt{14i}}{80}$	0	$-\frac{\sqrt{210i}}{400}$	0	$-\frac{3\sqrt{10i}}{80}$	
		0	0	0	0	0	0	$-\frac{\sqrt{30i}}{400}$	0	$\frac{3\sqrt{70i}}{400}$	0	$-\frac{\sqrt{42i}}{80}$	0	$\frac{\sqrt{210i}}{400}$	0	
		0	0	0	0	0	0	0	$\frac{\sqrt{210i}}{400}$	0	$-\frac{\sqrt{42i}}{80}$	0	$\frac{3\sqrt{70i}}{400}$	0	$-\frac{\sqrt{30i}}{400}$	
		0	0	0	0	0	0	$-\frac{3\sqrt{10i}}{80}$	0	$-\frac{\sqrt{210i}}{400}$	0	$\frac{\sqrt{14i}}{80}$	0	$-\frac{\sqrt{70i}}{400}$	0	
		0	$-\frac{\sqrt{105i}}{840}$	0	$\frac{\sqrt{210i}}{840}$	0	$\frac{\sqrt{21i}}{56}$	$\frac{\sqrt{2i}}{40}$	0	$-\frac{\sqrt{42i}}{56}$	0	$\frac{3\sqrt{70i}}{280}$	0	$\frac{3\sqrt{14i}}{56}$	0	
		$-\frac{\sqrt{105i}}{840}$	0	$\frac{\sqrt{42i}}{168}$	0	$-\frac{\sqrt{21i}}{168}$	0	0	$-\frac{23\sqrt{70i}}{1400}$	0	$\frac{13\sqrt{14i}}{280}$	0	$-\frac{3\sqrt{210i}}{1400}$	0	$\frac{3\sqrt{10i}}{40}$	
		0	$\frac{\sqrt{42i}}{168}$	0	$-\frac{\sqrt{21i}}{84}$	0	$\frac{\sqrt{210i}}{840}$	$-\frac{3\sqrt{5i}}{100}$	0	$\frac{11\sqrt{105i}}{700}$	0	$-\frac{\sqrt{7i}}{140}$	0	$-\frac{9\sqrt{35i}}{700}$	0	
		$\frac{\sqrt{210i}}{840}$	0	$-\frac{\sqrt{21i}}{84}$	0	$\frac{\sqrt{42i}}{168}$	0	0	$\frac{9\sqrt{35i}}{700}$	0	$\frac{\sqrt{7i}}{140}$	0	$-\frac{11\sqrt{105i}}{700}$	0	$\frac{3\sqrt{5i}}{100}$	
		0	$-\frac{\sqrt{21i}}{168}$	0	$\frac{\sqrt{42i}}{168}$	0	$-\frac{\sqrt{105i}}{840}$	$-\frac{3\sqrt{10i}}{40}$	0	$\frac{3\sqrt{210i}}{1400}$	0	$-\frac{13\sqrt{14i}}{280}$	0	$\frac{23\sqrt{70i}}{1400}$	0	
		$\frac{\sqrt{21i}}{56}$	0	$\frac{\sqrt{210i}}{840}$	0	$-\frac{\sqrt{105i}}{840}$	0	0	$-\frac{3\sqrt{14i}}{56}$	0	$-\frac{3\sqrt{70i}}{280}$	0	$\frac{\sqrt{42i}}{56}$	0	$-\frac{\sqrt{2i}}{40}$	
726	symmetry	$\frac{\sqrt{105}y(x-z)(x+z)(x^2-2y^2+z^2)}{4}$														

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{T}_{5,2}^{(1,-1;a)}(T_{2u})$	0	0	0	0	0	0	0	$-\frac{\sqrt{70}}{400}$	0	$-\frac{\sqrt{14}}{80}$	0	$-\frac{\sqrt{210}}{400}$	0	$\frac{3\sqrt{10}}{80}$
		0	0	0	0	0	0	$\frac{\sqrt{30}}{400}$	0	$\frac{3\sqrt{70}}{400}$	0	$\frac{\sqrt{42}}{80}$	0	$\frac{\sqrt{210}}{400}$	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{210}}{400}$	0	$-\frac{\sqrt{42}}{80}$	0	$-\frac{3\sqrt{70}}{400}$	0	$-\frac{\sqrt{30}}{400}$
		0	0	0	0	0	0	$-\frac{3\sqrt{10}}{80}$	0	$\frac{\sqrt{210}}{400}$	0	$\frac{\sqrt{14}}{80}$	0	$\frac{\sqrt{70}}{400}$	0
		0	$\frac{\sqrt{105}}{840}$	0	$\frac{\sqrt{210}}{840}$	0	$-\frac{\sqrt{21}}{56}$	$\frac{\sqrt{2}}{40}$	0	$\frac{\sqrt{42}}{56}$	0	$\frac{3\sqrt{70}}{280}$	0	$-\frac{3\sqrt{14}}{56}$	0
		$-\frac{\sqrt{105}}{840}$	0	$-\frac{\sqrt{42}}{168}$	0	$-\frac{\sqrt{21}}{168}$	0	0	$-\frac{23\sqrt{70}}{1400}$	0	$-\frac{13\sqrt{14}}{280}$	0	$-\frac{3\sqrt{210}}{1400}$	0	$-\frac{3\sqrt{10}}{40}$
		0	$\frac{\sqrt{42}}{168}$	0	$\frac{\sqrt{21}}{84}$	0	$\frac{\sqrt{210}}{840}$	$\frac{3\sqrt{5}}{100}$	0	$\frac{11\sqrt{105}}{700}$	0	$\frac{\sqrt{7}}{140}$	0	$-\frac{9\sqrt{35}}{700}$	0
		$-\frac{\sqrt{210}}{840}$	0	$-\frac{\sqrt{21}}{84}$	0	$-\frac{\sqrt{42}}{168}$	0	0	$-\frac{9\sqrt{35}}{700}$	0	$\frac{\sqrt{7}}{140}$	0	$\frac{11\sqrt{105}}{700}$	0	$\frac{3\sqrt{5}}{100}$
		0	$\frac{\sqrt{21}}{168}$	0	$\frac{\sqrt{42}}{168}$	0	$\frac{\sqrt{105}}{840}$	$-\frac{3\sqrt{10}}{40}$	0	$-\frac{3\sqrt{210}}{1400}$	0	$-\frac{13\sqrt{14}}{280}$	0	$-\frac{23\sqrt{70}}{1400}$	0
		$\frac{\sqrt{21}}{56}$	0	$-\frac{\sqrt{210}}{840}$	0	$-\frac{\sqrt{105}}{840}$	0	0	$-\frac{3\sqrt{14}}{56}$	0	$\frac{3\sqrt{70}}{280}$	0	$\frac{\sqrt{42}}{56}$	0	$\frac{\sqrt{2}}{40}$
727	symmetry	$-\frac{\sqrt{105}z(x-y)(x+y)(x^2+y^2-2z^2)}{4}$													
	$\mathbb{T}_{5,3}^{(1,-1;a)}(T_{2u})$	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	$x$													

continued ...

Table 9

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

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{T}_{1,3}^{(1,0;a)}(T_{1u})$	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	0	$-\frac{\sqrt{3}i}{14}$	0
731	symmetry	$\sqrt{15}xyz$													
	$\mathbb{T}_3^{(1,0;a)}(A_{2u})$	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
732	symmetry	$\frac{x(2x^2-3y^2-3z^2)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{T}_{3,1}^{(1,0;a)}(T_{1u})$	$-\frac{3\sqrt{35}i}{1120}$	0	$\frac{9\sqrt{14}i}{1120}$	0	$-\frac{3\sqrt{7}i}{224}$	0	0	$\frac{\sqrt{210}i}{112}$	0	$-\frac{\sqrt{42}i}{56}$	0	$\frac{\sqrt{70}i}{112}$	0	0
		0	$\frac{\sqrt{21}i}{160}$	0	$-\frac{\sqrt{42}i}{1120}$	0	$-\frac{\sqrt{105}i}{224}$	$\frac{\sqrt{10}i}{16}$	0	0	0	$-\frac{3\sqrt{14}i}{112}$	0	$\frac{\sqrt{70}i}{56}$	0
		$\frac{\sqrt{105}i}{224}$	0	$\frac{\sqrt{42}i}{1120}$	0	$-\frac{\sqrt{21}i}{160}$	0	0	$\frac{\sqrt{70}i}{56}$	0	$-\frac{3\sqrt{14}i}{112}$	0	0	0	$\frac{\sqrt{10}i}{16}$
		0	$\frac{3\sqrt{7}i}{224}$	0	$-\frac{9\sqrt{14}i}{1120}$	0	$\frac{3\sqrt{35}i}{1120}$	0	0	$\frac{\sqrt{70}i}{112}$	0	$-\frac{\sqrt{42}i}{56}$	0	$\frac{\sqrt{210}i}{112}$	0
		0	$-\frac{3\sqrt{35}i}{140}$	0	$\frac{\sqrt{70}i}{56}$	0	0	$\frac{\sqrt{6}i}{96}$	0	$-\frac{\sqrt{14}i}{112}$	0	$\frac{\sqrt{210}i}{672}$	0	0	0
		$-\frac{3\sqrt{35}i}{140}$	0	$\frac{3\sqrt{14}i}{280}$	0	$\frac{\sqrt{7}i}{14}$	0	0	$-\frac{\sqrt{210}i}{672}$	0	$-\frac{\sqrt{42}i}{336}$	0	$\frac{\sqrt{70}i}{224}$	0	0
		0	$\frac{3\sqrt{14}i}{280}$	0	$\frac{3\sqrt{7}i}{70}$	0	$\frac{\sqrt{70}i}{56}$	$-\frac{\sqrt{15}i}{96}$	0	$-\frac{\sqrt{35}i}{224}$	0	$\frac{\sqrt{21}i}{672}$	0	$\frac{\sqrt{105}i}{224}$	0
		$\frac{\sqrt{70}i}{56}$	0	$\frac{3\sqrt{7}i}{70}$	0	$\frac{3\sqrt{14}i}{280}$	0	0	$-\frac{\sqrt{105}i}{224}$	0	$-\frac{\sqrt{21}i}{672}$	0	$\frac{\sqrt{35}i}{224}$	0	$\frac{\sqrt{15}i}{96}$
		0	$\frac{\sqrt{7}i}{14}$	0	$\frac{3\sqrt{14}i}{280}$	0	$-\frac{3\sqrt{35}i}{140}$	0	0	$-\frac{\sqrt{70}i}{224}$	0	$\frac{\sqrt{42}i}{336}$	0	$\frac{\sqrt{210}i}{672}$	0
		0	0	$\frac{\sqrt{70}i}{56}$	0	$-\frac{3\sqrt{35}i}{140}$	0	0	0	0	$-\frac{\sqrt{210}i}{672}$	0	$\frac{\sqrt{14}i}{112}$	0	$-\frac{\sqrt{6}i}{96}$
733	symmetry	$-\frac{y(3x^2-2y^2+3z^2)}{2}$													
	$\mathbb{T}_{3,2}^{(1,0;a)}(T_{1u})$	$\frac{3\sqrt{35}}{1120}$	0	$\frac{9\sqrt{14}}{1120}$	0	$\frac{3\sqrt{7}}{224}$	0	0	$-\frac{\sqrt{210}}{112}$	0	$-\frac{\sqrt{42}}{56}$	0	$-\frac{\sqrt{70}}{112}$	0	0
		0	$-\frac{\sqrt{21}}{160}$	0	$-\frac{\sqrt{42}}{1120}$	0	$\frac{\sqrt{105}}{224}$	$\frac{\sqrt{10}}{16}$	0	0	0	$-\frac{3\sqrt{14}}{112}$	0	$-\frac{\sqrt{70}}{56}$	0
		$\frac{\sqrt{105}}{224}$	0	$-\frac{\sqrt{42}}{1120}$	0	$-\frac{\sqrt{21}}{160}$	0	0	$\frac{\sqrt{70}}{56}$	0	$\frac{3\sqrt{14}}{112}$	0	0	0	$-\frac{\sqrt{10}}{16}$
		0	$\frac{3\sqrt{7}}{224}$	0	$\frac{9\sqrt{14}}{1120}$	0	$\frac{3\sqrt{35}}{1120}$	0	0	$\frac{\sqrt{70}}{112}$	0	$\frac{\sqrt{42}}{56}$	0	$\frac{\sqrt{210}}{112}$	0
		0	$-\frac{3\sqrt{35}}{140}$	0	$-\frac{\sqrt{70}}{56}$	0	0	$-\frac{\sqrt{6}}{96}$	0	$-\frac{\sqrt{14}}{112}$	0	$-\frac{\sqrt{210}}{672}$	0	0	0
		$\frac{3\sqrt{35}}{140}$	0	$\frac{3\sqrt{14}}{280}$	0	$-\frac{\sqrt{7}}{14}$	0	0	$\frac{\sqrt{210}}{672}$	0	$-\frac{\sqrt{42}}{336}$	0	$-\frac{\sqrt{70}}{224}$	0	0
		0	$-\frac{3\sqrt{14}}{280}$	0	$\frac{3\sqrt{7}}{70}$	0	$-\frac{\sqrt{70}}{56}$	$-\frac{\sqrt{15}}{96}$	0	$\frac{\sqrt{35}}{224}$	0	$\frac{\sqrt{21}}{672}$	0	$-\frac{\sqrt{105}}{224}$	0
		$\frac{\sqrt{70}}{56}$	0	$-\frac{3\sqrt{7}}{70}$	0	$\frac{3\sqrt{14}}{280}$	0	0	$-\frac{\sqrt{105}}{224}$	0	$\frac{\sqrt{21}}{672}$	0	$\frac{\sqrt{35}}{224}$	0	$-\frac{\sqrt{15}}{96}$
		0	$\frac{\sqrt{7}}{14}$	0	$-\frac{3\sqrt{14}}{280}$	0	$-\frac{3\sqrt{35}}{140}$	0	0	$-\frac{\sqrt{70}}{224}$	0	$-\frac{\sqrt{42}}{336}$	0	$\frac{\sqrt{210}}{672}$	0
		0	0	$\frac{\sqrt{70}}{56}$	0	$\frac{3\sqrt{35}}{140}$	0	0	0	0	$-\frac{\sqrt{210}}{672}$	0	$-\frac{\sqrt{14}}{112}$	0	$-\frac{\sqrt{6}}{96}$
734	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{T}_{3,3}^{(1,0;a)}(T_{1u})$	0	$-\frac{3\sqrt{7}i}{140}$	0	0	0	0	0	0	$\frac{\sqrt{70}i}{28}$	0	0	0	0	0
		0	0	$\frac{\sqrt{42}i}{140}$	0	0	0	0	0	0	$\frac{\sqrt{14}i}{28}$	0	0	0	0
		0	0	0	$\frac{\sqrt{42}i}{140}$	0	0	0	0	0	0	$-\frac{\sqrt{14}i}{28}$	0	0	0
		0	0	0	0	$-\frac{3\sqrt{7}i}{140}$	0	0	0	0	0	0	$-\frac{\sqrt{70}i}{28}$	0	0
		$\frac{\sqrt{7}i}{14}$	0	0	0	0	0	0	$\frac{\sqrt{42}i}{84}$	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	0	$-\frac{\sqrt{21}i}{84}$	0	0	0	0
		0	0	0	$\frac{2\sqrt{7}i}{35}$	0	0	0	0	0	0	$-\frac{\sqrt{21}i}{84}$	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
735	symmetry	$\frac{\sqrt{15}x(y-z)(y+z)}{2}$													
	$\mathbb{T}_{3,1}^{(1,0;a)}(T_{2u})$	$-\frac{\sqrt{21}i}{224}$	0	$\frac{3\sqrt{210}i}{1120}$	0	$\frac{3\sqrt{105}i}{1120}$	0	0	$\frac{5\sqrt{14}i}{112}$	0	$-\frac{\sqrt{70}i}{56}$	0	$-\frac{\sqrt{42}i}{112}$	0	0
		0	$\frac{\sqrt{35}i}{160}$	0	$-\frac{\sqrt{70}i}{1120}$	0	$\frac{3\sqrt{7}i}{224}$	$-\frac{\sqrt{6}i}{16}$	0	0	0	$-\frac{\sqrt{210}i}{112}$	0	$-\frac{\sqrt{42}i}{56}$	0
		$-\frac{3\sqrt{7}i}{224}$	0	$\frac{\sqrt{70}i}{1120}$	0	$-\frac{\sqrt{35}i}{160}$	0	0	$-\frac{\sqrt{42}i}{56}$	0	$-\frac{\sqrt{210}i}{112}$	0	0	0	$-\frac{\sqrt{6}i}{16}$
		0	$-\frac{3\sqrt{105}i}{1120}$	0	$-\frac{3\sqrt{210}i}{1120}$	0	$\frac{\sqrt{21}i}{224}$	0	0	$-\frac{\sqrt{42}i}{112}$	0	$-\frac{\sqrt{70}i}{56}$	0	$\frac{5\sqrt{14}i}{112}$	0
		0	$-\frac{\sqrt{21}i}{28}$	0	$-\frac{\sqrt{42}i}{56}$	0	0	$\frac{\sqrt{10}i}{96}$	0	$-\frac{\sqrt{210}i}{336}$	0	$-\frac{\sqrt{14}i}{224}$	0	0	0
		$-\frac{\sqrt{21}i}{28}$	0	$\frac{\sqrt{210}i}{280}$	0	$-\frac{\sqrt{105}i}{70}$	0	0	$-\frac{5\sqrt{14}i}{672}$	0	$-\frac{\sqrt{70}i}{336}$	0	$-\frac{\sqrt{42}i}{224}$	0	0
		0	$\frac{\sqrt{210}i}{280}$	0	$\frac{\sqrt{105}i}{70}$	0	$-\frac{\sqrt{42}i}{56}$	$\frac{i}{32}$	0	$-\frac{5\sqrt{21}i}{672}$	0	$\frac{\sqrt{35}i}{672}$	0	$-\frac{3\sqrt{7}i}{224}$	0
		$-\frac{\sqrt{42}i}{56}$	0	$\frac{\sqrt{105}i}{70}$	0	$\frac{\sqrt{210}i}{280}$	0	0	$\frac{3\sqrt{7}i}{224}$	0	$-\frac{\sqrt{35}i}{672}$	0	$\frac{5\sqrt{21}i}{672}$	0	$-\frac{i}{32}$
		0	$-\frac{\sqrt{105}i}{70}$	0	$\frac{\sqrt{210}i}{280}$	0	$-\frac{\sqrt{21}i}{28}$	0	0	$\frac{\sqrt{42}i}{224}$	0	$\frac{\sqrt{70}i}{336}$	0	$\frac{5\sqrt{14}i}{672}$	0
		0	0	$-\frac{\sqrt{42}i}{56}$	0	$-\frac{\sqrt{21}i}{28}$	0	0	0	0	$\frac{\sqrt{14}i}{224}$	0	$\frac{\sqrt{210}i}{336}$	0	$-\frac{\sqrt{10}i}{96}$
736	symmetry	$-\frac{\sqrt{15}y(x-z)(x+z)}{2}$													

continued ...



Table 9

No.	multipole	matrix													
	$\mathbb{T}_{3,2}^{(1,0;a)}(T_{2u})$	$-\frac{\sqrt{21}}{224}$	0	$-\frac{3\sqrt{210}}{1120}$	0	$\frac{3\sqrt{105}}{1120}$	0	0	$\frac{5\sqrt{14}}{112}$	0	$\frac{\sqrt{70}}{56}$	0	$-\frac{\sqrt{42}}{112}$	0	0
		0	$\frac{\sqrt{35}}{160}$	0	$\frac{\sqrt{70}}{1120}$	0	$\frac{3\sqrt{7}}{224}$	$\frac{\sqrt{6}}{16}$	0	0	0	$\frac{\sqrt{210}}{112}$	0	$-\frac{\sqrt{42}}{56}$	0
		$\frac{3\sqrt{7}}{224}$	0	$\frac{\sqrt{70}}{1120}$	0	$\frac{\sqrt{35}}{160}$	0	0	$\frac{\sqrt{42}}{56}$	0	$-\frac{\sqrt{210}}{112}$	0	0	0	$-\frac{\sqrt{6}}{16}$
		0	$\frac{3\sqrt{105}}{1120}$	0	$-\frac{3\sqrt{210}}{1120}$	0	$-\frac{\sqrt{21}}{224}$	0	0	$\frac{\sqrt{42}}{112}$	0	$-\frac{\sqrt{70}}{56}$	0	$-\frac{5\sqrt{14}}{112}$	0
		0	$\frac{\sqrt{21}}{28}$	0	$-\frac{\sqrt{42}}{56}$	0	0	$\frac{\sqrt{10}}{96}$	0	$\frac{\sqrt{210}}{336}$	0	$-\frac{\sqrt{14}}{224}$	0	0	0
		$-\frac{\sqrt{21}}{28}$	0	$-\frac{\sqrt{210}}{280}$	0	$-\frac{\sqrt{105}}{70}$	0	0	$-\frac{5\sqrt{14}}{672}$	0	$\frac{\sqrt{70}}{336}$	0	$-\frac{\sqrt{42}}{224}$	0	0
		0	$\frac{\sqrt{210}}{280}$	0	$-\frac{\sqrt{105}}{70}$	0	$-\frac{\sqrt{42}}{56}$	$-\frac{1}{32}$	0	$-\frac{5\sqrt{21}}{672}$	0	$-\frac{\sqrt{35}}{672}$	0	$-\frac{3\sqrt{7}}{224}$	0
		$\frac{\sqrt{42}}{56}$	0	$\frac{\sqrt{105}}{70}$	0	$-\frac{\sqrt{210}}{280}$	0	0	$-\frac{3\sqrt{7}}{224}$	0	$-\frac{\sqrt{35}}{672}$	0	$-\frac{5\sqrt{21}}{672}$	0	$-\frac{1}{32}$
		0	$\frac{\sqrt{105}}{70}$	0	$\frac{\sqrt{210}}{280}$	0	$\frac{\sqrt{21}}{28}$	0	0	$-\frac{\sqrt{42}}{224}$	0	$\frac{\sqrt{70}}{336}$	0	$-\frac{5\sqrt{14}}{672}$	0
		0	0	$\frac{\sqrt{42}}{56}$	0	$-\frac{\sqrt{21}}{28}$	0	0	0	$-\frac{\sqrt{14}}{224}$	0	$\frac{\sqrt{210}}{336}$	0	$\frac{\sqrt{10}}{96}$	
737	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$													
	$\mathbb{T}_{3,3}^{(1,0;a)}(T_{2u})$	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
738	symmetry	$\frac{3\sqrt{35}xyz(x-y)(x+y)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{T}_{5,1}^{(1,0;a)}(E_u)$	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	
739	symmetry	$\frac{\sqrt{105}xyz(x^2+y^2-2z^2)}{2}$													
	$\mathbb{T}_{5,2}^{(1,0;a)}(E_u)$	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	
740	symmetry	$\frac{x(8x^4-40x^2y^2-40x^2z^2+15y^4+30y^2z^2+15z^4)}{8}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{T}_{5,1}^{(1,0;a)}(T_{1u},1)$	0	0	0	0	0	0	0	$\frac{\sqrt{6}i}{80}$	0	$-\frac{\sqrt{30}i}{80}$	0	$\frac{7\sqrt{2}i}{80}$	0	$-\frac{3\sqrt{42}i}{80}$
		0	0	0	0	0	0	$\frac{\sqrt{14}i}{80}$	0	$-\frac{3\sqrt{6}i}{80}$	0	$\frac{3\sqrt{10}i}{80}$	0	$-\frac{7\sqrt{2}i}{80}$	0
		0	0	0	0	0	0	0	$-\frac{7\sqrt{2}i}{80}$	0	$\frac{3\sqrt{10}i}{80}$	0	$-\frac{3\sqrt{6}i}{80}$	0	$\frac{\sqrt{14}i}{80}$
		0	0	0	0	0	0	$-\frac{3\sqrt{42}i}{80}$	0	$\frac{7\sqrt{2}i}{80}$	0	$-\frac{\sqrt{30}i}{80}$	0	$\frac{\sqrt{6}i}{80}$	0
		0	$-\frac{3i}{112}$	0	$\frac{\sqrt{2}i}{16}$	0	$-\frac{9\sqrt{5}i}{80}$	$\frac{\sqrt{210}i}{6720}$	0	$-\frac{\sqrt{10}i}{448}$	0	$\frac{\sqrt{6}i}{192}$	0	$-\frac{\sqrt{30}i}{320}$	0
		$-\frac{3i}{112}$	0	$\frac{3\sqrt{10}i}{112}$	0	$-\frac{\sqrt{5}i}{16}$	0	0	$-\frac{23\sqrt{6}i}{6720}$	0	$\frac{13\sqrt{30}i}{6720}$	0	$-\frac{\sqrt{2}i}{320}$	0	$-\frac{\sqrt{42}i}{320}$
		0	$\frac{3\sqrt{10}i}{112}$	0	$-\frac{3\sqrt{5}i}{56}$	0	$\frac{\sqrt{2}i}{16}$	$-\frac{\sqrt{21}i}{480}$	0	$\frac{11i}{1120}$	0	$-\frac{\sqrt{15}i}{3360}$	0	$-\frac{\sqrt{3}i}{160}$	0
		$\frac{\sqrt{2}i}{16}$	0	$-\frac{3\sqrt{5}i}{56}$	0	$\frac{3\sqrt{10}i}{112}$	0	0	$\frac{\sqrt{3}i}{160}$	0	$\frac{\sqrt{15}i}{3360}$	0	$-\frac{11i}{1120}$	0	$\frac{\sqrt{21}i}{480}$
		0	$-\frac{\sqrt{5}i}{16}$	0	$\frac{3\sqrt{10}i}{112}$	0	$-\frac{3i}{112}$	$\frac{\sqrt{42}i}{320}$	0	$\frac{\sqrt{2}i}{320}$	0	$-\frac{13\sqrt{30}i}{6720}$	0	$\frac{23\sqrt{6}i}{6720}$	0
		$-\frac{9\sqrt{5}i}{80}$	0	$\frac{\sqrt{2}i}{16}$	0	$-\frac{3i}{112}$	0	0	$\frac{\sqrt{30}i}{320}$	0	$-\frac{\sqrt{6}i}{192}$	0	$\frac{\sqrt{10}i}{448}$	0	$-\frac{\sqrt{210}i}{6720}$
741	symmetry	$\frac{y(15x^4-40x^2y^2+30x^2z^2+8y^4-40y^2z^2+15z^4)}{8}$													
	$\mathbb{T}_{5,2}^{(1,0;a)}(T_{1u},1)$	0	0	0	0	0	0	0	$-\frac{\sqrt{6}}{80}$	0	$-\frac{\sqrt{30}}{80}$	0	$-\frac{7\sqrt{2}}{80}$	0	$-\frac{3\sqrt{42}}{80}$
		0	0	0	0	0	0	$\frac{\sqrt{14}}{80}$	0	$\frac{3\sqrt{6}}{80}$	0	$\frac{3\sqrt{10}}{80}$	0	$\frac{7\sqrt{2}}{80}$	0
		0	0	0	0	0	0	0	$-\frac{7\sqrt{2}}{80}$	0	$-\frac{3\sqrt{10}}{80}$	0	$-\frac{3\sqrt{6}}{80}$	0	$-\frac{\sqrt{14}}{80}$
		0	0	0	0	0	0	$\frac{3\sqrt{42}}{80}$	0	$\frac{7\sqrt{2}}{80}$	0	$\frac{\sqrt{30}}{80}$	0	$\frac{\sqrt{6}}{80}$	0
		0	$-\frac{3}{112}$	0	$-\frac{\sqrt{2}}{16}$	0	$-\frac{9\sqrt{5}}{80}$	$-\frac{\sqrt{210}}{6720}$	0	$-\frac{\sqrt{10}}{448}$	0	$-\frac{\sqrt{6}}{192}$	0	$-\frac{\sqrt{30}}{320}$	0
		$\frac{3}{112}$	0	$\frac{3\sqrt{10}}{112}$	0	$\frac{\sqrt{5}}{16}$	0	0	$\frac{23\sqrt{6}}{6720}$	0	$\frac{13\sqrt{30}}{6720}$	0	$\frac{\sqrt{2}}{320}$	0	$-\frac{\sqrt{42}}{320}$
		0	$-\frac{3\sqrt{10}}{112}$	0	$-\frac{3\sqrt{5}}{56}$	0	$-\frac{\sqrt{2}}{16}$	$-\frac{\sqrt{21}}{480}$	0	$-\frac{11}{1120}$	0	$-\frac{\sqrt{15}}{3360}$	0	$\frac{\sqrt{3}}{160}$	0
		$\frac{\sqrt{2}}{16}$	0	$\frac{3\sqrt{5}}{56}$	0	$\frac{3\sqrt{10}}{112}$	0	0	$\frac{\sqrt{3}}{160}$	0	$-\frac{\sqrt{15}}{3360}$	0	$-\frac{11}{1120}$	0	$-\frac{\sqrt{21}}{480}$
		0	$-\frac{\sqrt{5}}{16}$	0	$-\frac{3\sqrt{10}}{112}$	0	$-\frac{3}{112}$	$-\frac{\sqrt{42}}{320}$	0	$\frac{\sqrt{2}}{320}$	0	$\frac{13\sqrt{30}}{6720}$	0	$\frac{23\sqrt{6}}{6720}$	0
		$\frac{9\sqrt{5}}{80}$	0	$\frac{\sqrt{2}}{16}$	0	$\frac{3}{112}$	0	0	$-\frac{\sqrt{30}}{320}$	0	$-\frac{\sqrt{6}}{192}$	0	$-\frac{\sqrt{10}}{448}$	0	$-\frac{\sqrt{210}}{6720}$
742	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														
	$\mathbb{T}_{5,3}^{(1,0;a)}(T_{1u}, 1)$	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	0	$\frac{\sqrt{10}i}{10}$	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	0	0	0	0	0	$\frac{\sqrt{2}i}{10}$	0	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
		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	0	$-\frac{\sqrt{5}i}{7}$	0	0	0	0	0	0	$-\frac{\sqrt{15}i}{210}$	0	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	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	0	$\frac{\sqrt{5}i}{70}$	0	0	0	0	0	0	$-\frac{\sqrt{30}i}{420}$	0	0
743	symmetry	$\frac{3\sqrt{35}x(y^2-2yz-z^2)(y^2+2yz-z^2)}{8}$														
	$\mathbb{T}_{5,1}^{(1,0;a)}(T_{1u}, 2)$	0	0	0	0	0	0	0	$\frac{\sqrt{210}i}{400}$	0	$-\frac{\sqrt{42}i}{80}$	0	$-\frac{9\sqrt{70}i}{400}$	0	$-\frac{\sqrt{30}i}{80}$	0
		0	0	0	0	0	0	$-\frac{9\sqrt{10}i}{400}$	0	$-\frac{3\sqrt{210}i}{400}$	0	$\frac{3\sqrt{14}i}{80}$	0	$\frac{9\sqrt{70}i}{400}$	0	0
		0	0	0	0	0	0	0	$\frac{9\sqrt{70}i}{400}$	0	$\frac{3\sqrt{14}i}{80}$	0	$-\frac{3\sqrt{210}i}{400}$	0	$-\frac{9\sqrt{10}i}{400}$	0
		0	0	0	0	0	0	$-\frac{\sqrt{30}i}{80}$	0	$-\frac{9\sqrt{70}i}{400}$	0	$-\frac{\sqrt{42}i}{80}$	0	$\frac{\sqrt{210}i}{400}$	0	0
		0	$-\frac{3\sqrt{35}i}{560}$	0	$-\frac{9\sqrt{70}i}{560}$	0	$-\frac{3\sqrt{7}i}{112}$	$\frac{\sqrt{6}i}{960}$	0	$-\frac{\sqrt{14}i}{448}$	0	$-\frac{3\sqrt{210}i}{2240}$	0	$-\frac{\sqrt{42}i}{1344}$	0	0
		$-\frac{3\sqrt{35}i}{560}$	0	$\frac{3\sqrt{14}i}{112}$	0	$\frac{9\sqrt{7}i}{112}$	0	0	$-\frac{23\sqrt{210}i}{33600}$	0	$\frac{13\sqrt{42}i}{6720}$	0	$\frac{9\sqrt{70}i}{11200}$	0	$-\frac{\sqrt{30}i}{960}$	0
		0	$\frac{3\sqrt{14}i}{112}$	0	$-\frac{3\sqrt{7}i}{56}$	0	$-\frac{9\sqrt{70}i}{560}$	$\frac{3\sqrt{15}i}{800}$	0	$\frac{11\sqrt{35}i}{5600}$	0	$-\frac{\sqrt{21}i}{3360}$	0	$\frac{9\sqrt{105}i}{5600}$	0	0
		$-\frac{9\sqrt{70}i}{560}$	0	$-\frac{3\sqrt{7}i}{56}$	0	$\frac{3\sqrt{14}i}{112}$	0	0	$-\frac{9\sqrt{105}i}{5600}$	0	$\frac{\sqrt{21}i}{3360}$	0	$-\frac{11\sqrt{35}i}{5600}$	0	$-\frac{3\sqrt{15}i}{800}$	0
		0	$\frac{9\sqrt{7}i}{112}$	0	$\frac{3\sqrt{14}i}{112}$	0	$-\frac{3\sqrt{35}i}{560}$	$\frac{\sqrt{30}i}{960}$	0	$-\frac{9\sqrt{70}i}{11200}$	0	$-\frac{13\sqrt{42}i}{6720}$	0	$\frac{23\sqrt{210}i}{33600}$	0	0
		$-\frac{3\sqrt{7}i}{112}$	0	$-\frac{9\sqrt{70}i}{560}$	0	$-\frac{3\sqrt{35}i}{560}$	0	0	$\frac{\sqrt{42}i}{1344}$	0	$\frac{3\sqrt{210}i}{2240}$	0	$\frac{\sqrt{14}i}{448}$	0	$-\frac{\sqrt{6}i}{960}$	0
744	symmetry	$\frac{3\sqrt{35}y(x^2-2xz-z^2)(x^2+2xz-z^2)}{8}$														

continued ...

Table 9

No.	multipole	matrix													
745	$\mathbb{T}_{5,2}^{(1,0;a)}(T_{1u}, 2)$	0	0	0	0	0	0	0	$-\frac{\sqrt{210}}{400}$	0	$-\frac{\sqrt{42}}{80}$	0	$\frac{9\sqrt{70}}{400}$	0	$-\frac{\sqrt{30}}{80}$
		0	0	0	0	0	0	$-\frac{9\sqrt{10}}{400}$	0	$\frac{3\sqrt{210}}{400}$	0	$\frac{3\sqrt{14}}{80}$	0	$-\frac{9\sqrt{70}}{400}$	0
		0	0	0	0	0	0	0	$\frac{9\sqrt{70}}{400}$	0	$-\frac{3\sqrt{14}}{80}$	0	$-\frac{3\sqrt{210}}{400}$	0	$\frac{9\sqrt{10}}{400}$
		0	0	0	0	0	0	$\frac{\sqrt{30}}{80}$	0	$-\frac{9\sqrt{70}}{400}$	0	$\frac{\sqrt{42}}{80}$	0	$\frac{\sqrt{210}}{400}$	0
		0	$-\frac{3\sqrt{35}}{560}$	0	$\frac{9\sqrt{70}}{560}$	0	$-\frac{3\sqrt{7}}{112}$	$-\frac{\sqrt{6}}{960}$	0	$-\frac{\sqrt{14}}{448}$	0	$\frac{3\sqrt{210}}{2240}$	0	$-\frac{\sqrt{42}}{1344}$	0
		$\frac{3\sqrt{35}}{560}$	0	$\frac{3\sqrt{14}}{112}$	0	$-\frac{9\sqrt{7}}{112}$	0	0	$\frac{23\sqrt{210}}{33600}$	0	$\frac{13\sqrt{42}}{6720}$	0	$-\frac{9\sqrt{70}}{11200}$	0	$-\frac{\sqrt{30}}{960}$
		0	$-\frac{3\sqrt{14}}{112}$	0	$-\frac{3\sqrt{7}}{56}$	0	$\frac{9\sqrt{70}}{560}$	$\frac{3\sqrt{15}}{800}$	0	$-\frac{11\sqrt{35}}{5600}$	0	$-\frac{\sqrt{21}}{3360}$	0	$-\frac{9\sqrt{105}}{5600}$	0
		$-\frac{9\sqrt{70}}{560}$	0	$\frac{3\sqrt{7}}{56}$	0	$\frac{3\sqrt{14}}{112}$	0	0	$-\frac{9\sqrt{105}}{5600}$	0	$-\frac{\sqrt{21}}{3360}$	0	$-\frac{11\sqrt{35}}{5600}$	0	$\frac{3\sqrt{15}}{800}$
		0	$\frac{9\sqrt{7}}{112}$	0	$-\frac{3\sqrt{14}}{112}$	0	$-\frac{3\sqrt{35}}{560}$	$-\frac{\sqrt{30}}{960}$	0	$-\frac{9\sqrt{70}}{11200}$	0	$\frac{13\sqrt{42}}{6720}$	0	$\frac{23\sqrt{210}}{33600}$	0
		$\frac{3\sqrt{7}}{112}$	0	$-\frac{9\sqrt{70}}{560}$	0	$\frac{3\sqrt{35}}{560}$	0	0	$-\frac{\sqrt{42}}{1344}$	0	$\frac{3\sqrt{210}}{2240}$	0	$-\frac{\sqrt{14}}{448}$	0	$-\frac{\sqrt{6}}{960}$
745	symmetry	$\frac{3\sqrt{35}z(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$													
746	$\mathbb{T}_{5,3}^{(1,0;a)}(T_{1u}, 2)$	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	0	$\frac{3\sqrt{10}i}{50}$	0
		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	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	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	$-\frac{\sqrt{210}i}{2100}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{15}i}{150}$	0
		0	0	0	0	0	0	$\frac{\sqrt{15}i}{150}$	0	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
		0	$\frac{3\sqrt{35}i}{70}$	0	0	0	0	0	0	$-\frac{\sqrt{14}i}{140}$	0	0	0	0	0
746	symmetry	$\frac{\sqrt{105}x(y-z)(y+z)(2x^2-y^2-z^2)}{4}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{T}_{5,1}^{(1,0;a)}(T_{2u})$	0	0	0	0	0	0	0	$\frac{\sqrt{70}i}{200}$	0	$-\frac{\sqrt{14}i}{40}$	0	$\frac{\sqrt{210}i}{200}$	0	$\frac{3\sqrt{10}i}{40}$
		0	0	0	0	0	0	$\frac{\sqrt{30}i}{200}$	0	$-\frac{3\sqrt{70}i}{200}$	0	$\frac{\sqrt{42}i}{40}$	0	$-\frac{\sqrt{210}i}{200}$	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{210}i}{200}$	0	$\frac{\sqrt{42}i}{40}$	0	$-\frac{3\sqrt{70}i}{200}$	0	$\frac{\sqrt{30}i}{200}$
		0	0	0	0	0	0	$\frac{3\sqrt{10}i}{40}$	0	$\frac{\sqrt{210}i}{200}$	0	$-\frac{\sqrt{14}i}{40}$	0	$\frac{\sqrt{70}i}{200}$	0
		0	$-\frac{\sqrt{105}i}{280}$	0	$\frac{\sqrt{210}i}{280}$	0	$\frac{3\sqrt{21}i}{56}$	$\frac{\sqrt{2}i}{480}$	0	$-\frac{\sqrt{42}i}{672}$	0	$\frac{\sqrt{70}i}{1120}$	0	$\frac{\sqrt{14}i}{224}$	0
		$-\frac{\sqrt{105}i}{280}$	0	$\frac{\sqrt{42}i}{56}$	0	$-\frac{\sqrt{21}i}{56}$	0	0	$-\frac{23\sqrt{70}i}{16800}$	0	$\frac{13\sqrt{14}i}{3360}$	0	$-\frac{\sqrt{210}i}{5600}$	0	$\frac{\sqrt{10}i}{160}$
		0	$\frac{\sqrt{42}i}{56}$	0	$-\frac{\sqrt{21}i}{28}$	0	$\frac{\sqrt{210}i}{280}$	$-\frac{\sqrt{5}i}{400}$	0	$\frac{11\sqrt{105}i}{8400}$	0	$-\frac{\sqrt{7}i}{1680}$	0	$-\frac{3\sqrt{35}i}{2800}$	0
		$\frac{\sqrt{210}i}{280}$	0	$-\frac{\sqrt{21}i}{28}$	0	$\frac{\sqrt{42}i}{56}$	0	0	$\frac{3\sqrt{35}i}{2800}$	0	$\frac{\sqrt{7}i}{1680}$	0	$-\frac{11\sqrt{105}i}{8400}$	0	$\frac{\sqrt{5}i}{400}$
		0	$-\frac{\sqrt{21}i}{56}$	0	$\frac{\sqrt{42}i}{56}$	0	$-\frac{\sqrt{105}i}{280}$	$-\frac{\sqrt{10}i}{160}$	0	$\frac{\sqrt{210}i}{5600}$	0	$-\frac{13\sqrt{14}i}{3360}$	0	$\frac{23\sqrt{70}i}{16800}$	0
		$\frac{3\sqrt{21}i}{56}$	0	$\frac{\sqrt{210}i}{280}$	0	$-\frac{\sqrt{105}i}{280}$	0	0	$-\frac{\sqrt{14}i}{224}$	0	$-\frac{\sqrt{70}i}{1120}$	0	$\frac{\sqrt{42}i}{672}$	0	$-\frac{\sqrt{2}i}{480}$
747	symmetry	$\frac{\sqrt{105}y(x-z)(x+z)(x^2-2y^2+z^2)}{4}$													
	$\mathbb{T}_{5,2}^{(1,0;a)}(T_{2u})$	0	0	0	0	0	0	0	$\frac{\sqrt{70}}{200}$	0	$\frac{\sqrt{14}}{40}$	0	$\frac{\sqrt{210}}{200}$	0	$-\frac{3\sqrt{10}}{40}$
		0	0	0	0	0	0	$-\frac{\sqrt{30}}{200}$	0	$-\frac{3\sqrt{70}}{200}$	0	$-\frac{\sqrt{42}}{40}$	0	$-\frac{\sqrt{210}}{200}$	0
		0	0	0	0	0	0	0	$\frac{\sqrt{210}}{200}$	0	$\frac{\sqrt{42}}{40}$	0	$\frac{3\sqrt{70}}{200}$	0	$\frac{\sqrt{30}}{200}$
		0	0	0	0	0	0	$\frac{3\sqrt{10}}{40}$	0	$-\frac{\sqrt{210}}{200}$	0	$-\frac{\sqrt{14}}{40}$	0	$-\frac{\sqrt{70}}{200}$	0
		0	$\frac{\sqrt{105}}{280}$	0	$\frac{\sqrt{210}}{280}$	0	$-\frac{3\sqrt{21}}{56}$	$\frac{\sqrt{2}}{480}$	0	$\frac{\sqrt{42}}{672}$	0	$\frac{\sqrt{70}}{1120}$	0	$-\frac{\sqrt{14}}{224}$	0
		$-\frac{\sqrt{105}}{280}$	0	$-\frac{\sqrt{42}}{56}$	0	$-\frac{\sqrt{21}}{56}$	0	0	$-\frac{23\sqrt{70}}{16800}$	0	$-\frac{13\sqrt{14}}{3360}$	0	$-\frac{\sqrt{210}}{5600}$	0	$-\frac{\sqrt{10}}{160}$
		0	$\frac{\sqrt{42}}{56}$	0	$\frac{\sqrt{21}}{28}$	0	$\frac{\sqrt{210}}{280}$	$\frac{\sqrt{5}}{400}$	0	$\frac{11\sqrt{105}}{8400}$	0	$\frac{\sqrt{7}}{1680}$	0	$-\frac{3\sqrt{35}}{2800}$	0
		$-\frac{\sqrt{210}}{280}$	0	$-\frac{\sqrt{21}}{28}$	0	$-\frac{\sqrt{42}}{56}$	0	0	$-\frac{3\sqrt{35}}{2800}$	0	$\frac{\sqrt{7}}{1680}$	0	$\frac{11\sqrt{105}}{8400}$	0	$\frac{\sqrt{5}}{400}$
		0	$\frac{\sqrt{21}}{56}$	0	$\frac{\sqrt{42}}{56}$	0	$\frac{\sqrt{105}}{280}$	$-\frac{\sqrt{10}}{160}$	0	$-\frac{\sqrt{210}}{5600}$	0	$-\frac{13\sqrt{14}}{3360}$	0	$-\frac{23\sqrt{70}}{16800}$	0
		$\frac{3\sqrt{21}}{56}$	0	$-\frac{\sqrt{210}}{280}$	0	$-\frac{\sqrt{105}}{280}$	0	0	$-\frac{\sqrt{14}}{224}$	0	$\frac{\sqrt{70}}{1120}$	0	$\frac{\sqrt{42}}{672}$	0	$\frac{\sqrt{2}}{480}$
748	symmetry	$-\frac{\sqrt{105}z(x-y)(x+y)(x^2+y^2-2z^2)}{4}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{T}_{5,3}^{(1,0;a)}(T_{2u})$	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	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	$-\frac{\sqrt{210}i}{140}$	0	0	0	0	0	0	$-\frac{\sqrt{70}i}{420}$	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	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	0	$-\frac{\sqrt{70}i}{420}$	0	0	0
749	symmetry	$x$													
	$\mathbb{T}_{1,1}^{(1,1;a)}(T_{1u})$	$\frac{\sqrt{5}i}{10}$	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	$\frac{\sqrt{42}i}{56}$
750	symmetry	$y$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{T}_{1,2}^{(1,1;a)}(T_{1u})$	$-\frac{\sqrt{5}}{10}$	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	$\frac{\sqrt{42}}{56}$
751	symmetry	$z$													
	$\mathbb{T}_{1,3}^{(1,1;a)}(T_{1u})$	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	0	$\frac{\sqrt{6}i}{28}$	0
752	symmetry	$\sqrt{15}xyz$													

continued ...



Table 9

No.	multipole	matrix													
	$\mathbb{T}_3^{(1,1;a)}(A_{2u})$	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
753	symmetry	$\frac{x(2x^2-3y^2-3z^2)}{2}$													
	$\mathbb{T}_{3,1}^{(1,1;a)}(T_{1u})$	$\frac{9\sqrt{5}i}{224}$	0	$-\frac{27\sqrt{2}i}{224}$	0	$\frac{45i}{224}$	0	0	$-\frac{\sqrt{30}i}{112}$	0	$\frac{\sqrt{6}i}{56}$	0	$-\frac{\sqrt{10}i}{112}$	0	0
		0	$-\frac{3\sqrt{3}i}{32}$	0	$\frac{3\sqrt{6}i}{224}$	0	$\frac{15\sqrt{15}i}{224}$	$-\frac{\sqrt{70}i}{112}$	0	0	0	$\frac{3\sqrt{2}i}{112}$	0	$-\frac{\sqrt{10}i}{56}$	0
		$-\frac{15\sqrt{15}i}{224}$	0	$-\frac{3\sqrt{6}i}{224}$	0	$\frac{3\sqrt{3}i}{32}$	0	0	$-\frac{\sqrt{10}i}{56}$	0	$\frac{3\sqrt{2}i}{112}$	0	0	0	$-\frac{\sqrt{70}i}{112}$
		0	$-\frac{45i}{224}$	0	$\frac{27\sqrt{2}i}{224}$	0	$-\frac{9\sqrt{5}i}{224}$	0	0	$-\frac{\sqrt{10}i}{112}$	0	$\frac{\sqrt{6}i}{56}$	0	$-\frac{\sqrt{30}i}{112}$	0
		0	$-\frac{\sqrt{5}i}{28}$	0	$\frac{5\sqrt{10}i}{168}$	0	0	$-\frac{\sqrt{42}i}{224}$	0	$\frac{3\sqrt{2}i}{112}$	0	$-\frac{\sqrt{30}i}{224}$	0	0	0
		$-\frac{\sqrt{5}i}{28}$	0	$\frac{\sqrt{2}i}{56}$	0	$\frac{5i}{42}$	0	0	$\frac{\sqrt{30}i}{224}$	0	$\frac{\sqrt{6}i}{112}$	0	$-\frac{3\sqrt{10}i}{224}$	0	0
		0	$\frac{\sqrt{2}i}{56}$	0	$\frac{i}{14}$	0	$\frac{5\sqrt{10}i}{168}$	$\frac{\sqrt{105}i}{224}$	0	$\frac{3\sqrt{5}i}{224}$	0	$-\frac{\sqrt{3}i}{224}$	0	$-\frac{3\sqrt{15}i}{224}$	0
		$\frac{5\sqrt{10}i}{168}$	0	$\frac{i}{14}$	0	$\frac{\sqrt{2}i}{56}$	0	0	$\frac{3\sqrt{15}i}{224}$	0	$\frac{\sqrt{3}i}{224}$	0	$-\frac{3\sqrt{5}i}{224}$	0	$-\frac{\sqrt{105}i}{224}$
		0	$\frac{5i}{42}$	0	$\frac{\sqrt{2}i}{56}$	0	$-\frac{\sqrt{5}i}{28}$	0	0	$\frac{3\sqrt{10}i}{224}$	0	$-\frac{\sqrt{6}i}{112}$	0	$-\frac{\sqrt{30}i}{224}$	0
		0	0	$\frac{5\sqrt{10}i}{168}$	0	$-\frac{\sqrt{5}i}{28}$	0	0	0	0	$\frac{\sqrt{30}i}{224}$	0	$-\frac{3\sqrt{2}i}{112}$	0	$\frac{\sqrt{42}i}{224}$
754	symmetry	$-\frac{y(3x^2-2y^2+3z^2)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
754	$\mathbb{T}_{3,2}^{(1,1;a)}(T_{1u})$	$-\frac{9\sqrt{5}}{224}$	0	$-\frac{27\sqrt{2}}{224}$	0	$-\frac{45}{224}$	0	0	$\frac{\sqrt{30}}{112}$	0	$\frac{\sqrt{6}}{56}$	0	$\frac{\sqrt{10}}{112}$	0	0
		0	$\frac{3\sqrt{3}}{32}$	0	$\frac{3\sqrt{6}}{224}$	0	$-\frac{15\sqrt{15}}{224}$	$-\frac{\sqrt{70}}{112}$	0	0	0	$\frac{3\sqrt{2}}{112}$	0	$\frac{\sqrt{10}}{56}$	0
		$-\frac{15\sqrt{15}}{224}$	0	$\frac{3\sqrt{6}}{224}$	0	$\frac{3\sqrt{3}}{32}$	0	0	$-\frac{\sqrt{10}}{56}$	0	$-\frac{3\sqrt{2}}{112}$	0	0	0	$\frac{\sqrt{70}}{112}$
		0	$-\frac{45}{224}$	0	$-\frac{27\sqrt{2}}{224}$	0	$-\frac{9\sqrt{5}}{224}$	0	0	$-\frac{\sqrt{10}}{112}$	0	$-\frac{\sqrt{6}}{56}$	0	$-\frac{\sqrt{30}}{112}$	0
		0	$-\frac{\sqrt{5}}{28}$	0	$-\frac{5\sqrt{10}}{168}$	0	0	$\frac{\sqrt{42}}{224}$	0	$\frac{3\sqrt{2}}{112}$	0	$\frac{\sqrt{30}}{224}$	0	0	0
		$\frac{\sqrt{5}}{28}$	0	$\frac{\sqrt{2}}{56}$	0	$-\frac{5}{42}$	0	0	$-\frac{\sqrt{30}}{224}$	0	$\frac{\sqrt{6}}{112}$	0	$\frac{3\sqrt{10}}{224}$	0	0
		0	$-\frac{\sqrt{2}}{56}$	0	$\frac{1}{14}$	0	$-\frac{5\sqrt{10}}{168}$	$\frac{\sqrt{105}}{224}$	0	$-\frac{3\sqrt{5}}{224}$	0	$-\frac{\sqrt{3}}{224}$	0	$\frac{3\sqrt{15}}{224}$	0
		$\frac{5\sqrt{10}}{168}$	0	$-\frac{1}{14}$	0	$\frac{\sqrt{2}}{56}$	0	0	$\frac{3\sqrt{15}}{224}$	0	$-\frac{\sqrt{3}}{224}$	0	$-\frac{3\sqrt{5}}{224}$	0	$\frac{\sqrt{105}}{224}$
		0	$\frac{5}{42}$	0	$-\frac{\sqrt{2}}{56}$	0	$-\frac{\sqrt{5}}{28}$	0	0	$\frac{3\sqrt{10}}{224}$	0	$\frac{\sqrt{6}}{112}$	0	$-\frac{\sqrt{30}}{224}$	0
		0	0	$\frac{5\sqrt{10}}{168}$	0	$\frac{\sqrt{5}}{28}$	0	0	0	0	$\frac{\sqrt{30}}{224}$	0	$\frac{3\sqrt{2}}{112}$	0	$\frac{\sqrt{42}}{224}$
755	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$													
755	$\mathbb{T}_{3,3}^{(1,1;a)}(T_{1u})$	0	$\frac{9i}{28}$	0	0	0	0	0	$-\frac{\sqrt{10}i}{28}$	0	0	0	0	0	0
		0	0	$-\frac{3\sqrt{6}i}{28}$	0	0	0	0	0	$-\frac{\sqrt{2}i}{28}$	0	0	0	0	0
		0	0	0	$-\frac{3\sqrt{6}i}{28}$	0	0	0	0	0	$\frac{\sqrt{2}i}{28}$	0	0	0	0
		0	0	0	0	$\frac{9i}{28}$	0	0	0	0	0	$\frac{\sqrt{10}i}{28}$	0	0	0
		$\frac{5i}{42}$	0	0	0	0	0	$-\frac{\sqrt{6}i}{28}$	0	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	$\frac{\sqrt{3}i}{28}$	0	0	0	0	0
		0	0	0	$\frac{2i}{21}$	0	0	0	0	0	$\frac{\sqrt{3}i}{28}$	0	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
756	symmetry	$\frac{\sqrt{15}x(y-z)(y+z)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{T}_{3,1}^{(1,1;a)}(T_{2u})$	$\frac{15\sqrt{3}i}{224}$	0	$-\frac{9\sqrt{30}i}{224}$	0	$-\frac{9\sqrt{15}i}{224}$	0	0	$-\frac{5\sqrt{2}i}{112}$	0	$\frac{\sqrt{10}i}{56}$	0	$\frac{\sqrt{6}i}{112}$	0	0
		0	$-\frac{3\sqrt{5}i}{32}$	0	$\frac{3\sqrt{10}i}{224}$	0	$-\frac{45i}{224}$	$\frac{\sqrt{42}i}{112}$	0	0	0	$\frac{\sqrt{30}i}{112}$	0	$\frac{\sqrt{6}i}{56}$	0
		$\frac{45i}{224}$	0	$-\frac{3\sqrt{10}i}{224}$	0	$\frac{3\sqrt{5}i}{32}$	0	0	$\frac{\sqrt{6}i}{56}$	0	$\frac{\sqrt{30}i}{112}$	0	0	0	$\frac{\sqrt{42}i}{112}$
		0	$\frac{9\sqrt{15}i}{224}$	0	$\frac{9\sqrt{30}i}{224}$	0	$-\frac{15\sqrt{3}i}{224}$	0	0	$\frac{\sqrt{6}i}{112}$	0	$\frac{\sqrt{10}i}{56}$	0	$-\frac{5\sqrt{2}i}{112}$	0
		0	$-\frac{5\sqrt{3}i}{84}$	0	$-\frac{5\sqrt{6}i}{168}$	0	0	$-\frac{\sqrt{70}i}{224}$	0	$\frac{\sqrt{30}i}{112}$	0	$\frac{3\sqrt{2}i}{224}$	0	0	0
		$-\frac{5\sqrt{3}i}{84}$	0	$\frac{\sqrt{30}i}{168}$	0	$-\frac{\sqrt{15}i}{42}$	0	0	$\frac{5\sqrt{2}i}{224}$	0	$\frac{\sqrt{10}i}{112}$	0	$\frac{3\sqrt{6}i}{224}$	0	0
		0	$\frac{\sqrt{30}i}{168}$	0	$\frac{\sqrt{15}i}{42}$	0	$-\frac{5\sqrt{6}i}{168}$	$-\frac{3\sqrt{7}i}{224}$	0	$\frac{5\sqrt{3}i}{224}$	0	$-\frac{\sqrt{5}i}{224}$	0	$\frac{9i}{224}$	0
		$-\frac{5\sqrt{6}i}{168}$	0	$\frac{\sqrt{15}i}{42}$	0	$\frac{\sqrt{30}i}{168}$	0	0	$-\frac{9i}{224}$	0	$\frac{\sqrt{5}i}{224}$	0	$-\frac{5\sqrt{3}i}{224}$	0	$\frac{3\sqrt{7}i}{224}$
		0	$-\frac{\sqrt{15}i}{42}$	0	$\frac{\sqrt{30}i}{168}$	0	$-\frac{5\sqrt{3}i}{84}$	0	0	$-\frac{3\sqrt{6}i}{224}$	0	$-\frac{\sqrt{10}i}{112}$	0	$-\frac{5\sqrt{2}i}{224}$	0
		0	0	$-\frac{5\sqrt{6}i}{168}$	0	$-\frac{5\sqrt{3}i}{84}$	0	0	0	0	$-\frac{3\sqrt{2}i}{224}$	0	$-\frac{\sqrt{30}i}{112}$	0	$\frac{\sqrt{70}i}{224}$
757	symmetry	$-\frac{\sqrt{15}y(x-z)(x+z)}{2}$													
	$\mathbb{T}_{3,2}^{(1,1;a)}(T_{2u})$	$\frac{15\sqrt{3}}{224}$	0	$\frac{9\sqrt{30}}{224}$	0	$-\frac{9\sqrt{15}}{224}$	0	0	$-\frac{5\sqrt{2}}{112}$	0	$-\frac{\sqrt{10}}{56}$	0	$\frac{\sqrt{6}}{112}$	0	0
		0	$-\frac{3\sqrt{5}}{32}$	0	$-\frac{3\sqrt{10}}{224}$	0	$-\frac{45}{224}$	$-\frac{\sqrt{42}}{112}$	0	0	0	$-\frac{\sqrt{30}}{112}$	0	$\frac{\sqrt{6}}{56}$	0
		$-\frac{45}{224}$	0	$-\frac{3\sqrt{10}}{224}$	0	$-\frac{3\sqrt{5}}{32}$	0	0	$-\frac{\sqrt{6}}{56}$	0	$\frac{\sqrt{30}}{112}$	0	0	0	$\frac{\sqrt{42}}{112}$
		0	$-\frac{9\sqrt{15}}{224}$	0	$\frac{9\sqrt{30}}{224}$	0	$\frac{15\sqrt{3}}{224}$	0	0	$-\frac{\sqrt{6}}{112}$	0	$\frac{\sqrt{10}}{56}$	0	$\frac{5\sqrt{2}}{112}$	0
		0	$\frac{5\sqrt{3}}{84}$	0	$-\frac{5\sqrt{6}}{168}$	0	0	$-\frac{\sqrt{70}}{224}$	0	$-\frac{\sqrt{30}}{112}$	0	$\frac{3\sqrt{2}}{224}$	0	0	0
		$-\frac{5\sqrt{3}}{84}$	0	$-\frac{\sqrt{30}}{168}$	0	$-\frac{\sqrt{15}}{42}$	0	0	$\frac{5\sqrt{2}}{224}$	0	$-\frac{\sqrt{10}}{112}$	0	$\frac{3\sqrt{6}}{224}$	0	0
		0	$\frac{\sqrt{30}}{168}$	0	$-\frac{\sqrt{15}}{42}$	0	$-\frac{5\sqrt{6}}{168}$	$\frac{3\sqrt{7}}{224}$	0	$\frac{5\sqrt{3}}{224}$	0	$\frac{\sqrt{5}}{224}$	0	$\frac{9}{224}$	0
		$\frac{5\sqrt{6}}{168}$	0	$\frac{\sqrt{15}}{42}$	0	$-\frac{\sqrt{30}}{168}$	0	0	$\frac{9}{224}$	0	$\frac{\sqrt{5}}{224}$	0	$\frac{5\sqrt{3}}{224}$	0	$\frac{3\sqrt{7}}{224}$
		0	$\frac{\sqrt{15}}{42}$	0	$\frac{\sqrt{30}}{168}$	0	$\frac{5\sqrt{3}}{84}$	0	0	$\frac{3\sqrt{6}}{224}$	0	$-\frac{\sqrt{10}}{112}$	0	$\frac{5\sqrt{2}}{224}$	0
		0	0	$\frac{5\sqrt{6}}{168}$	0	$-\frac{5\sqrt{3}}{84}$	0	0	0	0	$\frac{3\sqrt{2}}{224}$	0	$-\frac{\sqrt{30}}{112}$	0	$-\frac{\sqrt{70}}{224}$
758	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{T}_{3,3}^{(1,1;a)}(T_{2u})$	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	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$													
	$\mathbb{M}_{2,1}^{(a)}(E_u)$	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	$\frac{\sqrt{3}(x-y)(x+y)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{M}_{2,2}^{(a)}(E_u)$	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
761	symmetry	$\sqrt{3}yz$													
	$\mathbb{M}_{2,1}^{(a)}(T_{2u})$	$-\frac{\sqrt{6}i}{14}$	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	$\frac{\sqrt{35}i}{28}$
762	symmetry	$\sqrt{3}xz$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{M}_{2,2}^{(a)}(T_{2u})$	$-\frac{\sqrt{6}}{14}$	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
763	symmetry	$\sqrt{3}xy$													
	$\mathbb{M}_{2,3}^{(a)}(T_{2u})$	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	$\frac{\sqrt{21}(x^4-3x^2y^2-3x^2z^2+y^4-3y^2z^2+z^4)}{6}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{M}_4^{(a)}(A_{1u})$	0	$-\frac{\sqrt{21}}{84}$	0	0	0	$-\frac{\sqrt{105}}{84}$	0	0	$-\frac{3\sqrt{210}}{280}$	0	0	0	$-\frac{3\sqrt{70}}{280}$	0
		0	0	$\frac{\sqrt{14}}{28}$	0	0	0	0	0	0	$\frac{\sqrt{42}}{56}$	0	0	0	$-\frac{\sqrt{30}}{40}$
		0	0	0	$-\frac{\sqrt{14}}{28}$	0	0	$-\frac{\sqrt{30}}{40}$	0	0	0	$\frac{\sqrt{42}}{56}$	0	0	0
		$\frac{\sqrt{105}}{84}$	0	0	0	$\frac{\sqrt{21}}{84}$	0	0	$-\frac{3\sqrt{70}}{280}$	0	0	0	$-\frac{3\sqrt{210}}{280}$	0	0
		$\frac{\sqrt{21}}{84}$	0	0	0	$\frac{\sqrt{105}}{84}$	0	0	$-\frac{\sqrt{14}}{28}$	0	0	0	$-\frac{\sqrt{42}}{84}$	0	0
		0	$-\frac{\sqrt{21}}{28}$	0	0	0	$\frac{\sqrt{105}}{84}$	0	0	$\frac{\sqrt{210}}{105}$	0	0	0	$-\frac{\sqrt{70}}{70}$	0
		0	0	$\frac{\sqrt{21}}{42}$	0	0	0	0	0	$\frac{\sqrt{7}}{28}$	0	0	0	0	$-\frac{\sqrt{5}}{20}$
		0	0	0	$\frac{\sqrt{21}}{42}$	0	0	$\frac{\sqrt{5}}{20}$	0	0	0	$-\frac{\sqrt{7}}{28}$	0	0	0
		$\frac{\sqrt{105}}{84}$	0	0	0	$-\frac{\sqrt{21}}{28}$	0	0	$\frac{\sqrt{70}}{70}$	0	0	0	$-\frac{\sqrt{210}}{105}$	0	0
		0	$\frac{\sqrt{105}}{84}$	0	0	0	$\frac{\sqrt{21}}{84}$	0	0	$\frac{\sqrt{42}}{84}$	0	0	0	$\frac{\sqrt{14}}{28}$	0
765	symmetry	$-\frac{\sqrt{15}(x^4-12x^2y^2+6x^2z^2+y^4+6y^2z^2-2z^4)}{12}$													
	$\mathbb{M}_{4,1}^{(a)}(E_u)$	0	$-\frac{\sqrt{15}}{84}$	0	0	0	$\frac{\sqrt{3}}{12}$	0	0	$-\frac{3\sqrt{6}}{56}$	0	0	0	$\frac{3\sqrt{2}}{40}$	0
		0	0	$\frac{\sqrt{10}}{28}$	0	0	0	0	0	0	$\frac{\sqrt{30}}{56}$	0	0	0	$\frac{\sqrt{42}}{40}$
		0	0	0	$-\frac{\sqrt{10}}{28}$	0	0	$\frac{\sqrt{42}}{40}$	0	0	0	$\frac{\sqrt{30}}{56}$	0	0	0
		$-\frac{\sqrt{3}}{12}$	0	0	0	$\frac{\sqrt{15}}{84}$	0	0	$\frac{3\sqrt{2}}{40}$	0	0	0	$-\frac{3\sqrt{6}}{56}$	0	0
		$\frac{\sqrt{15}}{84}$	0	0	0	$-\frac{\sqrt{3}}{12}$	0	0	$-\frac{\sqrt{10}}{28}$	0	0	0	$\frac{\sqrt{30}}{60}$	0	0
		0	$-\frac{\sqrt{15}}{28}$	0	0	0	$-\frac{\sqrt{3}}{12}$	0	0	$\frac{\sqrt{6}}{21}$	0	0	0	$\frac{\sqrt{2}}{10}$	0
		0	0	$\frac{\sqrt{15}}{42}$	0	0	0	0	0	0	$\frac{\sqrt{5}}{28}$	0	0	0	$\frac{\sqrt{7}}{20}$
		0	0	0	$\frac{\sqrt{15}}{42}$	0	0	$-\frac{\sqrt{7}}{20}$	0	0	0	$-\frac{\sqrt{5}}{28}$	0	0	0
		$-\frac{\sqrt{3}}{12}$	0	0	0	$-\frac{\sqrt{15}}{28}$	0	0	$-\frac{\sqrt{2}}{10}$	0	0	0	$-\frac{\sqrt{6}}{21}$	0	0
		0	$-\frac{\sqrt{3}}{12}$	0	0	0	$\frac{\sqrt{15}}{84}$	0	0	$-\frac{\sqrt{30}}{60}$	0	0	0	$\frac{\sqrt{10}}{28}$	0
766	symmetry	$\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{M}_{4,2}^{(a)}(E_u)$	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	0	$\frac{9\sqrt{30}}{280}$	0	0	0	$\frac{3\sqrt{42}}{280}$
		0	0	$-\frac{3\sqrt{2}}{28}$	0	0	0	0	0	0	$\frac{\sqrt{6}}{14}$	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
767	symmetry	$\frac{\sqrt{35}yz(y-z)(y+z)}{2}$													
	$\mathbb{M}_{4,1}^{(a)}(T_{1u})$	$-\frac{\sqrt{7}i}{112}$	0	$-\frac{\sqrt{70}i}{112}$	0	$-\frac{\sqrt{35}i}{112}$	0	0	$-\frac{9\sqrt{42}i}{560}$	0	$-\frac{3\sqrt{210}i}{280}$	0	$-\frac{9\sqrt{14}i}{560}$	0	0
		0	$\frac{\sqrt{105}i}{112}$	0	$\frac{\sqrt{210}i}{112}$	0	$\frac{\sqrt{21}i}{112}$	$\frac{3\sqrt{2}i}{80}$	0	$\frac{3\sqrt{42}i}{140}$	0	$\frac{3\sqrt{70}i}{560}$	0	$-\frac{3\sqrt{14}i}{280}$	0
		$-\frac{\sqrt{21}i}{112}$	0	$-\frac{\sqrt{210}i}{112}$	0	$-\frac{\sqrt{105}i}{112}$	0	0	$-\frac{3\sqrt{14}i}{280}$	0	$\frac{3\sqrt{70}i}{560}$	0	$\frac{3\sqrt{42}i}{140}$	0	$\frac{3\sqrt{2}i}{80}$
		0	$\frac{\sqrt{35}i}{112}$	0	$\frac{\sqrt{70}i}{112}$	0	$\frac{\sqrt{7}i}{112}$	0	0	$-\frac{9\sqrt{14}i}{560}$	0	$-\frac{3\sqrt{210}i}{280}$	0	$-\frac{9\sqrt{42}i}{560}$	0
		0	$\frac{\sqrt{7}i}{28}$	0	$\frac{\sqrt{14}i}{56}$	0	0	$-\frac{\sqrt{30}i}{80}$	0	$-\frac{\sqrt{70}i}{56}$	0	$-\frac{\sqrt{42}i}{112}$	0	0	0
		$-\frac{\sqrt{7}i}{28}$	0	$-\frac{\sqrt{70}i}{56}$	0	0	0	0	$\frac{13\sqrt{42}i}{560}$	0	$\frac{\sqrt{210}i}{280}$	0	$-\frac{\sqrt{14}i}{80}$	0	0
		0	$\frac{\sqrt{70}i}{56}$	0	0	0	$-\frac{\sqrt{14}i}{56}$	$-\frac{3\sqrt{3}i}{80}$	0	$-\frac{\sqrt{7}i}{560}$	0	$\frac{\sqrt{105}i}{80}$	0	$\frac{\sqrt{21}i}{560}$	0
		$-\frac{\sqrt{14}i}{56}$	0	0	0	$\frac{\sqrt{70}i}{56}$	0	0	$-\frac{\sqrt{21}i}{560}$	0	$-\frac{\sqrt{105}i}{80}$	0	$\frac{\sqrt{7}i}{560}$	0	$\frac{3\sqrt{3}i}{80}$
		0	0	0	$-\frac{\sqrt{70}i}{56}$	0	$-\frac{\sqrt{7}i}{28}$	0	0	$\frac{\sqrt{14}i}{80}$	0	$-\frac{\sqrt{210}i}{280}$	0	$-\frac{13\sqrt{42}i}{560}$	0
		0	0	$\frac{\sqrt{14}i}{56}$	0	$\frac{\sqrt{7}i}{28}$	0	0	0	0	$\frac{\sqrt{42}i}{112}$	0	$\frac{\sqrt{70}i}{56}$	0	$\frac{\sqrt{30}i}{80}$
768	symmetry	$-\frac{\sqrt{35}xz(x-z)(x+z)}{2}$													

continued ...



Table 9

No.	multipole	matrix													
	$\mathbb{M}_{4,2}^{(a)}(T_{1u})$	$\frac{\sqrt{7}}{112}$	0	$-\frac{\sqrt{70}}{112}$	0	$\frac{\sqrt{35}}{112}$	0	0	$\frac{9\sqrt{42}}{560}$	0	$-\frac{3\sqrt{210}}{280}$	0	$\frac{9\sqrt{14}}{560}$	0	0
		0	$-\frac{\sqrt{105}}{112}$	0	$\frac{\sqrt{210}}{112}$	0	$-\frac{\sqrt{21}}{112}$	$\frac{3\sqrt{2}}{80}$	0	$-\frac{3\sqrt{42}}{140}$	0	$\frac{3\sqrt{70}}{560}$	0	$\frac{3\sqrt{14}}{280}$	0
		$-\frac{\sqrt{21}}{112}$	0	$\frac{\sqrt{210}}{112}$	0	$-\frac{\sqrt{105}}{112}$	0	0	$-\frac{3\sqrt{14}}{280}$	0	$-\frac{3\sqrt{70}}{560}$	0	$\frac{3\sqrt{42}}{140}$	0	$-\frac{3\sqrt{2}}{80}$
		0	$\frac{\sqrt{35}}{112}$	0	$-\frac{\sqrt{70}}{112}$	0	$\frac{\sqrt{7}}{112}$	0	0	$-\frac{9\sqrt{14}}{560}$	0	$\frac{3\sqrt{210}}{280}$	0	$-\frac{9\sqrt{42}}{560}$	0
		0	$\frac{\sqrt{7}}{28}$	0	$-\frac{\sqrt{14}}{56}$	0	0	$\frac{\sqrt{30}}{80}$	0	$-\frac{\sqrt{70}}{56}$	0	$\frac{\sqrt{42}}{112}$	0	0	0
		$\frac{\sqrt{7}}{28}$	0	$-\frac{\sqrt{70}}{56}$	0	0	0	0	$-\frac{13\sqrt{42}}{560}$	0	$\frac{\sqrt{210}}{280}$	0	$\frac{\sqrt{14}}{80}$	0	0
		0	$-\frac{\sqrt{70}}{56}$	0	0	0	$\frac{\sqrt{14}}{56}$	$-\frac{3\sqrt{3}}{80}$	0	$\frac{\sqrt{7}}{560}$	0	$\frac{\sqrt{105}}{80}$	0	$-\frac{\sqrt{21}}{560}$	0
		$-\frac{\sqrt{14}}{56}$	0	0	0	$\frac{\sqrt{70}}{56}$	0	0	$-\frac{\sqrt{21}}{560}$	0	$\frac{\sqrt{105}}{80}$	0	$\frac{\sqrt{7}}{560}$	0	$-\frac{3\sqrt{3}}{80}$
		0	0	0	$\frac{\sqrt{70}}{56}$	0	$-\frac{\sqrt{7}}{28}$	0	0	$\frac{\sqrt{14}}{80}$	0	$\frac{\sqrt{210}}{280}$	0	$-\frac{13\sqrt{42}}{560}$	0
		0	0	$\frac{\sqrt{14}}{56}$	0	$-\frac{\sqrt{7}}{28}$	0	0	0	0	$\frac{\sqrt{42}}{112}$	0	$-\frac{\sqrt{70}}{56}$	0	$\frac{\sqrt{30}}{80}$
769	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$													
	$\mathbb{M}_{4,3}^{(a)}(T_{1u})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{7}i}{14} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{3\sqrt{42}i}{140} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{3\sqrt{2}i}{20} \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{3\sqrt{2}i}{20} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{7}i}{14} & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{3\sqrt{42}i}{140} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{7}i}{14} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{70}i}{70} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{7}i}{14} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}i}{35} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}i}{10} \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}i}{10} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{7}i}{14} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}i}{35} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{7}i}{14} & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{70}i}{70} & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$													
770	symmetry	$\frac{\sqrt{5}yz(6x^2-y^2-z^2)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{M}_{4,1}^{(a)}(T_{2u})$	$-\frac{i}{112}$	0	$-\frac{\sqrt{10}i}{112}$	0	$\frac{\sqrt{5}i}{16}$	0	0	$-\frac{9\sqrt{6}i}{560}$	0	$-\frac{3\sqrt{30}i}{280}$	0	$\frac{9\sqrt{2}i}{80}$	0	0
		0	$\frac{\sqrt{15}i}{112}$	0	$\frac{\sqrt{30}i}{112}$	0	$-\frac{\sqrt{3}i}{16}$	$-\frac{3\sqrt{14}i}{80}$	0	$\frac{3\sqrt{6}i}{140}$	0	$\frac{3\sqrt{10}i}{560}$	0	$\frac{3\sqrt{2}i}{40}$	0
		$\frac{\sqrt{3}i}{16}$	0	$-\frac{\sqrt{30}i}{112}$	0	$-\frac{\sqrt{15}i}{112}$	0	0	$\frac{3\sqrt{2}i}{40}$	0	$\frac{3\sqrt{10}i}{560}$	0	$\frac{3\sqrt{6}i}{140}$	0	$-\frac{3\sqrt{14}i}{80}$
		0	$-\frac{\sqrt{5}i}{16}$	0	$\frac{\sqrt{10}i}{112}$	0	$\frac{i}{112}$	0	0	$\frac{9\sqrt{2}i}{80}$	0	$-\frac{3\sqrt{30}i}{280}$	0	$-\frac{9\sqrt{6}i}{560}$	0
		0	$\frac{i}{28}$	0	$-\frac{\sqrt{2}i}{8}$	0	0	$-\frac{\sqrt{210}i}{560}$	0	$-\frac{\sqrt{10}i}{56}$	0	$\frac{\sqrt{6}i}{16}$	0	0	0
		$-\frac{i}{28}$	0	$-\frac{\sqrt{10}i}{56}$	0	0	0	0	$\frac{13\sqrt{6}i}{560}$	0	$\frac{\sqrt{30}i}{280}$	0	$\frac{7\sqrt{2}i}{80}$	0	0
		0	$\frac{\sqrt{10}i}{56}$	0	0	0	$\frac{\sqrt{2}i}{8}$	$\frac{3\sqrt{21}i}{80}$	0	$-\frac{i}{560}$	0	$\frac{\sqrt{15}i}{80}$	0	$-\frac{\sqrt{3}i}{80}$	0
		$\frac{\sqrt{2}i}{8}$	0	0	0	$\frac{\sqrt{10}i}{56}$	0	0	$\frac{\sqrt{3}i}{80}$	0	$-\frac{\sqrt{15}i}{80}$	0	$\frac{i}{560}$	0	$-\frac{3\sqrt{21}i}{80}$
		0	0	0	$-\frac{\sqrt{10}i}{56}$	0	$-\frac{i}{28}$	0	0	$-\frac{7\sqrt{2}i}{80}$	0	$-\frac{\sqrt{30}i}{280}$	0	$-\frac{13\sqrt{6}i}{560}$	0
		0	0	$-\frac{\sqrt{2}i}{8}$	0	$\frac{i}{28}$	0	0	0	0	$-\frac{\sqrt{6}i}{16}$	0	$\frac{\sqrt{10}i}{56}$	0	$\frac{\sqrt{210}i}{560}$
771	symmetry	$-\frac{\sqrt{5}xz(x^2-6y^2+z^2)}{2}$													
	$\mathbb{M}_{4,2}^{(a)}(T_{2u})$	$-\frac{1}{112}$	0	$\frac{\sqrt{10}}{112}$	0	$\frac{\sqrt{5}}{16}$	0	0	$-\frac{9\sqrt{6}}{560}$	0	$\frac{3\sqrt{30}}{280}$	0	$\frac{9\sqrt{2}}{80}$	0	0
		0	$\frac{\sqrt{15}}{112}$	0	$-\frac{\sqrt{30}}{112}$	0	$-\frac{\sqrt{3}}{16}$	$\frac{3\sqrt{14}}{80}$	0	$\frac{3\sqrt{6}}{140}$	0	$-\frac{3\sqrt{10}}{560}$	0	$\frac{3\sqrt{2}}{40}$	0
		$-\frac{\sqrt{3}}{16}$	0	$-\frac{\sqrt{30}}{112}$	0	$\frac{\sqrt{15}}{112}$	0	0	$-\frac{3\sqrt{2}}{40}$	0	$\frac{3\sqrt{10}}{560}$	0	$-\frac{3\sqrt{6}}{140}$	0	$-\frac{3\sqrt{14}}{80}$
		0	$\frac{\sqrt{5}}{16}$	0	$\frac{\sqrt{10}}{112}$	0	$-\frac{1}{112}$	0	0	$-\frac{9\sqrt{2}}{80}$	0	$-\frac{3\sqrt{30}}{280}$	0	$\frac{9\sqrt{6}}{560}$	0
		0	$-\frac{1}{28}$	0	$-\frac{\sqrt{2}}{8}$	0	0	$-\frac{\sqrt{210}}{560}$	0	$\frac{\sqrt{10}}{56}$	0	$\frac{\sqrt{6}}{16}$	0	0	0
		$-\frac{1}{28}$	0	$\frac{\sqrt{10}}{56}$	0	0	0	0	$\frac{13\sqrt{6}}{560}$	0	$-\frac{\sqrt{30}}{280}$	0	$\frac{7\sqrt{2}}{80}$	0	0
		0	$\frac{\sqrt{10}}{56}$	0	0	0	$\frac{\sqrt{2}}{8}$	$-\frac{3\sqrt{21}}{80}$	0	$-\frac{1}{560}$	0	$-\frac{\sqrt{15}}{80}$	0	$-\frac{\sqrt{3}}{80}$	0
		$-\frac{\sqrt{2}}{8}$	0	0	0	$-\frac{\sqrt{10}}{56}$	0	0	$-\frac{\sqrt{3}}{80}$	0	$-\frac{\sqrt{15}}{80}$	0	$-\frac{1}{560}$	0	$-\frac{3\sqrt{21}}{80}$
		0	0	0	$-\frac{\sqrt{10}}{56}$	0	$\frac{1}{28}$	0	0	$\frac{7\sqrt{2}}{80}$	0	$-\frac{\sqrt{30}}{280}$	0	$\frac{13\sqrt{6}}{560}$	0
		0	0	$\frac{\sqrt{2}}{8}$	0	$\frac{1}{28}$	0	0	0	0	$\frac{\sqrt{6}}{16}$	0	$\frac{\sqrt{10}}{56}$	0	$-\frac{\sqrt{210}}{560}$
772	symmetry	$-\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$M_{4,3}^{(a)}(T_{2u})$	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	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$													
	$M_{2,1}^{(1,-1;a)}(E_u)$	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	$-\frac{3}{14}$	0	0
774	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)$	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	$-\frac{\sqrt{15}}{70}$	0	0	0	0
775	symmetry	$\sqrt{3}yz$													
	$\mathbb{M}_{2,1}^{(1,-1;a)}(T_{2u})$	$\frac{3\sqrt{10}i}{140}$	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	$\frac{\sqrt{21}i}{28}$
776	symmetry	$\sqrt{3}xz$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{M}_{2,2}^{(1,-1;a)}(T_{2u})$	$\frac{3\sqrt{10}}{140}$	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	$-\frac{\sqrt{21}}{28}$
777	symmetry	$\sqrt{3}xy$													
	$\mathbb{M}_{2,3}^{(1,-1;a)}(T_{2u})$	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	0	$-\frac{\sqrt{15}i}{70}$	0	0	0
778	symmetry	$\frac{\sqrt{21}(x^4-3x^2y^2-3x^2z^2+y^4-3y^2z^2+z^4)}{6}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{M}_4^{(1,-1;a)}(A_{1u})$	0	$\frac{\sqrt{7}}{168}$	0	0	0	$\frac{\sqrt{35}}{168}$	0	0	$\frac{\sqrt{70}}{56}$	0	0	0	$\frac{\sqrt{210}}{168}$	0
		0	0	$-\frac{\sqrt{42}}{168}$	0	0	0	0	0	$-\frac{5\sqrt{14}}{168}$	0	0	0	$\frac{\sqrt{10}}{24}$	
		0	0	0	$\frac{\sqrt{42}}{168}$	0	0	$\frac{\sqrt{10}}{24}$	0	0	0	$-\frac{5\sqrt{14}}{168}$	0	0	0
		$-\frac{\sqrt{35}}{168}$	0	0	0	$-\frac{\sqrt{7}}{168}$	0	0	$\frac{\sqrt{210}}{168}$	0	0	0	$\frac{\sqrt{70}}{56}$	0	0
		$-\frac{\sqrt{7}}{84}$	0	0	0	$-\frac{\sqrt{35}}{84}$	0	0	$-\frac{5\sqrt{42}}{168}$	0	0	0	$-\frac{5\sqrt{14}}{168}$	0	0
		0	$\frac{\sqrt{7}}{28}$	0	0	0	$-\frac{\sqrt{35}}{84}$	0	0	$\frac{\sqrt{70}}{42}$	0	0	0	$-\frac{\sqrt{210}}{84}$	0
		0	0	$-\frac{\sqrt{7}}{42}$	0	0	0	0	0	$\frac{5\sqrt{21}}{168}$	0	0	0	0	$-\frac{\sqrt{15}}{24}$
		0	0	0	$-\frac{\sqrt{7}}{42}$	0	0	$\frac{\sqrt{15}}{24}$	0	0	0	$-\frac{5\sqrt{21}}{168}$	0	0	0
		$-\frac{\sqrt{35}}{84}$	0	0	0	$\frac{\sqrt{7}}{28}$	0	0	$\frac{\sqrt{210}}{84}$	0	0	0	$-\frac{\sqrt{70}}{42}$	0	0
		0	$-\frac{\sqrt{35}}{84}$	0	0	0	$-\frac{\sqrt{7}}{84}$	0	0	$\frac{5\sqrt{14}}{168}$	0	0	0	$\frac{5\sqrt{42}}{168}$	0
779	symmetry	$-\frac{\sqrt{15}(x^4-12x^2y^2+6x^2z^2+y^4+6y^2z^2-2z^4)}{12}$													
	$\mathbb{M}_{4,1}^{(1,-1;a)}(E_u)$	0	$\frac{\sqrt{5}}{168}$	0	0	0	$-\frac{1}{24}$	0	0	$\frac{5\sqrt{2}}{56}$	0	0	0	$-\frac{\sqrt{6}}{24}$	0
		0	0	$-\frac{\sqrt{30}}{168}$	0	0	0	0	0	$-\frac{5\sqrt{10}}{168}$	0	0	0	$-\frac{\sqrt{14}}{24}$	
		0	0	0	$\frac{\sqrt{30}}{168}$	0	0	$-\frac{\sqrt{14}}{24}$	0	0	0	$-\frac{5\sqrt{10}}{168}$	0	0	0
		$\frac{1}{24}$	0	0	0	$-\frac{\sqrt{5}}{168}$	0	0	$-\frac{\sqrt{6}}{24}$	0	0	0	$\frac{5\sqrt{2}}{56}$	0	0
		$-\frac{\sqrt{5}}{84}$	0	0	0	$\frac{1}{12}$	0	0	$-\frac{5\sqrt{30}}{168}$	0	0	0	$\frac{\sqrt{10}}{24}$	0	0
		0	$\frac{\sqrt{5}}{28}$	0	0	0	$\frac{1}{12}$	0	0	$\frac{5\sqrt{2}}{42}$	0	0	0	$\frac{\sqrt{6}}{12}$	0
		0	0	$-\frac{\sqrt{5}}{42}$	0	0	0	0	0	$\frac{5\sqrt{15}}{168}$	0	0	0	$\frac{\sqrt{21}}{24}$	
		0	0	0	$-\frac{\sqrt{5}}{42}$	0	0	$-\frac{\sqrt{21}}{24}$	0	0	0	$-\frac{5\sqrt{15}}{168}$	0	0	0
		$\frac{1}{12}$	0	0	0	$\frac{\sqrt{5}}{28}$	0	0	$-\frac{\sqrt{6}}{12}$	0	0	0	$-\frac{5\sqrt{2}}{42}$	0	0
		0	$\frac{1}{12}$	0	0	0	$-\frac{\sqrt{5}}{84}$	0	0	$-\frac{\sqrt{10}}{24}$	0	0	0	$\frac{5\sqrt{30}}{168}$	0
780	symmetry	$\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{M}_{4,2}^{(1,-1;a)}(E_u)$	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	$-\frac{5\sqrt{2}}{28}$	0	0	0	0
781	symmetry	$\frac{\sqrt{35}yz(y-z)(y+z)}{2}$													
	$\mathbb{M}_{4,1}^{(1,-1;a)}(T_{1u})$	$\frac{\sqrt{21}i}{672}$	0	$\frac{\sqrt{210}i}{672}$	0	$\frac{\sqrt{105}i}{672}$	0	0	$\frac{3\sqrt{14}i}{112}$	0	$\frac{\sqrt{70}i}{56}$	0	$\frac{\sqrt{42}i}{112}$	0	0
		0	$-\frac{\sqrt{35}i}{224}$	0	$-\frac{\sqrt{70}i}{224}$	0	$-\frac{\sqrt{7}i}{224}$	$-\frac{\sqrt{6}i}{48}$	0	$-\frac{\sqrt{14}i}{28}$	0	$-\frac{\sqrt{210}i}{336}$	0	$\frac{\sqrt{42}i}{168}$	0
		$\frac{\sqrt{7}i}{224}$	0	$\frac{\sqrt{70}i}{224}$	0	$\frac{\sqrt{35}i}{224}$	0	0	$\frac{\sqrt{42}i}{168}$	0	$-\frac{\sqrt{210}i}{336}$	0	$-\frac{\sqrt{14}i}{28}$	0	$-\frac{\sqrt{6}i}{48}$
		0	$-\frac{\sqrt{105}i}{672}$	0	$-\frac{\sqrt{210}i}{672}$	0	$-\frac{\sqrt{21}i}{672}$	0	0	$\frac{\sqrt{42}i}{112}$	0	$\frac{\sqrt{70}i}{56}$	0	$\frac{3\sqrt{14}i}{112}$	0
		0	$-\frac{\sqrt{21}i}{84}$	0	$-\frac{\sqrt{42}i}{168}$	0	0	$-\frac{\sqrt{10}i}{32}$	0	$-\frac{5\sqrt{210}i}{336}$	0	$-\frac{5\sqrt{14}i}{224}$	0	0	0
		$\frac{\sqrt{21}i}{84}$	0	$\frac{\sqrt{210}i}{168}$	0	0	0	0	$\frac{13\sqrt{14}i}{224}$	0	$\frac{\sqrt{70}i}{112}$	0	$-\frac{\sqrt{42}i}{96}$	0	0
		0	$-\frac{\sqrt{210}i}{168}$	0	0	0	$\frac{\sqrt{42}i}{168}$	$-\frac{3i}{32}$	0	$-\frac{\sqrt{21}i}{672}$	0	$\frac{\sqrt{35}i}{32}$	0	$\frac{\sqrt{7}i}{224}$	0
		$\frac{\sqrt{42}i}{168}$	0	0	0	$-\frac{\sqrt{210}i}{168}$	0	0	$-\frac{\sqrt{7}i}{224}$	0	$-\frac{\sqrt{35}i}{32}$	0	$\frac{\sqrt{21}i}{672}$	0	$\frac{3i}{32}$
		0	0	0	$\frac{\sqrt{210}i}{168}$	0	$\frac{\sqrt{21}i}{84}$	0	0	$\frac{\sqrt{42}i}{96}$	0	$-\frac{\sqrt{70}i}{112}$	0	$-\frac{13\sqrt{14}i}{224}$	0
		0	0	$-\frac{\sqrt{42}i}{168}$	0	$-\frac{\sqrt{21}i}{84}$	0	0	0	0	$\frac{5\sqrt{14}i}{224}$	0	$\frac{5\sqrt{210}i}{336}$	0	$\frac{\sqrt{10}i}{32}$
782	symmetry	$-\frac{\sqrt{35}xz(x-z)(x+z)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{M}_{4,2}^{(1,-1;a)}(T_{1u})$	$-\frac{\sqrt{21}}{672}$	0	$\frac{\sqrt{210}}{672}$	0	$-\frac{\sqrt{105}}{672}$	0	0	$-\frac{3\sqrt{14}}{112}$	0	$\frac{\sqrt{70}}{56}$	0	$-\frac{\sqrt{42}}{112}$	0	0
		0	$\frac{\sqrt{35}}{224}$	0	$-\frac{\sqrt{70}}{224}$	0	$\frac{\sqrt{7}}{224}$	$-\frac{\sqrt{6}}{48}$	0	$\frac{\sqrt{14}}{28}$	0	$-\frac{\sqrt{210}}{336}$	0	$-\frac{\sqrt{42}}{168}$	0
		$\frac{\sqrt{7}}{224}$	0	$-\frac{\sqrt{70}}{224}$	0	$\frac{\sqrt{35}}{224}$	0	0	$\frac{\sqrt{42}}{168}$	0	$\frac{\sqrt{210}}{336}$	0	$-\frac{\sqrt{14}}{28}$	0	$\frac{\sqrt{6}}{48}$
		0	$-\frac{\sqrt{105}}{672}$	0	$\frac{\sqrt{210}}{672}$	0	$-\frac{\sqrt{21}}{672}$	0	0	$\frac{\sqrt{42}}{112}$	0	$-\frac{\sqrt{70}}{56}$	0	$\frac{3\sqrt{14}}{112}$	0
		0	$-\frac{\sqrt{21}}{84}$	0	$\frac{\sqrt{42}}{168}$	0	0	$\frac{\sqrt{10}}{32}$	0	$-\frac{5\sqrt{210}}{336}$	0	$\frac{5\sqrt{14}}{224}$	0	0	0
		$-\frac{\sqrt{21}}{84}$	0	$\frac{\sqrt{210}}{168}$	0	0	0	0	$-\frac{13\sqrt{14}}{224}$	0	$\frac{\sqrt{70}}{112}$	0	$\frac{\sqrt{42}}{96}$	0	0
		0	$\frac{\sqrt{210}}{168}$	0	0	0	$-\frac{\sqrt{42}}{168}$	$-\frac{3}{32}$	0	$\frac{\sqrt{21}}{672}$	0	$\frac{\sqrt{35}}{32}$	0	$-\frac{\sqrt{7}}{224}$	0
		$\frac{\sqrt{42}}{168}$	0	0	0	$-\frac{\sqrt{210}}{168}$	0	0	$-\frac{\sqrt{7}}{224}$	0	$\frac{\sqrt{35}}{32}$	0	$\frac{\sqrt{21}}{672}$	0	$-\frac{3}{32}$
		0	0	0	$-\frac{\sqrt{210}}{168}$	0	$\frac{\sqrt{21}}{84}$	0	0	$\frac{\sqrt{42}}{96}$	0	$\frac{\sqrt{70}}{112}$	0	$-\frac{13\sqrt{14}}{224}$	0
		0	0	$-\frac{\sqrt{42}}{168}$	0	$\frac{\sqrt{21}}{84}$	0	0	0	0	$\frac{5\sqrt{14}}{224}$	0	$-\frac{5\sqrt{210}}{336}$	0	$\frac{\sqrt{10}}{32}$
783	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$													
	$\mathbb{M}_{4,3}^{(1,-1;a)}(T_{1u})$	0	0	0	0	0	$-\frac{\sqrt{21}i}{84}$	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
		$-\frac{\sqrt{21}i}{84}$	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
784	symmetry	$\frac{\sqrt{5}yz(6x^2-y^2-z^2)}{2}$													

continued ...



Table 9

No.	multipole	matrix													
	$\mathbb{M}_{4,1}^{(1,-1;a)}(T_{2u})$	$\frac{\sqrt{3}i}{672}$	0	$\frac{\sqrt{30}i}{672}$	0	$-\frac{\sqrt{15}i}{96}$	0	0	$\frac{3\sqrt{2}i}{112}$	0	$\frac{\sqrt{10}i}{56}$	0	$-\frac{\sqrt{6}i}{16}$	0	0
		0	$-\frac{\sqrt{5}i}{224}$	0	$-\frac{\sqrt{10}i}{224}$	0	$\frac{i}{32}$	$\frac{\sqrt{42}i}{48}$	0	$-\frac{\sqrt{2}i}{28}$	0	$-\frac{\sqrt{30}i}{336}$	0	$-\frac{\sqrt{6}i}{24}$	0
		$-\frac{i}{32}$	0	$\frac{\sqrt{10}i}{224}$	0	$\frac{\sqrt{5}i}{224}$	0	0	$-\frac{\sqrt{6}i}{24}$	0	$-\frac{\sqrt{30}i}{336}$	0	$-\frac{\sqrt{2}i}{28}$	0	$\frac{\sqrt{42}i}{48}$
		0	$\frac{\sqrt{15}i}{96}$	0	$-\frac{\sqrt{30}i}{672}$	0	$-\frac{\sqrt{3}i}{672}$	0	0	$-\frac{\sqrt{6}i}{16}$	0	$\frac{\sqrt{10}i}{56}$	0	$\frac{3\sqrt{2}i}{112}$	0
		0	$-\frac{\sqrt{3}i}{84}$	0	$\frac{\sqrt{6}i}{24}$	0	0	$-\frac{\sqrt{70}i}{224}$	0	$-\frac{5\sqrt{30}i}{336}$	0	$\frac{5\sqrt{2}i}{32}$	0	0	0
		$\frac{\sqrt{3}i}{84}$	0	$\frac{\sqrt{30}i}{168}$	0	0	0	0	$\frac{13\sqrt{2}i}{224}$	0	$\frac{\sqrt{10}i}{112}$	0	$\frac{7\sqrt{6}i}{96}$	0	0
		0	$-\frac{\sqrt{30}i}{168}$	0	0	0	$-\frac{\sqrt{6}i}{24}$	$\frac{3\sqrt{7}i}{32}$	0	$-\frac{\sqrt{3}i}{672}$	0	$\frac{\sqrt{5}i}{32}$	0	$-\frac{i}{32}$	0
		$-\frac{\sqrt{6}i}{24}$	0	0	0	$-\frac{\sqrt{30}i}{168}$	0	0	$\frac{i}{32}$	0	$-\frac{\sqrt{5}i}{32}$	0	$\frac{\sqrt{3}i}{672}$	0	$-\frac{3\sqrt{7}i}{32}$
		0	0	0	$\frac{\sqrt{30}i}{168}$	0	$\frac{\sqrt{3}i}{84}$	0	0	$-\frac{7\sqrt{6}i}{96}$	0	$-\frac{\sqrt{10}i}{112}$	0	$-\frac{13\sqrt{2}i}{224}$	0
		0	0	$\frac{\sqrt{6}i}{24}$	0	$-\frac{\sqrt{3}i}{84}$	0	0	0	0	$-\frac{5\sqrt{2}i}{32}$	0	$\frac{5\sqrt{30}i}{336}$	0	$\frac{\sqrt{70}i}{224}$
785	symmetry	$-\frac{\sqrt{5}xz(x^2-6y^2+z^2)}{2}$													
	$\mathbb{M}_{4,2}^{(1,-1;a)}(T_{2u})$	$\frac{\sqrt{3}}{672}$	0	$-\frac{\sqrt{30}}{672}$	0	$-\frac{\sqrt{15}}{96}$	0	0	$\frac{3\sqrt{2}}{112}$	0	$-\frac{\sqrt{10}}{56}$	0	$-\frac{\sqrt{6}}{16}$	0	0
		0	$-\frac{\sqrt{5}}{224}$	0	$\frac{\sqrt{10}}{224}$	0	$\frac{1}{32}$	$-\frac{\sqrt{42}}{48}$	0	$-\frac{\sqrt{2}}{28}$	0	$\frac{\sqrt{30}}{336}$	0	$-\frac{\sqrt{6}}{24}$	0
		$\frac{1}{32}$	0	$\frac{\sqrt{10}}{224}$	0	$-\frac{\sqrt{5}}{224}$	0	0	$\frac{\sqrt{6}}{24}$	0	$-\frac{\sqrt{30}}{336}$	0	$\frac{\sqrt{2}}{28}$	0	$\frac{\sqrt{42}}{48}$
		0	$-\frac{\sqrt{15}}{96}$	0	$-\frac{\sqrt{30}}{672}$	0	$\frac{\sqrt{3}}{672}$	0	0	$\frac{\sqrt{6}}{16}$	0	$\frac{\sqrt{10}}{56}$	0	$-\frac{3\sqrt{2}}{112}$	0
		0	$\frac{\sqrt{3}}{84}$	0	$\frac{\sqrt{6}}{24}$	0	0	$-\frac{\sqrt{70}}{224}$	0	$\frac{5\sqrt{30}}{336}$	0	$\frac{5\sqrt{2}}{32}$	0	0	0
		$\frac{\sqrt{3}}{84}$	0	$-\frac{\sqrt{30}}{168}$	0	0	0	0	$\frac{13\sqrt{2}}{224}$	0	$-\frac{\sqrt{10}}{112}$	0	$\frac{7\sqrt{6}}{96}$	0	0
		0	$-\frac{\sqrt{30}}{168}$	0	0	0	$-\frac{\sqrt{6}}{24}$	$-\frac{3\sqrt{7}}{32}$	0	$-\frac{\sqrt{3}}{672}$	0	$-\frac{\sqrt{5}}{32}$	0	$-\frac{1}{32}$	0
		$\frac{\sqrt{6}}{24}$	0	0	0	$\frac{\sqrt{30}}{168}$	0	0	$-\frac{1}{32}$	0	$-\frac{\sqrt{5}}{32}$	0	$-\frac{\sqrt{3}}{672}$	0	$-\frac{3\sqrt{7}}{32}$
		0	0	0	$\frac{\sqrt{30}}{168}$	0	$-\frac{\sqrt{3}}{84}$	0	0	$\frac{7\sqrt{6}}{96}$	0	$-\frac{\sqrt{10}}{112}$	0	$\frac{13\sqrt{2}}{224}$	0
		0	0	$-\frac{\sqrt{6}}{24}$	0	$-\frac{\sqrt{3}}{84}$	0	0	0	0	$\frac{5\sqrt{2}}{32}$	0	$\frac{5\sqrt{30}}{336}$	0	$-\frac{\sqrt{70}}{224}$
786	symmetry	$-\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{M}_{4,3}^{(1,-1;a)}(T_{2u})$	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	$\frac{3\sqrt{10i}}{56}$	0	0	0	0	$-\frac{\sqrt{14i}}{56}$
		0	0	$\frac{\sqrt{6i}}{28}$	0	0	0	0	0	$\frac{5\sqrt{2i}}{28}$	0	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
787	symmetry	$\frac{\sqrt{2}(2x^6-15x^4y^2-15x^4z^2-15x^2y^4+180x^2y^2z^2-15x^2z^4+2y^6-15y^4z^2-15y^2z^4+2z^6)}{8}$													
	$\mathbb{M}_6^{(1,-1;a)}(A_{1u})$	$\begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{33}}{264} & 0 & 0 & 0 & -\frac{7\sqrt{11}}{88} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{55}}{88} & 0 & 0 & 0 & \frac{7\sqrt{165}}{264} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{5\sqrt{66}}{264} & 0 & 0 & 0 & -\frac{\sqrt{2310}}{264} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2310}}{264} & 0 & 0 & 0 & -\frac{5\sqrt{66}}{264} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{7\sqrt{165}}{264} & 0 & 0 & 0 & \frac{\sqrt{55}}{88} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{7\sqrt{11}}{88} & 0 & 0 & 0 & -\frac{\sqrt{33}}{264} & 0 & 0 \end{bmatrix}$													
788	symmetry	$-\frac{\sqrt{2310}(x-y)(x+y)(x-z)(x+z)(y-z)(y+z)}{8}$													

continued ...

Table 9

No.	multipole	matrix
	$\mathbb{M}_6^{(1,-1;a)}(A_{2u})$	$ \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{7}}{24} & 0 & 0 & 0 & \frac{\sqrt{5}}{8} \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{1}{24} & 0 & 0 & 0 & 0 & \frac{\sqrt{35}}{24} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{14}}{24} & 0 & 0 & 0 & 0 & -\frac{\sqrt{42}}{24} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{42}}{24} & 0 & 0 & 0 & 0 & \frac{\sqrt{14}}{24} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{35}}{24} & 0 & 0 & 0 & 0 & -\frac{1}{24} \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{8} & 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{24} & 0 & 0 & 0 \end{bmatrix} $
789	symmetry	$ -\frac{\sqrt{14}(x^6-15x^4z^2+15x^2z^4+y^6-15y^4z^2+15y^2z^4-2z^6)}{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 & 0 & 0 & 0 & 0 & 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}}{264} & 0 & 0 & 0 & \frac{\sqrt{77}}{88} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{385}}{88} & 0 & 0 & 0 & -\frac{\sqrt{1155}}{264} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{5\sqrt{462}}{264} & 0 & 0 & 0 & \frac{\sqrt{330}}{264} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{330}}{264} & 0 & 0 & 0 & -\frac{5\sqrt{462}}{264} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{1155}}{264} & 0 & 0 & 0 & \frac{\sqrt{385}}{88} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{77}}{88} & 0 & 0 & 0 & -\frac{\sqrt{231}}{264} & 0 & 0 \end{bmatrix} $
790	symmetry	$ \frac{\sqrt{42}(x-y)(x+y)(x^4-9x^2y^2-5x^2z^2+y^4-5y^2z^2+5z^4)}{8} $

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{M}_{6,2}^{(1,-1;a)}(E_u)$	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	0	0	0	0	$\frac{\sqrt{385}}{264}$	0	0	0	$\frac{\sqrt{11}}{8}$	
		0	0	0	0	0	0	$-\frac{\sqrt{55}}{264}$	0	0	$-\frac{5\sqrt{77}}{264}$	0	0	0	0
		0	0	0	0	0	0	$\frac{\sqrt{770}}{264}$	0	0	0	$\frac{\sqrt{2310}}{264}$	0	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{2310}}{264}$	0	0	0	$-\frac{\sqrt{770}}{264}$	0	0
		0	0	0	0	0	0	0	0	$\frac{5\sqrt{77}}{264}$	0	0	0	$\frac{\sqrt{55}}{264}$	
		0	0	0	0	0	0	$-\frac{\sqrt{11}}{8}$	0	0	$-\frac{\sqrt{385}}{264}$	0	0	0	0
791	symmetry	$\frac{3\sqrt{7}yz(y-z)(y+z)(10x^2-y^2-z^2)}{4}$													
	$\mathbb{M}_{6,1}^{(1,-1;a)}(T_{1u})$	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{66}i}{1056}$	0	$-\frac{\sqrt{154}i}{352}$	0	$\frac{\sqrt{2310}i}{352}$	0	$\frac{\sqrt{462}i}{96}$	0
		0	0	0	0	0	0	$\frac{\sqrt{2310}i}{1056}$	0	$\frac{5\sqrt{462}i}{1056}$	0	$-\frac{3\sqrt{770}i}{352}$	0	$-\frac{\sqrt{330}i}{96}$	0
		0	0	0	0	0	0	$\frac{\sqrt{165}i}{176}$	0	$-\frac{\sqrt{385}i}{176}$	0	$-\frac{5\sqrt{231}i}{528}$	0	$\frac{\sqrt{1155}i}{176}$	0
		0	0	0	0	0	0	$-\frac{\sqrt{1155}i}{176}$	0	$\frac{5\sqrt{231}i}{528}$	0	$\frac{\sqrt{385}i}{176}$	0	$-\frac{\sqrt{165}i}{176}$	0
		0	0	0	0	0	0	$\frac{\sqrt{330}i}{96}$	0	$\frac{3\sqrt{770}i}{352}$	0	$-\frac{5\sqrt{462}i}{1056}$	0	$-\frac{\sqrt{2310}i}{1056}$	0
		0	0	0	0	0	0	$-\frac{\sqrt{462}i}{96}$	0	$-\frac{\sqrt{2310}i}{352}$	0	$\frac{\sqrt{154}i}{352}$	0	$\frac{\sqrt{66}i}{1056}$	0
792	symmetry	$\frac{3\sqrt{7}xz(x-z)(x+z)(x^2-10y^2+z^2)}{4}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{M}_{6,2}^{(1,-1;a)}(T_{1u})$	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{154}}{352}$	0	$-\frac{\sqrt{2310}}{352}$	0	$\frac{\sqrt{462}}{96}$	0		
		0	0	0	0	0	0	$-\frac{\sqrt{2310}}{1056}$	0	$\frac{5\sqrt{462}}{1056}$	0	$\frac{3\sqrt{770}}{352}$	0	$-\frac{\sqrt{330}}{96}$	
		0	0	0	0	0	0	$\frac{\sqrt{165}}{176}$	0	$\frac{\sqrt{385}}{176}$	0	$-\frac{5\sqrt{231}}{528}$	0	$-\frac{\sqrt{1155}}{176}$	0
		0	0	0	0	0	0	$-\frac{\sqrt{1155}}{176}$	0	$-\frac{5\sqrt{231}}{528}$	0	$\frac{\sqrt{385}}{176}$	0	$\frac{\sqrt{165}}{176}$	
		0	0	0	0	0	0	$-\frac{\sqrt{330}}{96}$	0	$\frac{3\sqrt{770}}{352}$	0	$\frac{5\sqrt{462}}{1056}$	0	$-\frac{\sqrt{2310}}{1056}$	0
		0	0	0	0	0	0	$\frac{\sqrt{462}}{96}$	0	$-\frac{\sqrt{2310}}{352}$	0	$-\frac{\sqrt{154}}{352}$	0	$\frac{\sqrt{66}}{1056}$	
793	symmetry	$-\frac{3\sqrt{7}xy(x-y)(x+y)(x^2+y^2-10z^2)}{4}$													
	$\mathbb{M}_{6,3}^{(1,-1;a)}(T_{1u})$	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	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	$-\frac{\sqrt{165}i}{66}$	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	
794	symmetry	$\frac{\sqrt{462}yz(y^2-3z^2)(3y^2-z^2)}{16}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{M}_{6,1}^{(1,-1;a)}(T_{2u}, 1)$	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	$-\frac{i}{64}$	0	$-\frac{\sqrt{21}i}{64}$	0	$-\frac{\sqrt{35}i}{64}$	0	$-\frac{\sqrt{7}i}{64}$	0
		0	0	0	0	0	0	0	$\frac{\sqrt{35}i}{64}$	0	$\frac{5\sqrt{7}i}{64}$	0	$\frac{\sqrt{105}i}{64}$	0	$\frac{\sqrt{5}i}{64}$
		0	0	0	0	0	0	$-\frac{\sqrt{10}i}{64}$	0	$-\frac{\sqrt{210}i}{64}$	0	$-\frac{5\sqrt{14}i}{64}$	0	$-\frac{\sqrt{70}i}{64}$	0
		0	0	0	0	0	0	0	$\frac{\sqrt{70}i}{64}$	0	$\frac{5\sqrt{14}i}{64}$	0	$\frac{\sqrt{210}i}{64}$	0	$\frac{\sqrt{10}i}{64}$
		0	0	0	0	0	0	$-\frac{\sqrt{5}i}{64}$	0	$-\frac{\sqrt{105}i}{64}$	0	$-\frac{5\sqrt{7}i}{64}$	0	$-\frac{\sqrt{35}i}{64}$	0
		0	0	0	0	0	0	0	$\frac{\sqrt{7}i}{64}$	0	$\frac{\sqrt{35}i}{64}$	0	$\frac{\sqrt{21}i}{64}$	0	$\frac{i}{64}$
795	symmetry	$\frac{\sqrt{462}xz(x^2-3z^2)(3x^2-z^2)}{16}$													
	$\mathbb{M}_{6,2}^{(1,-1;a)}(T_{2u}, 1)$	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	$-\frac{1}{64}$	0	$\frac{\sqrt{21}}{64}$	0	$-\frac{\sqrt{35}}{64}$	0	$\frac{\sqrt{7}}{64}$	0
		0	0	0	0	0	0	0	$\frac{\sqrt{35}}{64}$	0	$-\frac{5\sqrt{7}}{64}$	0	$\frac{\sqrt{105}}{64}$	0	$-\frac{\sqrt{5}}{64}$
		0	0	0	0	0	0	$\frac{\sqrt{10}}{64}$	0	$-\frac{\sqrt{210}}{64}$	0	$\frac{5\sqrt{14}}{64}$	0	$-\frac{\sqrt{70}}{64}$	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{70}}{64}$	0	$\frac{5\sqrt{14}}{64}$	0	$-\frac{\sqrt{210}}{64}$	0	$\frac{\sqrt{10}}{64}$
		0	0	0	0	0	0	$-\frac{\sqrt{5}}{64}$	0	$\frac{\sqrt{105}}{64}$	0	$-\frac{5\sqrt{7}}{64}$	0	$\frac{\sqrt{35}}{64}$	0
		0	0	0	0	0	0	0	$\frac{\sqrt{7}}{64}$	0	$-\frac{\sqrt{35}}{64}$	0	$\frac{\sqrt{21}}{64}$	0	$-\frac{1}{64}$
796	symmetry	$\frac{\sqrt{462}xy(x^2-3y^2)(3x^2-y^2)}{16}$													

continued ...

Table 9

No.	multipole	matrix														
	$\mathbb{M}_{6,3}^{(1,-1;a)}(T_{2u},1)$	<div><math display="block">\begin{bmatrix} 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 \\ 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 \\ 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 \\ 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 \\ 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; -\frac{i}{2} \\ 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 \\ 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 \\ 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 \\ 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 \\ 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 \\ 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; -\frac{i}{2} &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 \end{bmatrix}</math></div>														
797	symmetry	<div><math display="block">\frac{\sqrt{210}yz\left(16x^4-16x^2y^2-16x^2z^2+y^4+2y^2z^2+z^4\right)}{16}</math><div><math display="block">\begin{bmatrix} 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 \\ 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 \\ 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 \\ 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 \\ 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; -\frac{\sqrt{55}i}{2112} &amp; 0 &amp; -\frac{\sqrt{1155}i}{2112} &amp; 0 &amp; \frac{9\sqrt{77}i}{704} &amp; 0 &amp; -\frac{\sqrt{385}i}{64} &amp; 0 &amp; 0 \\ 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; \frac{5\sqrt{77}i}{2112} &amp; 0 &amp; \frac{5\sqrt{385}i}{2112} &amp; 0 &amp; -\frac{9\sqrt{231}i}{704} &amp; 0 &amp; \frac{5\sqrt{11}i}{64} &amp; 0 \\ 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; \frac{9\sqrt{22}i}{704} &amp; 0 &amp; -\frac{5\sqrt{462}i}{2112} &amp; 0 &amp; -\frac{5\sqrt{770}i}{2112} &amp; 0 &amp; \frac{9\sqrt{154}i}{704} &amp; 0 &amp; 0 \\ 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; -\frac{9\sqrt{154}i}{704} &amp; 0 &amp; \frac{5\sqrt{770}i}{2112} &amp; 0 &amp; \frac{5\sqrt{462}i}{2112} &amp; 0 &amp; -\frac{9\sqrt{22}i}{704} &amp; 0 \\ 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; -\frac{5\sqrt{11}i}{64} &amp; 0 &amp; \frac{9\sqrt{231}i}{704} &amp; 0 &amp; -\frac{5\sqrt{385}i}{2112} &amp; 0 &amp; -\frac{5\sqrt{77}i}{2112} &amp; 0 &amp; 0 \\ 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; 0 &amp; \frac{\sqrt{385}i}{64} &amp; 0 &amp; -\frac{9\sqrt{77}i}{704} &amp; 0 &amp; \frac{\sqrt{1155}i}{2112} &amp; 0 &amp; \frac{\sqrt{55}i}{2112} &amp; 0 \end{bmatrix}</math></div></div>														
798	symmetry	<div><math display="block">\frac{\sqrt{210}xz\left(x^4-16x^2y^2+2x^2z^2+16y^4-16y^2z^2+z^4\right)}{16}</math></div>														

continued ...

Table 9

No.	multipole	matrix
	$\mathbb{M}_{6,2}^{(1,-1;a)}(T_{2u}, 2)$	$ \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 & -\frac{\sqrt{55}}{2112} & 0 & \frac{\sqrt{1155}}{2112} & 0 & \frac{9\sqrt{77}}{704} & 0 & \frac{\sqrt{385}}{64} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{5\sqrt{77}}{2112} & 0 & -\frac{5\sqrt{385}}{2112} & 0 & -\frac{9\sqrt{231}}{704} & 0 & -\frac{5\sqrt{11}}{64} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{9\sqrt{22}}{704} & 0 & -\frac{5\sqrt{462}}{2112} & 0 & \frac{5\sqrt{770}}{2112} & 0 & \frac{9\sqrt{154}}{704} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{9\sqrt{154}}{704} & 0 & \frac{5\sqrt{770}}{2112} & 0 & -\frac{5\sqrt{462}}{2112} & 0 & -\frac{9\sqrt{22}}{704} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{5\sqrt{11}}{64} & 0 & -\frac{9\sqrt{231}}{704} & 0 & -\frac{5\sqrt{385}}{2112} & 0 & \frac{5\sqrt{77}}{2112} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{385}}{64} & 0 & \frac{9\sqrt{77}}{704} & 0 & \frac{\sqrt{1155}}{2112} & 0 & -\frac{\sqrt{55}}{2112} & 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 & -\frac{\sqrt{11}i}{66} & 0 \\ 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													
	$\mathbb{M}_{2,1}^{(1,0;a)}(E_u)$	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	$\frac{3\sqrt{30}}{70}$	0	0	0	0	0
		0	0	0	$\frac{\sqrt{10}}{70}$	0	0	0	0	0	$\frac{3\sqrt{30}}{70}$	0	0	0	0
		0	0	0	0	$\frac{\sqrt{15}}{35}$	0	0	0	0	0	$\frac{\sqrt{6}}{14}$	0	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	$\frac{\sqrt{6}}{28}$	0	0	0	0	0	0
		0	0	$-\frac{2\sqrt{15}}{35}$	0	0	0	0	0	$\frac{\sqrt{5}}{70}$	0	0	0	0	0
		0	0	0	$-\frac{2\sqrt{15}}{35}$	0	0	0	0	0	$-\frac{\sqrt{5}}{70}$	0	0	0	0
		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	$\frac{\sqrt{15}}{14}$	0	0	0	0	0	$-\frac{\sqrt{10}}{28}$	0	0
801	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$													
	$\mathbb{M}_{2,2}^{(1,0;a)}(E_u)$	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
802	symmetry	$\sqrt{3}yz$													

*continued ...*

Table 9

No.	multipole	matrix													
	$\mathbb{M}_{2,1}^{(1,0;a)}(T_{2u})$	$\frac{i}{14}$	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	$\frac{\sqrt{210}i}{168}$
803	symmetry	$\sqrt{3}xz$													
	$\mathbb{M}_{2,2}^{(1,0;a)}(T_{2u})$	$\frac{1}{14}$	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	$-\frac{\sqrt{210}}{168}$
804	symmetry	$\sqrt{3}xy$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{M}_{2,3}^{(1,0;a)}(T_{2u})$	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	$\frac{\sqrt{21}(x^4-3x^2y^2-3x^2z^2+y^4-3y^2z^2+z^4)}{6}$													
	$\mathbb{M}_4^{(1,0;a)}(A_{1u})$	0	$\frac{\sqrt{105}}{840}$	0	0	0	$\frac{\sqrt{21}}{168}$	0	0	$-\frac{9\sqrt{42}}{280}$	0	0	0	$-\frac{9\sqrt{14}}{280}$	0
		0	0	$-\frac{\sqrt{70}}{280}$	0	0	0	0	0	0	$\frac{3\sqrt{210}}{280}$	0	0	0	$-\frac{3\sqrt{6}}{40}$
		0	0	0	$\frac{\sqrt{70}}{280}$	0	0	$-\frac{3\sqrt{6}}{40}$	0	0	0	$\frac{3\sqrt{210}}{280}$	0	0	0
		$-\frac{\sqrt{21}}{168}$	0	0	0	$-\frac{\sqrt{105}}{840}$	0	0	$-\frac{9\sqrt{14}}{280}$	0	0	0	$-\frac{9\sqrt{42}}{280}$	0	0
		$-\frac{\sqrt{105}}{140}$	0	0	0	$-\frac{\sqrt{21}}{28}$	0	0	$-\frac{\sqrt{70}}{280}$	0	0	0	$-\frac{\sqrt{210}}{840}$	0	0
		0	$\frac{3\sqrt{105}}{140}$	0	0	0	$-\frac{\sqrt{21}}{28}$	0	0	$\frac{\sqrt{42}}{210}$	0	0	0	$-\frac{\sqrt{14}}{140}$	0
		0	0	$-\frac{\sqrt{105}}{70}$	0	0	0	0	0	0	$\frac{\sqrt{35}}{280}$	0	0	0	$-\frac{1}{40}$
		0	0	0	$-\frac{\sqrt{105}}{70}$	0	0	$\frac{1}{40}$	0	0	0	$-\frac{\sqrt{35}}{280}$	0	0	0
		$-\frac{\sqrt{21}}{28}$	0	0	0	$\frac{3\sqrt{105}}{140}$	0	0	$\frac{\sqrt{14}}{140}$	0	0	0	$-\frac{\sqrt{42}}{210}$	0	0
		0	$-\frac{\sqrt{21}}{28}$	0	0	0	$-\frac{\sqrt{105}}{140}$	0	0	$\frac{\sqrt{210}}{840}$	0	0	0	$\frac{\sqrt{70}}{280}$	0
806	symmetry	$-\frac{\sqrt{15}(x^4-12x^2y^2+6x^2z^2+y^4+6y^2z^2-2z^4)}{12}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{M}_{4,1}^{(1,0;a)}(E_u)$	0	$\frac{\sqrt{3}}{168}$	0	0	0	$-\frac{\sqrt{15}}{120}$	0	0	$-\frac{9\sqrt{30}}{280}$	0	0	0	$\frac{9\sqrt{10}}{200}$	0
		0	0	$-\frac{\sqrt{2}}{56}$	0	0	0	0	0	0	$\frac{3\sqrt{6}}{56}$	0	0	0	$\frac{3\sqrt{210}}{200}$
		0	0	0	$\frac{\sqrt{2}}{56}$	0	0	$\frac{3\sqrt{210}}{200}$	0	0	0	$\frac{3\sqrt{6}}{56}$	0	0	0
		$\frac{\sqrt{15}}{120}$	0	0	0	$-\frac{\sqrt{3}}{168}$	0	0	$\frac{9\sqrt{10}}{200}$	0	0	0	$-\frac{9\sqrt{30}}{280}$	0	0
		$-\frac{\sqrt{3}}{28}$	0	0	0	$\frac{\sqrt{15}}{20}$	0	0	$-\frac{\sqrt{2}}{56}$	0	0	0	$\frac{\sqrt{6}}{120}$	0	0
		0	$\frac{3\sqrt{3}}{28}$	0	0	0	$\frac{\sqrt{15}}{20}$	0	0	$\frac{\sqrt{30}}{210}$	0	0	0	$\frac{\sqrt{10}}{100}$	0
		0	0	$-\frac{\sqrt{3}}{14}$	0	0	0	0	0	0	$\frac{1}{56}$	0	0	0	$\frac{\sqrt{35}}{200}$
		0	0	0	$-\frac{\sqrt{3}}{14}$	0	0	$-\frac{\sqrt{35}}{200}$	0	0	0	$-\frac{1}{56}$	0	0	0
		$\frac{\sqrt{15}}{20}$	0	0	0	$\frac{3\sqrt{3}}{28}$	0	0	$-\frac{\sqrt{10}}{100}$	0	0	0	$-\frac{\sqrt{30}}{210}$	0	0
		0	$\frac{\sqrt{15}}{20}$	0	0	0	$-\frac{\sqrt{3}}{28}$	0	0	$-\frac{\sqrt{6}}{120}$	0	0	0	$\frac{\sqrt{2}}{56}$	0
807	symmetry	$\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$													
	$\mathbb{M}_{4,2}^{(1,0;a)}(E_u)$	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
808	symmetry	$\frac{\sqrt{35}yz(y-z)(y+z)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{M}_{4,1}^{(1,0;a)}(T_{1u})$	$\frac{\sqrt{35}i}{1120}$	0	$\frac{\sqrt{14}i}{224}$	0	$\frac{\sqrt{7}i}{224}$	0	0	$-\frac{27\sqrt{210}i}{2800}$	0	$-\frac{9\sqrt{42}i}{280}$	0	$-\frac{27\sqrt{70}i}{2800}$	0	0
		0	$-\frac{\sqrt{21}i}{224}$	0	$-\frac{\sqrt{42}i}{224}$	0	$-\frac{\sqrt{105}i}{1120}$	$\frac{9\sqrt{10}i}{400}$	0	$\frac{9\sqrt{210}i}{700}$	0	$\frac{9\sqrt{14}i}{560}$	0	$-\frac{9\sqrt{70}i}{1400}$	0
		$\frac{\sqrt{105}i}{1120}$	0	$\frac{\sqrt{42}i}{224}$	0	$\frac{\sqrt{21}i}{224}$	0	0	$-\frac{9\sqrt{70}i}{1400}$	0	$\frac{9\sqrt{14}i}{560}$	0	$\frac{9\sqrt{210}i}{700}$	0	$\frac{9\sqrt{10}i}{400}$
		0	$-\frac{\sqrt{7}i}{224}$	0	$-\frac{\sqrt{14}i}{224}$	0	$-\frac{\sqrt{35}i}{1120}$	0	0	$-\frac{27\sqrt{70}i}{2800}$	0	$-\frac{9\sqrt{42}i}{280}$	0	$-\frac{27\sqrt{210}i}{2800}$	0
		0	$-\frac{3\sqrt{35}i}{140}$	0	$-\frac{3\sqrt{70}i}{280}$	0	0	$-\frac{\sqrt{6}i}{160}$	0	$-\frac{\sqrt{14}i}{112}$	0	$-\frac{\sqrt{210}i}{1120}$	0	0	0
		$\frac{3\sqrt{35}i}{140}$	0	$\frac{3\sqrt{14}i}{56}$	0	0	0	0	$\frac{13\sqrt{210}i}{5600}$	0	$\frac{\sqrt{42}i}{560}$	0	$-\frac{\sqrt{70}i}{800}$	0	0
		0	$-\frac{3\sqrt{14}i}{56}$	0	0	0	$\frac{3\sqrt{70}i}{280}$	$-\frac{3\sqrt{15}i}{800}$	0	$-\frac{\sqrt{35}i}{5600}$	0	$\frac{\sqrt{21}i}{160}$	0	$\frac{\sqrt{105}i}{5600}$	0
		$\frac{3\sqrt{70}i}{280}$	0	0	0	$-\frac{3\sqrt{14}i}{56}$	0	0	$-\frac{\sqrt{105}i}{5600}$	0	$-\frac{\sqrt{21}i}{160}$	0	$\frac{\sqrt{35}i}{5600}$	0	$\frac{3\sqrt{15}i}{800}$
		0	0	0	$\frac{3\sqrt{14}i}{56}$	0	$\frac{3\sqrt{35}i}{140}$	0	0	$\frac{\sqrt{70}i}{800}$	0	$-\frac{\sqrt{42}i}{560}$	0	$-\frac{13\sqrt{210}i}{5600}$	0
		0	0	$-\frac{3\sqrt{70}i}{280}$	0	$-\frac{3\sqrt{35}i}{140}$	0	0	0	0	$\frac{\sqrt{210}i}{1120}$	0	$\frac{\sqrt{14}i}{112}$	0	$\frac{\sqrt{6}i}{160}$
809	symmetry	$-\frac{\sqrt{35}xz(x-z)(x+z)}{2}$													
	$\mathbb{M}_{4,2}^{(1,0;a)}(T_{1u})$	$-\frac{\sqrt{35}}{1120}$	0	$\frac{\sqrt{14}}{224}$	0	$-\frac{\sqrt{7}}{224}$	0	0	$\frac{27\sqrt{210}}{2800}$	0	$-\frac{9\sqrt{42}}{280}$	0	$\frac{27\sqrt{70}}{2800}$	0	0
		0	$\frac{\sqrt{21}}{224}$	0	$-\frac{\sqrt{42}}{224}$	0	$\frac{\sqrt{105}}{1120}$	$\frac{9\sqrt{10}}{400}$	0	$-\frac{9\sqrt{210}}{700}$	0	$\frac{9\sqrt{14}}{560}$	0	$\frac{9\sqrt{70}}{1400}$	0
		$\frac{\sqrt{105}}{1120}$	0	$-\frac{\sqrt{42}}{224}$	0	$\frac{\sqrt{21}}{224}$	0	0	$-\frac{9\sqrt{70}}{1400}$	0	$-\frac{9\sqrt{14}}{560}$	0	$\frac{9\sqrt{210}}{700}$	0	$-\frac{9\sqrt{10}}{400}$
		0	$-\frac{\sqrt{7}}{224}$	0	$\frac{\sqrt{14}}{224}$	0	$-\frac{\sqrt{35}}{1120}$	0	0	$-\frac{27\sqrt{70}}{2800}$	0	$\frac{9\sqrt{42}}{280}$	0	$-\frac{27\sqrt{210}}{2800}$	0
		0	$-\frac{3\sqrt{35}}{140}$	0	$\frac{3\sqrt{70}}{280}$	0	0	$\frac{\sqrt{6}}{160}$	0	$-\frac{\sqrt{14}}{112}$	0	$\frac{\sqrt{210}}{1120}$	0	0	0
		$-\frac{3\sqrt{35}}{140}$	0	$\frac{3\sqrt{14}}{56}$	0	0	0	0	$-\frac{13\sqrt{210}}{5600}$	0	$\frac{\sqrt{42}}{560}$	0	$\frac{\sqrt{70}}{800}$	0	0
		0	$\frac{3\sqrt{14}}{56}$	0	0	0	$-\frac{3\sqrt{70}}{280}$	$-\frac{3\sqrt{15}}{800}$	0	$\frac{\sqrt{35}}{5600}$	0	$\frac{\sqrt{21}}{160}$	0	$-\frac{\sqrt{105}}{5600}$	0
		$\frac{3\sqrt{70}}{280}$	0	0	0	$-\frac{3\sqrt{14}}{56}$	0	0	$-\frac{\sqrt{105}}{5600}$	0	$\frac{\sqrt{21}}{160}$	0	$\frac{\sqrt{35}}{5600}$	0	$-\frac{3\sqrt{15}}{800}$
		0	0	0	$-\frac{3\sqrt{14}}{56}$	0	$\frac{3\sqrt{35}}{140}$	0	0	$\frac{\sqrt{70}}{800}$	0	$\frac{\sqrt{42}}{560}$	0	$-\frac{13\sqrt{210}}{5600}$	0
		0	0	$-\frac{3\sqrt{70}}{280}$	0	$\frac{3\sqrt{35}}{140}$	0	0	0	0	$\frac{\sqrt{210}}{1120}$	0	$-\frac{\sqrt{14}}{112}$	0	$\frac{\sqrt{6}}{160}$
810	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{M}_{4,3}^{(1,0;a)}(T_{1u})$	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
811	symmetry	$\frac{\sqrt{5}yz(6x^2-y^2-z^2)}{2}$													
	$\mathbb{M}_{4,1}^{(1,0;a)}(T_{2u})$	$\frac{\sqrt{5}i}{1120}$	0	$\frac{\sqrt{2}i}{224}$	0	$-\frac{i}{32}$	0	0	$-\frac{27\sqrt{30}i}{2800}$	0	$-\frac{9\sqrt{6}i}{280}$	0	$\frac{27\sqrt{10}i}{400}$	0	0
		0	$-\frac{\sqrt{3}i}{224}$	0	$-\frac{\sqrt{6}i}{224}$	0	$\frac{\sqrt{15}i}{160}$	$-\frac{9\sqrt{70}i}{400}$	0	$\frac{9\sqrt{30}i}{700}$	0	$\frac{9\sqrt{2}i}{560}$	0	$\frac{9\sqrt{10}i}{200}$	0
		$-\frac{\sqrt{15}i}{160}$	0	$\frac{\sqrt{6}i}{224}$	0	$\frac{\sqrt{3}i}{224}$	0	0	$\frac{9\sqrt{10}i}{200}$	0	$\frac{9\sqrt{2}i}{560}$	0	$\frac{9\sqrt{30}i}{700}$	0	$-\frac{9\sqrt{70}i}{400}$
		0	$\frac{i}{32}$	0	$-\frac{\sqrt{2}i}{224}$	0	$-\frac{\sqrt{5}i}{1120}$	0	0	$\frac{27\sqrt{10}i}{400}$	0	$-\frac{9\sqrt{6}i}{280}$	0	$-\frac{27\sqrt{30}i}{2800}$	0
		0	$-\frac{3\sqrt{5}i}{140}$	0	$\frac{3\sqrt{10}i}{40}$	0	0	$-\frac{\sqrt{42}i}{1120}$	0	$-\frac{\sqrt{2}i}{112}$	0	$\frac{\sqrt{30}i}{160}$	0	0	0
		$\frac{3\sqrt{5}i}{140}$	0	$\frac{3\sqrt{2}i}{56}$	0	0	0	0	$\frac{13\sqrt{30}i}{5600}$	0	$\frac{\sqrt{6}i}{560}$	0	$\frac{7\sqrt{10}i}{800}$	0	0
		0	$-\frac{3\sqrt{2}i}{56}$	0	0	0	$-\frac{3\sqrt{10}i}{40}$	$\frac{3\sqrt{105}i}{800}$	0	$-\frac{\sqrt{5}i}{5600}$	0	$\frac{\sqrt{3}i}{160}$	0	$-\frac{\sqrt{15}i}{800}$	0
		$-\frac{3\sqrt{10}i}{40}$	0	0	0	$-\frac{3\sqrt{2}i}{56}$	0	0	$\frac{\sqrt{15}i}{800}$	0	$-\frac{\sqrt{3}i}{160}$	0	$\frac{\sqrt{5}i}{5600}$	0	$-\frac{3\sqrt{105}i}{800}$
		0	0	0	$\frac{3\sqrt{2}i}{56}$	0	$\frac{3\sqrt{5}i}{140}$	0	0	$-\frac{7\sqrt{10}i}{800}$	0	$-\frac{\sqrt{6}i}{560}$	0	$-\frac{13\sqrt{30}i}{5600}$	0
		0	0	$\frac{3\sqrt{10}i}{40}$	0	$-\frac{3\sqrt{5}i}{140}$	0	0	0	$-\frac{\sqrt{30}i}{160}$	0	$\frac{\sqrt{2}i}{112}$	0	$\frac{\sqrt{42}i}{1120}$	0
812	symmetry	$-\frac{\sqrt{5}xz(x^2-6y^2+z^2)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{M}_{4,2}^{(1,0;a)}(T_{2u})$	$\frac{\sqrt{5}}{1120}$	0	$-\frac{\sqrt{2}}{224}$	0	$-\frac{1}{32}$	0	0	$-\frac{27\sqrt{30}}{2800}$	0	$\frac{9\sqrt{6}}{280}$	0	$\frac{27\sqrt{10}}{400}$	0	0
		0	$-\frac{\sqrt{3}}{224}$	0	$\frac{\sqrt{6}}{224}$	0	$\frac{\sqrt{15}}{160}$	$\frac{9\sqrt{70}}{400}$	0	$\frac{9\sqrt{30}}{700}$	0	$-\frac{9\sqrt{2}}{560}$	0	$\frac{9\sqrt{10}}{200}$	0
		$\frac{\sqrt{15}}{160}$	0	$\frac{\sqrt{6}}{224}$	0	$-\frac{\sqrt{3}}{224}$	0	0	$-\frac{9\sqrt{10}}{200}$	0	$\frac{9\sqrt{2}}{560}$	0	$-\frac{9\sqrt{30}}{700}$	0	$-\frac{9\sqrt{70}}{400}$
		0	$-\frac{1}{32}$	0	$-\frac{\sqrt{2}}{224}$	0	$\frac{\sqrt{5}}{1120}$	0	0	$-\frac{27\sqrt{10}}{400}$	0	$-\frac{9\sqrt{6}}{280}$	0	$\frac{27\sqrt{30}}{2800}$	0
		0	$\frac{3\sqrt{5}}{140}$	0	$\frac{3\sqrt{10}}{40}$	0	0	$-\frac{\sqrt{42}}{1120}$	0	$\frac{\sqrt{2}}{112}$	0	$\frac{\sqrt{30}}{160}$	0	0	0
		$\frac{3\sqrt{5}}{140}$	0	$-\frac{3\sqrt{2}}{56}$	0	0	0	0	$\frac{13\sqrt{30}}{5600}$	0	$-\frac{\sqrt{6}}{560}$	0	$\frac{7\sqrt{10}}{800}$	0	0
		0	$-\frac{3\sqrt{2}}{56}$	0	0	0	$-\frac{3\sqrt{10}}{40}$	$-\frac{3\sqrt{105}}{800}$	0	$-\frac{\sqrt{5}}{5600}$	0	$-\frac{\sqrt{3}}{160}$	0	$-\frac{\sqrt{15}}{800}$	0
		$\frac{3\sqrt{10}}{40}$	0	0	0	$\frac{3\sqrt{2}}{56}$	0	0	$-\frac{\sqrt{15}}{800}$	0	$-\frac{\sqrt{3}}{160}$	0	$-\frac{\sqrt{5}}{5600}$	0	$-\frac{3\sqrt{105}}{800}$
		0	0	0	$\frac{3\sqrt{2}}{56}$	0	$-\frac{3\sqrt{5}}{140}$	0	0	$\frac{7\sqrt{10}}{800}$	0	$-\frac{\sqrt{6}}{560}$	0	$\frac{13\sqrt{30}}{5600}$	0
		0	0	$-\frac{3\sqrt{10}}{40}$	0	$-\frac{3\sqrt{5}}{140}$	0	0	0	0	$\frac{\sqrt{30}}{160}$	0	$\frac{\sqrt{2}}{112}$	0	$-\frac{\sqrt{42}}{1120}$
813	symmetry	$-\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$													
	$\mathbb{M}_{4,3}^{(1,0;a)}(T_{2u})$	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	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														
	$\mathbb{M}_0^{(1,1;a)}(A_{1u})$	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	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
815	symmetry	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$														
	$\mathbb{M}_{2,1}^{(1,1;a)}(E_u)$	0	$\frac{12}{35}$	0	0	0	0	0	$-\frac{3\sqrt{10}}{140}$	0	0	0	0	0	0	0
		0	0	$\frac{2\sqrt{6}}{35}$	0	0	0	0	0	$-\frac{9\sqrt{2}}{140}$	0	0	0	0	0	0
		0	0	0	$-\frac{2\sqrt{6}}{35}$	0	0	0	0	0	$-\frac{9\sqrt{2}}{140}$	0	0	0	0	0
		0	0	0	0	$-\frac{12}{35}$	0	0	0	0	0	$-\frac{3\sqrt{10}}{140}$	0	0	0	0
		$\frac{3}{14}$	0	0	0	0	0	$-\frac{\sqrt{6}}{21}$	0	0	0	0	0	0	0	0
		0	$-\frac{3}{70}$	0	0	0	0	0	$-\frac{\sqrt{10}}{35}$	0	0	0	0	0	0	0
		0	0	$-\frac{6}{35}$	0	0	0	0	0	$-\frac{2\sqrt{3}}{105}$	0	0	0	0	0	0
		0	0	0	$-\frac{6}{35}$	0	0	0	0	0	$\frac{2\sqrt{3}}{105}$	0	0	0	0	0
		0	0	0	0	$-\frac{3}{70}$	0	0	0	0	0	$\frac{\sqrt{10}}{35}$	0	0	0	0
		0	0	0	0	0	$\frac{3}{14}$	0	0	0	0	0	0	$\frac{\sqrt{6}}{21}$	0	0
816	symmetry	$\frac{\sqrt{3}(x-y)(x+y)}{2}$														

continued ...



Table 9

No.	multipole	matrix													
	$\mathbb{M}_{2,2}^{(1,1;a)}(E_u)$	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
817	symmetry	$\sqrt{3}yz$													
	$\mathbb{M}_{2,1}^{(1,1;a)}(T_{2u})$	$-\frac{2\sqrt{15}i}{35}$	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	$-\frac{\sqrt{14}i}{42}$
818	symmetry	$\sqrt{3}xz$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{M}_{2,2}^{(1,1;a)}(T_{2u})$	$-\frac{2\sqrt{15}}{35}$	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	$-\frac{\sqrt{15}}{105}$	0	$-\frac{1}{15}$	0	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	$\frac{\sqrt{14}}{42}$
819	symmetry	$\sqrt{3}xy$													
	$\mathbb{M}_{2,3}^{(1,1;a)}(T_{2u})$	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	0	$-\frac{3\sqrt{2}i}{280}$	0	0	0	$\frac{3\sqrt{70}i}{280}$
		0	0	$-\frac{3\sqrt{30}i}{140}$	0	0	0	0	0	0	$\frac{\sqrt{10}i}{105}$	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	0	$\frac{4\sqrt{2}i}{105}$	0	0	0	$\frac{\sqrt{70}i}{105}$
		0	0	0	$\frac{3\sqrt{30}i}{140}$	0	0	0	0	0	0	$\frac{\sqrt{10}i}{105}$	0	0	0
820	symmetry	$\frac{\sqrt{21}(x^4-3x^2y^2-3x^2z^2+y^4-3y^2z^2+z^4)}{6}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{M}_4^{(1,1;a)}(A_{1u})$	0	$-\frac{\sqrt{770}}{210}$	0	0	0	$-\frac{\sqrt{154}}{42}$	0	0	$\frac{\sqrt{77}}{140}$	0	0	0	$\frac{\sqrt{231}}{420}$	0
		0	0	$\frac{\sqrt{1155}}{105}$	0	0	0	0	0	0	$-\frac{\sqrt{385}}{420}$	0	0	0	$\frac{\sqrt{11}}{60}$
		0	0	0	$-\frac{\sqrt{1155}}{105}$	0	0	$\frac{\sqrt{11}}{60}$	0	0	0	$-\frac{\sqrt{385}}{420}$	0	0	0
		$\frac{\sqrt{154}}{42}$	0	0	0	$\frac{\sqrt{770}}{210}$	0	0	$\frac{\sqrt{231}}{420}$	0	0	0	$\frac{\sqrt{77}}{140}$	0	0
		$-\frac{\sqrt{770}}{840}$	0	0	0	$-\frac{\sqrt{154}}{168}$	0	0	$\frac{\sqrt{1155}}{1155}$	0	0	0	$\frac{\sqrt{385}}{1155}$	0	0
		0	$\frac{\sqrt{770}}{280}$	0	0	0	$-\frac{\sqrt{154}}{168}$	0	0	$-\frac{4\sqrt{77}}{1155}$	0	0	0	$\frac{2\sqrt{231}}{1155}$	0
		0	0	$-\frac{\sqrt{770}}{420}$	0	0	0	0	0	0	$-\frac{\sqrt{2310}}{2310}$	0	0	0	$\frac{\sqrt{66}}{330}$
		0	0	0	$-\frac{\sqrt{770}}{420}$	0	0	$-\frac{\sqrt{66}}{330}$	0	0	0	$\frac{\sqrt{2310}}{2310}$	0	0	0
		$-\frac{\sqrt{154}}{168}$	0	0	0	$\frac{\sqrt{770}}{280}$	0	0	$-\frac{2\sqrt{231}}{1155}$	0	0	0	$\frac{4\sqrt{77}}{1155}$	0	0
		0	$-\frac{\sqrt{154}}{168}$	0	0	0	$-\frac{\sqrt{770}}{840}$	0	0	$-\frac{\sqrt{385}}{1155}$	0	0	0	$-\frac{\sqrt{1155}}{1155}$	0
821	symmetry	$-\frac{\sqrt{15}(x^4-12x^2y^2+6x^2z^2+y^4+6y^2z^2-2z^4)}{12}$													
	$\mathbb{M}_{4,1}^{(1,1;a)}(E_u)$	0	$-\frac{\sqrt{22}}{42}$	0	0	0	$\frac{\sqrt{110}}{30}$	0	0	$\frac{\sqrt{55}}{140}$	0	0	0	$-\frac{\sqrt{165}}{300}$	0
		0	0	$\frac{\sqrt{33}}{21}$	0	0	0	0	0	0	$-\frac{\sqrt{11}}{84}$	0	0	0	$-\frac{\sqrt{385}}{300}$
		0	0	0	$-\frac{\sqrt{33}}{21}$	0	0	$-\frac{\sqrt{385}}{300}$	0	0	0	$-\frac{\sqrt{11}}{84}$	0	0	0
		$-\frac{\sqrt{110}}{30}$	0	0	0	$\frac{\sqrt{22}}{42}$	0	0	$-\frac{\sqrt{165}}{300}$	0	0	0	$\frac{\sqrt{55}}{140}$	0	0
		$-\frac{\sqrt{22}}{168}$	0	0	0	$\frac{\sqrt{110}}{120}$	0	0	$\frac{\sqrt{33}}{231}$	0	0	0	$-\frac{\sqrt{11}}{165}$	0	0
		0	$\frac{\sqrt{22}}{56}$	0	0	0	$\frac{\sqrt{110}}{120}$	0	0	$-\frac{4\sqrt{55}}{1155}$	0	0	0	$-\frac{2\sqrt{165}}{825}$	0
		0	0	$-\frac{\sqrt{22}}{84}$	0	0	0	0	0	0	$-\frac{\sqrt{66}}{462}$	0	0	0	$-\frac{\sqrt{2310}}{1650}$
		0	0	0	$-\frac{\sqrt{22}}{84}$	0	0	$\frac{\sqrt{2310}}{1650}$	0	0	0	$\frac{\sqrt{66}}{462}$	0	0	0
		$\frac{\sqrt{110}}{120}$	0	0	0	$\frac{\sqrt{22}}{56}$	0	0	$\frac{2\sqrt{165}}{825}$	0	0	0	$\frac{4\sqrt{55}}{1155}$	0	0
		0	$\frac{\sqrt{110}}{120}$	0	0	0	$-\frac{\sqrt{22}}{168}$	0	0	$\frac{\sqrt{11}}{165}$	0	0	0	$-\frac{\sqrt{33}}{231}$	0
822	symmetry	$\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{M}_{4,2}^{(1,1;a)}(E_u)$	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
823	symmetry	$\frac{\sqrt{35}yz(y-z)(y+z)}{2}$													
	$\mathbb{M}_{4,1}^{(1,1;a)}(T_{1u})$	$-\frac{\sqrt{2310}i}{840}$	0	$-\frac{\sqrt{231}i}{84}$	0	$-\frac{\sqrt{462}i}{168}$	0	0	$\frac{3\sqrt{385}i}{1400}$	0	$\frac{\sqrt{77}i}{140}$	0	$\frac{\sqrt{1155}i}{1400}$	0	0
		0	$\frac{\sqrt{154}i}{56}$	0	$\frac{\sqrt{77}i}{28}$	0	$\frac{\sqrt{770}i}{280}$	$-\frac{\sqrt{165}i}{600}$	0	$-\frac{\sqrt{385}i}{350}$	0	$-\frac{\sqrt{231}i}{840}$	0	$\frac{\sqrt{1155}i}{2100}$	0
		$-\frac{\sqrt{770}i}{280}$	0	$-\frac{\sqrt{77}i}{28}$	0	$-\frac{\sqrt{154}i}{56}$	0	0	$\frac{\sqrt{1155}i}{2100}$	0	$-\frac{\sqrt{231}i}{840}$	0	$-\frac{\sqrt{385}i}{350}$	0	$-\frac{\sqrt{165}i}{600}$
		0	$\frac{\sqrt{462}i}{168}$	0	$\frac{\sqrt{231}i}{84}$	0	$\frac{\sqrt{2310}i}{840}$	0	0	$\frac{\sqrt{1155}i}{1400}$	0	$\frac{\sqrt{77}i}{140}$	0	$\frac{3\sqrt{385}i}{1400}$	0
		0	$-\frac{\sqrt{2310}i}{840}$	0	$-\frac{\sqrt{1155}i}{840}$	0	0	$\frac{\sqrt{11}i}{220}$	0	$\frac{\sqrt{231}i}{462}$	0	$\frac{\sqrt{385}i}{1540}$	0	0	0
		$\frac{\sqrt{2310}i}{840}$	0	$\frac{\sqrt{231}i}{168}$	0	0	0	0	$-\frac{13\sqrt{385}i}{7700}$	0	$-\frac{\sqrt{77}i}{770}$	0	$\frac{\sqrt{1155}i}{3300}$	0	0
		0	$-\frac{\sqrt{231}i}{168}$	0	0	0	$\frac{\sqrt{1155}i}{840}$	$\frac{3\sqrt{110}i}{2200}$	0	$\frac{\sqrt{2310}i}{46200}$	0	$-\frac{\sqrt{154}i}{440}$	0	$-\frac{\sqrt{770}i}{15400}$	0
		$\frac{\sqrt{1155}i}{840}$	0	0	0	$-\frac{\sqrt{231}i}{168}$	0	0	$\frac{\sqrt{770}i}{15400}$	0	$\frac{\sqrt{154}i}{440}$	0	$-\frac{\sqrt{2310}i}{46200}$	0	$-\frac{3\sqrt{110}i}{2200}$
		0	0	0	$\frac{\sqrt{231}i}{168}$	0	$\frac{\sqrt{2310}i}{840}$	0	0	$-\frac{\sqrt{1155}i}{3300}$	0	$\frac{\sqrt{77}i}{770}$	0	$\frac{13\sqrt{385}i}{7700}$	0
		0	0	$-\frac{\sqrt{1155}i}{840}$	0	$-\frac{\sqrt{2310}i}{840}$	0	0	0	$-\frac{\sqrt{385}i}{1540}$	0	$-\frac{\sqrt{231}i}{462}$	0	$-\frac{\sqrt{11}i}{220}$	0
824	symmetry	$-\frac{\sqrt{35}xz(x-z)(x+z)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{M}_{4,2}^{(1,1;a)}(T_{1u})$	$\frac{\sqrt{2310}}{840}$	0	$-\frac{\sqrt{231}}{84}$	0	$\frac{\sqrt{462}}{168}$	0	0	$-\frac{3\sqrt{385}}{1400}$	0	$\frac{\sqrt{77}}{140}$	0	$-\frac{\sqrt{1155}}{1400}$	0	0
		0	$-\frac{\sqrt{154}}{56}$	0	$\frac{\sqrt{77}}{28}$	0	$-\frac{\sqrt{770}}{280}$	$-\frac{\sqrt{165}}{600}$	0	$\frac{\sqrt{385}}{350}$	0	$-\frac{\sqrt{231}}{840}$	0	$-\frac{\sqrt{1155}}{2100}$	0
		$-\frac{\sqrt{770}}{280}$	0	$\frac{\sqrt{77}}{28}$	0	$-\frac{\sqrt{154}}{56}$	0	0	$\frac{\sqrt{1155}}{2100}$	0	$\frac{\sqrt{231}}{840}$	0	$-\frac{\sqrt{385}}{350}$	0	$\frac{\sqrt{165}}{600}$
		0	$\frac{\sqrt{462}}{168}$	0	$-\frac{\sqrt{231}}{84}$	0	$\frac{\sqrt{2310}}{840}$	0	0	$\frac{\sqrt{1155}}{1400}$	0	$-\frac{\sqrt{77}}{140}$	0	$\frac{3\sqrt{385}}{1400}$	0
		0	$-\frac{\sqrt{2310}}{840}$	0	$\frac{\sqrt{1155}}{840}$	0	0	$-\frac{\sqrt{11}}{220}$	0	$\frac{\sqrt{231}}{462}$	0	$-\frac{\sqrt{385}}{1540}$	0	0	0
		$-\frac{\sqrt{2310}}{840}$	0	$\frac{\sqrt{231}}{168}$	0	0	0	0	$\frac{13\sqrt{385}}{7700}$	0	$-\frac{\sqrt{77}}{770}$	0	$-\frac{\sqrt{1155}}{3300}$	0	0
		0	$\frac{\sqrt{231}}{168}$	0	0	0	$-\frac{\sqrt{1155}}{840}$	$\frac{3\sqrt{110}}{2200}$	0	$-\frac{\sqrt{2310}}{46200}$	0	$-\frac{\sqrt{154}}{440}$	0	$\frac{\sqrt{770}}{15400}$	0
		$\frac{\sqrt{1155}}{840}$	0	0	0	$-\frac{\sqrt{231}}{168}$	0	0	$\frac{\sqrt{770}}{15400}$	0	$-\frac{\sqrt{154}}{440}$	0	$-\frac{\sqrt{2310}}{46200}$	0	$\frac{3\sqrt{110}}{2200}$
		0	0	0	$-\frac{\sqrt{231}}{168}$	0	$\frac{\sqrt{2310}}{840}$	0	0	$-\frac{\sqrt{1155}}{3300}$	0	$-\frac{\sqrt{77}}{770}$	0	$\frac{13\sqrt{385}}{7700}$	0
		0	0	$-\frac{\sqrt{1155}}{840}$	0	$\frac{\sqrt{2310}}{840}$	0	0	0	$-\frac{\sqrt{385}}{1540}$	0	$\frac{\sqrt{231}}{462}$	0	$-\frac{\sqrt{11}}{220}$	0
825	symmetry	$\frac{\sqrt{35xy(x-y)(x+y)}}{2}$													
	$\mathbb{M}_{4,3}^{(1,1;a)}(T_{1u})$	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
826	symmetry	$\frac{\sqrt{5}yz(6x^2-y^2-z^2)}{2}$													

continued ...

Table 9

No.	multipole	matrix													
	$\mathbb{M}_{4,1}^{(1,1;a)}(T_{2u})$	$-\frac{\sqrt{330i}}{840}$	0	$-\frac{\sqrt{33i}}{84}$	0	$\frac{\sqrt{66i}}{24}$	0	0	$\frac{3\sqrt{55i}}{1400}$	0	$\frac{\sqrt{11i}}{140}$	0	$-\frac{\sqrt{165i}}{200}$	0	0
		0	$\frac{\sqrt{22i}}{56}$	0	$\frac{\sqrt{11i}}{28}$	0	$-\frac{\sqrt{110i}}{40}$	$\frac{\sqrt{1155i}}{600}$	0	$-\frac{\sqrt{55i}}{350}$	0	$-\frac{\sqrt{33i}}{840}$	0	$-\frac{\sqrt{165i}}{300}$	0
		$\frac{\sqrt{110i}}{40}$	0	$-\frac{\sqrt{11i}}{28}$	0	$-\frac{\sqrt{22i}}{56}$	0	0	$-\frac{\sqrt{165i}}{300}$	0	$-\frac{\sqrt{33i}}{840}$	0	$-\frac{\sqrt{55i}}{350}$	0	$\frac{\sqrt{1155i}}{600}$
		0	$-\frac{\sqrt{66i}}{24}$	0	$\frac{\sqrt{33i}}{84}$	0	$\frac{\sqrt{330i}}{840}$	0	0	$-\frac{\sqrt{165i}}{200}$	0	$\frac{\sqrt{11i}}{140}$	0	$\frac{3\sqrt{55i}}{1400}$	0
		0	$-\frac{\sqrt{330i}}{840}$	0	$\frac{\sqrt{165i}}{120}$	0	0	$\frac{\sqrt{77i}}{1540}$	0	$\frac{\sqrt{33i}}{462}$	0	$-\frac{\sqrt{55i}}{220}$	0	0	0
		$\frac{\sqrt{330i}}{840}$	0	$\frac{\sqrt{33i}}{168}$	0	0	0	0	$-\frac{13\sqrt{55i}}{7700}$	0	$-\frac{\sqrt{11i}}{770}$	0	$-\frac{7\sqrt{165i}}{3300}$	0	0
		0	$-\frac{\sqrt{33i}}{168}$	0	0	0	$-\frac{\sqrt{165i}}{120}$	$-\frac{3\sqrt{770i}}{2200}$	0	$\frac{\sqrt{330i}}{46200}$	0	$-\frac{\sqrt{22i}}{440}$	0	$\frac{\sqrt{110i}}{2200}$	0
		$-\frac{\sqrt{165i}}{120}$	0	0	0	$-\frac{\sqrt{33i}}{168}$	0	0	$-\frac{\sqrt{110i}}{2200}$	0	$\frac{\sqrt{22i}}{440}$	0	$-\frac{\sqrt{330i}}{46200}$	0	$\frac{3\sqrt{770i}}{2200}$
		0	0	0	$\frac{\sqrt{33i}}{168}$	0	$\frac{\sqrt{330i}}{840}$	0	0	$\frac{7\sqrt{165i}}{3300}$	0	$\frac{\sqrt{11i}}{770}$	0	$\frac{13\sqrt{55i}}{7700}$	0
		0	0	$\frac{\sqrt{165i}}{120}$	0	$-\frac{\sqrt{330i}}{840}$	0	0	0	0	$\frac{\sqrt{55i}}{220}$	0	$-\frac{\sqrt{33i}}{462}$	0	$-\frac{\sqrt{77i}}{1540}$
827	symmetry	$-\frac{\sqrt{5}xz(x^2-6y^2+z^2)}{2}$													
	$\mathbb{M}_{4,2}^{(1,1;a)}(T_{2u})$	$-\frac{\sqrt{330}}{840}$	0	$\frac{\sqrt{33}}{84}$	0	$\frac{\sqrt{66}}{24}$	0	0	$\frac{3\sqrt{55}}{1400}$	0	$-\frac{\sqrt{11}}{140}$	0	$-\frac{\sqrt{165}}{200}$	0	0
		0	$\frac{\sqrt{22}}{56}$	0	$-\frac{\sqrt{11}}{28}$	0	$-\frac{\sqrt{110}}{40}$	$-\frac{\sqrt{1155}}{600}$	0	$-\frac{\sqrt{55}}{350}$	0	$\frac{\sqrt{33}}{840}$	0	$-\frac{\sqrt{165}}{300}$	0
		$-\frac{\sqrt{110}}{40}$	0	$-\frac{\sqrt{11}}{28}$	0	$\frac{\sqrt{22}}{56}$	0	0	$\frac{\sqrt{165}}{300}$	0	$-\frac{\sqrt{33}}{840}$	0	$\frac{\sqrt{55}}{350}$	0	$\frac{\sqrt{1155}}{600}$
		0	$\frac{\sqrt{66}}{24}$	0	$\frac{\sqrt{33}}{84}$	0	$-\frac{\sqrt{330}}{840}$	0	0	$\frac{\sqrt{165}}{200}$	0	$\frac{\sqrt{11}}{140}$	0	$-\frac{3\sqrt{55}}{1400}$	0
		0	$\frac{\sqrt{330}}{840}$	0	$\frac{\sqrt{165}}{120}$	0	0	$\frac{\sqrt{77}}{1540}$	0	$-\frac{\sqrt{33}}{462}$	0	$-\frac{\sqrt{55}}{220}$	0	0	0
		$\frac{\sqrt{330}}{840}$	0	$-\frac{\sqrt{33}}{168}$	0	0	0	0	$-\frac{13\sqrt{55}}{7700}$	0	$\frac{\sqrt{11}}{770}$	0	$-\frac{7\sqrt{165}}{3300}$	0	0
		0	$-\frac{\sqrt{33}}{168}$	0	0	0	$-\frac{\sqrt{165}}{120}$	$\frac{3\sqrt{770}}{2200}$	0	$\frac{\sqrt{330}}{46200}$	0	$\frac{\sqrt{22}}{440}$	0	$\frac{\sqrt{110}}{2200}$	0
		$\frac{\sqrt{165}}{120}$	0	0	0	$\frac{\sqrt{33}}{168}$	0	0	$\frac{\sqrt{110}}{2200}$	0	$\frac{\sqrt{22}}{440}$	0	$\frac{\sqrt{330}}{46200}$	0	$\frac{3\sqrt{770}}{2200}$
		0	0	0	$\frac{\sqrt{33}}{168}$	0	$-\frac{\sqrt{330}}{840}$	0	0	$-\frac{7\sqrt{165}}{3300}$	0	$\frac{\sqrt{11}}{770}$	0	$-\frac{13\sqrt{55}}{7700}$	0
		0	0	$-\frac{\sqrt{165}}{120}$	0	$-\frac{\sqrt{330}}{840}$	0	0	0	0	$-\frac{\sqrt{55}}{220}$	0	$-\frac{\sqrt{33}}{462}$	0	$\frac{\sqrt{77}}{1540}$
828	symmetry	$-\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$													

continued ...

Table 9

No.	multipole	matrix												
$\mathbb{M}_{4,3}^{(1,1;a)}(T_{2u})$		0	0	0	$\frac{\sqrt{33}i}{21}$	0	0	$\frac{\sqrt{385}i}{700}$	0	0	0	$-\frac{3\sqrt{11}i}{140}$	0	0
		$\frac{\sqrt{110}i}{70}$	0	0	0	$-\frac{\sqrt{22}i}{14}$	0	0	$-\frac{11\sqrt{165}i}{2100}$	0	0	0	$-\frac{\sqrt{55}i}{700}$	0
		0	$-\frac{\sqrt{22}i}{14}$	0	0	0	$\frac{\sqrt{110}i}{70}$	0	0	$\frac{\sqrt{55}i}{700}$	0	0	0	$\frac{11\sqrt{165}i}{2100}$
		0	0	$\frac{\sqrt{33}i}{21}$	0	0	0	0	0	$\frac{3\sqrt{11}i}{140}$	0	0	0	$-\frac{\sqrt{385}i}{700}$
		0	0	$\frac{\sqrt{165}i}{140}$	0	0	0	0	0	$-\frac{2\sqrt{55}i}{385}$	0	0	0	0
		0	0	0	$-\frac{\sqrt{33}i}{84}$	0	0	$-\frac{3\sqrt{385}i}{1925}$	0	0	0	$-\frac{\sqrt{11}i}{385}$	0	0
		$-\frac{\sqrt{165}i}{140}$	0	0	0	$-\frac{\sqrt{33}i}{84}$	0	0	$\frac{9\sqrt{110}i}{3850}$	0	0	0	$\frac{17\sqrt{330}i}{11550}$	0
		0	$\frac{\sqrt{33}i}{84}$	0	0	0	$\frac{\sqrt{165}i}{140}$	0	0	$\frac{17\sqrt{330}i}{11550}$	0	0	0	$\frac{9\sqrt{110}i}{3850}$
		0	0	$\frac{\sqrt{33}i}{84}$	0	0	0	0	0	$-\frac{\sqrt{11}i}{385}$	0	0	0	$-\frac{3\sqrt{385}i}{1925}$
		0	0	0	$-\frac{\sqrt{165}i}{140}$	0	0	0	0	0	$-\frac{2\sqrt{55}i}{385}$	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													
$\mathbb{Q}_0^{(a)}(A_{1g})$		$\frac{\sqrt{14}}{14}$	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													
$\mathbb{Q}_{2,1}^{(a)}(E_g)$		$-\frac{5\sqrt{42}}{98}$	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	$\frac{\sqrt{3}(x-y)(x+y)}{2}$													

*continued ...*

Table 10

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

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{2,1}^{(a)}(T_{2g})$		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	$-\frac{5\sqrt{210}i}{588}$	0	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
833	symmetry	$\sqrt{3}xz$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{2,2}^{(a)}(T_{2g})$		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
834	symmetry	$\sqrt{3}xy$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{2,3}^{(a)}(T_{2g})$	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	$\frac{\sqrt{21}(x^4-3x^2y^2-3x^2z^2+y^4-3y^2z^2+z^4)}{6}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_4^{(a)}(A_{1g})$		$\frac{\sqrt{33}}{84}$	0	0	0	$\frac{\sqrt{165}}{84}$	0	0	$\frac{5\sqrt{22}}{154}$	0	0	0	$\frac{5\sqrt{66}}{462}$	0	0
		0	$-\frac{\sqrt{33}}{28}$	0	0	0	$\frac{\sqrt{165}}{84}$	0	0	$-\frac{2\sqrt{330}}{231}$	0	0	0	$\frac{\sqrt{110}}{77}$	0
		0	0	$\frac{\sqrt{33}}{42}$	0	0	0	0	0	0	$-\frac{5\sqrt{11}}{154}$	0	0	0	$\frac{\sqrt{385}}{154}$
		0	0	0	$\frac{\sqrt{33}}{42}$	0	0	$-\frac{\sqrt{385}}{154}$	0	0	0	$\frac{5\sqrt{11}}{154}$	0	0	0
		$\frac{\sqrt{165}}{84}$	0	0	0	$-\frac{\sqrt{33}}{28}$	0	0	$-\frac{\sqrt{110}}{77}$	0	0	0	$\frac{2\sqrt{330}}{231}$	0	0
		0	$\frac{\sqrt{165}}{84}$	0	0	0	$\frac{\sqrt{33}}{84}$	0	0	$-\frac{5\sqrt{66}}{462}$	0	0	0	$-\frac{5\sqrt{22}}{154}$	0
		0	0	0	$-\frac{\sqrt{385}}{154}$	0	0	$\frac{\sqrt{33}}{44}$	0	0	0	$\frac{\sqrt{1155}}{308}$	0	0	0
		$\frac{5\sqrt{22}}{154}$	0	0	0	$-\frac{\sqrt{110}}{77}$	0	0	$-\frac{13\sqrt{33}}{308}$	0	0	0	$\frac{15\sqrt{11}}{308}$	0	0
		0	$-\frac{2\sqrt{330}}{231}$	0	0	0	$-\frac{5\sqrt{66}}{462}$	0	0	$-\frac{3\sqrt{33}}{308}$	0	0	0	$\frac{15\sqrt{11}}{308}$	0
		0	0	$-\frac{5\sqrt{11}}{154}$	0	0	0	0	0	0	$\frac{9\sqrt{33}}{308}$	0	0	0	$\frac{\sqrt{1155}}{308}$
		0	0	0	$\frac{5\sqrt{11}}{154}$	0	0	$\frac{\sqrt{1155}}{308}$	0	0	0	$\frac{9\sqrt{33}}{308}$	0	0	0
		$\frac{5\sqrt{66}}{462}$	0	0	0	$\frac{2\sqrt{330}}{231}$	0	0	$\frac{15\sqrt{11}}{308}$	0	0	0	$-\frac{3\sqrt{33}}{308}$	0	0
		0	$\frac{\sqrt{110}}{77}$	0	0	0	$-\frac{5\sqrt{22}}{154}$	0	0	$\frac{15\sqrt{11}}{308}$	0	0	0	$-\frac{13\sqrt{33}}{308}$	0
		0	0	$\frac{\sqrt{385}}{154}$	0	0	0	0	0	0	$\frac{\sqrt{1155}}{308}$	0	0	0	$\frac{\sqrt{33}}{44}$
836	symmetry	$-\frac{\sqrt{15}(x^4-12x^2y^2+6x^2z^2+y^4+6y^2z^2-2z^4)}{12}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{4,1}^{(a)}(E_g)$		$\frac{\sqrt{1155}}{588}$	0	0	0	$-\frac{\sqrt{231}}{84}$	0	0	$\frac{5\sqrt{770}}{1078}$	0	0	0	$-\frac{\sqrt{2310}}{462}$	0	0
		0	$-\frac{\sqrt{1155}}{196}$	0	0	0	$-\frac{\sqrt{231}}{84}$	0	0	$-\frac{10\sqrt{462}}{1617}$	0	0	0	$-\frac{\sqrt{154}}{77}$	0
		0	0	$\frac{\sqrt{1155}}{294}$	0	0	0	0	0	$-\frac{5\sqrt{385}}{1078}$	0	0	0	0	$-\frac{\sqrt{11}}{22}$
		0	0	0	$\frac{\sqrt{1155}}{294}$	0	0	$\frac{\sqrt{11}}{22}$	0	0	0	$\frac{5\sqrt{385}}{1078}$	0	0	0
		$-\frac{\sqrt{231}}{84}$	0	0	0	$-\frac{\sqrt{1155}}{196}$	0	0	$\frac{\sqrt{154}}{77}$	0	0	0	$\frac{10\sqrt{462}}{1617}$	0	0
		0	$-\frac{\sqrt{231}}{84}$	0	0	0	$\frac{\sqrt{1155}}{588}$	0	0	$\frac{\sqrt{2310}}{462}$	0	0	0	$-\frac{5\sqrt{770}}{1078}$	0
		0	0	0	$\frac{\sqrt{11}}{22}$	0	0	$\frac{\sqrt{1155}}{308}$	0	0	0	$-\frac{\sqrt{33}}{44}$	0	0	0
		$\frac{5\sqrt{770}}{1078}$	0	0	0	$\frac{\sqrt{154}}{77}$	0	0	$-\frac{13\sqrt{1155}}{2156}$	0	0	0	$-\frac{3\sqrt{385}}{308}$	0	0
		0	$-\frac{10\sqrt{462}}{1617}$	0	0	0	$\frac{\sqrt{2310}}{462}$	0	0	$-\frac{3\sqrt{1155}}{2156}$	0	0	0	$-\frac{3\sqrt{385}}{308}$	0
		0	0	$-\frac{5\sqrt{385}}{1078}$	0	0	0	0	0	$\frac{9\sqrt{1155}}{2156}$	0	0	0	0	$-\frac{\sqrt{33}}{44}$
		0	0	0	$\frac{5\sqrt{385}}{1078}$	0	0	$-\frac{\sqrt{33}}{44}$	0	0	0	$\frac{9\sqrt{1155}}{2156}$	0	0	0
		$-\frac{\sqrt{2310}}{462}$	0	0	0	$\frac{10\sqrt{462}}{1617}$	0	0	$-\frac{3\sqrt{385}}{308}$	0	0	0	$-\frac{3\sqrt{1155}}{2156}$	0	0
		0	$-\frac{\sqrt{154}}{77}$	0	0	0	$-\frac{5\sqrt{770}}{1078}$	0	0	$-\frac{3\sqrt{385}}{308}$	0	0	0	$-\frac{13\sqrt{1155}}{2156}$	0
		0	0	$-\frac{\sqrt{11}}{22}$	0	0	0	0	0	$-\frac{\sqrt{33}}{44}$	0	0	0	0	$\frac{\sqrt{1155}}{308}$
837	symmetry	$\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{4,2}^{(a)}(E_g)$		0	0	$-\frac{3\sqrt{154}}{196}$	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	
		$-\frac{3\sqrt{154}}{196}$	0	0	0	$\frac{\sqrt{770}}{196}$	0	0	$-\frac{9\sqrt{231}}{1078}$	0	0	0	$\frac{17\sqrt{77}}{1078}$	0	
		0	$\frac{\sqrt{770}}{196}$	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	$\frac{\sqrt{770}}{196}$	0	0	0	0	0	0	$\frac{\sqrt{2310}}{1078}$	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	$\frac{3\sqrt{66}}{154}$	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	$-\frac{3\sqrt{77}}{1078}$	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	
		$-\frac{5\sqrt{462}}{539}$	0	0	0	$\frac{\sqrt{2310}}{1078}$	0	0	$-\frac{3\sqrt{77}}{1078}$	0	0	0	$\frac{6\sqrt{231}}{539}$	0	
		0	$-\frac{\sqrt{2310}}{1078}$	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	$\frac{17\sqrt{77}}{1078}$	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	$-\frac{3\sqrt{77}}{1078}$	0	0	0	
		0	0	0	0	$-\frac{3\sqrt{66}}{154}$	0	0	0	0	0	$-\frac{3\sqrt{165}}{154}$	0	0	
838	symmetry	$\frac{\sqrt{35}yz(y-z)(y+z)}{2}$													

*continued ...*



Table 10

No.	multipole	matrix													
$\mathbb{Q}_{4,1}^{(a)}(T_{1g})$		0	$\frac{\sqrt{11}i}{28}$	0	$\frac{\sqrt{22}i}{56}$	0	0	$\frac{\sqrt{2310}i}{616}$	0	$\frac{5\sqrt{110}i}{308}$	0	$\frac{5\sqrt{66}i}{616}$	0	0	0
		$-\frac{\sqrt{11}i}{28}$	0	$-\frac{\sqrt{110}i}{56}$	0	0	0	0	$-\frac{13\sqrt{66}i}{616}$	0	$-\frac{\sqrt{330}i}{308}$	0	$\frac{\sqrt{22}i}{88}$	0	0
		0	$\frac{\sqrt{110}i}{56}$	0	0	0	$-\frac{\sqrt{22}i}{56}$	$\frac{3\sqrt{231}i}{616}$	0	$\frac{\sqrt{11}i}{616}$	0	$-\frac{\sqrt{165}i}{88}$	0	$-\frac{\sqrt{33}i}{616}$	0
		$-\frac{\sqrt{22}i}{56}$	0	0	0	$\frac{\sqrt{110}i}{56}$	0	0	$\frac{\sqrt{33}i}{616}$	0	$\frac{\sqrt{165}i}{88}$	0	$-\frac{\sqrt{11}i}{616}$	0	$-\frac{3\sqrt{231}i}{616}$
		0	0	0	$-\frac{\sqrt{110}i}{56}$	0	$-\frac{\sqrt{11}i}{28}$	0	0	$-\frac{\sqrt{22}i}{88}$	0	$\frac{\sqrt{330}i}{308}$	0	$\frac{13\sqrt{66}i}{616}$	0
		0	0	$\frac{\sqrt{22}i}{56}$	0	$\frac{\sqrt{11}i}{28}$	0	0	0	0	$-\frac{5\sqrt{66}i}{616}$	0	$-\frac{5\sqrt{110}i}{308}$	0	$-\frac{\sqrt{2310}i}{616}$
		$-\frac{\sqrt{2310}i}{616}$	0	$-\frac{3\sqrt{231}i}{616}$	0	0	0	0	$\frac{3\sqrt{385}i}{308}$	0	$\frac{3\sqrt{77}i}{308}$	0	0	0	0
		0	$\frac{13\sqrt{66}i}{616}$	0	$-\frac{\sqrt{33}i}{616}$	0	0	$-\frac{3\sqrt{385}i}{308}$	0	$-\frac{3\sqrt{165}i}{308}$	0	$\frac{3\sqrt{11}i}{154}$	0	0	0
		$-\frac{5\sqrt{110}i}{308}$	0	$-\frac{\sqrt{11}i}{616}$	0	$\frac{\sqrt{22}i}{88}$	0	0	$\frac{3\sqrt{165}i}{308}$	0	$-\frac{9\sqrt{33}i}{308}$	0	0	0	0
		0	$\frac{\sqrt{330}i}{308}$	0	$-\frac{\sqrt{165}i}{88}$	0	$\frac{5\sqrt{66}i}{616}$	$-\frac{3\sqrt{77}i}{308}$	0	$\frac{9\sqrt{33}i}{308}$	0	0	0	$-\frac{3\sqrt{11}i}{154}$	0
		$-\frac{5\sqrt{66}i}{616}$	0	$\frac{\sqrt{165}i}{88}$	0	$-\frac{\sqrt{330}i}{308}$	0	0	$-\frac{3\sqrt{11}i}{154}$	0	0	0	$\frac{9\sqrt{33}i}{308}$	0	$-\frac{3\sqrt{77}i}{308}$
		0	$-\frac{\sqrt{22}i}{88}$	0	$\frac{\sqrt{11}i}{616}$	0	$\frac{5\sqrt{110}i}{308}$	0	0	0	0	$-\frac{9\sqrt{33}i}{308}$	0	$\frac{3\sqrt{165}i}{308}$	0
		0	0	$\frac{\sqrt{33}i}{616}$	0	$-\frac{13\sqrt{66}i}{616}$	0	0	0	0	$\frac{3\sqrt{11}i}{154}$	0	$-\frac{3\sqrt{165}i}{308}$	0	$-\frac{3\sqrt{385}i}{308}$
		0	0	0	$\frac{3\sqrt{231}i}{616}$	0	$\frac{\sqrt{2310}i}{616}$	0	0	0	0	$\frac{3\sqrt{77}i}{308}$	0	$\frac{3\sqrt{385}i}{308}$	0
839	symmetry	$-\frac{\sqrt{35}xz(x-z)(x+z)}{2}$													

continued ...

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{4,2}^{(a)}(T_{1g})$		0	$\frac{\sqrt{11}}{28}$	0	$-\frac{\sqrt{22}}{56}$	0	0	$-\frac{\sqrt{2310}}{616}$	0	$\frac{5\sqrt{110}}{308}$	0	$-\frac{5\sqrt{66}}{616}$	0	0	0
		$\frac{\sqrt{11}}{28}$	0	$-\frac{\sqrt{110}}{56}$	0	0	0	0	$\frac{13\sqrt{66}}{616}$	0	$-\frac{\sqrt{330}}{308}$	0	$-\frac{\sqrt{22}}{88}$	0	0
		0	$-\frac{\sqrt{110}}{56}$	0	0	0	$\frac{\sqrt{22}}{56}$	$\frac{3\sqrt{231}}{616}$	0	$-\frac{\sqrt{11}}{616}$	0	$-\frac{\sqrt{165}}{88}$	0	$\frac{\sqrt{33}}{616}$	0
		$-\frac{\sqrt{22}}{56}$	0	0	0	$\frac{\sqrt{110}}{56}$	0	0	$\frac{\sqrt{33}}{616}$	0	$-\frac{\sqrt{165}}{88}$	0	$-\frac{\sqrt{11}}{616}$	0	$\frac{3\sqrt{231}}{616}$
		0	0	0	$\frac{\sqrt{110}}{56}$	0	$-\frac{\sqrt{11}}{28}$	0	0	$-\frac{\sqrt{22}}{88}$	0	$-\frac{\sqrt{330}}{308}$	0	$\frac{13\sqrt{66}}{616}$	0
		0	0	$\frac{\sqrt{22}}{56}$	0	$-\frac{\sqrt{11}}{28}$	0	0	0	0	$-\frac{5\sqrt{66}}{616}$	0	$\frac{5\sqrt{110}}{308}$	0	$-\frac{\sqrt{2310}}{616}$
		$-\frac{\sqrt{2310}}{616}$	0	$\frac{3\sqrt{231}}{616}$	0	0	0	0	$\frac{3\sqrt{385}}{308}$	0	$-\frac{3\sqrt{77}}{308}$	0	0	0	0
		0	$\frac{13\sqrt{66}}{616}$	0	$\frac{\sqrt{33}}{616}$	0	0	0	$\frac{3\sqrt{385}}{308}$	0	$-\frac{3\sqrt{165}}{308}$	0	$-\frac{3\sqrt{11}}{154}$	0	0
		$\frac{5\sqrt{110}}{308}$	0	$-\frac{\sqrt{11}}{616}$	0	$-\frac{\sqrt{22}}{88}$	0	0	$-\frac{3\sqrt{165}}{308}$	0	$-\frac{9\sqrt{33}}{308}$	0	0	0	0
		0	$-\frac{\sqrt{330}}{308}$	0	$-\frac{\sqrt{165}}{88}$	0	$-\frac{5\sqrt{66}}{616}$	$-\frac{3\sqrt{77}}{308}$	0	$-\frac{9\sqrt{33}}{308}$	0	0	0	$\frac{3\sqrt{11}}{154}$	0
		$-\frac{5\sqrt{66}}{616}$	0	$-\frac{\sqrt{165}}{88}$	0	$-\frac{\sqrt{330}}{308}$	0	0	$-\frac{3\sqrt{11}}{154}$	0	0	0	$\frac{9\sqrt{33}}{308}$	0	$\frac{3\sqrt{77}}{308}$
		0	$-\frac{\sqrt{22}}{88}$	0	$-\frac{\sqrt{11}}{616}$	0	$\frac{5\sqrt{110}}{308}$	0	0	0	0	$\frac{9\sqrt{33}}{308}$	0	$\frac{3\sqrt{165}}{308}$	0
		0	0	$\frac{\sqrt{33}}{616}$	0	$\frac{13\sqrt{66}}{616}$	0	0	0	0	$\frac{3\sqrt{11}}{154}$	0	$\frac{3\sqrt{165}}{308}$	0	$-\frac{3\sqrt{385}}{308}$
		0	0	0	$\frac{3\sqrt{231}}{616}$	0	$-\frac{\sqrt{2310}}{616}$	0	0	0	0	$\frac{3\sqrt{77}}{308}$	0	$-\frac{3\sqrt{385}}{308}$	0
840	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{4,3}^{(a)}(T_{1g})$		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	0	$\frac{3\sqrt{77}i}{154}$	0	0	0	0
841	symmetry	$\frac{\sqrt{5}yz(6x^2-y^2-z^2)}{2}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{4,1}^{(a)}(T_{2g})$		0	$\frac{\sqrt{77}i}{196}$	0	$-\frac{\sqrt{154}i}{56}$	0	0	$\frac{\sqrt{330}i}{616}$	0	$\frac{5\sqrt{770}i}{2156}$	0	$-\frac{5\sqrt{462}i}{616}$	0	0	0
		$-\frac{\sqrt{77}i}{196}$	0	$-\frac{\sqrt{770}i}{392}$	0	0	0	0	$-\frac{13\sqrt{462}i}{4312}$	0	$-\frac{\sqrt{2310}i}{2156}$	0	$-\frac{\sqrt{154}i}{88}$	0	0
		0	$\frac{\sqrt{770}i}{392}$	0	0	0	$\frac{\sqrt{154}i}{56}$	$-\frac{3\sqrt{33}i}{88}$	0	$\frac{\sqrt{77}i}{4312}$	0	$-\frac{\sqrt{1155}i}{616}$	0	$\frac{\sqrt{231}i}{616}$	0
		$\frac{\sqrt{154}i}{56}$	0	0	0	$\frac{\sqrt{770}i}{392}$	0	0	$-\frac{\sqrt{231}i}{616}$	0	$\frac{\sqrt{1155}i}{616}$	0	$-\frac{\sqrt{77}i}{4312}$	0	$\frac{3\sqrt{33}i}{88}$
		0	0	0	$-\frac{\sqrt{770}i}{392}$	0	$-\frac{\sqrt{77}i}{196}$	0	0	$\frac{\sqrt{154}i}{88}$	0	$\frac{\sqrt{2310}i}{2156}$	0	$\frac{13\sqrt{462}i}{4312}$	0
		0	0	$-\frac{\sqrt{154}i}{56}$	0	$\frac{\sqrt{77}i}{196}$	0	0	0	0	$\frac{5\sqrt{462}i}{616}$	0	$-\frac{5\sqrt{770}i}{2156}$	0	$-\frac{\sqrt{330}i}{616}$
		$-\frac{\sqrt{330}i}{616}$	0	$\frac{3\sqrt{33}i}{88}$	0	0	0	0	$\frac{3\sqrt{55}i}{308}$	0	$-\frac{3\sqrt{11}i}{44}$	0	0	0	0
		0	$\frac{13\sqrt{462}i}{4312}$	0	$\frac{\sqrt{231}i}{616}$	0	0	$-\frac{3\sqrt{55}i}{308}$	0	$-\frac{3\sqrt{1155}i}{2156}$	0	$-\frac{3\sqrt{77}i}{154}$	0	0	0
		$-\frac{5\sqrt{770}i}{2156}$	0	$-\frac{\sqrt{77}i}{4312}$	0	$-\frac{\sqrt{154}i}{88}$	0	0	$\frac{3\sqrt{1155}i}{2156}$	0	$-\frac{9\sqrt{231}i}{2156}$	0	0	0	0
		0	$\frac{\sqrt{2310}i}{2156}$	0	$-\frac{\sqrt{1155}i}{616}$	0	$-\frac{5\sqrt{462}i}{616}$	$\frac{3\sqrt{11}i}{44}$	0	$\frac{9\sqrt{231}i}{2156}$	0	0	0	$\frac{3\sqrt{77}i}{154}$	0
		$\frac{5\sqrt{462}i}{616}$	0	$\frac{\sqrt{1155}i}{616}$	0	$-\frac{\sqrt{2310}i}{2156}$	0	0	$\frac{3\sqrt{77}i}{154}$	0	0	0	$\frac{9\sqrt{231}i}{2156}$	0	$\frac{3\sqrt{11}i}{44}$
		0	$\frac{\sqrt{154}i}{88}$	0	$\frac{\sqrt{77}i}{4312}$	0	$\frac{5\sqrt{770}i}{2156}$	0	0	0	0	$-\frac{9\sqrt{231}i}{2156}$	0	$\frac{3\sqrt{1155}i}{2156}$	0
		0	0	$-\frac{\sqrt{231}i}{616}$	0	$-\frac{13\sqrt{462}i}{4312}$	0	0	0	0	$-\frac{3\sqrt{77}i}{154}$	0	$-\frac{3\sqrt{1155}i}{2156}$	0	$-\frac{3\sqrt{55}i}{308}$
		0	0	0	$-\frac{3\sqrt{33}i}{88}$	0	$\frac{\sqrt{330}i}{616}$	0	0	0	0	$-\frac{3\sqrt{11}i}{44}$	0	$\frac{3\sqrt{55}i}{308}$	0
842	symmetry	$-\frac{\sqrt{5}xz(x^2-6y^2+z^2)}{2}$													

continued ...

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{4,2}^{(a)}(T_{2g})$		0	$-\frac{\sqrt{77}}{196}$	0	$-\frac{\sqrt{154}}{56}$	0	0	$\frac{\sqrt{330}}{616}$	0	$-\frac{5\sqrt{770}}{2156}$	0	$-\frac{5\sqrt{462}}{616}$	0	0	0
		$-\frac{\sqrt{77}}{196}$	0	$\frac{\sqrt{770}}{392}$	0	0	0	0	$-\frac{13\sqrt{462}}{4312}$	0	$\frac{\sqrt{2310}}{2156}$	0	$-\frac{\sqrt{154}}{88}$	0	0
		0	$\frac{\sqrt{770}}{392}$	0	0	0	$\frac{\sqrt{154}}{56}$	$\frac{3\sqrt{33}}{88}$	0	$\frac{\sqrt{77}}{4312}$	0	$\frac{\sqrt{1155}}{616}$	0	$\frac{\sqrt{231}}{616}$	0
		$-\frac{\sqrt{154}}{56}$	0	0	0	$-\frac{\sqrt{770}}{392}$	0	0	$\frac{\sqrt{231}}{616}$	0	$\frac{\sqrt{1155}}{616}$	0	$\frac{\sqrt{77}}{4312}$	0	$\frac{3\sqrt{33}}{88}$
		0	0	0	$-\frac{\sqrt{770}}{392}$	0	$\frac{\sqrt{77}}{196}$	0	0	$-\frac{\sqrt{154}}{88}$	0	$\frac{\sqrt{2310}}{2156}$	0	$-\frac{13\sqrt{462}}{4312}$	0
		0	0	$\frac{\sqrt{154}}{56}$	0	$\frac{\sqrt{77}}{196}$	0	0	0	0	$-\frac{5\sqrt{462}}{616}$	0	$-\frac{5\sqrt{770}}{2156}$	0	$\frac{\sqrt{330}}{616}$
		$\frac{\sqrt{330}}{616}$	0	$\frac{3\sqrt{33}}{88}$	0	0	0	0	$-\frac{3\sqrt{55}}{308}$	0	$-\frac{3\sqrt{11}}{44}$	0	0	0	0
		0	$-\frac{13\sqrt{462}}{4312}$	0	$\frac{\sqrt{231}}{616}$	0	0	$-\frac{3\sqrt{55}}{308}$	0	$\frac{3\sqrt{1155}}{2156}$	0	$-\frac{3\sqrt{77}}{154}$	0	0	0
		$-\frac{5\sqrt{770}}{2156}$	0	$\frac{\sqrt{77}}{4312}$	0	$-\frac{\sqrt{154}}{88}$	0	0	$\frac{3\sqrt{1155}}{2156}$	0	$\frac{9\sqrt{231}}{2156}$	0	0	0	0
		0	$\frac{\sqrt{2310}}{2156}$	0	$\frac{\sqrt{1155}}{616}$	0	$-\frac{5\sqrt{462}}{616}$	$-\frac{3\sqrt{11}}{44}$	0	$\frac{9\sqrt{231}}{2156}$	0	0	0	$\frac{3\sqrt{77}}{154}$	0
		$-\frac{5\sqrt{462}}{616}$	0	$\frac{\sqrt{1155}}{616}$	0	$\frac{\sqrt{2310}}{2156}$	0	0	$-\frac{3\sqrt{77}}{154}$	0	0	0	$-\frac{9\sqrt{231}}{2156}$	0	$\frac{3\sqrt{11}}{44}$
		0	$-\frac{\sqrt{154}}{88}$	0	$\frac{\sqrt{77}}{4312}$	0	$-\frac{5\sqrt{770}}{2156}$	0	0	0	0	$-\frac{9\sqrt{231}}{2156}$	0	$-\frac{3\sqrt{1155}}{2156}$	0
		0	0	$\frac{\sqrt{231}}{616}$	0	$-\frac{13\sqrt{462}}{4312}$	0	0	0	0	$\frac{3\sqrt{77}}{154}$	0	$-\frac{3\sqrt{1155}}{2156}$	0	$\frac{3\sqrt{55}}{308}$
		0	0	0	$\frac{3\sqrt{33}}{88}$	0	$\frac{\sqrt{330}}{616}$	0	0	0	0	$\frac{3\sqrt{11}}{44}$	0	$\frac{3\sqrt{55}}{308}$	0
843	symmetry	$-\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{4,3}^{(a)}(T_{2g})$	0	0	$-\frac{3\sqrt{154}i}{196}$	0	0	0	0	0	$-\frac{5\sqrt{462}i}{539}$	0	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	$\frac{9\sqrt{231}i}{1078}$	0		
	0	0	$-\frac{\sqrt{770}i}{196}$	0	0	0	0	0	$-\frac{\sqrt{2310}i}{1078}$	0	0	0	$-\frac{3\sqrt{66}i}{154}$		
	0	0	0	$\frac{3\sqrt{154}i}{196}$	0	0	0	0	0	$-\frac{5\sqrt{462}i}{539}$	0	0	0		
	0	$\frac{3\sqrt{66}i}{154}$	0	0	0	0	0	$-\frac{3\sqrt{165}i}{154}$	0	0	0	0	0		
	0	0	$-\frac{9\sqrt{231}i}{1078}$	0	0	0	0	0	$-\frac{3\sqrt{77}i}{1078}$	0	0	0	0		
	0	0	0	$-\frac{17\sqrt{77}i}{1078}$	0	0	$\frac{3\sqrt{165}i}{154}$	0	0	$\frac{6\sqrt{231}i}{539}$	0	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	$-\frac{6\sqrt{231}i}{539}$	0	0	0	$-\frac{3\sqrt{165}i}{154}$		
	0	0	0	$-\frac{9\sqrt{231}i}{1078}$	0	0	0	0	0	$\frac{3\sqrt{77}i}{1078}$	0	0	0		
	0	0	0	0	$\frac{3\sqrt{66}i}{154}$	0	0	0	0	0	$\frac{3\sqrt{165}i}{154}$	0	0		
844	symmetry	$\frac{\sqrt{2}(2x^6-15x^4y^2-15x^4z^2-15x^2y^4+180x^2y^2z^2-15x^2z^4+2y^6-15y^4z^2-15y^2z^4+2z^6)}{8}$													

continued ...

Table 10

No.	multipole	matrix													
$\mathbb{Q}_6^{(a)}(A_{1g})$		0	0	0	0	0	0	0	$-\frac{\sqrt{154}}{616}$	0	0	0	$\frac{\sqrt{462}}{88}$	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{2310}}{616}$	0	0	0	$-\frac{\sqrt{770}}{88}$	0
		0	0	0	0	0	0	0	0	0	$-\frac{5\sqrt{77}}{308}$	0	0	0	$\frac{\sqrt{55}}{44}$
		0	0	0	0	0	0	$-\frac{\sqrt{55}}{44}$	0	0	0	$\frac{5\sqrt{77}}{308}$	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{770}}{88}$	0	0	0	$-\frac{\sqrt{2310}}{616}$	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{462}}{88}$	0	0	0	$\frac{\sqrt{154}}{616}$	0
		0	0	0	$-\frac{\sqrt{55}}{44}$	0	0	$-\frac{\sqrt{231}}{1848}$	0	0	0	$\frac{\sqrt{165}}{88}$	0	0	0
		$-\frac{\sqrt{154}}{616}$	0	0	0	$\frac{\sqrt{770}}{88}$	0	0	$\frac{5\sqrt{231}}{1848}$	0	0	0	$-\frac{\sqrt{77}}{88}$	0	0
		0	$\frac{\sqrt{2310}}{616}$	0	0	0	$-\frac{\sqrt{462}}{88}$	0	0	$-\frac{3\sqrt{231}}{616}$	0	0	0	$-\frac{\sqrt{77}}{88}$	0
		0	0	$-\frac{5\sqrt{77}}{308}$	0	0	0	0	0	0	$\frac{5\sqrt{231}}{1848}$	0	0	0	$\frac{\sqrt{165}}{88}$
		0	0	0	$\frac{5\sqrt{77}}{308}$	0	0	$\frac{\sqrt{165}}{88}$	0	0	0	$\frac{5\sqrt{231}}{1848}$	0	0	0
		$\frac{\sqrt{462}}{88}$	0	0	0	$-\frac{\sqrt{2310}}{616}$	0	0	$-\frac{\sqrt{77}}{88}$	0	0	0	$-\frac{3\sqrt{231}}{616}$	0	0
		0	$-\frac{\sqrt{770}}{88}$	0	0	0	$\frac{\sqrt{154}}{616}$	0	0	$-\frac{\sqrt{77}}{88}$	0	0	0	$\frac{5\sqrt{231}}{1848}$	0
		0	0	$\frac{\sqrt{55}}{44}$	0	0	0	0	0	0	$\frac{\sqrt{165}}{88}$	0	0	0	$-\frac{\sqrt{231}}{1848}$
845	symmetry	$-\frac{\sqrt{2310}(x-y)(x+y)(x-z)(x+z)(y-z)(y+z)}{8}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_6^{(a)}(A_{2g})$		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{6}}{24}$	0	0	0	$-\frac{\sqrt{210}}{56}$
		0	0	0	0	0	0	$-\frac{\sqrt{42}}{168}$	0	0	0	$-\frac{\sqrt{30}}{24}$	0	0	0
		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	0	0	0	0	0	0	$\frac{\sqrt{30}}{24}$	0	0	0	$\frac{\sqrt{42}}{168}$
		0	0	0	0	0	0	$\frac{\sqrt{210}}{56}$	0	0	0	$-\frac{\sqrt{6}}{24}$	0	0	0
		0	$-\frac{\sqrt{42}}{168}$	0	0	0	$\frac{\sqrt{210}}{56}$	0	0	$\frac{\sqrt{105}}{168}$	0	0	0	$-\frac{\sqrt{35}}{56}$	0
		0	0	$\frac{\sqrt{3}}{12}$	0	0	0	0	0	0	$-\frac{1}{8}$	0	0	0	$-\frac{\sqrt{35}}{56}$
		0	0	0	$-\frac{1}{4}$	0	0	$\frac{\sqrt{105}}{168}$	0	0	0	$\frac{\sqrt{3}}{24}$	0	0	0
		$\frac{\sqrt{6}}{24}$	0	0	0	$\frac{\sqrt{30}}{24}$	0	0	$-\frac{1}{8}$	0	0	0	$\frac{\sqrt{3}}{24}$	0	0
		0	$-\frac{\sqrt{30}}{24}$	0	0	0	$-\frac{\sqrt{6}}{24}$	0	0	$\frac{\sqrt{3}}{24}$	0	0	0	$-\frac{1}{8}$	0
		0	0	$\frac{1}{4}$	0	0	0	0	0	0	$\frac{\sqrt{3}}{24}$	0	0	0	$\frac{\sqrt{105}}{168}$
		0	0	0	$-\frac{\sqrt{3}}{12}$	0	0	$-\frac{\sqrt{35}}{56}$	0	0	0	$-\frac{1}{8}$	0	0	0
		$-\frac{\sqrt{210}}{56}$	0	0	0	$\frac{\sqrt{42}}{168}$	0	0	$-\frac{\sqrt{35}}{56}$	0	0	0	$\frac{\sqrt{105}}{168}$	0	0
846	symmetry	$-\frac{\sqrt{14}(x^6-15x^4z^2+15x^2z^4+y^6-15y^4z^2+15y^2z^4-2z^6)}{8}$													

*continued ...*



Table 10

No.	multipole	matrix													
$\mathbb{Q}_{6,1}^{(a)}(E_g)$		0	0	0	0	0	0	0	$-\frac{\sqrt{22}}{88}$	0	0	0	$-\frac{\sqrt{66}}{88}$	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{330}}{88}$	0	0	0	$\frac{\sqrt{110}}{88}$	0
		0	0	0	0	0	0	0	0	0	$-\frac{5\sqrt{11}}{44}$	0	0	0	$-\frac{\sqrt{385}}{308}$
		0	0	0	0	0	0	$\frac{\sqrt{385}}{308}$	0	0	0	$\frac{5\sqrt{11}}{44}$	0	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{110}}{88}$	0	0	0	$-\frac{\sqrt{330}}{88}$	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{66}}{88}$	0	0	0	$\frac{\sqrt{22}}{88}$	0
		0	0	0	$\frac{\sqrt{385}}{308}$	0	0	$-\frac{\sqrt{33}}{264}$	0	0	0	$-\frac{\sqrt{1155}}{616}$	0	0	0
		$-\frac{\sqrt{22}}{88}$	0	0	0	$-\frac{\sqrt{110}}{88}$	0	0	$\frac{5\sqrt{33}}{264}$	0	0	0	$\frac{\sqrt{11}}{88}$	0	0
		0	$\frac{\sqrt{330}}{88}$	0	0	0	$\frac{\sqrt{66}}{88}$	0	0	$-\frac{3\sqrt{33}}{88}$	0	0	0	$\frac{\sqrt{11}}{88}$	0
		0	0	$-\frac{5\sqrt{11}}{44}$	0	0	0	0	0	$\frac{5\sqrt{33}}{264}$	0	0	0	0	$-\frac{\sqrt{1155}}{616}$
		0	0	0	$\frac{5\sqrt{11}}{44}$	0	0	$-\frac{\sqrt{1155}}{616}$	0	0	0	$\frac{5\sqrt{33}}{264}$	0	0	0
		$-\frac{\sqrt{66}}{88}$	0	0	0	$-\frac{\sqrt{330}}{88}$	0	0	$\frac{\sqrt{11}}{88}$	0	0	0	$-\frac{3\sqrt{33}}{88}$	0	0
		0	$\frac{\sqrt{110}}{88}$	0	0	0	$\frac{\sqrt{22}}{88}$	0	0	$\frac{\sqrt{11}}{88}$	0	0	0	$\frac{5\sqrt{33}}{264}$	0
		0	0	$-\frac{\sqrt{385}}{308}$	0	0	0	0	0	0	$-\frac{\sqrt{1155}}{616}$	0	0	0	$-\frac{\sqrt{33}}{264}$
	847	symmetry	$\frac{\sqrt{42}(x-y)(x+y)\left(x^4-9x^2y^2-5x^2z^2+y^4-5y^2z^2+5z^4\right)}{8}$												

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{6,2}^{(a)}(E_g)$		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{330}}{264}$	0	0	0	$-\frac{\sqrt{462}}{56}$
		0	0	0	0	0	0	$\frac{\sqrt{2310}}{1848}$	0	0	0	$\frac{5\sqrt{66}}{264}$	0	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{165}}{132}$	0	0	0	$-\frac{\sqrt{55}}{44}$	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{55}}{44}$	0	0	0	$\frac{\sqrt{165}}{132}$	0
		0	0	0	0	0	0	0	0	0	$-\frac{5\sqrt{66}}{264}$	0	0	0	$-\frac{\sqrt{2310}}{1848}$
		0	0	0	0	0	0	$\frac{\sqrt{462}}{56}$	0	0	0	$\frac{\sqrt{330}}{264}$	0	0	0
		0	$\frac{\sqrt{2310}}{1848}$	0	0	0	$\frac{\sqrt{462}}{56}$	0	0	$-\frac{5\sqrt{231}}{1848}$	0	0	0	$-\frac{\sqrt{77}}{56}$	0
		0	0	$-\frac{\sqrt{165}}{132}$	0	0	0	0	0	0	$\frac{\sqrt{55}}{88}$	0	0	0	$-\frac{\sqrt{77}}{56}$
		0	0	0	$\frac{\sqrt{55}}{44}$	0	0	$-\frac{5\sqrt{231}}{1848}$	0	0	0	$-\frac{\sqrt{165}}{264}$	0	0	0
		$-\frac{\sqrt{330}}{264}$	0	0	0	$-\frac{5\sqrt{66}}{264}$	0	0	$\frac{\sqrt{55}}{88}$	0	0	0	$-\frac{\sqrt{165}}{264}$	0	0
		0	$\frac{5\sqrt{66}}{264}$	0	0	0	$\frac{\sqrt{330}}{264}$	0	0	$-\frac{\sqrt{165}}{264}$	0	0	0	$\frac{\sqrt{55}}{88}$	0
		0	0	$-\frac{\sqrt{55}}{44}$	0	0	0	0	0	$-\frac{\sqrt{165}}{264}$	0	0	0	$-\frac{5\sqrt{231}}{1848}$	0
		0	0	0	$\frac{\sqrt{165}}{132}$	0	0	$-\frac{\sqrt{77}}{56}$	0	0	0	$\frac{\sqrt{55}}{88}$	0	0	0
		$-\frac{\sqrt{462}}{56}$	0	0	0	$-\frac{\sqrt{2310}}{1848}$	0	0	$-\frac{\sqrt{77}}{56}$	0	0	0	$-\frac{5\sqrt{231}}{1848}$	0	0
848	symmetry	$\frac{3\sqrt{7}yz(y-z)(y+z)(10x^2-y^2-z^2)}{4}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{6,1}^{(a)}(T_{1g})$		0	0	0	0	0	0	$\frac{\sqrt{77}i}{1232}$	0	$\frac{\sqrt{33}i}{176}$	0	$-\frac{3\sqrt{55}i}{176}$	0	$-\frac{\sqrt{11}i}{16}$	0
		0	0	0	0	0	0	$-\frac{\sqrt{55}i}{176}$	0	$-\frac{5\sqrt{11}i}{176}$	0	$\frac{3\sqrt{165}i}{176}$	0	$\frac{\sqrt{385}i}{112}$	
		0	0	0	0	0	0	$-\frac{3\sqrt{770}i}{1232}$	0	$\frac{\sqrt{330}i}{176}$	0	$\frac{5\sqrt{22}i}{176}$	0	$-\frac{3\sqrt{110}i}{176}$	0
		0	0	0	0	0	0	$\frac{3\sqrt{110}i}{176}$	0	$-\frac{5\sqrt{22}i}{176}$	0	$-\frac{\sqrt{330}i}{176}$	0	$\frac{3\sqrt{770}i}{1232}$	
		0	0	0	0	0	0	$-\frac{\sqrt{385}i}{112}$	0	$-\frac{3\sqrt{165}i}{176}$	0	$\frac{5\sqrt{11}i}{176}$	0	$\frac{\sqrt{55}i}{176}$	0
		0	0	0	0	0	0	0	$\frac{\sqrt{11}i}{16}$	0	$\frac{3\sqrt{55}i}{176}$	0	$-\frac{\sqrt{33}i}{176}$	0	$-\frac{\sqrt{77}i}{1232}$
		$-\frac{\sqrt{77}i}{1232}$	0	$\frac{3\sqrt{770}i}{1232}$	0	$\frac{\sqrt{385}i}{112}$	0	0	$\frac{\sqrt{462}i}{1232}$	0	$-\frac{\sqrt{2310}i}{616}$	0	$-\frac{\sqrt{154}i}{112}$	0	0
		0	$\frac{\sqrt{55}i}{176}$	0	$-\frac{3\sqrt{110}i}{176}$	0	$-\frac{\sqrt{11}i}{16}$	$-\frac{\sqrt{462}i}{1232}$	0	$-\frac{\sqrt{22}i}{88}$	0	$\frac{\sqrt{330}i}{176}$	0	0	0
		$-\frac{\sqrt{33}i}{176}$	0	$-\frac{\sqrt{330}i}{176}$	0	$\frac{3\sqrt{165}i}{176}$	0	0	$\frac{\sqrt{22}i}{88}$	0	$\frac{\sqrt{110}i}{176}$	0	0	0	$\frac{\sqrt{154}i}{112}$
		0	$\frac{5\sqrt{11}i}{176}$	0	$\frac{5\sqrt{22}i}{176}$	0	$-\frac{3\sqrt{55}i}{176}$	$\frac{\sqrt{2310}i}{616}$	0	$-\frac{\sqrt{110}i}{176}$	0	0	0	$-\frac{\sqrt{330}i}{176}$	0
		$\frac{3\sqrt{55}i}{176}$	0	$-\frac{5\sqrt{22}i}{176}$	0	$-\frac{5\sqrt{11}i}{176}$	0	0	$-\frac{\sqrt{330}i}{176}$	0	0	0	$-\frac{\sqrt{110}i}{176}$	0	$\frac{\sqrt{2310}i}{616}$
		0	$-\frac{3\sqrt{165}i}{176}$	0	$\frac{\sqrt{330}i}{176}$	0	$\frac{\sqrt{33}i}{176}$	$\frac{\sqrt{154}i}{112}$	0	0	0	$\frac{\sqrt{110}i}{176}$	0	$\frac{\sqrt{22}i}{88}$	0
		$\frac{\sqrt{11}i}{16}$	0	$\frac{3\sqrt{110}i}{176}$	0	$-\frac{\sqrt{55}i}{176}$	0	0	0	0	$\frac{\sqrt{330}i}{176}$	0	$-\frac{\sqrt{22}i}{88}$	0	$-\frac{\sqrt{462}i}{1232}$
		0	$-\frac{\sqrt{385}i}{112}$	0	$-\frac{3\sqrt{770}i}{1232}$	0	$\frac{\sqrt{77}i}{1232}$	0	0	$-\frac{\sqrt{154}i}{112}$	0	$-\frac{\sqrt{2310}i}{616}$	0	$\frac{\sqrt{462}i}{1232}$	0
849	symmetry	$\frac{3\sqrt{7}xz(x-z)(x+z)(x^2-10y^2+z^2)}{4}$													

*continued ...*

Table 10

No.	multipole	matrix													
$Q_{6,2}^{(a)}(T_{1g})$		0	0	0	0	0	0	$-\frac{\sqrt{77}}{1232}$	0	$\frac{\sqrt{33}}{176}$	0	$\frac{3\sqrt{55}}{176}$	0	$-\frac{\sqrt{11}}{16}$	0
		0	0	0	0	0	0	0	$\frac{\sqrt{55}}{176}$	0	$-\frac{5\sqrt{11}}{176}$	0	$-\frac{3\sqrt{165}}{176}$	0	$\frac{\sqrt{385}}{112}$
		0	0	0	0	0	0	$-\frac{3\sqrt{770}}{1232}$	0	$-\frac{\sqrt{330}}{176}$	0	$\frac{5\sqrt{22}}{176}$	0	$\frac{3\sqrt{110}}{176}$	0
		0	0	0	0	0	0	0	$\frac{3\sqrt{110}}{176}$	0	$\frac{5\sqrt{22}}{176}$	0	$-\frac{\sqrt{330}}{176}$	0	$-\frac{3\sqrt{770}}{1232}$
		0	0	0	0	0	0	$\frac{\sqrt{385}}{112}$	0	$-\frac{3\sqrt{165}}{176}$	0	$-\frac{5\sqrt{11}}{176}$	0	$\frac{\sqrt{55}}{176}$	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{11}}{16}$	0	$\frac{3\sqrt{55}}{176}$	0	$\frac{\sqrt{33}}{176}$	0	$-\frac{\sqrt{77}}{1232}$
		$-\frac{\sqrt{77}}{1232}$	0	$-\frac{3\sqrt{770}}{1232}$	0	$\frac{\sqrt{385}}{112}$	0	0	$\frac{\sqrt{462}}{1232}$	0	$\frac{\sqrt{2310}}{616}$	0	$-\frac{\sqrt{154}}{112}$	0	0
		0	$\frac{\sqrt{55}}{176}$	0	$\frac{3\sqrt{110}}{176}$	0	$-\frac{\sqrt{11}}{16}$	$\frac{\sqrt{462}}{1232}$	0	$-\frac{\sqrt{22}}{88}$	0	$-\frac{\sqrt{330}}{176}$	0	0	0
		$\frac{\sqrt{33}}{176}$	0	$-\frac{\sqrt{330}}{176}$	0	$-\frac{3\sqrt{165}}{176}$	0	0	$-\frac{\sqrt{22}}{88}$	0	$\frac{\sqrt{110}}{176}$	0	0	0	$\frac{\sqrt{154}}{112}$
		0	$-\frac{5\sqrt{11}}{176}$	0	$\frac{5\sqrt{22}}{176}$	0	$\frac{3\sqrt{55}}{176}$	$\frac{\sqrt{2310}}{616}$	0	$\frac{\sqrt{110}}{176}$	0	0	0	$\frac{\sqrt{330}}{176}$	0
		$\frac{3\sqrt{55}}{176}$	0	$\frac{5\sqrt{22}}{176}$	0	$-\frac{5\sqrt{11}}{176}$	0	0	$-\frac{\sqrt{330}}{176}$	0	0	0	$-\frac{\sqrt{110}}{176}$	0	$-\frac{\sqrt{2310}}{616}$
		0	$-\frac{3\sqrt{165}}{176}$	0	$-\frac{\sqrt{330}}{176}$	0	$\frac{\sqrt{33}}{176}$	$-\frac{\sqrt{154}}{112}$	0	0	0	$-\frac{\sqrt{110}}{176}$	0	$\frac{\sqrt{22}}{88}$	0
		$-\frac{\sqrt{11}}{16}$	0	$\frac{3\sqrt{110}}{176}$	0	$\frac{\sqrt{55}}{176}$	0	0	0	0	$\frac{\sqrt{330}}{176}$	0	$\frac{\sqrt{22}}{88}$	0	$-\frac{\sqrt{462}}{1232}$
		0	$\frac{\sqrt{385}}{112}$	0	$-\frac{3\sqrt{770}}{1232}$	0	$-\frac{\sqrt{77}}{1232}$	0	0	$\frac{\sqrt{154}}{112}$	0	$-\frac{\sqrt{2310}}{616}$	0	$-\frac{\sqrt{462}}{1232}$	0
850	symmetry	$-\frac{3\sqrt{7}xy(x-y)(x+y)(x^2+y^2-10z^2)}{4}$													

continued ...

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{6,3}^{(a)}(T_{1g})$		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	
851	symmetry	$\frac{\sqrt{462}yz(y^2-3z^2)(3y^2-z^2)}{16}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{6,1}^{(a)}(T_{2g}, 1)$		0	0	0	0	0	0	$\frac{\sqrt{42}i}{448}$	0	$\frac{3\sqrt{2}i}{64}$	0	$\frac{\sqrt{30}i}{64}$	0	$\frac{\sqrt{6}i}{64}$	0
		0	0	0	0	0	0	$-\frac{\sqrt{30}i}{64}$	0	$-\frac{5\sqrt{6}i}{64}$	0	$-\frac{3\sqrt{10}i}{64}$	0	$-\frac{\sqrt{210}i}{448}$	
		0	0	0	0	0	0	$\frac{\sqrt{105}i}{224}$	0	$\frac{3\sqrt{5}i}{32}$	0	$\frac{5\sqrt{3}i}{32}$	0	$\frac{\sqrt{15}i}{32}$	0
		0	0	0	0	0	0	$-\frac{\sqrt{15}i}{32}$	0	$-\frac{5\sqrt{3}i}{32}$	0	$-\frac{3\sqrt{5}i}{32}$	0	$-\frac{\sqrt{105}i}{224}$	
		0	0	0	0	0	0	$\frac{\sqrt{210}i}{448}$	0	$\frac{3\sqrt{10}i}{64}$	0	$\frac{5\sqrt{6}i}{64}$	0	$\frac{\sqrt{30}i}{64}$	0
		0	0	0	0	0	0	$-\frac{\sqrt{6}i}{64}$	0	$-\frac{\sqrt{30}i}{64}$	0	$-\frac{3\sqrt{2}i}{64}$	0	$-\frac{\sqrt{42}i}{448}$	
		$-\frac{\sqrt{42}i}{448}$	0	$-\frac{\sqrt{105}i}{224}$	0	$-\frac{\sqrt{210}i}{448}$	0	0	$\frac{3\sqrt{7}i}{224}$	0	$\frac{\sqrt{35}i}{112}$	0	$\frac{\sqrt{21}i}{224}$	0	0
		0	$\frac{\sqrt{30}i}{64}$	0	$\frac{\sqrt{15}i}{32}$	0	$\frac{\sqrt{6}i}{64}$	$-\frac{3\sqrt{7}i}{224}$	0	$-\frac{\sqrt{3}i}{16}$	0	$-\frac{\sqrt{5}i}{32}$	0	0	0
		$-\frac{3\sqrt{2}i}{64}$	0	$-\frac{3\sqrt{5}i}{32}$	0	$-\frac{3\sqrt{10}i}{64}$	0	0	$\frac{\sqrt{3}i}{16}$	0	$\frac{\sqrt{15}i}{32}$	0	0	0	$-\frac{\sqrt{21}i}{224}$
		0	$\frac{5\sqrt{6}i}{64}$	0	$\frac{5\sqrt{3}i}{32}$	0	$\frac{\sqrt{30}i}{64}$	$-\frac{\sqrt{35}i}{112}$	0	$-\frac{\sqrt{15}i}{32}$	0	0	0	$\frac{\sqrt{5}i}{32}$	0
		$-\frac{\sqrt{30}i}{64}$	0	$-\frac{5\sqrt{3}i}{32}$	0	$-\frac{5\sqrt{6}i}{64}$	0	0	$\frac{\sqrt{5}i}{32}$	0	0	0	$-\frac{\sqrt{15}i}{32}$	0	$-\frac{\sqrt{35}i}{112}$
		0	$\frac{3\sqrt{10}i}{64}$	0	$\frac{3\sqrt{5}i}{32}$	0	$\frac{3\sqrt{2}i}{64}$	$-\frac{\sqrt{21}i}{224}$	0	0	0	$\frac{\sqrt{15}i}{32}$	0	$\frac{\sqrt{3}i}{16}$	0
		$-\frac{\sqrt{6}i}{64}$	0	$-\frac{\sqrt{15}i}{32}$	0	$-\frac{\sqrt{30}i}{64}$	0	0	0	0	$-\frac{\sqrt{5}i}{32}$	0	$-\frac{\sqrt{3}i}{16}$	0	$-\frac{3\sqrt{7}i}{224}$
		0	$\frac{\sqrt{210}i}{448}$	0	$\frac{\sqrt{105}i}{224}$	0	$\frac{\sqrt{42}i}{448}$	0	0	$\frac{\sqrt{21}i}{224}$	0	$\frac{\sqrt{35}i}{112}$	0	$\frac{3\sqrt{7}i}{224}$	0
852	symmetry	$\frac{\sqrt{462}xz(x^2-3z^2)(3x^2-z^2)}{16}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{6,2}^{(a)}(T_{2g}, 1)$		0	0	0	0	0	0	$\frac{\sqrt{42}}{448}$	0	$-\frac{3\sqrt{2}}{64}$	0	$\frac{\sqrt{30}}{64}$	0	$-\frac{\sqrt{6}}{64}$	0
		0	0	0	0	0	0	$-\frac{\sqrt{30}}{64}$	0	$\frac{5\sqrt{6}}{64}$	0	$-\frac{3\sqrt{10}}{64}$	0	$\frac{\sqrt{210}}{448}$	
		0	0	0	0	0	0	$-\frac{\sqrt{105}}{224}$	0	$\frac{3\sqrt{5}}{32}$	0	$-\frac{5\sqrt{3}}{32}$	0	$\frac{\sqrt{15}}{32}$	0
		0	0	0	0	0	0	$\frac{\sqrt{15}}{32}$	0	$-\frac{5\sqrt{3}}{32}$	0	$\frac{3\sqrt{5}}{32}$	0	$-\frac{\sqrt{105}}{224}$	
		0	0	0	0	0	0	$\frac{\sqrt{210}}{448}$	0	$-\frac{3\sqrt{10}}{64}$	0	$\frac{5\sqrt{6}}{64}$	0	$-\frac{\sqrt{30}}{64}$	0
		0	0	0	0	0	0	$-\frac{\sqrt{6}}{64}$	0	$\frac{\sqrt{30}}{64}$	0	$-\frac{3\sqrt{2}}{64}$	0	$\frac{\sqrt{42}}{448}$	
		$\frac{\sqrt{42}}{448}$	0	$-\frac{\sqrt{105}}{224}$	0	$\frac{\sqrt{210}}{448}$	0	0	$-\frac{3\sqrt{7}}{224}$	0	$\frac{\sqrt{35}}{112}$	0	$-\frac{\sqrt{21}}{224}$	0	0
		0	$-\frac{\sqrt{30}}{64}$	0	$\frac{\sqrt{15}}{32}$	0	$-\frac{\sqrt{6}}{64}$	$-\frac{3\sqrt{7}}{224}$	0	$\frac{\sqrt{3}}{16}$	0	$-\frac{\sqrt{5}}{32}$	0	0	0
		$-\frac{3\sqrt{2}}{64}$	0	$\frac{3\sqrt{5}}{32}$	0	$-\frac{3\sqrt{10}}{64}$	0	0	$\frac{\sqrt{3}}{16}$	0	$-\frac{\sqrt{15}}{32}$	0	0	0	$\frac{\sqrt{21}}{224}$
		0	$\frac{5\sqrt{6}}{64}$	0	$-\frac{5\sqrt{3}}{32}$	0	$\frac{\sqrt{30}}{64}$	$\frac{\sqrt{35}}{112}$	0	$-\frac{\sqrt{15}}{32}$	0	0	0	$\frac{\sqrt{5}}{32}$	0
		$\frac{\sqrt{30}}{64}$	0	$-\frac{5\sqrt{3}}{32}$	0	$\frac{5\sqrt{6}}{64}$	0	0	$-\frac{\sqrt{5}}{32}$	0	0	0	$\frac{\sqrt{15}}{32}$	0	$-\frac{\sqrt{35}}{112}$
		0	$-\frac{3\sqrt{10}}{64}$	0	$\frac{3\sqrt{5}}{32}$	0	$-\frac{3\sqrt{2}}{64}$	$-\frac{\sqrt{21}}{224}$	0	0	0	$\frac{\sqrt{15}}{32}$	0	$-\frac{\sqrt{3}}{16}$	0
		$-\frac{\sqrt{6}}{64}$	0	$\frac{\sqrt{15}}{32}$	0	$-\frac{\sqrt{30}}{64}$	0	0	0	0	$\frac{\sqrt{5}}{32}$	0	$-\frac{\sqrt{3}}{16}$	0	$\frac{3\sqrt{7}}{224}$
		0	$\frac{\sqrt{210}}{448}$	0	$-\frac{\sqrt{105}}{224}$	0	$\frac{\sqrt{42}}{448}$	0	0	$\frac{\sqrt{21}}{224}$	0	$-\frac{\sqrt{35}}{112}$	0	$\frac{3\sqrt{7}}{224}$	0
853	symmetry	$\frac{\sqrt{462}xy(x^2-3y^2)(3x^2-y^2)}{16}$													

*continued ...*

Table 10

No.	multipole	matrix															
$\mathbb{Q}_{6,3}^{(a)}(T_{2g}, 1)$		0	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{42i}}{14}$		
		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	$\frac{\sqrt{42i}}{14}$	0	0	0	0	0	0	0	0	
		0	0	0	0	0	$-\frac{\sqrt{42i}}{14}$	0	0	0	0	0	0	$\frac{\sqrt{7i}}{14}$	0		
		0	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{7i}}{14}$		
		0	0	0	0	0	0	0	0	0	0	0	0	0	0		
		0	0	0	0	0	0	0	0	0	0	0	0	0	0		
		0	0	0	0	0	0	0	0	0	0	0	0	0	0		
		0	0	0	0	0	0	0	0	0	0	0	0	0	0		
		0	0	0	0	0	0	0	0	0	0	0	0	0	0		
		0	0	0	0	0	0	$-\frac{\sqrt{7i}}{14}$	0	0	0	0	0	0	0		
		$-\frac{\sqrt{42i}}{14}$	0	0	0	0	0	0	$-\frac{\sqrt{7i}}{14}$	0	0	0	0	0	0		
854	symmetry	$\frac{\sqrt{210}yz(16x^4-16x^2y^2-16x^2z^2+y^4+2y^2z^2+z^4)}{16}$															

*continued ...*



Table 10

No.	multipole	matrix													
$\mathbb{Q}_{6,1}^{(a)}(T_{2g}, 2)$		0	0	0	0	0	0	$\frac{\sqrt{2310}i}{14784}$	0	$\frac{\sqrt{110}i}{704}$	0	$-\frac{9\sqrt{66}i}{704}$	0	$\frac{\sqrt{330}i}{64}$	0
		0	0	0	0	0	0	$-\frac{5\sqrt{66}i}{2112}$	0	$-\frac{5\sqrt{330}i}{2112}$	0	$\frac{27\sqrt{22}i}{704}$	0	$-\frac{5\sqrt{462}i}{448}$	
		0	0	0	0	0	0	$-\frac{9\sqrt{231}i}{2464}$	0	$\frac{5\sqrt{11}i}{352}$	0	$\frac{5\sqrt{165}i}{1056}$	0	$-\frac{9\sqrt{33}i}{352}$	0
		0	0	0	0	0	0	$\frac{9\sqrt{33}i}{352}$	0	$-\frac{5\sqrt{165}i}{1056}$	0	$-\frac{5\sqrt{11}i}{352}$	0	$\frac{9\sqrt{231}i}{2464}$	
		0	0	0	0	0	0	$\frac{5\sqrt{462}i}{448}$	0	$-\frac{27\sqrt{22}i}{704}$	0	$\frac{5\sqrt{330}i}{2112}$	0	$\frac{5\sqrt{66}i}{2112}$	0
		0	0	0	0	0	0	$-\frac{\sqrt{330}i}{64}$	0	$\frac{9\sqrt{66}i}{704}$	0	$-\frac{\sqrt{110}i}{704}$	0	$-\frac{\sqrt{2310}i}{14784}$	
		$-\frac{\sqrt{2310}i}{14784}$	0	$\frac{9\sqrt{231}i}{2464}$	0	$-\frac{5\sqrt{462}i}{448}$	0	0	$\frac{\sqrt{385}i}{2464}$	0	$-\frac{9\sqrt{77}i}{1232}$	0	$\frac{\sqrt{1155}i}{224}$	0	0
		0	$\frac{5\sqrt{66}i}{2112}$	0	$-\frac{9\sqrt{33}i}{352}$	0	$\frac{\sqrt{330}i}{64}$	$-\frac{\sqrt{385}i}{2464}$	0	$-\frac{\sqrt{165}i}{528}$	0	$\frac{9\sqrt{11}i}{352}$	0	0	0
		$-\frac{\sqrt{110}i}{704}$	0	$-\frac{5\sqrt{11}i}{352}$	0	$\frac{27\sqrt{22}i}{704}$	0	0	$\frac{\sqrt{165}i}{528}$	0	$\frac{5\sqrt{33}i}{1056}$	0	0	0	$-\frac{\sqrt{1155}i}{224}$
		0	$\frac{5\sqrt{330}i}{2112}$	0	$\frac{5\sqrt{165}i}{1056}$	0	$-\frac{9\sqrt{66}i}{704}$	$\frac{9\sqrt{77}i}{1232}$	0	$-\frac{5\sqrt{33}i}{1056}$	0	0	0	$-\frac{9\sqrt{11}i}{352}$	0
		$\frac{9\sqrt{66}i}{704}$	0	$-\frac{5\sqrt{165}i}{1056}$	0	$-\frac{5\sqrt{330}i}{2112}$	0	0	$-\frac{9\sqrt{11}i}{352}$	0	0	0	$-\frac{5\sqrt{33}i}{1056}$	0	$\frac{9\sqrt{77}i}{1232}$
		0	$-\frac{27\sqrt{22}i}{704}$	0	$\frac{5\sqrt{11}i}{352}$	0	$\frac{\sqrt{110}i}{704}$	$-\frac{\sqrt{1155}i}{224}$	0	0	0	$\frac{5\sqrt{33}i}{1056}$	0	$\frac{\sqrt{165}i}{528}$	0
		$-\frac{\sqrt{330}i}{64}$	0	$\frac{9\sqrt{33}i}{352}$	0	$-\frac{5\sqrt{66}i}{2112}$	0	0	0	0	$\frac{9\sqrt{11}i}{352}$	0	$-\frac{\sqrt{165}i}{528}$	0	$-\frac{\sqrt{385}i}{2464}$
		0	$\frac{5\sqrt{462}i}{448}$	0	$-\frac{9\sqrt{231}i}{2464}$	0	$\frac{\sqrt{2310}i}{14784}$	0	0	$\frac{\sqrt{1155}i}{224}$	0	$-\frac{9\sqrt{77}i}{1232}$	0	$\frac{\sqrt{385}i}{2464}$	0
855	symmetry	$\frac{\sqrt{210}xz(x^4 - 16x^2y^2 + 2x^2z^2 + 16y^4 - 16y^2z^2 + z^4)}{16}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{6,2}^{(a)}(T_{2g}, 2)$		0	0	0	0	0	0	$\frac{\sqrt{2310}}{14784}$	0	$-\frac{\sqrt{110}}{704}$	0	$-\frac{9\sqrt{66}}{704}$	0	$-\frac{\sqrt{330}}{64}$	0
		0	0	0	0	0	0	$-\frac{5\sqrt{66}}{2112}$	0	$\frac{5\sqrt{330}}{2112}$	0	$\frac{27\sqrt{22}}{704}$	0	$\frac{5\sqrt{462}}{448}$	
		0	0	0	0	0	0	$\frac{9\sqrt{231}}{2464}$	0	$\frac{5\sqrt{11}}{352}$	0	$-\frac{5\sqrt{165}}{1056}$	0	$-\frac{9\sqrt{33}}{352}$	0
		0	0	0	0	0	0	$-\frac{9\sqrt{33}}{352}$	0	$-\frac{5\sqrt{165}}{1056}$	0	$\frac{5\sqrt{11}}{352}$	0	$\frac{9\sqrt{231}}{2464}$	
		0	0	0	0	0	0	$\frac{5\sqrt{462}}{448}$	0	$\frac{27\sqrt{22}}{704}$	0	$\frac{5\sqrt{330}}{2112}$	0	$-\frac{5\sqrt{66}}{2112}$	0
		0	0	0	0	0	0	$-\frac{\sqrt{330}}{64}$	0	$-\frac{9\sqrt{66}}{704}$	0	$-\frac{\sqrt{110}}{704}$	0	$\frac{\sqrt{2310}}{14784}$	
		$\frac{\sqrt{2310}}{14784}$	0	$\frac{9\sqrt{231}}{2464}$	0	$\frac{5\sqrt{462}}{448}$	0	0	$-\frac{\sqrt{385}}{2464}$	0	$-\frac{9\sqrt{77}}{1232}$	0	$-\frac{\sqrt{1155}}{224}$	0	0
		0	$-\frac{5\sqrt{66}}{2112}$	0	$-\frac{9\sqrt{33}}{352}$	0	$-\frac{\sqrt{330}}{64}$	$-\frac{\sqrt{385}}{2464}$	0	$\frac{\sqrt{165}}{528}$	0	$\frac{9\sqrt{11}}{352}$	0	0	0
		$-\frac{\sqrt{110}}{704}$	0	$\frac{5\sqrt{11}}{352}$	0	$\frac{27\sqrt{22}}{704}$	0	0	$\frac{\sqrt{165}}{528}$	0	$-\frac{5\sqrt{33}}{1056}$	0	0	0	$\frac{\sqrt{1155}}{224}$
		0	$\frac{5\sqrt{330}}{2112}$	0	$-\frac{5\sqrt{165}}{1056}$	0	$-\frac{9\sqrt{66}}{704}$	$-\frac{9\sqrt{77}}{1232}$	0	$-\frac{5\sqrt{33}}{1056}$	0	0	0	$-\frac{9\sqrt{11}}{352}$	0
		$-\frac{9\sqrt{66}}{704}$	0	$-\frac{5\sqrt{165}}{1056}$	0	$\frac{5\sqrt{330}}{2112}$	0	0	$\frac{9\sqrt{11}}{352}$	0	0	0	$\frac{5\sqrt{33}}{1056}$	0	$\frac{9\sqrt{77}}{1232}$
		0	$\frac{27\sqrt{22}}{704}$	0	$\frac{5\sqrt{11}}{352}$	0	$-\frac{\sqrt{110}}{704}$	$-\frac{\sqrt{1155}}{224}$	0	0	0	$\frac{5\sqrt{33}}{1056}$	0	$-\frac{\sqrt{165}}{528}$	0
		$-\frac{\sqrt{330}}{64}$	0	$-\frac{9\sqrt{33}}{352}$	0	$-\frac{5\sqrt{66}}{2112}$	0	0	0	0	$-\frac{9\sqrt{11}}{352}$	0	$-\frac{\sqrt{165}}{528}$	0	$\frac{\sqrt{385}}{2464}$
		0	$\frac{5\sqrt{462}}{448}$	0	$\frac{9\sqrt{231}}{2464}$	0	$\frac{\sqrt{2310}}{14784}$	0	0	$\frac{\sqrt{1155}}{224}$	0	$\frac{9\sqrt{77}}{1232}$	0	$\frac{\sqrt{385}}{2464}$	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													
$\mathbb{Q}_{6,3}^{(a)}(T_{2g}, 2)$		0	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	0	$-\frac{\sqrt{33}i}{33}$	0	0	0	$\frac{\sqrt{11}i}{11}$	0	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	0	$-\frac{\sqrt{330}i}{66}$	0	0	0	$\frac{\sqrt{462}i}{462}$
		0	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	0	$\frac{\sqrt{33}i}{33}$	0	0	0	0	0	0	$-\frac{\sqrt{11}i}{22}$	0	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	0
		$-\frac{\sqrt{66}i}{66}$	0	0	0	$\frac{\sqrt{330}i}{66}$	0	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	0	$-\frac{\sqrt{11}i}{11}$	0	0	0	0	0	0	$-\frac{\sqrt{33}i}{66}$	0	0	0	$\frac{\sqrt{1155}i}{462}$
		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	0	$-\frac{\sqrt{462}i}{462}$	0	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													
$\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)$		$-\frac{5\sqrt{21}}{147}$	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	$\frac{\sqrt{3}(x-y)(x+y)}{2}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)$		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
859	symmetry	$\sqrt{3}yz$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})$		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
860	symmetry	$\sqrt{3}xz$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})$		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	$-\frac{\sqrt{105}}{98}$	0	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	$-\frac{2\sqrt{21}}{49}$	0	$-\frac{3}{14}$	0
		0	0	0	0	0	$\frac{5\sqrt{6}}{56}$	0	0	0	0	0	0	$-\frac{3}{14}$	0
861	symmetry	$\sqrt{3}xy$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{2,3}^{(1,-1;a)}(T_{2g})$		0	0	$\frac{\sqrt{70}i}{98}$	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	$\frac{\sqrt{21}(x^4-3x^2y^2-3x^2z^2+y^4-3y^2z^2+z^4)}{6}$													

continued ...



Table 10

No.	multipole	matrix													
863	$\mathbb{Q}_4^{(1,-1;a)}(A_{1g})$	$\frac{1}{42}$	0	0	0	$\frac{\sqrt{5}}{42}$	0	0	$\frac{5\sqrt{6}}{84}$	0	0	0	$\frac{5\sqrt{2}}{84}$	0	0
		0	$-\frac{1}{14}$	0	0	0	$\frac{\sqrt{5}}{42}$	0	0	$-\frac{\sqrt{10}}{21}$	0	0	0	$\frac{\sqrt{30}}{42}$	0
		0	0	$\frac{1}{21}$	0	0	0	0	0	0	$-\frac{5\sqrt{3}}{84}$	0	0	0	$\frac{\sqrt{105}}{84}$
		0	0	0	$\frac{1}{21}$	0	0	$-\frac{\sqrt{105}}{84}$	0	0	0	$\frac{5\sqrt{3}}{84}$	0	0	0
		$\frac{\sqrt{5}}{42}$	0	0	0	$-\frac{1}{14}$	0	0	$-\frac{\sqrt{30}}{42}$	0	0	0	$\frac{\sqrt{10}}{21}$	0	0
		0	$\frac{\sqrt{5}}{42}$	0	0	0	$\frac{1}{42}$	0	0	$-\frac{5\sqrt{2}}{84}$	0	0	0	$-\frac{5\sqrt{6}}{84}$	0
		0	0	0	$-\frac{\sqrt{105}}{84}$	0	0	$-\frac{1}{6}$	0	0	0	$-\frac{\sqrt{35}}{42}$	0	0	0
		$\frac{5\sqrt{6}}{84}$	0	0	0	$-\frac{\sqrt{30}}{42}$	0	0	$\frac{13}{42}$	0	0	0	$-\frac{5\sqrt{3}}{42}$	0	0
		0	$-\frac{\sqrt{10}}{21}$	0	0	0	$-\frac{5\sqrt{2}}{84}$	0	0	$\frac{1}{14}$	0	0	0	$-\frac{5\sqrt{3}}{42}$	0
		0	0	$-\frac{5\sqrt{3}}{84}$	0	0	0	0	0	0	$-\frac{3}{14}$	0	0	0	$-\frac{\sqrt{35}}{42}$
		0	0	0	$\frac{5\sqrt{3}}{84}$	0	0	$-\frac{\sqrt{35}}{42}$	0	0	0	$-\frac{3}{14}$	0	0	0
		$\frac{5\sqrt{2}}{84}$	0	0	0	$\frac{\sqrt{10}}{21}$	0	0	$-\frac{5\sqrt{3}}{42}$	0	0	0	$\frac{1}{14}$	0	0
		0	$\frac{\sqrt{30}}{42}$	0	0	0	$-\frac{5\sqrt{6}}{84}$	0	0	$-\frac{5\sqrt{3}}{42}$	0	0	0	$\frac{13}{42}$	0
		0	0	$\frac{\sqrt{105}}{84}$	0	0	0	0	0	$-\frac{\sqrt{35}}{42}$	0	0	0	0	$-\frac{1}{6}$
863	symmetry	$-\frac{\sqrt{15}(x^4-12x^2y^2+6x^2z^2+y^4+6y^2z^2-2z^4)}{12}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{4,1}^{(1,-1;a)}(E_g)$		$\frac{\sqrt{35}}{294}$	0	0	0	$-\frac{\sqrt{7}}{42}$	0	0	$\frac{5\sqrt{210}}{588}$	0	0	0	$-\frac{\sqrt{70}}{84}$	0	0
		0	$-\frac{\sqrt{35}}{98}$	0	0	0	$-\frac{\sqrt{7}}{42}$	0	0	$-\frac{5\sqrt{14}}{147}$	0	0	0	$-\frac{\sqrt{42}}{42}$	0
		0	0	$\frac{\sqrt{35}}{147}$	0	0	0	0	0	$-\frac{5\sqrt{105}}{588}$	0	0	0	0	$-\frac{\sqrt{3}}{12}$
		0	0	0	$\frac{\sqrt{35}}{147}$	0	0	$\frac{\sqrt{3}}{12}$	0	0	0	$\frac{5\sqrt{105}}{588}$	0	0	0
		$-\frac{\sqrt{7}}{42}$	0	0	0	$-\frac{\sqrt{35}}{98}$	0	0	$\frac{\sqrt{42}}{42}$	0	0	0	$\frac{5\sqrt{14}}{147}$	0	0
		0	$-\frac{\sqrt{7}}{42}$	0	0	0	$\frac{\sqrt{35}}{294}$	0	0	$\frac{\sqrt{70}}{84}$	0	0	0	$-\frac{5\sqrt{210}}{588}$	0
		0	0	0	$\frac{\sqrt{3}}{12}$	0	0	$-\frac{\sqrt{35}}{42}$	0	0	0	$\frac{1}{6}$	0	0	0
		$\frac{5\sqrt{210}}{588}$	0	0	0	$\frac{\sqrt{42}}{42}$	0	0	$\frac{13\sqrt{35}}{294}$	0	0	0	$\frac{\sqrt{105}}{42}$	0	0
		0	$-\frac{5\sqrt{14}}{147}$	0	0	0	$\frac{\sqrt{70}}{84}$	0	0	$\frac{\sqrt{35}}{98}$	0	0	0	$\frac{\sqrt{105}}{42}$	0
		0	0	$-\frac{5\sqrt{105}}{588}$	0	0	0	0	0	$-\frac{3\sqrt{35}}{98}$	0	0	0	0	$\frac{1}{6}$
		0	0	0	$\frac{5\sqrt{105}}{588}$	0	0	$\frac{1}{6}$	0	0	0	$-\frac{3\sqrt{35}}{98}$	0	0	0
		$-\frac{\sqrt{70}}{84}$	0	0	0	$\frac{5\sqrt{14}}{147}$	0	0	$\frac{\sqrt{105}}{42}$	0	0	0	$\frac{\sqrt{35}}{98}$	0	0
		0	$-\frac{\sqrt{42}}{42}$	0	0	0	$-\frac{5\sqrt{210}}{588}$	0	0	$\frac{\sqrt{105}}{42}$	0	0	0	$\frac{13\sqrt{35}}{294}$	0
		0	0	$-\frac{\sqrt{3}}{12}$	0	0	0	0	0	0	$\frac{1}{6}$	0	0	0	$-\frac{\sqrt{35}}{42}$
864	symmetry	$\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{4,2}^{(1,-1;a)}(E_g)$		0	0	$-\frac{\sqrt{42}}{98}$	0	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	$\frac{\sqrt{70}}{196}$	0	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
865	symmetry	$\frac{\sqrt{35}yz(y-z)(y+z)}{2}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{4,1}^{(1,-1;a)}(T_{1g})$		0	$\frac{\sqrt{3}i}{42}$	0	$\frac{\sqrt{6}i}{84}$	0	0	$\frac{\sqrt{70}i}{112}$	0	$\frac{5\sqrt{30}i}{168}$	0	$\frac{5\sqrt{2}i}{112}$	0	0	0
		$-\frac{\sqrt{3}i}{42}$	0	$-\frac{\sqrt{30}i}{84}$	0	0	0	0	$-\frac{13\sqrt{2}i}{112}$	0	$-\frac{\sqrt{10}i}{56}$	0	$\frac{\sqrt{6}i}{48}$	0	0
		0	$\frac{\sqrt{30}i}{84}$	0	0	0	$-\frac{\sqrt{6}i}{84}$	$\frac{3\sqrt{7}i}{112}$	0	$\frac{\sqrt{3}i}{336}$	0	$-\frac{\sqrt{5}i}{16}$	0	$-\frac{i}{112}$	0
		$-\frac{\sqrt{6}i}{84}$	0	0	0	$\frac{\sqrt{30}i}{84}$	0	0	$\frac{i}{112}$	0	$\frac{\sqrt{5}i}{16}$	0	$-\frac{\sqrt{3}i}{336}$	0	$-\frac{3\sqrt{7}i}{112}$
		0	0	0	$-\frac{\sqrt{30}i}{84}$	0	$-\frac{\sqrt{3}i}{42}$	0	0	$-\frac{\sqrt{6}i}{48}$	0	$\frac{\sqrt{10}i}{56}$	0	$\frac{13\sqrt{2}i}{112}$	0
		0	0	$\frac{\sqrt{6}i}{84}$	0	$\frac{\sqrt{3}i}{42}$	0	0	0	0	$-\frac{5\sqrt{2}i}{112}$	0	$-\frac{5\sqrt{30}i}{168}$	0	$-\frac{\sqrt{70}i}{112}$
		$-\frac{\sqrt{70}i}{112}$	0	$-\frac{3\sqrt{7}i}{112}$	0	0	0	0	$-\frac{\sqrt{105}i}{42}$	0	$-\frac{\sqrt{21}i}{42}$	0	0	0	0
		0	$\frac{13\sqrt{2}i}{112}$	0	$-\frac{i}{112}$	0	0	$\frac{\sqrt{105}i}{42}$	0	$\frac{\sqrt{5}i}{14}$	0	$-\frac{\sqrt{3}i}{21}$	0	0	0
		$-\frac{5\sqrt{30}i}{168}$	0	$-\frac{\sqrt{3}i}{336}$	0	$\frac{\sqrt{6}i}{48}$	0	0	$-\frac{\sqrt{5}i}{14}$	0	$\frac{3i}{14}$	0	0	0	0
		0	$\frac{\sqrt{10}i}{56}$	0	$-\frac{\sqrt{5}i}{16}$	0	$\frac{5\sqrt{2}i}{112}$	$\frac{\sqrt{21}i}{42}$	0	$-\frac{3i}{14}$	0	0	0	$\frac{\sqrt{3}i}{21}$	0
		$-\frac{5\sqrt{2}i}{112}$	0	$\frac{\sqrt{5}i}{16}$	0	$-\frac{\sqrt{10}i}{56}$	0	0	$\frac{\sqrt{3}i}{21}$	0	0	0	$-\frac{3i}{14}$	0	$\frac{\sqrt{21}i}{42}$
		0	$-\frac{\sqrt{6}i}{48}$	0	$\frac{\sqrt{3}i}{336}$	0	$\frac{5\sqrt{30}i}{168}$	0	0	0	0	$\frac{3i}{14}$	0	$-\frac{\sqrt{5}i}{14}$	0
		0	0	$\frac{i}{112}$	0	$-\frac{13\sqrt{2}i}{112}$	0	0	0	0	$-\frac{\sqrt{3}i}{21}$	0	$\frac{\sqrt{5}i}{14}$	0	$\frac{\sqrt{105}i}{42}$
		0	0	0	$\frac{3\sqrt{7}i}{112}$	0	$\frac{\sqrt{70}i}{112}$	0	0	0	0	$-\frac{\sqrt{21}i}{42}$	0	$-\frac{\sqrt{105}i}{42}$	0
866	symmetry	$-\frac{\sqrt{35}xz(x-z)(x+z)}{2}$													

*continued ...*

Table 10

No.	multipole	matrix														
$\mathbb{Q}_{4,2}^{(1,-1;a)}(T_{1g})$		0	$\frac{\sqrt{3}}{42}$	0	$-\frac{\sqrt{6}}{84}$	0	0	$-\frac{\sqrt{70}}{112}$	0	$\frac{5\sqrt{30}}{168}$	0	$-\frac{5\sqrt{2}}{112}$	0	0	0	
		$\frac{\sqrt{3}}{42}$	0	$-\frac{\sqrt{30}}{84}$	0	0	0	0	$\frac{13\sqrt{2}}{112}$	0	$-\frac{\sqrt{10}}{56}$	0	$-\frac{\sqrt{6}}{48}$	0	0	
		0	$-\frac{\sqrt{30}}{84}$	0	0	0	$\frac{\sqrt{6}}{84}$	$\frac{3\sqrt{7}}{112}$	0	$-\frac{\sqrt{3}}{336}$	0	$-\frac{\sqrt{5}}{16}$	0	$\frac{1}{112}$	0	
		$-\frac{\sqrt{6}}{84}$	0	0	0	$\frac{\sqrt{30}}{84}$	0	0	$\frac{1}{112}$	0	$-\frac{\sqrt{5}}{16}$	0	$-\frac{\sqrt{3}}{336}$	0	$\frac{3\sqrt{7}}{112}$	
		0	0	0	$\frac{\sqrt{30}}{84}$	0	$-\frac{\sqrt{3}}{42}$	0	0	$-\frac{\sqrt{6}}{48}$	0	$-\frac{\sqrt{10}}{56}$	0	$\frac{13\sqrt{2}}{112}$	0	
		0	0	$\frac{\sqrt{6}}{84}$	0	$-\frac{\sqrt{3}}{42}$	0	0	0	0	$-\frac{5\sqrt{2}}{112}$	0	$\frac{5\sqrt{30}}{168}$	0	$-\frac{\sqrt{70}}{112}$	
		$-\frac{\sqrt{70}}{112}$	0	$\frac{3\sqrt{7}}{112}$	0	0	0	0	$-\frac{\sqrt{105}}{42}$	0	$\frac{\sqrt{21}}{42}$	0	0	0	0	
		0	$\frac{13\sqrt{2}}{112}$	0	$\frac{1}{112}$	0	0	$-\frac{\sqrt{105}}{42}$	0	$\frac{\sqrt{5}}{14}$	0	$\frac{\sqrt{3}}{21}$	0	0	0	
		$\frac{5\sqrt{30}}{168}$	0	$-\frac{\sqrt{3}}{336}$	0	$-\frac{\sqrt{6}}{48}$	0	0	$\frac{\sqrt{5}}{14}$	0	$\frac{3}{14}$	0	0	0	0	
		0	$-\frac{\sqrt{10}}{56}$	0	$-\frac{\sqrt{5}}{16}$	0	$-\frac{5\sqrt{2}}{112}$	$\frac{\sqrt{21}}{42}$	0	$\frac{3}{14}$	0	0	0	$-\frac{\sqrt{3}}{21}$	0	
		$-\frac{5\sqrt{2}}{112}$	0	$-\frac{\sqrt{5}}{16}$	0	$-\frac{\sqrt{10}}{56}$	0	0	$\frac{\sqrt{3}}{21}$	0	0	0	$-\frac{3}{14}$	0	$-\frac{\sqrt{21}}{42}$	
		0	$-\frac{\sqrt{6}}{48}$	0	$-\frac{\sqrt{3}}{336}$	0	$\frac{5\sqrt{30}}{168}$	0	0	0	0	$-\frac{3}{14}$	0	$-\frac{\sqrt{5}}{14}$	0	
		0	0	$\frac{1}{112}$	0	$\frac{13\sqrt{2}}{112}$	0	0	0	0	$-\frac{\sqrt{3}}{21}$	0	$-\frac{\sqrt{5}}{14}$	0	$\frac{\sqrt{105}}{42}$	
		0	0	0	$\frac{3\sqrt{7}}{112}$	0	$-\frac{\sqrt{70}}{112}$	0	0	0	0	$-\frac{\sqrt{21}}{42}$	0	$\frac{\sqrt{105}}{42}$	0	
	867	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{4,3}^{(1,-1;a)}(T_{1g})$		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	$-\frac{\sqrt{3}i}{21}$	0	0	0	0	0	0	$-\frac{\sqrt{2}i}{7}$	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	$-\frac{\sqrt{7}i}{14}$	0	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
		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	0	$\frac{\sqrt{21}i}{21}$	0	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	0	$\frac{\sqrt{30}i}{42}$	0	0	0	0	0	0	$\frac{\sqrt{5}i}{7}$	0
		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	0
		$\frac{\sqrt{30}i}{42}$	0	0	0	0	0	0	$-\frac{\sqrt{5}i}{7}$	0	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	0	$\frac{\sqrt{7}i}{14}$	0	0	0	0	0	0	$-\frac{\sqrt{21}i}{21}$	0	0	0	0
868	symmetry	$\frac{\sqrt{5}yz(6x^2-y^2-z^2)}{2}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{4,1}^{(1,-1;a)}(T_{2g})$		0	$\frac{\sqrt{21}i}{294}$	0	$-\frac{\sqrt{42}i}{84}$	0	0	$\frac{\sqrt{10}i}{112}$	0	$\frac{5\sqrt{210}i}{1176}$	0	$-\frac{5\sqrt{14}i}{112}$	0	0	0
		$-\frac{\sqrt{21}i}{294}$	0	$-\frac{\sqrt{210}i}{588}$	0	0	0	0	$-\frac{13\sqrt{14}i}{784}$	0	$-\frac{\sqrt{70}i}{392}$	0	$-\frac{\sqrt{42}i}{48}$	0	0
		0	$\frac{\sqrt{210}i}{588}$	0	0	0	$\frac{\sqrt{42}i}{84}$	$-\frac{3i}{16}$	0	$\frac{\sqrt{21}i}{2352}$	0	$-\frac{\sqrt{35}i}{112}$	0	$\frac{\sqrt{7}i}{112}$	0
		$\frac{\sqrt{42}i}{84}$	0	0	0	$\frac{\sqrt{210}i}{588}$	0	0	$-\frac{\sqrt{7}i}{112}$	0	$\frac{\sqrt{35}i}{112}$	0	$-\frac{\sqrt{21}i}{2352}$	0	$\frac{3i}{16}$
		0	0	0	$-\frac{\sqrt{210}i}{588}$	0	$-\frac{\sqrt{21}i}{294}$	0	0	$\frac{\sqrt{42}i}{48}$	0	$\frac{\sqrt{70}i}{392}$	0	$\frac{13\sqrt{14}i}{784}$	0
		0	0	$-\frac{\sqrt{42}i}{84}$	0	$\frac{\sqrt{21}i}{294}$	0	0	0	0	$\frac{5\sqrt{14}i}{112}$	0	$-\frac{5\sqrt{210}i}{1176}$	0	$-\frac{\sqrt{10}i}{112}$
		$-\frac{\sqrt{10}i}{112}$	0	$\frac{3i}{16}$	0	0	0	0	$-\frac{\sqrt{15}i}{42}$	0	$\frac{\sqrt{3}i}{6}$	0	0	0	0
		0	$\frac{13\sqrt{14}i}{784}$	0	$\frac{\sqrt{7}i}{112}$	0	0	$\frac{\sqrt{15}i}{42}$	0	$\frac{\sqrt{35}i}{98}$	0	$\frac{\sqrt{21}i}{21}$	0	0	0
		$-\frac{5\sqrt{210}i}{1176}$	0	$-\frac{\sqrt{21}i}{2352}$	0	$-\frac{\sqrt{42}i}{48}$	0	0	$-\frac{\sqrt{35}i}{98}$	0	$\frac{3\sqrt{7}i}{98}$	0	0	0	0
		0	$\frac{\sqrt{70}i}{392}$	0	$-\frac{\sqrt{35}i}{112}$	0	$-\frac{5\sqrt{14}i}{112}$	$-\frac{\sqrt{3}i}{6}$	0	$-\frac{3\sqrt{7}i}{98}$	0	0	0	$-\frac{\sqrt{21}i}{21}$	0
		$\frac{5\sqrt{14}i}{112}$	0	$\frac{\sqrt{35}i}{112}$	0	$-\frac{\sqrt{70}i}{392}$	0	0	$-\frac{\sqrt{21}i}{21}$	0	0	0	$-\frac{3\sqrt{7}i}{98}$	0	$-\frac{\sqrt{3}i}{6}$
		0	$\frac{\sqrt{42}i}{48}$	0	$\frac{\sqrt{21}i}{2352}$	0	$\frac{5\sqrt{210}i}{1176}$	0	0	0	0	$\frac{3\sqrt{7}i}{98}$	0	$-\frac{\sqrt{35}i}{98}$	0
		0	0	$-\frac{\sqrt{7}i}{112}$	0	$-\frac{13\sqrt{14}i}{784}$	0	0	0	0	$\frac{\sqrt{21}i}{21}$	0	$\frac{\sqrt{35}i}{98}$	0	$\frac{\sqrt{15}i}{42}$
		0	0	0	$-\frac{3i}{16}$	0	$\frac{\sqrt{10}i}{112}$	0	0	0	0	$\frac{\sqrt{3}i}{6}$	0	$-\frac{\sqrt{15}i}{42}$	0
869	symmetry	$-\frac{\sqrt{5}xz(x^2-6y^2+z^2)}{2}$													

continued ...

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{4,2}^{(1,-1;a)}(T_{2g})$		0	$-\frac{\sqrt{21}}{294}$	0	$-\frac{\sqrt{42}}{84}$	0	0	$\frac{\sqrt{10}}{112}$	0	$-\frac{5\sqrt{210}}{1176}$	0	$-\frac{5\sqrt{14}}{112}$	0	0	0
		$-\frac{\sqrt{21}}{294}$	0	$\frac{\sqrt{210}}{588}$	0	0	0	0	$-\frac{13\sqrt{14}}{784}$	0	$\frac{\sqrt{70}}{392}$	0	$-\frac{\sqrt{42}}{48}$	0	0
		0	$\frac{\sqrt{210}}{588}$	0	0	0	$\frac{\sqrt{42}}{84}$	$\frac{3}{16}$	0	$\frac{\sqrt{21}}{2352}$	0	$\frac{\sqrt{35}}{112}$	0	$\frac{\sqrt{7}}{112}$	0
		$-\frac{\sqrt{42}}{84}$	0	0	0	$-\frac{\sqrt{210}}{588}$	0	0	$\frac{\sqrt{7}}{112}$	0	$\frac{\sqrt{35}}{112}$	0	$\frac{\sqrt{21}}{2352}$	0	$\frac{3}{16}$
		0	0	0	$-\frac{\sqrt{210}}{588}$	0	$\frac{\sqrt{21}}{294}$	0	0	$-\frac{\sqrt{42}}{48}$	0	$\frac{\sqrt{70}}{392}$	0	$-\frac{13\sqrt{14}}{784}$	0
		0	0	$\frac{\sqrt{42}}{84}$	0	$\frac{\sqrt{21}}{294}$	0	0	0	0	$-\frac{5\sqrt{14}}{112}$	0	$-\frac{5\sqrt{210}}{1176}$	0	$\frac{\sqrt{10}}{112}$
		$\frac{\sqrt{10}}{112}$	0	$\frac{3}{16}$	0	0	0	0	$\frac{\sqrt{15}}{42}$	0	$\frac{\sqrt{3}}{6}$	0	0	0	0
		0	$-\frac{13\sqrt{14}}{784}$	0	$\frac{\sqrt{7}}{112}$	0	0	$\frac{\sqrt{15}}{42}$	0	$-\frac{\sqrt{35}}{98}$	0	$\frac{\sqrt{21}}{21}$	0	0	0
		$-\frac{5\sqrt{210}}{1176}$	0	$\frac{\sqrt{21}}{2352}$	0	$-\frac{\sqrt{42}}{48}$	0	0	$-\frac{\sqrt{35}}{98}$	0	$-\frac{3\sqrt{7}}{98}$	0	0	0	0
		0	$\frac{\sqrt{70}}{392}$	0	$\frac{\sqrt{35}}{112}$	0	$-\frac{5\sqrt{14}}{112}$	$\frac{\sqrt{3}}{6}$	0	$-\frac{3\sqrt{7}}{98}$	0	0	0	$-\frac{\sqrt{21}}{21}$	0
		$-\frac{5\sqrt{14}}{112}$	0	$\frac{\sqrt{35}}{112}$	0	$\frac{\sqrt{70}}{392}$	0	0	$\frac{\sqrt{21}}{21}$	0	0	0	$\frac{3\sqrt{7}}{98}$	0	$-\frac{\sqrt{3}}{6}$
		0	$-\frac{\sqrt{42}}{48}$	0	$\frac{\sqrt{21}}{2352}$	0	$-\frac{5\sqrt{210}}{1176}$	0	0	0	0	$\frac{3\sqrt{7}}{98}$	0	$\frac{\sqrt{35}}{98}$	0
		0	0	$\frac{\sqrt{7}}{112}$	0	$-\frac{13\sqrt{14}}{784}$	0	0	0	0	$-\frac{\sqrt{21}}{21}$	0	$\frac{\sqrt{35}}{98}$	0	$-\frac{\sqrt{15}}{42}$
		0	0	0	$\frac{3}{16}$	0	$\frac{\sqrt{10}}{112}$	0	0	0	0	$-\frac{\sqrt{3}}{6}$	0	$-\frac{\sqrt{15}}{42}$	0
870	symmetry	$-\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$													

*continued ...*



Table 10

No.	multipole	matrix													
$\mathbb{Q}_{4,3}^{(1,-1;a)}(T_{2g})$		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	$\frac{\sqrt{2}(2x^6-15x^4y^2-15x^4z^2-15x^2y^4+180x^2y^2z^2-15x^2z^4+2y^6-15y^4z^2-15y^2z^4+2z^6)}{8}$													

continued ...

Table 10

No.	multipole	matrix													
$\mathbb{Q}_6^{(1,-1;a)}(A_{1g})$		0	0	0	0	0	0	0	$-\frac{\sqrt{231}}{1848}$	0	0	0	$\frac{\sqrt{77}}{88}$	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{385}}{616}$	0	0	0	$-\frac{\sqrt{1155}}{264}$	0
		0	0	0	0	0	0	0	0	0	$-\frac{5\sqrt{462}}{1848}$	0	0	0	$\frac{\sqrt{330}}{264}$
		0	0	0	0	0	0	$-\frac{\sqrt{330}}{264}$	0	0	0	$\frac{5\sqrt{462}}{1848}$	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{1155}}{264}$	0	0	0	$-\frac{\sqrt{385}}{616}$	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{77}}{88}$	0	0	0	$\frac{\sqrt{231}}{1848}$	0
		0	0	0	$-\frac{\sqrt{330}}{264}$	0	0	$\frac{\sqrt{154}}{616}$	0	0	0	$-\frac{3\sqrt{110}}{88}$	0	0	0
		$-\frac{\sqrt{231}}{1848}$	0	0	0	$\frac{\sqrt{1155}}{264}$	0	0	$-\frac{5\sqrt{154}}{616}$	0	0	0	$\frac{\sqrt{462}}{88}$	0	0
		0	$\frac{\sqrt{385}}{616}$	0	0	0	$-\frac{\sqrt{77}}{88}$	0	0	$\frac{9\sqrt{154}}{616}$	0	0	0	$\frac{\sqrt{462}}{88}$	0
		0	0	$-\frac{5\sqrt{462}}{1848}$	0	0	0	0	0	$-\frac{5\sqrt{154}}{616}$	0	0	0	0	$-\frac{3\sqrt{110}}{88}$
		0	0	0	$\frac{5\sqrt{462}}{1848}$	0	0	$-\frac{3\sqrt{110}}{88}$	0	0	0	$-\frac{5\sqrt{154}}{616}$	0	0	0
		$\frac{\sqrt{77}}{88}$	0	0	0	$-\frac{\sqrt{385}}{616}$	0	0	$\frac{\sqrt{462}}{88}$	0	0	0	$\frac{9\sqrt{154}}{616}$	0	0
		0	$-\frac{\sqrt{1155}}{264}$	0	0	0	$\frac{\sqrt{231}}{1848}$	0	0	$\frac{\sqrt{462}}{88}$	0	0	0	$-\frac{5\sqrt{154}}{616}$	0
		0	0	$\frac{\sqrt{330}}{264}$	0	0	0	0	0	0	$-\frac{3\sqrt{110}}{88}$	0	0	0	$\frac{\sqrt{154}}{616}$
872	symmetry	$-\frac{\sqrt{2310}(x-y)(x+y)(x-z)(x+z)(y-z)(y+z)}{8}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_6^{(1,-1;a)}(A_{2g})$		0	0	0	0	0	0	0	0	0	$\frac{1}{24}$	0	0	0	$-\frac{\sqrt{35}}{56}$
		0	0	0	0	0	0	$-\frac{\sqrt{7}}{168}$	0	0	0	$-\frac{\sqrt{5}}{24}$	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{2}}{24}$	0	0	0	$\frac{\sqrt{6}}{24}$	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{6}}{24}$	0	0	0	$-\frac{\sqrt{2}}{24}$	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{5}}{24}$	0	0	0	$\frac{\sqrt{7}}{168}$
		0	0	0	0	0	0	$\frac{\sqrt{35}}{56}$	0	0	0	$-\frac{1}{24}$	0	0	0
		0	$-\frac{\sqrt{7}}{168}$	0	0	0	$\frac{\sqrt{35}}{56}$	0	0	$-\frac{\sqrt{70}}{56}$	0	0	0	$\frac{\sqrt{210}}{56}$	0
		0	0	$\frac{\sqrt{2}}{24}$	0	0	0	0	0	0	$\frac{\sqrt{6}}{8}$	0	0	0	$\frac{\sqrt{210}}{56}$
		0	0	0	$-\frac{\sqrt{6}}{24}$	0	0	$-\frac{\sqrt{70}}{56}$	0	0	0	$-\frac{\sqrt{2}}{8}$	0	0	0
		$\frac{1}{24}$	0	0	0	$\frac{\sqrt{5}}{24}$	0	0	$\frac{\sqrt{6}}{8}$	0	0	0	$-\frac{\sqrt{2}}{8}$	0	0
		0	$-\frac{\sqrt{5}}{24}$	0	0	0	$-\frac{1}{24}$	0	0	$-\frac{\sqrt{2}}{8}$	0	0	0	$\frac{\sqrt{6}}{8}$	0
		0	0	$\frac{\sqrt{6}}{24}$	0	0	0	0	0	$-\frac{\sqrt{2}}{8}$	0	0	0	0	$-\frac{\sqrt{70}}{56}$
		0	0	0	$-\frac{\sqrt{2}}{24}$	0	0	$\frac{\sqrt{210}}{56}$	0	0	0	$\frac{\sqrt{6}}{8}$	0	0	0
		$-\frac{\sqrt{35}}{56}$	0	0	0	$\frac{\sqrt{7}}{168}$	0	0	$\frac{\sqrt{210}}{56}$	0	0	0	$-\frac{\sqrt{70}}{56}$	0	0
873	symmetry	$-\frac{\sqrt{14}(x^6-15x^4z^2+15x^2z^4+y^6-15y^4z^2+15y^2z^4-2z^6)}{8}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{6,1}^{(1,-1;a)}(E_g)$		0	0	0	0	0	0	0	$-\frac{\sqrt{33}}{264}$	0	0	0	$-\frac{\sqrt{11}}{88}$	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{55}}{88}$	0	0	0	$\frac{\sqrt{165}}{264}$	0
		0	0	0	0	0	0	0	0	0	$-\frac{5\sqrt{66}}{264}$	0	0	0	$-\frac{\sqrt{2310}}{1848}$
		0	0	0	0	0	0	$\frac{\sqrt{2310}}{1848}$	0	0	0	$\frac{5\sqrt{66}}{264}$	0	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{165}}{264}$	0	0	0	$-\frac{\sqrt{55}}{88}$	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{11}}{88}$	0	0	0	$\frac{\sqrt{33}}{264}$	0
		0	0	0	$\frac{\sqrt{2310}}{1848}$	0	0	$\frac{\sqrt{22}}{88}$	0	0	0	$\frac{3\sqrt{770}}{616}$	0	0	0
		$-\frac{\sqrt{33}}{264}$	0	0	0	$-\frac{\sqrt{165}}{264}$	0	0	$-\frac{5\sqrt{22}}{88}$	0	0	0	$-\frac{\sqrt{66}}{88}$	0	0
		0	$\frac{\sqrt{55}}{88}$	0	0	0	$\frac{\sqrt{11}}{88}$	0	0	$\frac{9\sqrt{22}}{88}$	0	0	0	$-\frac{\sqrt{66}}{88}$	0
		0	0	$-\frac{5\sqrt{66}}{264}$	0	0	0	0	0	0	$-\frac{5\sqrt{22}}{88}$	0	0	0	$\frac{3\sqrt{770}}{616}$
		0	0	0	$\frac{5\sqrt{66}}{264}$	0	0	$\frac{3\sqrt{770}}{616}$	0	0	0	$-\frac{5\sqrt{22}}{88}$	0	0	0
		$-\frac{\sqrt{11}}{88}$	0	0	0	$-\frac{\sqrt{55}}{88}$	0	0	$-\frac{\sqrt{66}}{88}$	0	0	0	$\frac{9\sqrt{22}}{88}$	0	0
		0	$\frac{\sqrt{165}}{264}$	0	0	0	$\frac{\sqrt{33}}{264}$	0	0	$-\frac{\sqrt{66}}{88}$	0	0	0	$-\frac{5\sqrt{22}}{88}$	0
		0	0	$-\frac{\sqrt{2310}}{1848}$	0	0	0	0	0	0	$\frac{3\sqrt{770}}{616}$	0	0	0	$\frac{\sqrt{22}}{88}$
874	symmetry	$\frac{\sqrt{42}(x-y)(x+y)(x^4-9x^2y^2-5x^2z^2+y^4-5y^2z^2+5z^4)}{8}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{6,2}^{(1,-1;a)}(E_g)$		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{55}}{264}$	0	0	0	$-\frac{\sqrt{77}}{56}$
		0	0	0	0	0	0	$\frac{\sqrt{385}}{1848}$	0	0	0	$\frac{5\sqrt{11}}{264}$	0	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{110}}{264}$	0	0	0	$-\frac{\sqrt{330}}{264}$	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{330}}{264}$	0	0	0	$\frac{\sqrt{110}}{264}$	0
		0	0	0	0	0	0	0	0	0	$-\frac{5\sqrt{11}}{264}$	0	0	0	$-\frac{\sqrt{385}}{1848}$
		0	0	0	0	0	0	$\frac{\sqrt{77}}{56}$	0	0	0	$\frac{\sqrt{55}}{264}$	0	0	0
		0	$\frac{\sqrt{385}}{1848}$	0	0	0	$\frac{\sqrt{77}}{56}$	0	0	$\frac{5\sqrt{154}}{616}$	0	0	0	$\frac{\sqrt{462}}{56}$	0
		0	0	$-\frac{\sqrt{110}}{264}$	0	0	0	0	0	0	$-\frac{\sqrt{330}}{88}$	0	0	0	$\frac{\sqrt{462}}{56}$
		0	0	0	$\frac{\sqrt{330}}{264}$	0	0	$\frac{5\sqrt{154}}{616}$	0	0	0	$\frac{\sqrt{110}}{88}$	0	0	0
		$-\frac{\sqrt{55}}{264}$	0	0	0	$-\frac{5\sqrt{11}}{264}$	0	0	$-\frac{\sqrt{330}}{88}$	0	0	0	$\frac{\sqrt{110}}{88}$	0	0
		0	$\frac{5\sqrt{11}}{264}$	0	0	0	$\frac{\sqrt{55}}{264}$	0	0	$\frac{\sqrt{110}}{88}$	0	0	0	$-\frac{\sqrt{330}}{88}$	0
		0	0	$-\frac{\sqrt{330}}{264}$	0	0	0	0	0	0	$\frac{\sqrt{110}}{88}$	0	0	0	$\frac{5\sqrt{154}}{616}$
		0	0	0	$\frac{\sqrt{110}}{264}$	0	0	$\frac{\sqrt{462}}{56}$	0	0	0	$-\frac{\sqrt{330}}{88}$	0	0	0
		$-\frac{\sqrt{77}}{56}$	0	0	0	$-\frac{\sqrt{385}}{1848}$	0	0	$\frac{\sqrt{462}}{56}$	0	0	0	$\frac{5\sqrt{154}}{616}$	0	0
875	symmetry	$\frac{3\sqrt{7}yz(y-z)(y+z)(10x^2-y^2-z^2)}{4}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{6,1}^{(1,-1;a)}(T_{1g})$		0	0	0	0	0	0	$\frac{\sqrt{462i}}{7392}$	0	$\frac{\sqrt{22i}}{352}$	0	$-\frac{\sqrt{330i}}{352}$	0	$-\frac{\sqrt{66i}}{96}$	0
		0	0	0	0	0	0	$-\frac{\sqrt{330i}}{1056}$	0	$-\frac{5\sqrt{66i}}{1056}$	0	$\frac{3\sqrt{110i}}{352}$	0	$\frac{\sqrt{2310i}}{672}$	
		0	0	0	0	0	0	$-\frac{\sqrt{1155i}}{1232}$	0	$\frac{\sqrt{55i}}{176}$	0	$\frac{5\sqrt{33i}}{528}$	0	$-\frac{\sqrt{165i}}{176}$	0
		0	0	0	0	0	0	$\frac{\sqrt{165i}}{176}$	0	$-\frac{5\sqrt{33i}}{528}$	0	$-\frac{\sqrt{55i}}{176}$	0	$\frac{\sqrt{1155i}}{1232}$	
		0	0	0	0	0	0	$-\frac{\sqrt{2310i}}{672}$	0	$-\frac{3\sqrt{110i}}{352}$	0	$\frac{5\sqrt{66i}}{1056}$	0	$\frac{\sqrt{330i}}{1056}$	0
		0	0	0	0	0	0	$\frac{\sqrt{66i}}{96}$	0	$\frac{\sqrt{330i}}{352}$	0	$-\frac{\sqrt{22i}}{352}$	0	$-\frac{\sqrt{462i}}{7392}$	
		$-\frac{\sqrt{462i}}{7392}$	0	$\frac{\sqrt{1155i}}{1232}$	0	$\frac{\sqrt{2310i}}{672}$	0	0	$-\frac{3\sqrt{77i}}{616}$	0	$\frac{3\sqrt{385i}}{308}$	0	$\frac{\sqrt{231i}}{56}$	0	0
		0	$\frac{\sqrt{330i}}{1056}$	0	$-\frac{\sqrt{165i}}{176}$	0	$-\frac{\sqrt{66i}}{96}$	$\frac{3\sqrt{77i}}{616}$	0	$\frac{\sqrt{33i}}{44}$	0	$-\frac{3\sqrt{55i}}{88}$	0	0	0
		$-\frac{\sqrt{22i}}{352}$	0	$-\frac{\sqrt{55i}}{176}$	0	$\frac{3\sqrt{110i}}{352}$	0	0	$-\frac{\sqrt{33i}}{44}$	0	$-\frac{\sqrt{165i}}{88}$	0	0	0	$-\frac{\sqrt{231i}}{56}$
		0	$\frac{5\sqrt{66i}}{1056}$	0	$\frac{5\sqrt{33i}}{528}$	0	$-\frac{\sqrt{330i}}{352}$	$-\frac{3\sqrt{385i}}{308}$	0	$\frac{\sqrt{165i}}{88}$	0	0	0	$\frac{3\sqrt{55i}}{88}$	0
		$\frac{\sqrt{330i}}{352}$	0	$-\frac{5\sqrt{33i}}{528}$	0	$-\frac{5\sqrt{66i}}{1056}$	0	0	$\frac{3\sqrt{55i}}{88}$	0	0	0	$\frac{\sqrt{165i}}{88}$	0	$-\frac{3\sqrt{385i}}{308}$
		0	$-\frac{3\sqrt{110i}}{352}$	0	$\frac{\sqrt{55i}}{176}$	0	$\frac{\sqrt{22i}}{352}$	$-\frac{\sqrt{231i}}{56}$	0	0	0	$-\frac{\sqrt{165i}}{88}$	0	$-\frac{\sqrt{33i}}{44}$	0
		$\frac{\sqrt{66i}}{96}$	0	$\frac{\sqrt{165i}}{176}$	0	$-\frac{\sqrt{330i}}{1056}$	0	0	0	$-\frac{3\sqrt{55i}}{88}$	0	$\frac{\sqrt{33i}}{44}$	0	$\frac{3\sqrt{77i}}{616}$	
		0	$-\frac{\sqrt{2310i}}{672}$	0	$-\frac{\sqrt{1155i}}{1232}$	0	$\frac{\sqrt{462i}}{7392}$	0	0	$\frac{\sqrt{231i}}{56}$	0	$\frac{3\sqrt{385i}}{308}$	0	$-\frac{3\sqrt{77i}}{616}$	0
876	symmetry	$\frac{3\sqrt{7}xz(x-z)(x+z)(x^2-10y^2+z^2)}{4}$													

continued ...

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{6,2}^{(1,-1;a)}(T_{1g})$		0	0	0	0	0	0	$-\frac{\sqrt{462}}{7392}$	0	$\frac{\sqrt{22}}{352}$	0	$\frac{\sqrt{330}}{352}$	0	$-\frac{\sqrt{66}}{96}$	0
		0	0	0	0	0	0	0	$\frac{\sqrt{330}}{1056}$	0	$-\frac{5\sqrt{66}}{1056}$	0	$-\frac{3\sqrt{110}}{352}$	0	$\frac{\sqrt{2310}}{672}$
		0	0	0	0	0	0	$-\frac{\sqrt{1155}}{1232}$	0	$-\frac{\sqrt{55}}{176}$	0	$\frac{5\sqrt{33}}{528}$	0	$\frac{\sqrt{165}}{176}$	0
		0	0	0	0	0	0	0	$\frac{\sqrt{165}}{176}$	0	$\frac{5\sqrt{33}}{528}$	0	$-\frac{\sqrt{55}}{176}$	0	$-\frac{\sqrt{1155}}{1232}$
		0	0	0	0	0	0	$\frac{\sqrt{2310}}{672}$	0	$-\frac{3\sqrt{110}}{352}$	0	$-\frac{5\sqrt{66}}{1056}$	0	$\frac{\sqrt{330}}{1056}$	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{66}}{96}$	0	$\frac{\sqrt{330}}{352}$	0	$\frac{\sqrt{22}}{352}$	0	$-\frac{\sqrt{462}}{7392}$
		$-\frac{\sqrt{462}}{7392}$	0	$-\frac{\sqrt{1155}}{1232}$	0	$\frac{\sqrt{2310}}{672}$	0	0	$-\frac{3\sqrt{77}}{616}$	0	$-\frac{3\sqrt{385}}{308}$	0	$\frac{\sqrt{231}}{56}$	0	0
		0	$\frac{\sqrt{330}}{1056}$	0	$\frac{\sqrt{165}}{176}$	0	$-\frac{\sqrt{66}}{96}$	$-\frac{3\sqrt{77}}{616}$	0	$\frac{\sqrt{33}}{44}$	0	$\frac{3\sqrt{55}}{88}$	0	0	0
		$\frac{\sqrt{22}}{352}$	0	$-\frac{\sqrt{55}}{176}$	0	$-\frac{3\sqrt{110}}{352}$	0	0	$\frac{\sqrt{33}}{44}$	0	$-\frac{\sqrt{165}}{88}$	0	0	0	$-\frac{\sqrt{231}}{56}$
		0	$-\frac{5\sqrt{66}}{1056}$	0	$\frac{5\sqrt{33}}{528}$	0	$\frac{\sqrt{330}}{352}$	$-\frac{3\sqrt{385}}{308}$	0	$-\frac{\sqrt{165}}{88}$	0	0	0	$-\frac{3\sqrt{55}}{88}$	0
		$\frac{\sqrt{330}}{352}$	0	$\frac{5\sqrt{33}}{528}$	0	$-\frac{5\sqrt{66}}{1056}$	0	0	$\frac{3\sqrt{55}}{88}$	0	0	0	$\frac{\sqrt{165}}{88}$	0	$\frac{3\sqrt{385}}{308}$
		0	$-\frac{3\sqrt{110}}{352}$	0	$-\frac{\sqrt{55}}{176}$	0	$\frac{\sqrt{22}}{352}$	$\frac{\sqrt{231}}{56}$	0	0	0	$\frac{\sqrt{165}}{88}$	0	$-\frac{\sqrt{33}}{44}$	0
		$-\frac{\sqrt{66}}{96}$	0	$\frac{\sqrt{165}}{176}$	0	$\frac{\sqrt{330}}{1056}$	0	0	0	0	$-\frac{3\sqrt{55}}{88}$	0	$-\frac{\sqrt{33}}{44}$	0	$\frac{3\sqrt{77}}{616}$
		0	$\frac{\sqrt{2310}}{672}$	0	$-\frac{\sqrt{1155}}{1232}$	0	$-\frac{\sqrt{462}}{7392}$	0	0	$-\frac{\sqrt{231}}{56}$	0	$\frac{3\sqrt{385}}{308}$	0	$\frac{3\sqrt{77}}{616}$	0
877	symmetry	$-\frac{3\sqrt{7}xy(x-y)(x+y)(x^2+y^2-10z^2)}{4}$													

*continued ...*

Table 10

No.	multipole	matrix												
$\mathbb{Q}_{6,3}^{(1,-1;a)}(T_{1g})$		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
878	symmetry	$\frac{\sqrt{462}yz(y^2-3z^2)(3y^2-z^2)}{16}$												

*continued ...*



Table 10

No.	multipole	matrix													
$\mathbb{Q}_{6,1}^{(1,-1;a)}(T_{2g}, 1)$		0	0	0	0	0	0	$\frac{\sqrt{7}i}{448}$	0	$\frac{\sqrt{3}i}{64}$	0	$\frac{\sqrt{5}i}{64}$	0	$\frac{i}{64}$	0
		0	0	0	0	0	0	$-\frac{\sqrt{5}i}{64}$	0	$-\frac{5i}{64}$	0	$-\frac{\sqrt{15}i}{64}$	0	$-\frac{\sqrt{35}i}{448}$	
		0	0	0	0	0	0	$\frac{\sqrt{70}i}{448}$	0	$\frac{\sqrt{30}i}{64}$	0	$\frac{5\sqrt{2}i}{64}$	0	$\frac{\sqrt{10}i}{64}$	0
		0	0	0	0	0	0	$-\frac{\sqrt{10}i}{64}$	0	$-\frac{5\sqrt{2}i}{64}$	0	$-\frac{\sqrt{30}i}{64}$	0	$-\frac{\sqrt{70}i}{448}$	
		0	0	0	0	0	0	$\frac{\sqrt{35}i}{448}$	0	$\frac{\sqrt{15}i}{64}$	0	$\frac{5i}{64}$	0	$\frac{\sqrt{5}i}{64}$	0
		0	0	0	0	0	0	$-\frac{i}{64}$	0	$-\frac{\sqrt{5}i}{64}$	0	$-\frac{\sqrt{3}i}{64}$	0	$-\frac{\sqrt{7}i}{448}$	
		$-\frac{\sqrt{7}i}{448}$	0	$-\frac{\sqrt{70}i}{448}$	0	$-\frac{\sqrt{35}i}{448}$	0	0	$-\frac{3\sqrt{42}i}{224}$	0	$-\frac{\sqrt{210}i}{112}$	0	$-\frac{3\sqrt{14}i}{224}$	0	0
		0	$\frac{\sqrt{5}i}{64}$	0	$\frac{\sqrt{10}i}{64}$	0	$\frac{i}{64}$	$\frac{3\sqrt{42}i}{224}$	0	$\frac{3\sqrt{2}i}{16}$	0	$\frac{\sqrt{30}i}{32}$	0	0	0
		$-\frac{\sqrt{3}i}{64}$	0	$-\frac{\sqrt{30}i}{64}$	0	$-\frac{\sqrt{15}i}{64}$	0	0	$-\frac{3\sqrt{2}i}{16}$	0	$-\frac{3\sqrt{10}i}{32}$	0	0	0	$\frac{3\sqrt{14}i}{224}$
		0	$\frac{5i}{64}$	0	$\frac{5\sqrt{2}i}{64}$	0	$\frac{\sqrt{5}i}{64}$	$\frac{\sqrt{210}i}{112}$	0	$\frac{3\sqrt{10}i}{32}$	0	0	0	$-\frac{\sqrt{30}i}{32}$	0
		$-\frac{\sqrt{5}i}{64}$	0	$-\frac{5\sqrt{2}i}{64}$	0	$-\frac{5i}{64}$	0	0	$-\frac{\sqrt{30}i}{32}$	0	0	0	$\frac{3\sqrt{10}i}{32}$	0	$\frac{\sqrt{210}i}{112}$
		0	$\frac{\sqrt{15}i}{64}$	0	$\frac{\sqrt{30}i}{64}$	0	$\frac{\sqrt{3}i}{64}$	$\frac{3\sqrt{14}i}{224}$	0	0	0	$-\frac{3\sqrt{10}i}{32}$	0	$-\frac{3\sqrt{2}i}{16}$	0
		$-\frac{i}{64}$	0	$-\frac{\sqrt{10}i}{64}$	0	$-\frac{\sqrt{5}i}{64}$	0	0	0	0	$\frac{\sqrt{30}i}{32}$	0	$\frac{3\sqrt{2}i}{16}$	0	$\frac{3\sqrt{42}i}{224}$
		0	$\frac{\sqrt{35}i}{448}$	0	$\frac{\sqrt{70}i}{448}$	0	$\frac{\sqrt{7}i}{448}$	0	0	$-\frac{3\sqrt{14}i}{224}$	0	$-\frac{\sqrt{210}i}{112}$	0	$-\frac{3\sqrt{42}i}{224}$	0
879	symmetry	$\frac{\sqrt{462}xz(x^2-3z^2)(3x^2-z^2)}{16}$													

continued ...

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{6,2}^{(1,-1;a)}(T_{2g}, 1)$		0	0	0	0	0	0	$\frac{\sqrt{7}}{448}$	0	$-\frac{\sqrt{3}}{64}$	0	$\frac{\sqrt{5}}{64}$	0	$-\frac{1}{64}$	0
		0	0	0	0	0	0	$-\frac{\sqrt{5}}{64}$	0	$\frac{5}{64}$	0	$-\frac{\sqrt{15}}{64}$	0	$\frac{\sqrt{35}}{448}$	
		0	0	0	0	0	0	$-\frac{\sqrt{70}}{448}$	0	$\frac{\sqrt{30}}{64}$	0	$-\frac{5\sqrt{2}}{64}$	0	$\frac{\sqrt{10}}{64}$	0
		0	0	0	0	0	0	$\frac{\sqrt{10}}{64}$	0	$-\frac{5\sqrt{2}}{64}$	0	$\frac{\sqrt{30}}{64}$	0	$-\frac{\sqrt{70}}{448}$	
		0	0	0	0	0	0	$\frac{\sqrt{35}}{448}$	0	$-\frac{\sqrt{15}}{64}$	0	$\frac{5}{64}$	0	$-\frac{\sqrt{5}}{64}$	0
		0	0	0	0	0	0	$-\frac{1}{64}$	0	$\frac{\sqrt{5}}{64}$	0	$-\frac{\sqrt{3}}{64}$	0	$\frac{\sqrt{7}}{448}$	
		$\frac{\sqrt{7}}{448}$	0	$-\frac{\sqrt{70}}{448}$	0	$\frac{\sqrt{35}}{448}$	0	0	$\frac{3\sqrt{42}}{224}$	0	$-\frac{\sqrt{210}}{112}$	0	$\frac{3\sqrt{14}}{224}$	0	0
		0	$-\frac{\sqrt{5}}{64}$	0	$\frac{\sqrt{10}}{64}$	0	$-\frac{1}{64}$	$\frac{3\sqrt{42}}{224}$	0	$-\frac{3\sqrt{2}}{16}$	0	$\frac{\sqrt{30}}{32}$	0	0	0
		$-\frac{\sqrt{3}}{64}$	0	$\frac{\sqrt{30}}{64}$	0	$-\frac{\sqrt{15}}{64}$	0	0	$-\frac{3\sqrt{2}}{16}$	0	$\frac{3\sqrt{10}}{32}$	0	0	0	$-\frac{3\sqrt{14}}{224}$
		0	$\frac{5}{64}$	0	$-\frac{5\sqrt{2}}{64}$	0	$\frac{\sqrt{5}}{64}$	$-\frac{\sqrt{210}}{112}$	0	$\frac{3\sqrt{10}}{32}$	0	0	0	$-\frac{\sqrt{30}}{32}$	0
		$\frac{\sqrt{5}}{64}$	0	$-\frac{5\sqrt{2}}{64}$	0	$\frac{5}{64}$	0	0	$\frac{\sqrt{30}}{32}$	0	0	0	$-\frac{3\sqrt{10}}{32}$	0	$\frac{\sqrt{210}}{112}$
		0	$-\frac{\sqrt{15}}{64}$	0	$\frac{\sqrt{30}}{64}$	0	$-\frac{\sqrt{3}}{64}$	$\frac{3\sqrt{14}}{224}$	0	0	0	$-\frac{3\sqrt{10}}{32}$	0	$\frac{3\sqrt{2}}{16}$	0
		$-\frac{1}{64}$	0	$\frac{\sqrt{10}}{64}$	0	$-\frac{\sqrt{5}}{64}$	0	0	0	$-\frac{\sqrt{30}}{32}$	0	$\frac{3\sqrt{2}}{16}$	0	$-\frac{3\sqrt{42}}{224}$	
		0	$\frac{\sqrt{35}}{448}$	0	$-\frac{\sqrt{70}}{448}$	0	$\frac{\sqrt{7}}{448}$	0	0	$-\frac{3\sqrt{14}}{224}$	0	$\frac{\sqrt{210}}{112}$	0	$-\frac{3\sqrt{42}}{224}$	0
880	symmetry	$\frac{\sqrt{462}xy(x^2-3y^2)(3x^2-y^2)}{16}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{6,3}^{(1,-1;a)}(T_{2g},1)$		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	
881	symmetry	$\frac{\sqrt{210}yz(16x^4-16x^2y^2-16x^2z^2+y^4+2y^2z^2+z^4)}{16}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{6,1}^{(1,-1;a)}(T_{2g}, 2)$		0	0	0	0	0	0	$\frac{\sqrt{385}i}{14784}$	0	$\frac{\sqrt{165}i}{2112}$	0	$-\frac{9\sqrt{11}i}{704}$	0	$\frac{\sqrt{55}i}{64}$	0
		0	0	0	0	0	0	$-\frac{5\sqrt{11}i}{2112}$	0	$-\frac{5\sqrt{55}i}{2112}$	0	$\frac{9\sqrt{33}i}{704}$	0	$-\frac{5\sqrt{77}i}{448}$	
		0	0	0	0	0	0	$-\frac{9\sqrt{154}i}{4928}$	0	$\frac{5\sqrt{66}i}{2112}$	0	$\frac{5\sqrt{110}i}{2112}$	0	$-\frac{9\sqrt{22}i}{704}$	0
		0	0	0	0	0	0	$\frac{9\sqrt{22}i}{704}$	0	$-\frac{5\sqrt{110}i}{2112}$	0	$-\frac{5\sqrt{66}i}{2112}$	0	$\frac{9\sqrt{154}i}{4928}$	
		0	0	0	0	0	0	$\frac{5\sqrt{77}i}{448}$	0	$-\frac{9\sqrt{33}i}{704}$	0	$\frac{5\sqrt{55}i}{2112}$	0	$\frac{5\sqrt{11}i}{2112}$	0
		0	0	0	0	0	0	$-\frac{\sqrt{55}i}{64}$	0	$\frac{9\sqrt{11}i}{704}$	0	$-\frac{\sqrt{165}i}{2112}$	0	$-\frac{\sqrt{385}i}{14784}$	
		$-\frac{\sqrt{385}i}{14784}$	0	$\frac{9\sqrt{154}i}{4928}$	0	$-\frac{5\sqrt{77}i}{448}$	0	$-\frac{\sqrt{2310}i}{2464}$	0	$\frac{9\sqrt{462}i}{1232}$	0	$-\frac{3\sqrt{770}i}{224}$	0	0	
		0	$\frac{5\sqrt{11}i}{2112}$	0	$-\frac{9\sqrt{22}i}{704}$	0	$\frac{\sqrt{55}i}{64}$	$\frac{\sqrt{2310}i}{2464}$	0	$\frac{\sqrt{110}i}{176}$	0	$-\frac{9\sqrt{66}i}{352}$	0	0	0
		$-\frac{\sqrt{165}i}{2112}$	0	$-\frac{5\sqrt{66}i}{2112}$	0	$\frac{9\sqrt{33}i}{704}$	0	0	$-\frac{\sqrt{110}i}{176}$	0	$-\frac{5\sqrt{22}i}{352}$	0	0	0	$\frac{3\sqrt{770}i}{224}$
		0	$\frac{5\sqrt{55}i}{2112}$	0	$\frac{5\sqrt{110}i}{2112}$	0	$-\frac{9\sqrt{11}i}{704}$	$-\frac{9\sqrt{462}i}{1232}$	0	$\frac{5\sqrt{22}i}{352}$	0	0	0	$\frac{9\sqrt{66}i}{352}$	0
		$\frac{9\sqrt{11}i}{704}$	0	$-\frac{5\sqrt{110}i}{2112}$	0	$-\frac{5\sqrt{55}i}{2112}$	0	0	$\frac{9\sqrt{66}i}{352}$	0	0	0	$\frac{5\sqrt{22}i}{352}$	0	$-\frac{9\sqrt{462}i}{1232}$
		0	$-\frac{9\sqrt{33}i}{704}$	0	$\frac{5\sqrt{66}i}{2112}$	0	$\frac{\sqrt{165}i}{2112}$	$\frac{3\sqrt{770}i}{224}$	0	0	0	$-\frac{5\sqrt{22}i}{352}$	0	$-\frac{\sqrt{110}i}{176}$	0
		$-\frac{\sqrt{55}i}{64}$	0	$\frac{9\sqrt{22}i}{704}$	0	$-\frac{5\sqrt{11}i}{2112}$	0	0	0	$-\frac{9\sqrt{66}i}{352}$	0	$\frac{\sqrt{110}i}{176}$	0	$\frac{\sqrt{2310}i}{2464}$	
		0	$\frac{5\sqrt{77}i}{448}$	0	$-\frac{9\sqrt{154}i}{4928}$	0	$\frac{\sqrt{385}i}{14784}$	0	0	$-\frac{3\sqrt{770}i}{224}$	0	$\frac{9\sqrt{462}i}{1232}$	0	$-\frac{\sqrt{2310}i}{2464}$	0
882	symmetry	$\frac{\sqrt{210}xz(x^4-16x^2y^2+2x^2z^2+16y^4-16y^2z^2+z^4)}{16}$													

continued ...

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{6,2}^{(1,-1;a)}(T_{2g}, 2)$		0	0	0	0	0	0	$\frac{\sqrt{385}}{14784}$	0	$-\frac{\sqrt{165}}{2112}$	0	$-\frac{9\sqrt{11}}{704}$	0	$-\frac{\sqrt{55}}{64}$	0
		0	0	0	0	0	0	$-\frac{5\sqrt{11}}{2112}$	0	$\frac{5\sqrt{55}}{2112}$	0	$\frac{9\sqrt{33}}{704}$	0	$\frac{5\sqrt{77}}{448}$	
		0	0	0	0	0	0	$\frac{9\sqrt{154}}{4928}$	0	$\frac{5\sqrt{66}}{2112}$	0	$-\frac{5\sqrt{110}}{2112}$	0	$-\frac{9\sqrt{22}}{704}$	0
		0	0	0	0	0	0	$-\frac{9\sqrt{22}}{704}$	0	$-\frac{5\sqrt{110}}{2112}$	0	$\frac{5\sqrt{66}}{2112}$	0	$\frac{9\sqrt{154}}{4928}$	
		0	0	0	0	0	0	$\frac{5\sqrt{77}}{448}$	0	$\frac{9\sqrt{33}}{704}$	0	$\frac{5\sqrt{55}}{2112}$	0	$-\frac{5\sqrt{11}}{2112}$	0
		0	0	0	0	0	0	$-\frac{\sqrt{55}}{64}$	0	$-\frac{9\sqrt{11}}{704}$	0	$-\frac{\sqrt{165}}{2112}$	0	$\frac{\sqrt{385}}{14784}$	
		$\frac{\sqrt{385}}{14784}$	0	$\frac{9\sqrt{154}}{4928}$	0	$\frac{5\sqrt{77}}{448}$	0	0	$\frac{\sqrt{2310}}{2464}$	0	$\frac{9\sqrt{462}}{1232}$	0	$\frac{3\sqrt{770}}{224}$	0	0
		0	$-\frac{5\sqrt{11}}{2112}$	0	$-\frac{9\sqrt{22}}{704}$	0	$-\frac{\sqrt{55}}{64}$	$\frac{\sqrt{2310}}{2464}$	0	$-\frac{\sqrt{110}}{176}$	0	$-\frac{9\sqrt{66}}{352}$	0	0	0
		$-\frac{\sqrt{165}}{2112}$	0	$\frac{5\sqrt{66}}{2112}$	0	$\frac{9\sqrt{33}}{704}$	0	0	$-\frac{\sqrt{110}}{176}$	0	$\frac{5\sqrt{22}}{352}$	0	0	0	$-\frac{3\sqrt{770}}{224}$
		0	$\frac{5\sqrt{55}}{2112}$	0	$-\frac{5\sqrt{110}}{2112}$	0	$-\frac{9\sqrt{11}}{704}$	$\frac{9\sqrt{462}}{1232}$	0	$\frac{5\sqrt{22}}{352}$	0	0	0	$\frac{9\sqrt{66}}{352}$	0
		$-\frac{9\sqrt{11}}{704}$	0	$-\frac{5\sqrt{110}}{2112}$	0	$\frac{5\sqrt{55}}{2112}$	0	0	$-\frac{9\sqrt{66}}{352}$	0	0	0	$-\frac{5\sqrt{22}}{352}$	0	$-\frac{9\sqrt{462}}{1232}$
		0	$\frac{9\sqrt{33}}{704}$	0	$\frac{5\sqrt{66}}{2112}$	0	$-\frac{\sqrt{165}}{2112}$	$\frac{3\sqrt{770}}{224}$	0	0	0	$-\frac{5\sqrt{22}}{352}$	0	$\frac{\sqrt{110}}{176}$	0
		$-\frac{\sqrt{55}}{64}$	0	$-\frac{9\sqrt{22}}{704}$	0	$-\frac{5\sqrt{11}}{2112}$	0	0	0	0	$\frac{9\sqrt{66}}{352}$	0	$\frac{\sqrt{110}}{176}$	0	$-\frac{\sqrt{2310}}{2464}$
		0	$\frac{5\sqrt{77}}{448}$	0	$\frac{9\sqrt{154}}{4928}$	0	$\frac{\sqrt{385}}{14784}$	0	0	$-\frac{3\sqrt{770}}{224}$	0	$-\frac{9\sqrt{462}}{1232}$	0	$-\frac{\sqrt{2310}}{2464}$	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													
$\mathbb{Q}_{6,3}^{(1,-1;a)}(T_{2g},2)$		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													
$\mathbb{Q}_0^{(1,1;a)}(A_{1g})$		$-\frac{\sqrt{42}}{21}$	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													
	$\mathbb{Q}_{2,1}^{(1,1;a)}(E_g)$	$\frac{15\sqrt{7}}{98}$	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	$\frac{\sqrt{3}(x-y)(x+y)}{2}$													

*continued ...*



Table 10

No.	multipole	matrix													
$\mathbb{Q}_{2,2}^{(1,1;a)}(E_g)$	0	0	$\frac{3\sqrt{210}}{196}$	0	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	$-\frac{\sqrt{10}}{21}$		
	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	$-\frac{1}{14}$		
	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	$-\frac{\sqrt{10}}{21}$	0	0	0	0	0	0	$-\frac{1}{14}$	0	0	
887	symmetry	$\sqrt{3}yz$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{2,1}^{(1,1;a)}(T_{2g})$		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
888	symmetry	$\sqrt{3}xz$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{2,2}^{(1,1;a)}(T_{2g})$		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	0	$-\frac{5\sqrt{42}}{294}$	0	$\frac{5\sqrt{2}}{42}$
		$\frac{5\sqrt{2}}{42}$	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	0	$\frac{2\sqrt{7}}{49}$	0	$\frac{\sqrt{3}}{14}$
		0	0	0	0	0	$\frac{5\sqrt{2}}{42}$	0	0	0	0	0	0	$\frac{\sqrt{3}}{14}$	0
889	symmetry	$\sqrt{3}xy$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{2,3}^{(1,1;a)}(T_{2g})$		0	0	$-\frac{3\sqrt{210}i}{196}$	0	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	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	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	0	$\frac{4\sqrt{35}i}{147}$	0
		0	0	$\frac{9\sqrt{42}i}{196}$	0	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	0	$\frac{\sqrt{70}i}{147}$	0	0	0
		0	$-\frac{\sqrt{10}i}{21}$	0	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	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	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	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	0	$\frac{\sqrt{105}i}{98}$	0
		0	0	$-\frac{2\sqrt{105}i}{147}$	0	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	0	$-\frac{\sqrt{105}i}{98}$	0	0	0
		0	0	0	0	$-\frac{\sqrt{10}i}{21}$	0	0	0	0	0	0	$-\frac{i}{14}$	0	0
890	symmetry	$\frac{\sqrt{21}(x^4-3x^2y^2-3x^2z^2+y^4-3y^2z^2+z^4)}{6}$													

*continued ...*

Table 10

No.	multipole	matrix													
891	$\mathbb{Q}_4^{(1,1;a)}(A_{1g})$	$-\frac{\sqrt{110}}{84}$	0	0	0	$-\frac{5\sqrt{22}}{84}$	0	0	$\frac{2\sqrt{165}}{231}$	0	0	0	$\frac{2\sqrt{55}}{231}$	0	0
		0	$\frac{\sqrt{110}}{28}$	0	0	0	$-\frac{5\sqrt{22}}{84}$	0	0	$-\frac{8\sqrt{11}}{231}$	0	0	0	$\frac{4\sqrt{33}}{231}$	0
		0	0	$-\frac{\sqrt{110}}{42}$	0	0	0	0	0	0	$-\frac{\sqrt{330}}{231}$	0	0	0	$\frac{\sqrt{462}}{231}$
		0	0	0	$-\frac{\sqrt{110}}{42}$	0	0	$-\frac{\sqrt{462}}{231}$	0	0	0	$\frac{\sqrt{330}}{231}$	0	0	0
		$-\frac{5\sqrt{22}}{84}$	0	0	0	$\frac{\sqrt{110}}{28}$	0	0	$-\frac{4\sqrt{33}}{231}$	0	0	0	$\frac{8\sqrt{11}}{231}$	0	0
		0	$-\frac{5\sqrt{22}}{84}$	0	0	0	$-\frac{\sqrt{110}}{84}$	0	0	$-\frac{2\sqrt{55}}{231}$	0	0	0	$-\frac{2\sqrt{165}}{231}$	0
		0	0	0	$-\frac{\sqrt{462}}{231}$	0	0	$\frac{\sqrt{110}}{264}$	0	0	0	$\frac{5\sqrt{154}}{1848}$	0	0	0
		$\frac{2\sqrt{165}}{231}$	0	0	0	$-\frac{4\sqrt{33}}{231}$	0	0	$-\frac{13\sqrt{110}}{1848}$	0	0	0	$\frac{5\sqrt{330}}{1848}$	0	0
		0	$-\frac{8\sqrt{11}}{231}$	0	0	0	$-\frac{2\sqrt{55}}{231}$	0	0	$-\frac{\sqrt{110}}{616}$	0	0	0	$\frac{5\sqrt{330}}{1848}$	0
		0	0	$-\frac{\sqrt{330}}{231}$	0	0	0	0	0	0	$\frac{3\sqrt{110}}{616}$	0	0	0	$\frac{5\sqrt{154}}{1848}$
		0	0	0	$\frac{\sqrt{330}}{231}$	0	0	$\frac{5\sqrt{154}}{1848}$	0	0	0	$\frac{3\sqrt{110}}{616}$	0	0	0
		$\frac{2\sqrt{55}}{231}$	0	0	0	$\frac{8\sqrt{11}}{231}$	0	0	$\frac{5\sqrt{330}}{1848}$	0	0	0	$-\frac{\sqrt{110}}{616}$	0	0
		0	$\frac{4\sqrt{33}}{231}$	0	0	0	$-\frac{2\sqrt{165}}{231}$	0	0	$\frac{5\sqrt{330}}{1848}$	0	0	0	$-\frac{13\sqrt{110}}{1848}$	0
		0	0	$\frac{\sqrt{462}}{231}$	0	0	0	0	0	0	$\frac{5\sqrt{154}}{1848}$	0	0	0	$\frac{\sqrt{110}}{264}$
891	symmetry	$-\frac{\sqrt{15}(x^4-12x^2y^2+6x^2z^2+y^4+6y^2z^2-2z^4)}{12}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{4,1}^{(1,1;a)}(E_g)$		$-\frac{5\sqrt{154}}{588}$	0	0	0	$\frac{\sqrt{770}}{84}$	0	0	$\frac{10\sqrt{231}}{1617}$	0	0	0	$-\frac{2\sqrt{77}}{231}$	0	0
		0	$\frac{5\sqrt{154}}{196}$	0	0	0	$\frac{\sqrt{770}}{84}$	0	0	$-\frac{8\sqrt{385}}{1617}$	0	0	0	$-\frac{4\sqrt{1155}}{1155}$	0
		0	0	$-\frac{5\sqrt{154}}{294}$	0	0	0	0	0	0	$-\frac{5\sqrt{462}}{1617}$	0	0	0	$-\frac{\sqrt{330}}{165}$
		0	0	0	$-\frac{5\sqrt{154}}{294}$	0	0	$\frac{\sqrt{330}}{165}$	0	0	0	$\frac{5\sqrt{462}}{1617}$	0	0	0
		$\frac{\sqrt{770}}{84}$	0	0	0	$\frac{5\sqrt{154}}{196}$	0	0	$\frac{4\sqrt{1155}}{1155}$	0	0	0	$\frac{8\sqrt{385}}{1617}$	0	0
		0	$\frac{\sqrt{770}}{84}$	0	0	0	$-\frac{5\sqrt{154}}{588}$	0	0	$\frac{2\sqrt{77}}{231}$	0	0	0	0	$-\frac{10\sqrt{231}}{1617}$
		0	0	0	$\frac{\sqrt{330}}{165}$	0	0	$\frac{5\sqrt{154}}{1848}$	0	0	0	$-\frac{\sqrt{110}}{264}$	0	0	0
		$\frac{10\sqrt{231}}{1617}$	0	0	0	$\frac{4\sqrt{1155}}{1155}$	0	0	$-\frac{65\sqrt{154}}{12936}$	0	0	0	$-\frac{5\sqrt{462}}{1848}$	0	0
		0	$-\frac{8\sqrt{385}}{1617}$	0	0	0	$\frac{2\sqrt{77}}{231}$	0	0	$-\frac{5\sqrt{154}}{4312}$	0	0	0	$-\frac{5\sqrt{462}}{1848}$	0
		0	0	$-\frac{5\sqrt{462}}{1617}$	0	0	0	0	0	0	$\frac{15\sqrt{154}}{4312}$	0	0	0	$-\frac{\sqrt{110}}{264}$
		0	0	0	$\frac{5\sqrt{462}}{1617}$	0	0	$-\frac{\sqrt{110}}{264}$	0	0	0	$\frac{15\sqrt{154}}{4312}$	0	0	0
		$-\frac{2\sqrt{77}}{231}$	0	0	0	$\frac{8\sqrt{385}}{1617}$	0	0	$-\frac{5\sqrt{462}}{1848}$	0	0	0	$-\frac{5\sqrt{154}}{4312}$	0	0
		0	$-\frac{4\sqrt{1155}}{1155}$	0	0	0	$-\frac{10\sqrt{231}}{1617}$	0	0	$-\frac{5\sqrt{462}}{1848}$	0	0	0	$-\frac{65\sqrt{154}}{12936}$	0
		0	0	$-\frac{\sqrt{330}}{165}$	0	0	0	0	0	0	$-\frac{\sqrt{110}}{264}$	0	0	0	$\frac{5\sqrt{154}}{1848}$
892	symmetry	$\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{4,2}^{(1,1;a)}(E_g)$		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	$-\frac{\sqrt{2310}}{6468}$	0	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
893	symmetry	$\frac{\sqrt{35}yz(y-z)(y+z)}{2}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{4,1}^{(1,1;a)}(T_{1g})$		0	$-\frac{\sqrt{330i}}{84}$	0	$-\frac{\sqrt{165i}}{84}$	0	0	$\frac{\sqrt{77i}}{154}$	0	$\frac{5\sqrt{33i}}{231}$	0	$\frac{\sqrt{55i}}{154}$	0	0	0
		$\frac{\sqrt{330i}}{84}$	0	$\frac{5\sqrt{33i}}{84}$	0	0	0	0	$-\frac{13\sqrt{55i}}{770}$	0	$-\frac{\sqrt{11i}}{77}$	0	$\frac{\sqrt{165i}}{330}$	0	0
		0	$-\frac{5\sqrt{33i}}{84}$	0	0	0	$\frac{\sqrt{165i}}{84}$	$\frac{3\sqrt{770i}}{1540}$	0	$\frac{\sqrt{330i}}{4620}$	0	$-\frac{\sqrt{22i}}{44}$	0	$-\frac{\sqrt{110i}}{1540}$	0
		$\frac{\sqrt{165i}}{84}$	0	0	0	$-\frac{5\sqrt{33i}}{84}$	0	0	$\frac{\sqrt{110i}}{1540}$	0	$\frac{\sqrt{22i}}{44}$	0	$-\frac{\sqrt{330i}}{4620}$	0	$-\frac{3\sqrt{770i}}{1540}$
		0	0	0	$\frac{5\sqrt{33i}}{84}$	0	$\frac{\sqrt{330i}}{84}$	0	0	$-\frac{\sqrt{165i}}{330}$	0	$\frac{\sqrt{11i}}{77}$	0	$\frac{13\sqrt{55i}}{770}$	0
		0	0	$-\frac{\sqrt{165i}}{84}$	0	$-\frac{\sqrt{330i}}{84}$	0	0	0	0	$-\frac{\sqrt{55i}}{154}$	0	$-\frac{5\sqrt{33i}}{231}$	0	$-\frac{\sqrt{77i}}{154}$
		$-\frac{\sqrt{77i}}{154}$	0	$-\frac{3\sqrt{770i}}{1540}$	0	0	0	0	$\frac{5\sqrt{462i}}{1848}$	0	$\frac{\sqrt{2310i}}{1848}$	0	0	0	0
		0	$\frac{13\sqrt{55i}}{770}$	0	$-\frac{\sqrt{110i}}{1540}$	0	0	$-\frac{5\sqrt{462i}}{1848}$	0	$-\frac{5\sqrt{22i}}{616}$	0	$\frac{\sqrt{330i}}{924}$	0	0	0
		$-\frac{5\sqrt{33i}}{231}$	0	$-\frac{\sqrt{330i}}{4620}$	0	$\frac{\sqrt{165i}}{330}$	0	0	$\frac{5\sqrt{22i}}{616}$	0	$-\frac{3\sqrt{110i}}{616}$	0	0	0	0
		0	$\frac{\sqrt{11i}}{77}$	0	$-\frac{\sqrt{22i}}{44}$	0	$\frac{\sqrt{55i}}{154}$	$-\frac{\sqrt{2310i}}{1848}$	0	$\frac{3\sqrt{110i}}{616}$	0	0	0	$-\frac{\sqrt{330i}}{924}$	0
		$-\frac{\sqrt{55i}}{154}$	0	$\frac{\sqrt{22i}}{44}$	0	$-\frac{\sqrt{11i}}{77}$	0	0	$-\frac{\sqrt{330i}}{924}$	0	0	0	$\frac{3\sqrt{110i}}{616}$	0	$-\frac{\sqrt{2310i}}{1848}$
		0	$-\frac{\sqrt{165i}}{330}$	0	$\frac{\sqrt{330i}}{4620}$	0	$\frac{5\sqrt{33i}}{231}$	0	0	0	0	$-\frac{3\sqrt{110i}}{616}$	0	$\frac{5\sqrt{22i}}{616}$	0
		0	0	$\frac{\sqrt{110i}}{1540}$	0	$-\frac{13\sqrt{55i}}{770}$	0	0	0	0	$\frac{\sqrt{330i}}{924}$	0	$-\frac{5\sqrt{22i}}{616}$	0	$-\frac{5\sqrt{462i}}{1848}$
		0	0	0	$\frac{3\sqrt{770i}}{1540}$	0	$\frac{\sqrt{77i}}{154}$	0	0	0	0	$\frac{\sqrt{2310i}}{1848}$	0	$\frac{5\sqrt{462i}}{1848}$	0
894	symmetry	$-\frac{\sqrt{35}xz(x-z)(x+z)}{2}$													

*continued ...*



Table 10

No.	multipole	matrix													
$\mathbb{Q}_{4,2}^{(1,1;a)}(T_{1g})$		0	$-\frac{\sqrt{330}}{84}$	0	$\frac{\sqrt{165}}{84}$	0	0	$-\frac{\sqrt{77}}{154}$	0	$\frac{5\sqrt{33}}{231}$	0	$-\frac{\sqrt{55}}{154}$	0	0	0
		$-\frac{\sqrt{330}}{84}$	0	$\frac{5\sqrt{33}}{84}$	0	0	0	0	$\frac{13\sqrt{55}}{770}$	0	$-\frac{\sqrt{11}}{77}$	0	$-\frac{\sqrt{165}}{330}$	0	0
		0	$\frac{5\sqrt{33}}{84}$	0	0	0	$-\frac{\sqrt{165}}{84}$	$\frac{3\sqrt{770}}{1540}$	0	$-\frac{\sqrt{330}}{4620}$	0	$-\frac{\sqrt{22}}{44}$	0	$\frac{\sqrt{110}}{1540}$	0
		$\frac{\sqrt{165}}{84}$	0	0	0	$-\frac{5\sqrt{33}}{84}$	0	0	$\frac{\sqrt{110}}{1540}$	0	$-\frac{\sqrt{22}}{44}$	0	$-\frac{\sqrt{330}}{4620}$	0	$\frac{3\sqrt{770}}{1540}$
		0	0	0	$-\frac{5\sqrt{33}}{84}$	0	$\frac{\sqrt{330}}{84}$	0	0	$-\frac{\sqrt{165}}{330}$	0	$-\frac{\sqrt{11}}{77}$	0	$\frac{13\sqrt{55}}{770}$	0
		0	0	$-\frac{\sqrt{165}}{84}$	0	$\frac{\sqrt{330}}{84}$	0	0	0	0	$-\frac{\sqrt{55}}{154}$	0	$\frac{5\sqrt{33}}{231}$	0	$-\frac{\sqrt{77}}{154}$
		$-\frac{\sqrt{77}}{154}$	0	$\frac{3\sqrt{770}}{1540}$	0	0	0	0	$\frac{5\sqrt{462}}{1848}$	0	$-\frac{\sqrt{2310}}{1848}$	0	0	0	0
		0	$\frac{13\sqrt{55}}{770}$	0	$\frac{\sqrt{110}}{1540}$	0	0	$\frac{5\sqrt{462}}{1848}$	0	$-\frac{5\sqrt{22}}{616}$	0	$-\frac{\sqrt{330}}{924}$	0	0	0
		$\frac{5\sqrt{33}}{231}$	0	$-\frac{\sqrt{330}}{4620}$	0	$-\frac{\sqrt{165}}{330}$	0	0	$-\frac{5\sqrt{22}}{616}$	0	$-\frac{3\sqrt{110}}{616}$	0	0	0	0
		0	$-\frac{\sqrt{11}}{77}$	0	$-\frac{\sqrt{22}}{44}$	0	$-\frac{\sqrt{55}}{154}$	$-\frac{\sqrt{2310}}{1848}$	0	$-\frac{3\sqrt{110}}{616}$	0	0	0	$\frac{\sqrt{330}}{924}$	0
		$-\frac{\sqrt{55}}{154}$	0	$-\frac{\sqrt{22}}{44}$	0	$-\frac{\sqrt{11}}{77}$	0	0	$-\frac{\sqrt{330}}{924}$	0	0	0	$\frac{3\sqrt{110}}{616}$	0	$\frac{\sqrt{2310}}{1848}$
		0	$-\frac{\sqrt{165}}{330}$	0	$-\frac{\sqrt{330}}{4620}$	0	$\frac{5\sqrt{33}}{231}$	0	0	0	0	$\frac{3\sqrt{110}}{616}$	0	$\frac{5\sqrt{22}}{616}$	0
		0	0	$\frac{\sqrt{110}}{1540}$	0	$\frac{13\sqrt{55}}{770}$	0	0	0	0	$\frac{\sqrt{330}}{924}$	0	$\frac{5\sqrt{22}}{616}$	0	$-\frac{5\sqrt{462}}{1848}$
		0	0	0	$\frac{3\sqrt{770}}{1540}$	0	$-\frac{\sqrt{77}}{154}$	0	0	0	0	$\frac{\sqrt{2310}}{1848}$	0	$-\frac{5\sqrt{462}}{1848}$	0
895	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{4,3}^{(1,1;a)}(T_{1g})$		0	0	0	0	$\frac{\sqrt{330}i}{42}$	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	$-\frac{8\sqrt{55}i}{385}$	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	
		$-\frac{\sqrt{330}i}{42}$	0	0	0	0	0	0	$-\frac{8\sqrt{55}i}{385}$	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	$\frac{2\sqrt{770}i}{385}$	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	$-\frac{5\sqrt{22}i}{308}$	0	0	
		0	0	0	0	0	$\frac{4\sqrt{33}i}{231}$	0	0	0	0	0	$-\frac{5\sqrt{22}i}{308}$	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	
		$\frac{4\sqrt{33}i}{231}$	0	0	0	0	0	0	$\frac{5\sqrt{22}i}{308}$	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	$\frac{2\sqrt{770}i}{385}$	0	0	0	0	0	0	$\frac{\sqrt{2310}i}{924}$	0	0	0	
896	symmetry	$\frac{\sqrt{5}yz(6x^2-y^2-z^2)}{2}$													

continued ...

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{4,1}^{(1,1;a)}(T_{2g})$		0	$-\frac{\sqrt{2310}i}{588}$	0	$\frac{\sqrt{1155}i}{84}$	0	0	$\frac{\sqrt{11}i}{154}$	0	$\frac{5\sqrt{231}i}{1617}$	0	$-\frac{\sqrt{385}i}{154}$	0	0	0
		$\frac{\sqrt{2310}i}{588}$	0	$\frac{5\sqrt{231}i}{588}$	0	0	0	0	$-\frac{13\sqrt{385}i}{5390}$	0	$-\frac{\sqrt{77}i}{539}$	0	$-\frac{\sqrt{1155}i}{330}$	0	0
		0	$-\frac{5\sqrt{231}i}{588}$	0	0	0	$-\frac{\sqrt{1155}i}{84}$	$-\frac{3\sqrt{110}i}{220}$	0	$\frac{\sqrt{2310}i}{32340}$	0	$-\frac{\sqrt{154}i}{308}$	0	$\frac{\sqrt{770}i}{1540}$	0
		$-\frac{\sqrt{1155}i}{84}$	0	0	0	$-\frac{5\sqrt{231}i}{588}$	0	0	$-\frac{\sqrt{770}i}{1540}$	0	$\frac{\sqrt{154}i}{308}$	0	$-\frac{\sqrt{2310}i}{32340}$	0	$\frac{3\sqrt{110}i}{220}$
		0	0	0	$\frac{5\sqrt{231}i}{588}$	0	$\frac{\sqrt{2310}i}{588}$	0	0	$\frac{\sqrt{1155}i}{330}$	0	$\frac{\sqrt{77}i}{539}$	0	$\frac{13\sqrt{385}i}{5390}$	0
		0	0	$\frac{\sqrt{1155}i}{84}$	0	$-\frac{\sqrt{2310}i}{588}$	0	0	0	0	$\frac{\sqrt{385}i}{154}$	0	$-\frac{5\sqrt{231}i}{1617}$	0	$-\frac{\sqrt{11}i}{154}$
		$-\frac{\sqrt{11}i}{154}$	0	$\frac{3\sqrt{110}i}{220}$	0	0	0	0	$\frac{5\sqrt{66}i}{1848}$	0	$-\frac{\sqrt{330}i}{264}$	0	0	0	0
		0	$\frac{13\sqrt{385}i}{5390}$	0	$\frac{\sqrt{770}i}{1540}$	0	0	$-\frac{5\sqrt{66}i}{1848}$	0	$-\frac{5\sqrt{154}i}{4312}$	0	$-\frac{\sqrt{2310}i}{924}$	0	0	0
		$-\frac{5\sqrt{231}i}{1617}$	0	$-\frac{\sqrt{2310}i}{32340}$	0	$-\frac{\sqrt{1155}i}{330}$	0	0	$\frac{5\sqrt{154}i}{4312}$	0	$-\frac{3\sqrt{770}i}{4312}$	0	0	0	0
		0	$\frac{\sqrt{77}i}{539}$	0	$-\frac{\sqrt{154}i}{308}$	0	$-\frac{\sqrt{385}i}{154}$	$\frac{\sqrt{330}i}{264}$	0	$\frac{3\sqrt{770}i}{4312}$	0	0	0	$\frac{\sqrt{2310}i}{924}$	0
		$\frac{\sqrt{385}i}{154}$	0	$\frac{\sqrt{154}i}{308}$	0	$-\frac{\sqrt{77}i}{539}$	0	0	$\frac{\sqrt{2310}i}{924}$	0	0	0	$\frac{3\sqrt{770}i}{4312}$	0	$\frac{\sqrt{330}i}{264}$
		0	$\frac{\sqrt{1155}i}{330}$	0	$\frac{\sqrt{2310}i}{32340}$	0	$\frac{5\sqrt{231}i}{1617}$	0	0	0	0	$-\frac{3\sqrt{770}i}{4312}$	0	$\frac{5\sqrt{154}i}{4312}$	0
		0	0	$-\frac{\sqrt{770}i}{1540}$	0	$-\frac{13\sqrt{385}i}{5390}$	0	0	0	0	$-\frac{\sqrt{2310}i}{924}$	0	$-\frac{5\sqrt{154}i}{4312}$	0	$-\frac{5\sqrt{66}i}{1848}$
		0	0	0	$-\frac{3\sqrt{110}i}{220}$	0	$\frac{\sqrt{11}i}{154}$	0	0	0	0	$-\frac{\sqrt{330}i}{264}$	0	$\frac{5\sqrt{66}i}{1848}$	0
897	symmetry	$-\frac{\sqrt{5}xz(x^2-6y^2+z^2)}{2}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{4,2}^{(1,1;a)}(T_{2g})$		0	$\frac{\sqrt{2310}}{588}$	0	$\frac{\sqrt{1155}}{84}$	0	0	$\frac{\sqrt{11}}{154}$	0	$-\frac{5\sqrt{231}}{1617}$	0	$-\frac{\sqrt{385}}{154}$	0	0	0
		$\frac{\sqrt{2310}}{588}$	0	$-\frac{5\sqrt{231}}{588}$	0	0	0	0	$-\frac{13\sqrt{385}}{5390}$	0	$\frac{\sqrt{77}}{539}$	0	$-\frac{\sqrt{1155}}{330}$	0	0
		0	$-\frac{5\sqrt{231}}{588}$	0	0	0	$-\frac{\sqrt{1155}}{84}$	$\frac{3\sqrt{110}}{220}$	0	$\frac{\sqrt{2310}}{32340}$	0	$\frac{\sqrt{154}}{308}$	0	$\frac{\sqrt{770}}{1540}$	0
		$\frac{\sqrt{1155}}{84}$	0	0	0	$\frac{5\sqrt{231}}{588}$	0	0	$\frac{\sqrt{770}}{1540}$	0	$\frac{\sqrt{154}}{308}$	0	$\frac{\sqrt{2310}}{32340}$	0	$\frac{3\sqrt{110}}{220}$
		0	0	0	$\frac{5\sqrt{231}}{588}$	0	$-\frac{\sqrt{2310}}{588}$	0	0	$-\frac{\sqrt{1155}}{330}$	0	$\frac{\sqrt{77}}{539}$	0	$-\frac{13\sqrt{385}}{5390}$	0
		0	0	$-\frac{\sqrt{1155}}{84}$	0	$-\frac{\sqrt{2310}}{588}$	0	0	0	$-\frac{\sqrt{385}}{154}$	0	$-\frac{5\sqrt{231}}{1617}$	0	$\frac{\sqrt{11}}{154}$	0
		$\frac{\sqrt{11}}{154}$	0	$\frac{3\sqrt{110}}{220}$	0	0	0	0	$-\frac{5\sqrt{66}}{1848}$	0	$-\frac{\sqrt{330}}{264}$	0	0	0	0
		0	$-\frac{13\sqrt{385}}{5390}$	0	$\frac{\sqrt{770}}{1540}$	0	0	$-\frac{5\sqrt{66}}{1848}$	0	$\frac{5\sqrt{154}}{4312}$	0	$-\frac{\sqrt{2310}}{924}$	0	0	0
		$-\frac{5\sqrt{231}}{1617}$	0	$\frac{\sqrt{2310}}{32340}$	0	$-\frac{\sqrt{1155}}{330}$	0	0	$\frac{5\sqrt{154}}{4312}$	0	$\frac{3\sqrt{770}}{4312}$	0	0	0	0
		0	$\frac{\sqrt{77}}{539}$	0	$\frac{\sqrt{154}}{308}$	0	$-\frac{\sqrt{385}}{154}$	$-\frac{\sqrt{330}}{264}$	0	$\frac{3\sqrt{770}}{4312}$	0	0	0	$\frac{\sqrt{2310}}{924}$	0
		$-\frac{\sqrt{385}}{154}$	0	$\frac{\sqrt{154}}{308}$	0	$\frac{\sqrt{77}}{539}$	0	0	$-\frac{\sqrt{2310}}{924}$	0	0	0	$-\frac{3\sqrt{770}}{4312}$	0	$\frac{\sqrt{330}}{264}$
		0	$-\frac{\sqrt{1155}}{330}$	0	$\frac{\sqrt{2310}}{32340}$	0	$-\frac{5\sqrt{231}}{1617}$	0	0	0	0	$-\frac{3\sqrt{770}}{4312}$	0	$-\frac{5\sqrt{154}}{4312}$	0
		0	0	$\frac{\sqrt{770}}{1540}$	0	$-\frac{13\sqrt{385}}{5390}$	0	0	0	0	$\frac{\sqrt{2310}}{924}$	0	$-\frac{5\sqrt{154}}{4312}$	0	$\frac{5\sqrt{66}}{1848}$
		0	0	0	$\frac{3\sqrt{110}}{220}$	0	$\frac{\sqrt{11}}{154}$	0	0	0	0	$\frac{\sqrt{330}}{264}$	0	$\frac{5\sqrt{66}}{1848}$	0
898	symmetry	$-\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{Q}_{4,3}^{(1,1;a)}(T_{2g})$		0	0	$\frac{\sqrt{1155}i}{98}$	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	$-\frac{2\sqrt{77}i}{539}$	0	0	0	0	$-\frac{6\sqrt{55}i}{385}$
		0	0	0	$-\frac{\sqrt{1155}i}{98}$	0	0	0	0	0	$-\frac{4\sqrt{385}i}{539}$	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	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	$x$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{G}_{1,1}^{(1,0;a)}(T_{1g})$		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
900	symmetry	$y$													

*continued ...*

Table 10

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

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{G}_{1,3}^{(1,0;a)}(T_{1g})$		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
902	symmetry	$\sqrt{15}xyz$													

*continued ...*



Table 10

No.	multipole	matrix													
$\mathbb{G}_3^{(1,0;a)}(A_{2g})$		0	0	0	0	0	0	0	0	$\frac{\sqrt{2}}{6}$	0	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	$-\frac{\sqrt{14}}{12}$	
		0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{2}}{6}$	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	
903	symmetry	$\frac{x(2x^2-3y^2-3z^2)}{2}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{G}_{3,1}^{(1,0;a)}(T_{1g})$		0	0	0	0	0	0	$\frac{\sqrt{42}i}{48}$	0	$-\frac{\sqrt{2}i}{8}$	0	$\frac{\sqrt{30}i}{48}$	0	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{30}i}{48}$	0	$-\frac{\sqrt{6}i}{24}$	0	$\frac{\sqrt{10}i}{16}$	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{105}i}{48}$	0	$-\frac{\sqrt{5}i}{16}$	0	$\frac{\sqrt{3}i}{48}$	0	$\frac{\sqrt{15}i}{16}$	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{15}i}{16}$	0	$-\frac{\sqrt{3}i}{48}$	0	$\frac{\sqrt{5}i}{16}$	0	$\frac{\sqrt{105}i}{48}$
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{10}i}{16}$	0	$\frac{\sqrt{6}i}{24}$	0	$\frac{\sqrt{30}i}{48}$	0
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{30}i}{48}$	0	$\frac{\sqrt{2}i}{8}$	0	$-\frac{\sqrt{42}i}{48}$
		$-\frac{\sqrt{42}i}{48}$	0	$\frac{\sqrt{105}i}{48}$	0	0	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{30}i}{48}$	0	$\frac{\sqrt{15}i}{16}$	0	0	0	0	0	0	0	0	0	0
		$\frac{\sqrt{2}i}{8}$	0	$\frac{\sqrt{5}i}{16}$	0	$\frac{\sqrt{10}i}{16}$	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{6}i}{24}$	0	$\frac{\sqrt{3}i}{48}$	0	$\frac{\sqrt{30}i}{48}$	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{30}i}{48}$	0	$-\frac{\sqrt{3}i}{48}$	0	$-\frac{\sqrt{6}i}{24}$	0	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{10}i}{16}$	0	$-\frac{\sqrt{5}i}{16}$	0	$-\frac{\sqrt{2}i}{8}$	0	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{15}i}{16}$	0	$-\frac{\sqrt{30}i}{48}$	0	0	0	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{105}i}{48}$	0	$\frac{\sqrt{42}i}{48}$	0	0	0	0	0	0	0	0
904	symmetry	$-\frac{y(3x^2-2y^2+3z^2)}{2}$													

*continued ...*

Table 10

No.	multipole	matrix														
$\mathbb{G}_{3,2}^{(1,0;a)}(T_{1g})$		0	0	0	0	0	0	$-\frac{\sqrt{42}}{48}$	0	$-\frac{\sqrt{2}}{8}$	0	$-\frac{\sqrt{30}}{48}$	0	0	0	
		0	0	0	0	0	0	$\frac{\sqrt{30}}{48}$	0	$-\frac{\sqrt{6}}{24}$	0	$-\frac{\sqrt{10}}{16}$	0	0	0	
		0	0	0	0	0	0	$-\frac{\sqrt{105}}{48}$	0	$\frac{\sqrt{5}}{16}$	0	$\frac{\sqrt{3}}{48}$	0	$-\frac{\sqrt{15}}{16}$	0	
		0	0	0	0	0	0	$-\frac{\sqrt{15}}{16}$	0	$\frac{\sqrt{3}}{48}$	0	$\frac{\sqrt{5}}{16}$	0	$-\frac{\sqrt{105}}{48}$	0	
		0	0	0	0	0	0	0	$-\frac{\sqrt{10}}{16}$	0	$-\frac{\sqrt{6}}{24}$	0	$\frac{\sqrt{30}}{48}$	0	0	
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{30}}{48}$	0	$-\frac{\sqrt{2}}{8}$	0	$-\frac{\sqrt{42}}{48}$	0	
		$-\frac{\sqrt{42}}{48}$	0	$-\frac{\sqrt{105}}{48}$	0	0	0	0	0	0	0	0	0	0	0	
		0	$\frac{\sqrt{30}}{48}$	0	$-\frac{\sqrt{15}}{16}$	0	0	0	0	0	0	0	0	0	0	
		$-\frac{\sqrt{2}}{8}$	0	$\frac{\sqrt{5}}{16}$	0	$-\frac{\sqrt{10}}{16}$	0	0	0	0	0	0	0	0	0	
		0	$-\frac{\sqrt{6}}{24}$	0	$\frac{\sqrt{3}}{48}$	0	$-\frac{\sqrt{30}}{48}$	0	0	0	0	0	0	0	0	
		$-\frac{\sqrt{30}}{48}$	0	$\frac{\sqrt{3}}{48}$	0	$-\frac{\sqrt{6}}{24}$	0	0	0	0	0	0	0	0	0	
		0	$-\frac{\sqrt{10}}{16}$	0	$\frac{\sqrt{5}}{16}$	0	$-\frac{\sqrt{2}}{8}$	0	0	0	0	0	0	0	0	
		0	0	$-\frac{\sqrt{15}}{16}$	0	$\frac{\sqrt{30}}{48}$	0	0	0	0	0	0	0	0	0	
		0	0	0	$-\frac{\sqrt{105}}{48}$	0	$-\frac{\sqrt{42}}{48}$	0	0	0	0	0	0	0	0	
905	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$														

*continued ...*

Table 10

No.	multipole	matrix														
$\mathbb{G}_{3,3}^{(1,0;a)}(T_{1g})$		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
906	symmetry	$\frac{\sqrt{15}x(y-z)(y+z)}{2}$														

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{G}_{3,1}^{(1,0;a)}(T_{2g})$		0	0	0	0	0	0	$\frac{\sqrt{70}i}{48}$	0	$-\frac{\sqrt{30}i}{24}$	0	$-\frac{\sqrt{2}i}{16}$	0	0	0
		0	0	0	0	0	0	$-\frac{5\sqrt{2}i}{48}$	0	$-\frac{\sqrt{10}i}{24}$	0	$-\frac{\sqrt{6}i}{16}$	0	0	0
		0	0	0	0	0	0	$\frac{\sqrt{7}i}{16}$	0	$-\frac{5\sqrt{3}i}{48}$	0	$\frac{\sqrt{5}i}{48}$	0	$-\frac{3i}{16}$	0
		0	0	0	0	0	0	$\frac{3i}{16}$	0	$-\frac{\sqrt{5}i}{48}$	0	$\frac{5\sqrt{3}i}{48}$	0	$-\frac{\sqrt{7}i}{16}$	0
		0	0	0	0	0	0	0	$\frac{\sqrt{6}i}{16}$	0	$\frac{\sqrt{10}i}{24}$	0	$\frac{5\sqrt{2}i}{48}$	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{2}i}{16}$	0	$\frac{\sqrt{30}i}{24}$	0	$-\frac{\sqrt{70}i}{48}$	0
		$-\frac{\sqrt{70}i}{48}$	0	$-\frac{\sqrt{7}i}{16}$	0	0	0	0	0	0	0	0	0	0	0
		0	$\frac{5\sqrt{2}i}{48}$	0	$-\frac{3i}{16}$	0	0	0	0	0	0	0	0	0	0
		$\frac{\sqrt{30}i}{24}$	0	$\frac{5\sqrt{3}i}{48}$	0	$-\frac{\sqrt{6}i}{16}$	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{10}i}{24}$	0	$\frac{\sqrt{5}i}{48}$	0	$-\frac{\sqrt{2}i}{16}$	0	0	0	0	0	0	0	0
		$\frac{\sqrt{2}i}{16}$	0	$-\frac{\sqrt{5}i}{48}$	0	$-\frac{\sqrt{10}i}{24}$	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{6}i}{16}$	0	$-\frac{5\sqrt{3}i}{48}$	0	$-\frac{\sqrt{30}i}{24}$	0	0	0	0	0	0	0	0
		0	0	$\frac{3i}{16}$	0	$-\frac{5\sqrt{2}i}{48}$	0	0	0	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{7}i}{16}$	0	$\frac{\sqrt{70}i}{48}$	0	0	0	0	0	0	0	0
907	symmetry	$-\frac{\sqrt{15}y(x-z)(x+z)}{2}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{G}_{3,2}^{(1,0;a)}(T_{2g})$		0	0	0	0	0	0	$\frac{\sqrt{70}}{48}$	0	$\frac{\sqrt{30}}{24}$	0	$-\frac{\sqrt{2}}{16}$	0	0	0
		0	0	0	0	0	0	$-\frac{5\sqrt{2}}{48}$	0	$\frac{\sqrt{10}}{24}$	0	$-\frac{\sqrt{6}}{16}$	0	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{7}}{16}$	0	$-\frac{5\sqrt{3}}{48}$	0	$-\frac{\sqrt{5}}{48}$	0	$-\frac{3}{16}$	0
		0	0	0	0	0	0	$-\frac{3}{16}$	0	$-\frac{\sqrt{5}}{48}$	0	$-\frac{5\sqrt{3}}{48}$	0	$-\frac{\sqrt{7}}{16}$	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{6}}{16}$	0	$\frac{\sqrt{10}}{24}$	0	$-\frac{5\sqrt{2}}{48}$	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{2}}{16}$	0	$\frac{\sqrt{30}}{24}$	0	$\frac{\sqrt{70}}{48}$	0
		$\frac{\sqrt{70}}{48}$	0	$-\frac{\sqrt{7}}{16}$	0	0	0	0	0	0	0	0	0	0	0
		0	$-\frac{5\sqrt{2}}{48}$	0	$-\frac{3}{16}$	0	0	0	0	0	0	0	0	0	0
		$\frac{\sqrt{30}}{24}$	0	$-\frac{5\sqrt{3}}{48}$	0	$-\frac{\sqrt{6}}{16}$	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{10}}{24}$	0	$-\frac{\sqrt{5}}{48}$	0	$-\frac{\sqrt{2}}{16}$	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{2}}{16}$	0	$-\frac{\sqrt{5}}{48}$	0	$\frac{\sqrt{10}}{24}$	0	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{6}}{16}$	0	$-\frac{5\sqrt{3}}{48}$	0	$\frac{\sqrt{30}}{24}$	0	0	0	0	0	0	0	0
		0	0	$-\frac{3}{16}$	0	$-\frac{5\sqrt{2}}{48}$	0	0	0	0	0	0	0	0	0
		0	0	0	$-\frac{\sqrt{7}}{16}$	0	$\frac{\sqrt{70}}{48}$	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													
$\mathbb{G}_{3,3}^{(1,0;a)}(T_{2g})$		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	$\frac{3\sqrt{35}xyz(x-y)(x+y)}{2}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{G}_{5,1}^{(1,0;a)}(E_g)$		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	$-\frac{\sqrt{105}}{30}$	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	
910	symmetry	$\frac{\sqrt{105}xyz(x^2+y^2-2z^2)}{2}$													

*continued ...*



Table 10

No.	multipole	matrix													
$\mathbb{G}_{5,2}^{(1,0;a)}(E_g)$		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
911	symmetry	$\frac{x(8x^4 - 40x^2y^2 - 40x^2z^2 + 15y^4 + 30y^2z^2 + 15z^4)}{8}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{G}_{5,1}^{(1,0;a)}(T_{1g},1)$		0	0	0	0	0	0	$\frac{\sqrt{30}i}{192}$	0	$-\frac{5\sqrt{70}i}{448}$	0	$\frac{5\sqrt{42}i}{192}$	0	$-\frac{\sqrt{210}i}{64}$	0
		0	0	0	0	0	0	$-\frac{23\sqrt{42}i}{1344}$	0	$\frac{13\sqrt{210}i}{1344}$	0	$-\frac{\sqrt{14}i}{64}$	0	$-\frac{7\sqrt{6}i}{64}$	
		0	0	0	0	0	0	$-\frac{7\sqrt{3}i}{96}$	0	$\frac{11\sqrt{7}i}{224}$	0	$-\frac{\sqrt{105}i}{672}$	0	$-\frac{\sqrt{21}i}{32}$	0
		0	0	0	0	0	0	$\frac{\sqrt{21}i}{32}$	0	$\frac{\sqrt{105}i}{672}$	0	$-\frac{11\sqrt{7}i}{224}$	0	$\frac{7\sqrt{3}i}{96}$	
		0	0	0	0	0	0	$\frac{7\sqrt{6}i}{64}$	0	$\frac{\sqrt{14}i}{64}$	0	$-\frac{13\sqrt{210}i}{1344}$	0	$\frac{23\sqrt{42}i}{1344}$	0
		0	0	0	0	0	0	$\frac{\sqrt{210}i}{64}$	0	$-\frac{5\sqrt{42}i}{192}$	0	$\frac{5\sqrt{70}i}{448}$	0	$-\frac{\sqrt{30}i}{192}$	
		$-\frac{\sqrt{30}i}{192}$	0	$\frac{7\sqrt{3}i}{96}$	0	$-\frac{7\sqrt{6}i}{64}$	0	0	0	0	0	0	0	0	0
		0	$\frac{23\sqrt{42}i}{1344}$	0	$-\frac{\sqrt{21}i}{32}$	0	$-\frac{\sqrt{210}i}{64}$	0	0	0	0	0	0	0	0
		$\frac{5\sqrt{70}i}{448}$	0	$-\frac{11\sqrt{7}i}{224}$	0	$-\frac{\sqrt{14}i}{64}$	0	0	0	0	0	0	0	0	0
		0	$-\frac{13\sqrt{210}i}{1344}$	0	$-\frac{\sqrt{105}i}{672}$	0	$\frac{5\sqrt{42}i}{192}$	0	0	0	0	0	0	0	0
		$-\frac{5\sqrt{42}i}{192}$	0	$\frac{\sqrt{105}i}{672}$	0	$\frac{13\sqrt{210}i}{1344}$	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{14}i}{64}$	0	$\frac{11\sqrt{7}i}{224}$	0	$-\frac{5\sqrt{70}i}{448}$	0	0	0	0	0	0	0	0
		$\frac{\sqrt{210}i}{64}$	0	$\frac{\sqrt{21}i}{32}$	0	$-\frac{23\sqrt{42}i}{1344}$	0	0	0	0	0	0	0	0	0
		0	$\frac{7\sqrt{6}i}{64}$	0	$-\frac{7\sqrt{3}i}{96}$	0	$\frac{\sqrt{30}i}{192}$	0	0	0	0	0	0	0	0
912	symmetry	$\frac{y(15x^4-40x^2y^2+30x^2z^2+8y^4-40y^2z^2+15z^4)}{8}$													

continued ...

Table 10

No.	multipole	matrix													
$\mathbb{G}_{5,2}^{(1,0;a)}(T_{1g},1)$		0	0	0	0	0	0	$-\frac{\sqrt{30}}{192}$	0	$-\frac{5\sqrt{70}}{448}$	0	$-\frac{5\sqrt{42}}{192}$	0	$-\frac{\sqrt{210}}{64}$	0
		0	0	0	0	0	0	$\frac{23\sqrt{42}}{1344}$	0	$\frac{13\sqrt{210}}{1344}$	0	$\frac{\sqrt{14}}{64}$	0	$-\frac{7\sqrt{6}}{64}$	
		0	0	0	0	0	0	$-\frac{7\sqrt{3}}{96}$	0	$-\frac{11\sqrt{7}}{224}$	0	$-\frac{\sqrt{105}}{672}$	0	$\frac{\sqrt{21}}{32}$	0
		0	0	0	0	0	0	$\frac{\sqrt{21}}{32}$	0	$-\frac{\sqrt{105}}{672}$	0	$-\frac{11\sqrt{7}}{224}$	0	$-\frac{7\sqrt{3}}{96}$	
		0	0	0	0	0	0	$-\frac{7\sqrt{6}}{64}$	0	$\frac{\sqrt{14}}{64}$	0	$\frac{13\sqrt{210}}{1344}$	0	$\frac{23\sqrt{42}}{1344}$	0
		0	0	0	0	0	0	$-\frac{\sqrt{210}}{64}$	0	$-\frac{5\sqrt{42}}{192}$	0	$-\frac{5\sqrt{70}}{448}$	0	$-\frac{\sqrt{30}}{192}$	
		$-\frac{\sqrt{30}}{192}$	0	$-\frac{7\sqrt{3}}{96}$	0	$-\frac{7\sqrt{6}}{64}$	0	0	0	0	0	0	0	0	0
		0	$\frac{23\sqrt{42}}{1344}$	0	$\frac{\sqrt{21}}{32}$	0	$-\frac{\sqrt{210}}{64}$	0	0	0	0	0	0	0	0
		$-\frac{5\sqrt{70}}{448}$	0	$-\frac{11\sqrt{7}}{224}$	0	$\frac{\sqrt{14}}{64}$	0	0	0	0	0	0	0	0	0
		0	$\frac{13\sqrt{210}}{1344}$	0	$-\frac{\sqrt{105}}{672}$	0	$-\frac{5\sqrt{42}}{192}$	0	0	0	0	0	0	0	0
		$-\frac{5\sqrt{42}}{192}$	0	$-\frac{\sqrt{105}}{672}$	0	$\frac{13\sqrt{210}}{1344}$	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{14}}{64}$	0	$-\frac{11\sqrt{7}}{224}$	0	$-\frac{5\sqrt{70}}{448}$	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{210}}{64}$	0	$\frac{\sqrt{21}}{32}$	0	$\frac{23\sqrt{42}}{1344}$	0	0	0	0	0	0	0	0	0
		0	$-\frac{7\sqrt{6}}{64}$	0	$-\frac{7\sqrt{3}}{96}$	0	$-\frac{\sqrt{30}}{192}$	0	0	0	0	0	0	0	0
913	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														
$\mathbb{G}_{5,3}^{(1,0;a)}(T_{1g},1)$		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	$\frac{3\sqrt{14i}}{28}$	0	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	0	$-\frac{\sqrt{105i}}{42}$	0	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	0	$-\frac{\sqrt{210i}}{84}$	0	0
		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
		0	$-\frac{3\sqrt{14i}}{28}$	0	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	0	$\frac{\sqrt{105i}}{42}$	0	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	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	0	0
914	symmetry	$\frac{3\sqrt{35}x(y^2-2yz-z^2)(y^2+2yz-z^2)}{8}$														

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{G}_{5,1}^{(1,0;a)}(T_{1g}, 2)$		0	0	0	0	0	0	$\frac{\sqrt{42}i}{192}$	0	$-\frac{5\sqrt{2}i}{64}$	0	$-\frac{3\sqrt{30}i}{64}$	0	$-\frac{5\sqrt{6}i}{192}$	0
		0	0	0	0	0	0	$-\frac{23\sqrt{30}i}{960}$	0	$\frac{13\sqrt{6}i}{192}$	0	$\frac{9\sqrt{10}i}{320}$	0	$-\frac{\sqrt{210}i}{192}$	0
		0	0	0	0	0	0	$\frac{3\sqrt{105}i}{160}$	0	$\frac{11\sqrt{5}i}{160}$	0	$-\frac{\sqrt{3}i}{96}$	0	$\frac{9\sqrt{15}i}{160}$	0
		0	0	0	0	0	0	$-\frac{9\sqrt{15}i}{160}$	0	$\frac{\sqrt{3}i}{96}$	0	$-\frac{11\sqrt{5}i}{160}$	0	$-\frac{3\sqrt{105}i}{160}$	0
		0	0	0	0	0	0	$\frac{\sqrt{210}i}{192}$	0	$-\frac{9\sqrt{10}i}{320}$	0	$-\frac{13\sqrt{6}i}{192}$	0	$\frac{23\sqrt{30}i}{960}$	0
		0	0	0	0	0	0	0	$\frac{5\sqrt{6}i}{192}$	0	$\frac{3\sqrt{30}i}{64}$	0	$\frac{5\sqrt{2}i}{64}$	0	$-\frac{\sqrt{42}i}{192}$
		$-\frac{\sqrt{42}i}{192}$	0	$-\frac{3\sqrt{105}i}{160}$	0	$-\frac{\sqrt{210}i}{192}$	0	0	0	0	0	0	0	0	0
		0	$\frac{23\sqrt{30}i}{960}$	0	$\frac{9\sqrt{15}i}{160}$	0	$-\frac{5\sqrt{6}i}{192}$	0	0	0	0	0	0	0	0
		$\frac{5\sqrt{2}i}{64}$	0	$-\frac{11\sqrt{5}i}{160}$	0	$\frac{9\sqrt{10}i}{320}$	0	0	0	0	0	0	0	0	0
		0	$-\frac{13\sqrt{6}i}{192}$	0	$-\frac{\sqrt{3}i}{96}$	0	$-\frac{3\sqrt{30}i}{64}$	0	0	0	0	0	0	0	0
		$\frac{3\sqrt{30}i}{64}$	0	$\frac{\sqrt{3}i}{96}$	0	$\frac{13\sqrt{6}i}{192}$	0	0	0	0	0	0	0	0	0
		0	$-\frac{9\sqrt{10}i}{320}$	0	$\frac{11\sqrt{5}i}{160}$	0	$-\frac{5\sqrt{2}i}{64}$	0	0	0	0	0	0	0	0
		$\frac{5\sqrt{6}i}{192}$	0	$-\frac{9\sqrt{15}i}{160}$	0	$-\frac{23\sqrt{30}i}{960}$	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{210}i}{192}$	0	$\frac{3\sqrt{105}i}{160}$	0	$\frac{\sqrt{42}i}{192}$	0	0	0	0	0	0	0	0
915	symmetry	$\frac{3\sqrt{35}y(x^2-2xz-z^2)(x^2+2xz-z^2)}{8}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{G}_{5,2}^{(1,0;a)}(T_{1g}, 2)$		0	0	0	0	0	0	$-\frac{\sqrt{42}}{192}$	0	$-\frac{5\sqrt{2}}{64}$	0	$\frac{3\sqrt{30}}{64}$	0	$-\frac{5\sqrt{6}}{192}$	0
		0	0	0	0	0	0	$\frac{23\sqrt{30}}{960}$	0	$\frac{13\sqrt{6}}{192}$	0	$-\frac{9\sqrt{10}}{320}$	0	$-\frac{\sqrt{210}}{192}$	
		0	0	0	0	0	0	$\frac{3\sqrt{105}}{160}$	0	$-\frac{11\sqrt{5}}{160}$	0	$-\frac{\sqrt{3}}{96}$	0	$-\frac{9\sqrt{15}}{160}$	0
		0	0	0	0	0	0	$-\frac{9\sqrt{15}}{160}$	0	$-\frac{\sqrt{3}}{96}$	0	$-\frac{11\sqrt{5}}{160}$	0	$\frac{3\sqrt{105}}{160}$	
		0	0	0	0	0	0	$-\frac{\sqrt{210}}{192}$	0	$-\frac{9\sqrt{10}}{320}$	0	$\frac{13\sqrt{6}}{192}$	0	$\frac{23\sqrt{30}}{960}$	0
		0	0	0	0	0	0	$-\frac{5\sqrt{6}}{192}$	0	$\frac{3\sqrt{30}}{64}$	0	$-\frac{5\sqrt{2}}{64}$	0	$-\frac{\sqrt{42}}{192}$	
		$-\frac{\sqrt{42}}{192}$	0	$\frac{3\sqrt{105}}{160}$	0	$-\frac{\sqrt{210}}{192}$	0	0	0	0	0	0	0	0	0
		0	$\frac{23\sqrt{30}}{960}$	0	$-\frac{9\sqrt{15}}{160}$	0	$-\frac{5\sqrt{6}}{192}$	0	0	0	0	0	0	0	0
		$-\frac{5\sqrt{2}}{64}$	0	$-\frac{11\sqrt{5}}{160}$	0	$-\frac{9\sqrt{10}}{320}$	0	0	0	0	0	0	0	0	0
		0	$\frac{13\sqrt{6}}{192}$	0	$-\frac{\sqrt{3}}{96}$	0	$\frac{3\sqrt{30}}{64}$	0	0	0	0	0	0	0	0
		$\frac{3\sqrt{30}}{64}$	0	$-\frac{\sqrt{3}}{96}$	0	$\frac{13\sqrt{6}}{192}$	0	0	0	0	0	0	0	0	0
		0	$-\frac{9\sqrt{10}}{320}$	0	$-\frac{11\sqrt{5}}{160}$	0	$-\frac{5\sqrt{2}}{64}$	0	0	0	0	0	0	0	0
		$-\frac{5\sqrt{6}}{192}$	0	$-\frac{9\sqrt{15}}{160}$	0	$\frac{23\sqrt{30}}{960}$	0	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{210}}{192}$	0	$\frac{3\sqrt{105}}{160}$	0	$-\frac{\sqrt{42}}{192}$	0	0	0	0	0	0	0	0
916	symmetry	$\frac{3\sqrt{35}z(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$													

*continued ...*

Table 10

No.	multipole	matrix												
$\mathbb{G}_{5,3}^{(1,0;a)}(T_{1g},2)$		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
917	symmetry	$\frac{\sqrt{105}x(y-z)(y+z)(2x^2-y^2-z^2)}{4}$												

*continued ...*

Table 10

No.	multipole	matrix														
$\mathbb{G}_{5,1}^{(1,0;a)}(T_{2g})$		0	0	0	0	0	0	$\frac{\sqrt{14}i}{96}$	0	$-\frac{5\sqrt{6}i}{96}$	0	$\frac{\sqrt{10}i}{32}$	0	$\frac{5\sqrt{2}i}{32}$	0	
		0	0	0	0	0	0	$-\frac{23\sqrt{10}i}{480}$	0	$\frac{13\sqrt{2}i}{96}$	0	$-\frac{\sqrt{30}i}{160}$	0	$\frac{\sqrt{70}i}{32}$		
		0	0	0	0	0	0	$-\frac{\sqrt{35}i}{80}$	0	$\frac{11\sqrt{15}i}{240}$	0	$-\frac{i}{48}$	0	$-\frac{3\sqrt{5}i}{80}$	0	
		0	0	0	0	0	0	$\frac{3\sqrt{5}i}{80}$	0	$\frac{i}{48}$	0	$-\frac{11\sqrt{15}i}{240}$	0	$\frac{\sqrt{35}i}{80}$		
		0	0	0	0	0	0	$-\frac{\sqrt{70}i}{32}$	0	$\frac{\sqrt{30}i}{160}$	0	$-\frac{13\sqrt{2}i}{96}$	0	$\frac{23\sqrt{10}i}{480}$	0	
		0	0	0	0	0	0	$-\frac{5\sqrt{2}i}{32}$	0	$-\frac{\sqrt{10}i}{32}$	0	$\frac{5\sqrt{6}i}{96}$	0	$-\frac{\sqrt{14}i}{96}$		
		$-\frac{\sqrt{14}i}{96}$	0	$\frac{\sqrt{35}i}{80}$	0	$\frac{\sqrt{70}i}{32}$	0	0	0	0	0	0	0	0	0	
		0	$\frac{23\sqrt{10}i}{480}$	0	$-\frac{3\sqrt{5}i}{80}$	0	$\frac{5\sqrt{2}i}{32}$	0	0	0	0	0	0	0	0	
		$\frac{5\sqrt{6}i}{96}$	0	$-\frac{11\sqrt{15}i}{240}$	0	$-\frac{\sqrt{30}i}{160}$	0	0	0	0	0	0	0	0	0	
		0	$-\frac{13\sqrt{2}i}{96}$	0	$-\frac{i}{48}$	0	$\frac{\sqrt{10}i}{32}$	0	0	0	0	0	0	0	0	
		$-\frac{\sqrt{10}i}{32}$	0	$\frac{i}{48}$	0	$\frac{13\sqrt{2}i}{96}$	0	0	0	0	0	0	0	0	0	
		0	$\frac{\sqrt{30}i}{160}$	0	$\frac{11\sqrt{15}i}{240}$	0	$-\frac{5\sqrt{6}i}{96}$	0	0	0	0	0	0	0	0	
		$-\frac{5\sqrt{2}i}{32}$	0	$\frac{3\sqrt{5}i}{80}$	0	$-\frac{23\sqrt{10}i}{480}$	0	0	0	0	0	0	0	0	0	
		0	$-\frac{\sqrt{70}i}{32}$	0	$-\frac{\sqrt{35}i}{80}$	0	$\frac{\sqrt{14}i}{96}$	0	0	0	0	0	0	0	0	
918	symmetry	$\frac{\sqrt{105}y(x-z)(x+z)(x^2-2y^2+z^2)}{4}$														

*continued ...*



Table 10

No.	multipole	matrix													
$\mathbb{G}_{5,2}^{(1,0;a)}(T_{2g})$		0	0	0	0	0	0	$\frac{\sqrt{14}}{96}$	0	$\frac{5\sqrt{6}}{96}$	0	$\frac{\sqrt{10}}{32}$	0	$-\frac{5\sqrt{2}}{32}$	0
		0	0	0	0	0	0	$-\frac{23\sqrt{10}}{480}$	0	$-\frac{13\sqrt{2}}{96}$	0	$-\frac{\sqrt{30}}{160}$	0	$-\frac{\sqrt{70}}{32}$	0
		0	0	0	0	0	0	$\frac{\sqrt{35}}{80}$	0	$\frac{11\sqrt{15}}{240}$	0	$\frac{1}{48}$	0	$-\frac{3\sqrt{5}}{80}$	0
		0	0	0	0	0	0	$-\frac{3\sqrt{5}}{80}$	0	$\frac{1}{48}$	0	$\frac{11\sqrt{15}}{240}$	0	$\frac{\sqrt{35}}{80}$	0
		0	0	0	0	0	0	$-\frac{\sqrt{70}}{32}$	0	$-\frac{\sqrt{30}}{160}$	0	$-\frac{13\sqrt{2}}{96}$	0	$-\frac{23\sqrt{10}}{480}$	0
		0	0	0	0	0	0	$-\frac{5\sqrt{2}}{32}$	0	$\frac{\sqrt{10}}{32}$	0	$\frac{5\sqrt{6}}{96}$	0	$\frac{\sqrt{14}}{96}$	0
		$\frac{\sqrt{14}}{96}$	0	$\frac{\sqrt{35}}{80}$	0	$-\frac{\sqrt{70}}{32}$	0	0	0	0	0	0	0	0	0
		0	$-\frac{23\sqrt{10}}{480}$	0	$-\frac{3\sqrt{5}}{80}$	0	$-\frac{5\sqrt{2}}{32}$	0	0	0	0	0	0	0	0
		$\frac{5\sqrt{6}}{96}$	0	$\frac{11\sqrt{15}}{240}$	0	$-\frac{\sqrt{30}}{160}$	0	0	0	0	0	0	0	0	0
		0	$-\frac{13\sqrt{2}}{96}$	0	$\frac{1}{48}$	0	$\frac{\sqrt{10}}{32}$	0	0	0	0	0	0	0	0
		$\frac{\sqrt{10}}{32}$	0	$\frac{1}{48}$	0	$-\frac{13\sqrt{2}}{96}$	0	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{30}}{160}$	0	$\frac{11\sqrt{15}}{240}$	0	$\frac{5\sqrt{6}}{96}$	0	0	0	0	0	0	0	0
		$-\frac{5\sqrt{2}}{32}$	0	$-\frac{3\sqrt{5}}{80}$	0	$-\frac{23\sqrt{10}}{480}$	0	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{70}}{32}$	0	$\frac{\sqrt{35}}{80}$	0	$\frac{\sqrt{14}}{96}$	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												
$\mathbb{G}_{5,3}^{(1,0;a)}(T_{2g})$		0	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	$\frac{\sqrt{70}i}{60}$
		0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{10}i}{12}$	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													
$\mathbb{T}_{2,1}^{(1,0;a)}(E_g)$		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	$\frac{\sqrt{3}(x-y)(x+y)}{2}$													

*continued ...*

Table 10

No.	multipole	matrix												
$\mathbb{T}_{2,2}^{(1,0;a)}(E_g)$		0	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	$\frac{\sqrt{10}i}{12}$
		0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{70}i}{84}$	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
922	symmetry	$\sqrt{3}yz$												

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{T}_{2,1}^{(1,0;a)}(T_{2g})$		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
923	symmetry	$\sqrt{3}xz$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{T}_{2,2}^{(1,0;a)}(T_{2g})$		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	$-\frac{\sqrt{70}i}{168}$	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	$-\frac{5\sqrt{2}i}{24}$	0
		$\frac{5\sqrt{2}i}{24}$	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
924	symmetry	$\sqrt{3}xy$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{T}_{2,3}^{(1,0;a)}(T_{2g})$		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	$\frac{\sqrt{21}(x^4-3x^2y^2-3x^2z^2+y^4-3y^2z^2+z^4)}{6}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{T}_4^{(1,0;a)}(A_{1g})$		0	0	0	0	0	0	0	$-\frac{\sqrt{110i}}{44}$	0	0	0	$-\frac{\sqrt{330i}}{132}$	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{66i}}{33}$	0	0	0	$-\frac{\sqrt{22i}}{22}$	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{55i}}{44}$	0	0	0	$-\frac{\sqrt{77i}}{44}$
		0	0	0	0	0	0	$\frac{\sqrt{77i}}{44}$	0	0	0	$-\frac{\sqrt{55i}}{44}$	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{22i}}{22}$	0	0	0	$-\frac{\sqrt{66i}}{33}$	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{330i}}{132}$	0	0	0	$\frac{\sqrt{110i}}{44}$	0
		0	0	0	$-\frac{\sqrt{77i}}{44}$	0	0	0	0	0	0	0	0	0	0
		$\frac{\sqrt{110i}}{44}$	0	0	0	$-\frac{\sqrt{22i}}{22}$	0	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{66i}}{33}$	0	0	0	$-\frac{\sqrt{330i}}{132}$	0	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{55i}}{44}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	$\frac{\sqrt{55i}}{44}$	0	0	0	0	0	0	0	0	0	0
		$\frac{\sqrt{330i}}{132}$	0	0	0	$\frac{\sqrt{66i}}{33}$	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{22i}}{22}$	0	0	0	$-\frac{\sqrt{110i}}{44}$	0	0	0	0	0	0	0	0
		0	0	$\frac{\sqrt{77i}}{44}$	0	0	0	0	0	0	0	0	0	0	0
926	symmetry	$-\frac{\sqrt{15}(x^4-12x^2y^2+6x^2z^2+y^4+6y^2z^2-2z^4)}{12}$													

*continued ...*



Table 10

No.	multipole	matrix												
$\mathbb{T}_{4,1}^{(1,0;a)}(E_g)$		0	0	0	0	0	0	$-\frac{5\sqrt{154i}}{308}$	0	0	0	$\frac{\sqrt{462i}}{132}$	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{2310i}}{231}$	0	0	0	$\frac{\sqrt{770i}}{110}$	0
		0	0	0	0	0	0	0	0	$\frac{5\sqrt{77i}}{308}$	0	0	0	$\frac{7\sqrt{55i}}{220}$
		0	0	0	0	0	0	$-\frac{7\sqrt{55i}}{220}$	0	0	0	$-\frac{5\sqrt{77i}}{308}$	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{770i}}{110}$	0	0	0	$-\frac{\sqrt{2310i}}{231}$	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{462i}}{132}$	0	0	0	$\frac{5\sqrt{154i}}{308}$	0
		0	0	0	$\frac{7\sqrt{55i}}{220}$	0	0	0	0	0	0	0	0	0
		$\frac{5\sqrt{154i}}{308}$	0	0	0	$\frac{\sqrt{770i}}{110}$	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{2310i}}{231}$	0	0	0	$\frac{\sqrt{462i}}{132}$	0	0	0	0	0	0	0
		0	0	$-\frac{5\sqrt{77i}}{308}$	0	0	0	0	0	0	0	0	0	0
		0	0	0	$\frac{5\sqrt{77i}}{308}$	0	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{462i}}{132}$	0	0	0	$\frac{\sqrt{2310i}}{231}$	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{770i}}{110}$	0	0	0	$-\frac{5\sqrt{154i}}{308}$	0	0	0	0	0	0	0
		0	0	$-\frac{7\sqrt{55i}}{220}$	0	0	0	0	0	0	0	0	0	0
927	symmetry	$\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$												

*continued ...*

Table 10

No.	multipole	matrix												
$\mathbb{T}_{4,2}^{(1,0;a)}(E_g)$		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
928	symmetry	$\frac{\sqrt{35}yz(y-z)(y+z)}{2}$												

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{T}_{4,1}^{(1,0;a)}(T_{1g})$		0	0	0	0	0	0	$\frac{\sqrt{462}}{176}$	0	$\frac{5\sqrt{22}}{88}$	0	$\frac{\sqrt{330}}{176}$	0	0	0
		0	0	0	0	0	0	$-\frac{13\sqrt{330}}{880}$	0	$-\frac{\sqrt{66}}{88}$	0	$\frac{7\sqrt{110}}{880}$	0	0	0
		0	0	0	0	0	0	$\frac{3\sqrt{1155}}{880}$	0	$\frac{\sqrt{55}}{880}$	0	$-\frac{7\sqrt{33}}{176}$	0	$-\frac{\sqrt{165}}{880}$	0
		0	0	0	0	0	0	$\frac{\sqrt{165}}{880}$	0	$\frac{7\sqrt{33}}{176}$	0	$-\frac{\sqrt{55}}{880}$	0	$-\frac{3\sqrt{1155}}{880}$	0
		0	0	0	0	0	0	0	$-\frac{7\sqrt{110}}{880}$	0	$\frac{\sqrt{66}}{88}$	0	$\frac{13\sqrt{330}}{880}$	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{330}}{176}$	0	$-\frac{5\sqrt{22}}{88}$	0	$-\frac{\sqrt{462}}{176}$	0
		$\frac{\sqrt{462}}{176}$	0	$\frac{3\sqrt{1155}}{880}$	0	0	0	0	0	0	0	0	0	0	0
		0	$-\frac{13\sqrt{330}}{880}$	0	$\frac{\sqrt{165}}{880}$	0	0	0	0	0	0	0	0	0	0
		$\frac{5\sqrt{22}}{88}$	0	$\frac{\sqrt{55}}{880}$	0	$-\frac{7\sqrt{110}}{880}$	0	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{66}}{88}$	0	$\frac{7\sqrt{33}}{176}$	0	$-\frac{\sqrt{330}}{176}$	0	0	0	0	0	0	0	0
		$\frac{\sqrt{330}}{176}$	0	$-\frac{7\sqrt{33}}{176}$	0	$\frac{\sqrt{66}}{88}$	0	0	0	0	0	0	0	0	0
		0	$\frac{7\sqrt{110}}{880}$	0	$-\frac{\sqrt{55}}{880}$	0	$-\frac{5\sqrt{22}}{88}$	0	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{165}}{880}$	0	$\frac{13\sqrt{330}}{880}$	0	0	0	0	0	0	0	0	0
		0	0	0	$-\frac{3\sqrt{1155}}{880}$	0	$-\frac{\sqrt{462}}{176}$	0	0	0	0	0	0	0	0
929	symmetry	$-\frac{\sqrt{35}xz(x-z)(x+z)}{2}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{T}_{4,2}^{(1,0;a)}(T_{1g})$		0	0	0	0	0	0	$\frac{\sqrt{462i}}{176}$	0	$-\frac{5\sqrt{22i}}{88}$	0	$\frac{\sqrt{330i}}{176}$	0	0	0
		0	0	0	0	0	0	$-\frac{13\sqrt{330i}}{880}$	0	$\frac{\sqrt{66i}}{88}$	0	$\frac{7\sqrt{110i}}{880}$	0	0	0
		0	0	0	0	0	0	$-\frac{3\sqrt{1155i}}{880}$	0	$\frac{\sqrt{55i}}{880}$	0	$\frac{7\sqrt{33i}}{176}$	0	$-\frac{\sqrt{165i}}{880}$	0
		0	0	0	0	0	0	$-\frac{\sqrt{165i}}{880}$	0	$\frac{7\sqrt{33i}}{176}$	0	$\frac{\sqrt{55i}}{880}$	0	$-\frac{3\sqrt{1155i}}{880}$	0
		0	0	0	0	0	0	0	$\frac{7\sqrt{110i}}{880}$	0	$\frac{\sqrt{66i}}{88}$	0	$-\frac{13\sqrt{330i}}{880}$	0	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{330i}}{176}$	0	$-\frac{5\sqrt{22i}}{88}$	0	$\frac{\sqrt{462i}}{176}$
		$-\frac{\sqrt{462i}}{176}$	0	$\frac{3\sqrt{1155i}}{880}$	0	0	0	0	0	0	0	0	0	0	0
		0	$\frac{13\sqrt{330i}}{880}$	0	$\frac{\sqrt{165i}}{880}$	0	0	0	0	0	0	0	0	0	0
		$\frac{5\sqrt{22i}}{88}$	0	$-\frac{\sqrt{55i}}{880}$	0	$-\frac{7\sqrt{110i}}{880}$	0	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{66i}}{88}$	0	$-\frac{7\sqrt{33i}}{176}$	0	$-\frac{\sqrt{330i}}{176}$	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{330i}}{176}$	0	$-\frac{7\sqrt{33i}}{176}$	0	$-\frac{\sqrt{66i}}{88}$	0	0	0	0	0	0	0	0	0
		0	$-\frac{7\sqrt{110i}}{880}$	0	$-\frac{\sqrt{55i}}{880}$	0	$\frac{5\sqrt{22i}}{88}$	0	0	0	0	0	0	0	0
		0	0	$\frac{\sqrt{165i}}{880}$	0	$\frac{13\sqrt{330i}}{880}$	0	0	0	0	0	0	0	0	0
		0	0	0	$\frac{3\sqrt{1155i}}{880}$	0	$-\frac{\sqrt{462i}}{176}$	0	0	0	0	0	0	0	0
930	symmetry	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{T}_{4,3}^{(1,0;a)}(T_{1g})$		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	$-\frac{\sqrt{330}}{55}$	0
		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	0	$-\frac{\sqrt{330}}{55}$	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	$-\frac{\sqrt{1155}}{110}$	0	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	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	0	0	0
		$-\frac{\sqrt{22}}{22}$	0	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	0	$-\frac{\sqrt{1155}}{110}$	0	0	0	0	0	0	0	0	0	0	0
931	symmetry	$\frac{\sqrt{5}yz(6x^2-y^2-z^2)}{2}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{T}_{4,1}^{(1,0;a)}(I_{2g})$		0	0	0	0	0	0	$\frac{\sqrt{66}}{176}$	0	$\frac{5\sqrt{154}}{616}$	0	$-\frac{\sqrt{2310}}{176}$	0	0	0
		0	0	0	0	0	0	$-\frac{13\sqrt{2310}}{6160}$	0	$-\frac{\sqrt{462}}{616}$	0	$-\frac{7\sqrt{770}}{880}$	0	0	0
		0	0	0	0	0	0	$-\frac{21\sqrt{165}}{880}$	0	$\frac{\sqrt{385}}{6160}$	0	$-\frac{\sqrt{231}}{176}$	0	$\frac{\sqrt{1155}}{880}$	0
		0	0	0	0	0	0	$-\frac{\sqrt{1155}}{880}$	0	$\frac{\sqrt{231}}{176}$	0	$-\frac{\sqrt{385}}{6160}$	0	$\frac{21\sqrt{165}}{880}$	0
		0	0	0	0	0	0	0	$\frac{7\sqrt{770}}{880}$	0	$\frac{\sqrt{462}}{616}$	0	$\frac{13\sqrt{2310}}{6160}$	0	0
		0	0	0	0	0	0	0	0	$\frac{\sqrt{2310}}{176}$	0	$-\frac{5\sqrt{154}}{616}$	0	$-\frac{\sqrt{66}}{176}$	0
		$\frac{\sqrt{66}}{176}$	0	$-\frac{21\sqrt{165}}{880}$	0	0	0	0	0	0	0	0	0	0	0
		0	$-\frac{13\sqrt{2310}}{6160}$	0	$-\frac{\sqrt{1155}}{880}$	0	0	0	0	0	0	0	0	0	0
		$\frac{5\sqrt{154}}{616}$	0	$\frac{\sqrt{385}}{6160}$	0	$\frac{7\sqrt{770}}{880}$	0	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{462}}{616}$	0	$\frac{\sqrt{231}}{176}$	0	$\frac{\sqrt{2310}}{176}$	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{2310}}{176}$	0	$-\frac{\sqrt{231}}{176}$	0	$\frac{\sqrt{462}}{616}$	0	0	0	0	0	0	0	0	0
		0	$-\frac{7\sqrt{770}}{880}$	0	$-\frac{\sqrt{385}}{6160}$	0	$-\frac{5\sqrt{154}}{616}$	0	0	0	0	0	0	0	0
		0	0	$\frac{\sqrt{1155}}{880}$	0	$\frac{13\sqrt{2310}}{6160}$	0	0	0	0	0	0	0	0	0
		0	0	0	$\frac{21\sqrt{165}}{880}$	0	$-\frac{\sqrt{66}}{176}$	0	0	0	0	0	0	0	0
932	symmetry	$-\frac{\sqrt{5}xz(x^2-6y^2+z^2)}{2}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{T}_{4,2}^{(1,0;a)}(T_{2g})$		0	0	0	0	0	0	$-\frac{\sqrt{66}i}{176}$	0	$\frac{5\sqrt{154}i}{616}$	0	$\frac{\sqrt{2310}i}{176}$	0	0	0
		0	0	0	0	0	0	$\frac{13\sqrt{2310}i}{6160}$	0	$-\frac{\sqrt{462}i}{616}$	0	$\frac{7\sqrt{770}i}{880}$	0	0	0
		0	0	0	0	0	0	$-\frac{21\sqrt{165}i}{880}$	0	$-\frac{\sqrt{385}i}{6160}$	0	$-\frac{\sqrt{231}i}{176}$	0	$-\frac{\sqrt{1155}i}{880}$	0
		0	0	0	0	0	0	$-\frac{\sqrt{1155}i}{880}$	0	$-\frac{\sqrt{231}i}{176}$	0	$-\frac{\sqrt{385}i}{6160}$	0	$-\frac{21\sqrt{165}i}{880}$	0
		0	0	0	0	0	0	0	0	$\frac{7\sqrt{770}i}{880}$	0	$-\frac{\sqrt{462}i}{616}$	0	$\frac{13\sqrt{2310}i}{6160}$	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{2310}i}{176}$	0	$\frac{5\sqrt{154}i}{616}$	0	$-\frac{\sqrt{66}i}{176}$
		$\frac{\sqrt{66}i}{176}$	0	$\frac{21\sqrt{165}i}{880}$	0	0	0	0	0	0	0	0	0	0	0
		0	$-\frac{13\sqrt{2310}i}{6160}$	0	$\frac{\sqrt{1155}i}{880}$	0	0	0	0	0	0	0	0	0	0
		$-\frac{5\sqrt{154}i}{616}$	0	$\frac{\sqrt{385}i}{6160}$	0	$-\frac{7\sqrt{770}i}{880}$	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{462}i}{616}$	0	$\frac{\sqrt{231}i}{176}$	0	$-\frac{\sqrt{2310}i}{176}$	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{2310}i}{176}$	0	$\frac{\sqrt{231}i}{176}$	0	$\frac{\sqrt{462}i}{616}$	0	0	0	0	0	0	0	0	0
		0	$-\frac{7\sqrt{770}i}{880}$	0	$\frac{\sqrt{385}i}{6160}$	0	$-\frac{5\sqrt{154}i}{616}$	0	0	0	0	0	0	0	0
		0	0	$\frac{\sqrt{1155}i}{880}$	0	$-\frac{13\sqrt{2310}i}{6160}$	0	0	0	0	0	0	0	0	0
		0	0	0	$\frac{21\sqrt{165}i}{880}$	0	$\frac{\sqrt{66}i}{176}$	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												
$\mathbb{T}_{4,3}^{(1,0;a)}(I_{2g})$		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{2310}}{154}$	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	$\frac{9\sqrt{1155}}{1540}$	0	0	0	$\frac{17\sqrt{385}}{1540}$	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	$-\frac{\sqrt{462}}{308}$	0	0	$-\frac{3\sqrt{330}}{220}$
		0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{2310}}{154}$	0	0
		0	$-\frac{3\sqrt{330}}{220}$	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	$\frac{17\sqrt{385}}{1540}$	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	$-\frac{\sqrt{462}}{308}$	0	0	0	$-\frac{\sqrt{2310}}{154}$	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	$\frac{9\sqrt{1155}}{1540}$	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
934	symmetry	$\frac{\sqrt{2}(2x^6-15x^4y^2-15x^4z^2-15x^2y^4+180x^2y^2z^2-15x^2z^4+2y^6-15y^4z^2-15y^2z^4+2z^6)}{8}$												

*continued ...*



Table 10

No.	multipole	matrix												
$\mathbb{T}_6^{(1,0;a)}(A_{1g})$	0	0	0	0	0	0	0	$\frac{\sqrt{33}i}{264}$	0	0	0	$-\frac{7\sqrt{11}i}{88}$	0	0
	0	0	0	0	0	0	0	0	$-\frac{\sqrt{55}i}{88}$	0	0	0	$\frac{7\sqrt{165}i}{264}$	0
	0	0	0	0	0	0	0	0	0	$\frac{5\sqrt{66}i}{264}$	0	0	0	$-\frac{\sqrt{2310}i}{264}$
	0	0	0	0	0	0	$\frac{\sqrt{2310}i}{264}$	0	0	0	$-\frac{5\sqrt{66}i}{264}$	0	0	0
	0	0	0	0	0	0	0	$-\frac{7\sqrt{165}i}{264}$	0	0	0	$\frac{\sqrt{55}i}{88}$	0	0
	0	0	0	0	0	0	0	0	$\frac{7\sqrt{11}i}{88}$	0	0	0	$-\frac{\sqrt{33}i}{264}$	0
	0	0	0	$-\frac{\sqrt{2310}i}{264}$	0	0	0	0	0	0	0	0	0	0
	$-\frac{\sqrt{33}i}{264}$	0	0	0	$\frac{7\sqrt{165}i}{264}$	0	0	0	0	0	0	0	0	0
	0	$\frac{\sqrt{55}i}{88}$	0	0	0	$-\frac{7\sqrt{11}i}{88}$	0	0	0	0	0	0	0	0
	0	0	$-\frac{5\sqrt{66}i}{264}$	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	$\frac{5\sqrt{66}i}{264}$	0	0	0	0	0	0	0	0	0	0
	$\frac{7\sqrt{11}i}{88}$	0	0	0	$-\frac{\sqrt{55}i}{88}$	0	0	0	0	0	0	0	0	0
	0	$-\frac{7\sqrt{165}i}{264}$	0	0	0	$\frac{\sqrt{33}i}{264}$	0	0	0	0	0	0	0	0
	0	0	$\frac{\sqrt{2310}i}{264}$	0	0	0	0	0	0	0	0	0	0	0
935	symmetry	$-\frac{\sqrt{2310}(x-y)(x+y)(x-z)(x+z)(y-z)(y+z)}{8}$												

*continued ...*

Table 10

No.	multipole	matrix														
$\mathbb{T}_6^{(1,0;a)}(A_{2g})$		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{7}i}{24}$	0	0	0	$\frac{\sqrt{5}i}{8}$	
		0	0	0	0	0	0	$\frac{i}{24}$	0	0	0	$\frac{\sqrt{35}i}{24}$	0	0	0	
		0	0	0	0	0	0	0	$-\frac{\sqrt{14}i}{24}$	0	0	0	$-\frac{\sqrt{42}i}{24}$	0	0	
		0	0	0	0	0	0	0	0	$\frac{\sqrt{42}i}{24}$	0	0	0	$\frac{\sqrt{14}i}{24}$	0	
		0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{35}i}{24}$	0	0	0	$-\frac{i}{24}$	
		0	0	0	0	0	0	$-\frac{\sqrt{5}i}{8}$	0	0	0	0	$\frac{\sqrt{7}i}{24}$	0	0	0
		0	$-\frac{i}{24}$	0	0	0	$\frac{\sqrt{5}i}{8}$	0	0	0	0	0	0	0	0	0
		0	0	$\frac{\sqrt{14}i}{24}$	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
		$\frac{\sqrt{7}i}{24}$	0	0	0	$\frac{\sqrt{35}i}{24}$	0	0	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{35}i}{24}$	0	0	0	$-\frac{\sqrt{7}i}{24}$	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	0
		0	0	0	$-\frac{\sqrt{14}i}{24}$	0	0	0	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{5}i}{8}$	0	0	0	$\frac{i}{24}$	0	0	0	0	0	0	0	0	0	0
936	symmetry	$-\frac{\sqrt{14}(x^6-15x^4z^2+15x^2z^4+y^6-15y^4z^2+15y^2z^4-2z^6)}{8}$														

*continued ...*

Table 10

No.	multipole	matrix													
$T_{6,1}^{(1,0;a)}(E_g)$		0	0	0	0	0	0	0	$\frac{\sqrt{231}i}{264}$	0	0	0	$\frac{\sqrt{77}i}{88}$	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{385}i}{88}$	0	0	0	$-\frac{\sqrt{1155}i}{264}$	0
		0	0	0	0	0	0	0	0	0	$\frac{5\sqrt{462}i}{264}$	0	0	0	$\frac{\sqrt{330}i}{264}$
		0	0	0	0	0	0	$-\frac{\sqrt{330}i}{264}$	0	0	0	$-\frac{5\sqrt{462}i}{264}$	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{1155}i}{264}$	0	0	0	$\frac{\sqrt{385}i}{88}$	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{77}i}{88}$	0	0	0	$-\frac{\sqrt{231}i}{264}$	0
		0	0	0	$\frac{\sqrt{330}i}{264}$	0	0	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{231}i}{264}$	0	0	0	$-\frac{\sqrt{1155}i}{264}$	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{385}i}{88}$	0	0	0	$\frac{\sqrt{77}i}{88}$	0	0	0	0	0	0	0	0
		0	0	$-\frac{5\sqrt{462}i}{264}$	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	$\frac{5\sqrt{462}i}{264}$	0	0	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{77}i}{88}$	0	0	0	$-\frac{\sqrt{385}i}{88}$	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{1155}i}{264}$	0	0	0	$\frac{\sqrt{231}i}{264}$	0	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{330}i}{264}$	0	0	0	0	0	0	0	0	0	0	0
937	symmetry	$\frac{\sqrt{42}(x-y)(x+y)(x^4-9x^2y^2-5x^2z^2+y^4-5y^2z^2+5z^4)}{8}$													

continued ...

Table 10

No.	multipole	matrix													
$\mathbb{T}_{6,2}^{(1,0;a)}(E_g)$		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{385}i}{264}$	0	0	0	$\frac{\sqrt{11}i}{8}$
		0	0	0	0	0	0	$-\frac{\sqrt{55}i}{264}$	0	0	0	$-\frac{5\sqrt{77}i}{264}$	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{770}i}{264}$	0	0	0	$\frac{\sqrt{2310}i}{264}$	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{2310}i}{264}$	0	0	0	$-\frac{\sqrt{770}i}{264}$	0
		0	0	0	0	0	0	0	0	0	$\frac{5\sqrt{77}i}{264}$	0	0	0	$\frac{\sqrt{55}i}{264}$
		0	0	0	0	0	0	$-\frac{\sqrt{11}i}{8}$	0	0	0	$-\frac{\sqrt{385}i}{264}$	0	0	0
		0	$\frac{\sqrt{55}i}{264}$	0	0	0	$\frac{\sqrt{11}i}{8}$	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	0	$\frac{\sqrt{2310}i}{264}$	0	0	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{385}i}{264}$	0	0	0	$-\frac{5\sqrt{77}i}{264}$	0	0	0	0	0	0	0	0	0
		0	$\frac{5\sqrt{77}i}{264}$	0	0	0	$\frac{\sqrt{385}i}{264}$	0	0	0	0	0	0	0	0
		0	0	$-\frac{\sqrt{2310}i}{264}$	0	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
		$-\frac{\sqrt{11}i}{8}$	0	0	0	$-\frac{\sqrt{55}i}{264}$	0	0	0	0	0	0	0	0	0
938	symmetry	$\frac{3\sqrt{7}yz(y-z)(y+z)(10x^2-y^2-z^2)}{4}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{T}_{6,1}^{(1,0;a)}(T_{1g})$		0	0	0	0	0	0	$\frac{\sqrt{66}}{1056}$	0	$\frac{\sqrt{154}}{352}$	0	$-\frac{\sqrt{2310}}{352}$	0	$-\frac{\sqrt{462}}{96}$	0
		0	0	0	0	0	0	$-\frac{\sqrt{2310}}{1056}$	0	$-\frac{5\sqrt{462}}{1056}$	0	$\frac{3\sqrt{770}}{352}$	0	$\frac{\sqrt{330}}{96}$	
		0	0	0	0	0	0	$-\frac{\sqrt{165}}{176}$	0	$\frac{\sqrt{385}}{176}$	0	$\frac{5\sqrt{231}}{528}$	0	$-\frac{\sqrt{1155}}{176}$	0
		0	0	0	0	0	0	$\frac{\sqrt{1155}}{176}$	0	$-\frac{5\sqrt{231}}{528}$	0	$-\frac{\sqrt{385}}{176}$	0	$\frac{\sqrt{165}}{176}$	
		0	0	0	0	0	0	$-\frac{\sqrt{330}}{96}$	0	$-\frac{3\sqrt{770}}{352}$	0	$\frac{5\sqrt{462}}{1056}$	0	$\frac{\sqrt{2310}}{1056}$	0
		0	0	0	0	0	0	0	$\frac{\sqrt{462}}{96}$	0	$\frac{\sqrt{2310}}{352}$	0	$-\frac{\sqrt{154}}{352}$	0	$-\frac{\sqrt{66}}{1056}$
		$\frac{\sqrt{66}}{1056}$	0	$-\frac{\sqrt{165}}{176}$	0	$-\frac{\sqrt{330}}{96}$	0	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{2310}}{1056}$	0	$\frac{\sqrt{1155}}{176}$	0	$\frac{\sqrt{462}}{96}$	0	0	0	0	0	0	0	0
		$\frac{\sqrt{154}}{352}$	0	$\frac{\sqrt{385}}{176}$	0	$-\frac{3\sqrt{770}}{352}$	0	0	0	0	0	0	0	0	0
		0	$-\frac{5\sqrt{462}}{1056}$	0	$-\frac{5\sqrt{231}}{528}$	0	$\frac{\sqrt{2310}}{352}$	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{2310}}{352}$	0	$\frac{5\sqrt{231}}{528}$	0	$\frac{5\sqrt{462}}{1056}$	0	0	0	0	0	0	0	0	0
		0	$\frac{3\sqrt{770}}{352}$	0	$-\frac{\sqrt{385}}{176}$	0	$-\frac{\sqrt{154}}{352}$	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{462}}{96}$	0	$-\frac{\sqrt{1155}}{176}$	0	$\frac{\sqrt{2310}}{1056}$	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{330}}{96}$	0	$\frac{\sqrt{165}}{176}$	0	$-\frac{\sqrt{66}}{1056}$	0	0	0	0	0	0	0	0
939	symmetry	$\frac{3\sqrt{7}xz(x-z)(x+z)(x^2-10y^2+z^2)}{4}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{T}_{6,2}^{(1,0;a)}(T_{1g})$		0	0	0	0	0	0	$\frac{\sqrt{66}i}{1056}$	0	$-\frac{\sqrt{154}i}{352}$	0	$-\frac{\sqrt{2310}i}{352}$	0	$\frac{\sqrt{462}i}{96}$	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{2310}i}{1056}$	0	$\frac{5\sqrt{462}i}{1056}$	0	$\frac{3\sqrt{770}i}{352}$	0	$-\frac{\sqrt{330}i}{96}$
		0	0	0	0	0	0	$\frac{\sqrt{165}i}{176}$	0	$\frac{\sqrt{385}i}{176}$	0	$-\frac{5\sqrt{231}i}{528}$	0	$-\frac{\sqrt{1155}i}{176}$	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{1155}i}{176}$	0	$-\frac{5\sqrt{231}i}{528}$	0	$\frac{\sqrt{385}i}{176}$	0	$\frac{\sqrt{165}i}{176}$
		0	0	0	0	0	0	$-\frac{\sqrt{330}i}{96}$	0	$\frac{3\sqrt{770}i}{352}$	0	$\frac{5\sqrt{462}i}{1056}$	0	$-\frac{\sqrt{2310}i}{1056}$	0
		0	0	0	0	0	0	0	$\frac{\sqrt{462}i}{96}$	0	$-\frac{\sqrt{2310}i}{352}$	0	$-\frac{\sqrt{154}i}{352}$	0	$\frac{\sqrt{66}i}{1056}$
		$-\frac{\sqrt{66}i}{1056}$	0	$-\frac{\sqrt{165}i}{176}$	0	$\frac{\sqrt{330}i}{96}$	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{2310}i}{1056}$	0	$\frac{\sqrt{1155}i}{176}$	0	$-\frac{\sqrt{462}i}{96}$	0	0	0	0	0	0	0	0
		$\frac{\sqrt{154}i}{352}$	0	$-\frac{\sqrt{385}i}{176}$	0	$-\frac{3\sqrt{770}i}{352}$	0	0	0	0	0	0	0	0	0
		0	$-\frac{5\sqrt{462}i}{1056}$	0	$\frac{5\sqrt{231}i}{528}$	0	$\frac{\sqrt{2310}i}{352}$	0	0	0	0	0	0	0	0
		$\frac{\sqrt{2310}i}{352}$	0	$\frac{5\sqrt{231}i}{528}$	0	$-\frac{5\sqrt{462}i}{1056}$	0	0	0	0	0	0	0	0	0
		0	$-\frac{3\sqrt{770}i}{352}$	0	$-\frac{\sqrt{385}i}{176}$	0	$\frac{\sqrt{154}i}{352}$	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{462}i}{96}$	0	$\frac{\sqrt{1155}i}{176}$	0	$\frac{\sqrt{2310}i}{1056}$	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{330}i}{96}$	0	$-\frac{\sqrt{165}i}{176}$	0	$-\frac{\sqrt{66}i}{1056}$	0	0	0	0	0	0	0	0
940	symmetry	$-\frac{3\sqrt{7}xy(x-y)(x+y)(x^2+y^2-10z^2)}{4}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{T}_{6,3}^{(1,0;a)}(T_{1g})$		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	
941	symmetry	$\frac{\sqrt{462}yz(y^2-3z^2)(3y^2-z^2)}{16}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{T}_{6,1}^{(1,0;a)}(T_{2g}, 1)$		0	0	0	0	0	0	$\frac{1}{64}$	0	$\frac{\sqrt{21}}{64}$	0	$\frac{\sqrt{35}}{64}$	0	$\frac{\sqrt{7}}{64}$	0
		0	0	0	0	0	0	$-\frac{\sqrt{35}}{64}$	0	$-\frac{5\sqrt{7}}{64}$	0	$-\frac{\sqrt{105}}{64}$	0	$-\frac{\sqrt{5}}{64}$	
		0	0	0	0	0	0	$\frac{\sqrt{10}}{64}$	0	$\frac{\sqrt{210}}{64}$	0	$\frac{5\sqrt{14}}{64}$	0	$\frac{\sqrt{70}}{64}$	0
		0	0	0	0	0	0	$-\frac{\sqrt{70}}{64}$	0	$-\frac{5\sqrt{14}}{64}$	0	$-\frac{\sqrt{210}}{64}$	0	$-\frac{\sqrt{10}}{64}$	
		0	0	0	0	0	0	$\frac{\sqrt{5}}{64}$	0	$\frac{\sqrt{105}}{64}$	0	$\frac{5\sqrt{7}}{64}$	0	$\frac{\sqrt{35}}{64}$	0
		0	0	0	0	0	0	$-\frac{\sqrt{7}}{64}$	0	$-\frac{\sqrt{35}}{64}$	0	$-\frac{\sqrt{21}}{64}$	0	$-\frac{1}{64}$	
		$\frac{1}{64}$	0	$\frac{\sqrt{10}}{64}$	0	$\frac{\sqrt{5}}{64}$	0	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{35}}{64}$	0	$-\frac{\sqrt{70}}{64}$	0	$-\frac{\sqrt{7}}{64}$	0	0	0	0	0	0	0	0
		$\frac{\sqrt{21}}{64}$	0	$\frac{\sqrt{210}}{64}$	0	$\frac{\sqrt{105}}{64}$	0	0	0	0	0	0	0	0	0
		0	$-\frac{5\sqrt{7}}{64}$	0	$-\frac{5\sqrt{14}}{64}$	0	$-\frac{\sqrt{35}}{64}$	0	0	0	0	0	0	0	0
		$\frac{\sqrt{35}}{64}$	0	$\frac{5\sqrt{14}}{64}$	0	$\frac{5\sqrt{7}}{64}$	0	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{105}}{64}$	0	$-\frac{\sqrt{210}}{64}$	0	$-\frac{\sqrt{21}}{64}$	0	0	0	0	0	0	0	0
		$\frac{\sqrt{7}}{64}$	0	$\frac{\sqrt{70}}{64}$	0	$\frac{\sqrt{35}}{64}$	0	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{5}}{64}$	0	$-\frac{\sqrt{10}}{64}$	0	$-\frac{1}{64}$	0	0	0	0	0	0	0	0
942	symmetry	$\frac{\sqrt{462}xz(x^2-3z^2)(3x^2-z^2)}{16}$													

*continued ...*



Table 10

No.	multipole	matrix													
$\mathbb{T}_{6,2}^{(1,0;a)}(T_{2g}, 1)$		0	0	0	0	0	0	$-\frac{i}{64}$	0	$\frac{\sqrt{21}i}{64}$	0	$-\frac{\sqrt{35}i}{64}$	0	$\frac{\sqrt{7}i}{64}$	0
		0	0	0	0	0	0	$\frac{\sqrt{35}i}{64}$	0	$-\frac{5\sqrt{7}i}{64}$	0	$\frac{\sqrt{105}i}{64}$	0	$-\frac{\sqrt{5}i}{64}$	0
		0	0	0	0	0	0	$\frac{\sqrt{10}i}{64}$	0	$-\frac{\sqrt{210}i}{64}$	0	$\frac{5\sqrt{14}i}{64}$	0	$-\frac{\sqrt{70}i}{64}$	0
		0	0	0	0	0	0	$-\frac{\sqrt{70}i}{64}$	0	$\frac{5\sqrt{14}i}{64}$	0	$-\frac{\sqrt{210}i}{64}$	0	$\frac{\sqrt{10}i}{64}$	0
		0	0	0	0	0	0	$-\frac{\sqrt{5}i}{64}$	0	$\frac{\sqrt{105}i}{64}$	0	$-\frac{5\sqrt{7}i}{64}$	0	$\frac{\sqrt{35}i}{64}$	0
		0	0	0	0	0	0	$\frac{\sqrt{7}i}{64}$	0	$-\frac{\sqrt{35}i}{64}$	0	$\frac{\sqrt{21}i}{64}$	0	$-\frac{i}{64}$	0
		$\frac{i}{64}$	0	$-\frac{\sqrt{10}i}{64}$	0	$\frac{\sqrt{5}i}{64}$	0	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{35}i}{64}$	0	$\frac{\sqrt{70}i}{64}$	0	$-\frac{\sqrt{7}i}{64}$	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{21}i}{64}$	0	$\frac{\sqrt{210}i}{64}$	0	$-\frac{\sqrt{105}i}{64}$	0	0	0	0	0	0	0	0	0
		0	$\frac{5\sqrt{7}i}{64}$	0	$-\frac{5\sqrt{14}i}{64}$	0	$\frac{\sqrt{35}i}{64}$	0	0	0	0	0	0	0	0
		$\frac{\sqrt{35}i}{64}$	0	$-\frac{5\sqrt{14}i}{64}$	0	$\frac{5\sqrt{7}i}{64}$	0	0	0	0	0	0	0	0	0
		0	$-\frac{\sqrt{105}i}{64}$	0	$\frac{\sqrt{210}i}{64}$	0	$-\frac{\sqrt{21}i}{64}$	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{7}i}{64}$	0	$\frac{\sqrt{70}i}{64}$	0	$-\frac{\sqrt{35}i}{64}$	0	0	0	0	0	0	0	0	0
		0	$\frac{\sqrt{5}i}{64}$	0	$-\frac{\sqrt{10}i}{64}$	0	$\frac{i}{64}$	0	0	0	0	0	0	0	0
943	symmetry	$\frac{\sqrt{462}xy(x^2-3y^2)(3x^2-y^2)}{16}$													

*continued ...*

Table 10

No.	multipole	matrix															
$\mathbb{T}_{6,3}^{(1,0;a)}(T_{2g},1)$		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	$\frac{1}{2}$	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	
		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	
944	symmetry	$\frac{\sqrt{210}yz(16x^4-16x^2y^2-16x^2z^2+y^4+2y^2z^2+z^4)}{16}$															

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{T}_{6,1}^{(1,0;a)}(T_{2g}, 2)$	0	0	0	0	0	0	$\frac{\sqrt{55}}{2112}$	0	$\frac{\sqrt{1155}}{2112}$	0	$-\frac{9\sqrt{77}}{704}$	0	$\frac{\sqrt{385}}{64}$	0	
	0	0	0	0	0	0	0	$-\frac{5\sqrt{77}}{2112}$	0	$-\frac{5\sqrt{385}}{2112}$	0	$\frac{9\sqrt{231}}{704}$	0	$-\frac{5\sqrt{11}}{64}$	
	0	0	0	0	0	0	$-\frac{9\sqrt{22}}{704}$	0	$\frac{5\sqrt{462}}{2112}$	0	$\frac{5\sqrt{770}}{2112}$	0	$-\frac{9\sqrt{154}}{704}$	0	
	0	0	0	0	0	0	0	$\frac{9\sqrt{154}}{704}$	0	$-\frac{5\sqrt{770}}{2112}$	0	$-\frac{5\sqrt{462}}{2112}$	0	$\frac{9\sqrt{22}}{704}$	
	0	0	0	0	0	0	$\frac{5\sqrt{11}}{64}$	0	$-\frac{9\sqrt{231}}{704}$	0	$\frac{5\sqrt{385}}{2112}$	0	$\frac{5\sqrt{77}}{2112}$	0	
	0	0	0	0	0	0	0	$-\frac{\sqrt{385}}{64}$	0	$\frac{9\sqrt{77}}{704}$	0	$-\frac{\sqrt{1155}}{2112}$	0	$-\frac{\sqrt{55}}{2112}$	
	$\frac{\sqrt{55}}{2112}$	0	$-\frac{9\sqrt{22}}{704}$	0	$\frac{5\sqrt{11}}{64}$	0	0	0	0	0	0	0	0	0	
	0	$-\frac{5\sqrt{77}}{2112}$	0	$\frac{9\sqrt{154}}{704}$	0	$-\frac{\sqrt{385}}{64}$	0	0	0	0	0	0	0	0	
	$\frac{\sqrt{1155}}{2112}$	0	$\frac{5\sqrt{462}}{2112}$	0	$-\frac{9\sqrt{231}}{704}$	0	0	0	0	0	0	0	0	0	
	0	$-\frac{5\sqrt{385}}{2112}$	0	$-\frac{5\sqrt{770}}{2112}$	0	$\frac{9\sqrt{77}}{704}$	0	0	0	0	0	0	0	0	
	$-\frac{9\sqrt{77}}{704}$	0	$\frac{5\sqrt{770}}{2112}$	0	$\frac{5\sqrt{385}}{2112}$	0	0	0	0	0	0	0	0	0	
	0	$\frac{9\sqrt{231}}{704}$	0	$-\frac{5\sqrt{462}}{2112}$	0	$-\frac{\sqrt{1155}}{2112}$	0	0	0	0	0	0	0	0	
	$\frac{\sqrt{385}}{64}$	0	$-\frac{9\sqrt{154}}{704}$	0	$\frac{5\sqrt{77}}{2112}$	0	0	0	0	0	0	0	0	0	
	0	$-\frac{5\sqrt{11}}{64}$	0	$\frac{9\sqrt{22}}{704}$	0	$-\frac{\sqrt{55}}{2112}$	0	0	0	0	0	0	0	0	
945	symmetry	$\frac{\sqrt{210}xz(x^4-16x^2y^2+2x^2z^2+16y^4-16y^2z^2+z^4)}{16}$													

*continued ...*

Table 10

No.	multipole	matrix													
946	$\mathbb{T}_{6,2}^{(1,0;a)}(T_{2g}, 2)$	0	0	0	0	0	0	$-\frac{\sqrt{55}i}{2112}$	0	$\frac{\sqrt{1155}i}{2112}$	0	$\frac{9\sqrt{77}i}{704}$	0	$\frac{\sqrt{385}i}{64}$	0
		0	0	0	0	0	0	$\frac{5\sqrt{77}i}{2112}$	0	$-\frac{5\sqrt{385}i}{2112}$	0	$-\frac{9\sqrt{231}i}{704}$	0	$-\frac{5\sqrt{11}i}{64}$	0
		0	0	0	0	0	0	$-\frac{9\sqrt{22}i}{704}$	0	$-\frac{5\sqrt{462}i}{2112}$	0	$\frac{5\sqrt{770}i}{2112}$	0	$\frac{9\sqrt{154}i}{704}$	0
		0	0	0	0	0	0	$\frac{9\sqrt{154}i}{704}$	0	$\frac{5\sqrt{770}i}{2112}$	0	$-\frac{5\sqrt{462}i}{2112}$	0	$-\frac{9\sqrt{22}i}{704}$	0
		0	0	0	0	0	0	$-\frac{5\sqrt{11}i}{64}$	0	$-\frac{9\sqrt{231}i}{704}$	0	$-\frac{5\sqrt{385}i}{2112}$	0	$\frac{5\sqrt{77}i}{2112}$	0
		0	0	0	0	0	0	0	$\frac{\sqrt{385}i}{64}$	0	$\frac{9\sqrt{77}i}{704}$	0	$\frac{\sqrt{1155}i}{2112}$	0	$-\frac{\sqrt{55}i}{2112}$
		$\frac{\sqrt{55}i}{2112}$	0	$\frac{9\sqrt{22}i}{704}$	0	$\frac{5\sqrt{11}i}{64}$	0	0	0	0	0	0	0	0	0
		0	$-\frac{5\sqrt{77}i}{2112}$	0	$-\frac{9\sqrt{154}i}{704}$	0	$-\frac{\sqrt{385}i}{64}$	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{1155}i}{2112}$	0	$\frac{5\sqrt{462}i}{2112}$	0	$\frac{9\sqrt{231}i}{704}$	0	0	0	0	0	0	0	0	0
		0	$\frac{5\sqrt{385}i}{2112}$	0	$-\frac{5\sqrt{770}i}{2112}$	0	$-\frac{9\sqrt{77}i}{704}$	0	0	0	0	0	0	0	0
		$-\frac{9\sqrt{77}i}{704}$	0	$-\frac{5\sqrt{770}i}{2112}$	0	$\frac{5\sqrt{385}i}{2112}$	0	0	0	0	0	0	0	0	0
		0	$\frac{9\sqrt{231}i}{704}$	0	$\frac{5\sqrt{462}i}{2112}$	0	$-\frac{\sqrt{1155}i}{2112}$	0	0	0	0	0	0	0	0
		$-\frac{\sqrt{385}i}{64}$	0	$-\frac{9\sqrt{154}i}{704}$	0	$-\frac{5\sqrt{77}i}{2112}$	0	0	0	0	0	0	0	0	0
		0	$\frac{5\sqrt{11}i}{64}$	0	$\frac{9\sqrt{22}i}{704}$	0	$\frac{\sqrt{55}i}{2112}$	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												
$\mathbb{T}_{6,3}^{(1,0;a)}(T_{2g}, 2)$		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	$x$												

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{M}_{1,1}^{(a)}(T_{1g})$		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	$\frac{3\sqrt{42}}{98}$	0	$\frac{3\sqrt{2}}{28}$	0
		0	0	0	0	0	$\frac{\sqrt{3}}{28}$	0	0	0	0	0	0	$\frac{3\sqrt{2}}{28}$	0
948	symmetry	$y$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{M}_{1,2}^{(a)}(T_{1g})$		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	0	$-\frac{\sqrt{7}i}{196}$	0	$-\frac{\sqrt{3}i}{28}$
		$\frac{\sqrt{3}i}{28}$	0	0	0	0	0	0	$-\frac{3\sqrt{2}i}{28}$	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	0	$\frac{3\sqrt{42}i}{98}$	0	$-\frac{3\sqrt{210}i}{196}$	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	0	$\frac{3\sqrt{2}i}{28}$	0
949	symmetry	$z$													

*continued ...*

Table 10

No.	multipole	matrix													
950	$\mathbb{M}_{1,3}^{(a)}(T_{1g})$	$\frac{5\sqrt{14}}{49}$	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	$-\frac{3\sqrt{14}}{28}$
950	symmetry	$\sqrt{15}xyz$													

*continued ...*



Table 10

No.	multipole	matrix													
$\mathbb{M}_3^{(a)}(A_{2g})$		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
951	symmetry	$\frac{x(2x^2-3y^2-3z^2)}{2}$													

*continued ...*

Table 10

No.	multipole	matrix													
952	$\mathbb{M}_{3,1}^{(a)}(T_{1g})$	0	$\frac{\sqrt{15}}{28}$	0	$-\frac{5\sqrt{30}}{168}$	0	0	$-\frac{\sqrt{14}}{56}$	0	$\frac{\sqrt{6}}{28}$	0	$-\frac{\sqrt{10}}{56}$	0	0	0
		$\frac{\sqrt{15}}{28}$	0	$-\frac{\sqrt{6}}{56}$	0	$-\frac{5\sqrt{3}}{42}$	0	0	$\frac{\sqrt{10}}{56}$	0	$\frac{\sqrt{2}}{28}$	0	$-\frac{\sqrt{30}}{56}$	0	0
		0	$-\frac{\sqrt{6}}{56}$	0	$-\frac{\sqrt{3}}{14}$	0	$-\frac{5\sqrt{30}}{168}$	$\frac{\sqrt{35}}{56}$	0	$\frac{\sqrt{15}}{56}$	0	$-\frac{1}{56}$	0	$-\frac{3\sqrt{5}}{56}$	0
		$-\frac{5\sqrt{30}}{168}$	0	$-\frac{\sqrt{3}}{14}$	0	$-\frac{\sqrt{6}}{56}$	0	0	$\frac{3\sqrt{5}}{56}$	0	$\frac{1}{56}$	0	$-\frac{\sqrt{15}}{56}$	0	$-\frac{\sqrt{35}}{56}$
		0	$-\frac{5\sqrt{3}}{42}$	0	$-\frac{\sqrt{6}}{56}$	0	$\frac{\sqrt{15}}{28}$	0	0	$\frac{\sqrt{30}}{56}$	0	$-\frac{\sqrt{2}}{28}$	0	$-\frac{\sqrt{10}}{56}$	0
		0	0	$-\frac{5\sqrt{30}}{168}$	0	$\frac{\sqrt{15}}{28}$	0	0	0	$\frac{\sqrt{10}}{56}$	0	$-\frac{\sqrt{6}}{28}$	0	$\frac{\sqrt{14}}{56}$	
		$-\frac{\sqrt{14}}{56}$	0	$\frac{\sqrt{35}}{56}$	0	0	0	0	$\frac{\sqrt{21}}{28}$	0	$-\frac{\sqrt{105}}{84}$	0	0	0	0
		0	$\frac{\sqrt{10}}{56}$	0	$\frac{3\sqrt{5}}{56}$	0	0	$\frac{\sqrt{21}}{28}$	0	$\frac{1}{28}$	0	$-\frac{\sqrt{15}}{21}$	0	0	0
		$\frac{\sqrt{6}}{28}$	0	$\frac{\sqrt{15}}{56}$	0	$\frac{\sqrt{30}}{56}$	0	0	$\frac{1}{28}$	0	$-\frac{\sqrt{5}}{28}$	0	$-\frac{5\sqrt{3}}{42}$	0	0
		0	$\frac{\sqrt{2}}{28}$	0	$\frac{1}{56}$	0	$\frac{\sqrt{10}}{56}$	$-\frac{\sqrt{105}}{84}$	0	$-\frac{\sqrt{5}}{28}$	0	$-\frac{\sqrt{3}}{14}$	0	$-\frac{\sqrt{15}}{21}$	0
		$-\frac{\sqrt{10}}{56}$	0	$-\frac{1}{56}$	0	$-\frac{\sqrt{2}}{28}$	0	0	$-\frac{\sqrt{15}}{21}$	0	$-\frac{\sqrt{3}}{14}$	0	$-\frac{\sqrt{5}}{28}$	0	$-\frac{\sqrt{105}}{84}$
		0	$-\frac{\sqrt{30}}{56}$	0	$-\frac{\sqrt{15}}{56}$	0	$-\frac{\sqrt{6}}{28}$	0	0	$-\frac{5\sqrt{3}}{42}$	0	$-\frac{\sqrt{5}}{28}$	0	$\frac{1}{28}$	0
		0	0	$-\frac{3\sqrt{5}}{56}$	0	$-\frac{\sqrt{10}}{56}$	0	0	0	$-\frac{\sqrt{15}}{21}$	0	$\frac{1}{28}$	0	$\frac{\sqrt{21}}{28}$	
		0	0	0	$-\frac{\sqrt{35}}{56}$	0	$\frac{\sqrt{14}}{56}$	0	0	0	0	$-\frac{\sqrt{105}}{84}$	0	$\frac{\sqrt{21}}{28}$	0
	symmetry	$-\frac{y(3x^2-2y^2+3z^2)}{2}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{M}_{3,2}^{(a)}(T_{1g})$		0	$-\frac{\sqrt{15}i}{28}$	0	$-\frac{5\sqrt{30}i}{168}$	0	0	$-\frac{\sqrt{14}i}{56}$	0	$-\frac{\sqrt{6}i}{28}$	0	$-\frac{\sqrt{10}i}{56}$	0	0	0
		$\frac{\sqrt{15}i}{28}$	0	$\frac{\sqrt{6}i}{56}$	0	$-\frac{5\sqrt{3}i}{42}$	0	0	$\frac{\sqrt{10}i}{56}$	0	$-\frac{\sqrt{2}i}{28}$	0	$-\frac{\sqrt{30}i}{56}$	0	0
		0	$-\frac{\sqrt{6}i}{56}$	0	$\frac{\sqrt{3}i}{14}$	0	$-\frac{5\sqrt{30}i}{168}$	$-\frac{\sqrt{35}i}{56}$	0	$\frac{\sqrt{15}i}{56}$	0	$\frac{i}{56}$	0	$-\frac{3\sqrt{5}i}{56}$	0
		$\frac{5\sqrt{30}i}{168}$	0	$-\frac{\sqrt{3}i}{14}$	0	$\frac{\sqrt{6}i}{56}$	0	0	$-\frac{3\sqrt{5}i}{56}$	0	$\frac{i}{56}$	0	$\frac{\sqrt{15}i}{56}$	0	$-\frac{\sqrt{35}i}{56}$
		0	$\frac{5\sqrt{3}i}{42}$	0	$-\frac{\sqrt{6}i}{56}$	0	$-\frac{\sqrt{15}i}{28}$	0	0	$-\frac{\sqrt{30}i}{56}$	0	$-\frac{\sqrt{2}i}{28}$	0	$\frac{\sqrt{10}i}{56}$	0
		0	0	$\frac{5\sqrt{30}i}{168}$	0	$\frac{\sqrt{15}i}{28}$	0	0	0	$-\frac{\sqrt{10}i}{56}$	0	$-\frac{\sqrt{6}i}{28}$	0	$-\frac{\sqrt{14}i}{56}$	0
		$\frac{\sqrt{14}i}{56}$	0	$\frac{\sqrt{35}i}{56}$	0	0	0	0	$-\frac{\sqrt{21}i}{28}$	0	$-\frac{\sqrt{105}i}{84}$	0	0	0	0
		0	$-\frac{\sqrt{10}i}{56}$	0	$\frac{3\sqrt{5}i}{56}$	0	0	$\frac{\sqrt{21}i}{28}$	0	$-\frac{i}{28}$	0	$-\frac{\sqrt{15}i}{21}$	0	0	0
		$\frac{\sqrt{6}i}{28}$	0	$-\frac{\sqrt{15}i}{56}$	0	$\frac{\sqrt{30}i}{56}$	0	0	$\frac{i}{28}$	0	$\frac{\sqrt{5}i}{28}$	0	$-\frac{5\sqrt{3}i}{42}$	0	0
		0	$\frac{\sqrt{2}i}{28}$	0	$-\frac{i}{56}$	0	$\frac{\sqrt{10}i}{56}$	$\frac{\sqrt{105}i}{84}$	0	$-\frac{\sqrt{5}i}{28}$	0	$\frac{\sqrt{3}i}{14}$	0	$-\frac{\sqrt{15}i}{21}$	0
		$\frac{\sqrt{10}i}{56}$	0	$-\frac{i}{56}$	0	$\frac{\sqrt{2}i}{28}$	0	0	$\frac{\sqrt{15}i}{21}$	0	$-\frac{\sqrt{3}i}{14}$	0	$\frac{\sqrt{5}i}{28}$	0	$-\frac{\sqrt{105}i}{84}$
		0	$\frac{\sqrt{30}i}{56}$	0	$-\frac{\sqrt{15}i}{56}$	0	$\frac{\sqrt{6}i}{28}$	0	0	$\frac{5\sqrt{3}i}{42}$	0	$-\frac{\sqrt{5}i}{28}$	0	$-\frac{i}{28}$	0
		0	0	$\frac{3\sqrt{5}i}{56}$	0	$-\frac{\sqrt{10}i}{56}$	0	0	0	$\frac{\sqrt{15}i}{21}$	0	$\frac{i}{28}$	0	$-\frac{\sqrt{21}i}{28}$	0
		0	0	0	$\frac{\sqrt{35}i}{56}$	0	$\frac{\sqrt{14}i}{56}$	0	0	0	0	$\frac{\sqrt{105}i}{84}$	0	$\frac{\sqrt{21}i}{28}$	0
953	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$													

continued ...

Table 10

No.	multipole	matrix														
954	$\mathbb{M}_{3,3}^{(a)}(T_{1g})$	$-\frac{5\sqrt{3}}{42}$	0	0	0	0	0	0	$-\frac{\sqrt{2}}{7}$	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	0	$\frac{2\sqrt{3}}{21}$	0	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	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	0	$\frac{5\sqrt{3}}{42}$	0	0	0	0	0	0	$-\frac{\sqrt{2}}{7}$	0	0
		0	0	0	0	0	0	$-\frac{\sqrt{3}}{6}$	0	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	0	$\frac{\sqrt{3}}{6}$	0	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	$\frac{1}{7}$	0	0	0	0	0	0	$-\frac{\sqrt{3}}{14}$	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	$-\frac{\sqrt{3}}{6}$	0	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	0	$\frac{\sqrt{3}}{6}$	0
954	symmetry	$\frac{\sqrt{15}x(y-z)(y+z)}{2}$														

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{M}_{3,1}^{(a)}(T_{2g})$		0	$\frac{5}{28}$	0	$\frac{5\sqrt{2}}{56}$	0	0	$-\frac{\sqrt{210}}{168}$	0	$\frac{\sqrt{10}}{28}$	0	$\frac{\sqrt{6}}{56}$	0	0	0
		$\frac{5}{28}$	0	$-\frac{\sqrt{10}}{56}$	0	$\frac{\sqrt{5}}{14}$	0	0	$\frac{5\sqrt{6}}{168}$	0	$\frac{\sqrt{30}}{84}$	0	$\frac{3\sqrt{2}}{56}$	0	0
		0	$-\frac{\sqrt{10}}{56}$	0	$-\frac{\sqrt{5}}{14}$	0	$\frac{5\sqrt{2}}{56}$	$-\frac{\sqrt{21}}{56}$	0	$\frac{5}{56}$	0	$-\frac{\sqrt{15}}{168}$	0	$\frac{3\sqrt{3}}{56}$	0
		$\frac{5\sqrt{2}}{56}$	0	$-\frac{\sqrt{5}}{14}$	0	$-\frac{\sqrt{10}}{56}$	0	0	$-\frac{3\sqrt{3}}{56}$	0	$\frac{\sqrt{15}}{168}$	0	$-\frac{5}{56}$	0	$\frac{\sqrt{21}}{56}$
		0	$\frac{\sqrt{5}}{14}$	0	$-\frac{\sqrt{10}}{56}$	0	$\frac{5}{28}$	0	0	$-\frac{3\sqrt{2}}{56}$	0	$-\frac{\sqrt{30}}{84}$	0	$-\frac{5\sqrt{6}}{168}$	0
		0	0	$\frac{5\sqrt{2}}{56}$	0	$\frac{5}{28}$	0	0	0	0	$-\frac{\sqrt{6}}{56}$	0	$-\frac{\sqrt{10}}{28}$	0	$\frac{\sqrt{210}}{168}$
		$-\frac{\sqrt{210}}{168}$	0	$-\frac{\sqrt{21}}{56}$	0	0	0	0	$\frac{\sqrt{35}}{28}$	0	$\frac{\sqrt{7}}{28}$	0	0	0	0
		0	$\frac{5\sqrt{6}}{168}$	0	$-\frac{3\sqrt{3}}{56}$	0	0	$\frac{\sqrt{35}}{28}$	0	$\frac{\sqrt{15}}{84}$	0	$\frac{1}{7}$	0	0	0
		$\frac{\sqrt{10}}{28}$	0	$\frac{5}{56}$	0	$-\frac{3\sqrt{2}}{56}$	0	0	$\frac{\sqrt{15}}{84}$	0	$-\frac{5\sqrt{3}}{84}$	0	$\frac{\sqrt{5}}{14}$	0	0
		0	$\frac{\sqrt{30}}{84}$	0	$\frac{\sqrt{15}}{168}$	0	$-\frac{\sqrt{6}}{56}$	$\frac{\sqrt{7}}{28}$	0	$-\frac{5\sqrt{3}}{84}$	0	$-\frac{\sqrt{5}}{14}$	0	$\frac{1}{7}$	0
		$\frac{\sqrt{6}}{56}$	0	$-\frac{\sqrt{15}}{168}$	0	$-\frac{\sqrt{30}}{84}$	0	0	$\frac{1}{7}$	0	$-\frac{\sqrt{5}}{14}$	0	$-\frac{5\sqrt{3}}{84}$	0	$\frac{\sqrt{7}}{28}$
		0	$\frac{3\sqrt{2}}{56}$	0	$-\frac{5}{56}$	0	$-\frac{\sqrt{10}}{28}$	0	0	$\frac{\sqrt{5}}{14}$	0	$-\frac{5\sqrt{3}}{84}$	0	$\frac{\sqrt{15}}{84}$	0
		0	0	$\frac{3\sqrt{3}}{56}$	0	$-\frac{5\sqrt{6}}{168}$	0	0	0	0	$\frac{1}{7}$	0	$\frac{\sqrt{15}}{84}$	0	$\frac{\sqrt{35}}{28}$
		0	0	0	$\frac{\sqrt{21}}{56}$	0	$\frac{\sqrt{210}}{168}$	0	0	0	0	$\frac{\sqrt{7}}{28}$	0	$\frac{\sqrt{35}}{28}$	0
955	symmetry	$-\frac{\sqrt{15}y(x-z)(x+z)}{2}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{M}_{3,2}^{(a)}(T_{2g})$		0	$\frac{5i}{28}$	0	$-\frac{5\sqrt{2}i}{56}$	0	0	$\frac{\sqrt{210}i}{168}$	0	$\frac{\sqrt{10}i}{28}$	0	$-\frac{\sqrt{6}i}{56}$	0	0	0
		$-\frac{5i}{28}$	0	$-\frac{\sqrt{10}i}{56}$	0	$-\frac{\sqrt{5}i}{14}$	0	0	$-\frac{5\sqrt{6}i}{168}$	0	$\frac{\sqrt{30}i}{84}$	0	$-\frac{3\sqrt{2}i}{56}$	0	0
		0	$\frac{\sqrt{10}i}{56}$	0	$-\frac{\sqrt{5}i}{14}$	0	$-\frac{5\sqrt{2}i}{56}$	$-\frac{\sqrt{21}i}{56}$	0	$-\frac{5i}{56}$	0	$-\frac{\sqrt{15}i}{168}$	0	$-\frac{3\sqrt{3}i}{56}$	0
		$\frac{5\sqrt{2}i}{56}$	0	$\frac{\sqrt{5}i}{14}$	0	$-\frac{\sqrt{10}i}{56}$	0	0	$-\frac{3\sqrt{3}i}{56}$	0	$-\frac{\sqrt{15}i}{168}$	0	$-\frac{5i}{56}$	0	$-\frac{\sqrt{21}i}{56}$
		0	$\frac{\sqrt{5}i}{14}$	0	$\frac{\sqrt{10}i}{56}$	0	$\frac{5i}{28}$	0	0	$-\frac{3\sqrt{2}i}{56}$	0	$\frac{\sqrt{30}i}{84}$	0	$-\frac{5\sqrt{6}i}{168}$	0
		0	0	$\frac{5\sqrt{2}i}{56}$	0	$-\frac{5i}{28}$	0	0	0	0	$-\frac{\sqrt{6}i}{56}$	0	$\frac{\sqrt{10}i}{28}$	0	$\frac{\sqrt{210}i}{168}$
		$-\frac{\sqrt{210}i}{168}$	0	$\frac{\sqrt{21}i}{56}$	0	0	0	0	$\frac{\sqrt{35}i}{28}$	0	$-\frac{\sqrt{7}i}{28}$	0	0	0	0
		0	$\frac{5\sqrt{6}i}{168}$	0	$\frac{3\sqrt{3}i}{56}$	0	0	$-\frac{\sqrt{35}i}{28}$	0	$\frac{\sqrt{15}i}{84}$	0	$-\frac{i}{7}$	0	0	0
		$-\frac{\sqrt{10}i}{28}$	0	$\frac{5i}{56}$	0	$\frac{3\sqrt{2}i}{56}$	0	0	$-\frac{\sqrt{15}i}{84}$	0	$-\frac{5\sqrt{3}i}{84}$	0	$-\frac{\sqrt{5}i}{14}$	0	0
		0	$-\frac{\sqrt{30}i}{84}$	0	$\frac{\sqrt{15}i}{168}$	0	$\frac{\sqrt{6}i}{56}$	$\frac{\sqrt{7}i}{28}$	0	$\frac{5\sqrt{3}i}{84}$	0	$-\frac{\sqrt{5}i}{14}$	0	$-\frac{i}{7}$	0
		$\frac{\sqrt{6}i}{56}$	0	$\frac{\sqrt{15}i}{168}$	0	$-\frac{\sqrt{30}i}{84}$	0	0	$\frac{i}{7}$	0	$\frac{\sqrt{5}i}{14}$	0	$-\frac{5\sqrt{3}i}{84}$	0	$-\frac{\sqrt{7}i}{28}$
		0	$\frac{3\sqrt{2}i}{56}$	0	$\frac{5i}{56}$	0	$-\frac{\sqrt{10}i}{28}$	0	0	$\frac{\sqrt{5}i}{14}$	0	$\frac{5\sqrt{3}i}{84}$	0	$\frac{\sqrt{15}i}{84}$	0
		0	0	$\frac{3\sqrt{3}i}{56}$	0	$\frac{5\sqrt{6}i}{168}$	0	0	0	0	$\frac{i}{7}$	0	$-\frac{\sqrt{15}i}{84}$	0	$\frac{\sqrt{35}i}{28}$
		0	0	0	$\frac{\sqrt{21}i}{56}$	0	$-\frac{\sqrt{210}i}{168}$	0	0	0	0	$\frac{\sqrt{7}i}{28}$	0	$-\frac{\sqrt{35}i}{28}$	0
956	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{M}_{3,3}^{(a)}(T_{2g})$		0	0	$-\frac{5\sqrt{2}}{28}$	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	$-\frac{\sqrt{30}}{42}$	0	0	0	
		$-\frac{5\sqrt{2}}{28}$	0	0	0	$\frac{\sqrt{10}}{28}$	0	0	$\frac{\sqrt{3}}{42}$	0	0	$-\frac{1}{14}$	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	$\frac{\sqrt{10}}{28}$	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	$-\frac{\sqrt{6}}{21}$	0	0	0	
		0	$\frac{\sqrt{42}}{42}$	0	0	0	0	0	$-\frac{\sqrt{105}}{42}$	0	0	0	0	0	
		0	0	$\frac{\sqrt{3}}{42}$	0	0	0	0	0	$-\frac{3}{14}$	0	0	0	0	
		0	0	0	$-\frac{1}{14}$	0	0	$-\frac{\sqrt{105}}{42}$	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	$-\frac{\sqrt{30}}{42}$	0	0	0	$-\frac{\sqrt{6}}{21}$	0	0	$-\frac{\sqrt{3}}{21}$	0	0	0	$\frac{3}{14}$	
		0	0	$-\frac{1}{14}$	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	$\frac{3}{14}$	0	0	0	
		0	0	0	0	$\frac{\sqrt{42}}{42}$	0	0	0	0	0	$\frac{\sqrt{105}}{42}$	0	0	
957	symmetry	$\frac{3\sqrt{35}xyz(x-y)(x+y)}{2}$													

*continued ...*

Table 10

No.	multipole	matrix													
$M_{5,1}^{(a)}(E_g)$		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	$\frac{\sqrt{6}i}{14}$	0	0	0	0	0	0	$-\frac{i}{14}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{14}i}{14}$
		0	0	0	0	0	0	$-\frac{\sqrt{14}i}{14}$	0	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
		0	$-\frac{\sqrt{6}i}{14}$	0	0	0	0	0	0	$\frac{\sqrt{15}i}{14}$	0	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	0	$-\frac{i}{14}$	0	0	0	0	0	$-\frac{\sqrt{10}i}{28}$	0	0	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	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	0
		$\frac{\sqrt{15}i}{14}$	0	0	0	0	0	0	$\frac{\sqrt{10}i}{28}$	0	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	0	$-\frac{\sqrt{14}i}{14}$	0	0	0	0	0	0	$-\frac{\sqrt{42}i}{28}$	0	0	0	0
958	symmetry	$\frac{\sqrt{105}xyz(x^2+y^2-2z^2)}{2}$													

*continued ...*



Table 10

No.	multipole	matrix													
$M_{5,2}^{(a)}(E_g)$		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	0	$-\frac{\sqrt{15}i}{21}$	0	0	
		$-\frac{i}{14}$	0	0	0	$\frac{\sqrt{5}i}{14}$	0	0	$-\frac{2\sqrt{6}i}{21}$	0	0	0	$-\frac{\sqrt{2}i}{14}$	0	
		0	$\frac{\sqrt{5}i}{14}$	0	0	0	$-\frac{i}{14}$	0	0	$\frac{\sqrt{2}i}{14}$	0	0	0	$\frac{2\sqrt{6}i}{21}$	
		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	0	$\frac{\sqrt{210}i}{84}$	0	0	0	0	
		0	0	$\frac{2\sqrt{6}i}{21}$	0	0	0	0	0	0	$-\frac{3\sqrt{2}i}{28}$	0	0	0	
		0	0	0	$-\frac{\sqrt{2}i}{14}$	0	0	$-\frac{\sqrt{210}i}{84}$	0	0	0	$-\frac{\sqrt{6}i}{21}$	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	0	$\frac{\sqrt{6}i}{21}$	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	0	$\frac{3\sqrt{2}i}{28}$	
		0	0	$\frac{\sqrt{2}i}{14}$	0	0	0	0	0	0	$-\frac{\sqrt{6}i}{21}$	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	0	$\frac{\sqrt{210}i}{84}$	0	
959	symmetry	$\frac{x\left(8x^4-40x^2y^2-40x^2z^2+15y^4+30y^2z^2+15z^4\right)}{8}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{M}_{5,1}^{(a)}(T_{1g}, 1)$		0	$\frac{\sqrt{210}}{784}$	0	$-\frac{\sqrt{105}}{168}$	0	$\frac{3\sqrt{42}}{112}$	$-\frac{5}{224}$	0	$\frac{25\sqrt{21}}{1568}$	0	$-\frac{5\sqrt{35}}{224}$	0	$\frac{15\sqrt{7}}{224}$	0
		$\frac{\sqrt{210}}{784}$	0	$-\frac{5\sqrt{21}}{392}$	0	$\frac{5\sqrt{42}}{336}$	0	0	$\frac{23\sqrt{35}}{1568}$	0	$-\frac{65\sqrt{7}}{1568}$	0	$\frac{\sqrt{105}}{224}$	0	$\frac{3\sqrt{5}}{32}$
		0	$-\frac{5\sqrt{21}}{392}$	0	$\frac{5\sqrt{42}}{392}$	0	$-\frac{\sqrt{105}}{168}$	$\frac{\sqrt{10}}{32}$	0	$-\frac{11\sqrt{210}}{1568}$	0	$\frac{5\sqrt{14}}{1568}$	0	$\frac{3\sqrt{70}}{224}$	0
		$-\frac{\sqrt{105}}{168}$	0	$\frac{5\sqrt{42}}{392}$	0	$-\frac{5\sqrt{21}}{392}$	0	0	$-\frac{3\sqrt{70}}{224}$	0	$-\frac{5\sqrt{14}}{1568}$	0	$\frac{11\sqrt{210}}{1568}$	0	$-\frac{\sqrt{10}}{32}$
		0	$\frac{5\sqrt{42}}{336}$	0	$-\frac{5\sqrt{21}}{392}$	0	$\frac{\sqrt{210}}{784}$	$-\frac{3\sqrt{5}}{32}$	0	$-\frac{\sqrt{105}}{224}$	0	$\frac{65\sqrt{7}}{1568}$	0	$-\frac{23\sqrt{35}}{1568}$	0
		$\frac{3\sqrt{42}}{112}$	0	$-\frac{\sqrt{105}}{168}$	0	$\frac{\sqrt{210}}{784}$	0	0	$-\frac{15\sqrt{7}}{224}$	0	$\frac{5\sqrt{35}}{224}$	0	$-\frac{25\sqrt{21}}{1568}$	0	$\frac{5}{224}$
		$-\frac{5}{224}$	0	$\frac{\sqrt{10}}{32}$	0	$-\frac{3\sqrt{5}}{32}$	0	0	$\frac{5\sqrt{6}}{224}$	0	$-\frac{\sqrt{30}}{48}$	0	$\frac{3\sqrt{2}}{32}$	0	0
		0	$\frac{23\sqrt{35}}{1568}$	0	$-\frac{3\sqrt{70}}{224}$	0	$-\frac{15\sqrt{7}}{224}$	$\frac{5\sqrt{6}}{224}$	0	$-\frac{5\sqrt{14}}{196}$	0	$\frac{\sqrt{210}}{672}$	0	$\frac{3\sqrt{42}}{112}$	0
		$\frac{25\sqrt{21}}{1568}$	0	$-\frac{11\sqrt{210}}{1568}$	0	$-\frac{\sqrt{105}}{224}$	0	0	$-\frac{5\sqrt{14}}{196}$	0	$\frac{\sqrt{70}}{1568}$	0	$\frac{5\sqrt{42}}{336}$	0	$\frac{3\sqrt{2}}{32}$
		0	$-\frac{65\sqrt{7}}{1568}$	0	$-\frac{5\sqrt{14}}{1568}$	0	$\frac{5\sqrt{35}}{224}$	$-\frac{\sqrt{30}}{48}$	0	$\frac{\sqrt{70}}{1568}$	0	$\frac{5\sqrt{42}}{392}$	0	$\frac{\sqrt{210}}{672}$	0
		$-\frac{5\sqrt{35}}{224}$	0	$\frac{5\sqrt{14}}{1568}$	0	$\frac{65\sqrt{7}}{1568}$	0	0	$\frac{\sqrt{210}}{672}$	0	$\frac{5\sqrt{42}}{392}$	0	$\frac{\sqrt{70}}{1568}$	0	$-\frac{\sqrt{30}}{48}$
		0	$\frac{\sqrt{105}}{224}$	0	$\frac{11\sqrt{210}}{1568}$	0	$-\frac{25\sqrt{21}}{1568}$	$\frac{3\sqrt{2}}{32}$	0	$\frac{5\sqrt{42}}{336}$	0	$\frac{\sqrt{70}}{1568}$	0	$-\frac{5\sqrt{14}}{196}$	0
		$\frac{15\sqrt{7}}{224}$	0	$\frac{3\sqrt{70}}{224}$	0	$-\frac{23\sqrt{35}}{1568}$	0	0	$\frac{3\sqrt{42}}{112}$	0	$\frac{\sqrt{210}}{672}$	0	$-\frac{5\sqrt{14}}{196}$	0	$\frac{5\sqrt{6}}{224}$
		0	$\frac{3\sqrt{5}}{32}$	0	$-\frac{\sqrt{10}}{32}$	0	$\frac{5}{224}$	0	0	$\frac{3\sqrt{2}}{32}$	0	$-\frac{\sqrt{30}}{48}$	0	$\frac{5\sqrt{6}}{224}$	0
960	symmetry	$\frac{y(15x^4 - 40x^2y^2 + 30x^2z^2 + 8y^4 - 40y^2z^2 + 15z^4)}{8}$													

*continued ...*

Table 10

No.	multipole	matrix													
961	$M_{5,2}^{(a)}(T_{1g}, 1)$	0	$-\frac{\sqrt{210i}}{784}$	0	$-\frac{\sqrt{105i}}{168}$	0	$-\frac{3\sqrt{42i}}{112}$	$-\frac{5i}{224}$	0	$-\frac{25\sqrt{21i}}{1568}$	0	$-\frac{5\sqrt{35i}}{224}$	0	$-\frac{15\sqrt{7i}}{224}$	0
		$\frac{\sqrt{210i}}{784}$	0	$\frac{5\sqrt{21i}}{392}$	0	$\frac{5\sqrt{42i}}{336}$	0	0	$\frac{23\sqrt{35i}}{1568}$	0	$\frac{65\sqrt{7i}}{1568}$	0	$\frac{\sqrt{105i}}{224}$	0	$-\frac{3\sqrt{5i}}{32}$
		0	$-\frac{5\sqrt{21i}}{392}$	0	$-\frac{5\sqrt{42i}}{392}$	0	$-\frac{\sqrt{105i}}{168}$	$-\frac{\sqrt{10i}}{32}$	0	$-\frac{11\sqrt{210i}}{1568}$	0	$-\frac{5\sqrt{14i}}{1568}$	0	$\frac{3\sqrt{70i}}{224}$	0
		$\frac{\sqrt{105i}}{168}$	0	$\frac{5\sqrt{42i}}{392}$	0	$\frac{5\sqrt{21i}}{392}$	0	0	$\frac{3\sqrt{70i}}{224}$	0	$-\frac{5\sqrt{14i}}{1568}$	0	$-\frac{11\sqrt{210i}}{1568}$	0	$-\frac{\sqrt{10i}}{32}$
		0	$-\frac{5\sqrt{42i}}{336}$	0	$-\frac{5\sqrt{21i}}{392}$	0	$-\frac{\sqrt{210i}}{784}$	$-\frac{3\sqrt{5i}}{32}$	0	$\frac{\sqrt{105i}}{224}$	0	$\frac{65\sqrt{7i}}{1568}$	0	$\frac{23\sqrt{35i}}{1568}$	0
		$\frac{3\sqrt{42i}}{112}$	0	$\frac{\sqrt{105i}}{168}$	0	$\frac{\sqrt{210i}}{784}$	0	0	$-\frac{15\sqrt{7i}}{224}$	0	$-\frac{5\sqrt{35i}}{224}$	0	$-\frac{25\sqrt{21i}}{1568}$	0	$-\frac{5i}{224}$
		$\frac{5i}{224}$	0	$\frac{\sqrt{10i}}{32}$	0	$\frac{3\sqrt{5i}}{32}$	0	0	$-\frac{5\sqrt{6i}}{224}$	0	$-\frac{\sqrt{30i}}{48}$	0	$-\frac{3\sqrt{2i}}{32}$	0	0
		0	$-\frac{23\sqrt{35i}}{1568}$	0	$-\frac{3\sqrt{70i}}{224}$	0	$\frac{15\sqrt{7i}}{224}$	$\frac{5\sqrt{6i}}{224}$	0	$\frac{5\sqrt{14i}}{196}$	0	$\frac{\sqrt{210i}}{672}$	0	$-\frac{3\sqrt{42i}}{112}$	0
		$\frac{25\sqrt{21i}}{1568}$	0	$\frac{11\sqrt{210i}}{1568}$	0	$-\frac{\sqrt{105i}}{224}$	0	0	$-\frac{5\sqrt{14i}}{196}$	0	$-\frac{\sqrt{70i}}{1568}$	0	$\frac{5\sqrt{42i}}{336}$	0	$-\frac{3\sqrt{2i}}{32}$
		0	$-\frac{65\sqrt{7i}}{1568}$	0	$\frac{5\sqrt{14i}}{1568}$	0	$\frac{5\sqrt{35i}}{224}$	$\frac{\sqrt{30i}}{48}$	0	$\frac{\sqrt{70i}}{1568}$	0	$-\frac{5\sqrt{42i}}{392}$	0	$\frac{\sqrt{210i}}{672}$	0
		$\frac{5\sqrt{35i}}{224}$	0	$\frac{5\sqrt{14i}}{1568}$	0	$-\frac{65\sqrt{7i}}{1568}$	0	0	$-\frac{\sqrt{210i}}{672}$	0	$\frac{5\sqrt{42i}}{392}$	0	$-\frac{\sqrt{70i}}{1568}$	0	$-\frac{\sqrt{30i}}{48}$
		0	$-\frac{\sqrt{105i}}{224}$	0	$\frac{11\sqrt{210i}}{1568}$	0	$\frac{25\sqrt{21i}}{1568}$	$\frac{3\sqrt{2i}}{32}$	0	$-\frac{5\sqrt{42i}}{336}$	0	$\frac{\sqrt{70i}}{1568}$	0	$\frac{5\sqrt{14i}}{196}$	0
		$\frac{15\sqrt{7i}}{224}$	0	$-\frac{3\sqrt{70i}}{224}$	0	$-\frac{23\sqrt{35i}}{1568}$	0	0	$\frac{3\sqrt{42i}}{112}$	0	$-\frac{\sqrt{210i}}{672}$	0	$-\frac{5\sqrt{14i}}{196}$	0	$-\frac{5\sqrt{6i}}{224}$
		0	$\frac{3\sqrt{5i}}{32}$	0	$\frac{\sqrt{10i}}{32}$	0	$\frac{5i}{224}$	0	0	$\frac{3\sqrt{2i}}{32}$	0	$\frac{\sqrt{30i}}{48}$	0	$\frac{5\sqrt{6i}}{224}$	0
961	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												
962	$\mathbb{M}_{5,3}^{(a)}(T_{1g}, 1)$	$\frac{\sqrt{42}}{294}$	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	$-\frac{\sqrt{42}}{84}$
962	symmetry	$\frac{3\sqrt{35}x(y^2-2yz-z^2)(y^2+2yz-z^2)}{8}$												

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{M}_{5,1}^{(a)}(T_{1g}, 2)$		0	$\frac{\sqrt{6}}{112}$	0	$\frac{3\sqrt{3}}{56}$	0	$\frac{\sqrt{30}}{112}$	$-\frac{\sqrt{35}}{224}$	0	$\frac{5\sqrt{15}}{224}$	0	$\frac{45}{224}$	0	$\frac{5\sqrt{5}}{224}$	0
		$\frac{\sqrt{6}}{112}$	0	$-\frac{\sqrt{15}}{56}$	0	$-\frac{3\sqrt{30}}{112}$	0	0	$\frac{23}{224}$	0	$-\frac{13\sqrt{5}}{224}$	0	$-\frac{9\sqrt{3}}{224}$	0	$\frac{5\sqrt{7}}{224}$
		0	$-\frac{\sqrt{15}}{56}$	0	$\frac{\sqrt{30}}{56}$	0	$\frac{3\sqrt{3}}{56}$	$-\frac{9\sqrt{14}}{224}$	0	$-\frac{11\sqrt{6}}{224}$	0	$\frac{\sqrt{10}}{224}$	0	$-\frac{27\sqrt{2}}{224}$	0
		$\frac{3\sqrt{3}}{56}$	0	$\frac{\sqrt{30}}{56}$	0	$-\frac{\sqrt{15}}{56}$	0	0	$\frac{27\sqrt{2}}{224}$	0	$-\frac{\sqrt{10}}{224}$	0	$\frac{11\sqrt{6}}{224}$	0	$\frac{9\sqrt{14}}{224}$
		0	$-\frac{3\sqrt{30}}{112}$	0	$-\frac{\sqrt{15}}{56}$	0	$\frac{\sqrt{6}}{112}$	$-\frac{5\sqrt{7}}{224}$	0	$\frac{9\sqrt{3}}{224}$	0	$\frac{13\sqrt{5}}{224}$	0	$-\frac{23}{224}$	0
		$\frac{\sqrt{30}}{112}$	0	$\frac{3\sqrt{3}}{56}$	0	$\frac{\sqrt{6}}{112}$	0	0	$-\frac{5\sqrt{5}}{224}$	0	$-\frac{45}{224}$	0	$-\frac{5\sqrt{15}}{224}$	0	$\frac{\sqrt{35}}{224}$
		$-\frac{\sqrt{35}}{224}$	0	$-\frac{9\sqrt{14}}{224}$	0	$-\frac{5\sqrt{7}}{224}$	0	0	$\frac{\sqrt{210}}{224}$	0	$\frac{3\sqrt{42}}{112}$	0	$\frac{\sqrt{70}}{224}$	0	0
		0	$\frac{23}{224}$	0	$\frac{27\sqrt{2}}{224}$	0	$-\frac{5\sqrt{5}}{224}$	$\frac{\sqrt{210}}{224}$	0	$-\frac{\sqrt{10}}{28}$	0	$-\frac{3\sqrt{6}}{224}$	0	$\frac{\sqrt{30}}{112}$	0
		$\frac{5\sqrt{15}}{224}$	0	$-\frac{11\sqrt{6}}{224}$	0	$\frac{9\sqrt{3}}{224}$	0	0	$-\frac{\sqrt{10}}{28}$	0	$\frac{\sqrt{2}}{224}$	0	$-\frac{3\sqrt{30}}{112}$	0	$\frac{\sqrt{70}}{224}$
		0	$-\frac{13\sqrt{5}}{224}$	0	$-\frac{\sqrt{10}}{224}$	0	$-\frac{45}{224}$	$\frac{3\sqrt{42}}{112}$	0	$\frac{\sqrt{2}}{224}$	0	$\frac{\sqrt{30}}{56}$	0	$-\frac{3\sqrt{6}}{224}$	0
		$\frac{45}{224}$	0	$\frac{\sqrt{10}}{224}$	0	$\frac{13\sqrt{5}}{224}$	0	0	$-\frac{3\sqrt{6}}{224}$	0	$\frac{\sqrt{30}}{56}$	0	$\frac{\sqrt{2}}{224}$	0	$\frac{3\sqrt{42}}{112}$
		0	$-\frac{9\sqrt{3}}{224}$	0	$\frac{11\sqrt{6}}{224}$	0	$-\frac{5\sqrt{15}}{224}$	$\frac{\sqrt{70}}{224}$	0	$-\frac{3\sqrt{30}}{112}$	0	$\frac{\sqrt{2}}{224}$	0	$-\frac{\sqrt{10}}{28}$	0
		$\frac{5\sqrt{5}}{224}$	0	$-\frac{27\sqrt{2}}{224}$	0	$-\frac{23}{224}$	0	0	$\frac{\sqrt{30}}{112}$	0	$-\frac{3\sqrt{6}}{224}$	0	$-\frac{\sqrt{10}}{28}$	0	$\frac{\sqrt{210}}{224}$
		0	$\frac{5\sqrt{7}}{224}$	0	$\frac{9\sqrt{14}}{224}$	0	$\frac{\sqrt{35}}{224}$	0	0	$\frac{\sqrt{70}}{224}$	0	$\frac{3\sqrt{42}}{112}$	0	$\frac{\sqrt{210}}{224}$	0
963	symmetry	$\frac{3\sqrt{35}y(x^2-2xz-z^2)(x^2+2xz-z^2)}{8}$													

*continued ...*

Table 10

No.	multipole	matrix													
964	$\mathbb{M}_{5,2}^{(a)}(T_{1g}, 2)$	0	$-\frac{\sqrt{6}i}{112}$	0	$\frac{3\sqrt{3}i}{56}$	0	$-\frac{\sqrt{30}i}{112}$	$-\frac{\sqrt{35}i}{224}$	0	$-\frac{5\sqrt{15}i}{224}$	0	$\frac{45i}{224}$	0	$-\frac{5\sqrt{5}i}{224}$	0
		$\frac{\sqrt{6}i}{112}$	0	$\frac{\sqrt{15}i}{56}$	0	$-\frac{3\sqrt{30}i}{112}$	0	0	$\frac{23i}{224}$	0	$\frac{13\sqrt{5}i}{224}$	0	$-\frac{9\sqrt{3}i}{224}$	0	$-\frac{5\sqrt{7}i}{224}$
		0	$-\frac{\sqrt{15}i}{56}$	0	$-\frac{\sqrt{30}i}{56}$	0	$\frac{3\sqrt{3}i}{56}$	$\frac{9\sqrt{14}i}{224}$	0	$-\frac{11\sqrt{6}i}{224}$	0	$-\frac{\sqrt{10}i}{224}$	0	$-\frac{27\sqrt{2}i}{224}$	0
		$-\frac{3\sqrt{3}i}{56}$	0	$\frac{\sqrt{30}i}{56}$	0	$\frac{\sqrt{15}i}{56}$	0	0	$-\frac{27\sqrt{2}i}{224}$	0	$-\frac{\sqrt{10}i}{224}$	0	$-\frac{11\sqrt{6}i}{224}$	0	$\frac{9\sqrt{14}i}{224}$
		0	$\frac{3\sqrt{30}i}{112}$	0	$-\frac{\sqrt{15}i}{56}$	0	$-\frac{\sqrt{6}i}{112}$	$-\frac{5\sqrt{7}i}{224}$	0	$-\frac{9\sqrt{3}i}{224}$	0	$\frac{13\sqrt{5}i}{224}$	0	$\frac{23i}{224}$	0
		$\frac{\sqrt{30}i}{112}$	0	$-\frac{3\sqrt{3}i}{56}$	0	$\frac{\sqrt{6}i}{112}$	0	0	$-\frac{5\sqrt{5}i}{224}$	0	$\frac{45i}{224}$	0	$-\frac{5\sqrt{15}i}{224}$	0	$-\frac{\sqrt{35}i}{224}$
		$\frac{\sqrt{35}i}{224}$	0	$-\frac{9\sqrt{14}i}{224}$	0	$\frac{5\sqrt{7}i}{224}$	0	0	$-\frac{\sqrt{210}i}{224}$	0	$\frac{3\sqrt{42}i}{112}$	0	$-\frac{\sqrt{70}i}{224}$	0	0
		0	$-\frac{23i}{224}$	0	$\frac{27\sqrt{2}i}{224}$	0	$\frac{5\sqrt{5}i}{224}$	$\frac{\sqrt{210}i}{224}$	0	$\frac{\sqrt{10}i}{28}$	0	$-\frac{3\sqrt{6}i}{224}$	0	$-\frac{\sqrt{30}i}{112}$	0
		$\frac{5\sqrt{15}i}{224}$	0	$\frac{11\sqrt{6}i}{224}$	0	$\frac{9\sqrt{3}i}{224}$	0	0	$-\frac{\sqrt{10}i}{28}$	0	$-\frac{\sqrt{2}i}{224}$	0	$-\frac{3\sqrt{30}i}{112}$	0	$-\frac{\sqrt{70}i}{224}$
		0	$-\frac{13\sqrt{5}i}{224}$	0	$\frac{\sqrt{10}i}{224}$	0	$-\frac{45i}{224}$	$-\frac{3\sqrt{42}i}{112}$	0	$\frac{\sqrt{2}i}{224}$	0	$-\frac{\sqrt{30}i}{56}$	0	$-\frac{3\sqrt{6}i}{224}$	0
		$-\frac{45i}{224}$	0	$\frac{\sqrt{10}i}{224}$	0	$-\frac{13\sqrt{5}i}{224}$	0	0	$\frac{3\sqrt{6}i}{224}$	0	$\frac{\sqrt{30}i}{56}$	0	$-\frac{\sqrt{2}i}{224}$	0	$\frac{3\sqrt{42}i}{112}$
		0	$\frac{9\sqrt{3}i}{224}$	0	$\frac{11\sqrt{6}i}{224}$	0	$\frac{5\sqrt{15}i}{224}$	$\frac{\sqrt{70}i}{224}$	0	$\frac{3\sqrt{30}i}{112}$	0	$\frac{\sqrt{2}i}{224}$	0	$\frac{\sqrt{10}i}{28}$	0
		$\frac{5\sqrt{5}i}{224}$	0	$\frac{27\sqrt{2}i}{224}$	0	$-\frac{23i}{224}$	0	0	$\frac{\sqrt{30}i}{112}$	0	$\frac{3\sqrt{6}i}{224}$	0	$-\frac{\sqrt{10}i}{28}$	0	$-\frac{\sqrt{210}i}{224}$
		0	$\frac{5\sqrt{7}i}{224}$	0	$-\frac{9\sqrt{14}i}{224}$	0	$\frac{\sqrt{35}i}{224}$	0	0	$\frac{\sqrt{70}i}{224}$	0	$-\frac{3\sqrt{42}i}{112}$	0	$\frac{\sqrt{210}i}{224}$	0
964	symmetry	$\frac{3\sqrt{35}z(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$													

continued ...

Table 10

No.	multipole	matrix													
$\mathbb{M}_{5,3}^{(a)}(T_{1g}, 2)$		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	$-\frac{\sqrt{14}}{14}$	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	$-\frac{\sqrt{10}}{28}$	0	0	0	0	0	
		0	0	$-\frac{\sqrt{14}}{14}$	0	0	0	0	0	$-\frac{\sqrt{42}}{28}$	0	0	0	0	
965	symmetry	$\frac{\sqrt{105}x(y-z)(y+z)(2x^2-y^2-z^2)}{4}$													

*continued ...*

Table 10

No.	multipole	matrix													
966	$\mathbb{M}_{5,1}^{(a)}(T_{2g})$	0	$\frac{\sqrt{2}}{56}$	0	$-\frac{1}{28}$	0	$-\frac{3\sqrt{10}}{56}$	$-\frac{\sqrt{105}}{336}$	0	$\frac{5\sqrt{5}}{112}$	0	$-\frac{5\sqrt{3}}{112}$	0	$-\frac{5\sqrt{15}}{112}$	0
		$\frac{\sqrt{2}}{56}$	0	$-\frac{\sqrt{5}}{28}$	0	$\frac{\sqrt{10}}{56}$	0	0	$\frac{23\sqrt{3}}{336}$	0	$-\frac{13\sqrt{15}}{336}$	0	$\frac{3}{112}$	0	$-\frac{5\sqrt{21}}{112}$
		0	$-\frac{\sqrt{5}}{28}$	0	$\frac{\sqrt{10}}{28}$	0	$-\frac{1}{28}$	$\frac{\sqrt{42}}{112}$	0	$-\frac{11\sqrt{2}}{112}$	0	$\frac{\sqrt{30}}{336}$	0	$\frac{3\sqrt{6}}{112}$	0
		$-\frac{1}{28}$	0	$\frac{\sqrt{10}}{28}$	0	$-\frac{\sqrt{5}}{28}$	0	0	$-\frac{3\sqrt{6}}{112}$	0	$-\frac{\sqrt{30}}{336}$	0	$\frac{11\sqrt{2}}{112}$	0	$-\frac{\sqrt{42}}{112}$
		0	$\frac{\sqrt{10}}{56}$	0	$-\frac{\sqrt{5}}{28}$	0	$\frac{\sqrt{2}}{56}$	$\frac{5\sqrt{21}}{112}$	0	$-\frac{3}{112}$	0	$\frac{13\sqrt{15}}{336}$	0	$-\frac{23\sqrt{3}}{336}$	0
		$-\frac{3\sqrt{10}}{56}$	0	$-\frac{1}{28}$	0	$\frac{\sqrt{2}}{56}$	0	0	$\frac{5\sqrt{15}}{112}$	0	$\frac{5\sqrt{3}}{112}$	0	$-\frac{5\sqrt{5}}{112}$	0	$\frac{\sqrt{105}}{336}$
		$-\frac{\sqrt{105}}{336}$	0	$\frac{\sqrt{42}}{112}$	0	$\frac{5\sqrt{21}}{112}$	0	0	$\frac{\sqrt{70}}{112}$	0	$-\frac{\sqrt{14}}{56}$	0	$-\frac{\sqrt{210}}{112}$	0	0
		0	$\frac{23\sqrt{3}}{336}$	0	$-\frac{3\sqrt{6}}{112}$	0	$\frac{5\sqrt{15}}{112}$	$\frac{\sqrt{70}}{112}$	0	$-\frac{\sqrt{30}}{42}$	0	$\frac{\sqrt{2}}{112}$	0	$-\frac{3\sqrt{10}}{56}$	0
		$\frac{5\sqrt{5}}{112}$	0	$-\frac{11\sqrt{2}}{112}$	0	$-\frac{3}{112}$	0	0	$-\frac{\sqrt{30}}{42}$	0	$\frac{\sqrt{6}}{336}$	0	$\frac{\sqrt{10}}{56}$	0	$-\frac{\sqrt{210}}{112}$
		0	$-\frac{13\sqrt{15}}{336}$	0	$-\frac{\sqrt{30}}{336}$	0	$\frac{5\sqrt{3}}{112}$	$-\frac{\sqrt{14}}{56}$	0	$\frac{\sqrt{6}}{336}$	0	$\frac{\sqrt{10}}{28}$	0	$\frac{\sqrt{2}}{112}$	0
		$-\frac{5\sqrt{3}}{112}$	0	$\frac{\sqrt{30}}{336}$	0	$\frac{13\sqrt{15}}{336}$	0	0	$\frac{\sqrt{2}}{112}$	0	$\frac{\sqrt{10}}{28}$	0	$\frac{\sqrt{6}}{336}$	0	$-\frac{\sqrt{14}}{56}$
		0	$\frac{3}{112}$	0	$\frac{11\sqrt{2}}{112}$	0	$-\frac{5\sqrt{5}}{112}$	$-\frac{\sqrt{210}}{112}$	0	$\frac{\sqrt{10}}{56}$	0	$\frac{\sqrt{6}}{336}$	0	$-\frac{\sqrt{30}}{42}$	0
		$-\frac{5\sqrt{15}}{112}$	0	$\frac{3\sqrt{6}}{112}$	0	$-\frac{23\sqrt{3}}{336}$	0	0	$-\frac{3\sqrt{10}}{56}$	0	$\frac{\sqrt{2}}{112}$	0	$-\frac{\sqrt{30}}{42}$	0	$\frac{\sqrt{70}}{112}$
		0	$-\frac{5\sqrt{21}}{112}$	0	$-\frac{\sqrt{42}}{112}$	0	$\frac{\sqrt{105}}{336}$	0	0	$-\frac{\sqrt{210}}{112}$	0	$-\frac{\sqrt{14}}{56}$	0	$\frac{\sqrt{70}}{112}$	0
				$\frac{\sqrt{105}y(x-z)(x+z)(x^2-2y^2+z^2)}{4}$											
966	symmetry														

continued ...



Table 10

No.	multipole	matrix													
967	$\mathbb{M}_{5,2}^{(a)}(T_{2g})$	0	$\frac{\sqrt{2}i}{56}$	0	$\frac{i}{28}$	0	$-\frac{3\sqrt{10}i}{56}$	$\frac{\sqrt{105}i}{336}$	0	$\frac{5\sqrt{5}i}{112}$	0	$\frac{5\sqrt{3}i}{112}$	0	$-\frac{5\sqrt{15}i}{112}$	0
		$-\frac{\sqrt{2}i}{56}$	0	$-\frac{\sqrt{5}i}{28}$	0	$-\frac{\sqrt{10}i}{56}$	0	0	$-\frac{23\sqrt{3}i}{336}$	0	$-\frac{13\sqrt{15}i}{336}$	0	$-\frac{3i}{112}$	0	$-\frac{5\sqrt{21}i}{112}$
		0	$\frac{\sqrt{5}i}{28}$	0	$\frac{\sqrt{10}i}{28}$	0	$\frac{i}{28}$	$\frac{\sqrt{42}i}{112}$	0	$\frac{11\sqrt{2}i}{112}$	0	$\frac{\sqrt{30}i}{336}$	0	$-\frac{3\sqrt{6}i}{112}$	0
		$-\frac{i}{28}$	0	$-\frac{\sqrt{10}i}{28}$	0	$-\frac{\sqrt{5}i}{28}$	0	0	$-\frac{3\sqrt{6}i}{112}$	0	$\frac{\sqrt{30}i}{336}$	0	$\frac{11\sqrt{2}i}{112}$	0	$\frac{\sqrt{42}i}{112}$
		0	$\frac{\sqrt{10}i}{56}$	0	$\frac{\sqrt{5}i}{28}$	0	$\frac{\sqrt{2}i}{56}$	$-\frac{5\sqrt{21}i}{112}$	0	$-\frac{3i}{112}$	0	$-\frac{13\sqrt{15}i}{336}$	0	$-\frac{23\sqrt{3}i}{336}$	0
		$\frac{3\sqrt{10}i}{56}$	0	$-\frac{i}{28}$	0	$-\frac{\sqrt{2}i}{56}$	0	0	$-\frac{5\sqrt{15}i}{112}$	0	$\frac{5\sqrt{3}i}{112}$	0	$\frac{5\sqrt{5}i}{112}$	0	$\frac{\sqrt{105}i}{336}$
		$-\frac{\sqrt{105}i}{336}$	0	$-\frac{\sqrt{42}i}{112}$	0	$\frac{5\sqrt{21}i}{112}$	0	0	$\frac{\sqrt{70}i}{112}$	0	$\frac{\sqrt{14}i}{56}$	0	$-\frac{\sqrt{210}i}{112}$	0	0
		0	$\frac{23\sqrt{3}i}{336}$	0	$\frac{3\sqrt{6}i}{112}$	0	$\frac{5\sqrt{15}i}{112}$	$-\frac{\sqrt{70}i}{112}$	0	$-\frac{\sqrt{30}i}{42}$	0	$-\frac{\sqrt{2}i}{112}$	0	$-\frac{3\sqrt{10}i}{56}$	0
		$-\frac{5\sqrt{5}i}{112}$	0	$-\frac{11\sqrt{2}i}{112}$	0	$\frac{3i}{112}$	0	0	$\frac{\sqrt{30}i}{42}$	0	$\frac{\sqrt{6}i}{336}$	0	$-\frac{\sqrt{10}i}{56}$	0	$-\frac{\sqrt{210}i}{112}$
		0	$\frac{13\sqrt{15}i}{336}$	0	$-\frac{\sqrt{30}i}{336}$	0	$-\frac{5\sqrt{3}i}{112}$	$-\frac{\sqrt{14}i}{56}$	0	$-\frac{\sqrt{6}i}{336}$	0	$\frac{\sqrt{10}i}{28}$	0	$-\frac{\sqrt{2}i}{112}$	0
		$-\frac{5\sqrt{3}i}{112}$	0	$-\frac{\sqrt{30}i}{336}$	0	$\frac{13\sqrt{15}i}{336}$	0	0	$\frac{\sqrt{2}i}{112}$	0	$-\frac{\sqrt{10}i}{28}$	0	$\frac{\sqrt{6}i}{336}$	0	$\frac{\sqrt{14}i}{56}$
		0	$\frac{3i}{112}$	0	$-\frac{11\sqrt{2}i}{112}$	0	$-\frac{5\sqrt{5}i}{112}$	$\frac{\sqrt{210}i}{112}$	0	$\frac{\sqrt{10}i}{56}$	0	$-\frac{\sqrt{6}i}{336}$	0	$-\frac{\sqrt{30}i}{42}$	0
		$\frac{5\sqrt{15}i}{112}$	0	$\frac{3\sqrt{6}i}{112}$	0	$\frac{23\sqrt{3}i}{336}$	0	0	$\frac{3\sqrt{10}i}{56}$	0	$\frac{\sqrt{2}i}{112}$	0	$\frac{\sqrt{30}i}{42}$	0	$\frac{\sqrt{70}i}{112}$
		0	$\frac{5\sqrt{21}i}{112}$	0	$-\frac{\sqrt{42}i}{112}$	0	$-\frac{\sqrt{105}i}{336}$	0	0	$\frac{\sqrt{210}i}{112}$	0	$-\frac{\sqrt{14}i}{56}$	0	$-\frac{\sqrt{70}i}{112}$	0
		$-\frac{\sqrt{105}z(x-y)(x+y)(x^2+y^2-2z^2)}{4}$													

continued ...

Table 10

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

*continued ...*

Table 10

No.	multipole	matrix													
969	$M_{1,1}^{(1,-1;a)}(T_{1g})$	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
969	symmetry	$y$													

*continued ...*

Table 10

No.	multipole	matrix													
$M_{1,2}^{(1,-1;a)}(T_{1g})$		0	$\frac{\sqrt{70i}}{98}$	0	0	0	0	$\frac{\sqrt{3i}}{7}$	0	$\frac{\sqrt{7i}}{49}$	0	0	0	0	0
		$-\frac{\sqrt{70i}}{98}$	0	$\frac{2\sqrt{7i}}{49}$	0	0	0	0	$\frac{\sqrt{105i}}{49}$	0	$\frac{\sqrt{21i}}{49}$	0	0	0	0
		0	$-\frac{2\sqrt{7i}}{49}$	0	$\frac{3\sqrt{14i}}{98}$	0	0	0	0	$\frac{\sqrt{70i}}{49}$	0	$\frac{\sqrt{42i}}{49}$	0	0	0
		0	0	$-\frac{3\sqrt{14i}}{98}$	0	$\frac{2\sqrt{7i}}{49}$	0	0	0	0	$\frac{\sqrt{42i}}{49}$	0	$\frac{\sqrt{70i}}{49}$	0	0
		0	0	0	$-\frac{2\sqrt{7i}}{49}$	0	$\frac{\sqrt{70i}}{98}$	0	0	0	0	$\frac{\sqrt{21i}}{49}$	0	$\frac{\sqrt{105i}}{49}$	0
		0	0	0	0	$-\frac{\sqrt{70i}}{98}$	0	0	0	0	0	0	$\frac{\sqrt{7i}}{49}$	0	$\frac{\sqrt{3i}}{7}$
		$-\frac{\sqrt{3i}}{7}$	0	0	0	0	0	0	$-\frac{\sqrt{2i}}{14}$	0	0	0	0	0	0
		0	$-\frac{\sqrt{105i}}{49}$	0	0	0	0	$\frac{\sqrt{2i}}{14}$	0	$-\frac{\sqrt{42i}}{49}$	0	0	0	0	0
		$-\frac{\sqrt{7i}}{49}$	0	$-\frac{\sqrt{70i}}{49}$	0	0	0	0	$\frac{\sqrt{42i}}{49}$	0	$-\frac{\sqrt{210i}}{98}$	0	0	0	0
		0	$-\frac{\sqrt{21i}}{49}$	0	$-\frac{\sqrt{42i}}{49}$	0	0	0	0	$\frac{\sqrt{210i}}{98}$	0	$-\frac{2\sqrt{14i}}{49}$	0	0	0
		0	0	$-\frac{\sqrt{42i}}{49}$	0	$-\frac{\sqrt{21i}}{49}$	0	0	0	0	$\frac{2\sqrt{14i}}{49}$	0	$-\frac{\sqrt{210i}}{98}$	0	0
		0	0	0	$-\frac{\sqrt{70i}}{49}$	0	$-\frac{\sqrt{7i}}{49}$	0	0	0	0	$\frac{\sqrt{210i}}{98}$	0	$-\frac{\sqrt{42i}}{49}$	0
		0	0	0	0	$-\frac{\sqrt{105i}}{49}$	0	0	0	0	0	0	$\frac{\sqrt{42i}}{49}$	0	$-\frac{\sqrt{2i}}{14}$
		0	0	0	0	0	$-\frac{\sqrt{3i}}{7}$	0	0	0	0	0	0	$\frac{\sqrt{2i}}{14}$	0
970	symmetry	$z$													

*continued ...*

Table 10

No.	multipole	matrix													
971	$M_{1,3}^{(1,-1;a)}(T_{1g})$	$-\frac{5\sqrt{14}}{98}$	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	$-\frac{\sqrt{14}}{14}$
971	symmetry	$\sqrt{15}xyz$													

*continued ...*

Table 10

No.	multipole	matrix													
972	$\mathbb{M}_3^{(1,-1;a)}(A_{2g})$	0	0	$-\frac{\sqrt{105}i}{98}$	0	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	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
		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	0	$-\frac{\sqrt{21}i}{98}$	0	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	0	$\frac{4\sqrt{35}i}{147}$	0	0	0
		0	$\frac{2\sqrt{5}i}{21}$	0	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	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	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
		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	0	$-\frac{3\sqrt{210}i}{196}$	0
		0	0	$\frac{\sqrt{210}i}{147}$	0	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	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	0	$\frac{5\sqrt{2}i}{28}$	0	0
				$\frac{x(2x^2-3y^2-3z^2)}{2}$											

continued ...

Table 10

No.	multipole	matrix													
973	$M_{3,1}^{(1,-1;a)}(T_{1g})$	0	$-\frac{3\sqrt{14}}{196}$	0	$\frac{5\sqrt{7}}{196}$	0	0	$\frac{\sqrt{15}}{42}$	0	$-\frac{\sqrt{35}}{49}$	0	$\frac{5\sqrt{21}}{294}$	0	0	0
		$-\frac{3\sqrt{14}}{196}$	0	$\frac{3\sqrt{35}}{980}$	0	$\frac{\sqrt{70}}{98}$	0	0	$-\frac{5\sqrt{21}}{294}$	0	$-\frac{\sqrt{105}}{147}$	0	$\frac{5\sqrt{7}}{98}$	0	0
		0	$\frac{3\sqrt{35}}{980}$	0	$\frac{3\sqrt{70}}{490}$	0	$\frac{5\sqrt{7}}{196}$	$-\frac{5\sqrt{6}}{84}$	0	$-\frac{5\sqrt{14}}{196}$	0	$\frac{\sqrt{210}}{588}$	0	$\frac{5\sqrt{42}}{196}$	0
		$\frac{5\sqrt{7}}{196}$	0	$\frac{3\sqrt{70}}{490}$	0	$\frac{3\sqrt{35}}{980}$	0	0	$-\frac{5\sqrt{42}}{196}$	0	$-\frac{\sqrt{210}}{588}$	0	$\frac{5\sqrt{14}}{196}$	0	$\frac{5\sqrt{6}}{84}$
		0	$\frac{\sqrt{70}}{98}$	0	$\frac{3\sqrt{35}}{980}$	0	$-\frac{3\sqrt{14}}{196}$	0	0	$-\frac{5\sqrt{7}}{98}$	0	$\frac{\sqrt{105}}{147}$	0	$\frac{5\sqrt{21}}{294}$	0
		0	0	$\frac{5\sqrt{7}}{196}$	0	$-\frac{3\sqrt{14}}{196}$	0	0	0	$-\frac{5\sqrt{21}}{294}$	0	$\frac{\sqrt{35}}{49}$	0	$-\frac{\sqrt{15}}{42}$	0
		$\frac{\sqrt{15}}{42}$	0	$-\frac{5\sqrt{6}}{84}$	0	0	0	0	$\frac{3\sqrt{10}}{56}$	0	$-\frac{5\sqrt{2}}{56}$	0	0	0	0
		0	$-\frac{5\sqrt{21}}{294}$	0	$-\frac{5\sqrt{42}}{196}$	0	0	$\frac{3\sqrt{10}}{56}$	0	$\frac{\sqrt{210}}{392}$	0	$-\frac{5\sqrt{14}}{98}$	0	0	0
		$-\frac{\sqrt{35}}{49}$	0	$-\frac{5\sqrt{14}}{196}$	0	$-\frac{5\sqrt{7}}{98}$	0	0	$\frac{\sqrt{210}}{392}$	0	$-\frac{5\sqrt{42}}{392}$	0	$-\frac{5\sqrt{70}}{196}$	0	0
		0	$-\frac{\sqrt{105}}{147}$	0	$-\frac{\sqrt{210}}{588}$	0	$-\frac{5\sqrt{21}}{294}$	$-\frac{5\sqrt{2}}{56}$	0	$-\frac{5\sqrt{42}}{392}$	0	$-\frac{3\sqrt{70}}{196}$	0	$-\frac{5\sqrt{14}}{98}$	0
		$\frac{5\sqrt{21}}{294}$	0	$\frac{\sqrt{210}}{588}$	0	$\frac{\sqrt{105}}{147}$	0	0	$-\frac{5\sqrt{14}}{98}$	0	$-\frac{3\sqrt{70}}{196}$	0	$-\frac{5\sqrt{42}}{392}$	0	$-\frac{5\sqrt{2}}{56}$
		0	$\frac{5\sqrt{7}}{98}$	0	$\frac{5\sqrt{14}}{196}$	0	$\frac{\sqrt{35}}{49}$	0	0	$-\frac{5\sqrt{70}}{196}$	0	$-\frac{5\sqrt{42}}{392}$	0	$\frac{\sqrt{210}}{392}$	0
		0	0	$\frac{5\sqrt{42}}{196}$	0	$\frac{5\sqrt{21}}{294}$	0	0	0	$-\frac{5\sqrt{14}}{98}$	0	$\frac{\sqrt{210}}{392}$	0	$\frac{3\sqrt{10}}{56}$	0
		0	0	0	$\frac{5\sqrt{6}}{84}$	0	$-\frac{\sqrt{15}}{42}$	0	0	0	0	$-\frac{5\sqrt{2}}{56}$	0	$\frac{3\sqrt{10}}{56}$	0
973	symmetry	$-\frac{y(3x^2-2y^2+3z^2)}{2}$													

continued ...

Table 10

No.	multipole	matrix													
$M_{3,2}^{(1,-1;a)}(T_{1g})$		0	$\frac{3\sqrt{14}i}{196}$	0	$\frac{5\sqrt{7}i}{196}$	0	0	$\frac{\sqrt{15}i}{42}$	0	$\frac{\sqrt{35}i}{49}$	0	$\frac{5\sqrt{21}i}{294}$	0	0	0
		$-\frac{3\sqrt{14}i}{196}$	0	$-\frac{3\sqrt{35}i}{980}$	0	$\frac{\sqrt{70}i}{98}$	0	0	$-\frac{5\sqrt{21}i}{294}$	0	$\frac{\sqrt{105}i}{147}$	0	$\frac{5\sqrt{7}i}{98}$	0	0
		0	$\frac{3\sqrt{35}i}{980}$	0	$-\frac{3\sqrt{70}i}{490}$	0	$\frac{5\sqrt{7}i}{196}$	$\frac{5\sqrt{6}i}{84}$	0	$-\frac{5\sqrt{14}i}{196}$	0	$-\frac{\sqrt{210}i}{588}$	0	$\frac{5\sqrt{42}i}{196}$	0
		$-\frac{5\sqrt{7}i}{196}$	0	$\frac{3\sqrt{70}i}{490}$	0	$-\frac{3\sqrt{35}i}{980}$	0	0	$\frac{5\sqrt{42}i}{196}$	0	$-\frac{\sqrt{210}i}{588}$	0	$-\frac{5\sqrt{14}i}{196}$	0	$\frac{5\sqrt{6}i}{84}$
		0	$-\frac{\sqrt{70}i}{98}$	0	$\frac{3\sqrt{35}i}{980}$	0	$\frac{3\sqrt{14}i}{196}$	0	0	$\frac{5\sqrt{7}i}{98}$	0	$\frac{\sqrt{105}i}{147}$	0	$-\frac{5\sqrt{21}i}{294}$	0
		0	0	$-\frac{5\sqrt{7}i}{196}$	0	$-\frac{3\sqrt{14}i}{196}$	0	0	0	0	$\frac{5\sqrt{21}i}{294}$	0	$\frac{\sqrt{35}i}{49}$	0	$\frac{\sqrt{15}i}{42}$
		$-\frac{\sqrt{15}i}{42}$	0	$-\frac{5\sqrt{6}i}{84}$	0	0	0	0	$-\frac{3\sqrt{10}i}{56}$	0	$-\frac{5\sqrt{2}i}{56}$	0	0	0	0
		0	$\frac{5\sqrt{21}i}{294}$	0	$-\frac{5\sqrt{42}i}{196}$	0	0	$\frac{3\sqrt{10}i}{56}$	0	$-\frac{\sqrt{210}i}{392}$	0	$-\frac{5\sqrt{14}i}{98}$	0	0	0
		$-\frac{\sqrt{35}i}{49}$	0	$\frac{5\sqrt{14}i}{196}$	0	$-\frac{5\sqrt{7}i}{98}$	0	0	$\frac{\sqrt{210}i}{392}$	0	$\frac{5\sqrt{42}i}{392}$	0	$-\frac{5\sqrt{70}i}{196}$	0	0
		0	$-\frac{\sqrt{105}i}{147}$	0	$\frac{\sqrt{210}i}{588}$	0	$-\frac{5\sqrt{21}i}{294}$	$\frac{5\sqrt{2}i}{56}$	0	$-\frac{5\sqrt{42}i}{392}$	0	$\frac{3\sqrt{70}i}{196}$	0	$-\frac{5\sqrt{14}i}{98}$	0
		$-\frac{5\sqrt{21}i}{294}$	0	$\frac{\sqrt{210}i}{588}$	0	$-\frac{\sqrt{105}i}{147}$	0	0	$\frac{5\sqrt{14}i}{98}$	0	$-\frac{3\sqrt{70}i}{196}$	0	$\frac{5\sqrt{42}i}{392}$	0	$-\frac{5\sqrt{2}i}{56}$
		0	$-\frac{5\sqrt{7}i}{98}$	0	$\frac{5\sqrt{14}i}{196}$	0	$-\frac{\sqrt{35}i}{49}$	0	0	$\frac{5\sqrt{70}i}{196}$	0	$-\frac{5\sqrt{42}i}{392}$	0	$-\frac{\sqrt{210}i}{392}$	0
		0	0	$-\frac{5\sqrt{42}i}{196}$	0	$\frac{5\sqrt{21}i}{294}$	0	0	0	0	$\frac{5\sqrt{14}i}{98}$	0	$\frac{\sqrt{210}i}{392}$	0	$-\frac{3\sqrt{10}i}{56}$
		0	0	0	$-\frac{5\sqrt{6}i}{84}$	0	$-\frac{\sqrt{15}i}{42}$	0	0	0	0	$\frac{5\sqrt{2}i}{56}$	0	$\frac{3\sqrt{10}i}{56}$	0
974	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$													

continued ...



Table 10

No.	multipole	matrix													
$M_{3,3}^{(1,-1;a)}(T_{1g})$		$\frac{\sqrt{70}}{98}$	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	$\frac{\sqrt{70}}{28}$
975	symmetry	$\frac{\sqrt{15}x(y-z)(y+z)}{2}$													

*continued ...*

Table 10

No.	multipole	matrix													
	$M_{3,1}^{(1,-1;a)}(T_{2g})$	0	$-\frac{\sqrt{210}}{196}$	0	$-\frac{\sqrt{105}}{196}$	0	0	$\frac{5}{42}$	0	$-\frac{5\sqrt{21}}{147}$	0	$-\frac{\sqrt{35}}{98}$	0	0	0
		$-\frac{\sqrt{210}}{196}$	0	$\frac{\sqrt{21}}{196}$	0	$-\frac{\sqrt{42}}{98}$	0	0	$-\frac{5\sqrt{35}}{294}$	0	$-\frac{5\sqrt{7}}{147}$	0	$-\frac{\sqrt{105}}{98}$	0	0
		0	$\frac{\sqrt{21}}{196}$	0	$\frac{\sqrt{42}}{98}$	0	$-\frac{\sqrt{105}}{196}$	$\frac{\sqrt{10}}{28}$	0	$-\frac{5\sqrt{210}}{588}$	0	$\frac{5\sqrt{14}}{588}$	0	$-\frac{3\sqrt{70}}{196}$	0
		$-\frac{\sqrt{105}}{196}$	0	$\frac{\sqrt{42}}{98}$	0	$\frac{\sqrt{21}}{196}$	0	0	$\frac{3\sqrt{70}}{196}$	0	$-\frac{5\sqrt{14}}{588}$	0	$\frac{5\sqrt{210}}{588}$	0	$-\frac{\sqrt{10}}{28}$
		0	$-\frac{\sqrt{42}}{98}$	0	$\frac{\sqrt{21}}{196}$	0	$-\frac{\sqrt{210}}{196}$	0	0	$\frac{\sqrt{105}}{98}$	0	$\frac{5\sqrt{7}}{147}$	0	$\frac{5\sqrt{35}}{294}$	0
		0	0	$-\frac{\sqrt{105}}{196}$	0	$-\frac{\sqrt{210}}{196}$	0	0	0	0	$\frac{\sqrt{35}}{98}$	0	$\frac{5\sqrt{21}}{147}$	0	$-\frac{5}{42}$
		$\frac{5}{42}$	0	$\frac{\sqrt{10}}{28}$	0	0	0	0	$\frac{5\sqrt{6}}{56}$	0	$\frac{\sqrt{30}}{56}$	0	0	0	0
		0	$-\frac{5\sqrt{35}}{294}$	0	$\frac{3\sqrt{70}}{196}$	0	0	$\frac{5\sqrt{6}}{56}$	0	$\frac{5\sqrt{14}}{392}$	0	$\frac{\sqrt{210}}{98}$	0	0	0
		$-\frac{5\sqrt{21}}{147}$	0	$-\frac{5\sqrt{210}}{588}$	0	$\frac{\sqrt{105}}{98}$	0	0	$\frac{5\sqrt{14}}{392}$	0	$-\frac{5\sqrt{70}}{392}$	0	$\frac{5\sqrt{42}}{196}$	0	0
		0	$-\frac{5\sqrt{7}}{147}$	0	$-\frac{5\sqrt{14}}{588}$	0	$\frac{\sqrt{35}}{98}$	$\frac{\sqrt{30}}{56}$	0	$-\frac{5\sqrt{70}}{392}$	0	$-\frac{5\sqrt{42}}{196}$	0	$\frac{\sqrt{210}}{98}$	0
		$-\frac{\sqrt{35}}{98}$	0	$\frac{5\sqrt{14}}{588}$	0	$\frac{5\sqrt{7}}{147}$	0	0	$\frac{\sqrt{210}}{98}$	0	$-\frac{5\sqrt{42}}{196}$	0	$-\frac{5\sqrt{70}}{392}$	0	$\frac{\sqrt{30}}{56}$
		0	$-\frac{\sqrt{105}}{98}$	0	$\frac{5\sqrt{210}}{588}$	0	$\frac{5\sqrt{21}}{147}$	0	0	$\frac{5\sqrt{42}}{196}$	0	$-\frac{5\sqrt{70}}{392}$	0	$\frac{5\sqrt{14}}{392}$	0
		0	0	$-\frac{3\sqrt{70}}{196}$	0	$\frac{5\sqrt{35}}{294}$	0	0	0	0	$\frac{\sqrt{210}}{98}$	0	$\frac{5\sqrt{14}}{392}$	0	$\frac{5\sqrt{6}}{56}$
		0	0	0	$-\frac{\sqrt{10}}{28}$	0	$-\frac{5}{42}$	0	0	0	0	$\frac{\sqrt{30}}{56}$	0	$\frac{5\sqrt{6}}{56}$	0
976	symmetry	$-\frac{\sqrt{15}y(x-z)(x+z)}{2}$													

*continued ...*

Table 10

No.	multipole	matrix													
$M_{3,2}^{(1,-1;a)}(T_{2g})$		0	$-\frac{\sqrt{210}i}{196}$	0	$\frac{\sqrt{105}i}{196}$	0	0	$-\frac{5i}{42}$	0	$-\frac{5\sqrt{21}i}{147}$	0	$\frac{\sqrt{35}i}{98}$	0	0	0
		$\frac{\sqrt{210}i}{196}$	0	$\frac{\sqrt{21}i}{196}$	0	$\frac{\sqrt{42}i}{98}$	0	0	$\frac{5\sqrt{35}i}{294}$	0	$-\frac{5\sqrt{7}i}{147}$	0	$\frac{\sqrt{105}i}{98}$	0	0
		0	$-\frac{\sqrt{21}i}{196}$	0	$\frac{\sqrt{42}i}{98}$	0	$\frac{\sqrt{105}i}{196}$	$\frac{\sqrt{10}i}{28}$	0	$\frac{5\sqrt{210}i}{588}$	0	$\frac{5\sqrt{14}i}{588}$	0	$\frac{3\sqrt{70}i}{196}$	0
		$-\frac{\sqrt{105}i}{196}$	0	$-\frac{\sqrt{42}i}{98}$	0	$\frac{\sqrt{21}i}{196}$	0	0	$\frac{3\sqrt{70}i}{196}$	0	$\frac{5\sqrt{14}i}{588}$	0	$\frac{5\sqrt{210}i}{588}$	0	$\frac{\sqrt{10}i}{28}$
		0	$-\frac{\sqrt{42}i}{98}$	0	$-\frac{\sqrt{21}i}{196}$	0	$-\frac{\sqrt{210}i}{196}$	0	0	$\frac{\sqrt{105}i}{98}$	0	$-\frac{5\sqrt{7}i}{147}$	0	$\frac{5\sqrt{35}i}{294}$	0
		0	0	$-\frac{\sqrt{105}i}{196}$	0	$\frac{\sqrt{210}i}{196}$	0	0	0	0	$\frac{\sqrt{35}i}{98}$	0	$-\frac{5\sqrt{21}i}{147}$	0	$-\frac{5i}{42}$
		$\frac{5i}{42}$	0	$-\frac{\sqrt{10}i}{28}$	0	0	0	0	$\frac{5\sqrt{6}i}{56}$	0	$-\frac{\sqrt{30}i}{56}$	0	0	0	0
		0	$-\frac{5\sqrt{35}i}{294}$	0	$-\frac{3\sqrt{70}i}{196}$	0	0	$-\frac{5\sqrt{6}i}{56}$	0	$\frac{5\sqrt{14}i}{392}$	0	$-\frac{\sqrt{210}i}{98}$	0	0	0
		$\frac{5\sqrt{21}i}{147}$	0	$-\frac{5\sqrt{210}i}{588}$	0	$-\frac{\sqrt{105}i}{98}$	0	0	$-\frac{5\sqrt{14}i}{392}$	0	$-\frac{5\sqrt{70}i}{392}$	0	$-\frac{5\sqrt{42}i}{196}$	0	0
		0	$\frac{5\sqrt{7}i}{147}$	0	$-\frac{5\sqrt{14}i}{588}$	0	$-\frac{\sqrt{35}i}{98}$	$\frac{\sqrt{30}i}{56}$	0	$\frac{5\sqrt{70}i}{392}$	0	$-\frac{5\sqrt{42}i}{196}$	0	$-\frac{\sqrt{210}i}{98}$	0
		$-\frac{\sqrt{35}i}{98}$	0	$-\frac{5\sqrt{14}i}{588}$	0	$\frac{5\sqrt{7}i}{147}$	0	0	$\frac{\sqrt{210}i}{98}$	0	$\frac{5\sqrt{42}i}{196}$	0	$-\frac{5\sqrt{70}i}{392}$	0	$-\frac{\sqrt{30}i}{56}$
		0	$-\frac{\sqrt{105}i}{98}$	0	$-\frac{5\sqrt{210}i}{588}$	0	$\frac{5\sqrt{42}i}{147}$	0	0	$\frac{5\sqrt{42}i}{196}$	0	$\frac{5\sqrt{70}i}{392}$	0	$\frac{5\sqrt{14}i}{392}$	0
		0	0	$-\frac{3\sqrt{70}i}{196}$	0	$-\frac{5\sqrt{35}i}{294}$	0	0	0	0	$\frac{\sqrt{210}i}{98}$	0	$-\frac{5\sqrt{14}i}{392}$	0	$\frac{5\sqrt{6}i}{56}$
		0	0	0	$-\frac{\sqrt{10}i}{28}$	0	$\frac{5i}{42}$	0	0	0	0	$\frac{\sqrt{30}i}{56}$	0	$-\frac{5\sqrt{6}i}{56}$	0
977	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$													

continued ...

Table 10

No.	multipole	matrix													
$\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})$	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	$\frac{3\sqrt{35}xyz(x-y)(x+y)}{2}$													

*continued ...*

Table 10

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

continued ...

Table 10

No.	multipole	matrix													
$M_{5,2}^{(1,-1;a)}(E_g)$		0	0	$-\frac{\sqrt{330}i}{924}$	0	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	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	0	$-\frac{2\sqrt{22}i}{77}$	0	0	0	$\frac{\sqrt{770}i}{385}$
		0	0	0	$-\frac{\sqrt{330}i}{924}$	0	0	0	0	0	0	$\frac{\sqrt{110}i}{77}$	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
980	symmetry	$\frac{x(8x^4 - 40x^2y^2 - 40x^2z^2 + 15y^4 + 30y^2z^2 + 15z^4)}{8}$													

continued ...

Table 10

No.	multipole	matrix													
$M_{5,1}^{(1,-1;a)}(T_{1g}, 1)$		0	$-\frac{5\sqrt{77}}{8624}$	0	$\frac{5\sqrt{154}}{3696}$	0	$-\frac{3\sqrt{385}}{1232}$	$\frac{\sqrt{330}}{1232}$	0	$-\frac{15\sqrt{770}}{8624}$	0	$\frac{5\sqrt{462}}{1232}$	0	$-\frac{3\sqrt{2310}}{1232}$	0
		$-\frac{5\sqrt{77}}{8624}$	0	$\frac{5\sqrt{770}}{8624}$	0	$-\frac{5\sqrt{385}}{3696}$	0	0	$-\frac{23\sqrt{462}}{8624}$	0	$\frac{13\sqrt{2310}}{8624}$	0	$-\frac{3\sqrt{154}}{1232}$	0	$-\frac{3\sqrt{66}}{176}$
		0	$\frac{5\sqrt{770}}{8624}$	0	$-\frac{5\sqrt{385}}{4312}$	0	$\frac{5\sqrt{154}}{3696}$	$-\frac{\sqrt{33}}{88}$	0	$\frac{3\sqrt{77}}{392}$	0	$-\frac{\sqrt{1155}}{4312}$	0	$-\frac{3\sqrt{231}}{616}$	0
		$\frac{5\sqrt{154}}{3696}$	0	$-\frac{5\sqrt{385}}{4312}$	0	$\frac{5\sqrt{770}}{8624}$	0	0	$\frac{3\sqrt{231}}{616}$	0	$\frac{\sqrt{1155}}{4312}$	0	$-\frac{3\sqrt{77}}{392}$	0	$\frac{\sqrt{33}}{88}$
		0	$-\frac{5\sqrt{385}}{3696}$	0	$\frac{5\sqrt{770}}{8624}$	0	$-\frac{5\sqrt{77}}{8624}$	$\frac{3\sqrt{66}}{176}$	0	$\frac{3\sqrt{154}}{1232}$	0	$-\frac{13\sqrt{2310}}{8624}$	0	$\frac{23\sqrt{462}}{8624}$	0
		$-\frac{3\sqrt{385}}{1232}$	0	$\frac{5\sqrt{154}}{3696}$	0	$-\frac{5\sqrt{77}}{8624}$	0	0	$\frac{3\sqrt{2310}}{1232}$	0	$-\frac{5\sqrt{462}}{1232}$	0	$\frac{15\sqrt{770}}{8624}$	0	$-\frac{\sqrt{330}}{1232}$
		$\frac{\sqrt{330}}{1232}$	0	$-\frac{\sqrt{33}}{88}$	0	$\frac{3\sqrt{66}}{176}$	0	0	$\frac{15\sqrt{55}}{1232}$	0	$-\frac{5\sqrt{11}}{88}$	0	$\frac{3\sqrt{165}}{176}$	0	0
		0	$-\frac{23\sqrt{462}}{8624}$	0	$\frac{3\sqrt{231}}{616}$	0	$\frac{3\sqrt{2310}}{1232}$	$\frac{15\sqrt{55}}{1232}$	0	$-\frac{5\sqrt{1155}}{1078}$	0	$\frac{5\sqrt{77}}{1232}$	0	$\frac{9\sqrt{385}}{616}$	0
		$-\frac{15\sqrt{770}}{8624}$	0	$\frac{3\sqrt{77}}{392}$	0	$\frac{3\sqrt{154}}{1232}$	0	0	$-\frac{5\sqrt{1155}}{1078}$	0	$\frac{5\sqrt{231}}{8624}$	0	$\frac{5\sqrt{385}}{616}$	0	$\frac{3\sqrt{165}}{176}$
		0	$\frac{13\sqrt{2310}}{8624}$	0	$\frac{\sqrt{1155}}{4312}$	0	$-\frac{5\sqrt{462}}{1232}$	$-\frac{5\sqrt{11}}{88}$	0	$\frac{5\sqrt{231}}{8624}$	0	$\frac{15\sqrt{385}}{2156}$	0	$\frac{5\sqrt{77}}{1232}$	0
		$\frac{5\sqrt{462}}{1232}$	0	$-\frac{\sqrt{1155}}{4312}$	0	$-\frac{13\sqrt{2310}}{8624}$	0	0	$\frac{5\sqrt{77}}{1232}$	0	$\frac{15\sqrt{385}}{2156}$	0	$\frac{5\sqrt{231}}{8624}$	0	$-\frac{5\sqrt{11}}{88}$
		0	$-\frac{3\sqrt{154}}{1232}$	0	$-\frac{3\sqrt{77}}{392}$	0	$\frac{15\sqrt{770}}{8624}$	$\frac{3\sqrt{165}}{176}$	0	$\frac{5\sqrt{385}}{616}$	0	$\frac{5\sqrt{231}}{8624}$	0	$-\frac{5\sqrt{1155}}{1078}$	0
		$-\frac{3\sqrt{2310}}{1232}$	0	$-\frac{3\sqrt{231}}{616}$	0	$\frac{23\sqrt{462}}{8624}$	0	0	$\frac{9\sqrt{385}}{616}$	0	$\frac{5\sqrt{77}}{1232}$	0	$-\frac{5\sqrt{1155}}{1078}$	0	$\frac{15\sqrt{55}}{1232}$
		0	$-\frac{3\sqrt{66}}{176}$	0	$\frac{\sqrt{33}}{88}$	0	$-\frac{\sqrt{330}}{1232}$	0	0	$\frac{3\sqrt{165}}{176}$	0	$-\frac{5\sqrt{11}}{88}$	0	$\frac{15\sqrt{55}}{1232}$	0
981	symmetry	$\frac{y(15x^4 - 40x^2y^2 + 30x^2z^2 + 8y^4 - 40y^2z^2 + 15z^4)}{8}$													

*continued ...*

Table 10

No.	multipole	matrix													
$M_{5,2}^{(1,-1;a)}(T_{1g}, 1)$		0	$\frac{5\sqrt{77}i}{8624}$	0	$\frac{5\sqrt{154}i}{3696}$	0	$\frac{3\sqrt{385}i}{1232}$	$\frac{\sqrt{330}i}{1232}$	0	$\frac{15\sqrt{770}i}{8624}$	0	$\frac{5\sqrt{462}i}{1232}$	0	$\frac{3\sqrt{2310}i}{1232}$	0
		$-\frac{5\sqrt{77}i}{8624}$	0	$-\frac{5\sqrt{770}i}{8624}$	0	$-\frac{5\sqrt{385}i}{3696}$	0	0	$-\frac{23\sqrt{462}i}{8624}$	0	$-\frac{13\sqrt{2310}i}{8624}$	0	$-\frac{3\sqrt{154}i}{1232}$	0	$\frac{3\sqrt{66}i}{176}$
		0	$\frac{5\sqrt{770}i}{8624}$	0	$\frac{5\sqrt{385}i}{4312}$	0	$\frac{5\sqrt{154}i}{3696}$	$\frac{\sqrt{33}i}{88}$	0	$\frac{3\sqrt{77}i}{392}$	0	$\frac{\sqrt{1155}i}{4312}$	0	$-\frac{3\sqrt{231}i}{616}$	0
		$-\frac{5\sqrt{154}i}{3696}$	0	$-\frac{5\sqrt{385}i}{4312}$	0	$-\frac{5\sqrt{770}i}{8624}$	0	0	$-\frac{3\sqrt{231}i}{616}$	0	$\frac{\sqrt{1155}i}{4312}$	0	$\frac{3\sqrt{77}i}{392}$	0	$\frac{\sqrt{33}i}{88}$
		0	$\frac{5\sqrt{385}i}{3696}$	0	$\frac{5\sqrt{770}i}{8624}$	0	$\frac{5\sqrt{77}i}{8624}$	$\frac{3\sqrt{66}i}{176}$	0	$-\frac{3\sqrt{154}i}{1232}$	0	$-\frac{13\sqrt{2310}i}{8624}$	0	$-\frac{23\sqrt{462}i}{8624}$	0
		$-\frac{3\sqrt{385}i}{1232}$	0	$-\frac{5\sqrt{154}i}{3696}$	0	$-\frac{5\sqrt{77}i}{8624}$	0	0	$\frac{3\sqrt{2310}i}{1232}$	0	$\frac{5\sqrt{462}i}{1232}$	0	$\frac{15\sqrt{770}i}{8624}$	0	$\frac{\sqrt{330}i}{1232}$
		$-\frac{\sqrt{330}i}{1232}$	0	$-\frac{\sqrt{33}i}{88}$	0	$-\frac{3\sqrt{66}i}{176}$	0	0	$-\frac{15\sqrt{55}i}{1232}$	0	$-\frac{5\sqrt{11}i}{88}$	0	$-\frac{3\sqrt{165}i}{176}$	0	0
		0	$\frac{23\sqrt{462}i}{8624}$	0	$\frac{3\sqrt{231}i}{616}$	0	$-\frac{3\sqrt{2310}i}{1232}$	$\frac{15\sqrt{55}i}{1232}$	0	$\frac{5\sqrt{1155}i}{1078}$	0	$\frac{5\sqrt{77}i}{1232}$	0	$-\frac{9\sqrt{385}i}{616}$	0
		$-\frac{15\sqrt{770}i}{8624}$	0	$-\frac{3\sqrt{77}i}{392}$	0	$\frac{3\sqrt{154}i}{1232}$	0	0	$-\frac{5\sqrt{1155}i}{1078}$	0	$-\frac{5\sqrt{231}i}{8624}$	0	$\frac{5\sqrt{385}i}{616}$	0	$-\frac{3\sqrt{165}i}{176}$
		0	$\frac{13\sqrt{2310}i}{8624}$	0	$-\frac{\sqrt{1155}i}{4312}$	0	$-\frac{5\sqrt{462}i}{1232}$	$\frac{5\sqrt{11}i}{88}$	0	$\frac{5\sqrt{231}i}{8624}$	0	$-\frac{15\sqrt{385}i}{2156}$	0	$\frac{5\sqrt{77}i}{1232}$	0
		$-\frac{5\sqrt{462}i}{1232}$	0	$-\frac{\sqrt{1155}i}{4312}$	0	$\frac{13\sqrt{2310}i}{8624}$	0	0	$-\frac{5\sqrt{77}i}{1232}$	0	$\frac{15\sqrt{385}i}{2156}$	0	$-\frac{5\sqrt{231}i}{8624}$	0	$-\frac{5\sqrt{11}i}{88}$
		0	$\frac{3\sqrt{154}i}{1232}$	0	$-\frac{3\sqrt{77}i}{392}$	0	$-\frac{15\sqrt{770}i}{8624}$	$\frac{3\sqrt{165}i}{176}$	0	$-\frac{5\sqrt{385}i}{616}$	0	$\frac{5\sqrt{231}i}{8624}$	0	$\frac{5\sqrt{1155}i}{1078}$	0
		$-\frac{3\sqrt{2310}i}{1232}$	0	$\frac{3\sqrt{231}i}{616}$	0	$\frac{23\sqrt{462}i}{8624}$	0	0	$\frac{9\sqrt{385}i}{616}$	0	$-\frac{5\sqrt{77}i}{1232}$	0	$-\frac{5\sqrt{1155}i}{1078}$	0	$-\frac{15\sqrt{55}i}{1232}$
		0	$-\frac{3\sqrt{66}i}{176}$	0	$-\frac{\sqrt{33}i}{88}$	0	$-\frac{\sqrt{330}i}{1232}$	0	0	$\frac{3\sqrt{165}i}{176}$	0	$\frac{5\sqrt{11}i}{88}$	0	$\frac{15\sqrt{55}i}{1232}$	0
982	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													
$M_{5,3}^{(1,-1;a)}(T_{1g}, 1)$		$-\frac{\sqrt{385}}{3234}$	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	$-\frac{\sqrt{385}}{154}$
983	symmetry	$\frac{3\sqrt{35}x(y^2-2yz-z^2)(y^2+2yz-z^2)}{8}$													

*continued ...*

Table 10

No.	multipole	matrix													
$M_{5,1}^{(1,-1;a)}(T_{1g}, 2)$		0	$-\frac{\sqrt{55}}{1232}$	0	$-\frac{3\sqrt{110}}{1232}$	0	$-\frac{5\sqrt{11}}{1232}$	$\frac{\sqrt{462}}{1232}$	0	$-\frac{15\sqrt{22}}{1232}$	0	$-\frac{9\sqrt{330}}{1232}$	0	$-\frac{5\sqrt{66}}{1232}$	0
		$-\frac{\sqrt{55}}{1232}$	0	$\frac{5\sqrt{22}}{1232}$	0	$\frac{15\sqrt{11}}{1232}$	0	0	$-\frac{23\sqrt{330}}{6160}$	0	$\frac{13\sqrt{66}}{1232}$	0	$\frac{27\sqrt{110}}{6160}$	0	$-\frac{\sqrt{2310}}{1232}$
		0	$\frac{5\sqrt{22}}{1232}$	0	$-\frac{5\sqrt{11}}{616}$	0	$-\frac{3\sqrt{110}}{1232}$	$\frac{9\sqrt{1155}}{3080}$	0	$\frac{3\sqrt{55}}{280}$	0	$-\frac{\sqrt{33}}{616}$	0	$\frac{27\sqrt{165}}{3080}$	0
		$-\frac{3\sqrt{110}}{1232}$	0	$-\frac{5\sqrt{11}}{616}$	0	$\frac{5\sqrt{22}}{1232}$	0	0	$-\frac{27\sqrt{165}}{3080}$	0	$\frac{\sqrt{33}}{616}$	0	$-\frac{3\sqrt{55}}{280}$	0	$-\frac{9\sqrt{1155}}{3080}$
		0	$\frac{15\sqrt{11}}{1232}$	0	$\frac{5\sqrt{22}}{1232}$	0	$-\frac{\sqrt{55}}{1232}$	$\frac{\sqrt{2310}}{1232}$	0	$-\frac{27\sqrt{110}}{6160}$	0	$-\frac{13\sqrt{66}}{1232}$	0	$\frac{23\sqrt{330}}{6160}$	0
		$-\frac{5\sqrt{11}}{1232}$	0	$-\frac{3\sqrt{110}}{1232}$	0	$-\frac{\sqrt{55}}{1232}$	0	0	$\frac{5\sqrt{66}}{1232}$	0	$\frac{9\sqrt{330}}{1232}$	0	$\frac{15\sqrt{22}}{1232}$	0	$-\frac{\sqrt{462}}{1232}$
		$\frac{\sqrt{462}}{1232}$	0	$\frac{9\sqrt{1155}}{3080}$	0	$\frac{\sqrt{2310}}{1232}$	0	0	$\frac{15\sqrt{77}}{1232}$	0	$\frac{9\sqrt{385}}{616}$	0	$\frac{5\sqrt{231}}{1232}$	0	0
		0	$-\frac{23\sqrt{330}}{6160}$	0	$-\frac{27\sqrt{165}}{3080}$	0	$\frac{5\sqrt{66}}{1232}$	$\frac{15\sqrt{77}}{1232}$	0	$-\frac{5\sqrt{33}}{154}$	0	$-\frac{9\sqrt{55}}{1232}$	0	$\frac{15\sqrt{11}}{616}$	0
		$-\frac{15\sqrt{22}}{1232}$	0	$\frac{3\sqrt{55}}{280}$	0	$-\frac{27\sqrt{110}}{6160}$	0	0	$-\frac{5\sqrt{33}}{154}$	0	$\frac{\sqrt{165}}{1232}$	0	$-\frac{45\sqrt{11}}{616}$	0	$\frac{5\sqrt{231}}{1232}$
		0	$\frac{13\sqrt{66}}{1232}$	0	$\frac{\sqrt{33}}{616}$	0	$\frac{9\sqrt{330}}{1232}$	$\frac{9\sqrt{385}}{616}$	0	$\frac{\sqrt{165}}{1232}$	0	$\frac{15\sqrt{11}}{308}$	0	$-\frac{9\sqrt{55}}{1232}$	0
		$-\frac{9\sqrt{330}}{1232}$	0	$-\frac{\sqrt{33}}{616}$	0	$-\frac{13\sqrt{66}}{1232}$	0	0	$-\frac{9\sqrt{55}}{1232}$	0	$\frac{15\sqrt{11}}{308}$	0	$\frac{\sqrt{165}}{1232}$	0	$\frac{9\sqrt{385}}{616}$
		0	$\frac{27\sqrt{110}}{6160}$	0	$-\frac{3\sqrt{55}}{280}$	0	$\frac{15\sqrt{22}}{1232}$	$\frac{5\sqrt{231}}{1232}$	0	$-\frac{45\sqrt{11}}{616}$	0	$\frac{\sqrt{165}}{1232}$	0	$-\frac{5\sqrt{33}}{154}$	0
		$-\frac{5\sqrt{66}}{1232}$	0	$\frac{27\sqrt{165}}{3080}$	0	$\frac{23\sqrt{330}}{6160}$	0	0	$\frac{15\sqrt{11}}{616}$	0	$-\frac{9\sqrt{55}}{1232}$	0	$-\frac{5\sqrt{33}}{154}$	0	$\frac{15\sqrt{77}}{1232}$
		0	$-\frac{\sqrt{2310}}{1232}$	0	$-\frac{9\sqrt{1155}}{3080}$	0	$-\frac{\sqrt{462}}{1232}$	0	0	$\frac{5\sqrt{231}}{1232}$	0	$\frac{9\sqrt{385}}{616}$	0	$\frac{15\sqrt{77}}{1232}$	0
984	symmetry	$\frac{3\sqrt{35}y(x^2-2xz-z^2)(x^2+2xz-z^2)}{8}$													

*continued ...*

Table 10

No.	multipole	matrix													
$M_{5,2}^{(1,-1;a)}(T_{1g}, 2)$		0	$\frac{\sqrt{55}i}{1232}$	0	$-\frac{3\sqrt{110}i}{1232}$	0	$\frac{5\sqrt{11}i}{1232}$	$\frac{\sqrt{462}i}{1232}$	0	$\frac{15\sqrt{22}i}{1232}$	0	$-\frac{9\sqrt{330}i}{1232}$	0	$\frac{5\sqrt{66}i}{1232}$	0
		$-\frac{\sqrt{55}i}{1232}$	0	$-\frac{5\sqrt{22}i}{1232}$	0	$\frac{15\sqrt{11}i}{1232}$	0	0	$-\frac{23\sqrt{330}i}{6160}$	0	$-\frac{13\sqrt{66}i}{1232}$	0	$\frac{27\sqrt{110}i}{6160}$	0	$\frac{\sqrt{2310}i}{1232}$
		0	$\frac{5\sqrt{22}i}{1232}$	0	$\frac{5\sqrt{11}i}{616}$	0	$-\frac{3\sqrt{110}i}{1232}$	$-\frac{9\sqrt{1155}i}{3080}$	0	$\frac{3\sqrt{55}i}{280}$	0	$\frac{\sqrt{33}i}{616}$	0	$\frac{27\sqrt{165}i}{3080}$	0
		$\frac{3\sqrt{110}i}{1232}$	0	$-\frac{5\sqrt{11}i}{616}$	0	$-\frac{5\sqrt{22}i}{1232}$	0	0	$\frac{27\sqrt{165}i}{3080}$	0	$\frac{\sqrt{33}i}{616}$	0	$\frac{3\sqrt{55}i}{280}$	0	$-\frac{9\sqrt{1155}i}{3080}$
		0	$-\frac{15\sqrt{11}i}{1232}$	0	$\frac{5\sqrt{22}i}{1232}$	0	$\frac{\sqrt{55}i}{1232}$	$\frac{\sqrt{2310}i}{1232}$	0	$\frac{27\sqrt{110}i}{6160}$	0	$-\frac{13\sqrt{66}i}{1232}$	0	$-\frac{23\sqrt{330}i}{6160}$	0
		$-\frac{5\sqrt{11}i}{1232}$	0	$\frac{3\sqrt{110}i}{1232}$	0	$-\frac{\sqrt{55}i}{1232}$	0	0	$\frac{5\sqrt{66}i}{1232}$	0	$-\frac{9\sqrt{330}i}{1232}$	0	$\frac{15\sqrt{22}i}{1232}$	0	$\frac{\sqrt{462}i}{1232}$
		$-\frac{\sqrt{462}i}{1232}$	0	$\frac{9\sqrt{1155}i}{3080}$	0	$-\frac{\sqrt{2310}i}{1232}$	0	0	$-\frac{15\sqrt{77}i}{1232}$	0	$\frac{9\sqrt{385}i}{616}$	0	$-\frac{5\sqrt{231}i}{1232}$	0	0
		0	$\frac{23\sqrt{330}i}{6160}$	0	$-\frac{27\sqrt{165}i}{3080}$	0	$-\frac{5\sqrt{66}i}{1232}$	$\frac{15\sqrt{77}i}{1232}$	0	$\frac{5\sqrt{33}i}{154}$	0	$-\frac{9\sqrt{55}i}{1232}$	0	$-\frac{15\sqrt{11}i}{616}$	0
		$-\frac{15\sqrt{22}i}{1232}$	0	$-\frac{3\sqrt{55}i}{280}$	0	$-\frac{27\sqrt{110}i}{6160}$	0	0	$-\frac{5\sqrt{33}i}{154}$	0	$-\frac{\sqrt{165}i}{1232}$	0	$-\frac{45\sqrt{11}i}{616}$	0	$-\frac{5\sqrt{231}i}{1232}$
		0	$\frac{13\sqrt{66}i}{1232}$	0	$-\frac{\sqrt{33}i}{616}$	0	$\frac{9\sqrt{330}i}{1232}$	$-\frac{9\sqrt{385}i}{616}$	0	$\frac{\sqrt{165}i}{1232}$	0	$-\frac{15\sqrt{11}i}{308}$	0	$-\frac{9\sqrt{55}i}{1232}$	0
		$\frac{9\sqrt{330}i}{1232}$	0	$-\frac{\sqrt{33}i}{616}$	0	$\frac{13\sqrt{66}i}{1232}$	0	0	$\frac{9\sqrt{55}i}{1232}$	0	$\frac{15\sqrt{11}i}{308}$	0	$-\frac{\sqrt{165}i}{1232}$	0	$\frac{9\sqrt{385}i}{616}$
		0	$-\frac{27\sqrt{110}i}{6160}$	0	$-\frac{3\sqrt{55}i}{280}$	0	$-\frac{15\sqrt{22}i}{1232}$	$\frac{5\sqrt{231}i}{1232}$	0	$\frac{45\sqrt{11}i}{616}$	0	$\frac{\sqrt{165}i}{1232}$	0	$\frac{5\sqrt{33}i}{154}$	0
		$-\frac{5\sqrt{66}i}{1232}$	0	$-\frac{27\sqrt{165}i}{3080}$	0	$\frac{23\sqrt{330}i}{6160}$	0	0	$\frac{15\sqrt{11}i}{616}$	0	$\frac{9\sqrt{55}i}{1232}$	0	$-\frac{5\sqrt{33}i}{154}$	0	$-\frac{15\sqrt{77}i}{1232}$
		0	$-\frac{\sqrt{2310}i}{1232}$	0	$\frac{9\sqrt{1155}i}{3080}$	0	$-\frac{\sqrt{462}i}{1232}$	0	0	$\frac{5\sqrt{231}i}{1232}$	0	$-\frac{9\sqrt{385}i}{616}$	0	$\frac{15\sqrt{77}i}{1232}$	0
985	symmetry	$\frac{3\sqrt{35}z(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{M}_{5,3}^{(1,-1;a)}(T_{1g}, 2)$	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	$\frac{\sqrt{55}}{154}$	0	0	0	0	0	0	$-\frac{\sqrt{330}}{385}$	0	
	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	0	
	$-\frac{\sqrt{55}}{154}$	0	0	0	0	0	0	$-\frac{\sqrt{330}}{385}$	0	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	0	$\frac{2\sqrt{1155}}{385}$	0	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	0	$\frac{5\sqrt{33}}{154}$	0	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	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	0	
	$-\frac{3\sqrt{22}}{77}$	0	0	0	0	0	0	$\frac{5\sqrt{33}}{154}$	0	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	0	$\frac{2\sqrt{1155}}{385}$	0	0	0	0	0	0	$-\frac{3\sqrt{385}}{154}$	0	0	0	0	
986	symmetry	$\frac{\sqrt{105}x(y-z)(y+z)(2x^2-y^2-z^2)}{4}$													

*continued ...*

Table 10

No.	multipole	matrix													
$M_{5,1}^{(1,-1;a)}(T_{2g})$		0	$-\frac{\sqrt{165}}{1848}$	0	$\frac{\sqrt{330}}{1848}$	0	$\frac{5\sqrt{33}}{616}$	$\frac{\sqrt{154}}{616}$	0	$-\frac{5\sqrt{66}}{616}$	0	$\frac{3\sqrt{110}}{616}$	0	$\frac{15\sqrt{22}}{616}$	0
		$-\frac{\sqrt{165}}{1848}$	0	$\frac{5\sqrt{66}}{1848}$	0	$-\frac{5\sqrt{33}}{1848}$	0	0	$-\frac{23\sqrt{110}}{3080}$	0	$\frac{13\sqrt{22}}{616}$	0	$-\frac{3\sqrt{330}}{3080}$	0	$\frac{3\sqrt{770}}{616}$
		0	$\frac{5\sqrt{66}}{1848}$	0	$-\frac{5\sqrt{33}}{924}$	0	$\frac{\sqrt{330}}{1848}$	$-\frac{3\sqrt{385}}{1540}$	0	$\frac{\sqrt{165}}{140}$	0	$-\frac{\sqrt{11}}{308}$	0	$-\frac{9\sqrt{55}}{1540}$	0
		$\frac{\sqrt{330}}{1848}$	0	$-\frac{5\sqrt{33}}{924}$	0	$\frac{5\sqrt{66}}{1848}$	0	0	$\frac{9\sqrt{55}}{1540}$	0	$\frac{\sqrt{11}}{308}$	0	$-\frac{\sqrt{165}}{140}$	0	$\frac{3\sqrt{385}}{1540}$
		0	$-\frac{5\sqrt{33}}{1848}$	0	$\frac{5\sqrt{66}}{1848}$	0	$-\frac{\sqrt{165}}{1848}$	$-\frac{3\sqrt{770}}{616}$	0	$\frac{3\sqrt{330}}{3080}$	0	$-\frac{13\sqrt{22}}{616}$	0	$\frac{23\sqrt{110}}{3080}$	0
		$\frac{5\sqrt{33}}{616}$	0	$\frac{\sqrt{330}}{1848}$	0	$-\frac{\sqrt{165}}{1848}$	0	0	$-\frac{15\sqrt{22}}{616}$	0	$-\frac{3\sqrt{110}}{616}$	0	$\frac{5\sqrt{66}}{616}$	0	$-\frac{\sqrt{154}}{616}$
		$\frac{\sqrt{154}}{616}$	0	$-\frac{3\sqrt{385}}{1540}$	0	$-\frac{3\sqrt{770}}{616}$	0	0	$\frac{5\sqrt{231}}{616}$	0	$-\frac{\sqrt{1155}}{308}$	0	$-\frac{15\sqrt{77}}{616}$	0	0
		0	$-\frac{23\sqrt{110}}{3080}$	0	$\frac{9\sqrt{55}}{1540}$	0	$-\frac{15\sqrt{22}}{616}$	$\frac{5\sqrt{231}}{616}$	0	$-\frac{5\sqrt{11}}{77}$	0	$\frac{\sqrt{165}}{616}$	0	$-\frac{15\sqrt{33}}{308}$	0
		$-\frac{5\sqrt{66}}{616}$	0	$\frac{\sqrt{165}}{140}$	0	$\frac{3\sqrt{330}}{3080}$	0	0	$-\frac{5\sqrt{11}}{77}$	0	$\frac{\sqrt{55}}{616}$	0	$\frac{5\sqrt{33}}{308}$	0	$-\frac{15\sqrt{77}}{616}$
		0	$\frac{13\sqrt{22}}{616}$	0	$\frac{\sqrt{11}}{308}$	0	$-\frac{3\sqrt{110}}{616}$	$-\frac{\sqrt{1155}}{308}$	0	$\frac{\sqrt{55}}{616}$	0	$\frac{5\sqrt{33}}{154}$	0	$\frac{\sqrt{165}}{616}$	0
		$\frac{3\sqrt{110}}{616}$	0	$-\frac{\sqrt{11}}{308}$	0	$-\frac{13\sqrt{22}}{616}$	0	0	$\frac{\sqrt{165}}{616}$	0	$\frac{5\sqrt{33}}{154}$	0	$\frac{\sqrt{55}}{616}$	0	$-\frac{\sqrt{1155}}{308}$
		0	$-\frac{3\sqrt{330}}{3080}$	0	$-\frac{\sqrt{165}}{140}$	0	$\frac{5\sqrt{66}}{616}$	$-\frac{15\sqrt{77}}{616}$	0	$\frac{5\sqrt{33}}{308}$	0	$\frac{\sqrt{55}}{616}$	0	$-\frac{5\sqrt{11}}{77}$	0
		$\frac{15\sqrt{22}}{616}$	0	$-\frac{9\sqrt{55}}{1540}$	0	$\frac{23\sqrt{110}}{3080}$	0	0	$-\frac{15\sqrt{33}}{308}$	0	$\frac{\sqrt{165}}{616}$	0	$-\frac{5\sqrt{11}}{77}$	0	$\frac{5\sqrt{231}}{616}$
		0	$\frac{3\sqrt{770}}{616}$	0	$\frac{3\sqrt{385}}{1540}$	0	$-\frac{\sqrt{154}}{616}$	0	0	$-\frac{15\sqrt{77}}{616}$	0	$-\frac{\sqrt{1155}}{308}$	0	$\frac{5\sqrt{231}}{616}$	0
987	symmetry	$\frac{\sqrt{105}y(x-z)(x+z)(x^2-2y^2+z^2)}{4}$													

*continued ...*

Table 10

No.	multipole	matrix													
988	$M_{5,2}^{(1,-1;a)}(T_{2g})$	0	$-\frac{\sqrt{165}i}{1848}$	0	$-\frac{\sqrt{330}i}{1848}$	0	$\frac{5\sqrt{33}i}{616}$	$-\frac{\sqrt{154}i}{616}$	0	$-\frac{5\sqrt{66}i}{616}$	0	$-\frac{3\sqrt{110}i}{616}$	0	$\frac{15\sqrt{22}i}{616}$	0
		$\frac{\sqrt{165}i}{1848}$	0	$\frac{5\sqrt{66}i}{1848}$	0	$\frac{5\sqrt{33}i}{1848}$	0	0	$\frac{23\sqrt{110}i}{3080}$	0	$\frac{13\sqrt{22}i}{616}$	0	$\frac{3\sqrt{330}i}{3080}$	0	$\frac{3\sqrt{770}i}{616}$
		0	$-\frac{5\sqrt{66}i}{1848}$	0	$-\frac{5\sqrt{33}i}{924}$	0	$-\frac{\sqrt{330}i}{1848}$	$-\frac{3\sqrt{385}i}{1540}$	0	$-\frac{\sqrt{165}i}{140}$	0	$-\frac{\sqrt{11}i}{308}$	0	$\frac{9\sqrt{55}i}{1540}$	0
		$\frac{\sqrt{330}i}{1848}$	0	$\frac{5\sqrt{33}i}{924}$	0	$\frac{5\sqrt{66}i}{1848}$	0	0	$\frac{9\sqrt{55}i}{1540}$	0	$-\frac{\sqrt{11}i}{308}$	0	$-\frac{\sqrt{165}i}{140}$	0	$-\frac{3\sqrt{385}i}{1540}$
		0	$-\frac{5\sqrt{33}i}{1848}$	0	$-\frac{5\sqrt{66}i}{1848}$	0	$-\frac{\sqrt{165}i}{1848}$	$\frac{3\sqrt{770}i}{616}$	0	$\frac{3\sqrt{330}i}{3080}$	0	$\frac{13\sqrt{22}i}{616}$	0	$\frac{23\sqrt{110}i}{3080}$	0
		$-\frac{5\sqrt{33}i}{616}$	0	$\frac{\sqrt{330}i}{1848}$	0	$\frac{\sqrt{165}i}{1848}$	0	0	$\frac{15\sqrt{22}i}{616}$	0	$-\frac{3\sqrt{110}i}{616}$	0	$-\frac{5\sqrt{66}i}{616}$	0	$-\frac{\sqrt{154}i}{616}$
		$\frac{\sqrt{154}i}{616}$	0	$\frac{3\sqrt{385}i}{1540}$	0	$-\frac{3\sqrt{770}i}{616}$	0	0	$\frac{5\sqrt{231}i}{616}$	0	$\frac{\sqrt{1155}i}{308}$	0	$-\frac{15\sqrt{77}i}{616}$	0	0
		0	$-\frac{23\sqrt{110}i}{3080}$	0	$-\frac{9\sqrt{55}i}{1540}$	0	$-\frac{15\sqrt{22}i}{616}$	$-\frac{5\sqrt{231}i}{616}$	0	$-\frac{5\sqrt{11}i}{77}$	0	$-\frac{\sqrt{165}i}{616}$	0	$-\frac{15\sqrt{33}i}{308}$	0
		$\frac{5\sqrt{66}i}{616}$	0	$\frac{\sqrt{165}i}{140}$	0	$-\frac{3\sqrt{330}i}{3080}$	0	0	$\frac{5\sqrt{11}i}{77}$	0	$\frac{\sqrt{55}i}{616}$	0	$-\frac{5\sqrt{33}i}{308}$	0	$-\frac{15\sqrt{77}i}{616}$
		0	$-\frac{13\sqrt{22}i}{616}$	0	$\frac{\sqrt{11}i}{308}$	0	$\frac{3\sqrt{110}i}{616}$	$-\frac{\sqrt{1155}i}{308}$	0	$-\frac{\sqrt{55}i}{616}$	0	$\frac{5\sqrt{33}i}{154}$	0	$-\frac{\sqrt{165}i}{616}$	0
		$\frac{3\sqrt{110}i}{616}$	0	$\frac{\sqrt{11}i}{308}$	0	$-\frac{13\sqrt{22}i}{616}$	0	0	$\frac{\sqrt{165}i}{616}$	0	$-\frac{5\sqrt{33}i}{154}$	0	$\frac{\sqrt{55}i}{616}$	0	$\frac{\sqrt{1155}i}{308}$
		0	$-\frac{3\sqrt{330}i}{3080}$	0	$\frac{\sqrt{165}i}{140}$	0	$\frac{5\sqrt{66}i}{616}$	$\frac{15\sqrt{77}i}{616}$	0	$\frac{5\sqrt{33}i}{308}$	0	$-\frac{\sqrt{55}i}{616}$	0	$-\frac{5\sqrt{11}i}{77}$	0
		$-\frac{15\sqrt{22}i}{616}$	0	$-\frac{9\sqrt{55}i}{1540}$	0	$-\frac{23\sqrt{110}i}{3080}$	0	0	$\frac{15\sqrt{33}i}{308}$	0	$\frac{\sqrt{165}i}{616}$	0	$\frac{5\sqrt{11}i}{77}$	0	$\frac{5\sqrt{231}i}{616}$
		0	$-\frac{3\sqrt{770}i}{616}$	0	$\frac{3\sqrt{385}i}{1540}$	0	$\frac{\sqrt{154}i}{616}$	0	0	$\frac{15\sqrt{77}i}{616}$	0	$-\frac{\sqrt{1155}i}{308}$	0	$-\frac{5\sqrt{231}i}{616}$	0
		988 symmetry		$-\frac{\sqrt{105}z(x-y)(x+y)(x^2+y^2-2z^2)}{4}$											

continued ...

Table 10

No.	multipole	matrix													
989	$M_{5,3}^{(1,-1;a)}(T_{2g})$	0	0	$-\frac{\sqrt{330}}{924}$	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	$-\frac{8\sqrt{55}}{385}$	0	
		0	0	$-\frac{5\sqrt{66}}{924}$	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	$-\frac{\sqrt{110}}{77}$	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	$-\frac{8\sqrt{55}}{385}$	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	$\frac{2\sqrt{55}}{77}$	0	0	0	$-\frac{5\sqrt{77}}{154}$	
		0	0	0	$-\frac{8\sqrt{55}}{385}$	0	0	0	0	0	$\frac{3\sqrt{165}}{154}$	0	0	0	
		0	0	0	0	$\frac{\sqrt{770}}{385}$	0	0	0	0	0	$-\frac{5\sqrt{77}}{154}$	0	0	
		$\frac{\sqrt{91}xyz(3x^4-5x^2y^2-5x^2z^2+3y^4-5y^2z^2+3z^4)}{2}$													
989	symmetry														

continued ...

Table 10

No.	multipole	matrix													
$\mathbb{M}_7^{(1,-1;a)}(A_{2g})$		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{22}i}{88}$	0	0	0	$\frac{\sqrt{66}i}{24}$	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{2310}i}{264}$	0	0	0	$-\frac{\sqrt{66}i}{24}$	0
		0	0	0	0	0	0	$-\frac{\sqrt{22}i}{88}$	0	0	0	$\frac{\sqrt{770}i}{88}$	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{2310}i}{264}$	0	0	0	$-\frac{\sqrt{770}i}{88}$	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{770}i}{88}$	0	0	0	$\frac{\sqrt{2310}i}{264}$	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{770}i}{88}$	0	0	0	$-\frac{\sqrt{22}i}{88}$
		0	0	0	0	0	0	$-\frac{\sqrt{66}i}{24}$	0	0	0	$-\frac{\sqrt{2310}i}{264}$	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{66}i}{24}$	0	0	0	$\frac{\sqrt{22}i}{88}$	0	0
990	symmetry	$-\frac{\sqrt{231}xyz(x-y)(x+y)(3x^2+3y^2-10z^2)}{4}$													

*continued ...*



Table 10

No.	multipole	matrix													
$\mathbb{M}_{7,1}^{(1,-1;a)}(E_g)$		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	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	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	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	$\frac{\sqrt{130}i}{52}$	0	0	0	0	0
991	symmetry	$-\frac{\sqrt{77}xyz(3x^4-20x^2y^2+10x^2z^2+3y^4+10y^2z^2-6z^4)}{4}$													

*continued ...*

Table 10

No.	multipole	matrix													
$M_{7,2}^{(1,-1;a)}(E_g)$		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	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{26}i}{104}$	0	0	0	$-\frac{\sqrt{78}i}{24}$	0	
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{2730}i}{312}$	0	0	0	$\frac{\sqrt{78}i}{24}$	
		0	0	0	0	0	0	$-\frac{\sqrt{26}i}{104}$	0	0	0	$\frac{\sqrt{910}i}{104}$	0	0	0
		0	0	0	0	0	0	0	$\frac{\sqrt{2730}i}{312}$	0	0	0	$-\frac{\sqrt{910}i}{104}$	0	0
		0	0	0	0	0	0	0	0	$-\frac{\sqrt{910}i}{104}$	0	0	0	$\frac{\sqrt{2730}i}{312}$	0
		0	0	0	0	0	0	0	0	0	$\frac{\sqrt{910}i}{104}$	0	0	0	$-\frac{\sqrt{26}i}{104}$
		0	0	0	0	0	0	$\frac{\sqrt{78}i}{24}$	0	0	0	$-\frac{\sqrt{2730}i}{312}$	0	0	0
		0	0	0	0	0	0	0	$-\frac{\sqrt{78}i}{24}$	0	0	0	$\frac{\sqrt{26}i}{104}$	0	0
992	symmetry	$\frac{x(16x^6-168x^4y^2-168x^4z^2+210x^2y^4+420x^2y^2z^2+210x^2z^4-35y^6-105y^4z^2-105y^2z^4-35z^6)}{16}$													

continued ...

Table 10

No.	multipole	matrix													
$\mathbb{M}_{7,1}^{(1,-1;a)}(T_{1g}, 1)$		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	$\frac{5\sqrt{6006}}{27456}$	0	$-\frac{3\sqrt{30030}}{9152}$	0	$\frac{3\sqrt{2002}}{832}$	0	$-\frac{\sqrt{858}}{64}$	0
		0	0	0	0	0	0	$\frac{5\sqrt{6006}}{27456}$	$-\frac{35\sqrt{286}}{9152}$	0	$\frac{21\sqrt{4290}}{9152}$	0	$-\frac{7\sqrt{858}}{832}$	0	0
		0	0	0	0	0	0	$-\frac{35\sqrt{286}}{9152}$	0	$\frac{35\sqrt{1430}}{9152}$	0	$-\frac{63\sqrt{858}}{9152}$	0	$\frac{3\sqrt{2002}}{832}$	0
		0	0	0	0	0	$-\frac{3\sqrt{30030}}{9152}$	0	$\frac{35\sqrt{1430}}{9152}$	0	$-\frac{175\sqrt{858}}{27456}$	0	$\frac{21\sqrt{4290}}{9152}$	0	0
		0	0	0	0	0	0	$\frac{21\sqrt{4290}}{9152}$	0	$-\frac{175\sqrt{858}}{27456}$	0	$\frac{35\sqrt{1430}}{9152}$	0	$-\frac{3\sqrt{30030}}{9152}$	0
		0	0	0	0	0	0	$\frac{3\sqrt{2002}}{832}$	$-\frac{63\sqrt{858}}{9152}$	0	$\frac{35\sqrt{1430}}{9152}$	0	$-\frac{35\sqrt{286}}{9152}$	0	0
		0	0	0	0	0	0	$-\frac{7\sqrt{858}}{832}$	0	$\frac{21\sqrt{4290}}{9152}$	0	$-\frac{35\sqrt{286}}{9152}$	0	$\frac{5\sqrt{6006}}{27456}$	0
		0	0	0	0	0	0	$-\frac{\sqrt{858}}{64}$	0	$\frac{3\sqrt{2002}}{832}$	0	$-\frac{3\sqrt{30030}}{9152}$	0	$\frac{5\sqrt{6006}}{27456}$	0
993	symmetry	$-\frac{y(35x^6-210x^4y^2+105x^4z^2+168x^2y^4-420x^2y^2z^2+105x^2z^4-16y^6+168y^4z^2-210y^2z^4+35z^6)}{16}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{M}_{7,2}^{(1,-1;a)}(T_{1g}, 1)$		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	$-\frac{5\sqrt{6006}i}{27456}$	0	$-\frac{3\sqrt{30030}i}{9152}$	0	$-\frac{3\sqrt{2002}i}{832}$	0	$-\frac{\sqrt{858}i}{64}$	
		0	0	0	0	0	0	$\frac{5\sqrt{6006}i}{27456}$	0	$\frac{35\sqrt{286}i}{9152}$	0	$\frac{21\sqrt{4290}i}{9152}$	0	$\frac{7\sqrt{858}i}{832}$	0
		0	0	0	0	0	0	$-\frac{35\sqrt{286}i}{9152}$	0	$-\frac{35\sqrt{1430}i}{9152}$	0	$-\frac{63\sqrt{858}i}{9152}$	0	$-\frac{3\sqrt{2002}i}{832}$	
		0	0	0	0	0	0	$\frac{3\sqrt{30030}i}{9152}$	0	$\frac{35\sqrt{1430}i}{9152}$	0	$\frac{175\sqrt{858}i}{27456}$	0	$\frac{21\sqrt{4290}i}{9152}$	0
		0	0	0	0	0	0	$-\frac{21\sqrt{4290}i}{9152}$	0	$-\frac{175\sqrt{858}i}{27456}$	0	$-\frac{35\sqrt{1430}i}{9152}$	0	$-\frac{3\sqrt{30030}i}{9152}$	
		0	0	0	0	0	0	$\frac{3\sqrt{2002}i}{832}$	0	$\frac{63\sqrt{858}i}{9152}$	0	$\frac{35\sqrt{1430}i}{9152}$	0	$\frac{35\sqrt{286}i}{9152}$	0
		0	0	0	0	0	0	$-\frac{7\sqrt{858}i}{832}$	0	$-\frac{21\sqrt{4290}i}{9152}$	0	$-\frac{35\sqrt{286}i}{9152}$	0	$-\frac{5\sqrt{6006}i}{27456}$	
		0	0	0	0	0	0	$\frac{\sqrt{858}i}{64}$	0	$\frac{3\sqrt{2002}i}{832}$	0	$\frac{3\sqrt{30030}i}{9152}$	0	$\frac{5\sqrt{6006}i}{27456}$	0
994	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													
$\mathbb{M}_{7,3}^{(1,-1;a)}(T_{1g}, 1)$		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	$-\frac{\sqrt{858}}{1716}$	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
995	symmetry	$\frac{\sqrt{231}x(10x^2-3y^2-3z^2)(y^2-2yz-z^2)(y^2+2yz-z^2)}{16}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{M}_{7,1}^{(1,-1;a)}(T_{1g}, 2)$		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	$\frac{3\sqrt{26}}{832}$	0	$\frac{\sqrt{130}}{832}$	0	$-\frac{25\sqrt{78}}{832}$	0	$-\frac{\sqrt{182}}{64}$	
		0	0	0	0	0	0	$\frac{3\sqrt{26}}{832}$	$-\frac{3\sqrt{546}}{832}$	0	$-\frac{\sqrt{910}}{832}$	0	$\frac{25\sqrt{182}}{832}$	0	
		0	0	0	0	0	0	$-\frac{3\sqrt{546}}{832}$	0	$\frac{3\sqrt{2730}}{832}$	0	$\frac{3\sqrt{182}}{832}$	0	$-\frac{25\sqrt{78}}{832}$	
		0	0	0	0	0	0	$\frac{\sqrt{130}}{832}$	0	$\frac{3\sqrt{2730}}{832}$	0	$-\frac{15\sqrt{182}}{832}$	0	$-\frac{\sqrt{910}}{832}$	0
		0	0	0	0	0	0	$-\frac{\sqrt{910}}{832}$	0	$-\frac{15\sqrt{182}}{832}$	0	$\frac{3\sqrt{2730}}{832}$	0	$\frac{\sqrt{130}}{832}$	
		0	0	0	0	0	0	$-\frac{25\sqrt{78}}{832}$	0	$\frac{3\sqrt{182}}{832}$	0	$\frac{3\sqrt{2730}}{832}$	0	$-\frac{3\sqrt{546}}{832}$	0
		0	0	0	0	0	0	$\frac{25\sqrt{182}}{832}$	0	$-\frac{\sqrt{910}}{832}$	0	$-\frac{3\sqrt{546}}{832}$	0	$\frac{3\sqrt{26}}{832}$	
		0	0	0	0	0	0	$-\frac{\sqrt{182}}{64}$	0	$-\frac{25\sqrt{78}}{832}$	0	$\frac{\sqrt{130}}{832}$	0	$\frac{3\sqrt{26}}{832}$	0
996	symmetry	$-\frac{\sqrt{231}y(x^2-2xz-z^2)(x^2+2xz-z^2)(3x^2-10y^2+3z^2)}{16}$													

*continued ...*

Table 10

No.	multipole	matrix													
$M_{7,2}^{(1,-1;a)}(T_{1g}, 2)$		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	$-\frac{3\sqrt{26}i}{832}$	0	$\frac{\sqrt{130}i}{832}$	0	$\frac{25\sqrt{78}i}{832}$	0	$-\frac{\sqrt{182}i}{64}$	
		0	0	0	0	0	0	$\frac{3\sqrt{26}i}{832}$	0	$\frac{3\sqrt{546}i}{832}$	0	$-\frac{\sqrt{910}i}{832}$	0	$-\frac{25\sqrt{182}i}{832}$	0
		0	0	0	0	0	0	$-\frac{3\sqrt{546}i}{832}$	0	$-\frac{3\sqrt{2730}i}{832}$	0	$\frac{3\sqrt{182}i}{832}$	0	$\frac{25\sqrt{78}i}{832}$	
		0	0	0	0	0	0	$-\frac{\sqrt{130}i}{832}$	0	$\frac{3\sqrt{2730}i}{832}$	0	$\frac{15\sqrt{182}i}{832}$	0	$-\frac{\sqrt{910}i}{832}$	0
		0	0	0	0	0	0	$\frac{\sqrt{910}i}{832}$	0	$-\frac{15\sqrt{182}i}{832}$	0	$-\frac{3\sqrt{2730}i}{832}$	0	$\frac{\sqrt{130}i}{832}$	
		0	0	0	0	0	0	$-\frac{25\sqrt{78}i}{832}$	0	$-\frac{3\sqrt{182}i}{832}$	0	$\frac{3\sqrt{2730}i}{832}$	0	$\frac{3\sqrt{546}i}{832}$	0
		0	0	0	0	0	0	$\frac{25\sqrt{182}i}{832}$	0	$\frac{\sqrt{910}i}{832}$	0	$-\frac{3\sqrt{546}i}{832}$	0	$-\frac{3\sqrt{26}i}{832}$	
		0	0	0	0	0	0	$\frac{\sqrt{182}i}{64}$	0	$-\frac{25\sqrt{78}i}{832}$	0	$-\frac{\sqrt{130}i}{832}$	0	$\frac{3\sqrt{26}i}{832}$	0
997	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													
$\mathbb{M}_{7,3}^{(1,-1;a)}(T_{1g}, 2)$		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	$-\frac{\sqrt{130}}{52}$	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	$-\frac{\sqrt{546}}{52}$	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	$\frac{\sqrt{546}}{52}$	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	$\frac{\sqrt{130}}{52}$	0	0	0	0
998	symmetry	$\frac{\sqrt{6006}x(y-z)(y+z)(y^2-4yz+z^2)(y^2+4yz+z^2)}{32}$													

*continued ...*



Table 10

No.	multipole	matrix															
$\mathbb{M}_{7,1}^{(1,-1;a)}(T_{2g},1)$		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	$\frac{1}{64}$	0	$\frac{3\sqrt{5}}{64}$	0	$\frac{5\sqrt{3}}{64}$	0	$\frac{\sqrt{7}}{64}$			
		0	0	0	0	0	0	$\frac{1}{64}$	0	$-\frac{\sqrt{21}}{64}$	0	$-\frac{3\sqrt{35}}{64}$	0	$-\frac{5\sqrt{7}}{64}$	0		
		0	0	0	0	0	0	$-\frac{\sqrt{21}}{64}$	0	$\frac{\sqrt{105}}{64}$	0	$\frac{9\sqrt{7}}{64}$	0	$\frac{5\sqrt{3}}{64}$			
		0	0	0	0	0	0	$\frac{3\sqrt{5}}{64}$	0	$\frac{\sqrt{105}}{64}$	0	$-\frac{5\sqrt{7}}{64}$	0	$-\frac{3\sqrt{35}}{64}$	0		
		0	0	0	0	0	0	$-\frac{3\sqrt{35}}{64}$	0	$-\frac{5\sqrt{7}}{64}$	0	$\frac{\sqrt{105}}{64}$	0	$\frac{3\sqrt{5}}{64}$			
		0	0	0	0	0	0	$\frac{5\sqrt{3}}{64}$	0	$\frac{9\sqrt{7}}{64}$	0	$\frac{\sqrt{105}}{64}$	0	$-\frac{\sqrt{21}}{64}$	0		
		0	0	0	0	0	0	$-\frac{5\sqrt{7}}{64}$	0	$-\frac{3\sqrt{35}}{64}$	0	$-\frac{\sqrt{21}}{64}$	0	$\frac{1}{64}$			
		0	0	0	0	0	0	$\frac{\sqrt{7}}{64}$	0	$\frac{5\sqrt{3}}{64}$	0	$\frac{3\sqrt{5}}{64}$	0	$\frac{1}{64}$	0		
999	symmetry	$-\frac{\sqrt{6006}y(x-z)(x+z)(x^2-4xz+z^2)(x^2+4xz+z^2)}{32}$															

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{M}_{7,2}^{(1,-1;a)}(T_{2g}, 1)$		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	$\frac{i}{64}$	0	$-\frac{3\sqrt{5}i}{64}$	0	$\frac{5\sqrt{3}i}{64}$	0	$-\frac{\sqrt{7}i}{64}$	0
		0	0	0	0	0	0	$-\frac{i}{64}$	0	$-\frac{\sqrt{21}i}{64}$	0	$\frac{3\sqrt{35}i}{64}$	0	$-\frac{5\sqrt{7}i}{64}$	0
		0	0	0	0	0	0	$\frac{\sqrt{21}i}{64}$	0	$\frac{\sqrt{105}i}{64}$	0	$-\frac{9\sqrt{7}i}{64}$	0	$\frac{5\sqrt{3}i}{64}$	0
		0	0	0	0	0	0	$\frac{3\sqrt{5}i}{64}$	0	$-\frac{\sqrt{105}i}{64}$	0	$-\frac{5\sqrt{7}i}{64}$	0	$\frac{3\sqrt{35}i}{64}$	0
		0	0	0	0	0	0	$-\frac{3\sqrt{35}i}{64}$	0	$\frac{5\sqrt{7}i}{64}$	0	$\frac{\sqrt{105}i}{64}$	0	$-\frac{3\sqrt{5}i}{64}$	0
		0	0	0	0	0	0	$-\frac{5\sqrt{3}i}{64}$	0	$\frac{9\sqrt{7}i}{64}$	0	$-\frac{\sqrt{105}i}{64}$	0	$-\frac{\sqrt{21}i}{64}$	0
		0	0	0	0	0	0	$\frac{5\sqrt{7}i}{64}$	0	$-\frac{3\sqrt{35}i}{64}$	0	$\frac{\sqrt{21}i}{64}$	0	$\frac{i}{64}$	0
		0	0	0	0	0	0	$\frac{\sqrt{7}i}{64}$	0	$-\frac{5\sqrt{3}i}{64}$	0	$\frac{3\sqrt{5}i}{64}$	0	$-\frac{i}{64}$	0
1000	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															
$\mathbb{M}_{7,3}^{(1,-1;a)}(T_{2g},1)$		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	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
1001	symmetry	$\frac{\sqrt{42}x(y-z)(y+z)(48x^4-80x^2y^2-80x^2z^2+15y^4+30y^2z^2+15z^4)}{32}$															

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{M}_{7,1}^{(1,-1;a)}(T_{2g}, 2)$		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	$\frac{15\sqrt{143}}{9152}$	0	$-\frac{19\sqrt{715}}{9152}$	0	$\frac{\sqrt{429}}{832}$	0	$\frac{\sqrt{1001}}{64}$	
		0	0	0	0	0	0	$\frac{15\sqrt{143}}{9152}$	$-\frac{15\sqrt{3003}}{9152}$	0	$\frac{19\sqrt{5005}}{9152}$	0	$-\frac{\sqrt{1001}}{832}$	0	
		0	0	0	0	0	0	$-\frac{15\sqrt{3003}}{9152}$	0	$\frac{15\sqrt{15015}}{9152}$	0	$-\frac{57\sqrt{1001}}{9152}$	0	$\frac{\sqrt{429}}{832}$	
		0	0	0	0	0	$-\frac{19\sqrt{715}}{9152}$	0	$\frac{15\sqrt{15015}}{9152}$	0	$-\frac{75\sqrt{1001}}{9152}$	0	$\frac{19\sqrt{5005}}{9152}$	0	
		0	0	0	0	0	0	$\frac{19\sqrt{5005}}{9152}$	0	$-\frac{75\sqrt{1001}}{9152}$	0	$\frac{15\sqrt{15015}}{9152}$	0	$-\frac{19\sqrt{715}}{9152}$	
		0	0	0	0	0	$\frac{\sqrt{429}}{832}$	0	$-\frac{57\sqrt{1001}}{9152}$	0	$\frac{15\sqrt{15015}}{9152}$	0	$-\frac{15\sqrt{3003}}{9152}$	0	
		0	0	0	0	0	0	$-\frac{\sqrt{1001}}{832}$	0	$\frac{19\sqrt{5005}}{9152}$	0	$-\frac{15\sqrt{3003}}{9152}$	0	$\frac{15\sqrt{143}}{9152}$	
		0	0	0	0	0	$\frac{\sqrt{1001}}{64}$	0	$\frac{\sqrt{429}}{832}$	0	$-\frac{19\sqrt{715}}{9152}$	0	$\frac{15\sqrt{143}}{9152}$	0	
1002	symmetry	$-\frac{\sqrt{42}y(x-z)(x+z)(15x^4-80x^2y^2+30x^2z^2+48y^4-80y^2z^2+15z^4)}{32}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{M}_{7,2}^{(1,-1;a)}(T_{2g}, 2)$		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	$\frac{15\sqrt{143}i}{9152}$	0	$\frac{19\sqrt{715}i}{9152}$	0	$\frac{\sqrt{429}i}{832}$	0	$-\frac{\sqrt{1001}i}{64}$	
		0	0	0	0	0	0	$-\frac{15\sqrt{143}i}{9152}$	$-\frac{15\sqrt{3003}i}{9152}$	0	$-\frac{19\sqrt{5005}i}{9152}$	0	$-\frac{\sqrt{1001}i}{832}$	0	
		0	0	0	0	0	0	$\frac{15\sqrt{3003}i}{9152}$	0	$\frac{15\sqrt{15015}i}{9152}$	0	$\frac{57\sqrt{1001}i}{9152}$	0	$\frac{\sqrt{429}i}{832}$	
		0	0	0	0	0	0	$-\frac{19\sqrt{715}i}{9152}$	$-\frac{15\sqrt{15015}i}{9152}$	0	$-\frac{75\sqrt{1001}i}{9152}$	0	$-\frac{19\sqrt{5005}i}{9152}$	0	
		0	0	0	0	0	0	$\frac{19\sqrt{5005}i}{9152}$	0	$\frac{75\sqrt{1001}i}{9152}$	0	$\frac{15\sqrt{15015}i}{9152}$	0	$\frac{19\sqrt{715}i}{9152}$	
		0	0	0	0	0	0	$-\frac{\sqrt{429}i}{832}$	$-\frac{57\sqrt{1001}i}{9152}$	0	$-\frac{15\sqrt{15015}i}{9152}$	0	$-\frac{15\sqrt{3003}i}{9152}$	0	
		0	0	0	0	0	0	$\frac{\sqrt{1001}i}{832}$	0	$\frac{19\sqrt{5005}i}{9152}$	0	$\frac{15\sqrt{3003}i}{9152}$	0	$\frac{15\sqrt{143}i}{9152}$	
		0	0	0	0	0	0	$\frac{\sqrt{1001}i}{64}$	0	$-\frac{\sqrt{429}i}{832}$	0	$-\frac{19\sqrt{715}i}{9152}$	0	$-\frac{15\sqrt{143}i}{9152}$	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													
$\mathbb{M}_{7,3}^{(1,-1;a)}(T_{2g}, 2)$		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	$-\frac{\sqrt{15015}}{286}$	0	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	$x$													

*continued ...*

Table 10

No.	multipole	matrix													
$M_{1,1}^{(1,1;a)}(T_{1g})$		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	$\frac{\sqrt{210}}{392}$	0	$-\frac{3\sqrt{10}}{56}$	0
		$\frac{3\sqrt{10}}{56}$	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
1005	symmetry	$y$													

*continued ...*

Table 10

No.	multipole	matrix													
$M_{1,2}^{(1,1;a)}(T_{1g})$		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	$\frac{3\sqrt{10}i}{56}$	0
		$-\frac{3\sqrt{10}i}{56}$	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	0	$-\frac{5\sqrt{7}i}{98}$	0	$\frac{2\sqrt{105}i}{147}$	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	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	0	$-\frac{\sqrt{15}i}{42}$	0
1006	symmetry	$z$													

*continued ...*



Table 10

No.	multipole	matrix													
$M_{1,3}^{(1,1;a)}(T_{1g})$		$\frac{2\sqrt{105}}{49}$	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	$\frac{\sqrt{105}}{42}$
1007	symmetry	$\sqrt{15}xyz$													

*continued ...*

Table 10

No.	multipole	matrix														
$\mathbb{M}_3^{(1,1;a)}(A_{2g})$		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	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	
	1008	symmetry	$\frac{x(2x^2-3y^2-3z^2)}{2}$													

*continued ...*

Table 10

No.	multipole	matrix													
$M_{3,1}^{(1,1;a)}(T_{1g})$		0	$\frac{\sqrt{385}}{98}$	0	$-\frac{5\sqrt{770}}{588}$	0	0	$\frac{\sqrt{66}}{112}$	0	$-\frac{3\sqrt{154}}{392}$	0	$\frac{\sqrt{2310}}{784}$	0	0	0
		$\frac{\sqrt{385}}{98}$	0	$-\frac{\sqrt{154}}{196}$	0	$-\frac{5\sqrt{77}}{147}$	0	0	$-\frac{\sqrt{2310}}{784}$	0	$-\frac{\sqrt{462}}{392}$	0	$\frac{3\sqrt{770}}{784}$	0	0
		0	$-\frac{\sqrt{154}}{196}$	0	$-\frac{\sqrt{77}}{49}$	0	$-\frac{5\sqrt{770}}{588}$	$-\frac{\sqrt{165}}{112}$	0	$-\frac{3\sqrt{385}}{784}$	0	$\frac{\sqrt{231}}{784}$	0	$\frac{3\sqrt{1155}}{784}$	0
		$-\frac{5\sqrt{770}}{588}$	0	$-\frac{\sqrt{77}}{49}$	0	$-\frac{\sqrt{154}}{196}$	0	0	$-\frac{3\sqrt{1155}}{784}$	0	$-\frac{\sqrt{231}}{784}$	0	$\frac{3\sqrt{385}}{784}$	0	$\frac{\sqrt{165}}{112}$
		0	$-\frac{5\sqrt{77}}{147}$	0	$-\frac{\sqrt{154}}{196}$	0	$\frac{\sqrt{385}}{98}$	0	0	$-\frac{3\sqrt{770}}{784}$	0	$\frac{\sqrt{462}}{392}$	0	$\frac{\sqrt{2310}}{784}$	0
		0	0	$-\frac{5\sqrt{770}}{588}$	0	$\frac{\sqrt{385}}{98}$	0	0	0	0	$-\frac{\sqrt{2310}}{784}$	0	$\frac{3\sqrt{154}}{392}$	0	$-\frac{\sqrt{66}}{112}$
		$\frac{\sqrt{66}}{112}$	0	$-\frac{\sqrt{165}}{112}$	0	0	0	0	$-\frac{3\sqrt{11}}{154}$	0	$\frac{\sqrt{55}}{154}$	0	0	0	0
		0	$-\frac{\sqrt{2310}}{784}$	0	$-\frac{3\sqrt{1155}}{784}$	0	0	$-\frac{3\sqrt{11}}{154}$	0	$-\frac{\sqrt{231}}{1078}$	0	$\frac{2\sqrt{385}}{539}$	0	0	0
		$-\frac{3\sqrt{154}}{392}$	0	$-\frac{3\sqrt{385}}{784}$	0	$-\frac{3\sqrt{770}}{784}$	0	0	$-\frac{\sqrt{231}}{1078}$	0	$\frac{\sqrt{1155}}{1078}$	0	$\frac{5\sqrt{77}}{539}$	0	0
		0	$-\frac{\sqrt{462}}{392}$	0	$-\frac{\sqrt{231}}{784}$	0	$-\frac{\sqrt{2310}}{784}$	$\frac{\sqrt{55}}{154}$	0	$\frac{\sqrt{1155}}{1078}$	0	$\frac{3\sqrt{77}}{539}$	0	$\frac{2\sqrt{385}}{539}$	0
		$\frac{\sqrt{2310}}{784}$	0	$\frac{\sqrt{231}}{784}$	0	$\frac{\sqrt{462}}{392}$	0	0	$\frac{2\sqrt{385}}{539}$	0	$\frac{3\sqrt{77}}{539}$	0	$\frac{\sqrt{1155}}{1078}$	0	$\frac{\sqrt{55}}{154}$
		0	$\frac{3\sqrt{770}}{784}$	0	$\frac{3\sqrt{385}}{784}$	0	$\frac{3\sqrt{154}}{392}$	0	0	$\frac{5\sqrt{77}}{539}$	0	$\frac{\sqrt{1155}}{1078}$	0	$-\frac{\sqrt{231}}{1078}$	0
		0	0	$\frac{3\sqrt{1155}}{784}$	0	$\frac{\sqrt{2310}}{784}$	0	0	0	0	$\frac{2\sqrt{385}}{539}$	0	$-\frac{\sqrt{231}}{1078}$	0	$-\frac{3\sqrt{11}}{154}$
		0	0	0	$\frac{\sqrt{165}}{112}$	0	$-\frac{\sqrt{66}}{112}$	0	0	0	0	$\frac{\sqrt{55}}{154}$	0	$-\frac{3\sqrt{11}}{154}$	0
1009	symmetry	$-\frac{y(3x^2-2y^2+3z^2)}{2}$													

*continued ...*

Table 10

No.	multipole	matrix													
$M_{3,2}^{(1,1;a)}(T_{1g})$		0	$-\frac{\sqrt{385}i}{98}$	0	$-\frac{5\sqrt{770}i}{588}$	0	0	$\frac{\sqrt{66}i}{112}$	0	$\frac{3\sqrt{154}i}{392}$	0	$\frac{\sqrt{2310}i}{784}$	0	0	0
		$\frac{\sqrt{385}i}{98}$	0	$\frac{\sqrt{154}i}{196}$	0	$-\frac{5\sqrt{77}i}{147}$	0	0	$-\frac{\sqrt{2310}i}{784}$	0	$\frac{\sqrt{462}i}{392}$	0	$\frac{3\sqrt{770}i}{784}$	0	0
		0	$-\frac{\sqrt{154}i}{196}$	0	$\frac{\sqrt{77}i}{49}$	0	$-\frac{5\sqrt{770}i}{588}$	$\frac{\sqrt{165}i}{112}$	0	$-\frac{3\sqrt{385}i}{784}$	0	$-\frac{\sqrt{231}i}{784}$	0	$\frac{3\sqrt{1155}i}{784}$	0
		$\frac{5\sqrt{770}i}{588}$	0	$-\frac{\sqrt{77}i}{49}$	0	$\frac{\sqrt{154}i}{196}$	0	0	$\frac{3\sqrt{1155}i}{784}$	0	$-\frac{\sqrt{231}i}{784}$	0	$-\frac{3\sqrt{385}i}{784}$	0	$\frac{\sqrt{165}i}{112}$
		0	$\frac{5\sqrt{77}i}{147}$	0	$-\frac{\sqrt{154}i}{196}$	0	$-\frac{\sqrt{385}i}{98}$	0	0	$\frac{3\sqrt{770}i}{784}$	0	$\frac{\sqrt{462}i}{392}$	0	$-\frac{\sqrt{2310}i}{784}$	0
		0	0	$\frac{5\sqrt{770}i}{588}$	0	$\frac{\sqrt{385}i}{98}$	0	0	0	0	$\frac{\sqrt{2310}i}{784}$	0	$\frac{3\sqrt{154}i}{392}$	0	$\frac{\sqrt{66}i}{112}$
		$-\frac{\sqrt{66}i}{112}$	0	$-\frac{\sqrt{165}i}{112}$	0	0	0	0	$\frac{3\sqrt{11}i}{154}$	0	$\frac{\sqrt{55}i}{154}$	0	0	0	0
		0	$\frac{\sqrt{2310}i}{784}$	0	$-\frac{3\sqrt{1155}i}{784}$	0	0	$-\frac{3\sqrt{11}i}{154}$	0	$\frac{\sqrt{231}i}{1078}$	0	$\frac{2\sqrt{385}i}{539}$	0	0	0
		$-\frac{3\sqrt{154}i}{392}$	0	$\frac{3\sqrt{385}i}{784}$	0	$-\frac{3\sqrt{770}i}{784}$	0	0	$-\frac{\sqrt{231}i}{1078}$	0	$-\frac{\sqrt{1155}i}{1078}$	0	$\frac{5\sqrt{77}i}{539}$	0	0
		0	$-\frac{\sqrt{462}i}{392}$	0	$\frac{\sqrt{231}i}{784}$	0	$-\frac{\sqrt{2310}i}{784}$	$-\frac{\sqrt{55}i}{154}$	0	$\frac{\sqrt{1155}i}{1078}$	0	$-\frac{3\sqrt{77}i}{539}$	0	$\frac{2\sqrt{385}i}{539}$	0
		$-\frac{\sqrt{2310}i}{784}$	0	$\frac{\sqrt{231}i}{784}$	0	$-\frac{\sqrt{462}i}{392}$	0	0	$-\frac{2\sqrt{385}i}{539}$	0	$\frac{3\sqrt{77}i}{539}$	0	$-\frac{\sqrt{1155}i}{1078}$	0	$\frac{\sqrt{55}i}{154}$
		0	$-\frac{3\sqrt{770}i}{784}$	0	$\frac{3\sqrt{385}i}{784}$	0	$-\frac{3\sqrt{154}i}{392}$	0	0	$-\frac{5\sqrt{77}i}{539}$	0	$\frac{\sqrt{1155}i}{1078}$	0	$\frac{\sqrt{231}i}{1078}$	0
		0	0	$-\frac{3\sqrt{1155}i}{784}$	0	$\frac{\sqrt{2310}i}{784}$	0	0	0	$-\frac{2\sqrt{385}i}{539}$	0	$-\frac{\sqrt{231}i}{1078}$	0	$\frac{3\sqrt{11}i}{154}$	0
		0	0	0	$-\frac{\sqrt{165}i}{112}$	0	$-\frac{\sqrt{66}i}{112}$	0	0	0	0	$-\frac{\sqrt{55}i}{154}$	0	$-\frac{3\sqrt{11}i}{154}$	0
1010	symmetry	$-\frac{z(3x^2+3y^2-2z^2)}{2}$													

*continued ...*

Table 10

No.	multipole	matrix													
$M_{3,3}^{(1,1;a)}(T_{1g})$		$-\frac{5\sqrt{77}}{147}$	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	$-\frac{\sqrt{77}}{77}$
1011	symmetry	$\frac{\sqrt{15}x(y-z)(y+z)}{2}$													

*continued ...*

Table 10

No.	multipole	matrix													
$M_{3,1}^{(1,1;a)}(T_{2g})$		0	$\frac{5\sqrt{231}}{294}$	0	$\frac{5\sqrt{462}}{588}$	0	0	$\frac{\sqrt{110}}{112}$	0	$-\frac{\sqrt{2310}}{392}$	0	$-\frac{3\sqrt{154}}{784}$	0	0	0
		$\frac{5\sqrt{231}}{294}$	0	$-\frac{\sqrt{2310}}{588}$	0	$\frac{\sqrt{1155}}{147}$	0	0	$-\frac{5\sqrt{154}}{784}$	0	$-\frac{\sqrt{770}}{392}$	0	$-\frac{3\sqrt{462}}{784}$	0	0
		0	$-\frac{\sqrt{2310}}{588}$	0	$-\frac{\sqrt{1155}}{147}$	0	$\frac{5\sqrt{462}}{588}$	$\frac{3\sqrt{11}}{112}$	0	$-\frac{5\sqrt{231}}{784}$	0	$\frac{\sqrt{385}}{784}$	0	$-\frac{9\sqrt{77}}{784}$	0
		$\frac{5\sqrt{462}}{588}$	0	$-\frac{\sqrt{1155}}{147}$	0	$-\frac{\sqrt{2310}}{588}$	0	0	$\frac{9\sqrt{77}}{784}$	0	$-\frac{\sqrt{385}}{784}$	0	$\frac{5\sqrt{231}}{784}$	0	$-\frac{3\sqrt{11}}{112}$
		0	$\frac{\sqrt{1155}}{147}$	0	$-\frac{\sqrt{2310}}{588}$	0	$\frac{5\sqrt{231}}{294}$	0	0	$\frac{3\sqrt{462}}{784}$	0	$\frac{\sqrt{770}}{392}$	0	$\frac{5\sqrt{154}}{784}$	0
		0	0	$\frac{5\sqrt{462}}{588}$	0	$\frac{5\sqrt{231}}{294}$	0	0	0	$\frac{3\sqrt{154}}{784}$	0	$\frac{\sqrt{2310}}{392}$	0	$-\frac{\sqrt{110}}{112}$	
		$\frac{\sqrt{110}}{112}$	0	$\frac{3\sqrt{11}}{112}$	0	0	0	0	$-\frac{\sqrt{165}}{154}$	0	$-\frac{\sqrt{33}}{154}$	0	0	0	0
		0	$-\frac{5\sqrt{154}}{784}$	0	$\frac{9\sqrt{77}}{784}$	0	0	$-\frac{\sqrt{165}}{154}$	0	$-\frac{\sqrt{385}}{1078}$	0	$-\frac{2\sqrt{231}}{539}$	0	0	0
		$-\frac{\sqrt{2310}}{392}$	0	$-\frac{5\sqrt{231}}{784}$	0	$\frac{3\sqrt{462}}{784}$	0	0	$-\frac{\sqrt{385}}{1078}$	0	$\frac{5\sqrt{77}}{1078}$	0	$-\frac{\sqrt{1155}}{539}$	0	0
		0	$-\frac{\sqrt{770}}{392}$	0	$-\frac{\sqrt{385}}{784}$	0	$\frac{3\sqrt{154}}{784}$	$-\frac{\sqrt{33}}{154}$	0	$\frac{5\sqrt{77}}{1078}$	0	$\frac{\sqrt{1155}}{539}$	0	$-\frac{2\sqrt{231}}{539}$	0
		$-\frac{3\sqrt{154}}{784}$	0	$\frac{\sqrt{385}}{784}$	0	$\frac{\sqrt{770}}{392}$	0	0	$-\frac{2\sqrt{231}}{539}$	0	$\frac{\sqrt{1155}}{539}$	0	$\frac{5\sqrt{77}}{1078}$	0	$-\frac{\sqrt{33}}{154}$
		0	$-\frac{3\sqrt{462}}{784}$	0	$\frac{5\sqrt{231}}{784}$	0	$\frac{\sqrt{2310}}{392}$	0	0	$-\frac{\sqrt{1155}}{539}$	0	$\frac{5\sqrt{77}}{1078}$	0	$-\frac{\sqrt{385}}{1078}$	0
		0	0	$-\frac{9\sqrt{77}}{784}$	0	$\frac{5\sqrt{154}}{784}$	0	0	0	$-\frac{2\sqrt{231}}{539}$	0	$-\frac{\sqrt{385}}{1078}$	0	$-\frac{\sqrt{165}}{154}$	
		0	0	0	$-\frac{3\sqrt{11}}{112}$	0	$-\frac{\sqrt{110}}{112}$	0	0	0	0	$-\frac{\sqrt{33}}{154}$	0	$-\frac{\sqrt{165}}{154}$	0
1012	symmetry	$-\frac{\sqrt{15}y(x-z)(x+z)}{2}$													

*continued ...*

Table 10

No.	multipole	matrix													
$M_{3,2}^{(1,1;a)}(T_{2g})$		0	$\frac{5\sqrt{231}i}{294}$	0	$-\frac{5\sqrt{462}i}{588}$	0	0	$-\frac{\sqrt{110}i}{112}$	0	$-\frac{\sqrt{2310}i}{392}$	0	$\frac{3\sqrt{154}i}{784}$	0	0	0
		$-\frac{5\sqrt{231}i}{294}$	0	$-\frac{\sqrt{2310}i}{588}$	0	$-\frac{\sqrt{1155}i}{147}$	0	0	$\frac{5\sqrt{154}i}{784}$	0	$-\frac{\sqrt{770}i}{392}$	0	$\frac{3\sqrt{462}i}{784}$	0	0
		0	$\frac{\sqrt{2310}i}{588}$	0	$-\frac{\sqrt{1155}i}{147}$	0	$-\frac{5\sqrt{462}i}{588}$	$\frac{3\sqrt{11}i}{112}$	0	$\frac{5\sqrt{231}i}{784}$	0	$\frac{\sqrt{385}i}{784}$	0	$\frac{9\sqrt{77}i}{784}$	0
		$\frac{5\sqrt{462}i}{588}$	0	$\frac{\sqrt{1155}i}{147}$	0	$-\frac{\sqrt{2310}i}{588}$	0	0	$\frac{9\sqrt{77}i}{784}$	0	$\frac{\sqrt{385}i}{784}$	0	$\frac{5\sqrt{231}i}{784}$	0	$\frac{3\sqrt{11}i}{112}$
		0	$\frac{\sqrt{1155}i}{147}$	0	$\frac{\sqrt{2310}i}{588}$	0	$\frac{5\sqrt{231}i}{294}$	0	0	$\frac{3\sqrt{462}i}{784}$	0	$-\frac{\sqrt{770}i}{392}$	0	$\frac{5\sqrt{154}i}{784}$	0
		0	0	$\frac{5\sqrt{462}i}{588}$	0	$-\frac{5\sqrt{231}i}{294}$	0	0	0	0	$\frac{3\sqrt{154}i}{784}$	0	$-\frac{\sqrt{2310}i}{392}$	0	$-\frac{\sqrt{110}i}{112}$
		$\frac{\sqrt{110}i}{112}$	0	$-\frac{3\sqrt{11}i}{112}$	0	0	0	0	$-\frac{\sqrt{165}i}{154}$	0	$\frac{\sqrt{33}i}{154}$	0	0	0	0
		0	$-\frac{5\sqrt{154}i}{784}$	0	$-\frac{9\sqrt{77}i}{784}$	0	0	$\frac{\sqrt{165}i}{154}$	0	$-\frac{\sqrt{385}i}{1078}$	0	$\frac{2\sqrt{231}i}{539}$	0	0	0
		$\frac{\sqrt{2310}i}{392}$	0	$-\frac{5\sqrt{231}i}{784}$	0	$-\frac{3\sqrt{462}i}{784}$	0	0	$\frac{\sqrt{385}i}{1078}$	0	$\frac{5\sqrt{77}i}{1078}$	0	$\frac{\sqrt{1155}i}{539}$	0	0
		0	$\frac{\sqrt{770}i}{392}$	0	$-\frac{\sqrt{385}i}{784}$	0	$-\frac{3\sqrt{154}i}{784}$	$-\frac{\sqrt{33}i}{154}$	0	$-\frac{5\sqrt{77}i}{1078}$	0	$\frac{\sqrt{1155}i}{539}$	0	$\frac{2\sqrt{231}i}{539}$	0
		$-\frac{3\sqrt{154}i}{784}$	0	$-\frac{\sqrt{385}i}{784}$	0	$\frac{\sqrt{770}i}{392}$	0	0	$-\frac{2\sqrt{231}i}{539}$	0	$-\frac{\sqrt{1155}i}{539}$	0	$\frac{5\sqrt{77}i}{1078}$	0	$\frac{\sqrt{33}i}{154}$
		0	$-\frac{3\sqrt{462}i}{784}$	0	$-\frac{5\sqrt{231}i}{784}$	0	$\frac{\sqrt{2310}i}{392}$	0	0	$-\frac{\sqrt{1155}i}{539}$	0	$-\frac{5\sqrt{77}i}{1078}$	0	$-\frac{\sqrt{385}i}{1078}$	0
		0	0	$-\frac{9\sqrt{77}i}{784}$	0	$-\frac{5\sqrt{154}i}{784}$	0	0	0	0	$-\frac{2\sqrt{231}i}{539}$	0	$\frac{\sqrt{385}i}{1078}$	0	$-\frac{\sqrt{165}i}{154}$
		0	0	0	$-\frac{3\sqrt{11}i}{112}$	0	$\frac{\sqrt{110}i}{112}$	0	0	0	0	$-\frac{\sqrt{33}i}{154}$	0	$\frac{\sqrt{165}i}{154}$	0
1013	symmetry	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$													

continued ...

Table 10

No.	multipole	matrix													
$M_{3,3}^{(1,1;a)}(T_{2g})$		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	0	$-\frac{2\sqrt{77}}{539}$	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	$\frac{3\sqrt{35}xyz(x-y)(x+y)}{2}$													

*continued ...*



Table 10

No.	multipole	matrix													
$\mathbb{M}_{5,1}^{(1,1;a)}(E_g)$		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
1015	symmetry	$\frac{\sqrt{105}xyz(x^2+y^2-2z^2)}{2}$													

*continued ...*

Table 10

No.	multipole	matrix												
$\mathbb{M}_{5,2}^{(1,1;a)}(E_g)$		0	0	$\frac{\sqrt{858}i}{154}$	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
		$-\frac{\sqrt{858}i}{154}$	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	$\frac{\sqrt{4290}i}{154}$	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	$-\frac{\sqrt{4290}i}{154}$	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	$\frac{5\sqrt{286}i}{924}$	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	$-\frac{2\sqrt{143}i}{231}$	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
		$\frac{5\sqrt{286}i}{924}$	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	$-\frac{\sqrt{1430}i}{462}$	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	$-\frac{\sqrt{429}i}{462}$	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	$\frac{3\sqrt{429}i}{2002}$	0	0	0
		0	0	0	0	$-\frac{\sqrt{2002}i}{924}$	0	0	0	0	0	$-\frac{\sqrt{5005}i}{2002}$	0	0
1016	symmetry	$\frac{x(8x^4 - 40x^2y^2 - 40x^2z^2 + 15y^4 + 30y^2z^2 + 15z^4)}{8}$												

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{M}_{5,1}^{(1,1;a)}(T_{1g},1)$		0	$\frac{3\sqrt{5005}}{4312}$	0	$-\frac{\sqrt{10010}}{616}$	0	$\frac{9\sqrt{1001}}{616}$	$\frac{5\sqrt{858}}{14784}$	0	$-\frac{25\sqrt{2002}}{34496}$	0	$\frac{5\sqrt{30030}}{14784}$	0	$-\frac{5\sqrt{6006}}{4928}$	0
		$\frac{3\sqrt{5005}}{4312}$	0	$-\frac{15\sqrt{2002}}{4312}$	0	$\frac{5\sqrt{1001}}{616}$	0	0	$-\frac{23\sqrt{30030}}{103488}$	0	$\frac{65\sqrt{6006}}{103488}$	0	$-\frac{\sqrt{10010}}{4928}$	0	$-\frac{\sqrt{4290}}{704}$
		0	$-\frac{15\sqrt{2002}}{4312}$	0	$\frac{15\sqrt{1001}}{2156}$	0	$-\frac{\sqrt{10010}}{616}$	$-\frac{\sqrt{2145}}{1056}$	0	$\frac{\sqrt{5005}}{1568}$	0	$-\frac{5\sqrt{3003}}{51744}$	0	$-\frac{\sqrt{15015}}{2464}$	0
		$-\frac{\sqrt{10010}}{616}$	0	$\frac{15\sqrt{1001}}{2156}$	0	$-\frac{15\sqrt{2002}}{4312}$	0	0	$\frac{\sqrt{15015}}{2464}$	0	$\frac{5\sqrt{3003}}{51744}$	0	$-\frac{\sqrt{5005}}{1568}$	0	$\frac{\sqrt{2145}}{1056}$
		0	$\frac{5\sqrt{1001}}{616}$	0	$-\frac{15\sqrt{2002}}{4312}$	0	$\frac{3\sqrt{5005}}{4312}$	$\frac{\sqrt{4290}}{704}$	0	$\frac{\sqrt{10010}}{4928}$	0	$-\frac{65\sqrt{6006}}{103488}$	0	$\frac{23\sqrt{30030}}{103488}$	0
		$\frac{9\sqrt{1001}}{616}$	0	$-\frac{\sqrt{10010}}{616}$	0	$\frac{3\sqrt{5005}}{4312}$	0	0	$\frac{5\sqrt{6006}}{4928}$	0	$-\frac{5\sqrt{30030}}{14784}$	0	$\frac{25\sqrt{2002}}{34496}$	0	$-\frac{5\sqrt{858}}{14784}$
		$\frac{5\sqrt{858}}{14784}$	0	$-\frac{\sqrt{2145}}{1056}$	0	$\frac{\sqrt{4290}}{704}$	0	0	$-\frac{15\sqrt{143}}{16016}$	0	$\frac{\sqrt{715}}{1144}$	0	$-\frac{3\sqrt{429}}{2288}$	0	0
		0	$-\frac{23\sqrt{30030}}{103488}$	0	$\frac{\sqrt{15015}}{2464}$	0	$\frac{5\sqrt{6006}}{4928}$	$-\frac{15\sqrt{143}}{16016}$	0	$\frac{5\sqrt{3003}}{14014}$	0	$-\frac{\sqrt{5005}}{16016}$	0	$-\frac{9\sqrt{1001}}{8008}$	0
		$-\frac{25\sqrt{2002}}{34496}$	0	$\frac{\sqrt{5005}}{1568}$	0	$\frac{\sqrt{10010}}{4928}$	0	0	$\frac{5\sqrt{3003}}{14014}$	0	$-\frac{\sqrt{15015}}{112112}$	0	$-\frac{5\sqrt{1001}}{8008}$	0	$-\frac{3\sqrt{429}}{2288}$
		0	$\frac{65\sqrt{6006}}{103488}$	0	$\frac{5\sqrt{3003}}{51744}$	0	$-\frac{5\sqrt{30030}}{14784}$	$\frac{\sqrt{715}}{1144}$	0	$-\frac{\sqrt{15015}}{112112}$	0	$-\frac{15\sqrt{1001}}{28028}$	0	$-\frac{\sqrt{5005}}{16016}$	0
		$\frac{5\sqrt{30030}}{14784}$	0	$-\frac{5\sqrt{3003}}{51744}$	0	$-\frac{65\sqrt{6006}}{103488}$	0	0	$-\frac{\sqrt{5005}}{16016}$	0	$-\frac{15\sqrt{1001}}{28028}$	0	$-\frac{\sqrt{15015}}{112112}$	0	$\frac{\sqrt{715}}{1144}$
		0	$-\frac{\sqrt{10010}}{4928}$	0	$-\frac{\sqrt{5005}}{1568}$	0	$\frac{25\sqrt{2002}}{34496}$	$-\frac{3\sqrt{429}}{2288}$	0	$-\frac{5\sqrt{1001}}{8008}$	0	$-\frac{\sqrt{15015}}{112112}$	0	$\frac{5\sqrt{3003}}{14014}$	0
		$-\frac{5\sqrt{6006}}{4928}$	0	$-\frac{\sqrt{15015}}{2464}$	0	$\frac{23\sqrt{30030}}{103488}$	0	0	$-\frac{9\sqrt{1001}}{8008}$	0	$-\frac{\sqrt{5005}}{16016}$	0	$\frac{5\sqrt{3003}}{14014}$	0	$-\frac{15\sqrt{143}}{16016}$
		0	$-\frac{\sqrt{4290}}{704}$	0	$\frac{\sqrt{2145}}{1056}$	0	$-\frac{5\sqrt{858}}{14784}$	0	0	$-\frac{3\sqrt{429}}{2288}$	0	$\frac{\sqrt{715}}{1144}$	0	$-\frac{15\sqrt{143}}{16016}$	0
1017	symmetry	$\frac{y(15x^4-40x^2y^2+30x^2z^2+8y^4-40y^2z^2+15z^4)}{8}$													

continued ...

Table 10

No.	multipole	matrix													
$\mathbb{M}_{5,2}^{(1,1;a)}(T_{1g},1)$		0	$-\frac{3\sqrt{5005}i}{4312}$	0	$-\frac{\sqrt{10010}i}{616}$	0	$-\frac{9\sqrt{1001}i}{616}$	$\frac{5\sqrt{858}i}{14784}$	0	$\frac{25\sqrt{2002}i}{34496}$	0	$\frac{5\sqrt{30030}i}{14784}$	0	$\frac{5\sqrt{6006}i}{4928}$	0
		$\frac{3\sqrt{5005}i}{4312}$	0	$\frac{15\sqrt{2002}i}{4312}$	0	$\frac{5\sqrt{1001}i}{616}$	0	0	$-\frac{23\sqrt{30030}i}{103488}$	0	$-\frac{65\sqrt{6006}i}{103488}$	0	$-\frac{\sqrt{10010}i}{4928}$	0	$\frac{\sqrt{4290}i}{704}$
		0	$-\frac{15\sqrt{2002}i}{4312}$	0	$-\frac{15\sqrt{1001}i}{2156}$	0	$-\frac{\sqrt{10010}i}{616}$	$\frac{\sqrt{2145}i}{1056}$	0	$\frac{\sqrt{5005}i}{1568}$	0	$\frac{5\sqrt{3003}i}{51744}$	0	$-\frac{\sqrt{15015}i}{2464}$	0
		$\frac{\sqrt{10010}i}{616}$	0	$\frac{15\sqrt{1001}i}{2156}$	0	$\frac{15\sqrt{2002}i}{4312}$	0	0	$-\frac{\sqrt{15015}i}{2464}$	0	$\frac{5\sqrt{3003}i}{51744}$	0	$\frac{\sqrt{5005}i}{1568}$	0	$\frac{\sqrt{2145}i}{1056}$
		0	$-\frac{5\sqrt{1001}i}{616}$	0	$-\frac{15\sqrt{2002}i}{4312}$	0	$-\frac{3\sqrt{5005}i}{4312}$	$\frac{\sqrt{4290}i}{704}$	0	$-\frac{\sqrt{10010}i}{4928}$	0	$-\frac{65\sqrt{6006}i}{103488}$	0	$-\frac{23\sqrt{30030}i}{103488}$	0
		$\frac{9\sqrt{1001}i}{616}$	0	$\frac{\sqrt{10010}i}{616}$	0	$\frac{3\sqrt{5005}i}{4312}$	0	0	$\frac{5\sqrt{6006}i}{4928}$	0	$\frac{5\sqrt{30030}i}{14784}$	0	$\frac{25\sqrt{2002}i}{34496}$	0	$\frac{5\sqrt{858}i}{14784}$
		$-\frac{5\sqrt{858}i}{14784}$	0	$-\frac{\sqrt{2145}i}{1056}$	0	$-\frac{\sqrt{4290}i}{704}$	0	0	$\frac{15\sqrt{143}i}{16016}$	0	$\frac{\sqrt{715}i}{1144}$	0	$\frac{3\sqrt{429}i}{2288}$	0	0
		0	$\frac{23\sqrt{30030}i}{103488}$	0	$\frac{\sqrt{15015}i}{2464}$	0	$-\frac{5\sqrt{6006}i}{4928}$	$-\frac{15\sqrt{143}i}{16016}$	0	$-\frac{5\sqrt{3003}i}{14014}$	0	$-\frac{\sqrt{5005}i}{16016}$	0	$\frac{9\sqrt{1001}i}{8008}$	0
		$-\frac{25\sqrt{2002}i}{34496}$	0	$-\frac{\sqrt{5005}i}{1568}$	0	$\frac{\sqrt{10010}i}{4928}$	0	0	$\frac{5\sqrt{3003}i}{14014}$	0	$\frac{\sqrt{15015}i}{112112}$	0	$-\frac{5\sqrt{1001}i}{8008}$	0	$\frac{3\sqrt{429}i}{2288}$
		0	$\frac{65\sqrt{6006}i}{103488}$	0	$-\frac{5\sqrt{3003}i}{51744}$	0	$-\frac{5\sqrt{30030}i}{14784}$	$-\frac{\sqrt{715}i}{1144}$	0	$-\frac{\sqrt{15015}i}{112112}$	0	$\frac{15\sqrt{1001}i}{28028}$	0	$-\frac{\sqrt{5005}i}{16016}$	0
		$-\frac{5\sqrt{30030}i}{14784}$	0	$-\frac{5\sqrt{3003}i}{51744}$	0	$\frac{65\sqrt{6006}i}{103488}$	0	0	$\frac{\sqrt{5005}i}{16016}$	0	$-\frac{15\sqrt{1001}i}{28028}$	0	$\frac{\sqrt{15015}i}{112112}$	0	$\frac{\sqrt{715}i}{1144}$
		0	$\frac{\sqrt{10010}i}{4928}$	0	$-\frac{\sqrt{5005}i}{1568}$	0	$-\frac{25\sqrt{2002}i}{34496}$	$-\frac{3\sqrt{429}i}{2288}$	0	$\frac{5\sqrt{1001}i}{8008}$	0	$-\frac{\sqrt{15015}i}{112112}$	0	$-\frac{5\sqrt{3003}i}{14014}$	0
		$-\frac{5\sqrt{6006}i}{4928}$	0	$\frac{\sqrt{15015}i}{2464}$	0	$\frac{23\sqrt{30030}i}{103488}$	0	0	$-\frac{9\sqrt{1001}i}{8008}$	0	$\frac{\sqrt{5005}i}{16016}$	0	$\frac{5\sqrt{3003}i}{14014}$	0	$\frac{15\sqrt{143}i}{16016}$
		0	$-\frac{\sqrt{4290}i}{704}$	0	$-\frac{\sqrt{2145}i}{1056}$	0	$-\frac{5\sqrt{858}i}{14784}$	0	0	$-\frac{3\sqrt{429}i}{2288}$	0	$-\frac{\sqrt{715}i}{1144}$	0	$-\frac{15\sqrt{143}i}{16016}$	0
1018	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												
$\mathbb{M}_{5,3}^{(1,1;a)}(T_{1g}, 1)$		$\frac{\sqrt{1001}}{539}$	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	0	$\frac{15\sqrt{1001}}{14014}$	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	$-\frac{5\sqrt{6006}}{6468}$	0	0	0	0	0	$-\frac{23\sqrt{1001}}{14014}$	0
		0	0	0	0	0	0	0	0	0	0	0	0	$\frac{\sqrt{1001}}{2002}$
1019	symmetry	$\frac{3\sqrt{35}x(y^2-2yz-z^2)(y^2+2yz-z^2)}{8}$												

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{M}_{5,1}^{(1,1;a)}(T_{1g}, 2)$		0	$\frac{3\sqrt{143}}{616}$	0	$\frac{9\sqrt{286}}{616}$	0	$\frac{3\sqrt{715}}{616}$	$\frac{\sqrt{30030}}{14784}$	0	$-\frac{5\sqrt{1430}}{4928}$	0	$-\frac{15\sqrt{858}}{4928}$	0	$-\frac{5\sqrt{4290}}{14784}$	0
		$\frac{3\sqrt{143}}{616}$	0	$-\frac{3\sqrt{1430}}{616}$	0	$-\frac{9\sqrt{715}}{616}$	0	0	$-\frac{23\sqrt{858}}{14784}$	0	$\frac{13\sqrt{4290}}{14784}$	0	$\frac{9\sqrt{286}}{4928}$	0	$-\frac{5\sqrt{6006}}{14784}$
		0	$-\frac{3\sqrt{1430}}{616}$	0	$\frac{3\sqrt{715}}{308}$	0	$\frac{9\sqrt{286}}{616}$	$\frac{3\sqrt{3003}}{2464}$	0	$\frac{\sqrt{143}}{224}$	0	$-\frac{\sqrt{2145}}{7392}$	0	$\frac{9\sqrt{429}}{2464}$	0
		$\frac{9\sqrt{286}}{616}$	0	$\frac{3\sqrt{715}}{308}$	0	$-\frac{3\sqrt{1430}}{616}$	0	0	$-\frac{9\sqrt{429}}{2464}$	0	$\frac{\sqrt{2145}}{7392}$	0	$-\frac{\sqrt{143}}{224}$	0	$-\frac{3\sqrt{3003}}{2464}$
		0	$-\frac{9\sqrt{715}}{616}$	0	$-\frac{3\sqrt{1430}}{616}$	0	$\frac{3\sqrt{143}}{616}$	$\frac{5\sqrt{6006}}{14784}$	0	$-\frac{9\sqrt{286}}{4928}$	0	$-\frac{13\sqrt{4290}}{14784}$	0	$\frac{23\sqrt{858}}{14784}$	0
		$\frac{3\sqrt{715}}{616}$	0	$\frac{9\sqrt{286}}{616}$	0	$\frac{3\sqrt{143}}{616}$	0	0	$\frac{5\sqrt{4290}}{14784}$	0	$\frac{15\sqrt{858}}{4928}$	0	$\frac{5\sqrt{1430}}{4928}$	0	$-\frac{\sqrt{30030}}{14784}$
		$\frac{\sqrt{30030}}{14784}$	0	$\frac{3\sqrt{3003}}{2464}$	0	$\frac{5\sqrt{6006}}{14784}$	0	0	$-\frac{3\sqrt{5005}}{16016}$	0	$-\frac{9\sqrt{1001}}{8008}$	0	$-\frac{\sqrt{15015}}{16016}$	0	0
		0	$-\frac{23\sqrt{858}}{14784}$	0	$-\frac{9\sqrt{429}}{2464}$	0	$\frac{5\sqrt{4290}}{14784}$	$-\frac{3\sqrt{5005}}{16016}$	0	$\frac{\sqrt{2145}}{2002}$	0	$\frac{9\sqrt{143}}{16016}$	0	$-\frac{3\sqrt{715}}{8008}$	0
		$-\frac{5\sqrt{1430}}{4928}$	0	$\frac{\sqrt{143}}{224}$	0	$-\frac{9\sqrt{286}}{4928}$	0	0	$\frac{\sqrt{2145}}{2002}$	0	$-\frac{\sqrt{429}}{16016}$	0	$\frac{9\sqrt{715}}{8008}$	0	$-\frac{\sqrt{15015}}{16016}$
		0	$\frac{13\sqrt{4290}}{14784}$	0	$\frac{\sqrt{2145}}{7392}$	0	$\frac{15\sqrt{858}}{4928}$	$-\frac{9\sqrt{1001}}{8008}$	0	$-\frac{\sqrt{429}}{16016}$	0	$-\frac{3\sqrt{715}}{4004}$	0	$\frac{9\sqrt{143}}{16016}$	0
		$-\frac{15\sqrt{858}}{4928}$	0	$-\frac{\sqrt{2145}}{7392}$	0	$-\frac{13\sqrt{4290}}{14784}$	0	0	$\frac{9\sqrt{143}}{16016}$	0	$-\frac{3\sqrt{715}}{4004}$	0	$-\frac{\sqrt{429}}{16016}$	0	$-\frac{9\sqrt{1001}}{8008}$
		0	$\frac{9\sqrt{286}}{4928}$	0	$-\frac{\sqrt{143}}{224}$	0	$\frac{5\sqrt{1430}}{4928}$	$-\frac{\sqrt{15015}}{16016}$	0	$\frac{9\sqrt{715}}{8008}$	0	$-\frac{\sqrt{429}}{16016}$	0	$\frac{\sqrt{2145}}{2002}$	0
		$-\frac{5\sqrt{4290}}{14784}$	0	$\frac{9\sqrt{429}}{2464}$	0	$\frac{23\sqrt{858}}{14784}$	0	0	$-\frac{3\sqrt{715}}{8008}$	0	$\frac{9\sqrt{143}}{16016}$	0	$\frac{\sqrt{2145}}{2002}$	0	$-\frac{3\sqrt{5005}}{16016}$
		0	$-\frac{5\sqrt{6006}}{14784}$	0	$-\frac{3\sqrt{3003}}{2464}$	0	$-\frac{\sqrt{30030}}{14784}$	0	0	$-\frac{\sqrt{15015}}{16016}$	0	$-\frac{9\sqrt{1001}}{8008}$	0	$-\frac{3\sqrt{5005}}{16016}$	0
1020	symmetry	$\frac{3\sqrt{35}y(x^2-2xz-z^2)(x^2+2xz-z^2)}{8}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{M}_{5,2}^{(1,1;a)}(T_{1g}, 2)$		0	$-\frac{3\sqrt{143i}}{616}$	0	$\frac{9\sqrt{286i}}{616}$	0	$-\frac{3\sqrt{715i}}{616}$	$\frac{\sqrt{30030i}}{14784}$	0	$\frac{5\sqrt{1430i}}{4928}$	0	$-\frac{15\sqrt{858i}}{4928}$	0	$\frac{5\sqrt{4290i}}{14784}$	0
		$\frac{3\sqrt{143i}}{616}$	0	$\frac{3\sqrt{1430i}}{616}$	0	$-\frac{9\sqrt{715i}}{616}$	0	0	$-\frac{23\sqrt{858i}}{14784}$	0	$-\frac{13\sqrt{4290i}}{14784}$	0	$\frac{9\sqrt{286i}}{4928}$	0	$\frac{5\sqrt{6006i}}{14784}$
		0	$-\frac{3\sqrt{1430i}}{616}$	0	$-\frac{3\sqrt{715i}}{308}$	0	$\frac{9\sqrt{286i}}{616}$	$-\frac{3\sqrt{3003i}}{2464}$	0	$\frac{\sqrt{143i}}{224}$	0	$\frac{\sqrt{2145i}}{7392}$	0	$\frac{9\sqrt{429i}}{2464}$	0
		$-\frac{9\sqrt{286i}}{616}$	0	$\frac{3\sqrt{715i}}{308}$	0	$\frac{3\sqrt{1430i}}{616}$	0	0	$\frac{9\sqrt{429i}}{2464}$	0	$\frac{\sqrt{2145i}}{7392}$	0	$\frac{\sqrt{143i}}{224}$	0	$-\frac{3\sqrt{3003i}}{2464}$
		0	$\frac{9\sqrt{715i}}{616}$	0	$-\frac{3\sqrt{1430i}}{616}$	0	$-\frac{3\sqrt{143i}}{616}$	$\frac{5\sqrt{6006i}}{14784}$	0	$\frac{9\sqrt{286i}}{4928}$	0	$-\frac{13\sqrt{4290i}}{14784}$	0	$-\frac{23\sqrt{858i}}{14784}$	0
		$\frac{3\sqrt{715i}}{616}$	0	$-\frac{9\sqrt{286i}}{616}$	0	$\frac{3\sqrt{143i}}{616}$	0	0	$\frac{5\sqrt{4290i}}{14784}$	0	$-\frac{15\sqrt{858i}}{4928}$	0	$\frac{5\sqrt{1430i}}{4928}$	0	$\frac{\sqrt{30030i}}{14784}$
		$-\frac{\sqrt{30030i}}{14784}$	0	$\frac{3\sqrt{3003i}}{2464}$	0	$-\frac{5\sqrt{6006i}}{14784}$	0	0	$\frac{3\sqrt{5005i}}{16016}$	0	$-\frac{9\sqrt{1001i}}{8008}$	0	$\frac{\sqrt{15015i}}{16016}$	0	0
		0	$\frac{23\sqrt{858i}}{14784}$	0	$-\frac{9\sqrt{429i}}{2464}$	0	$-\frac{5\sqrt{4290i}}{14784}$	$-\frac{3\sqrt{5005i}}{16016}$	0	$-\frac{\sqrt{2145i}}{2002}$	0	$\frac{9\sqrt{143i}}{16016}$	0	$\frac{3\sqrt{715i}}{8008}$	0
		$-\frac{5\sqrt{1430i}}{4928}$	0	$-\frac{\sqrt{143i}}{224}$	0	$-\frac{9\sqrt{286i}}{4928}$	0	0	$\frac{\sqrt{2145i}}{2002}$	0	$\frac{\sqrt{429i}}{16016}$	0	$\frac{9\sqrt{715i}}{8008}$	0	$\frac{\sqrt{15015i}}{16016}$
		0	$\frac{13\sqrt{4290i}}{14784}$	0	$-\frac{\sqrt{2145i}}{7392}$	0	$\frac{15\sqrt{858i}}{4928}$	$\frac{9\sqrt{1001i}}{8008}$	0	$-\frac{\sqrt{429i}}{16016}$	0	$\frac{3\sqrt{715i}}{4004}$	0	$\frac{9\sqrt{143i}}{16016}$	0
		$\frac{15\sqrt{858i}}{4928}$	0	$-\frac{\sqrt{2145i}}{7392}$	0	$\frac{13\sqrt{4290i}}{14784}$	0	0	$-\frac{9\sqrt{143i}}{16016}$	0	$-\frac{3\sqrt{715i}}{4004}$	0	$\frac{\sqrt{429i}}{16016}$	0	$-\frac{9\sqrt{1001i}}{8008}$
		0	$-\frac{9\sqrt{286i}}{4928}$	0	$-\frac{\sqrt{143i}}{224}$	0	$-\frac{5\sqrt{1430i}}{4928}$	$-\frac{\sqrt{15015i}}{16016}$	0	$-\frac{9\sqrt{715i}}{8008}$	0	$-\frac{\sqrt{429i}}{16016}$	0	$-\frac{\sqrt{2145i}}{2002}$	0
		$-\frac{5\sqrt{4290i}}{14784}$	0	$-\frac{9\sqrt{429i}}{2464}$	0	$\frac{23\sqrt{858i}}{14784}$	0	0	$-\frac{3\sqrt{715i}}{8008}$	0	$-\frac{9\sqrt{143i}}{16016}$	0	$\frac{\sqrt{2145i}}{2002}$	0	$\frac{3\sqrt{5005i}}{16016}$
		0	$-\frac{5\sqrt{6006i}}{14784}$	0	$\frac{3\sqrt{3003i}}{2464}$	0	$-\frac{\sqrt{30030i}}{14784}$	0	0	$-\frac{\sqrt{15015i}}{16016}$	0	$\frac{9\sqrt{1001i}}{8008}$	0	$-\frac{3\sqrt{5005i}}{16016}$	0
1021	symmetry	$\frac{3\sqrt{35}z(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$													

*continued ...*

Table 10

No.	multipole	matrix													
$\mathbb{M}_{5,3}^{(1,1;a)}(T_{1g},2)$		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
1022	symmetry	$\frac{\sqrt{105}x(y-z)(y+z)(2x^2-y^2-z^2)}{4}$													

*continued ...*



Table 10

No.	multipole	matrix													
$M_{5,1}^{(1,1;a)}(T_{2g})$		0	$\frac{\sqrt{429}}{308}$	0	$-\frac{\sqrt{858}}{308}$	0	$-\frac{3\sqrt{2145}}{308}$	$\frac{\sqrt{10010}}{7392}$	0	$-\frac{5\sqrt{4290}}{7392}$	0	$\frac{5\sqrt{286}}{2464}$	0	$\frac{5\sqrt{1430}}{2464}$	0
		$\frac{\sqrt{429}}{308}$	0	$-\frac{\sqrt{4290}}{308}$	0	$\frac{\sqrt{2145}}{308}$	0	0	$-\frac{23\sqrt{286}}{7392}$	0	$\frac{13\sqrt{1430}}{7392}$	0	$-\frac{\sqrt{858}}{2464}$	0	$\frac{5\sqrt{2002}}{2464}$
		0	$-\frac{\sqrt{4290}}{308}$	0	$\frac{\sqrt{2145}}{154}$	0	$-\frac{\sqrt{858}}{308}$	$-\frac{\sqrt{1001}}{1232}$	0	$\frac{\sqrt{429}}{336}$	0	$-\frac{\sqrt{715}}{3696}$	0	$-\frac{3\sqrt{143}}{1232}$	0
		$-\frac{\sqrt{858}}{308}$	0	$\frac{\sqrt{2145}}{154}$	0	$-\frac{\sqrt{4290}}{308}$	0	0	$\frac{3\sqrt{143}}{1232}$	0	$\frac{\sqrt{715}}{3696}$	0	$-\frac{\sqrt{429}}{336}$	0	$\frac{\sqrt{1001}}{1232}$
		0	$\frac{\sqrt{2145}}{308}$	0	$-\frac{\sqrt{4290}}{308}$	0	$\frac{\sqrt{429}}{308}$	$-\frac{5\sqrt{2002}}{2464}$	0	$\frac{\sqrt{858}}{2464}$	0	$-\frac{13\sqrt{1430}}{7392}$	0	$\frac{23\sqrt{286}}{7392}$	0
		$-\frac{3\sqrt{2145}}{308}$	0	$-\frac{\sqrt{858}}{308}$	0	$\frac{\sqrt{429}}{308}$	0	0	$-\frac{5\sqrt{1430}}{2464}$	0	$-\frac{5\sqrt{286}}{2464}$	0	$\frac{5\sqrt{4290}}{7392}$	0	$-\frac{\sqrt{10010}}{7392}$
		$\frac{\sqrt{10010}}{7392}$	0	$-\frac{\sqrt{1001}}{1232}$	0	$-\frac{5\sqrt{2002}}{2464}$	0	0	$-\frac{\sqrt{15015}}{8008}$	0	$\frac{\sqrt{3003}}{4004}$	0	$\frac{3\sqrt{5005}}{8008}$	0	0
		0	$-\frac{23\sqrt{286}}{7392}$	0	$\frac{3\sqrt{143}}{1232}$	0	$-\frac{5\sqrt{1430}}{2464}$	$-\frac{\sqrt{15015}}{8008}$	0	$\frac{\sqrt{715}}{1001}$	0	$-\frac{\sqrt{429}}{8008}$	0	$\frac{3\sqrt{2145}}{4004}$	0
		$-\frac{5\sqrt{4290}}{7392}$	0	$\frac{\sqrt{429}}{336}$	0	$\frac{\sqrt{858}}{2464}$	0	0	$\frac{\sqrt{715}}{1001}$	0	$-\frac{\sqrt{143}}{8008}$	0	$-\frac{\sqrt{2145}}{4004}$	0	$\frac{3\sqrt{5005}}{8008}$
		0	$\frac{13\sqrt{1430}}{7392}$	0	$\frac{\sqrt{715}}{3696}$	0	$-\frac{5\sqrt{286}}{2464}$	$\frac{\sqrt{3003}}{4004}$	0	$-\frac{\sqrt{143}}{8008}$	0	$-\frac{\sqrt{2145}}{2002}$	0	$-\frac{\sqrt{429}}{8008}$	0
		$\frac{5\sqrt{286}}{2464}$	0	$-\frac{\sqrt{715}}{3696}$	0	$-\frac{13\sqrt{1430}}{7392}$	0	0	$-\frac{\sqrt{429}}{8008}$	0	$-\frac{\sqrt{2145}}{2002}$	0	$-\frac{\sqrt{143}}{8008}$	0	$\frac{\sqrt{3003}}{4004}$
		0	$-\frac{\sqrt{858}}{2464}$	0	$-\frac{\sqrt{429}}{336}$	0	$\frac{5\sqrt{4290}}{7392}$	$\frac{3\sqrt{5005}}{8008}$	0	$-\frac{\sqrt{2145}}{4004}$	0	$-\frac{\sqrt{143}}{8008}$	0	$\frac{\sqrt{715}}{1001}$	0
		$\frac{5\sqrt{1430}}{2464}$	0	$-\frac{3\sqrt{143}}{1232}$	0	$\frac{23\sqrt{286}}{7392}$	0	0	$\frac{3\sqrt{2145}}{4004}$	0	$-\frac{\sqrt{429}}{8008}$	0	$\frac{\sqrt{715}}{1001}$	0	$-\frac{\sqrt{15015}}{8008}$
		0	$\frac{5\sqrt{2002}}{2464}$	0	$\frac{\sqrt{1001}}{1232}$	0	$-\frac{\sqrt{10010}}{7392}$	0	0	$\frac{3\sqrt{5005}}{8008}$	0	$\frac{\sqrt{3003}}{4004}$	0	$-\frac{\sqrt{15015}}{8008}$	0
1023	symmetry	$\frac{\sqrt{105}y(x-z)(x+z)(x^2-2y^2+z^2)}{4}$													

*continued ...*

Table 10

No.	multipole	matrix													
$M_{5,2}^{(1,1;a)}(T_{2g})$		0	$\frac{\sqrt{429}i}{308}$	0	$\frac{\sqrt{858}i}{308}$	0	$-\frac{3\sqrt{2145}i}{308}$	$-\frac{\sqrt{10010}i}{7392}$	0	$-\frac{5\sqrt{4290}i}{7392}$	0	$-\frac{5\sqrt{286}i}{2464}$	0	$\frac{5\sqrt{1430}i}{2464}$	0
		$-\frac{\sqrt{429}i}{308}$	0	$-\frac{\sqrt{4290}i}{308}$	0	$-\frac{\sqrt{2145}i}{308}$	0	0	$\frac{23\sqrt{286}i}{7392}$	0	$\frac{13\sqrt{1430}i}{7392}$	0	$\frac{\sqrt{858}i}{2464}$	0	$\frac{5\sqrt{2002}i}{2464}$
		0	$\frac{\sqrt{4290}i}{308}$	0	$\frac{\sqrt{2145}i}{154}$	0	$\frac{\sqrt{858}i}{308}$	$-\frac{\sqrt{1001}i}{1232}$	0	$-\frac{\sqrt{429}i}{336}$	0	$-\frac{\sqrt{715}i}{3696}$	0	$\frac{3\sqrt{143}i}{1232}$	0
		$-\frac{\sqrt{858}i}{308}$	0	$-\frac{\sqrt{2145}i}{154}$	0	$-\frac{\sqrt{4290}i}{308}$	0	0	$\frac{3\sqrt{143}i}{1232}$	0	$-\frac{\sqrt{715}i}{3696}$	0	$-\frac{\sqrt{429}i}{336}$	0	$-\frac{\sqrt{1001}i}{1232}$
		0	$\frac{\sqrt{2145}i}{308}$	0	$\frac{\sqrt{4290}i}{308}$	0	$\frac{\sqrt{429}i}{308}$	$\frac{5\sqrt{2002}i}{2464}$	0	$\frac{\sqrt{858}i}{2464}$	0	$\frac{13\sqrt{1430}i}{7392}$	0	$\frac{23\sqrt{286}i}{7392}$	0
		$\frac{3\sqrt{2145}i}{308}$	0	$-\frac{\sqrt{858}i}{308}$	0	$-\frac{\sqrt{429}i}{308}$	0	0	$\frac{5\sqrt{1430}i}{2464}$	0	$-\frac{5\sqrt{286}i}{2464}$	0	$-\frac{5\sqrt{4290}i}{7392}$	0	$-\frac{\sqrt{10010}i}{7392}$
		$\frac{\sqrt{10010}i}{7392}$	0	$\frac{\sqrt{1001}i}{1232}$	0	$-\frac{5\sqrt{2002}i}{2464}$	0	0	$-\frac{\sqrt{15015}i}{8008}$	0	$-\frac{\sqrt{3003}i}{4004}$	0	$\frac{3\sqrt{5005}i}{8008}$	0	0
		0	$-\frac{23\sqrt{286}i}{7392}$	0	$-\frac{3\sqrt{143}i}{1232}$	0	$-\frac{5\sqrt{1430}i}{2464}$	$\frac{\sqrt{15015}i}{8008}$	0	$\frac{\sqrt{715}i}{1001}$	0	$\frac{\sqrt{429}i}{8008}$	0	$\frac{3\sqrt{2145}i}{4004}$	0
		$\frac{5\sqrt{4290}i}{7392}$	0	$\frac{\sqrt{429}i}{336}$	0	$-\frac{\sqrt{858}i}{2464}$	0	0	$-\frac{\sqrt{715}i}{1001}$	0	$-\frac{\sqrt{143}i}{8008}$	0	$\frac{\sqrt{2145}i}{4004}$	0	$\frac{3\sqrt{5005}i}{8008}$
		0	$-\frac{13\sqrt{1430}i}{7392}$	0	$\frac{\sqrt{715}i}{3696}$	0	$\frac{5\sqrt{286}i}{2464}$	$\frac{\sqrt{3003}i}{4004}$	0	$\frac{\sqrt{143}i}{8008}$	0	$-\frac{\sqrt{2145}i}{2002}$	0	$\frac{\sqrt{429}i}{8008}$	0
		$\frac{5\sqrt{286}i}{2464}$	0	$\frac{\sqrt{715}i}{3696}$	0	$-\frac{13\sqrt{1430}i}{7392}$	0	0	$-\frac{\sqrt{429}i}{8008}$	0	$\frac{\sqrt{2145}i}{2002}$	0	$-\frac{\sqrt{143}i}{8008}$	0	$-\frac{\sqrt{3003}i}{4004}$
		0	$-\frac{\sqrt{858}i}{2464}$	0	$\frac{\sqrt{429}i}{336}$	0	$\frac{5\sqrt{4290}i}{7392}$	$-\frac{3\sqrt{5005}i}{8008}$	0	$-\frac{\sqrt{2145}i}{4004}$	0	$\frac{\sqrt{143}i}{8008}$	0	$\frac{\sqrt{715}i}{1001}$	0
		$-\frac{5\sqrt{1430}i}{2464}$	0	$-\frac{3\sqrt{143}i}{1232}$	0	$-\frac{23\sqrt{286}i}{7392}$	0	0	$-\frac{3\sqrt{2145}i}{4004}$	0	$-\frac{\sqrt{429}i}{8008}$	0	$-\frac{\sqrt{715}i}{1001}$	0	$-\frac{\sqrt{15015}i}{8008}$
		0	$-\frac{5\sqrt{2002}i}{2464}$	0	$\frac{\sqrt{1001}i}{1232}$	0	$\frac{\sqrt{10010}i}{7392}$	0	0	$-\frac{3\sqrt{5005}i}{8008}$	0	$\frac{\sqrt{3003}i}{4004}$	0	$\frac{\sqrt{15015}i}{8008}$	0
1024	symmetry	$-\frac{\sqrt{105}z(x-y)(x+y)(x^2+y^2-2z^2)}{4}$													

*continued ...*

Table 10

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