Model for “Oh1”

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General Condition

- Basis type: `lgs`
- SAMB selection:
  - Type: `[Q, G]`
  - Rank: `[0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11]`
  - Irrep.: $[A_{1g}, A_{2g}, E_g, T_{1g}, T_{2g}, A_{1u}, A_{2u}, E_u, T_{1u}, T_{2u}]$
  - Spin (s): `[0, 1]`
- Max. neighbor: `10`
- Search cell range: `(-2, 3), (-2, 3), (-2, 3)`
- Toroidal priority: `false`

Group and Unit Cell

- Group: SG No. 221 $O_{\rm h}^1$ $Pm\bar{3}m$ [cubic]
- Associated point group: PG No. 221 $O_{\rm h}$ $m\bar{3}m$ [cubic]
- Unit cell:
  $a =$ 1.00000, $b =$ 1.00000, $c =$ 1.00000, $\alpha =$ 90.0, $\beta =$ 90.0, $\gamma =$ 90.0
- Lattice vectors (conventional cell):
  $\boldsymbol{a}_1 =$ [1.00000, 0.00000, 0.00000]
  $\boldsymbol{a}_2 =$ [0.00000, 1.00000, 0.00000]
  $\boldsymbol{a}_3 =$ [0.00000, 0.00000, 1.00000]

Symmetry Operation

Table 1: Symmetry operation

#	SO	#	SO	#	SO	#	SO	#	SO
1	$\{1\|0\}$	2	$\{2_{001}\|0\}$	3	$\{2_{010}\|0\}$	4	$\{2_{100}\|0\}$	5	$\{3^{+}_{111}\|0\}$

continued ...

Table 1

#	SO	#	SO	#	SO	#	SO	#	SO
6	$\{3^{+}_{-11-1}\|0\}$	7	$\{3^{+}_{1-1-1}\|0\}$	8	$\{3^{+}_{-1-11}\|0\}$	9	$\{3^{-}_{111}\|0\}$	10	$\{3^{-}_{1-1-1}\|0\}$
11	$\{3^{-}_{-1-11}\|0\}$	12	$\{3^{-}_{-11-1}\|0\}$	13	$\{2_{110}\|0\}$	14	$\{2_{1-10}\|0\}$	15	$\{4^{-}_{001}\|0\}$
16	$\{4^{+}_{001}\|0\}$	17	$\{4^{-}_{100}\|0\}$	18	$\{2_{011}\|0\}$	19	$\{2_{01-1}\|0\}$	20	$\{4^{+}_{100}\|0\}$
21	$\{4^{+}_{010}\|0\}$	22	$\{2_{101}\|0\}$	23	$\{4^{-}_{010}\|0\}$	24	$\{2_{-101}\|0\}$	25	$\{-1\|0\}$
26	$\{m_{001}\|0\}$	27	$\{m_{010}\|0\}$	28	$\{m_{100}\|0\}$	29	$\{-3^{+}_{111}\|0\}$	30	$\{-3^{+}_{-11-1}\|0\}$
31	$\{-3^{+}_{1-1-1}\|0\}$	32	$\{-3^{+}_{-1-11}\|0\}$	33	$\{-3^{-}_{111}\|0\}$	34	$\{-3^{-}_{1-1-1}\|0\}$	35	$\{-3^{-}_{-1-11}\|0\}$
36	$\{-3^{-}_{-11-1}\|0\}$	37	$\{m_{110}\|0\}$	38	$\{m_{1-10}\|0\}$	39	$\{-4^{-}_{001}\|0\}$	40	$\{-4^{+}_{001}\|0\}$
41	$\{-4^{-}_{100}\|0\}$	42	$\{m_{011}\|0\}$	43	$\{m_{01-1}\|0\}$	44	$\{-4^{+}_{100}\|0\}$	45	$\{-4^{+}_{010}\|0\}$
46	$\{m_{101}\|0\}$	47	$\{-4^{-}_{010}\|0\}$	48	$\{m_{-101}\|0\}$				

Harmonics

Table 2: Harmonics

#	symbol	irrep.	rank	X	multiplicity	component	symmetry
1	$\mathbb{Q}_0(A_{1g})$	A_{1g}	0	Q, T	-	-	1
2	$\mathbb{Q}_4(A_{1g})$	A_{1g}	4	Q, T	-	-	$\frac{\sqrt{21}\left(x^4-3x^2y^2-3x^2z^2+y^4-3y^2z^2+z^4\right)}{6}$
3	$\mathbb{G}_0(A_{1u})$	A_{1u}	0	G, M	-	-	1

continued ...

Table 2

#	symbol	irrep.	rank	X	multiplicity	component	symmetry
4	$\mathbb{G}_4(A_{1u})$	A_{1u}	4	$G,\ M$	-	-	$\frac{\sqrt{21}\left(x^4-3x^2y^2-3x^2z^2+y^4-3y^2z^2+z^4\right)}{6}$
5	$\mathbb{G}_3(A_{2g})$	A_{2g}	3	$G,\ M$	-	-	$\sqrt{15}xyz$
6	$\mathbb{Q}_3(A_{2u})$	A_{2u}	3	$Q,\ T$	-	-	$\sqrt{15}xyz$
7	$\mathbb{Q}_{2,1}(E_g)$	E_g	2	$Q,\ T$	-	1	$-\frac{x^2}{2}-\frac{y^2}{2}+z^2$
8	$\mathbb{Q}_{2,2}(E_g)$					2	$\frac{\sqrt{3}(x-y)(x+y)}{2}$
9	$\mathbb{Q}_{4,1}(E_g)$	E_g	4	$Q,\ T$	-	1	$-\frac{\sqrt{15}\left(x^4-12x^2y^2+6x^2z^2+y^4+6y^2z^2-2z^4\right)}{12}$
10	$\mathbb{Q}_{4,2}(E_g)$					2	$\frac{\sqrt{5}(x-y)(x+y)\left(x^2+y^2-6z^2\right)}{4}$
11	$\mathbb{G}_{2,1}(E_u)$	E_u	2	$G,\ M$	-	1	$-\frac{x^2}{2}-\frac{y^2}{2}+z^2$
12	$\mathbb{G}_{2,2}(E_u)$					2	$\frac{\sqrt{3}(x-y)(x+y)}{2}$
13	$\mathbb{G}_{4,1}(E_u)$	E_u	4	$G,\ M$	-	1	$-\frac{\sqrt{15}\left(x^4-12x^2y^2+6x^2z^2+y^4+6y^2z^2-2z^4\right)}{12}$
14	$\mathbb{G}_{4,2}(E_u)$					2	$\frac{\sqrt{5}(x-y)(x+y)\left(x^2+y^2-6z^2\right)}{4}$
15	$\mathbb{Q}_{5,1}(E_u)$	E_u	5	$Q,\ T$	-	1	$\frac{3\sqrt{35}xyz(x-y)(x+y)}{2}$
16	$\mathbb{Q}_{5,2}(E_u)$					2	$\frac{\sqrt{105}xyz\left(x^2+y^2-2z^2\right)}{2}$
17	$\mathbb{G}_{1,1}(T_{1g})$	T_{1g}	1	$G,\ M$	-	1	x
18	$\mathbb{G}_{1,2}(T_{1g})$					2	y
19	$\mathbb{G}_{1,3}(T_{1g})$					3	z
20	$\mathbb{G}_{3,1}(T_{1g})$	T_{1g}	3	$G,\ M$	-	1	$\frac{x\left(2x^2-3y^2-3z^2\right)}{2}$
21	$\mathbb{G}_{3,2}(T_{1g})$					2	$-\frac{y\left(3x^2-2y^2+3z^2\right)}{2}$
22	$\mathbb{G}_{3,3}(T_{1g})$					3	$-\frac{z\left(3x^2+3y^2-2z^2\right)}{2}$
23	$\mathbb{Q}_{4,1}(T_{1g})$	T_{1g}	4	$Q,\ T$	-	1	$\frac{\sqrt{35}yz(y-z)(y+z)}{2}$
24	$\mathbb{Q}_{4,2}(T_{1g})$					2	$-\frac{\sqrt{35}xz(x-z)(x+z)}{2}$

continued ...

Table 2

#	symbol	irrep.	rank	X	multiplicity	component	symmetry
25	$\mathbb{Q}_{4,3}(T_{1g})$					3	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$
26	$\mathbb{Q}_{1,1}(T_{1u})$	T_{1u}	1	Q, T	-	1	x
27	$\mathbb{Q}_{1,2}(T_{1u})$					2	y
28	$\mathbb{Q}_{1,3}(T_{1u})$					3	z
29	$\mathbb{Q}_{3,1}(T_{1u})$	T_{1u}	3	Q, T	-	1	$\frac{x(2x^2-3y^2-3z^2)}{2}$
30	$\mathbb{Q}_{3,2}(T_{1u})$					2	$-\frac{y(3x^2-2y^2+3z^2)}{2}$
31	$\mathbb{Q}_{3,3}(T_{1u})$					3	$-\frac{z(3x^2+3y^2-2z^2)}{2}$
32	$\mathbb{G}_{4,1}(T_{1u})$	T_{1u}	4	G, M	-	1	$\frac{\sqrt{35}yz(y-z)(y+z)}{2}$
33	$\mathbb{G}_{4,2}(T_{1u})$					2	$-\frac{\sqrt{35}xz(x-z)(x+z)}{2}$
34	$\mathbb{G}_{4,3}(T_{1u})$					3	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$
35	$\mathbb{Q}_{5,1}(T_{1u},2)$	T_{1u}	5	Q, T	2	1	$\frac{3\sqrt{35}x(y^2-2yz-z^2)(y^2+2yz-z^2)}{8}$
36	$\mathbb{Q}_{5,2}(T_{1u},2)$					2	$\frac{3\sqrt{35}y(x^2-2xz-z^2)(x^2+2xz-z^2)}{8}$
37	$\mathbb{Q}_{5,3}(T_{1u},2)$					3	$\frac{3\sqrt{35}z(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$
38	$\mathbb{Q}_{2,1}(T_{2g})$	T_{2g}	2	Q, T	-	1	$\sqrt{3}yz$
39	$\mathbb{Q}_{2,2}(T_{2g})$					2	$\sqrt{3}xz$
40	$\mathbb{Q}_{2,3}(T_{2g})$					3	$\sqrt{3}xy$
41	$\mathbb{G}_{3,1}(T_{2g})$	T_{2g}	3	G, M	-	1	$\frac{\sqrt{15}x(y-z)(y+z)}{2}$
42	$\mathbb{G}_{3,2}(T_{2g})$					2	$-\frac{\sqrt{15}y(x-z)(x+z)}{2}$
43	$\mathbb{G}_{3,3}(T_{2g})$					3	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$
44	$\mathbb{Q}_{4,1}(T_{2g})$	T_{2g}	4	Q, T	-	1	$\frac{\sqrt{5}yz(6x^2-y^2-z^2)}{2}$
45	$\mathbb{Q}_{4,2}(T_{2g})$					2	$-\frac{\sqrt{5}xz(x^2-6y^2+z^2)}{2}$

continued ...

Table 2

#	symbol	irrep.	rank	X	multiplicity	component	symmetry
46	$\mathbb{Q}_{4,3}(T_{2g})$					3	$-\frac{\sqrt{5}xy\left(x^{2}+y^{2}-6z^{2}\right)}{2}$
47	$\mathbb{G}_{2,1}(T_{2u})$	T_{2u}	2	G, M	-	1	$\sqrt{3}yz$
48	$\mathbb{G}_{2,2}(T_{2u})$					2	$\sqrt{3}xz$
49	$\mathbb{G}_{2,3}(T_{2u})$					3	$\sqrt{3}xy$
50	$\mathbb{Q}_{3,1}(T_{2u})$	T_{2u}	3	Q, T	-	1	$\frac{\sqrt{15}x(y-z)(y+z)}{2}$
51	$\mathbb{Q}_{3,2}(T_{2u})$					2	$-\frac{\sqrt{15}y(x-z)(x+z)}{2}$
52	$\mathbb{Q}_{3,3}(T_{2u})$					3	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$
53	$\mathbb{G}_{4,1}(T_{2u})$	T_{2u}	4	G, M	-	1	$\frac{\sqrt{5}yz\left(6x^{2}-y^{2}-z^{2}\right)}{2}$
54	$\mathbb{G}_{4,2}(T_{2u})$					2	$-\frac{\sqrt{5}xz\left(x^{2}-6y^{2}+z^{2}\right)}{2}$
55	$\mathbb{G}_{4,3}(T_{2u})$					3	$-\frac{\sqrt{5}xy\left(x^{2}+y^{2}-6z^{2}\right)}{2}$
56	$\mathbb{Q}_{5,1}(T_{2u})$	T_{2u}	5	Q, T	-	1	$\frac{\sqrt{105}x(y-z)(y+z)\left(2x^{2}-y^{2}-z^{2}\right)}{4}$
57	$\mathbb{Q}_{5,2}(T_{2u})$					2	$\frac{\sqrt{105}y(x-z)(x+z)\left(x^{2}-2y^{2}+z^{2}\right)}{4}$
58	$\mathbb{Q}_{5,3}(T_{2u})$					3	$-\frac{\sqrt{105}z(x-y)(x+y)\left(x^{2}+y^{2}-2z^{2}\right)}{4}$

Basis in full matrix

Table 3: dimension = 8

#	orbital@atom(SL)	#	orbital@atom(SL)	#	orbital@atom(SL)	#	orbital@atom(SL)	#	orbital@atom(SL)
1	$\lvert s,\uparrow\rangle$ @A(1)	2	$\lvert s,\downarrow\rangle$ @A(1)	3	$\lvert p_x,\uparrow\rangle$ @A(1)	4	$\lvert p_x,\downarrow\rangle$ @A(1)	5	$\lvert p_y,\uparrow\rangle$ @A(1)
6	$\lvert p_y,\downarrow\rangle$ @A(1)	7	$\lvert p_z,\uparrow\rangle$ @A(1)	8	$\lvert p_z,\downarrow\rangle$ @A(1)				

Table 4: Atomic basis (orbital part only)

orbital	definition
$\lvert s\rangle$	1
$\lvert p_x\rangle$	x
$\lvert p_y\rangle$	y
$\lvert p_z\rangle$	z

SAMB

261 (all 604) SAMBs

- 'A' site-cluster
  - * bra: $\langle s,\uparrow\rvert$, $\langle s,\downarrow\rvert$
  - * ket: $\lvert s,\uparrow\rangle$, $\lvert s,\downarrow\rangle$
  - * wyckoff: `1a`

$\boxed{\text{z1}}$ $\mathbb{Q}_0^{(c)}(A_{1g}) = \mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_0^{(s)}(A_{1g})$

- 'A' site-cluster
  * bra: $\langle s,\uparrow|$, $\langle s,\downarrow|$
  * ket: $|p_x,\uparrow\rangle$, $|p_x,\downarrow\rangle$, $|p_y,\uparrow\rangle$, $|p_y,\downarrow\rangle$, $|p_z,\uparrow\rangle$, $|p_z,\downarrow\rangle$
  * wyckoff: `1a`

$$\boxed{\text{z269}} \quad \mathbb{Q}_{1,1}^{(c)}(T_{1u}) = \frac{\sqrt{3}\mathbb{Q}_{1,1}^{(a)}(T_{1u})\mathbb{Q}_{0}^{(s)}(A_{1g})}{3}$$

$$\boxed{\text{z300}} \quad \mathbb{Q}_{1,2}^{(c)}(T_{1u}) = \frac{\sqrt{3}\mathbb{Q}_{1,2}^{(a)}(T_{1u})\mathbb{Q}_{0}^{(s)}(A_{1g})}{3}$$

$$\boxed{\text{z301}} \quad \mathbb{Q}_{1,3}^{(c)}(T_{1u}) = \frac{\sqrt{3}\mathbb{Q}_{1,3}^{(a)}(T_{1u})\mathbb{Q}_{0}^{(s)}(A_{1g})}{3}$$

$$\boxed{\text{z362}} \quad \mathbb{Q}_{1,1}^{(1,0;c)}(T_{1u}) = \frac{\sqrt{3}\mathbb{Q}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{Q}_{0}^{(s)}(A_{1g})}{3}$$

$$\boxed{\text{z363}} \quad \mathbb{Q}_{1,2}^{(1,0;c)}(T_{1u}) = \frac{\sqrt{3}\mathbb{Q}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{Q}_{0}^{(s)}(A_{1g})}{3}$$

$$\boxed{\text{z364}} \quad \mathbb{Q}_{1,3}^{(1,0;c)}(T_{1u}) = \frac{\sqrt{3}\mathbb{Q}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{Q}_{0}^{(s)}(A_{1g})}{3}$$

$$\boxed{\text{z365}} \quad \mathbb{G}_{0}^{(1,1;c)}(A_{1u}) = \mathbb{G}_{0}^{(1,1;a)}(A_{1u})\mathbb{Q}_{0}^{(s)}(A_{1g})$$

$$\boxed{\text{z366}} \quad \mathbb{G}_{2,1}^{(1,-1;c)}(E_{u}) = \frac{\sqrt{2}\mathbb{G}_{2,1}^{(1,-1;a)}(E_{u})\mathbb{Q}_{0}^{(s)}(A_{1g})}{2}$$

$$\boxed{\text{z367}} \quad \mathbb{G}_{2,2}^{(1,-1;c)}(E_{u}) = \frac{\sqrt{2}\mathbb{G}_{2,2}^{(1,-1;a)}(E_{u})\mathbb{Q}_{0}^{(s)}(A_{1g})}{2}$$

$$\boxed{\text{z485}} \quad \mathbb{G}_{2,1}^{(1,-1;c)}(T_{2u}) = \frac{\sqrt{3}\mathbb{G}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{0}^{(s)}(A_{1g})}{3}$$

$$\boxed{\text{z486}} \quad \mathbb{G}_{2,2}^{(1,-1;c)}(T_{2u}) = \frac{\sqrt{3}\mathbb{G}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{0}^{(s)}(A_{1g})}{3}$$

$$\boxed{\text{z487}} \quad \mathbb{G}_{2,3}^{(1,-1;c)}(T_{2u}) = \frac{\sqrt{3}\mathbb{G}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{0}^{(s)}(A_{1g})}{3}$$

- 'A' site-cluster
  * bra: $\langle p_x,\uparrow|$, $\langle p_x,\downarrow|$, $\langle p_y,\uparrow|$, $\langle p_y,\downarrow|$, $\langle p_z,\uparrow|$, $\langle p_z,\downarrow|$
  * ket: $|p_x,\uparrow\rangle$, $|p_x,\downarrow\rangle$, $|p_y,\uparrow\rangle$, $|p_y,\downarrow\rangle$, $|p_z,\uparrow\rangle$, $|p_z,\downarrow\rangle$
  * wyckoff: `1a`

$\boxed{\text{z2}}$ $\mathbb{Q}_0^{(c)}(A_{1g}) = \mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_0^{(s)}(A_{1g})$

$\boxed{\text{z3}}$ $\mathbb{Q}_0^{(1,1;c)}(A_{1g}) = \mathbb{Q}_0^{(1,1;a)}(A_{1g})\mathbb{Q}_0^{(s)}(A_{1g})$

$\boxed{\text{z30}}$ $\mathbb{Q}_{2,1}^{(c)}(E_g) = \dfrac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_0^{(s)}(A_{1g})}{2}$

$\boxed{\text{z31}}$ $\mathbb{Q}_{2,2}^{(c)}(E_g) = \dfrac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_0^{(s)}(A_{1g})}{2}$

$\boxed{\text{z32}}$ $\mathbb{Q}_{2,1}^{(1,-1;c)}(E_g) = \dfrac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_0^{(s)}(A_{1g})}{2}$

$\boxed{\text{z33}}$ $\mathbb{Q}_{2,2}^{(1,-1;c)}(E_g) = \dfrac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_0^{(s)}(A_{1g})}{2}$

$\boxed{\text{z86}}$ $\mathbb{Q}_{2,1}^{(c)}(T_{2g}) = \dfrac{\sqrt{3}\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_0^{(s)}(A_{1g})}{3}$

$\boxed{\text{z87}}$ $\mathbb{Q}_{2,2}^{(c)}(T_{2g}) = \dfrac{\sqrt{3}\mathbb{Q}_{2,2}^{(a)}(T_{2g})\mathbb{Q}_0^{(s)}(A_{1g})}{3}$

$\boxed{\text{z88}}$ $\mathbb{Q}_{2,3}^{(c)}(T_{2g}) = \dfrac{\sqrt{3}\mathbb{Q}_{2,3}^{(a)}(T_{2g})\mathbb{Q}_0^{(s)}(A_{1g})}{3}$

$\boxed{\text{z170}}$ $\mathbb{Q}_{2,1}^{(1,-1;c)}(T_{2g}) = \dfrac{\sqrt{3}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})\mathbb{Q}_0^{(s)}(A_{1g})}{3}$

$\boxed{\text{z171}}$ $\mathbb{Q}_{2,2}^{(1,-1;c)}(T_{2g}) = \dfrac{\sqrt{3}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})\mathbb{Q}_0^{(s)}(A_{1g})}{3}$

$\boxed{\text{z172}}$ $\mathbb{Q}_{2,3}^{(1,-1;c)}(T_{2g}) = \dfrac{\sqrt{3}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_{2g})\mathbb{Q}_0^{(s)}(A_{1g})}{3}$

$\boxed{\text{z173}}$ $\mathbb{G}_{1,1}^{(1,0;c)}(T_{1g}) = \dfrac{\sqrt{3}\mathbb{G}_{1,1}^{(1,0;a)}(T_{1g})\mathbb{Q}_0^{(s)}(A_{1g})}{3}$

$\boxed{\text{z174}}$ $\mathbb{G}_{1,2}^{(1,0;c)}(T_{1g}) = \frac{\sqrt{3}\mathbb{G}_{1,2}^{(1,0;a)}(T_{1g})\mathbb{Q}_{0}^{(s)}(A_{1g})}{3}$

$\boxed{\text{z175}}$ $\mathbb{G}_{1,3}^{(1,0;c)}(T_{1g}) = \frac{\sqrt{3}\mathbb{G}_{1,3}^{(1,0;a)}(T_{1g})\mathbb{Q}_{0}^{(s)}(A_{1g})}{3}$

- 'A'-'A' bond-cluster
  * bra: $\langle s,\uparrow|$, $\langle s,\downarrow|$
  * ket: $|s,\uparrow\rangle$, $|s,\downarrow\rangle$
  * wyckoff: `3a@3d`

$\boxed{\text{z4}}$ $\mathbb{Q}_{0}^{(c)}(A_{1g}) = \mathbb{Q}_{0}^{(a)}(A_{1g})\mathbb{Q}_{0}^{(b)}(A_{1g})$

$\boxed{\text{z34}}$ $\mathbb{Q}_{2,1}^{(c)}(E_{g}) = \frac{\sqrt{2}\mathbb{Q}_{0}^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{g})}{2}$

$\boxed{\text{z35}}$ $\mathbb{Q}_{2,2}^{(c)}(E_{g}) = \frac{\sqrt{2}\mathbb{Q}_{0}^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{g})}{2}$

$\boxed{\text{z270}}$ $\mathbb{Q}_{1,1}^{(1,-1;c)}(T_{1u}) = \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} - \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z302}}$ $\mathbb{Q}_{1,2}^{(1,-1;c)}(T_{1u}) = -\frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z303}}$ $\mathbb{Q}_{1,3}^{(1,-1;c)}(T_{1u}) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} - \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z368}}$ $\mathbb{G}_{0}^{(1,-1;c)}(A_{1u}) = \frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{3} + \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{3} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z369}}$ $\mathbb{G}_{2,1}^{(1,-1;c)}(E_{u}) = -\frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6} - \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z370}}$ $\mathbb{G}_{2,2}^{(1,-1;c)}(E_{u}) = \frac{\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{2} - \frac{\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{2}$

$\boxed{\text{z488}}$ $\mathbb{G}_{2,1}^{(1,-1;c)}(T_{2u}) = \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z489}}$ $\mathbb{G}_{2,2}^{(1,-1;c)}(T_{2u}) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z490}}$ $\mathbb{G}_{2,3}^{(1,-1;c)}(T_{2u}) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} + \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$

- 'A'-'A' bond-cluster
  * bra: $\langle s,\uparrow|$, $\langle s,\downarrow|$
  * ket: $|p_x,\uparrow\rangle$, $|p_x,\downarrow\rangle$, $|p_y,\uparrow\rangle$, $|p_y,\downarrow\rangle$, $|p_z,\uparrow\rangle$, $|p_z,\downarrow\rangle$
  * wyckoff: `3a@3d`

$\boxed{\text{z5}}$ $\mathbb{Q}_{0}^{(c)}(A_{1g}) = \frac{\sqrt{3}\mathbb{T}_{1,1}^{(a)}(T_{1u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{3} + \frac{\sqrt{3}\mathbb{T}_{1,2}^{(a)}(T_{1u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{3} + \frac{\sqrt{3}\mathbb{T}_{1,3}^{(a)}(T_{1u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z6}}$ $\mathbb{Q}_{0}^{(1,0;c)}(A_{1g}) = \frac{\sqrt{3}\mathbb{T}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{3} + \frac{\sqrt{3}\mathbb{T}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{3} + \frac{\sqrt{3}\mathbb{T}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z21}}$ $\mathbb{Q}_{3}^{(1,-1;c)}(A_{2u}) = \frac{\sqrt{2}\mathbb{G}_{2,1}^{(1,-1;a)}(E_{u})\mathbb{Q}_{2,2}^{(b)}(E_{g})}{2} - \frac{\sqrt{2}\mathbb{G}_{2,2}^{(1,-1;a)}(E_{u})\mathbb{Q}_{2,1}^{(b)}(E_{g})}{2}$

$\boxed{\text{z36}}$ $\mathbb{Q}_{2,1}^{(c)}(E_{g}) = -\frac{\sqrt{3}\mathbb{T}_{1,1}^{(a)}(T_{1u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6} - \frac{\sqrt{3}\mathbb{T}_{1,2}^{(a)}(T_{1u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} + \frac{\sqrt{3}\mathbb{T}_{1,3}^{(a)}(T_{1u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z37}}$ $\mathbb{Q}_{2,2}^{(c)}(E_{g}) = \frac{\mathbb{T}_{1,1}^{(a)}(T_{1u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{2} - \frac{\mathbb{T}_{1,2}^{(a)}(T_{1u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{2}$

$\boxed{\text{z38}}$ $\mathbb{Q}_{2,1}^{(1,-1;c)}(E_{g}) = -\frac{\mathbb{M}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{2} + \frac{\mathbb{M}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{2}$

$\boxed{\text{z39}}$ $\mathbb{Q}_{2,2}^{(1,-1;c)}(E_{g}) = -\frac{\sqrt{3}\mathbb{M}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6} - \frac{\sqrt{3}\mathbb{M}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} + \frac{\sqrt{3}\mathbb{M}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z40}}$ $\mathbb{Q}_{2,1}^{(1,0;c)}(E_{g}) = -\frac{\sqrt{3}\mathbb{T}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6} - \frac{\sqrt{3}\mathbb{T}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} + \frac{\sqrt{3}\mathbb{T}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z41}}$ $\mathbb{Q}_{2,2}^{(1,0;c)}(E_{g}) = \frac{\mathbb{T}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{2} - \frac{\mathbb{T}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{2}$

$\boxed{\text{z89}}$ $\mathbb{Q}_{1,1}^{(c)}(T_{1u},a) = \frac{\sqrt{3}\mathbb{Q}_{1,1}^{(a)}(T_{1u})\mathbb{Q}_{0}^{(b)}(A_{1g})}{3}$

$\boxed{\text{z90}}$ $$\mathbb{Q}_{1,2}^{(c)}(T_{1u},a) = \frac{\sqrt{3}\mathbb{Q}_{1,2}^{(a)}(T_{1u})\mathbb{Q}_{0}^{(b)}(A_{1g})}{3}$$

$\boxed{\text{z91}}$ $$\mathbb{Q}_{1,3}^{(c)}(T_{1u},a) = \frac{\sqrt{3}\mathbb{Q}_{1,3}^{(a)}(T_{1u})\mathbb{Q}_{0}^{(b)}(A_{1g})}{3}$$

$\boxed{\text{z92}}$ $$\mathbb{Q}_{1,1}^{(c)}(T_{1u},b) = -\frac{\sqrt{3}\mathbb{Q}_{1,1}^{(a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(E_{g})}{6} + \frac{\mathbb{Q}_{1,1}^{(a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(E_{g})}{2}$$

$\boxed{\text{z93}}$ $$\mathbb{Q}_{1,2}^{(c)}(T_{1u},b) = -\frac{\sqrt{3}\mathbb{Q}_{1,2}^{(a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(E_{g})}{6} - \frac{\mathbb{Q}_{1,2}^{(a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(E_{g})}{2}$$

$\boxed{\text{z94}}$ $$\mathbb{Q}_{1,3}^{(c)}(T_{1u},b) = \frac{\sqrt{3}\mathbb{Q}_{1,3}^{(a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(E_{g})}{3}$$

$\boxed{\text{z95}}$ $$\mathbb{Q}_{1,1}^{(1,-1;c)}(T_{1u}) = \frac{\mathbb{G}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,1}^{(b)}(E_{g})}{2} + \frac{\sqrt{3}\mathbb{G}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,2}^{(b)}(E_{g})}{6}$$

$\boxed{\text{z96}}$ $$\mathbb{Q}_{1,2}^{(1,-1;c)}(T_{1u}) = -\frac{\mathbb{G}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,1}^{(b)}(E_{g})}{2} + \frac{\sqrt{3}\mathbb{G}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,2}^{(b)}(E_{g})}{6}$$

$\boxed{\text{z97}}$ $$\mathbb{Q}_{1,3}^{(1,-1;c)}(T_{1u}) = -\frac{\sqrt{3}\mathbb{G}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,2}^{(b)}(E_{g})}{3}$$

$\boxed{\text{z98}}$ $$\mathbb{Q}_{1,1}^{(1,0;c)}(T_{1u},a) = \frac{\sqrt{3}\mathbb{Q}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{Q}_{0}^{(b)}(A_{1g})}{3}$$

$\boxed{\text{z99}}$ $$\mathbb{Q}_{1,2}^{(1,0;c)}(T_{1u},a) = \frac{\sqrt{3}\mathbb{Q}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{Q}_{0}^{(b)}(A_{1g})}{3}$$

$\boxed{\text{z100}}$ $$\mathbb{Q}_{1,3}^{(1,0;c)}(T_{1u},a) = \frac{\sqrt{3}\mathbb{Q}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{Q}_{0}^{(b)}(A_{1g})}{3}$$

$\boxed{\text{z101}}$ $$\mathbb{Q}_{1,1}^{(1,0;c)}(T_{1u},b) = -\frac{\sqrt{3}\mathbb{Q}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(E_{g})}{6} + \frac{\mathbb{Q}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(E_{g})}{2}$$

$\boxed{\text{z102}}$ $$\mathbb{Q}_{1,2}^{(1,0;c)}(T_{1u},b) = -\frac{\sqrt{3}\mathbb{Q}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(E_{g})}{6} - \frac{\mathbb{Q}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(E_{g})}{2}$$

$\boxed{\text{z103}}$ $$\mathbb{Q}_{1,3}^{(1,0;c)}(T_{1u},b) = \frac{\sqrt{3}\mathbb{Q}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(E_{g})}{3}$$

$\boxed{\text{z176}}$ $\mathbb{Q}_{2,1}^{(c)}(T_{2g}) = \frac{\sqrt{6}\mathbb{T}_{1,2}^{(a)}(T_{1u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \frac{\sqrt{6}\mathbb{T}_{1,3}^{(a)}(T_{1u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z177}}$ $\mathbb{Q}_{2,2}^{(c)}(T_{2g}) = \frac{\sqrt{6}\mathbb{T}_{1,1}^{(a)}(T_{1u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \frac{\sqrt{6}\mathbb{T}_{1,3}^{(a)}(T_{1u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z178}}$ $\mathbb{Q}_{2,3}^{(c)}(T_{2g}) = \frac{\sqrt{6}\mathbb{T}_{1,1}^{(a)}(T_{1u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} + \frac{\sqrt{6}\mathbb{T}_{1,2}^{(a)}(T_{1u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z179}}$ $\mathbb{Q}_{2,1}^{(1,-1;c)}(T_{2g}) = \frac{\sqrt{6}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6} + \frac{\sqrt{2}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6} - \frac{\sqrt{2}\mathbb{M}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \frac{\sqrt{2}\mathbb{M}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z180}}$ $\mathbb{Q}_{2,2}^{(1,-1;c)}(T_{2g}) = -\frac{\sqrt{6}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} + \frac{\sqrt{2}\mathbb{M}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \frac{\sqrt{2}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} - \frac{\sqrt{2}\mathbb{M}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z181}}$ $\mathbb{Q}_{2,3}^{(1,-1;c)}(T_{2g}) = -\frac{\sqrt{2}\mathbb{M}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} - \frac{\sqrt{2}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3} + \frac{\sqrt{2}\mathbb{M}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z182}}$ $\mathbb{Q}_{2,1}^{(1,0;c)}(T_{2g}) = \frac{\sqrt{6}\mathbb{T}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \frac{\sqrt{6}\mathbb{T}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z183}}$ $\mathbb{Q}_{2,2}^{(1,0;c)}(T_{2g}) = \frac{\sqrt{6}\mathbb{T}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \frac{\sqrt{6}\mathbb{T}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z184}}$ $\mathbb{Q}_{2,3}^{(1,0;c)}(T_{2g}) = \frac{\sqrt{6}\mathbb{T}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} + \frac{\sqrt{6}\mathbb{T}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z185}}$ $\mathbb{Q}_{3,1}^{(c)}(T_{2u}) = -\frac{\mathbb{Q}_{1,1}^{(a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{Q}_{1,1}^{(a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{6}$

$\boxed{\text{z186}}$ $\mathbb{Q}_{3,2}^{(c)}(T_{2u}) = \frac{\mathbb{Q}_{1,2}^{(a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{Q}_{1,2}^{(a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{6}$

$\boxed{\text{z187}}$ $\mathbb{Q}_{3,3}^{(c)}(T_{2u}) = \frac{\sqrt{3}\mathbb{Q}_{1,3}^{(a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{3}$

$\boxed{\text{z271}}$ $\mathbb{Q}_{3,1}^{(1,-1;c)}(T_{2u}) = -\frac{\sqrt{3}\mathbb{G}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} + \frac{\mathbb{G}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$

$\boxed{\text{z272}}$ $\mathbb{Q}_{3,2}^{(1,-1;c)}(T_{2u}) = -\frac{\sqrt{3}\mathbb{G}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} - \frac{\mathbb{G}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$

$\boxed{\text{z287}}$ $\mathbb{Q}_{3,3}^{(1,-1;c)}(T_{2u}) = \frac{\sqrt{3}\mathbb{G}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{3}$

$\boxed{\text{z304}}$ $\mathbb{Q}_{3,1}^{(1,0;c)}(T_{2u}) = -\frac{\mathbb{Q}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{Q}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{6}$

$\boxed{\text{z305}}$ $\mathbb{Q}_{3,2}^{(1,0;c)}(T_{2u}) = \frac{\mathbb{Q}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{Q}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{6}$

$\boxed{\text{z306}}$ $\mathbb{Q}_{3,3}^{(1,0;c)}(T_{2u}) = \frac{\sqrt{3}\mathbb{Q}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{3}$

$\boxed{\text{z307}}$ $\mathbb{G}_{0}^{(1,-1;c)}(A_{1u}) = \frac{\sqrt{2}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} + \frac{\sqrt{2}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$

$\boxed{\text{z308}}$ $\mathbb{G}_{0}^{(1,1;c)}(A_{1u}) = \mathbb{G}_{0}^{(1,1;a)}(A_{1u})\mathbb{Q}_{0}^{(b)}(A_{1g})$

$\boxed{\text{z309}}$ $\mathbb{G}_{3}^{(1,-1;c)}(A_{2g}) = \frac{\sqrt{3}\mathbb{M}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{3} + \frac{\sqrt{3}\mathbb{M}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{3} + \frac{\sqrt{3}\mathbb{M}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z371}}$ $\mathbb{G}_{2,1}^{(1,-1;c)}(E_u, a) = \frac{\sqrt{2}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$

$\boxed{\text{z372}}$ $\mathbb{G}_{2,2}^{(1,-1;c)}(E_u, a) = \frac{\sqrt{2}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$

$\boxed{\text{z373}}$ $\mathbb{G}_{2,1}^{(1,-1;c)}(E_u, b) = \frac{\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \frac{\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$

$\boxed{\text{z374}}$ $\mathbb{G}_{2,2}^{(1,-1;c)}(E_u, b) = -\frac{\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2} - \frac{\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$

$\boxed{\text{z375}}$ $\mathbb{G}_{2,1}^{(1,1;c)}(E_u) = \frac{\sqrt{2}\mathbb{G}_{0}^{(1,1;a)}(A_{1u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$

$\boxed{\text{z376}}$ $\mathbb{G}_{2,2}^{(1,1;c)}(E_u) = \frac{\sqrt{2}\mathbb{G}_{0}^{(1,1;a)}(A_{1u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$

$\boxed{\text{z377}}$ $\mathbb{G}_{1,1}^{(c)}(T_{1g}) = \frac{\sqrt{6}\mathbb{T}_{1,2}^{(a)}(T_{1u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} - \frac{\sqrt{6}\mathbb{T}_{1,3}^{(a)}(T_{1u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z378}}$ $$\mathbb{G}_{1,2}^{(c)}(T_{1g}) = -\frac{\sqrt{6}\mathbb{T}_{1,1}^{(a)}(T_{1u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \frac{\sqrt{6}\mathbb{T}_{1,3}^{(a)}(T_{1u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$$

$\boxed{\text{z379}}$ $$\mathbb{G}_{1,3}^{(c)}(T_{1g}) = \frac{\sqrt{6}\mathbb{T}_{1,1}^{(a)}(T_{1u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} - \frac{\sqrt{6}\mathbb{T}_{1,2}^{(a)}(T_{1u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$$

$\boxed{\text{z380}}$ $$\mathbb{G}_{1,1}^{(1,-1;c)}(T_{1g}) = -\frac{\sqrt{30}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,1}^{(b)}(T_{1u})}{30} + \frac{\sqrt{10}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,1}^{(b)}(T_{1u})}{10} + \frac{\sqrt{10}\mathbb{M}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{10} + \frac{\sqrt{10}\mathbb{M}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{10}$$

$\boxed{\text{z381}}$ $$\mathbb{G}_{1,2}^{(1,-1;c)}(T_{1g}) = -\frac{\sqrt{30}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,2}^{(b)}(T_{1u})}{30} + \frac{\sqrt{10}\mathbb{M}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{10} - \frac{\sqrt{10}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,2}^{(b)}(T_{1u})}{10} + \frac{\sqrt{10}\mathbb{M}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{10}$$

$\boxed{\text{z382}}$ $$\mathbb{G}_{1,3}^{(1,-1;c)}(T_{1g}) = \frac{\sqrt{30}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,3}^{(b)}(T_{1u})}{15} + \frac{\sqrt{10}\mathbb{M}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{10} + \frac{\sqrt{10}\mathbb{M}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{10}$$

$\boxed{\text{z383}}$ $$\mathbb{G}_{3,1}^{(1,-1;c)}(T_{1g}) = -\frac{\sqrt{5}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,1}^{(b)}(T_{1u})}{10} + \frac{\sqrt{15}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,1}^{(b)}(T_{1u})}{10} - \frac{\sqrt{15}\mathbb{M}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{15} - \frac{\sqrt{15}\mathbb{M}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{15}$$

$\boxed{\text{z384}}$ $$\mathbb{G}_{3,2}^{(1,-1;c)}(T_{1g}) = -\frac{\sqrt{5}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,2}^{(b)}(T_{1u})}{10} - \frac{\sqrt{15}\mathbb{M}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{15} - \frac{\sqrt{15}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,2}^{(b)}(T_{1u})}{10} - \frac{\sqrt{15}\mathbb{M}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{15}$$

$\boxed{\text{z385}}$ $$\mathbb{G}_{3,3}^{(1,-1;c)}(T_{1g}) = \frac{\sqrt{5}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,3}^{(b)}(T_{1u})}{5} - \frac{\sqrt{15}\mathbb{M}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{15} - \frac{\sqrt{15}\mathbb{M}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{15}$$

$\boxed{\text{z491}}$ $$\mathbb{G}_{1,1}^{(1,0;c)}(T_{1g}) = \frac{\sqrt{6}\mathbb{T}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} - \frac{\sqrt{6}\mathbb{T}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6}$$

$\boxed{\text{z492}}$ $$\mathbb{G}_{1,2}^{(1,0;c)}(T_{1g}) = -\frac{\sqrt{6}\mathbb{T}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \frac{\sqrt{6}\mathbb{T}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$$

$\boxed{\text{z493}}$ $$\mathbb{G}_{1,3}^{(1,0;c)}(T_{1g}) = \frac{\sqrt{6}\mathbb{T}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} - \frac{\sqrt{6}\mathbb{T}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$$

$\boxed{\text{z494}}$ $$\mathbb{G}_{1,1}^{(1,1;c)}(T_{1g}) = \frac{\sqrt{3}\mathbb{M}_{0}^{(1,1;a)}(A_{1u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{3}$$

$\boxed{\text{z495}}$ $$\mathbb{G}_{1,2}^{(1,1;c)}(T_{1g}) = \frac{\sqrt{3}\mathbb{M}_{0}^{(1,1;a)}(A_{1u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{3}$$

$\boxed{\text{z496}}$ $$\mathbb{G}_{1,3}^{(1,1;c)}(T_{1g}) = \frac{\sqrt{3}\mathbb{M}_{0}^{(1,1;a)}(A_{1u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$$

$\boxed{\text{z497}}$ $\mathbb{G}_{3,1}^{(1,-1;c)}(T_{2g}) = -\frac{\sqrt{3}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6} - \frac{\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6} - \frac{\mathbb{M}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3} + \frac{\mathbb{M}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z498}}$ $\mathbb{G}_{3,2}^{(1,-1;c)}(T_{2g}) = \frac{\sqrt{3}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} + \frac{\mathbb{M}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3} - \frac{\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} - \frac{\mathbb{M}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z499}}$ $\mathbb{G}_{3,3}^{(1,-1;c)}(T_{2g}) = -\frac{\mathbb{M}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{3} + \frac{\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3} + \frac{\mathbb{M}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z500}}$ $\mathbb{G}_{2,1}^{(1,-1;c)}(T_{2u}) = \frac{\sqrt{3}\mathbb{G}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{0}^{(b)}(A_{1g})}{3}$

$\boxed{\text{z501}}$ $\mathbb{G}_{2,2}^{(1,-1;c)}(T_{2u}) = \frac{\sqrt{3}\mathbb{G}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{0}^{(b)}(A_{1g})}{3}$

$\boxed{\text{z502}}$ $\mathbb{G}_{2,3}^{(1,-1;c)}(T_{2u}) = \frac{\sqrt{3}\mathbb{G}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{0}^{(b)}(A_{1g})}{3}$

- 'A'-'A' bond-cluster
  * bra: $\langle p_x,\uparrow|$, $\langle p_x,\downarrow|$, $\langle p_y,\uparrow|$, $\langle p_y,\downarrow|$, $\langle p_z,\uparrow|$, $\langle p_z,\downarrow|$
  * ket: $|p_x,\uparrow\rangle$, $|p_x,\downarrow\rangle$, $|p_y,\uparrow\rangle$, $|p_y,\downarrow\rangle$, $|p_z,\uparrow\rangle$, $|p_z,\downarrow\rangle$
  * wyckoff: `3a@3d`

$\boxed{\text{z7}}$ $\mathbb{Q}_{0}^{(c)}(A_{1g},a) = \mathbb{Q}_{0}^{(a)}(A_{1g})\mathbb{Q}_{0}^{(b)}(A_{1g})$

$\boxed{\text{z8}}$ $\mathbb{Q}_{0}^{(c)}(A_{1g},b) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$

$\boxed{\text{z9}}$ $\mathbb{Q}_{0}^{(1,-1;c)}(A_{1g}) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$

$\boxed{\text{z10}}$ $\mathbb{Q}_{0}^{(1,1;c)}(A_{1g}) = \mathbb{Q}_{0}^{(1,1;a)}(A_{1g})\mathbb{Q}_{0}^{(b)}(A_{1g})$

$\boxed{\text{z22}}$ $\mathbb{Q}_{3}^{(1,-1;c)}(A_{2u}) = -\frac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{3} - \frac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{3} - \frac{\sqrt{3}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z23}}$ $\mathbb{Q}_{3}^{(1,0;c)}(A_{2u}) = \frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{3} + \frac{\sqrt{3}\mathbb{T}_{2,2}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{3} + \frac{\sqrt{3}\mathbb{T}_{2,3}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z42}}$ $$\mathbb{Q}_{2,1}^{(c)}(E_g, a) = \frac{\sqrt{2}\mathbb{Q}_{0}^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

$\boxed{\text{z43}}$ $$\mathbb{Q}_{2,2}^{(c)}(E_g, a) = \frac{\sqrt{2}\mathbb{Q}_{0}^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$\boxed{\text{z44}}$ $$\mathbb{Q}_{2,1}^{(c)}(E_g, b) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$$

$\boxed{\text{z45}}$ $$\mathbb{Q}_{2,2}^{(c)}(E_g, b) = \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$$

$\boxed{\text{z46}}$ $$\mathbb{Q}_{2,1}^{(c)}(E_g, c) = \frac{\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \frac{\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$\boxed{\text{z47}}$ $$\mathbb{Q}_{2,2}^{(c)}(E_g, c) = -\frac{\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2} - \frac{\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

$\boxed{\text{z48}}$ $$\mathbb{Q}_{2,1}^{(1,-1;c)}(E_g, a) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$$

$\boxed{\text{z49}}$ $$\mathbb{Q}_{2,2}^{(1,-1;c)}(E_g, a) = \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$$

$\boxed{\text{z50}}$ $$\mathbb{Q}_{2,1}^{(1,-1;c)}(E_g, b) = \frac{\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \frac{\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$\boxed{\text{z51}}$ $$\mathbb{Q}_{2,2}^{(1,-1;c)}(E_g, b) = -\frac{\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2} - \frac{\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

$\boxed{\text{z52}}$ $$\mathbb{Q}_{2,1}^{(1,1;c)}(E_g) = \frac{\sqrt{2}\mathbb{Q}_{0}^{(1,1;a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

$\boxed{\text{z53}}$ $$\mathbb{Q}_{2,2}^{(1,1;c)}(E_g) = \frac{\sqrt{2}\mathbb{Q}_{0}^{(1,1;a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$\boxed{\text{z104}}$ $$\mathbb{Q}_{4,1}^{(c)}(T_{1g}) = -\frac{\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{6}$$

$\boxed{\text{z105}}$ $$\mathbb{Q}_{4,2}^{(c)}(T_{1g}) = \frac{\mathbb{Q}_{2,2}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{Q}_{2,2}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{6}$$

$\boxed{\text{z106}}$ $$\mathbb{Q}_{4,3}^{(c)}(T_{1g}) = \frac{\sqrt{3}\mathbb{Q}_{2,3}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{3}$$

$\boxed{\text{z107}}$ $$\mathbb{Q}_{4,1}^{(1,-1;c)}(T_{1g}) = -\frac{\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{6}$$

$\boxed{\text{z108}}$ $$\mathbb{Q}_{4,2}^{(1,-1;c)}(T_{1g}) = \frac{\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{6}$$

$\boxed{\text{z109}}$ $$\mathbb{Q}_{4,3}^{(1,-1;c)}(T_{1g}) = \frac{\sqrt{3}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{3}$$

$\boxed{\text{z110}}$ $$\mathbb{Q}_{1,1}^{(c)}(T_{1u}) = \frac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} - \frac{\sqrt{6}\mathbb{M}_{1,3}^{(a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6}$$

$\boxed{\text{z111}}$ $$\mathbb{Q}_{1,2}^{(c)}(T_{1u}) = -\frac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$$

$\boxed{\text{z112}}$ $$\mathbb{Q}_{1,3}^{(c)}(T_{1u}) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} - \frac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$$

$\boxed{\text{z113}}$ $$\mathbb{Q}_{1,1}^{(1,-1;c)}(T_{1u}) = \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} - \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6}$$

$\boxed{\text{z114}}$ $$\mathbb{Q}_{1,2}^{(1,-1;c)}(T_{1u}) = -\frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$$

$\boxed{\text{z115}}$ $$\mathbb{Q}_{1,3}^{(1,-1;c)}(T_{1u}) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} - \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$$

$\boxed{\text{z188}}$ $$\mathbb{Q}_{3,1}^{(1,-1;c)}(T_{1u}) = -\frac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{4} - \frac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{12} + \frac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{4} - \frac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{12}$$

$\boxed{\text{z189}}$ $$\mathbb{Q}_{3,2}^{(1,-1;c)}(T_{1u}) = \frac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{4} - \frac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{12} - \frac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{4} - \frac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{12}$$

$\boxed{\text{z190}}$ $$\mathbb{Q}_{3,3}^{(1,-1;c)}(T_{1u}) = -\frac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{4} - \frac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{12} + \frac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{4} - \frac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{12}$$

$\boxed{\text{z191}}$ $$\mathbb{Q}_{1,1}^{(1,0;c)}(T_{1u}) = -\frac{\sqrt{30}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(T_{1u})}{30} + \frac{\sqrt{10}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(T_{1u})}{10} + \frac{\sqrt{10}\mathbb{T}_{2,2}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{10} + \frac{\sqrt{10}\mathbb{T}_{2,3}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{10}$$

$$\boxed{\text{z192}} \quad \mathbb{Q}_{1,2}^{(1,0;c)}(T_{1u}) = -\frac{\sqrt{30}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(T_{1u})}{30} + \frac{\sqrt{10}\mathbb{T}_{2,1}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{10} - \frac{\sqrt{10}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(T_{1u})}{10} + \frac{\sqrt{10}\mathbb{T}_{2,3}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{10}$$

$$\boxed{\text{z193}} \quad \mathbb{Q}_{1,3}^{(1,0;c)}(T_{1u}) = \frac{\sqrt{30}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,3}^{(b)}(T_{1u})}{15} + \frac{\sqrt{10}\mathbb{T}_{2,1}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{10} + \frac{\sqrt{10}\mathbb{T}_{2,2}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{10}$$

$$\boxed{\text{z194}} \quad \mathbb{Q}_{3,1}^{(1,0;c)}(T_{1u}) = -\frac{\sqrt{5}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(T_{1u})}{10} + \frac{\sqrt{15}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(T_{1u})}{10} - \frac{\sqrt{15}\mathbb{T}_{2,2}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{15} - \frac{\sqrt{15}\mathbb{T}_{2,3}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{15}$$

$$\boxed{\text{z195}} \quad \mathbb{Q}_{3,2}^{(1,0;c)}(T_{1u}) = -\frac{\sqrt{5}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(T_{1u})}{10} - \frac{\sqrt{15}\mathbb{T}_{2,1}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{15} - \frac{\sqrt{15}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(T_{1u})}{10} - \frac{\sqrt{15}\mathbb{T}_{2,3}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{15}$$

$$\boxed{\text{z196}} \quad \mathbb{Q}_{3,3}^{(1,0;c)}(T_{1u}) = \frac{\sqrt{5}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,3}^{(b)}(T_{1u})}{5} - \frac{\sqrt{15}\mathbb{T}_{2,1}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{15} - \frac{\sqrt{15}\mathbb{T}_{2,2}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{15}$$

$$\boxed{\text{z197}} \quad \mathbb{Q}_{1,1}^{(1,1;c)}(T_{1u}) = \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} - \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6}$$

$$\boxed{\text{z198}} \quad \mathbb{Q}_{1,2}^{(1,1;c)}(T_{1u}) = -\frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$$

$$\boxed{\text{z199}} \quad \mathbb{Q}_{1,3}^{(1,1;c)}(T_{1u}) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} - \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$$

$$\boxed{\text{z200}} \quad \mathbb{Q}_{2,1}^{(c)}(T_{2g}, a) = \frac{\sqrt{3}\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_{0}^{(b)}(A_{1g})}{3}$$

$$\boxed{\text{z201}} \quad \mathbb{Q}_{2,2}^{(c)}(T_{2g}, a) = \frac{\sqrt{3}\mathbb{Q}_{2,2}^{(a)}(T_{2g})\mathbb{Q}_{0}^{(b)}(A_{1g})}{3}$$

$$\boxed{\text{z202}} \quad \mathbb{Q}_{2,3}^{(c)}(T_{2g}, a) = \frac{\sqrt{3}\mathbb{Q}_{2,3}^{(a)}(T_{2g})\mathbb{Q}_{0}^{(b)}(A_{1g})}{3}$$

$$\boxed{\text{z273}} \quad \mathbb{Q}_{2,1}^{(c)}(T_{2g}, b) = \frac{\sqrt{3}\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} - \frac{\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z274}} \quad \mathbb{Q}_{2,2}^{(c)}(T_{2g}, b) = \frac{\sqrt{3}\mathbb{Q}_{2,2}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} + \frac{\mathbb{Q}_{2,2}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z275}} \quad \mathbb{Q}_{2,3}^{(c)}(T_{2g}, b) = -\frac{\sqrt{3}\mathbb{Q}_{2,3}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{3}$$

$$\boxed{\text{z276}}\quad \mathbb{Q}_{2,1}^{(1,-1;c)}(T_{2g},a) = \frac{\sqrt{3}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{0}^{(b)}(A_{1g})}{3}$$

$$\boxed{\text{z288}}\quad \mathbb{Q}_{2,2}^{(1,-1;c)}(T_{2g},a) = \frac{\sqrt{3}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{0}^{(b)}(A_{1g})}{3}$$

$$\boxed{\text{z289}}\quad \mathbb{Q}_{2,3}^{(1,-1;c)}(T_{2g},a) = \frac{\sqrt{3}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{0}^{(b)}(A_{1g})}{3}$$

$$\boxed{\text{z310}}\quad \mathbb{Q}_{2,1}^{(1,-1;c)}(T_{2g},b) = \frac{\sqrt{3}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{g})}{6} - \frac{\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{g})}{2}$$

$$\boxed{\text{z311}}\quad \mathbb{Q}_{2,2}^{(1,-1;c)}(T_{2g},b) = \frac{\sqrt{3}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{g})}{6} + \frac{\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{g})}{2}$$

$$\boxed{\text{z312}}\quad \mathbb{Q}_{2,3}^{(1,-1;c)}(T_{2g},b) = -\frac{\sqrt{3}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{g})}{3}$$

$$\boxed{\text{z313}}\quad \mathbb{Q}_{2,1}^{(1,0;c)}(T_{2g}) = -\frac{\mathbb{G}_{1,1}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{g})}{2} - \frac{\sqrt{3}\mathbb{G}_{1,1}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{g})}{6}$$

$$\boxed{\text{z314}}\quad \mathbb{Q}_{2,2}^{(1,0;c)}(T_{2g}) = \frac{\mathbb{G}_{1,2}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{g})}{2} - \frac{\sqrt{3}\mathbb{G}_{1,2}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{g})}{6}$$

$$\boxed{\text{z315}}\quad \mathbb{Q}_{2,3}^{(1,0;c)}(T_{2g}) = \frac{\sqrt{3}\mathbb{G}_{1,3}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{g})}{3}$$

$$\boxed{\text{z316}}\quad \mathbb{Q}_{3,1}^{(1,-1;c)}(T_{2u}) = \frac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{12} + \frac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{12} + \frac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{12} - \frac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{12} + \frac{\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{3}$$

$$\boxed{\text{z317}}\quad \mathbb{Q}_{3,2}^{(1,-1;c)}(T_{2u}) = \frac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{12} - \frac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{12} + \frac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{12} + \frac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{12} + \frac{\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{3}$$

$$\boxed{\text{z318}}\quad \mathbb{Q}_{3,3}^{(1,-1;c)}(T_{2u}) = \frac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{12} + \frac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{12} + \frac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{12} - \frac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{12} + \frac{\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$$

$$\boxed{\text{z319}}\quad \mathbb{Q}_{3,1}^{(1,0;c)}(T_{2u}) = -\frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(E_{g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6} - \frac{\mathbb{T}_{2,2}^{(1,0;a)}(E_{g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6} - \frac{\mathbb{T}_{2,2}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3} + \frac{\mathbb{T}_{2,3}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{3}$$

$$\boxed{\text{z320}}\quad \mathbb{Q}_{3,2}^{(1,0;c)}(T_{2u}) = \frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(E_{g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} + \frac{\mathbb{T}_{2,1}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3} - \frac{\mathbb{T}_{2,2}^{(1,0;a)}(E_{g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} - \frac{\mathbb{T}_{2,3}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{3}$$

$\boxed{\text{z321}}$ $$\mathbb{Q}_{3,3}^{(1,0;c)}(T_{2u}) = -\frac{\mathbb{T}_{2,1}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{3} + \frac{\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3} + \frac{\mathbb{T}_{2,2}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{3}$$

$\boxed{\text{z386}}$ $$\mathbb{G}_{0}^{(c)}(A_{1u}) = \frac{\sqrt{3}\mathbb{M}_{1,1}^{(a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{3} + \frac{\sqrt{3}\mathbb{M}_{1,2}^{(a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{3} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$$

$\boxed{\text{z387}}$ $$\mathbb{G}_{0}^{(1,-1;c)}(A_{1u}) = \frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{3} + \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{3} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$$

$\boxed{\text{z388}}$ $$\mathbb{G}_{4}^{(1,-1;c)}(A_{1u}) = \frac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{3} + \frac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{3} + \frac{\sqrt{3}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$$

$\boxed{\text{z389}}$ $$\mathbb{G}_{0}^{(1,1;c)}(A_{1u}) = \frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{3} + \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{3} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$$

$\boxed{\text{z390}}$ $$\mathbb{G}_{3}^{(c)}(A_{2g}) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

$\boxed{\text{z391}}$ $$\mathbb{G}_{3}^{(1,-1;c)}(A_{2g}) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

$\boxed{\text{z392}}$ $$\mathbb{G}_{2,1}^{(c)}(E_u) = -\frac{\sqrt{3}\mathbb{M}_{1,1}^{(a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6} - \frac{\sqrt{3}\mathbb{M}_{1,2}^{(a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$$

$\boxed{\text{z393}}$ $$\mathbb{G}_{2,2}^{(c)}(E_u) = \frac{\mathbb{M}_{1,1}^{(a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{2} - \frac{\mathbb{M}_{1,2}^{(a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{2}$$

$\boxed{\text{z394}}$ $$\mathbb{G}_{2,1}^{(1,-1;c)}(E_u,a) = -\frac{\sqrt{42}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{28} - \frac{\sqrt{70}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{28} - \frac{\sqrt{42}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{28} + \frac{\sqrt{70}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{28} + \frac{\sqrt{42}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{14}$$

$\boxed{\text{z395}}$ $$\mathbb{G}_{2,2}^{(1,-1;c)}(E_u,a) = \frac{3\sqrt{14}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{28} - \frac{\sqrt{210}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{84} - \frac{3\sqrt{14}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{28} - \frac{\sqrt{210}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{84} + \frac{\sqrt{210}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{42}$$

$\boxed{\text{z396}}$ $$\mathbb{G}_{2,1}^{(1,-1;c)}(E_u,b) = -\frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6} - \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$$

$\boxed{\text{z397}}$ $$\mathbb{G}_{2,2}^{(1,-1;c)}(E_u,b) = \frac{\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{2} - \frac{\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{2}$$

$\boxed{\text{z398}}$ $$\mathbb{G}_{4,1}^{(1,-1;c)}(E_u) = -\frac{\sqrt{210}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{84} + \frac{3\sqrt{14}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{28} - \frac{\sqrt{210}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{84} - \frac{3\sqrt{14}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{28} + \frac{\sqrt{210}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{42}$$

$\boxed{\text{z399}}$ $\mathbb{G}_{4,2}^{(1,-1;c)}(E_u) = \frac{\sqrt{70}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{28} + \frac{\sqrt{42}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{28} - \frac{\sqrt{70}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{28} + \frac{\sqrt{42}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{28} - \frac{\sqrt{42}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{14}$

$\boxed{\text{z400}}$ $\mathbb{G}_{2,1}^{(1,0;c)}(E_u) = -\frac{\mathbb{T}_{2,1}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{2} + \frac{\mathbb{T}_{2,2}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{2}$

$\boxed{\text{z401}}$ $\mathbb{G}_{2,2}^{(1,0;c)}(E_u) = -\frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6} - \frac{\sqrt{3}\mathbb{T}_{2,2}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} + \frac{\sqrt{3}\mathbb{T}_{2,3}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z402}}$ $\mathbb{G}_{2,1}^{(1,1;c)}(E_u) = -\frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6} - \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z403}}$ $\mathbb{G}_{2,2}^{(1,1;c)}(E_u) = \frac{\mathbb{M}_{1,1}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{2} - \frac{\mathbb{M}_{1,2}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{2}$

$\boxed{\text{z404}}$ $\mathbb{G}_{1,1}^{(1,0;c)}(T_{1g},a) = \frac{\sqrt{3}\mathbb{G}_{1,1}^{(1,0;a)}(T_{1g})\mathbb{Q}_{0}^{(b)}(A_{1g})}{3}$

$\boxed{\text{z405}}$ $\mathbb{G}_{1,2}^{(1,0;c)}(T_{1g},a) = \frac{\sqrt{3}\mathbb{G}_{1,2}^{(1,0;a)}(T_{1g})\mathbb{Q}_{0}^{(b)}(A_{1g})}{3}$

$\boxed{\text{z406}}$ $\mathbb{G}_{1,3}^{(1,0;c)}(T_{1g},a) = \frac{\sqrt{3}\mathbb{G}_{1,3}^{(1,0;a)}(T_{1g})\mathbb{Q}_{0}^{(b)}(A_{1g})}{3}$

$\boxed{\text{z503}}$ $\mathbb{G}_{1,1}^{(1,0;c)}(T_{1g},b) = -\frac{\sqrt{3}\mathbb{G}_{1,1}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} + \frac{\mathbb{G}_{1,1}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$

$\boxed{\text{z504}}$ $\mathbb{G}_{1,2}^{(1,0;c)}(T_{1g},b) = -\frac{\sqrt{3}\mathbb{G}_{1,2}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} - \frac{\mathbb{G}_{1,2}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$

$\boxed{\text{z505}}$ $\mathbb{G}_{1,3}^{(1,0;c)}(T_{1g},b) = \frac{\sqrt{3}\mathbb{G}_{1,3}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{3}$

$\boxed{\text{z506}}$ $\mathbb{G}_{4,1}^{(1,-1;c)}(T_{1u}) = \frac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{12} - \frac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{4} - \frac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{12} - \frac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{4}$

$\boxed{\text{z507}}$ $\mathbb{G}_{4,2}^{(1,-1;c)}(T_{1u}) = -\frac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{12} - \frac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{4} + \frac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{12} - \frac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{4}$

$\boxed{\text{z508}}$ $\mathbb{G}_{4,3}^{(1,-1;c)}(T_{1u}) = \frac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{12} - \frac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{4} - \frac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{12} - \frac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{4}$

z509 $\mathbb{G}_{2,1}^{(c)}(T_{2u}) = \frac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6}$

z510 $\mathbb{G}_{2,2}^{(c)}(T_{2u}) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$

z511 $\mathbb{G}_{2,3}^{(c)}(T_{2u}) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} + \frac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$

z512 $\mathbb{G}_{2,1}^{(1,-1;c)}(T_{2u},a) = -\frac{\sqrt{21}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{21} + \frac{\sqrt{35}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{21} - \frac{\sqrt{21}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{21} - \frac{\sqrt{35}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{21} + \frac{\sqrt{35}\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{21}$

z513 $\mathbb{G}_{2,2}^{(1,-1;c)}(T_{2u},a) = -\frac{\sqrt{21}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{21} - \frac{\sqrt{35}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{21} - \frac{\sqrt{21}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{21} + \frac{\sqrt{35}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{21} + \frac{\sqrt{35}\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{21}$

z514 $\mathbb{G}_{2,3}^{(1,-1;c)}(T_{2u},a) = -\frac{\sqrt{21}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{21} + \frac{\sqrt{35}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{21} - \frac{\sqrt{21}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{21} - \frac{\sqrt{35}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{21} + \frac{\sqrt{35}\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{21}$

z515 $\mathbb{G}_{2,1}^{(1,-1;c)}(T_{2u},b) = \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6}$

z516 $\mathbb{G}_{2,2}^{(1,-1;c)}(T_{2u},b) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$

z517 $\mathbb{G}_{2,3}^{(1,-1;c)}(T_{2u},b) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} + \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$

z518 $\mathbb{G}_{4,1}^{(1,-1;c)}(T_{2u}) = -\frac{\sqrt{105}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{84} - \frac{3\sqrt{7}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{28} - \frac{\sqrt{105}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{84} + \frac{3\sqrt{7}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{28} + \frac{\sqrt{7}\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{7}$

z519 $\mathbb{G}_{4,2}^{(1,-1;c)}(T_{2u}) = -\frac{\sqrt{105}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{84} + \frac{3\sqrt{7}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{28} - \frac{\sqrt{105}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{84} - \frac{3\sqrt{7}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{28} + \frac{\sqrt{7}\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{7}$

z520 $\mathbb{G}_{4,3}^{(1,-1;c)}(T_{2u}) = -\frac{\sqrt{105}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{84} - \frac{3\sqrt{7}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{28} - \frac{\sqrt{105}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{84} + \frac{3\sqrt{7}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{28} + \frac{\sqrt{7}\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{7}$

z521 $\mathbb{G}_{2,1}^{(1,0;c)}(T_{2u}) = \frac{\sqrt{6}\mathbb{T}_{2,1}^{(1,0;a)}(E_{g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6} + \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(E_{g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6} - \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \frac{\sqrt{2}\mathbb{T}_{2,3}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6}$

z522 $\mathbb{G}_{2,2}^{(1,0;c)}(T_{2u}) = -\frac{\sqrt{6}\mathbb{T}_{2,1}^{(1,0;a)}(E_{g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} + \frac{\sqrt{2}\mathbb{T}_{2,1}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(E_{g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} - \frac{\sqrt{2}\mathbb{T}_{2,3}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z523}}$ $\mathbb{G}_{2,3}^{(1,0;c)}(T_{2u}) = -\frac{\sqrt{2}\mathbb{T}_{2,1}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} - \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3} + \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z524}}$ $\mathbb{G}_{2,1}^{(1,1;c)}(T_{2u}) = \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z525}}$ $\mathbb{G}_{2,2}^{(1,1;c)}(T_{2u}) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z526}}$ $\mathbb{G}_{2,3}^{(1,1;c)}(T_{2u}) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} + \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$

- 'A'-'A' bond-cluster
  * bra: $\langle s,\uparrow|$, $\langle s,\downarrow|$
  * ket: $|s,\uparrow\rangle$, $|s,\downarrow\rangle$
  * wyckoff: `6b@3c`

$\boxed{\text{z11}}$ $\mathbb{Q}_{0}^{(c)}(A_{1g}) = \mathbb{Q}_{0}^{(a)}(A_{1g})\mathbb{Q}_{0}^{(b)}(A_{1g})$

$\boxed{\text{z54}}$ $\mathbb{Q}_{3}^{(1,-1;c)}(A_{2u}) = \frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{3} + \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{3} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{3}$

$\boxed{\text{z55}}$ $\mathbb{Q}_{2,1}^{(c)}(E_g) = \frac{\sqrt{2}\mathbb{Q}_{0}^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$

$\boxed{\text{z203}}$ $\mathbb{Q}_{2,2}^{(c)}(E_g) = \frac{\sqrt{2}\mathbb{Q}_{0}^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$

$\boxed{\text{z204}}$ $\mathbb{Q}_{1,1}^{(1,-1;c)}(T_{1u},a) = \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} - \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z205}}$ $\mathbb{Q}_{1,2}^{(1,-1;c)}(T_{1u},a) = -\frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z277}}$ $\mathbb{Q}_{1,3}^{(1,-1;c)}(T_{1u},a) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} - \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z290}}$ $\mathbb{Q}_{1,1}^{(1,-1;c)}(T_{1u},b) = \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6}$

$\boxed{\text{z322}}$ $\mathbb{Q}_{1,2}^{(1,-1;c)}(T_{1u},b) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6}$

$\boxed{\text{z323}}$ $\mathbb{Q}_{1,3}^{(1,-1;c)}(T_{1u},b) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6} + \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6}$

$\boxed{\text{z324}}$ $\mathbb{Q}_{2,1}^{(c)}(T_{2g}) = \frac{\sqrt{3}\mathbb{Q}_{0}^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{3}$

$\boxed{\text{z325}}$ $\mathbb{Q}_{2,2}^{(c)}(T_{2g}) = \frac{\sqrt{3}\mathbb{Q}_{0}^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{3}$

$\boxed{\text{z407}}$ $\mathbb{Q}_{2,3}^{(c)}(T_{2g}) = \frac{\sqrt{3}\mathbb{Q}_{0}^{(a)}(A_{1g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{3}$

$\boxed{\text{z408}}$ $\mathbb{Q}_{3,1}^{(1,-1;c)}(T_{2u}) = \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{6} - \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6}$

$\boxed{\text{z409}}$ $\mathbb{Q}_{3,2}^{(1,-1;c)}(T_{2u}) = -\frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6}$

$\boxed{\text{z410}}$ $\mathbb{Q}_{3,3}^{(1,-1;c)}(T_{2u}) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6} - \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6}$

$\boxed{\text{z411}}$ $\mathbb{G}_{0}^{(1,-1;c)}(A_{1u}) = \frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{3} + \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{3} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z412}}$ $\mathbb{G}_{2,1}^{(1,-1;c)}(E_{u},a) = -\frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6} - \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z527}}$ $\mathbb{G}_{2,2}^{(1,-1;c)}(E_{u},a) = \frac{\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{2} - \frac{\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{2}$

$\boxed{\text{z528}}$ $\mathbb{G}_{2,1}^{(1,-1;c)}(E_{u},b) = \frac{\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{2} - \frac{\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{2}$

$\boxed{\text{z529}}$ $\mathbb{G}_{2,2}^{(1,-1;c)}(E_{u},b) = \frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6} + \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6} - \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{3}$

$\boxed{\text{z530}}$ $\mathbb{G}_{2,1}^{(1,-1;c)}(T_{2u}) = \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z531}}$ $\mathbb{G}_{2,2}^{(1,-1;c)}(T_{2u}) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z532}}$ $\mathbb{G}_{2,3}^{(1,-1;c)}(T_{2u}) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} + \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$

- 'A'-'A' bond-cluster
  * bra: $\langle s,\uparrow|$, $\langle s,\downarrow|$
  * ket: $|p_x,\uparrow\rangle$, $|p_x,\downarrow\rangle$, $|p_y,\uparrow\rangle$, $|p_y,\downarrow\rangle$, $|p_z,\uparrow\rangle$, $|p_z,\downarrow\rangle$
  * wyckoff: `6b@3c`

$\boxed{\text{z12}}$ $\mathbb{Q}_{0}^{(c)}(A_{1g}) = \frac{\sqrt{3}\mathbb{T}_{1,1}^{(a)}(T_{1u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{3} + \frac{\sqrt{3}\mathbb{T}_{1,2}^{(a)}(T_{1u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{3} + \frac{\sqrt{3}\mathbb{T}_{1,3}^{(a)}(T_{1u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z13}}$ $\mathbb{Q}_{0}^{(1,-1;c)}(A_{1g}) = \frac{\sqrt{3}\mathbb{M}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{3} + \frac{\sqrt{3}\mathbb{M}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{3} + \frac{\sqrt{3}\mathbb{M}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{3}$

$\boxed{\text{z14}}$ $\mathbb{Q}_{0}^{(1,0;c)}(A_{1g}) = \frac{\sqrt{3}\mathbb{T}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{3} + \frac{\sqrt{3}\mathbb{T}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{3} + \frac{\sqrt{3}\mathbb{T}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z24}}$ $\mathbb{Q}_{3}^{(c)}(A_{2u}) = \frac{\sqrt{3}\mathbb{Q}_{1,1}^{(a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{3} + \frac{\sqrt{3}\mathbb{Q}_{1,2}^{(a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{3} + \frac{\sqrt{3}\mathbb{Q}_{1,3}^{(a)}(T_{1u})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{3}$

$\boxed{\text{z25}}$ $\mathbb{Q}_{3}^{(1,-1;c)}(A_{2u}) = \frac{\sqrt{2}\mathbb{G}_{2,1}^{(1,-1;a)}(E_{u})\mathbb{Q}_{2,2}^{(b)}(E_{g})}{2} - \frac{\sqrt{2}\mathbb{G}_{2,2}^{(1,-1;a)}(E_{u})\mathbb{Q}_{2,1}^{(b)}(E_{g})}{2}$

$\boxed{\text{z26}}$ $\mathbb{Q}_{3}^{(1,0;c)}(A_{2u}) = \frac{\sqrt{3}\mathbb{Q}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{3} + \frac{\sqrt{3}\mathbb{Q}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{3} + \frac{\sqrt{3}\mathbb{Q}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{3}$

$\boxed{\text{z56}}$ $\mathbb{Q}_{2,1}^{(c)}(E_{g},a) = -\frac{\sqrt{3}\mathbb{T}_{1,1}^{(a)}(T_{1u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6} - \frac{\sqrt{3}\mathbb{T}_{1,2}^{(a)}(T_{1u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} + \frac{\sqrt{3}\mathbb{T}_{1,3}^{(a)}(T_{1u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z57}}$ $\mathbb{Q}_{2,2}^{(c)}(E_{g},a) = \frac{\mathbb{T}_{1,1}^{(a)}(T_{1u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{2} - \frac{\mathbb{T}_{1,2}^{(a)}(T_{1u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{2}$

$\boxed{\text{z58}}$ $\mathbb{Q}_{2,1}^{(c)}(E_{g},b) = \frac{\mathbb{T}_{1,1}^{(a)}(T_{1u})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{2} - \frac{\mathbb{T}_{1,2}^{(a)}(T_{1u})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{2}$

$\boxed{\text{z59}}$ $\mathbb{Q}_{2,2}^{(c)}(E_{g},b) = \frac{\sqrt{3}\mathbb{T}_{1,1}^{(a)}(T_{1u})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6} + \frac{\sqrt{3}\mathbb{T}_{1,2}^{(a)}(T_{1u})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6} - \frac{\sqrt{3}\mathbb{T}_{1,3}^{(a)}(T_{1u})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{3}$

$\boxed{\text{z60}}$ $$\mathbb{Q}_{2,1}^{(1,-1;c)}(E_g,a) = -\frac{\mathbb{M}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{2} + \frac{\mathbb{M}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{2}$$

$\boxed{\text{z61}}$ $$\mathbb{Q}_{2,2}^{(1,-1;c)}(E_g,a) = -\frac{\sqrt{3}\mathbb{M}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6} - \frac{\sqrt{3}\mathbb{M}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} + \frac{\sqrt{3}\mathbb{M}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$$

$\boxed{\text{z62}}$ $$\mathbb{Q}_{2,1}^{(1,-1;c)}(E_g,b) = \frac{\sqrt{3}\mathbb{M}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6} + \frac{\sqrt{3}\mathbb{M}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6} - \frac{\sqrt{3}\mathbb{M}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{3}$$

$\boxed{\text{z63}}$ $$\mathbb{Q}_{2,2}^{(1,-1;c)}(E_g,b) = -\frac{\mathbb{M}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{2} + \frac{\mathbb{M}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{2}$$

$\boxed{\text{z64}}$ $$\mathbb{Q}_{2,1}^{(1,0;c)}(E_g,a) = -\frac{\sqrt{3}\mathbb{T}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6} - \frac{\sqrt{3}\mathbb{T}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} + \frac{\sqrt{3}\mathbb{T}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$$

$\boxed{\text{z65}}$ $$\mathbb{Q}_{2,2}^{(1,0;c)}(E_g,a) = \frac{\mathbb{T}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{2} - \frac{\mathbb{T}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{2}$$

$\boxed{\text{z66}}$ $$\mathbb{Q}_{2,1}^{(1,0;c)}(E_g,b) = \frac{\mathbb{T}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{2} - \frac{\mathbb{T}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{2}$$

$\boxed{\text{z67}}$ $$\mathbb{Q}_{2,2}^{(1,0;c)}(E_g,b) = \frac{\sqrt{3}\mathbb{T}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6} + \frac{\sqrt{3}\mathbb{T}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6} - \frac{\sqrt{3}\mathbb{T}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{3}$$

$\boxed{\text{z116}}$ $$\mathbb{Q}_{4,1}^{(1,-1;c)}(T_{1g}) = -\frac{\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{M}_{2,1}^{(b)}(T_{2u})}{2} - \frac{\sqrt{3}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6}$$

$\boxed{\text{z117}}$ $$\mathbb{Q}_{4,2}^{(1,-1;c)}(T_{1g}) = \frac{\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{M}_{2,2}^{(b)}(T_{2u})}{2} - \frac{\sqrt{3}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6}$$

$\boxed{\text{z118}}$ $$\mathbb{Q}_{4,3}^{(1,-1;c)}(T_{1g}) = \frac{\sqrt{3}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{M}_{2,3}^{(b)}(T_{2u})}{3}$$

$\boxed{\text{z119}}$ $$\mathbb{Q}_{1,1}^{(c)}(T_{1u},a) = \frac{\sqrt{3}\mathbb{Q}_{1,1}^{(a)}(T_{1u})\mathbb{Q}_{0}^{(b)}(A_{1g})}{3}$$

$\boxed{\text{z120}}$ $$\mathbb{Q}_{1,2}^{(c)}(T_{1u},a) = \frac{\sqrt{3}\mathbb{Q}_{1,2}^{(a)}(T_{1u})\mathbb{Q}_{0}^{(b)}(A_{1g})}{3}$$

$\boxed{\text{z121}}$ $$\mathbb{Q}_{1,3}^{(c)}(T_{1u},a) = \frac{\sqrt{3}\mathbb{Q}_{1,3}^{(a)}(T_{1u})\mathbb{Q}_{0}^{(b)}(A_{1g})}{3}$$

$\boxed{\text{z122}}$ $\mathbb{Q}_{1,1}^{(c)}(T_{1u},b) = -\frac{\sqrt{30}\mathbb{Q}_{1,1}^{(a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{30} + \frac{\sqrt{10}\mathbb{Q}_{1,1}^{(a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{10} + \frac{\sqrt{10}\mathbb{Q}_{1,2}^{(a)}(T_{1u})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{10} + \frac{\sqrt{10}\mathbb{Q}_{1,3}^{(a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{10}$

$\boxed{\text{z123}}$ $\mathbb{Q}_{1,2}^{(c)}(T_{1u},b) = \frac{\sqrt{10}\mathbb{Q}_{1,1}^{(a)}(T_{1u})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{10} - \frac{\sqrt{30}\mathbb{Q}_{1,2}^{(a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{30} - \frac{\sqrt{10}\mathbb{Q}_{1,2}^{(a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{10} + \frac{\sqrt{10}\mathbb{Q}_{1,3}^{(a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{10}$

$\boxed{\text{z124}}$ $\mathbb{Q}_{1,3}^{(c)}(T_{1u},b) = \frac{\sqrt{10}\mathbb{Q}_{1,1}^{(a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{10} + \frac{\sqrt{10}\mathbb{Q}_{1,2}^{(a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{10} + \frac{\sqrt{30}\mathbb{Q}_{1,3}^{(a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{15}$

$\boxed{\text{z125}}$ $\mathbb{Q}_{3,1}^{(c)}(T_{1u}) = -\frac{\sqrt{5}\mathbb{Q}_{1,1}^{(a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{10} + \frac{\sqrt{15}\mathbb{Q}_{1,1}^{(a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{10} - \frac{\sqrt{15}\mathbb{Q}_{1,2}^{(a)}(T_{1u})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{15} - \frac{\sqrt{15}\mathbb{Q}_{1,3}^{(a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{15}$

$\boxed{\text{z126}}$ $\mathbb{Q}_{3,2}^{(c)}(T_{1u}) = -\frac{\sqrt{15}\mathbb{Q}_{1,1}^{(a)}(T_{1u})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{15} - \frac{\sqrt{5}\mathbb{Q}_{1,2}^{(a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{10} - \frac{\sqrt{15}\mathbb{Q}_{1,2}^{(a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{10} - \frac{\sqrt{15}\mathbb{Q}_{1,3}^{(a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{15}$

$\boxed{\text{z127}}$ $\mathbb{Q}_{3,3}^{(c)}(T_{1u}) = -\frac{\sqrt{15}\mathbb{Q}_{1,1}^{(a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{15} - \frac{\sqrt{15}\mathbb{Q}_{1,2}^{(a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{15} + \frac{\sqrt{5}\mathbb{Q}_{1,3}^{(a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{5}$

$\boxed{\text{z128}}$ $\mathbb{Q}_{1,1}^{(1,-1;c)}(T_{1u}) = -\frac{\sqrt{10}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{10} + \frac{\sqrt{10}\mathbb{G}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{10} + \frac{\sqrt{30}\mathbb{G}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{30}$
$- \frac{\sqrt{30}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{30} - \frac{\sqrt{30}\mathbb{G}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{30} + \frac{\sqrt{30}\mathbb{G}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{30}$

$\boxed{\text{z129}}$ $\mathbb{Q}_{1,2}^{(1,-1;c)}(T_{1u}) = \frac{\sqrt{10}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{10} + \frac{\sqrt{30}\mathbb{G}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{30} - \frac{\sqrt{30}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{30}$
$- \frac{\sqrt{10}\mathbb{G}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{10} + \frac{\sqrt{30}\mathbb{G}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{30} - \frac{\sqrt{30}\mathbb{G}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{30}$

$\boxed{\text{z130}}$ $\mathbb{Q}_{1,3}^{(1,-1;c)}(T_{1u}) = -\frac{\sqrt{30}\mathbb{G}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{30} + \frac{\sqrt{30}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{15} + \frac{\sqrt{30}\mathbb{G}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{30} - \frac{\sqrt{30}\mathbb{G}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{15}$

$\boxed{\text{z131}}$ $\mathbb{Q}_{3,1}^{(1,-1;c)}(T_{1u}) = \frac{\sqrt{10}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{20} - \frac{\sqrt{10}\mathbb{G}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{20} - \frac{\sqrt{30}\mathbb{G}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{60}$
$+ \frac{\sqrt{30}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{60} - \frac{\sqrt{30}\mathbb{G}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{15} + \frac{\sqrt{30}\mathbb{G}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{15}$

$\boxed{\text{z132}}$ $\mathbb{Q}_{3,2}^{(1,-1;c)}(T_{1u}) = -\frac{\sqrt{10}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{20} + \frac{\sqrt{30}\mathbb{G}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{15} + \frac{\sqrt{30}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{60}$
$+ \frac{\sqrt{10}\mathbb{G}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{20} - \frac{\sqrt{30}\mathbb{G}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{60} - \frac{\sqrt{30}\mathbb{G}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{15}$

$\boxed{\text{z133}}$ $$\mathbb{Q}_{3,3}^{(1,-1;c)}(T_{1u}) = -\frac{\sqrt{30}\mathbb{G}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{15} - \frac{\sqrt{30}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{30} + \frac{\sqrt{30}\mathbb{G}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{15} + \frac{\sqrt{30}\mathbb{G}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{30}$$

$\boxed{\text{z134}}$ $$\mathbb{Q}_{1,1}^{(1,0;c)}(T_{1u},a) = \frac{\sqrt{3}\mathbb{Q}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{Q}_{0}^{(b)}(A_{1g})}{3}$$

$\boxed{\text{z135}}$ $$\mathbb{Q}_{1,2}^{(1,0;c)}(T_{1u},a) = \frac{\sqrt{3}\mathbb{Q}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{Q}_{0}^{(b)}(A_{1g})}{3}$$

$\boxed{\text{z136}}$ $$\mathbb{Q}_{1,3}^{(1,0;c)}(T_{1u},a) = \frac{\sqrt{3}\mathbb{Q}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{Q}_{0}^{(b)}(A_{1g})}{3}$$

$\boxed{\text{z137}}$ $$\mathbb{Q}_{1,1}^{(1,0;c)}(T_{1u},b) = -\frac{\sqrt{30}\mathbb{Q}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{30} + \frac{\sqrt{10}\mathbb{Q}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{10} + \frac{\sqrt{10}\mathbb{Q}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{10} + \frac{\sqrt{10}\mathbb{Q}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{10}$$

$\boxed{\text{z138}}$ $$\mathbb{Q}_{1,2}^{(1,0;c)}(T_{1u},b) = \frac{\sqrt{10}\mathbb{Q}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{10} - \frac{\sqrt{30}\mathbb{Q}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{30} - \frac{\sqrt{10}\mathbb{Q}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{10} + \frac{\sqrt{10}\mathbb{Q}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{10}$$

$\boxed{\text{z139}}$ $$\mathbb{Q}_{1,3}^{(1,0;c)}(T_{1u},b) = \frac{\sqrt{10}\mathbb{Q}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{10} + \frac{\sqrt{10}\mathbb{Q}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{10} + \frac{\sqrt{30}\mathbb{Q}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{15}$$

$\boxed{\text{z140}}$ $$\mathbb{Q}_{3,1}^{(1,0;c)}(T_{1u}) = -\frac{\sqrt{5}\mathbb{Q}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{10} + \frac{\sqrt{15}\mathbb{Q}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{10} - \frac{\sqrt{15}\mathbb{Q}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{15} - \frac{\sqrt{15}\mathbb{Q}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{15}$$

$\boxed{\text{z141}}$ $$\mathbb{Q}_{3,2}^{(1,0;c)}(T_{1u}) = -\frac{\sqrt{15}\mathbb{Q}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{15} - \frac{\sqrt{5}\mathbb{Q}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{10} - \frac{\sqrt{15}\mathbb{Q}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{10} - \frac{\sqrt{15}\mathbb{Q}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{15}$$

$\boxed{\text{z142}}$ $$\mathbb{Q}_{3,3}^{(1,0;c)}(T_{1u}) = -\frac{\sqrt{15}\mathbb{Q}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{15} - \frac{\sqrt{15}\mathbb{Q}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{15} + \frac{\sqrt{5}\mathbb{Q}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{5}$$

$\boxed{\text{z206}}$ $$\mathbb{Q}_{2,1}^{(c)}(T_{2g},a) = \frac{\sqrt{6}\mathbb{T}_{1,2}^{(a)}(T_{1u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \frac{\sqrt{6}\mathbb{T}_{1,3}^{(a)}(T_{1u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6}$$

$\boxed{\text{z207}}$ $$\mathbb{Q}_{2,2}^{(c)}(T_{2g},a) = \frac{\sqrt{6}\mathbb{T}_{1,1}^{(a)}(T_{1u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \frac{\sqrt{6}\mathbb{T}_{1,3}^{(a)}(T_{1u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$$

$\boxed{\text{z208}}$ $$\mathbb{Q}_{2,3}^{(c)}(T_{2g},a) = \frac{\sqrt{6}\mathbb{T}_{1,1}^{(a)}(T_{1u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} + \frac{\sqrt{6}\mathbb{T}_{1,2}^{(a)}(T_{1u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$$

$\boxed{\text{z209}}$ $$\mathbb{Q}_{2,1}^{(c)}(T_{2g},b) = -\frac{\sqrt{6}\mathbb{T}_{1,2}^{(a)}(T_{1u})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{6} + \frac{\sqrt{6}\mathbb{T}_{1,3}^{(a)}(T_{1u})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6}$$

$$\boxed{\text{z210}} \quad \mathbb{Q}_{2,2}^{(c)}(T_{2g},b) = \frac{\sqrt{6}\mathbb{T}_{1,1}^{(a)}(T_{1u})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{6} - \frac{\sqrt{6}\mathbb{T}_{1,3}^{(a)}(T_{1u})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6}$$

$$\boxed{\text{z211}} \quad \mathbb{Q}_{2,3}^{(c)}(T_{2g},b) = -\frac{\sqrt{6}\mathbb{T}_{1,1}^{(a)}(T_{1u})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6} + \frac{\sqrt{6}\mathbb{T}_{1,2}^{(a)}(T_{1u})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6}$$

$$\boxed{\text{z212}} \quad \mathbb{Q}_{2,1}^{(1,-1;c)}(T_{2g},a) = \frac{\sqrt{6}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6} + \frac{\sqrt{2}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6} - \frac{\sqrt{2}\mathbb{M}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \frac{\sqrt{2}\mathbb{M}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6}$$

$$\boxed{\text{z213}} \quad \mathbb{Q}_{2,2}^{(1,-1;c)}(T_{2g},a) = -\frac{\sqrt{6}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} + \frac{\sqrt{2}\mathbb{M}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \frac{\sqrt{2}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} - \frac{\sqrt{2}\mathbb{M}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$$

$$\boxed{\text{z214}} \quad \mathbb{Q}_{2,3}^{(1,-1;c)}(T_{2g},a) = -\frac{\sqrt{2}\mathbb{M}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} - \frac{\sqrt{2}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3} + \frac{\sqrt{2}\mathbb{M}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$$

$$\boxed{\text{z215}} \quad \mathbb{Q}_{2,1}^{(1,-1;c)}(T_{2g},b) = \frac{\sqrt{30}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{M}_{2,1}^{(b)}(T_{2u})}{30} - \frac{\sqrt{10}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{M}_{2,1}^{(b)}(T_{2u})}{10} + \frac{\sqrt{10}\mathbb{M}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{10} + \frac{\sqrt{10}\mathbb{M}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{10}$$

$$\boxed{\text{z216}} \quad \mathbb{Q}_{2,2}^{(1,-1;c)}(T_{2g},b) = \frac{\sqrt{30}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{M}_{2,2}^{(b)}(T_{2u})}{30} + \frac{\sqrt{10}\mathbb{M}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{10} + \frac{\sqrt{10}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{M}_{2,2}^{(b)}(T_{2u})}{10} + \frac{\sqrt{10}\mathbb{M}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{10}$$

$$\boxed{\text{z217}} \quad \mathbb{Q}_{2,3}^{(1,-1;c)}(T_{2g},b) = -\frac{\sqrt{30}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{M}_{2,3}^{(b)}(T_{2u})}{15} + \frac{\sqrt{10}\mathbb{M}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{10} + \frac{\sqrt{10}\mathbb{M}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{10}$$

$$\boxed{\text{z218}} \quad \mathbb{Q}_{4,1}^{(1,-1;c)}(T_{2g}) = -\frac{\sqrt{5}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{M}_{2,1}^{(b)}(T_{2u})}{10} + \frac{\sqrt{15}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{M}_{2,1}^{(b)}(T_{2u})}{10} + \frac{\sqrt{15}\mathbb{M}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{15} + \frac{\sqrt{15}\mathbb{M}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{15}$$

$$\boxed{\text{z219}} \quad \mathbb{Q}_{4,2}^{(1,-1;c)}(T_{2g}) = -\frac{\sqrt{5}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{M}_{2,2}^{(b)}(T_{2u})}{10} + \frac{\sqrt{15}\mathbb{M}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{15} - \frac{\sqrt{15}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{M}_{2,2}^{(b)}(T_{2u})}{10} + \frac{\sqrt{15}\mathbb{M}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{15}$$

$$\boxed{\text{z220}} \quad \mathbb{Q}_{4,3}^{(1,-1;c)}(T_{2g}) = \frac{\sqrt{5}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{M}_{2,3}^{(b)}(T_{2u})}{5} + \frac{\sqrt{15}\mathbb{M}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{15} + \frac{\sqrt{15}\mathbb{M}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{15}$$

$$\boxed{\text{z221}} \quad \mathbb{Q}_{2,1}^{(1,0;c)}(T_{2g},a) = \frac{\sqrt{6}\mathbb{T}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \frac{\sqrt{6}\mathbb{T}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6}$$

$$\boxed{\text{z222}} \quad \mathbb{Q}_{2,2}^{(1,0;c)}(T_{2g},a) = \frac{\sqrt{6}\mathbb{T}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \frac{\sqrt{6}\mathbb{T}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$$

$$\boxed{\text{z223}} \quad \mathbb{Q}_{2,3}^{(1,0;c)}(T_{2g},a) = \frac{\sqrt{6}\mathbb{T}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} + \frac{\sqrt{6}\mathbb{T}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$$

$\boxed{\text{z224}}$ $$\mathbb{Q}_{2,1}^{(1,0;c)}(T_{2g},b) = -\frac{\sqrt{6}\mathbb{T}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{6} + \frac{\sqrt{6}\mathbb{T}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6}$$

$\boxed{\text{z225}}$ $$\mathbb{Q}_{2,2}^{(1,0;c)}(T_{2g},b) = \frac{\sqrt{6}\mathbb{T}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{6} - \frac{\sqrt{6}\mathbb{T}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6}$$

$\boxed{\text{z226}}$ $$\mathbb{Q}_{2,3}^{(1,0;c)}(T_{2g},b) = -\frac{\sqrt{6}\mathbb{T}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6} + \frac{\sqrt{6}\mathbb{T}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6}$$

$\boxed{\text{z227}}$ $$\mathbb{Q}_{2,1}^{(1,1;c)}(T_{2g}) = \frac{\sqrt{3}\mathbb{M}_{0}^{(1,1;a)}(A_{1u})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{3}$$

$\boxed{\text{z228}}$ $$\mathbb{Q}_{2,2}^{(1,1;c)}(T_{2g}) = \frac{\sqrt{3}\mathbb{M}_{0}^{(1,1;a)}(A_{1u})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{3}$$

$\boxed{\text{z229}}$ $$\mathbb{Q}_{2,3}^{(1,1;c)}(T_{2g}) = \frac{\sqrt{3}\mathbb{M}_{0}^{(1,1;a)}(A_{1u})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{3}$$

$\boxed{\text{z230}}$ $$\mathbb{Q}_{3,1}^{(c)}(T_{2u}) = -\frac{\sqrt{3}\mathbb{Q}_{1,1}^{(a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} - \frac{\mathbb{Q}_{1,1}^{(a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{6} + \frac{\mathbb{Q}_{1,2}^{(a)}(T_{1u})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{3} - \frac{\mathbb{Q}_{1,3}^{(a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{3}$$

$\boxed{\text{z231}}$ $$\mathbb{Q}_{3,2}^{(c)}(T_{2u}) = -\frac{\mathbb{Q}_{1,1}^{(a)}(T_{1u})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{3} + \frac{\sqrt{3}\mathbb{Q}_{1,2}^{(a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} - \frac{\mathbb{Q}_{1,2}^{(a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{6} + \frac{\mathbb{Q}_{1,3}^{(a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{3}$$

$\boxed{\text{z232}}$ $$\mathbb{Q}_{3,3}^{(c)}(T_{2u}) = \frac{\mathbb{Q}_{1,1}^{(a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{3} - \frac{\mathbb{Q}_{1,2}^{(a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{3} + \frac{\mathbb{Q}_{1,3}^{(a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{3}$$

$\boxed{\text{z278}}$ $$\mathbb{Q}_{3,1}^{(1,-1;c)}(T_{2u}) = \frac{\sqrt{6}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{12} - \frac{\sqrt{6}\mathbb{G}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{12} + \frac{\sqrt{2}\mathbb{G}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{4} - \frac{\sqrt{2}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{4}$$

$\boxed{\text{z279}}$ $$\mathbb{Q}_{3,2}^{(1,-1;c)}(T_{2u}) = \frac{\sqrt{6}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{12} + \frac{\sqrt{2}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{4} - \frac{\sqrt{6}\mathbb{G}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{12} - \frac{\sqrt{2}\mathbb{G}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{4}$$

$\boxed{\text{z280}}$ $$\mathbb{Q}_{3,3}^{(1,-1;c)}(T_{2u}) = -\frac{\sqrt{6}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{6} + \frac{\sqrt{6}\mathbb{G}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{6}$$

$\boxed{\text{z291}}$ $$\mathbb{Q}_{3,1}^{(1,0;c)}(T_{2u}) = -\frac{\sqrt{3}\mathbb{Q}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} - \frac{\mathbb{Q}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{6} + \frac{\mathbb{Q}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{3} - \frac{\mathbb{Q}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{3}$$

$\boxed{\text{z292}}$ $$\mathbb{Q}_{3,2}^{(1,0;c)}(T_{2u}) = -\frac{\mathbb{Q}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{3} + \frac{\sqrt{3}\mathbb{Q}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} - \frac{\mathbb{Q}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{6} + \frac{\mathbb{Q}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{3}$$

$\boxed{\text{z293}}$ $\mathbb{Q}_{3,3}^{(1,0;c)}(T_{2u}) = \frac{\mathbb{Q}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{3} - \frac{\mathbb{Q}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{3} + \frac{\mathbb{Q}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{3}$

$\boxed{\text{z326}}$ $\mathbb{G}_{0}^{(1,-1;c)}(A_{1u}) = \frac{\sqrt{5}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{5} + \frac{\sqrt{5}\mathbb{G}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{5} + \frac{\sqrt{5}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{5} + \frac{\sqrt{5}\mathbb{G}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{5} + \frac{\sqrt{5}\mathbb{G}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{5}$

$\boxed{\text{z327}}$ $\mathbb{G}_{4}^{(1,-1;c)}(A_{1u}) = \frac{\sqrt{30}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{10} - \frac{\sqrt{30}\mathbb{G}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{15} + \frac{\sqrt{30}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{10} - \frac{\sqrt{30}\mathbb{G}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{15} - \frac{\sqrt{30}\mathbb{G}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{15}$

$\boxed{\text{z328}}$ $\mathbb{G}_{0}^{(1,1;c)}(A_{1u}) = \mathbb{G}_{0}^{(1,1;a)}(A_{1u})\mathbb{Q}_{0}^{(b)}(A_{1g})$

$\boxed{\text{z329}}$ $\mathbb{G}_{3}^{(c)}(A_{2g}) = \frac{\sqrt{3}\mathbb{T}_{1,1}^{(a)}(T_{1u})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{3} + \frac{\sqrt{3}\mathbb{T}_{1,2}^{(a)}(T_{1u})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{3} + \frac{\sqrt{3}\mathbb{T}_{1,3}^{(a)}(T_{1u})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{3}$

$\boxed{\text{z330}}$ $\mathbb{G}_{3}^{(1,-1;c)}(A_{2g}) = \frac{\sqrt{3}\mathbb{M}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{3} + \frac{\sqrt{3}\mathbb{M}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{3} + \frac{\sqrt{3}\mathbb{M}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z331}}$ $\mathbb{G}_{3}^{(1,0;c)}(A_{2g}) = \frac{\sqrt{3}\mathbb{T}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{3} + \frac{\sqrt{3}\mathbb{T}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{3} + \frac{\sqrt{3}\mathbb{T}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{3}$

$\boxed{\text{z332}}$ $\mathbb{G}_{2,1}^{(c)}(E_u) = \frac{\mathbb{Q}_{1,1}^{(a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{2} - \frac{\mathbb{Q}_{1,2}^{(a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{2}$

$\boxed{\text{z333}}$ $\mathbb{G}_{2,2}^{(c)}(E_u) = \frac{\sqrt{3}\mathbb{Q}_{1,1}^{(a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{6} + \frac{\sqrt{3}\mathbb{Q}_{1,2}^{(a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{6} - \frac{\sqrt{3}\mathbb{Q}_{1,3}^{(a)}(T_{1u})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{3}$

$\boxed{\text{z334}}$ $\mathbb{G}_{2,1}^{(1,-1;c)}(E_u,a) = \frac{\sqrt{2}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$

$\boxed{\text{z335}}$ $\mathbb{G}_{2,2}^{(1,-1;c)}(E_u,a) = \frac{\sqrt{2}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$

$\boxed{\text{z336}}$ $\mathbb{G}_{2,1}^{(1,-1;c)}(E_u,b) = \frac{\sqrt{7}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{7} + \frac{\sqrt{7}\mathbb{G}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{14} - \frac{\sqrt{7}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{7} + \frac{\sqrt{7}\mathbb{G}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{14} - \frac{\sqrt{7}\mathbb{G}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{7}$

$\boxed{\text{z337}}$ $\mathbb{G}_{2,2}^{(1,-1;c)}(E_u,b) = -\frac{\sqrt{7}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{7} - \frac{\sqrt{21}\mathbb{G}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{14} - \frac{\sqrt{7}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{7} + \frac{\sqrt{21}\mathbb{G}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{14}$

$\boxed{\text{z413}}$ $\mathbb{G}_{4,1}^{(1,-1;c)}(E_u) = \frac{\sqrt{21}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{14} - \frac{\sqrt{21}\mathbb{G}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{21} - \frac{\sqrt{21}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{14} - \frac{\sqrt{21}\mathbb{G}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{21} + \frac{2\sqrt{21}\mathbb{G}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{21}$

$\boxed{\text{z414}}$ $\mathbb{G}_{4,2}^{(1,-1;c)}(E_u) = -\frac{\sqrt{21}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{14} + \frac{\sqrt{7}\mathbb{G}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{7} - \frac{\sqrt{21}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{14} - \frac{\sqrt{7}\mathbb{G}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{7}$

$\boxed{\text{z415}}$ $\mathbb{G}_{2,1}^{(1,0;c)}(E_u) = \frac{\mathbb{Q}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{2} - \frac{\mathbb{Q}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{2}$

$\boxed{\text{z416}}$ $\mathbb{G}_{2,2}^{(1,0;c)}(E_u) = \frac{\sqrt{3}\mathbb{Q}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{6} + \frac{\sqrt{3}\mathbb{Q}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{6} - \frac{\sqrt{3}\mathbb{Q}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{3}$

$\boxed{\text{z417}}$ $\mathbb{G}_{2,1}^{(1,1;c)}(E_u) = \frac{\sqrt{2}\mathbb{G}_{0}^{(1,1;a)}(A_{1u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$

$\boxed{\text{z418}}$ $\mathbb{G}_{2,2}^{(1,1;c)}(E_u) = \frac{\sqrt{2}\mathbb{G}_{0}^{(1,1;a)}(A_{1u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$

$\boxed{\text{z419}}$ $\mathbb{G}_{1,1}^{(c)}(T_{1g}, a) = \frac{\sqrt{6}\mathbb{T}_{1,2}^{(a)}(T_{1u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} - \frac{\sqrt{6}\mathbb{T}_{1,3}^{(a)}(T_{1u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z420}}$ $\mathbb{G}_{1,2}^{(c)}(T_{1g}, a) = -\frac{\sqrt{6}\mathbb{T}_{1,1}^{(a)}(T_{1u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \frac{\sqrt{6}\mathbb{T}_{1,3}^{(a)}(T_{1u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z421}}$ $\mathbb{G}_{1,3}^{(c)}(T_{1g}, a) = \frac{\sqrt{6}\mathbb{T}_{1,1}^{(a)}(T_{1u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} - \frac{\sqrt{6}\mathbb{T}_{1,2}^{(a)}(T_{1u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z422}}$ $\mathbb{G}_{1,1}^{(c)}(T_{1g}, b) = \frac{\sqrt{6}\mathbb{T}_{1,2}^{(a)}(T_{1u})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{6} + \frac{\sqrt{6}\mathbb{T}_{1,3}^{(a)}(T_{1u})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6}$

$\boxed{\text{z423}}$ $\mathbb{G}_{1,2}^{(c)}(T_{1g}, b) = \frac{\sqrt{6}\mathbb{T}_{1,1}^{(a)}(T_{1u})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{6} + \frac{\sqrt{6}\mathbb{T}_{1,3}^{(a)}(T_{1u})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6}$

$\boxed{\text{z424}}$ $\mathbb{G}_{1,3}^{(c)}(T_{1g}, b) = \frac{\sqrt{6}\mathbb{T}_{1,1}^{(a)}(T_{1u})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6} + \frac{\sqrt{6}\mathbb{T}_{1,2}^{(a)}(T_{1u})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6}$

$\boxed{\text{z425}}$ $\mathbb{G}_{1,1}^{(1,-1;c)}(T_{1g}, a) = -\frac{\sqrt{30}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,1}^{(b)}(T_{1u})}{30} + \frac{\sqrt{10}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,1}^{(b)}(T_{1u})}{10} + \frac{\sqrt{10}\mathbb{M}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{10} + \frac{\sqrt{10}\mathbb{M}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{10}$

$\boxed{\text{z426}}$ $\mathbb{G}_{1,2}^{(1,-1;c)}(T_{1g}, a) = -\frac{\sqrt{30}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,2}^{(b)}(T_{1u})}{30} + \frac{\sqrt{10}\mathbb{M}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{10} - \frac{\sqrt{10}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,2}^{(b)}(T_{1u})}{10} + \frac{\sqrt{10}\mathbb{M}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{10}$

$\boxed{\text{z427}}$ $\mathbb{G}_{1,3}^{(1,-1;c)}(T_{1g}, a) = \frac{\sqrt{30}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,3}^{(b)}(T_{1u})}{15} + \frac{\sqrt{10}\mathbb{M}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{10} + \frac{\sqrt{10}\mathbb{M}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{10}$

$\boxed{\text{z428}}$ $\mathbb{G}_{1,1}^{(1,-1;c)}(T_{1g},b)=-\frac{\sqrt{6}\mathbb{M}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{6}+\frac{\sqrt{6}\mathbb{M}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6}$

$\boxed{\text{z429}}$ $\mathbb{G}_{1,2}^{(1,-1;c)}(T_{1g},b)=\frac{\sqrt{6}\mathbb{M}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{6}-\frac{\sqrt{6}\mathbb{M}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6}$

$\boxed{\text{z430}}$ $\mathbb{G}_{1,3}^{(1,-1;c)}(T_{1g},b)=-\frac{\sqrt{6}\mathbb{M}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6}+\frac{\sqrt{6}\mathbb{M}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6}$

$\boxed{\text{z431}}$ $\mathbb{G}_{3,1}^{(1,-1;c)}(T_{1g})=-\frac{\sqrt{5}\mathbb{M}_{2,1}^{(1,-1;a)}(E_{u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{10}+\frac{\sqrt{15}\mathbb{M}_{2,2}^{(1,-1;a)}(E_{u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{10}-\frac{\sqrt{15}\mathbb{M}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{15}-\frac{\sqrt{15}\mathbb{M}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{15}$

$\boxed{\text{z432}}$ $\mathbb{G}_{3,2}^{(1,-1;c)}(T_{1g})=-\frac{\sqrt{5}\mathbb{M}_{2,1}^{(1,-1;a)}(E_{u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{10}-\frac{\sqrt{15}\mathbb{M}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{15}-\frac{\sqrt{15}\mathbb{M}_{2,2}^{(1,-1;a)}(E_{u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{10}-\frac{\sqrt{15}\mathbb{M}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{15}$

$\boxed{\text{z433}}$ $\mathbb{G}_{3,3}^{(1,-1;c)}(T_{1g})=\frac{\sqrt{5}\mathbb{M}_{2,1}^{(1,-1;a)}(E_{u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{5}-\frac{\sqrt{15}\mathbb{M}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{15}-\frac{\sqrt{15}\mathbb{M}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{15}$

$\boxed{\text{z434}}$ $\mathbb{G}_{1,1}^{(1,0;c)}(T_{1g},a)=\frac{\sqrt{6}\mathbb{T}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6}-\frac{\sqrt{6}\mathbb{T}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z435}}$ $\mathbb{G}_{1,2}^{(1,0;c)}(T_{1g},a)=-\frac{\sqrt{6}\mathbb{T}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6}+\frac{\sqrt{6}\mathbb{T}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z436}}$ $\mathbb{G}_{1,3}^{(1,0;c)}(T_{1g},a)=\frac{\sqrt{6}\mathbb{T}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6}-\frac{\sqrt{6}\mathbb{T}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z437}}$ $\mathbb{G}_{1,1}^{(1,0;c)}(T_{1g},b)=\frac{\sqrt{6}\mathbb{T}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{6}+\frac{\sqrt{6}\mathbb{T}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6}$

$\boxed{\text{z438}}$ $\mathbb{G}_{1,2}^{(1,0;c)}(T_{1g},b)=\frac{\sqrt{6}\mathbb{T}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{6}+\frac{\sqrt{6}\mathbb{T}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6}$

$\boxed{\text{z439}}$ $\mathbb{G}_{1,3}^{(1,0;c)}(T_{1g},b)=\frac{\sqrt{6}\mathbb{T}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6}+\frac{\sqrt{6}\mathbb{T}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6}$

$\boxed{\text{z533}}$ $\mathbb{G}_{1,1}^{(1,1;c)}(T_{1g})=\frac{\sqrt{3}\mathbb{M}_{0}^{(1,1;a)}(A_{1u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z534}}$ $\mathbb{G}_{1,2}^{(1,1;c)}(T_{1g})=\frac{\sqrt{3}\mathbb{M}_{0}^{(1,1;a)}(A_{1u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z535}}$ $\mathbb{G}_{1,3}^{(1,1;c)}(T_{1g}) = \frac{\sqrt{3}\mathbb{M}_{0}^{(1,1;a)}(A_{1u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z536}}$ $\mathbb{G}_{4,1}^{(1,-1;c)}(T_{1u}) = -\frac{\sqrt{2}\mathbb{G}_{2,1}^{(1,-1;a)}(E_{u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{4} - \frac{\sqrt{2}\mathbb{G}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,1}^{(b)}(E_{g})}{4} - \frac{\sqrt{6}\mathbb{G}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,2}^{(b)}(E_{g})}{12} - \frac{\sqrt{6}\mathbb{G}_{2,2}^{(1,-1;a)}(E_{u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{12}$

$\boxed{\text{z537}}$ $\mathbb{G}_{4,2}^{(1,-1;c)}(T_{1u}) = \frac{\sqrt{2}\mathbb{G}_{2,1}^{(1,-1;a)}(E_{u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{4} - \frac{\sqrt{6}\mathbb{G}_{2,2}^{(1,-1;a)}(E_{u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{12} + \frac{\sqrt{2}\mathbb{G}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,1}^{(b)}(E_{g})}{4} - \frac{\sqrt{6}\mathbb{G}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,2}^{(b)}(E_{g})}{12}$

$\boxed{\text{z538}}$ $\mathbb{G}_{4,3}^{(1,-1;c)}(T_{1u}) = \frac{\sqrt{6}\mathbb{G}_{2,2}^{(1,-1;a)}(E_{u})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{6} + \frac{\sqrt{6}\mathbb{G}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,2}^{(b)}(E_{g})}{6}$

$\boxed{\text{z539}}$ $\mathbb{G}_{3,1}^{(1,-1;c)}(T_{2g}) = -\frac{\sqrt{3}\mathbb{M}_{2,1}^{(1,-1;a)}(E_{u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6} - \frac{\mathbb{M}_{2,2}^{(1,-1;a)}(E_{u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6} - \frac{\mathbb{M}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3} + \frac{\mathbb{M}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z540}}$ $\mathbb{G}_{3,2}^{(1,-1;c)}(T_{2g}) = \frac{\sqrt{3}\mathbb{M}_{2,1}^{(1,-1;a)}(E_{u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} + \frac{\mathbb{M}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3} - \frac{\mathbb{M}_{2,2}^{(1,-1;a)}(E_{u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} - \frac{\mathbb{M}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z541}}$ $\mathbb{G}_{3,3}^{(1,-1;c)}(T_{2g}) = -\frac{\mathbb{M}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{3} + \frac{\mathbb{M}_{2,2}^{(1,-1;a)}(E_{u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3} + \frac{\mathbb{M}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z542}}$ $\mathbb{G}_{2,1}^{(c)}(T_{2u}) = -\frac{\sqrt{6}\mathbb{Q}_{1,1}^{(a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(E_{g})}{6} - \frac{\sqrt{2}\mathbb{Q}_{1,1}^{(a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(E_{g})}{6} - \frac{\sqrt{2}\mathbb{Q}_{1,2}^{(a)}(T_{1u})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{6} + \frac{\sqrt{2}\mathbb{Q}_{1,3}^{(a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{6}$

$\boxed{\text{z543}}$ $\mathbb{G}_{2,2}^{(c)}(T_{2u}) = \frac{\sqrt{2}\mathbb{Q}_{1,1}^{(a)}(T_{1u})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{6} + \frac{\sqrt{6}\mathbb{Q}_{1,2}^{(a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(E_{g})}{6} - \frac{\sqrt{2}\mathbb{Q}_{1,2}^{(a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(E_{g})}{6} - \frac{\sqrt{2}\mathbb{Q}_{1,3}^{(a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{6}$

$\boxed{\text{z544}}$ $\mathbb{G}_{2,3}^{(c)}(T_{2u}) = -\frac{\sqrt{2}\mathbb{Q}_{1,1}^{(a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{6} + \frac{\sqrt{2}\mathbb{Q}_{1,2}^{(a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{6} + \frac{\sqrt{2}\mathbb{Q}_{1,3}^{(a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(E_{g})}{3}$

$\boxed{\text{z545}}$ $\mathbb{G}_{2,1}^{(1,-1;c)}(T_{2u}, a) = \frac{\sqrt{3}\mathbb{G}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{0}^{(b)}(A_{1g})}{3}$

$\boxed{\text{z546}}$ $\mathbb{G}_{2,2}^{(1,-1;c)}(T_{2u}, a) = \frac{\sqrt{3}\mathbb{G}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{0}^{(b)}(A_{1g})}{3}$

$\boxed{\text{z547}}$ $\mathbb{G}_{2,3}^{(1,-1;c)}(T_{2u}, a) = \frac{\sqrt{3}\mathbb{G}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{0}^{(b)}(A_{1g})}{3}$

$\boxed{\text{z548}}$ $$\mathbb{G}_{2,1}^{(1,-1;c)}(T_{2u},b) = \frac{\sqrt{42}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{42} + \frac{\sqrt{42}\mathbb{G}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{42} - \frac{\sqrt{14}\mathbb{G}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{14} - \frac{\sqrt{14}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{14} + \frac{\sqrt{14}\mathbb{G}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{14} + \frac{\sqrt{14}\mathbb{G}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{14}$$

$\boxed{\text{z549}}$ $$\mathbb{G}_{2,2}^{(1,-1;c)}(T_{2u},b) = \frac{\sqrt{42}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{42} + \frac{\sqrt{14}\mathbb{G}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{14} + \frac{\sqrt{14}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{14} + \frac{\sqrt{42}\mathbb{G}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{42} + \frac{\sqrt{14}\mathbb{G}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{14} + \frac{\sqrt{14}\mathbb{G}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{14}$$

$\boxed{\text{z550}}$ $$\mathbb{G}_{2,3}^{(1,-1;c)}(T_{2u},b) = -\frac{\sqrt{42}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{21} + \frac{\sqrt{14}\mathbb{G}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{14} + \frac{\sqrt{14}\mathbb{G}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{14} - \frac{\sqrt{42}\mathbb{G}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{21}$$

$\boxed{\text{z551}}$ $$\mathbb{G}_{4,1}^{(1,-1;c)}(T_{2u}) = -\frac{\sqrt{14}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{28} - \frac{\sqrt{14}\mathbb{G}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{28} + \frac{\sqrt{42}\mathbb{G}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{28} + \frac{\sqrt{42}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{28} + \frac{\sqrt{42}\mathbb{G}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{21} + \frac{\sqrt{42}\mathbb{G}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{21}$$

$\boxed{\text{z552}}$ $$\mathbb{G}_{4,2}^{(1,-1;c)}(T_{2u}) = -\frac{\sqrt{14}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{28} + \frac{\sqrt{42}\mathbb{G}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{21} - \frac{\sqrt{42}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{28} - \frac{\sqrt{14}\mathbb{G}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{28} - \frac{\sqrt{42}\mathbb{G}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{28} + \frac{\sqrt{42}\mathbb{G}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{21}$$

$\boxed{\text{z553}}$ $$\mathbb{G}_{4,3}^{(1,-1;c)}(T_{2u}) = \frac{\sqrt{14}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{14} + \frac{\sqrt{42}\mathbb{G}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{21} + \frac{\sqrt{42}\mathbb{G}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{21} + \frac{\sqrt{14}\mathbb{G}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{14}$$

$\boxed{\text{z554}}$ $$\mathbb{G}_{2,1}^{(1,0;c)}(T_{2u}) = -\frac{\sqrt{6}\mathbb{Q}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} - \frac{\sqrt{2}\mathbb{Q}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{6} - \frac{\sqrt{2}\mathbb{Q}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{6} + \frac{\sqrt{2}\mathbb{Q}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{6}$$

$\boxed{\text{z555}}$ $$\mathbb{G}_{2,2}^{(1,0;c)}(T_{2u}) = \frac{\sqrt{2}\mathbb{Q}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{6} + \frac{\sqrt{6}\mathbb{Q}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} - \frac{\sqrt{2}\mathbb{Q}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{6} - \frac{\sqrt{2}\mathbb{Q}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{6}$$

$\boxed{\text{z556}}$ $$\mathbb{G}_{2,3}^{(1,0;c)}(T_{2u}) = -\frac{\sqrt{2}\mathbb{Q}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{6} + \frac{\sqrt{2}\mathbb{Q}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{6} + \frac{\sqrt{2}\mathbb{Q}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{3}$$

$\boxed{\text{z557}}$ $$\mathbb{G}_{2,1}^{(1,1;c)}(T_{2u}) = \frac{\sqrt{3}\mathbb{G}_{0}^{(1,1;a)}(A_{1u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{3}$$

$\boxed{\text{z558}}$ $$\mathbb{G}_{2,2}^{(1,1;c)}(T_{2u}) = \frac{\sqrt{3}\mathbb{G}_{0}^{(1,1;a)}(A_{1u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{3}$$

$\boxed{\text{z559}}$ $\mathbb{G}_{2,3}^{(1,1;c)}(T_{2u}) = \frac{\sqrt{3}\mathbb{G}_{0}^{(1,1;a)}(A_{1u})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{3}$

- 'A'-'A' bond-cluster
  - bra: $\langle p_x,\uparrow|$, $\langle p_x,\downarrow|$, $\langle p_y,\uparrow|$, $\langle p_y,\downarrow|$, $\langle p_z,\uparrow|$, $\langle p_z,\downarrow|$
  - ket: $|p_x,\uparrow\rangle$, $|p_x,\downarrow\rangle$, $|p_y,\uparrow\rangle$, $|p_y,\downarrow\rangle$, $|p_z,\uparrow\rangle$, $|p_z,\downarrow\rangle$
  - wyckoff: `6b@3c`

$\boxed{\text{z15}}$ $\mathbb{Q}_{0}^{(c)}(A_{1g},a) = \mathbb{Q}_{0}^{(a)}(A_{1g})\mathbb{Q}_{0}^{(b)}(A_{1g})$

$\boxed{\text{z16}}$ $\mathbb{Q}_{0}^{(c)}(A_{1g},b) = \frac{\sqrt{5}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{5} + \frac{\sqrt{5}\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{5} + \frac{\sqrt{5}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{5} + \frac{\sqrt{5}\mathbb{Q}_{2,2}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{5} + \frac{\sqrt{5}\mathbb{Q}_{2,3}^{(a)}(T_{2g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{5}$

$\boxed{\text{z17}}$ $\mathbb{Q}_{4}^{(c)}(A_{1g}) = \frac{\sqrt{30}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{10} - \frac{\sqrt{30}\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{15} + \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{10} - \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{15} - \frac{\sqrt{30}\mathbb{Q}_{2,3}^{(a)}(T_{2g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{15}$

$\boxed{\text{z18}}$ $\mathbb{Q}_{0}^{(1,-1;c)}(A_{1g}) = \frac{\sqrt{5}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{5} + \frac{\sqrt{5}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{5} + \frac{\sqrt{5}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{5} + \frac{\sqrt{5}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{5} + \frac{\sqrt{5}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{5}$

$\boxed{\text{z19}}$ $\mathbb{Q}_{4}^{(1,-1;c)}(A_{1g}) = \frac{\sqrt{30}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{10} - \frac{\sqrt{30}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{15} + \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{10} - \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{15} - \frac{\sqrt{30}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{15}$

$\boxed{\text{z20}}$ $\mathbb{Q}_{0}^{(1,1;c)}(A_{1g}) = \mathbb{Q}_{0}^{(1,1;a)}(A_{1g})\mathbb{Q}_{0}^{(b)}(A_{1g})$

$\boxed{\text{z27}}$ $\mathbb{Q}_{3}^{(c)}(A_{2u}) = \frac{\sqrt{3}\mathbb{M}_{1,1}^{(a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{3} + \frac{\sqrt{3}\mathbb{M}_{1,2}^{(a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{3} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{3}$

$\boxed{\text{z28}}$ $\mathbb{Q}_{3}^{(1,-1;c)}(A_{2u},a) = -\frac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{3} - \frac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{3} - \frac{\sqrt{3}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z29}}$ $\mathbb{Q}_{3}^{(1,-1;c)}(A_{2u},b) = -\frac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{3} - \frac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{3} - \frac{\sqrt{3}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{3}$

$\boxed{\text{z68}}$ $\mathbb{Q}_{3}^{(1,-1;c)}(A_{2u},c) = \frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{3} + \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{3} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{3}$

$\boxed{\text{z69}}$ $\mathbb{Q}_{3}^{(1,0;c)}(A_{2u}) = \frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{3} + \frac{\sqrt{3}\mathbb{T}_{2,2}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{3} + \frac{\sqrt{3}\mathbb{T}_{2,3}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z70}}$ $\mathbb{Q}_{3}^{(1,1;c)}(A_{2u}) = \frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{3} + \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{3} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,1;a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{3}$

$\boxed{\text{z71}}$ $\mathbb{Q}_{2,1}^{(c)}(E_g, a) = \frac{\sqrt{2}\mathbb{Q}_{0}^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$

$\boxed{\text{z72}}$ $\mathbb{Q}_{2,2}^{(c)}(E_g, a) = \frac{\sqrt{2}\mathbb{Q}_{0}^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$

$\boxed{\text{z73}}$ $\mathbb{Q}_{2,1}^{(c)}(E_g, b) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$

$\boxed{\text{z74}}$ $\mathbb{Q}_{2,2}^{(c)}(E_g, b) = \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$

$\boxed{\text{z75}}$ $\mathbb{Q}_{2,1}^{(c)}(E_g, c) = \frac{\sqrt{7}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{7} + \frac{\sqrt{7}\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{14} - \frac{\sqrt{7}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{7} + \frac{\sqrt{7}\mathbb{Q}_{2,2}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{14} - \frac{\sqrt{7}\mathbb{Q}_{2,3}^{(a)}(T_{2g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{7}$

$\boxed{\text{z76}}$ $\mathbb{Q}_{2,2}^{(c)}(E_g, c) = -\frac{\sqrt{7}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{7} - \frac{\sqrt{21}\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{14} - \frac{\sqrt{7}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{7} + \frac{\sqrt{21}\mathbb{Q}_{2,2}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{14}$

$\boxed{\text{z77}}$ $\mathbb{Q}_{4,1}^{(c)}(E_g) = \frac{\sqrt{21}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{14} - \frac{\sqrt{21}\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{21} - \frac{\sqrt{21}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{14} - \frac{\sqrt{21}\mathbb{Q}_{2,2}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{21} + \frac{2\sqrt{21}\mathbb{Q}_{2,3}^{(a)}(T_{2g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{21}$

$\boxed{\text{z78}}$ $\mathbb{Q}_{4,2}^{(c)}(E_g) = -\frac{\sqrt{21}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{14} + \frac{\sqrt{7}\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{7} - \frac{\sqrt{21}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{14} - \frac{\sqrt{7}\mathbb{Q}_{2,2}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{7}$

$\boxed{\text{z79}}$ $\mathbb{Q}_{2,1}^{(1,-1;c)}(E_g, a) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$

$\boxed{\text{z80}}$ $\mathbb{Q}_{2,2}^{(1,-1;c)}(E_g, a) = \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$

$\boxed{\text{z81}}$ $\mathbb{Q}_{2,1}^{(1,-1;c)}(E_g, b) = \frac{\sqrt{7}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{7} + \frac{\sqrt{7}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{14} - \frac{\sqrt{7}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{7} + \frac{\sqrt{7}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{14} - \frac{\sqrt{7}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{7}$

$\boxed{\text{z82}}$ $\mathbb{Q}_{2,2}^{(1,-1;c)}(E_g, b) = -\frac{\sqrt{7}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{7} - \frac{\sqrt{21}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{14} - \frac{\sqrt{7}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{7} + \frac{\sqrt{21}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{14}$

$\boxed{\text{z83}}$ $\mathbb{Q}_{4,1}^{(1,-1;c)}(E_g) = \frac{\sqrt{21}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{14} - \frac{\sqrt{21}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{21} - \frac{\sqrt{21}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{14} - \frac{\sqrt{21}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{21} + \frac{2\sqrt{21}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{21}$

$\boxed{\text{z84}}$ $$\mathbb{Q}_{4,2}^{(1,-1;c)}(E_g) = -\frac{\sqrt{21}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{14} + \frac{\sqrt{7}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{7} - \frac{\sqrt{21}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{14} - \frac{\sqrt{7}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{7}$$

$\boxed{\text{z85}}$ $$\mathbb{Q}_{2,1}^{(1,0;c)}(E_g) = \frac{\mathbb{G}_{1,1}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{2} - \frac{\mathbb{G}_{1,2}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{2}$$

$\boxed{\text{z143}}$ $$\mathbb{Q}_{2,2}^{(1,0;c)}(E_g) = \frac{\sqrt{3}\mathbb{G}_{1,1}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{6} + \frac{\sqrt{3}\mathbb{G}_{1,2}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{6} - \frac{\sqrt{3}\mathbb{G}_{1,3}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{3}$$

$\boxed{\text{z144}}$ $$\mathbb{Q}_{2,1}^{(1,1;c)}(E_g) = \frac{\sqrt{2}\mathbb{Q}_{0}^{(1,1;a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

$\boxed{\text{z145}}$ $$\mathbb{Q}_{2,2}^{(1,1;c)}(E_g) = \frac{\sqrt{2}\mathbb{Q}_{0}^{(1,1;a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$\boxed{\text{z146}}$ $$\mathbb{Q}_{5,1}^{(1,-1;c)}(E_u) = \frac{\sqrt{70}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{28} - \frac{\sqrt{42}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{28} - \frac{\sqrt{70}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{28} - \frac{\sqrt{42}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{28} + \frac{\sqrt{42}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{14}$$

$\boxed{\text{z147}}$ $$\mathbb{Q}_{5,2}^{(1,-1;c)}(E_u) = \frac{\sqrt{210}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{84} + \frac{3\sqrt{14}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{28} + \frac{\sqrt{210}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{84} - \frac{3\sqrt{14}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{28} - \frac{\sqrt{210}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{42}$$

$\boxed{\text{z148}}$ $$\mathbb{Q}_{4,1}^{(c)}(T_{1g}) = -\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{4} - \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{4} - \frac{\sqrt{6}\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{12} - \frac{\sqrt{6}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{12}$$

$\boxed{\text{z149}}$ $$\mathbb{Q}_{4,2}^{(c)}(T_{1g}) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{4} - \frac{\sqrt{6}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{12} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{4} - \frac{\sqrt{6}\mathbb{Q}_{2,2}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{12}$$

$\boxed{\text{z150}}$ $$\mathbb{Q}_{4,3}^{(c)}(T_{1g}) = \frac{\sqrt{6}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{6} + \frac{\sqrt{6}\mathbb{Q}_{2,3}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{6}$$

$\boxed{\text{z151}}$ $$\mathbb{Q}_{4,1}^{(1,-1;c)}(T_{1g}) = -\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{4} - \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{4} - \frac{\sqrt{6}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{12} - \frac{\sqrt{6}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{12}$$

$\boxed{\text{z152}}$ $$\mathbb{Q}_{4,2}^{(1,-1;c)}(T_{1g}) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{4} - \frac{\sqrt{6}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{12} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{4} - \frac{\sqrt{6}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{12}$$

$\boxed{\text{z153}}$ $$\mathbb{Q}_{4,3}^{(1,-1;c)}(T_{1g}) = \frac{\sqrt{6}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{6} + \frac{\sqrt{6}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{6}$$

$\boxed{\text{z154}}$ $$\mathbb{Q}_{1,1}^{(c)}(T_{1u},a) = \frac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} - \frac{\sqrt{6}\mathbb{M}_{1,3}^{(a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6}$$

$\boxed{\text{z155}}$ $\mathbb{Q}_{1,2}^{(c)}(T_{1u},a) = -\frac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z156}}$ $\mathbb{Q}_{1,3}^{(c)}(T_{1u},a) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} - \frac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z157}}$ $\mathbb{Q}_{1,1}^{(c)}(T_{1u},b) = \frac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6}$

$\boxed{\text{z158}}$ $\mathbb{Q}_{1,2}^{(c)}(T_{1u},b) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6}$

$\boxed{\text{z159}}$ $\mathbb{Q}_{1,3}^{(c)}(T_{1u},b) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6} + \frac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6}$

$\boxed{\text{z160}}$ $\mathbb{Q}_{1,1}^{(1,-1;c)}(T_{1u},a) = -\frac{\sqrt{21}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{21} - \frac{\sqrt{35}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{21} - \frac{\sqrt{21}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{21} + \frac{\sqrt{35}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{21} + \frac{\sqrt{35}\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{21}$

$\boxed{\text{z161}}$ $\mathbb{Q}_{1,2}^{(1,-1;c)}(T_{1u},a) = -\frac{\sqrt{21}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{21} + \frac{\sqrt{35}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{21} - \frac{\sqrt{21}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{21} - \frac{\sqrt{35}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{21} + \frac{\sqrt{35}\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{21}$

$\boxed{\text{z162}}$ $\mathbb{Q}_{1,3}^{(1,-1;c)}(T_{1u},a) = -\frac{\sqrt{21}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{21} - \frac{\sqrt{35}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{21} - \frac{\sqrt{21}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{21} + \frac{\sqrt{35}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{21} + \frac{\sqrt{35}\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{21}$

$\boxed{\text{z163}}$ $\mathbb{Q}_{1,1}^{(1,-1;c)}(T_{1u},b) = \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} - \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z164}}$ $\mathbb{Q}_{1,2}^{(1,-1;c)}(T_{1u},b) = -\frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z165}}$ $\mathbb{Q}_{1,3}^{(1,-1;c)}(T_{1u},b) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} - \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z166}}$ $\mathbb{Q}_{1,1}^{(1,-1;c)}(T_{1u},c) = \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6}$

$\boxed{\text{z167}}$ $\mathbb{Q}_{1,2}^{(1,-1;c)}(T_{1u},c) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6}$

$\boxed{\text{z168}}$ $\mathbb{Q}_{1,3}^{(1,-1;c)}(T_{1u},c) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6} + \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6}$

$\boxed{\text{z169}}$ $$\mathbb{Q}_{3,1}^{(1,-1;c)}(T_{1u},a)=-\frac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{4}-\frac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{12}+\frac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{4}-\frac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{12}$$

$\boxed{\text{z233}}$ $$\mathbb{Q}_{3,2}^{(1,-1;c)}(T_{1u},a)=\frac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{4}-\frac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{12}-\frac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{4}-\frac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{12}$$

$\boxed{\text{z234}}$ $$\mathbb{Q}_{3,3}^{(1,-1;c)}(T_{1u},a)=-\frac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{4}-\frac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{12}+\frac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{4}-\frac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{12}$$

$\boxed{\text{z235}}$ $$\mathbb{Q}_{3,1}^{(1,-1;c)}(T_{1u},b)=-\frac{\sqrt{105}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{84}-\frac{5\sqrt{7}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{84}-\frac{\sqrt{105}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{84}$$
$$+\frac{5\sqrt{7}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{84}-\frac{4\sqrt{7}\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{21}$$

$\boxed{\text{z236}}$ $$\mathbb{Q}_{3,2}^{(1,-1;c)}(T_{1u},b)=-\frac{\sqrt{105}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{84}+\frac{5\sqrt{7}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{84}-\frac{\sqrt{105}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{84}$$
$$-\frac{5\sqrt{7}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{84}-\frac{4\sqrt{7}\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{21}$$

$\boxed{\text{z237}}$ $$\mathbb{Q}_{3,3}^{(1,-1;c)}(T_{1u},b)=-\frac{\sqrt{105}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{84}-\frac{5\sqrt{7}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{84}-\frac{\sqrt{105}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{84}$$
$$+\frac{5\sqrt{7}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{84}-\frac{4\sqrt{7}\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{21}$$

$\boxed{\text{z238}}$ $$\mathbb{Q}_{5,1}^{(1,-1;c)}(T_{1u},2)=\frac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{12}-\frac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{4}+\frac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{12}+\frac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{4}$$

$\boxed{\text{z239}}$ $$\mathbb{Q}_{5,2}^{(1,-1;c)}(T_{1u},2)=\frac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{12}+\frac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{4}+\frac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{12}-\frac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{4}$$

$\boxed{\text{z240}}$ $$\mathbb{Q}_{5,3}^{(1,-1;c)}(T_{1u},2)=\frac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{12}-\frac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{4}+\frac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{12}+\frac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{4}$$

$\boxed{\text{z241}}$ $$\mathbb{Q}_{1,1}^{(1,0;c)}(T_{1u},a)=-\frac{\sqrt{30}\mathbb{T}_{2,1}^{(1,0;a)}(E_{g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{30}+\frac{\sqrt{10}\mathbb{T}_{2,2}^{(1,0;a)}(E_{g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{10}+\frac{\sqrt{10}\mathbb{T}_{2,2}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{10}+\frac{\sqrt{10}\mathbb{T}_{2,3}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{10}$$

$\boxed{\text{z242}}$ $$\mathbb{Q}_{1,2}^{(1,0;c)}(T_{1u},a)=-\frac{\sqrt{30}\mathbb{T}_{2,1}^{(1,0;a)}(E_{g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{30}+\frac{\sqrt{10}\mathbb{T}_{2,1}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{10}-\frac{\sqrt{10}\mathbb{T}_{2,2}^{(1,0;a)}(E_{g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{10}+\frac{\sqrt{10}\mathbb{T}_{2,3}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{10}$$

$\boxed{\text{z243}}$ $\mathbb{Q}_{1,3}^{(1,0;c)}(T_{1u},a) = \frac{\sqrt{30}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,3}^{(b)}(T_{1u})}{15} + \frac{\sqrt{10}\mathbb{T}_{2,1}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{10} + \frac{\sqrt{10}\mathbb{T}_{2,2}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{10}$

$\boxed{\text{z244}}$ $\mathbb{Q}_{1,1}^{(1,0;c)}(T_{1u},b) = -\frac{\sqrt{6}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6} - \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6} - \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(T_{2g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{6} + \frac{\sqrt{2}\mathbb{T}_{2,3}^{(1,0;a)}(T_{2g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6}$

$\boxed{\text{z245}}$ $\mathbb{Q}_{1,2}^{(1,0;c)}(T_{1u},b) = \frac{\sqrt{6}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6} + \frac{\sqrt{2}\mathbb{T}_{2,1}^{(1,0;a)}(T_{2g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{6} - \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6} - \frac{\sqrt{2}\mathbb{T}_{2,3}^{(1,0;a)}(T_{2g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6}$

$\boxed{\text{z246}}$ $\mathbb{Q}_{1,3}^{(1,0;c)}(T_{1u},b) = -\frac{\sqrt{2}\mathbb{T}_{2,1}^{(1,0;a)}(T_{2g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6} + \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{M}_{2,3}^{(b)}(T_{2u})}{3} + \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(T_{2g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6}$

$\boxed{\text{z247}}$ $\mathbb{Q}_{3,1}^{(1,0;c)}(T_{1u},a) = -\frac{\sqrt{5}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(T_{1u})}{10} + \frac{\sqrt{15}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(T_{1u})}{10} - \frac{\sqrt{15}\mathbb{T}_{2,2}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{15} - \frac{\sqrt{15}\mathbb{T}_{2,3}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{15}$

$\boxed{\text{z248}}$ $\mathbb{Q}_{3,2}^{(1,0;c)}(T_{1u},a) = -\frac{\sqrt{5}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(T_{1u})}{10} - \frac{\sqrt{15}\mathbb{T}_{2,1}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{15} - \frac{\sqrt{15}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(T_{1u})}{10} - \frac{\sqrt{15}\mathbb{T}_{2,3}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{15}$

$\boxed{\text{z249}}$ $\mathbb{Q}_{3,3}^{(1,0;c)}(T_{1u},a) = \frac{\sqrt{5}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,3}^{(b)}(T_{1u})}{5} - \frac{\sqrt{15}\mathbb{T}_{2,1}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{15} - \frac{\sqrt{15}\mathbb{T}_{2,2}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{15}$

$\boxed{\text{z250}}$ $\mathbb{Q}_{3,1}^{(1,0;c)}(T_{1u},b) = \frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6} + \frac{\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6} - \frac{\mathbb{T}_{2,2}^{(1,0;a)}(T_{2g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{3} + \frac{\mathbb{T}_{2,3}^{(1,0;a)}(T_{2g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{3}$

$\boxed{\text{z251}}$ $\mathbb{Q}_{3,2}^{(1,0;c)}(T_{1u},b) = -\frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6} + \frac{\mathbb{T}_{2,1}^{(1,0;a)}(T_{2g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{3} + \frac{\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6} - \frac{\mathbb{T}_{2,3}^{(1,0;a)}(T_{2g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{3}$

$\boxed{\text{z252}}$ $\mathbb{Q}_{3,3}^{(1,0;c)}(T_{1u},b) = -\frac{\mathbb{T}_{2,1}^{(1,0;a)}(T_{2g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{3} - \frac{\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{M}_{2,3}^{(b)}(T_{2u})}{3} + \frac{\mathbb{T}_{2,2}^{(1,0;a)}(T_{2g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{3}$

$\boxed{\text{z253}}$ $\mathbb{Q}_{1,1}^{(1,1;c)}(T_{1u},a) = \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} - \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z254}}$ $\mathbb{Q}_{1,2}^{(1,1;c)}(T_{1u},a) = -\frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z255}}$ $\mathbb{Q}_{1,3}^{(1,1;c)}(T_{1u},a) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} - \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z256}}$ $\mathbb{Q}_{1,1}^{(1,1;c)}(T_{1u},b) = \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,1;a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6}$

$\boxed{\text{z257}}$ $\mathbb{Q}_{1,2}^{(1,1;c)}(T_{1u},b) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,1;a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6}$

$\boxed{\text{z258}}$ $\mathbb{Q}_{1,3}^{(1,1;c)}(T_{1u},b) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6} + \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6}$

$\boxed{\text{z259}}$ $\mathbb{Q}_{2,1}^{(c)}(T_{2g},a) = \frac{\sqrt{3}\mathbb{Q}_{0}^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{3}$

$\boxed{\text{z260}}$ $\mathbb{Q}_{2,2}^{(c)}(T_{2g},a) = \frac{\sqrt{3}\mathbb{Q}_{0}^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{3}$

$\boxed{\text{z261}}$ $\mathbb{Q}_{2,3}^{(c)}(T_{2g},a) = \frac{\sqrt{3}\mathbb{Q}_{0}^{(a)}(A_{1g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{3}$

$\boxed{\text{z262}}$ $\mathbb{Q}_{2,1}^{(c)}(T_{2g},b) = \frac{\sqrt{3}\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_{0}^{(b)}(A_{1g})}{3}$

$\boxed{\text{z263}}$ $\mathbb{Q}_{2,2}^{(c)}(T_{2g},b) = \frac{\sqrt{3}\mathbb{Q}_{2,2}^{(a)}(T_{2g})\mathbb{Q}_{0}^{(b)}(A_{1g})}{3}$

$\boxed{\text{z264}}$ $\mathbb{Q}_{2,3}^{(c)}(T_{2g},b) = \frac{\sqrt{3}\mathbb{Q}_{2,3}^{(a)}(T_{2g})\mathbb{Q}_{0}^{(b)}(A_{1g})}{3}$

$\boxed{\text{z265}}$ $\mathbb{Q}_{2,1}^{(c)}(T_{2g},c) = \frac{\sqrt{42}\mathbb{Q}_{2,1}^{(a)}(E_{g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{42} + \frac{\sqrt{42}\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{g})}{42} - \frac{\sqrt{14}\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{g})}{14} - \frac{\sqrt{14}\mathbb{Q}_{2,2}^{(a)}(E_{g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{14} + \frac{\sqrt{14}\mathbb{Q}_{2,2}^{(a)}(T_{2g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{14} + \frac{\sqrt{14}\mathbb{Q}_{2,3}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{14}$

$\boxed{\text{z266}}$ $\mathbb{Q}_{2,2}^{(c)}(T_{2g},c) = \frac{\sqrt{42}\mathbb{Q}_{2,1}^{(a)}(E_{g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{42} + \frac{\sqrt{14}\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{14} + \frac{\sqrt{14}\mathbb{Q}_{2,2}^{(a)}(E_{g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{14} + \frac{\sqrt{42}\mathbb{Q}_{2,2}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{g})}{42} + \frac{\sqrt{14}\mathbb{Q}_{2,2}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{g})}{14} + \frac{\sqrt{14}\mathbb{Q}_{2,3}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{14}$

$\boxed{\text{z267}}$ $\mathbb{Q}_{2,3}^{(c)}(T_{2g},c) = -\frac{\sqrt{42}\mathbb{Q}_{2,1}^{(a)}(E_{g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{21} + \frac{\sqrt{14}\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{14} + \frac{\sqrt{14}\mathbb{Q}_{2,2}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{14} - \frac{\sqrt{42}\mathbb{Q}_{2,3}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{g})}{21}$

$\boxed{\text{z268}}$ $\mathbb{Q}_{4,1}^{(c)}(T_{2g}) = -\frac{\sqrt{14}\mathbb{Q}_{2,1}^{(a)}(E_{g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{28} - \frac{\sqrt{14}\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{g})}{28} + \frac{\sqrt{42}\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{g})}{28} + \frac{\sqrt{42}\mathbb{Q}_{2,2}^{(a)}(E_{g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{28} + \frac{\sqrt{42}\mathbb{Q}_{2,2}^{(a)}(T_{2g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{21} + \frac{\sqrt{42}\mathbb{Q}_{2,3}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{21}$

$\boxed{\text{z281}}$ $\mathbb{Q}_{4,2}^{(c)}(T_{2g}) = -\frac{\sqrt{14}\mathbb{Q}_{2,1}^{(a)}(E_{g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{28} + \frac{\sqrt{42}\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{21} - \frac{\sqrt{42}\mathbb{Q}_{2,2}^{(a)}(E_{g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{28} - \frac{\sqrt{14}\mathbb{Q}_{2,2}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{g})}{28} - \frac{\sqrt{42}\mathbb{Q}_{2,2}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{g})}{28} + \frac{\sqrt{42}\mathbb{Q}_{2,3}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{21}$

$\boxed{\text{z282}}$ $\mathbb{Q}_{4,3}^{(c)}(T_{2g}) = \frac{\sqrt{14}\mathbb{Q}_{2,1}^{(a)}(E_{g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{14} + \frac{\sqrt{42}\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{21} + \frac{\sqrt{42}\mathbb{Q}_{2,2}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{21} + \frac{\sqrt{14}\mathbb{Q}_{2,3}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{g})}{14}$

$\boxed{\text{z283}}$ $$\mathbb{Q}_{2,1}^{(1,-1;c)}(T_{2g},a)=\frac{\sqrt{3}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{0}^{(b)}(A_{1g})}{3}$$

$\boxed{\text{z284}}$ $$\mathbb{Q}_{2,2}^{(1,-1;c)}(T_{2g},a)=\frac{\sqrt{3}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{0}^{(b)}(A_{1g})}{3}$$

$\boxed{\text{z285}}$ $$\mathbb{Q}_{2,3}^{(1,-1;c)}(T_{2g},a)=\frac{\sqrt{3}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{0}^{(b)}(A_{1g})}{3}$$

$\boxed{\text{z286}}$ $$\mathbb{Q}_{2,1}^{(1,-1;c)}(T_{2g},b)=\frac{\sqrt{42}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_{g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{42}+\frac{\sqrt{42}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{g})}{42}-\frac{\sqrt{14}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{g})}{14}$$
$$-\frac{\sqrt{14}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_{g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{14}+\frac{\sqrt{14}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{14}+\frac{\sqrt{14}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{14}$$

$\boxed{\text{z294}}$ $$\mathbb{Q}_{2,2}^{(1,-1;c)}(T_{2g},b)=\frac{\sqrt{42}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_{g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{42}+\frac{\sqrt{14}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{14}+\frac{\sqrt{14}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_{g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{14}$$
$$+\frac{\sqrt{42}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{g})}{42}+\frac{\sqrt{14}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{g})}{14}+\frac{\sqrt{14}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{14}$$

$\boxed{\text{z295}}$ $$\mathbb{Q}_{2,3}^{(1,-1;c)}(T_{2g},b)=-\frac{\sqrt{42}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_{g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{21}+\frac{\sqrt{14}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{14}+\frac{\sqrt{14}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{14}-\frac{\sqrt{42}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{g})}{21}$$

$\boxed{\text{z296}}$ $$\mathbb{Q}_{4,1}^{(1,-1;c)}(T_{2g})=-\frac{\sqrt{14}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_{g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{28}-\frac{\sqrt{14}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{g})}{28}+\frac{\sqrt{42}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{g})}{28}$$
$$+\frac{\sqrt{42}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_{g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{28}+\frac{\sqrt{42}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{21}+\frac{\sqrt{42}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{21}$$

$\boxed{\text{z297}}$ $$\mathbb{Q}_{4,2}^{(1,-1;c)}(T_{2g})=-\frac{\sqrt{14}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_{g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{28}+\frac{\sqrt{42}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{21}-\frac{\sqrt{42}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_{g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{28}$$
$$-\frac{\sqrt{14}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{g})}{28}-\frac{\sqrt{42}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{g})}{28}+\frac{\sqrt{42}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{21}$$

$\boxed{\text{z298}}$ $$\mathbb{Q}_{4,3}^{(1,-1;c)}(T_{2g})=\frac{\sqrt{14}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_{g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{14}+\frac{\sqrt{42}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{21}+\frac{\sqrt{42}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{21}+\frac{\sqrt{14}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{g})}{14}$$

$\boxed{\text{z299}}$ $$\mathbb{Q}_{2,1}^{(1,0;c)}(T_{2g})=-\frac{\sqrt{6}\mathbb{G}_{1,1}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{g})}{6}-\frac{\sqrt{2}\mathbb{G}_{1,1}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{g})}{6}-\frac{\sqrt{2}\mathbb{G}_{1,2}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{6}+\frac{\sqrt{2}\mathbb{G}_{1,3}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{6}$$

$\boxed{\text{z338}}$ $$\mathbb{Q}_{2,2}^{(1,0;c)}(T_{2g})=\frac{\sqrt{2}\mathbb{G}_{1,1}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{6}+\frac{\sqrt{6}\mathbb{G}_{1,2}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{g})}{6}-\frac{\sqrt{2}\mathbb{G}_{1,2}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{g})}{6}-\frac{\sqrt{2}\mathbb{G}_{1,3}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{6}$$

$\boxed{\text{z339}}$ $\mathbb{Q}_{2,3}^{(1,0;c)}(T_{2g}) = -\frac{\sqrt{2}\mathbb{G}_{1,1}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{6} + \frac{\sqrt{2}\mathbb{G}_{1,2}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{6} + \frac{\sqrt{2}\mathbb{G}_{1,3}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{3}$

$\boxed{\text{z340}}$ $\mathbb{Q}_{2,1}^{(1,1;c)}(T_{2g}) = \frac{\sqrt{3}\mathbb{Q}_{0}^{(1,1;a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{3}$

$\boxed{\text{z341}}$ $\mathbb{Q}_{2,2}^{(1,1;c)}(T_{2g}) = \frac{\sqrt{3}\mathbb{Q}_{0}^{(1,1;a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{3}$

$\boxed{\text{z342}}$ $\mathbb{Q}_{2,3}^{(1,1;c)}(T_{2g}) = \frac{\sqrt{3}\mathbb{Q}_{0}^{(1,1;a)}(A_{1g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{3}$

$\boxed{\text{z343}}$ $\mathbb{Q}_{3,1}^{(c)}(T_{2u}) = \frac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{6} - \frac{\sqrt{6}\mathbb{M}_{1,3}^{(a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6}$

$\boxed{\text{z344}}$ $\mathbb{Q}_{3,2}^{(c)}(T_{2u}) = -\frac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6}$

$\boxed{\text{z345}}$ $\mathbb{Q}_{3,3}^{(c)}(T_{2u}) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6} - \frac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6}$

$\boxed{\text{z346}}$ $\mathbb{Q}_{3,1}^{(1,-1;c)}(T_{2u},a) = \frac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{12} + \frac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{12} + \frac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{12} - \frac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{12} + \frac{\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z347}}$ $\mathbb{Q}_{3,2}^{(1,-1;c)}(T_{2u},a) = \frac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{12} - \frac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{12} + \frac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{12} + \frac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{12} + \frac{\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z348}}$ $\mathbb{Q}_{3,3}^{(1,-1;c)}(T_{2u},a) = \frac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{12} + \frac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{12} + \frac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{12} - \frac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{12} + \frac{\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z349}}$ $\mathbb{Q}_{3,1}^{(1,-1;c)}(T_{2u},b) = \frac{\sqrt{6}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{24} - \frac{\sqrt{10}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{8} - \frac{\sqrt{6}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{24} - \frac{\sqrt{10}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{8}$

$\boxed{\text{z350}}$ $\mathbb{Q}_{3,2}^{(1,-1;c)}(T_{2u},b) = -\frac{\sqrt{6}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{24} - \frac{\sqrt{10}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{8} + \frac{\sqrt{6}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{24} - \frac{\sqrt{10}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{8}$

$\boxed{\text{z351}}$ $\mathbb{Q}_{3,3}^{(1,-1;c)}(T_{2u},b) = \frac{\sqrt{6}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{24} - \frac{\sqrt{10}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{8} - \frac{\sqrt{6}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{24} - \frac{\sqrt{10}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{8}$

$\boxed{\text{z352}}$ $\mathbb{Q}_{3,1}^{(1,-1;c)}(T_{2u},c) = \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{6} - \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6}$

z353 $$\mathbb{Q}_{3,2}^{(1,-1;c)}(T_{2u},c) = -\frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6}$$

z354 $$\mathbb{Q}_{3,3}^{(1,-1;c)}(T_{2u},c) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6} - \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6}$$

z355 $$\mathbb{Q}_{5,1}^{(1,-1;c)}(T_{2u}) = -\frac{\sqrt{10}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{8} - \frac{\sqrt{6}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{24} + \frac{\sqrt{10}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{8} - \frac{\sqrt{6}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{24}$$

z356 $$\mathbb{Q}_{5,2}^{(1,-1;c)}(T_{2u}) = \frac{\sqrt{10}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{8} - \frac{\sqrt{6}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{24} - \frac{\sqrt{10}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{8} - \frac{\sqrt{6}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{24}$$

z357 $$\mathbb{Q}_{5,3}^{(1,-1;c)}(T_{2u}) = -\frac{\sqrt{10}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{8} - \frac{\sqrt{6}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{24} + \frac{\sqrt{10}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{8} - \frac{\sqrt{6}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{24}$$

z358 $$\mathbb{Q}_{3,1}^{(1,0;c)}(T_{2u},a) = -\frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6} - \frac{\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6} - \frac{\mathbb{T}_{2,2}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3} + \frac{\mathbb{T}_{2,3}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{3}$$

z359 $$\mathbb{Q}_{3,2}^{(1,0;c)}(T_{2u},a) = \frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} + \frac{\mathbb{T}_{2,1}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3} - \frac{\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} - \frac{\mathbb{T}_{2,3}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{3}$$

z360 $$\mathbb{Q}_{3,3}^{(1,0;c)}(T_{2u},a) = -\frac{\mathbb{T}_{2,1}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{3} + \frac{\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3} + \frac{\mathbb{T}_{2,2}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{3}$$

z361 $$\mathbb{Q}_{3,1}^{(1,0;c)}(T_{2u},b) = \frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6} - \frac{\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{M}_{2,1}^{(b)}(T_{2u})}{2}$$

z440 $$\mathbb{Q}_{3,2}^{(1,0;c)}(T_{2u},b) = \frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6} + \frac{\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{M}_{2,2}^{(b)}(T_{2u})}{2}$$

z441 $$\mathbb{Q}_{3,3}^{(1,0;c)}(T_{2u},b) = -\frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{M}_{2,3}^{(b)}(T_{2u})}{3}$$

z442 $$\mathbb{Q}_{3,1}^{(1,1;c)}(T_{2u}) = \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,1;a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{6} - \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6}$$

z443 $$\mathbb{Q}_{3,2}^{(1,1;c)}(T_{2u}) = -\frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,1;a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6}$$

z444 $$\mathbb{Q}_{3,3}^{(1,1;c)}(T_{2u}) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6} - \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6}$$

$\boxed{\text{z445}}$ $\mathbb{G}_{0}^{(c)}(A_{1u}) = \frac{\sqrt{3}\mathbb{M}_{1,1}^{(a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{3} + \frac{\sqrt{3}\mathbb{M}_{1,2}^{(a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{3} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z446}}$ $\mathbb{G}_{0}^{(1,-1;c)}(A_{1u}) = \frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{3} + \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{3} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z447}}$ $\mathbb{G}_{4}^{(1,-1;c)}(A_{1u}, a) = \frac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{3} + \frac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{3} + \frac{\sqrt{3}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z448}}$ $\mathbb{G}_{4}^{(1,-1;c)}(A_{1u}, b) = -\frac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{3} - \frac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{3} - \frac{\sqrt{3}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{3}$

$\boxed{\text{z449}}$ $\mathbb{G}_{0}^{(1,0;c)}(A_{1u}) = \frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(T_{2g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{3} + \frac{\sqrt{3}\mathbb{T}_{2,2}^{(1,0;a)}(T_{2g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{3} + \frac{\sqrt{3}\mathbb{T}_{2,3}^{(1,0;a)}(T_{2g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{3}$

$\boxed{\text{z450}}$ $\mathbb{G}_{0}^{(1,1;c)}(A_{1u}) = \frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{3} + \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{3} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z451}}$ $\mathbb{G}_{3}^{(c)}(A_{2g}) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{g})\mathbb{Q}_{2,2}^{(b)}(E_{g})}{2} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{g})\mathbb{Q}_{2,1}^{(b)}(E_{g})}{2}$

$\boxed{\text{z452}}$ $\mathbb{G}_{3}^{(1,-1;c)}(A_{2g}) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_{g})\mathbb{Q}_{2,2}^{(b)}(E_{g})}{2} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_{g})\mathbb{Q}_{2,1}^{(b)}(E_{g})}{2}$

$\boxed{\text{z453}}$ $\mathbb{G}_{3}^{(1,0;c)}(A_{2g}) = \frac{\sqrt{3}\mathbb{G}_{1,1}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{3} + \frac{\sqrt{3}\mathbb{G}_{1,2}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{3} + \frac{\sqrt{3}\mathbb{G}_{1,3}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{3}$

$\boxed{\text{z454}}$ $\mathbb{G}_{2,1}^{(c)}(E_{u}, a) = -\frac{\sqrt{3}\mathbb{M}_{1,1}^{(a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6} - \frac{\sqrt{3}\mathbb{M}_{1,2}^{(a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z455}}$ $\mathbb{G}_{2,2}^{(c)}(E_{u}, a) = \frac{\mathbb{M}_{1,1}^{(a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{2} - \frac{\mathbb{M}_{1,2}^{(a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{2}$

$\boxed{\text{z456}}$ $\mathbb{G}_{2,1}^{(c)}(E_{u}, b) = \frac{\mathbb{M}_{1,1}^{(a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{2} - \frac{\mathbb{M}_{1,2}^{(a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{2}$

$\boxed{\text{z457}}$ $\mathbb{G}_{2,2}^{(c)}(E_{u}, b) = \frac{\sqrt{3}\mathbb{M}_{1,1}^{(a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6} + \frac{\sqrt{3}\mathbb{M}_{1,2}^{(a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6} - \frac{\sqrt{3}\mathbb{M}_{1,3}^{(a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{3}$

$\boxed{\text{z458}}$ $\mathbb{G}_{2,1}^{(1,-1;c)}(E_{u}, a) = -\frac{\sqrt{42}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{28} - \frac{\sqrt{70}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{28} - \frac{\sqrt{42}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{28} + \frac{\sqrt{70}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{28} + \frac{\sqrt{42}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{14}$

$$\boxed{\text{z459}}\quad \mathbb{G}_{2,2}^{(1,-1;c)}(E_u,a)=\frac{3\sqrt{14}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{28}-\frac{\sqrt{210}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{84}-\frac{3\sqrt{14}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{28}-\frac{\sqrt{210}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{84}+\frac{\sqrt{210}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{42}$$

$$\boxed{\text{z460}}\quad \mathbb{G}_{2,1}^{(1,-1;c)}(E_u,b)=-\frac{3\sqrt{14}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{28}-\frac{\sqrt{210}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{84}+\frac{3\sqrt{14}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{28}$$
$$-\frac{\sqrt{210}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{84}+\frac{\sqrt{210}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{42}$$

$$\boxed{\text{z461}}\quad \mathbb{G}_{2,2}^{(1,-1;c)}(E_u,b)=-\frac{\sqrt{42}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{28}+\frac{\sqrt{70}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{28}-\frac{\sqrt{42}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{28}-\frac{\sqrt{70}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{28}+\frac{\sqrt{42}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{14}$$

$$\boxed{\text{z462}}\quad \mathbb{G}_{2,1}^{(1,-1;c)}(E_u,c)=-\frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}-\frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6}+\frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$$

$$\boxed{\text{z463}}\quad \mathbb{G}_{2,2}^{(1,-1;c)}(E_u,c)=\frac{\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{2}-\frac{\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{2}$$

$$\boxed{\text{z464}}\quad \mathbb{G}_{2,1}^{(1,-1;c)}(E_u,d)=\frac{\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{2}-\frac{\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{2}$$

$$\boxed{\text{z465}}\quad \mathbb{G}_{2,2}^{(1,-1;c)}(E_u,d)=\frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6}+\frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6}-\frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{3}$$

$$\boxed{\text{z466}}\quad \mathbb{G}_{4,1}^{(1,-1;c)}(E_u)=-\frac{\sqrt{210}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{84}+\frac{3\sqrt{14}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{28}-\frac{\sqrt{210}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{84}-\frac{3\sqrt{14}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{28}+\frac{\sqrt{210}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{42}$$

$$\boxed{\text{z467}}\quad \mathbb{G}_{4,2}^{(1,-1;c)}(E_u)=\frac{\sqrt{70}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{28}+\frac{\sqrt{42}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{28}-\frac{\sqrt{70}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{28}+\frac{\sqrt{42}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{28}-\frac{\sqrt{42}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{14}$$

$$\boxed{\text{z468}}\quad \mathbb{G}_{2,1}^{(1,0;c)}(E_u,a)=-\frac{\mathbb{T}_{2,1}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{2}+\frac{\mathbb{T}_{2,2}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{2}$$

$$\boxed{\text{z469}}\quad \mathbb{G}_{2,2}^{(1,0;c)}(E_u,a)=-\frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}-\frac{\sqrt{3}\mathbb{T}_{2,2}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6}+\frac{\sqrt{3}\mathbb{T}_{2,3}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$$

$$\boxed{\text{z470}}\quad \mathbb{G}_{2,1}^{(1,0;c)}(E_u,b)=\frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(T_{2g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6}+\frac{\sqrt{3}\mathbb{T}_{2,2}^{(1,0;a)}(T_{2g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6}-\frac{\sqrt{3}\mathbb{T}_{2,3}^{(1,0;a)}(T_{2g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{3}$$

$$\boxed{\text{z471}}\quad \mathbb{G}_{2,2}^{(1,0;c)}(E_u,b)=-\frac{\mathbb{T}_{2,1}^{(1,0;a)}(T_{2g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{2}+\frac{\mathbb{T}_{2,2}^{(1,0;a)}(T_{2g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{2}$$

$$\boxed{\text{z472}}\quad \mathbb{G}_{2,1}^{(1,1;c)}(E_u,a) = -\frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6} - \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$$

$$\boxed{\text{z473}}\quad \mathbb{G}_{2,2}^{(1,1;c)}(E_u,a) = \frac{\mathbb{M}_{1,1}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{2} - \frac{\mathbb{M}_{1,2}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{2}$$

$$\boxed{\text{z474}}\quad \mathbb{G}_{2,1}^{(1,1;c)}(E_u,b) = \frac{\mathbb{M}_{1,1}^{(1,1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{2} - \frac{\mathbb{M}_{1,2}^{(1,1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{2}$$

$$\boxed{\text{z475}}\quad \mathbb{G}_{2,2}^{(1,1;c)}(E_u,b) = \frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6} + \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6} - \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,1;a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{3}$$

$$\boxed{\text{z476}}\quad \mathbb{G}_{1,1}^{(c)}(T_{1g}) = -\frac{\sqrt{10}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{10} + \frac{\sqrt{10}\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{10} + \frac{\sqrt{30}\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{30} - \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{30} - \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(a)}(T_{2g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{30} + \frac{\sqrt{30}\mathbb{Q}_{2,3}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{30}$$

$$\boxed{\text{z477}}\quad \mathbb{G}_{1,2}^{(c)}(T_{1g}) = \frac{\sqrt{10}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{10} + \frac{\sqrt{30}\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{30} - \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{30} - \frac{\sqrt{10}\mathbb{Q}_{2,2}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{10} + \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{30} - \frac{\sqrt{30}\mathbb{Q}_{2,3}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{30}$$

$$\boxed{\text{z478}}\quad \mathbb{G}_{1,3}^{(c)}(T_{1g}) = -\frac{\sqrt{30}\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{30} + \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{15} + \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{30} - \frac{\sqrt{30}\mathbb{Q}_{2,3}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{15}$$

$$\boxed{\text{z479}}\quad \mathbb{G}_{3,1}^{(c)}(T_{1g}) = \frac{\sqrt{10}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{20} - \frac{\sqrt{10}\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{20} - \frac{\sqrt{30}\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{60} + \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{60} - \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(a)}(T_{2g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{15} + \frac{\sqrt{30}\mathbb{Q}_{2,3}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{15}$$

$$\boxed{\text{z480}}\quad \mathbb{G}_{3,2}^{(c)}(T_{1g}) = -\frac{\sqrt{10}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{20} + \frac{\sqrt{30}\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{15} + \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{60} + \frac{\sqrt{10}\mathbb{Q}_{2,2}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{20} - \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{60} - \frac{\sqrt{30}\mathbb{Q}_{2,3}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{15}$$

$$\boxed{\text{z481}}\quad \mathbb{G}_{3,3}^{(c)}(T_{1g}) = -\frac{\sqrt{30}\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{15} - \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{30} + \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{15} + \frac{\sqrt{30}\mathbb{Q}_{2,3}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{30}$$

$$\boxed{\text{z482}}\quad \mathbb{G}_{1,1}^{(1,-1;c)}(T_{1g}) = -\frac{\sqrt{10}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{10} + \frac{\sqrt{10}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{10} + \frac{\sqrt{30}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{30} - \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{30} - \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{30} + \frac{\sqrt{30}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{30}$$

$$\boxed{\text{z483}}\quad \mathbb{G}_{1,2}^{(1,-1;c)}(T_{1g}) = \frac{\sqrt{10}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{10} + \frac{\sqrt{30}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{30} - \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{30} - \frac{\sqrt{10}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{10} + \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{30} - \frac{\sqrt{30}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{30}$$

$\boxed{\text{z484}}$ $\mathbb{G}_{1,3}^{(1,-1;c)}(T_{1g}) = -\frac{\sqrt{30}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{30} + \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_{g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{15} + \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{30} - \frac{\sqrt{30}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{g})}{15}$

$\boxed{\text{z560}}$ $\mathbb{G}_{3,1}^{(1,-1;c)}(T_{1g}) = \frac{\sqrt{10}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_{g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{20} - \frac{\sqrt{10}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{g})}{20} - \frac{\sqrt{30}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{g})}{60} + \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_{g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{60} - \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{15} + \frac{\sqrt{30}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{15}$

$\boxed{\text{z561}}$ $\mathbb{G}_{3,2}^{(1,-1;c)}(T_{1g}) = -\frac{\sqrt{10}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_{g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{20} + \frac{\sqrt{30}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{15} + \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_{g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{60} + \frac{\sqrt{10}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{g})}{20} - \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{g})}{60} - \frac{\sqrt{30}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{15}$

$\boxed{\text{z562}}$ $\mathbb{G}_{3,3}^{(1,-1;c)}(T_{1g}) = -\frac{\sqrt{30}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{15} - \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_{g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{30} + \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{15} + \frac{\sqrt{30}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{g})}{30}$

$\boxed{\text{z563}}$ $\mathbb{G}_{1,1}^{(1,0;c)}(T_{1g}, a) = \frac{\sqrt{3}\mathbb{G}_{1,1}^{(1,0;a)}(T_{1g})\mathbb{Q}_{0}^{(b)}(A_{1g})}{3}$

$\boxed{\text{z564}}$ $\mathbb{G}_{1,2}^{(1,0;c)}(T_{1g}, a) = \frac{\sqrt{3}\mathbb{G}_{1,2}^{(1,0;a)}(T_{1g})\mathbb{Q}_{0}^{(b)}(A_{1g})}{3}$

$\boxed{\text{z565}}$ $\mathbb{G}_{1,3}^{(1,0;c)}(T_{1g}, a) = \frac{\sqrt{3}\mathbb{G}_{1,3}^{(1,0;a)}(T_{1g})\mathbb{Q}_{0}^{(b)}(A_{1g})}{3}$

$\boxed{\text{z566}}$ $\mathbb{G}_{1,1}^{(1,0;c)}(T_{1g}, b) = -\frac{\sqrt{30}\mathbb{G}_{1,1}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{g})}{30} + \frac{\sqrt{10}\mathbb{G}_{1,1}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{g})}{10} + \frac{\sqrt{10}\mathbb{G}_{1,2}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{10} + \frac{\sqrt{10}\mathbb{G}_{1,3}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{10}$

$\boxed{\text{z567}}$ $\mathbb{G}_{1,2}^{(1,0;c)}(T_{1g}, b) = \frac{\sqrt{10}\mathbb{G}_{1,1}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{10} - \frac{\sqrt{30}\mathbb{G}_{1,2}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{g})}{30} - \frac{\sqrt{10}\mathbb{G}_{1,2}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{g})}{10} + \frac{\sqrt{10}\mathbb{G}_{1,3}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{10}$

$\boxed{\text{z568}}$ $\mathbb{G}_{1,3}^{(1,0;c)}(T_{1g}, b) = \frac{\sqrt{10}\mathbb{G}_{1,1}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{10} + \frac{\sqrt{10}\mathbb{G}_{1,2}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{10} + \frac{\sqrt{30}\mathbb{G}_{1,3}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{g})}{15}$

$\boxed{\text{z569}}$ $\mathbb{G}_{3,1}^{(1,0;c)}(T_{1g}) = -\frac{\sqrt{5}\mathbb{G}_{1,1}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{g})}{10} + \frac{\sqrt{15}\mathbb{G}_{1,1}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{g})}{10} - \frac{\sqrt{15}\mathbb{G}_{1,2}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{15} - \frac{\sqrt{15}\mathbb{G}_{1,3}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{15}$

$\boxed{\text{z570}}$ $\mathbb{G}_{3,2}^{(1,0;c)}(T_{1g}) = -\frac{\sqrt{15}\mathbb{G}_{1,1}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{15} - \frac{\sqrt{5}\mathbb{G}_{1,2}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{g})}{10} - \frac{\sqrt{15}\mathbb{G}_{1,2}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{g})}{10} - \frac{\sqrt{15}\mathbb{G}_{1,3}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{15}$

$\boxed{\text{z571}}$ $\mathbb{G}_{3,3}^{(1,0;c)}(T_{1g}) = -\frac{\sqrt{15}\mathbb{G}_{1,1}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{15} - \frac{\sqrt{15}\mathbb{G}_{1,2}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{15} + \frac{\sqrt{5}\mathbb{G}_{1,3}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{5}$

$\boxed{\text{z572}}$ $\mathbb{G}_{4,1}^{(1,-1;c)}(T_{1u}) = \frac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{12} - \frac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{4} - \frac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{12} - \frac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{4}$

$\boxed{\text{z573}}$ $\mathbb{G}_{4,2}^{(1,-1;c)}(T_{1u}) = -\frac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{12} - \frac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{4} + \frac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{12} - \frac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{4}$

$\boxed{\text{z574}}$ $\mathbb{G}_{4,3}^{(1,-1;c)}(T_{1u}) = \frac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{12} - \frac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{4} - \frac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{12} - \frac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{4}$

$\boxed{\text{z575}}$ $\mathbb{G}_{3,1}^{(c)}(T_{2g}) = \frac{\sqrt{6}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{12} - \frac{\sqrt{6}\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{12} + \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{4} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{4}$

$\boxed{\text{z576}}$ $\mathbb{G}_{3,2}^{(c)}(T_{2g}) = \frac{\sqrt{6}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{12} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{4} - \frac{\sqrt{6}\mathbb{Q}_{2,2}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{12} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{4}$

$\boxed{\text{z577}}$ $\mathbb{G}_{3,3}^{(c)}(T_{2g}) = -\frac{\sqrt{6}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{6} + \frac{\sqrt{6}\mathbb{Q}_{2,3}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{6}$

$\boxed{\text{z578}}$ $\mathbb{G}_{3,1}^{(1,-1;c)}(T_{2g}) = \frac{\sqrt{6}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{12} - \frac{\sqrt{6}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{12} + \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{4} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{4}$

$\boxed{\text{z579}}$ $\mathbb{G}_{3,2}^{(1,-1;c)}(T_{2g}) = \frac{\sqrt{6}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{12} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{4} - \frac{\sqrt{6}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{12} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{4}$

$\boxed{\text{z580}}$ $\mathbb{G}_{3,3}^{(1,-1;c)}(T_{2g}) = -\frac{\sqrt{6}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{6} + \frac{\sqrt{6}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{6}$

$\boxed{\text{z581}}$ $\mathbb{G}_{3,1}^{(1,0;c)}(T_{2g}) = -\frac{\sqrt{3}\mathbb{G}_{1,1}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} - \frac{\mathbb{G}_{1,1}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{6} + \frac{\mathbb{G}_{1,2}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{3} - \frac{\mathbb{G}_{1,3}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{3}$

$\boxed{\text{z582}}$ $\mathbb{G}_{3,2}^{(1,0;c)}(T_{2g}) = -\frac{\mathbb{G}_{1,1}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{3} + \frac{\sqrt{3}\mathbb{G}_{1,2}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} - \frac{\mathbb{G}_{1,2}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{6} + \frac{\mathbb{G}_{1,3}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{3}$

$\boxed{\text{z583}}$ $\mathbb{G}_{3,3}^{(1,0;c)}(T_{2g}) = \frac{\mathbb{G}_{1,1}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{3} - \frac{\mathbb{G}_{1,2}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{3} + \frac{\mathbb{G}_{1,3}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{3}$

$\boxed{\text{z584}}$ $\mathbb{G}_{2,1}^{(c)}(T_{2u}) = \frac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z585}}$ $$\mathbb{G}_{2,2}^{(c)}(T_{2u}) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$$

$\boxed{\text{z586}}$ $$\mathbb{G}_{2,3}^{(c)}(T_{2u}) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} + \frac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$$

$\boxed{\text{z587}}$ $$\mathbb{G}_{2,1}^{(1,-1;c)}(T_{2u},a) = -\frac{\sqrt{21}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{21} + \frac{\sqrt{35}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{21} - \frac{\sqrt{21}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{21} - \frac{\sqrt{35}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{21} + \frac{\sqrt{35}\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{21}$$

$\boxed{\text{z588}}$ $$\mathbb{G}_{2,2}^{(1,-1;c)}(T_{2u},a) = -\frac{\sqrt{21}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{21} - \frac{\sqrt{35}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{21} - \frac{\sqrt{21}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{21} + \frac{\sqrt{35}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{21} + \frac{\sqrt{35}\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{21}$$

$\boxed{\text{z589}}$ $$\mathbb{G}_{2,3}^{(1,-1;c)}(T_{2u},a) = -\frac{\sqrt{21}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{21} + \frac{\sqrt{35}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{21} - \frac{\sqrt{21}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{21} - \frac{\sqrt{35}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{21} + \frac{\sqrt{35}\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{21}$$

$\boxed{\text{z590}}$ $$\mathbb{G}_{2,1}^{(1,-1;c)}(T_{2u},b) = \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6}$$

$\boxed{\text{z591}}$ $$\mathbb{G}_{2,2}^{(1,-1;c)}(T_{2u},b) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$$

$\boxed{\text{z592}}$ $$\mathbb{G}_{2,3}^{(1,-1;c)}(T_{2u},b) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} + \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$$

$\boxed{\text{z593}}$ $$\mathbb{G}_{4,1}^{(1,-1;c)}(T_{2u}) = -\frac{\sqrt{105}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{84} - \frac{3\sqrt{7}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{28} - \frac{\sqrt{105}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{84} + \frac{3\sqrt{7}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{28} + \frac{\sqrt{7}\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{7}$$

$\boxed{\text{z594}}$ $$\mathbb{G}_{4,2}^{(1,-1;c)}(T_{2u}) = -\frac{\sqrt{105}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{84} + \frac{3\sqrt{7}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{28} - \frac{\sqrt{105}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{84} - \frac{3\sqrt{7}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{28} + \frac{\sqrt{7}\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{7}$$

$\boxed{\text{z595}}$ $$\mathbb{G}_{4,3}^{(1,-1;c)}(T_{2u}) = -\frac{\sqrt{105}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{84} - \frac{3\sqrt{7}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{28} - \frac{\sqrt{105}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{84} + \frac{3\sqrt{7}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{28} + \frac{\sqrt{7}\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{7}$$

$\boxed{\text{z596}}$ $$\mathbb{G}_{2,1}^{(1,0;c)}(T_{2u},a) = \frac{\sqrt{6}\mathbb{T}_{2,1}^{(1,0;a)}(E_{g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6} + \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(E_{g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6} - \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \frac{\sqrt{2}\mathbb{T}_{2,3}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6}$$

$\boxed{\text{z597}}$ $$\mathbb{G}_{2,2}^{(1,0;c)}(T_{2u},a) = -\frac{\sqrt{6}\mathbb{T}_{2,1}^{(1,0;a)}(E_{g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} + \frac{\sqrt{2}\mathbb{T}_{2,1}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(E_{g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} - \frac{\sqrt{2}\mathbb{T}_{2,3}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$$

$\boxed{\text{z598}}$ $$\mathbb{G}_{2,3}^{(1,0;c)}(T_{2u},a) = -\frac{\sqrt{2}\mathbb{T}_{2,1}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} - \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(E_{g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3} + \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$$

$\boxed{\text{z599}}$ $\mathbb{G}_{2,1}^{(1,0;c)}(T_{2u},b) = \frac{\sqrt{6}\mathbb{T}_{2,2}^{(1,0;a)}(T_{2g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{6} + \frac{\sqrt{6}\mathbb{T}_{2,3}^{(1,0;a)}(T_{2g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6}$

$\boxed{\text{z600}}$ $\mathbb{G}_{2,2}^{(1,0;c)}(T_{2u},b) = \frac{\sqrt{6}\mathbb{T}_{2,1}^{(1,0;a)}(T_{2g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{6} + \frac{\sqrt{6}\mathbb{T}_{2,3}^{(1,0;a)}(T_{2g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6}$

$\boxed{\text{z601}}$ $\mathbb{G}_{2,3}^{(1,0;c)}(T_{2u},b) = \frac{\sqrt{6}\mathbb{T}_{2,1}^{(1,0;a)}(T_{2g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6} + \frac{\sqrt{6}\mathbb{T}_{2,2}^{(1,0;a)}(T_{2g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6}$

$\boxed{\text{z602}}$ $\mathbb{G}_{2,1}^{(1,1;c)}(T_{2u}) = \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z603}}$ $\mathbb{G}_{2,2}^{(1,1;c)}(T_{2u}) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z604}}$ $\mathbb{G}_{2,3}^{(1,1;c)}(T_{2u}) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} + \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$

— Atomic SAMB

- bra: $\langle s,\uparrow|$, $\langle s,\downarrow|$
- ket: $|s,\uparrow\rangle$, $|s,\downarrow\rangle$

$\boxed{\text{x1}}$ $\mathbb{Q}_{0}^{(a)}(A_{1g}) = \begin{bmatrix} \frac{\sqrt{2}}{2} & 0 \\ 0 & \frac{\sqrt{2}}{2} \end{bmatrix}$

$\boxed{\text{x2}}$ $\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g}) = \begin{bmatrix} 0 & \frac{\sqrt{2}}{2} \\ \frac{\sqrt{2}}{2} & 0 \end{bmatrix}$

$\boxed{\text{x3}}$ $\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g}) = \begin{bmatrix} 0 & -\frac{\sqrt{2}i}{2} \\ \frac{\sqrt{2}i}{2} & 0 \end{bmatrix}$

$\boxed{\text{x4}}$ $\mathbb{M}_{1,3}^{(1,-1;a)}(T_{1g}) = \begin{bmatrix} \frac{\sqrt{2}}{2} & 0 \\ 0 & -\frac{\sqrt{2}}{2} \end{bmatrix}$

- bra: $\langle s,\uparrow|$, $\langle s,\downarrow|$

- ket: $|p_x,\uparrow\rangle$, $|p_x,\downarrow\rangle$, $|p_y,\uparrow\rangle$, $|p_y,\downarrow\rangle$, $|p_z,\uparrow\rangle$, $|p_z,\downarrow\rangle$

$\boxed{\text{x5}}$ $\mathbb{Q}_{1,1}^{(a)}(T_{1u}) = \begin{bmatrix} \frac{1}{2} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{1}{2} & 0 & 0 & 0 & 0 \end{bmatrix}$

$\boxed{\text{x6}}$ $\mathbb{Q}_{1,2}^{(a)}(T_{1u}) = \begin{bmatrix} 0 & 0 & \frac{1}{2} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{1}{2} & 0 & 0 \end{bmatrix}$

$\boxed{\text{x7}}$ $\mathbb{Q}_{1,3}^{(a)}(T_{1u}) = \begin{bmatrix} 0 & 0 & 0 & 0 & \frac{1}{2} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{1}{2} \end{bmatrix}$

$\boxed{\text{x8}}$ $\mathbb{Q}_{1,1}^{(1,0;a)}(T_{1u}) = \begin{bmatrix} 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & \frac{\sqrt{2}}{4} \\ 0 & 0 & 0 & \frac{\sqrt{2}i}{4} & -\frac{\sqrt{2}}{4} & 0 \end{bmatrix}$

$\boxed{\text{x9}}$ $\mathbb{Q}_{1,2}^{(1,0;a)}(T_{1u}) = \begin{bmatrix} \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} \\ 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 \end{bmatrix}$

$\boxed{\text{x10}}$ $\mathbb{Q}_{1,3}^{(1,0;a)}(T_{1u}) = \begin{bmatrix} 0 & -\frac{\sqrt{2}}{4} & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 \\ \frac{\sqrt{2}}{4} & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 \end{bmatrix}$

$\boxed{\text{x11}}$ $\mathbb{G}_{2,1}^{(1,-1;a)}(E_{u}) = \begin{bmatrix} 0 & -\frac{\sqrt{6}i}{12} & 0 & -\frac{\sqrt{6}}{12} & \frac{\sqrt{6}i}{6} & 0 \\ -\frac{\sqrt{6}i}{12} & 0 & \frac{\sqrt{6}}{12} & 0 & 0 & -\frac{\sqrt{6}i}{6} \end{bmatrix}$

$\boxed{\text{x12}}$ $\mathbb{G}_{2,2}^{(1,-1;a)}(E_{u}) = \begin{bmatrix} 0 & \frac{\sqrt{2}i}{4} & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 \\ \frac{\sqrt{2}i}{4} & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 \end{bmatrix}$

$\boxed{\text{x13}}$ $\mathbb{G}_{2,1}^{(1,-1;a)}(T_{2u}) = \begin{bmatrix} 0 & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & \frac{\sqrt{2}}{4} \\ 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & -\frac{\sqrt{2}}{4} & 0 \end{bmatrix}$

$\boxed{\text{x14}}$ $\mathbb{G}_{2,2}^{(1,-1;a)}(T_{2u}) = \begin{bmatrix} \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} \\ 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & \frac{\sqrt{2}i}{4} & 0 \end{bmatrix}$

$\boxed{\text{x15}}$ $\mathbb{G}_{2,3}^{(1,-1;a)}(T_{2u}) = \begin{bmatrix} 0 & \frac{\sqrt{2}}{4} & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 \\ -\frac{\sqrt{2}}{4} & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 \end{bmatrix}$

$\boxed{\text{x16}}$ $\mathbb{G}_{0}^{(1,1;a)}(A_{1u}) = \begin{bmatrix} 0 & \frac{\sqrt{3}i}{6} & 0 & \frac{\sqrt{3}}{6} & \frac{\sqrt{3}i}{6} & 0 \\ \frac{\sqrt{3}i}{6} & 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & -\frac{\sqrt{3}i}{6} \end{bmatrix}$

$\boxed{\text{x17}}$ $\mathbb{M}_{2,1}^{(1,-1;a)}(E_u) = \begin{bmatrix} 0 & -\frac{\sqrt{6}}{12} & 0 & \frac{\sqrt{6}i}{12} & \frac{\sqrt{6}}{6} & 0 \\ -\frac{\sqrt{6}}{12} & 0 & -\frac{\sqrt{6}i}{12} & 0 & 0 & -\frac{\sqrt{6}}{6} \end{bmatrix}$

$\boxed{\text{x18}}$ $\mathbb{M}_{2,2}^{(1,-1;a)}(E_u) = \begin{bmatrix} 0 & \frac{\sqrt{2}}{4} & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 \\ \frac{\sqrt{2}}{4} & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 \end{bmatrix}$

$\boxed{\text{x19}}$ $\mathbb{M}_{2,1}^{(1,-1;a)}(T_{2u}) = \begin{bmatrix} 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & -\frac{\sqrt{2}i}{4} \\ 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & \frac{\sqrt{2}i}{4} & 0 \end{bmatrix}$

$\boxed{\text{x20}}$ $\mathbb{M}_{2,2}^{(1,-1;a)}(T_{2u}) = \begin{bmatrix} \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} \\ 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & \frac{\sqrt{2}}{4} & 0 \end{bmatrix}$

$\boxed{\text{x21}}$ $\mathbb{M}_{2,3}^{(1,-1;a)}(T_{2u}) = \begin{bmatrix} 0 & -\frac{\sqrt{2}i}{4} & 0 & \frac{\sqrt{2}}{4} & 0 & 0 \\ \frac{\sqrt{2}i}{4} & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 \end{bmatrix}$

$\boxed{\text{x22}}$ $\mathbb{M}_{0}^{(1,1;a)}(A_{1u}) = \begin{bmatrix} 0 & \frac{\sqrt{3}}{6} & 0 & -\frac{\sqrt{3}i}{6} & \frac{\sqrt{3}}{6} & 0 \\ \frac{\sqrt{3}}{6} & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 & -\frac{\sqrt{3}}{6} \end{bmatrix}$

$\boxed{\text{x23}}$ $\mathbb{T}_{1,1}^{(a)}(T_{1u}) = \begin{bmatrix} \frac{i}{2} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{i}{2} & 0 & 0 & 0 & 0 \end{bmatrix}$

$\boxed{\text{x24}}$ $\mathbb{T}_{1,2}^{(a)}(T_{1u}) = \begin{bmatrix} 0 & 0 & \frac{i}{2} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{i}{2} & 0 & 0 \end{bmatrix}$

$\boxed{\text{x25}}$ $\mathbb{T}_{1,3}^{(a)}(T_{1u}) = \begin{bmatrix} 0 & 0 & 0 & 0 & \frac{i}{2} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{i}{2} \end{bmatrix}$

$\boxed{\text{x26}}$ $\mathbb{T}_{1,1}^{(1,0;a)}(T_{1u}) = \begin{bmatrix} 0 & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & -\frac{\sqrt{2}i}{4} \\ 0 & 0 & 0 & \frac{\sqrt{2}}{4} & \frac{\sqrt{2}i}{4} & 0 \end{bmatrix}$

$\boxed{\text{x27}}$ $\mathbb{T}_{1,2}^{(1,0;a)}(T_{1u}) = \begin{bmatrix} \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} \\ 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 \end{bmatrix}$

$\boxed{\text{x28}}$ $\mathbb{T}_{1,3}^{(1,0;a)}(T_{1u}) = \begin{bmatrix} 0 & \frac{\sqrt{2}i}{4} & 0 & \frac{\sqrt{2}}{4} & 0 & 0 \\ -\frac{\sqrt{2}i}{4} & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 \end{bmatrix}$

- bra: $\langle p_x,\uparrow|$, $\langle p_x,\downarrow|$, $\langle p_y,\uparrow|$, $\langle p_y,\downarrow|$, $\langle p_z,\uparrow|$, $\langle p_z,\downarrow|$

- ket: $|p_x,\uparrow\rangle$, $|p_x,\downarrow\rangle$, $|p_y,\uparrow\rangle$, $|p_y,\downarrow\rangle$, $|p_z,\uparrow\rangle$, $|p_z,\downarrow\rangle$

$$\boxed{\text{x29}} \quad \mathbb{Q}_0^{(a)}(A_{1g}) = \begin{bmatrix} \frac{\sqrt{6}}{6} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{6}}{6} & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{6}}{6} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{6}}{6} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{6} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{6} \end{bmatrix}$$

$$\boxed{\text{x30}} \quad \mathbb{Q}_{2,1}^{(a)}(E_g) = \begin{bmatrix} -\frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{3}}{6} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{3} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{3} \end{bmatrix}$$

$$\boxed{\text{x31}} \quad \mathbb{Q}_{2,2}^{(a)}(E_g) = \begin{bmatrix} \frac{1}{2} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{1}{2} & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{1}{2} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{1}{2} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$$

$$\boxed{\text{x32}} \quad \mathbb{Q}_{2,1}^{(a)}(T_{2g}) = \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{1}{2} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{1}{2} \\ 0 & 0 & \frac{1}{2} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{1}{2} & 0 & 0 \end{bmatrix}$$

$$\boxed{\text{x33}} \quad \mathbb{Q}_{2,2}^{(a)}(T_{2g}) = \begin{bmatrix} 0 & 0 & 0 & 0 & \frac{1}{2} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{1}{2} \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{1}{2} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{1}{2} & 0 & 0 & 0 & 0 \end{bmatrix}$$

$$\boxed{\text{x34}} \quad \mathbb{Q}_{2,3}^{(a)}(T_{2g}) = \begin{bmatrix} 0 & 0 & \frac{1}{2} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{1}{2} & 0 & 0 \\ \frac{1}{2} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{1}{2} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$$

$$\boxed{\text{x35}} \quad \mathbb{Q}_{2,1}^{(1,-1;a)}(E_g) = \begin{bmatrix} 0 & 0 & -\frac{\sqrt{6}i}{6} & 0 & 0 & -\frac{\sqrt{6}}{12} \\ 0 & 0 & 0 & \frac{\sqrt{6}i}{6} & \frac{\sqrt{6}}{12} & 0 \\ \frac{\sqrt{6}i}{6} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{12} \\ 0 & -\frac{\sqrt{6}i}{6} & 0 & 0 & \frac{\sqrt{6}i}{12} & 0 \\ 0 & \frac{\sqrt{6}}{12} & 0 & -\frac{\sqrt{6}i}{12} & 0 & 0 \\ -\frac{\sqrt{6}}{12} & 0 & -\frac{\sqrt{6}i}{12} & 0 & 0 & 0 \end{bmatrix}$$

$$\boxed{\text{x36}} \quad \mathbb{Q}_{2,2}^{(1,-1;a)}(E_g) = \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 \\ 0 & \frac{\sqrt{2}}{4} & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 \\ -\frac{\sqrt{2}}{4} & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 \end{bmatrix}$$

$$\boxed{\text{x37}} \quad \mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g}) = \begin{bmatrix} 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & \frac{\sqrt{2}i}{4} & 0 \\ 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & -\frac{\sqrt{2}i}{4} \\ 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 \end{bmatrix}$$

$$\boxed{\text{x38}} \quad \mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g}) = \begin{bmatrix} 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 \\ \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} \\ 0 & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 \end{bmatrix}$$

$$\boxed{\text{x39}} \quad \mathbb{Q}_{2,3}^{(1,-1;a)}(T_{2g}) = \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 \\ 0 & -\frac{\sqrt{2}i}{4} & 0 & \frac{\sqrt{2}}{4} & 0 & 0 \\ -\frac{\sqrt{2}i}{4} & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 \end{bmatrix}$$

$\boxed{\text{x40}}$ $$\mathbb{Q}_{0}^{(1,1;a)}(A_{1g}) = \begin{bmatrix} 0 & 0 & -\frac{\sqrt{3}i}{6} & 0 & 0 & \frac{\sqrt{3}}{6} \\ 0 & 0 & 0 & \frac{\sqrt{3}i}{6} & -\frac{\sqrt{3}}{6} & 0 \\ \frac{\sqrt{3}i}{6} & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{6} \\ 0 & -\frac{\sqrt{3}i}{6} & 0 & 0 & -\frac{\sqrt{3}i}{6} & 0 \\ 0 & -\frac{\sqrt{3}}{6} & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 \\ \frac{\sqrt{3}}{6} & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 & 0 \end{bmatrix}$$

$\boxed{\text{x41}}$ $$\mathbb{G}_{1,1}^{(1,0;a)}(T_{1g}) = \begin{bmatrix} 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & -\frac{\sqrt{2}i}{4} & 0 \\ 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & \frac{\sqrt{2}i}{4} \\ 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 \end{bmatrix}$$

$\boxed{\text{x42}}$ $$\mathbb{G}_{1,2}^{(1,0;a)}(T_{1g}) = \begin{bmatrix} 0 & 0 & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 \\ 0 & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 \\ -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} \\ 0 & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 \end{bmatrix}$$

$\boxed{\text{x43}}$ $$\mathbb{G}_{1,3}^{(1,0;a)}(T_{1g}) = \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 \\ 0 & -\frac{\sqrt{2}i}{4} & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 \\ -\frac{\sqrt{2}i}{4} & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 \end{bmatrix}$$

$\boxed{\text{x44}}$ $$\mathbb{M}_{1,1}^{(a)}(T_{1g}) = \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{i}{2} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{i}{2} \\ 0 & 0 & \frac{i}{2} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{i}{2} & 0 & 0 \end{bmatrix}$$

$\boxed{\text{x45}}$ $$\mathbb{M}_{1,2}^{(a)}(T_{1g}) = \begin{bmatrix} 0 & 0 & 0 & 0 & \frac{i}{2} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{i}{2} \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{i}{2} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{i}{2} & 0 & 0 & 0 & 0 \end{bmatrix}$$

$\boxed{\text{x46}}$ $$\mathbb{M}_{1,3}^{(a)}(T_{1g}) = \begin{bmatrix} 0 & 0 & -\frac{i}{2} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{i}{2} & 0 & 0 \\ \frac{i}{2} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{i}{2} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$$

$\boxed{\text{x47}}$ $$\mathbb{M}_{3}^{(1,-1;a)}(A_{2g}) = \begin{bmatrix} 0 & 0 & \frac{\sqrt{3}}{6} & 0 & 0 & -\frac{\sqrt{3}i}{6} \\ 0 & 0 & 0 & -\frac{\sqrt{3}}{6} & \frac{\sqrt{3}i}{6} & 0 \\ \frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{6} \\ 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & \frac{\sqrt{3}}{6} & 0 \\ 0 & -\frac{\sqrt{3}i}{6} & 0 & \frac{\sqrt{3}}{6} & 0 & 0 \\ \frac{\sqrt{3}i}{6} & 0 & \frac{\sqrt{3}}{6} & 0 & 0 & 0 \end{bmatrix}$$

$\boxed{\text{x48}}$ $$\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g}) = \begin{bmatrix} 0 & \frac{\sqrt{6}}{6} & 0 & 0 & 0 & 0 \\ \frac{\sqrt{6}}{6} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{6}}{6} & 0 & 0 \\ 0 & 0 & \frac{\sqrt{6}}{6} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{6} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{6} & 0 \end{bmatrix}$$

$\boxed{\text{x49}}$ $$\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g}) = \begin{bmatrix} 0 & -\frac{\sqrt{6}i}{6} & 0 & 0 & 0 & 0 \\ \frac{\sqrt{6}i}{6} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{6}i}{6} & 0 & 0 \\ 0 & 0 & \frac{\sqrt{6}i}{6} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{6} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{6} & 0 \end{bmatrix}$$

$\boxed{\text{x50}}$ $$\mathbb{M}_{1,3}^{(1,-1;a)}(T_{1g}) = \begin{bmatrix} \frac{\sqrt{6}}{6} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{6}}{6} & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{6}}{6} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{6}}{6} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{6} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{6} \end{bmatrix}$$

$\boxed{\text{x51}}$ $$\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g}) = \begin{bmatrix} 0 & \frac{\sqrt{5}}{5} & 0 & \frac{\sqrt{5}i}{10} & -\frac{\sqrt{5}}{10} & 0 \\ \frac{\sqrt{5}}{5} & 0 & -\frac{\sqrt{5}i}{10} & 0 & 0 & \frac{\sqrt{5}}{10} \\ 0 & \frac{\sqrt{5}i}{10} & 0 & -\frac{\sqrt{5}}{10} & 0 & 0 \\ -\frac{\sqrt{5}i}{10} & 0 & -\frac{\sqrt{5}}{10} & 0 & 0 & 0 \\ -\frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{10} \\ 0 & \frac{\sqrt{5}}{10} & 0 & 0 & -\frac{\sqrt{5}}{10} & 0 \end{bmatrix}$$

$\boxed{\text{x52}}$ $$\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g}) = \begin{bmatrix} 0 & \frac{\sqrt{5}i}{10} & 0 & -\frac{\sqrt{5}}{10} & 0 & 0 \\ -\frac{\sqrt{5}i}{10} & 0 & -\frac{\sqrt{5}}{10} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{5}}{10} & 0 & -\frac{\sqrt{5}i}{5} & -\frac{\sqrt{5}}{10} & 0 \\ -\frac{\sqrt{5}}{10} & 0 & \frac{\sqrt{5}i}{5} & 0 & 0 & \frac{\sqrt{5}}{10} \\ 0 & 0 & -\frac{\sqrt{5}}{10} & 0 & 0 & \frac{\sqrt{5}i}{10} \\ 0 & 0 & 0 & \frac{\sqrt{5}}{10} & -\frac{\sqrt{5}i}{10} & 0 \end{bmatrix}$$

$\boxed{\text{x53}}$ $$\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g}) = \begin{bmatrix} -\frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{10} \\ 0 & \frac{\sqrt{5}}{10} & 0 & 0 & -\frac{\sqrt{5}}{10} & 0 \\ 0 & 0 & -\frac{\sqrt{5}}{10} & 0 & 0 & \frac{\sqrt{5}i}{10} \\ 0 & 0 & 0 & \frac{\sqrt{5}}{10} & -\frac{\sqrt{5}i}{10} & 0 \\ 0 & -\frac{\sqrt{5}}{10} & 0 & \frac{\sqrt{5}i}{10} & \frac{\sqrt{5}}{5} & 0 \\ -\frac{\sqrt{5}}{10} & 0 & -\frac{\sqrt{5}i}{10} & 0 & 0 & -\frac{\sqrt{5}}{5} \end{bmatrix}$$

$\boxed{\text{x54}}$ $$\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g}) = \begin{bmatrix} 0 & 0 & 0 & -\frac{\sqrt{3}i}{6} & -\frac{\sqrt{3}}{6} & 0 \\ 0 & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 & \frac{\sqrt{3}}{6} \\ 0 & -\frac{\sqrt{3}i}{6} & 0 & \frac{\sqrt{3}}{6} & 0 & 0 \\ \frac{\sqrt{3}i}{6} & 0 & \frac{\sqrt{3}}{6} & 0 & 0 & 0 \\ -\frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{6} \\ 0 & \frac{\sqrt{3}}{6} & 0 & 0 & -\frac{\sqrt{3}}{6} & 0 \end{bmatrix}$$

$\boxed{\text{x55}}$ $$\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g}) = \begin{bmatrix} 0 & \frac{\sqrt{3}i}{6} & 0 & -\frac{\sqrt{3}}{6} & 0 & 0 \\ -\frac{\sqrt{3}i}{6} & 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & \frac{\sqrt{3}}{6} & 0 \\ -\frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{6} \\ 0 & 0 & \frac{\sqrt{3}}{6} & 0 & 0 & -\frac{\sqrt{3}i}{6} \\ 0 & 0 & 0 & -\frac{\sqrt{3}}{6} & \frac{\sqrt{3}i}{6} & 0 \end{bmatrix}$$

$$\boxed{\text{x56}} \quad \mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g}) = \begin{bmatrix} \frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{6} \\ 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & \frac{\sqrt{3}}{6} & 0 \\ 0 & 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & \frac{\sqrt{3}i}{6} \\ 0 & 0 & 0 & \frac{\sqrt{3}}{6} & -\frac{\sqrt{3}i}{6} & 0 \\ 0 & \frac{\sqrt{3}}{6} & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 \\ \frac{\sqrt{3}}{6} & 0 & -\frac{\sqrt{3}i}{6} & 0 & 0 & 0 \end{bmatrix}$$

$$\boxed{\text{x57}} \quad \mathbb{M}_{1,1}^{(1,1;a)}(T_{1g}) = \begin{bmatrix} 0 & \frac{\sqrt{30}}{15} & 0 & -\frac{\sqrt{30}i}{20} & \frac{\sqrt{30}}{20} & 0 \\ \frac{\sqrt{30}}{15} & 0 & \frac{\sqrt{30}i}{20} & 0 & 0 & -\frac{\sqrt{30}}{20} \\ 0 & -\frac{\sqrt{30}i}{20} & 0 & -\frac{\sqrt{30}}{30} & 0 & 0 \\ \frac{\sqrt{30}i}{20} & 0 & -\frac{\sqrt{30}}{30} & 0 & 0 & 0 \\ \frac{\sqrt{30}}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{30} \\ 0 & -\frac{\sqrt{30}}{20} & 0 & 0 & -\frac{\sqrt{30}}{30} & 0 \end{bmatrix}$$

$$\boxed{\text{x58}} \quad \mathbb{M}_{1,2}^{(1,1;a)}(T_{1g}) = \begin{bmatrix} 0 & \frac{\sqrt{30}i}{30} & 0 & \frac{\sqrt{30}}{20} & 0 & 0 \\ -\frac{\sqrt{30}i}{30} & 0 & \frac{\sqrt{30}}{20} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{30}}{20} & 0 & -\frac{\sqrt{30}i}{15} & \frac{\sqrt{30}}{20} & 0 \\ \frac{\sqrt{30}}{20} & 0 & \frac{\sqrt{30}i}{15} & 0 & 0 & -\frac{\sqrt{30}}{20} \\ 0 & 0 & \frac{\sqrt{30}}{20} & 0 & 0 & \frac{\sqrt{30}i}{30} \\ 0 & 0 & 0 & -\frac{\sqrt{30}}{20} & -\frac{\sqrt{30}i}{30} & 0 \end{bmatrix}$$

$$\boxed{\text{x59}} \quad \mathbb{M}_{1,3}^{(1,1;a)}(T_{1g}) = \begin{bmatrix} -\frac{\sqrt{30}}{30} & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{20} \\ 0 & \frac{\sqrt{30}}{30} & 0 & 0 & \frac{\sqrt{30}}{20} & 0 \\ 0 & 0 & -\frac{\sqrt{30}}{30} & 0 & 0 & -\frac{\sqrt{30}i}{20} \\ 0 & 0 & 0 & \frac{\sqrt{30}}{30} & \frac{\sqrt{30}i}{20} & 0 \\ 0 & \frac{\sqrt{30}}{20} & 0 & -\frac{\sqrt{30}i}{20} & \frac{\sqrt{30}}{15} & 0 \\ \frac{\sqrt{30}}{20} & 0 & \frac{\sqrt{30}i}{20} & 0 & 0 & -\frac{\sqrt{30}}{15} \end{bmatrix}$$

$$\boxed{\text{x60}} \quad \mathbb{T}_{2,1}^{(1,0;a)}(E_g) = \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 \\ 0 & \frac{\sqrt{2}i}{4} & 0 & \frac{\sqrt{2}}{4} & 0 & 0 \\ -\frac{\sqrt{2}i}{4} & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 \end{bmatrix}$$

$\boxed{\text{x61}}$ $\mathbb{T}_{2,2}^{(1,0;a)}(E_g) = \begin{bmatrix} 0 & 0 & -\frac{\sqrt{6}}{6} & 0 & 0 & -\frac{\sqrt{6}i}{12} \\ 0 & 0 & 0 & \frac{\sqrt{6}}{6} & \frac{\sqrt{6}i}{12} & 0 \\ -\frac{\sqrt{6}}{6} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{12} \\ 0 & \frac{\sqrt{6}}{6} & 0 & 0 & \frac{\sqrt{6}}{12} & 0 \\ 0 & -\frac{\sqrt{6}i}{12} & 0 & \frac{\sqrt{6}}{12} & 0 & 0 \\ \frac{\sqrt{6}i}{12} & 0 & \frac{\sqrt{6}}{12} & 0 & 0 & 0 \end{bmatrix}$

$\boxed{\text{x62}}$ $\mathbb{T}_{2,1}^{(1,0;a)}(T_{2g}) = \begin{bmatrix} 0 & 0 & 0 & \frac{\sqrt{6}i}{12} & \frac{\sqrt{6}}{12} & 0 \\ 0 & 0 & -\frac{\sqrt{6}i}{12} & 0 & 0 & -\frac{\sqrt{6}}{12} \\ 0 & \frac{\sqrt{6}i}{12} & 0 & \frac{\sqrt{6}}{6} & 0 & 0 \\ -\frac{\sqrt{6}i}{12} & 0 & \frac{\sqrt{6}}{6} & 0 & 0 & 0 \\ \frac{\sqrt{6}}{12} & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{6} \\ 0 & -\frac{\sqrt{6}}{12} & 0 & 0 & -\frac{\sqrt{6}}{6} & 0 \end{bmatrix}$

$\boxed{\text{x63}}$ $\mathbb{T}_{2,2}^{(1,0;a)}(T_{2g}) = \begin{bmatrix} 0 & \frac{\sqrt{6}i}{6} & 0 & \frac{\sqrt{6}}{12} & 0 & 0 \\ -\frac{\sqrt{6}i}{6} & 0 & \frac{\sqrt{6}}{12} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{6}}{12} & 0 & 0 & -\frac{\sqrt{6}}{12} & 0 \\ \frac{\sqrt{6}}{12} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{12} \\ 0 & 0 & -\frac{\sqrt{6}}{12} & 0 & 0 & -\frac{\sqrt{6}i}{6} \\ 0 & 0 & 0 & \frac{\sqrt{6}}{12} & \frac{\sqrt{6}i}{6} & 0 \end{bmatrix}$

$\boxed{\text{x64}}$ $\mathbb{T}_{2,3}^{(1,0;a)}(T_{2g}) = \begin{bmatrix} \frac{\sqrt{6}}{6} & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{12} \\ 0 & -\frac{\sqrt{6}}{6} & 0 & 0 & -\frac{\sqrt{6}}{12} & 0 \\ 0 & 0 & -\frac{\sqrt{6}}{6} & 0 & 0 & -\frac{\sqrt{6}i}{12} \\ 0 & 0 & 0 & \frac{\sqrt{6}}{6} & \frac{\sqrt{6}i}{12} & 0 \\ 0 & -\frac{\sqrt{6}}{12} & 0 & -\frac{\sqrt{6}i}{12} & 0 & 0 \\ -\frac{\sqrt{6}}{12} & 0 & \frac{\sqrt{6}i}{12} & 0 & 0 & 0 \end{bmatrix}$

Cluster SAMB

- Site cluster

** Wyckoff: `1a`

$\boxed{\text{y1}}$ $\mathbb{Q}_{0}^{(s)}(A_{1g}) = [1]$

- Bond cluster

** Wyckoff: `3a@3d`

$\boxed{\text{y2}}$ $\mathbb{Q}_{0}^{(s)}(A_{1g}) = \left[\frac{\sqrt{3}}{3},\, \frac{\sqrt{3}}{3},\, \frac{\sqrt{3}}{3}\right]$

$\boxed{\text{y3}}$ $\mathbb{Q}_{2,1}^{(s)}(E_{g}) = \left[-\frac{\sqrt{6}}{6},\, -\frac{\sqrt{6}}{6},\, \frac{\sqrt{6}}{3}\right]$

$\boxed{\text{y4}}$ $\mathbb{Q}_{2,2}^{(s)}(E_{g}) = \left[\frac{\sqrt{2}}{2},\, -\frac{\sqrt{2}}{2},\, 0\right]$

$\boxed{\text{y5}}$ $\mathbb{T}_{1,1}^{(s)}(T_{1u}) = [i,\, 0,\, 0]$

$\boxed{\text{y6}}$ $\mathbb{T}_{1,2}^{(s)}(T_{1u}) = [0,\, i,\, 0]$

$\boxed{\text{y7}}$ $\mathbb{T}_{1,3}^{(s)}(T_{1u}) = [0,\, 0,\, i]$

** Wyckoff: `6b@3c`

$\boxed{\text{y8}}$ $\mathbb{Q}_{0}^{(s)}(A_{1g}) = \left[\frac{\sqrt{6}}{6},\, \frac{\sqrt{6}}{6},\, \frac{\sqrt{6}}{6},\, \frac{\sqrt{6}}{6},\, \frac{\sqrt{6}}{6},\, \frac{\sqrt{6}}{6}\right]$

$\boxed{\text{y9}}$ $\mathbb{Q}_{2,1}^{(s)}(E_{g}) = \left[-\frac{\sqrt{3}}{6},\, -\frac{\sqrt{3}}{6},\, -\frac{\sqrt{3}}{6},\, -\frac{\sqrt{3}}{6},\, \frac{\sqrt{3}}{3},\, \frac{\sqrt{3}}{3}\right]$

$\boxed{\text{y10}}$ $\mathbb{Q}_{2,2}^{(s)}(E_{g}) = \left[\frac{1}{2},\, \frac{1}{2},\, -\frac{1}{2},\, -\frac{1}{2},\, 0,\, 0\right]$

$\boxed{\text{y11}}$ $\mathbb{T}_{1,1}^{(s)}(T_{1u}) = \left[0,\, 0,\, \frac{i}{2},\, \frac{i}{2},\, \frac{i}{2},\, -\frac{i}{2}\right]$

$\boxed{\text{y12}}$ $\mathbb{T}_{1,2}^{(s)}(T_{1u}) = \left[\frac{i}{2},\, -\frac{i}{2},\, 0,\, 0,\, \frac{i}{2},\, \frac{i}{2}\right]$

$\boxed{\text{y13}}$ $\mathbb{T}_{1,3}^{(s)}(T_{1u}) = \left[\frac{i}{2},\, \frac{i}{2},\, \frac{i}{2},\, -\frac{i}{2},\, 0,\, 0\right]$

$\boxed{\text{y14}}$ $\mathbb{Q}_{2,1}^{(s)}(T_{2g}) = \left[\frac{\sqrt{2}}{2},\, -\frac{\sqrt{2}}{2},\, 0,\, 0,\, 0,\, 0\right]$

$\boxed{\text{y15}}$ $\mathbb{Q}_{2,2}^{(s)}(T_{2g}) = \left[0,\ 0,\ \frac{\sqrt{2}}{2},\ -\frac{\sqrt{2}}{2},\ 0,\ 0\right]$

$\boxed{\text{y16}}$ $\mathbb{Q}_{2,3}^{(s)}(T_{2g}) = \left[0,\ 0,\ 0,\ 0,\ \frac{\sqrt{2}}{2},\ -\frac{\sqrt{2}}{2}\right]$

$\boxed{\text{y17}}$ $\mathbb{M}_{2,1}^{(s)}(T_{2u}) = \left[0,\ 0,\ \frac{i}{2},\ \frac{i}{2},\ -\frac{i}{2},\ \frac{i}{2}\right]$

$\boxed{\text{y18}}$ $\mathbb{M}_{2,2}^{(s)}(T_{2u}) = \left[-\frac{i}{2},\ \frac{i}{2},\ 0,\ 0,\ \frac{i}{2},\ \frac{i}{2}\right]$

$\boxed{\text{y19}}$ $\mathbb{M}_{2,3}^{(s)}(T_{2u}) = \left[\frac{i}{2},\ \frac{i}{2},\ -\frac{i}{2},\ \frac{i}{2},\ 0,\ 0\right]$

Site and Bond

Table 5: Orbital of each site

#	site	orbital
1	`A`	$\lvert s,\uparrow\rangle$, $\lvert s,\downarrow\rangle$, $\lvert p_x,\uparrow\rangle$, $\lvert p_x,\downarrow\rangle$, $\lvert p_y,\uparrow\rangle$, $\lvert p_y,\downarrow\rangle$, $\lvert p_z,\uparrow\rangle$, $\lvert p_z,\downarrow\rangle$

Table 6: Neighbor and bra-ket of each bond

#	head	tail	neighbor	head (bra)	tail (ket)
1	`A`	`A`	`[1,2]`	`[s,p]`	`[s,p]`

Site in Unit Cell

Sites in (conventional) cell (no plus set), SL = sublattice

Table 7: 'A' (#1) site cluster (1a), m-3m

SL	position ($\boldsymbol{s}$)	mapping
1	[0.00000, 0.00000, 0.00000]	[1,2,3,4,···,48]

Bond in Unit Cell

Bonds in (conventional) cell (no plus set): tail, head = (SL, plus set), (N)D = (non)directional (listed up to 5th neighbor at most)

Table 8: 1-th 'A'-'A' [1] (#1) bond cluster (3a@3d), ND, $|\boldsymbol{v}|$= 1.0 (cartesian)

SL	vector ($\boldsymbol{v}$)	center ($\boldsymbol{c}$)	mapping	head	tail	$\boldsymbol{R}$ (primitive)
1	[-1.00000, 0.00000, 0.00000]	[0.50000, 0.00000, 0.00000]	[1,-2,-3,4,17,-18,-19,20,-25,26,27,-28,-41,42,43,-44]	(1,1)	(1,1)	[1,0,0]
2	[0.00000,-1.00000, 0.00000]	[0.00000, 0.50000, 0.00000]	[5,-6,-7,8,13,-14,-15,16,-29,30,31,-32,-37,38,39,-40]	(1,1)	(1,1)	[0,1,0]
3	[0.00000, 0.00000,-1.00000]	[0.00000, 0.00000, 0.50000]	[9,-10,-11,12,-21,22,23,-24,-33,34,35,-36,45,-46,-47,48]	(1,1)	(1,1)	[0,0,1]

Table 9: 2-th 'A'-'A' [1] (#2) bond cluster (6b@3c), ND, $|\boldsymbol{v}|$= 1.41421 (cartesian)

SL	vector ($\boldsymbol{v}$)	center ($\boldsymbol{c}$)	mapping	head	tail	$\boldsymbol{R}$ (primitive)
1	[0.00000,-1.00000,-1.00000]	[0.00000, 0.50000, 0.50000]	[1,-4,18,-19,-25,28,-42,43]	(1,1)	(1,1)	[0,1,1]
2	[0.00000, 1.00000,-1.00000]	[0.00000, 0.50000, 0.50000]	[2,-3,-17,20,-26,27,41,-44]	(1,1)	(1,1)	[0,-1,1]
3	[-1.00000, 0.00000,-1.00000]	[0.50000, 0.00000, 0.50000]	[5,-8,-14,15,-29,32,38,-39]	(1,1)	(1,1)	[1,0,1]
4	[-1.00000, 0.00000, 1.00000]	[0.50000, 0.00000, 0.50000]	[6,-7,13,-16,-30,31,-37,40]	(1,1)	(1,1)	[1,0,-1]
5	[-1.00000,-1.00000, 0.00000]	[0.50000, 0.50000, 0.00000]	[9,-12,21,-24,-33,36,-45,48]	(1,1)	(1,1)	[1,1,0]
6	[1.00000,-1.00000, 0.00000]	[0.50000, 0.50000, 0.00000]	[10,-11,-22,23,-34,35,46,-47]	(1,1)	(1,1)	[-1,1,0]