

Model for “Th1”

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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_g , E_g , T_g , A_u , E_u , T_u]
 - Spin (s): [0, 1]
- Atomic selection:
 - Type: [Q, G, M, T]
 - Rank: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11]
 - Irrep.: [A_g , E_g , T_g , A_u , E_u , T_u]
 - Spin (s): [0, 1]
- Site-cluster selection:
 - Rank: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11]
 - Irrep.: [A_g , E_g , T_g , A_u , E_u , T_u]
- Bond-cluster selection:
 - Type: [Q, G, M, T]
 - Rank: [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11]
 - Irrep.: [A_g , E_g , T_g , A_u , E_u , T_u]
- Max. neighbor: 10
- Search cell range: (-2, 3), (-2, 3), (-2, 3)
- Toroidal priority: **false**

Group and Unit Cell

- Group: SG No. 200 $T_h^1 Pm\bar{3}$ [cubic]
- Associated point group: PG No. 200 $T_h m\bar{3}$ [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):
 - $\mathbf{a}_1 = [1.00000, 0.00000, 0.00000]$
 - $\mathbf{a}_2 = [0.00000, 1.00000, 0.00000]$
 - $\mathbf{a}_3 = [0.00000, 0.00000, 1.00000]$

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	$\{3_{111}^+ 0\}$
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	$\{-1 0\}$	14	$\{m_{001} 0\}$	15	$\{m_{010} 0\}$
16	$\{m_{100} 0\}$	17	$\{-3_{111}^+ 0\}$	18	$\{-3_{-11-1}^+ 0\}$	19	$\{-3_{1-1-1}^+ 0\}$	20	$\{-3_{-1-11}^+ 0\}$
21	$\{-3_{111}^- 0\}$	22	$\{-3_{1-1-1}^- 0\}$	23	$\{-3_{-1-11}^- 0\}$	24	$\{-3_{-11-1}^- 0\}$		

Harmonics

Table 2: Harmonics

#	symbol	irrep.	rank	X	multiplicity	component	symmetry
1	$\mathbb{Q}_0(A_g)$	A_g	0	Q, T	-	-	1
2	$\mathbb{G}_3(A_g)$	A_g	3	G, M	-	-	$\sqrt{15}xyz$
3	$\mathbb{Q}_4(A_g)$	A_g	4	Q, T	-	-	$\frac{\sqrt{21}(x^4-3x^2y^2-3x^2z^2+y^4-3y^2z^2+z^4)}{6}$
4	$\mathbb{G}_0(A_u)$	A_u	0	G, M	-	-	1
5	$\mathbb{Q}_3(A_u)$	A_u	3	Q, T	-	-	$\sqrt{15}xyz$

continued ...

Table 2

#	symbol	irrep.	rank	X	multiplicity	component	symmetry
6	$\mathbb{G}_4(A_u)$	A_u	4	G, M	-	-	$\frac{\sqrt{21}(x^4-3x^2y^2-3x^2z^2+y^4-3y^2z^2+z^4)}{6}$
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	$-\frac{\sqrt{15}(x^4-12x^2y^2+6x^2z^2+y^4+6y^2z^2-2z^4)}{12}$
10	$\mathbb{Q}_{4,2}(E_g)$					2	$\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$
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	$-\frac{\sqrt{15}(x^4-12x^2y^2+6x^2z^2+y^4+6y^2z^2-2z^4)}{12}$
14	$\mathbb{G}_{4,2}(E_u)$					2	$\frac{\sqrt{5}(x-y)(x+y)(x^2+y^2-6z^2)}{4}$
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	$\frac{\sqrt{105}xyz(x^2+y^2-2z^2)}{2}$
17	$\mathbb{G}_{1,1}(T_g)$	T_g	1	G, M	-	1	x
18	$\mathbb{G}_{1,2}(T_g)$					2	y
19	$\mathbb{G}_{1,3}(T_g)$					3	z
20	$\mathbb{Q}_{2,1}(T_g)$	T_g	2	Q, T	-	1	$\sqrt{3}yz$
21	$\mathbb{Q}_{2,2}(T_g)$					2	$\sqrt{3}xz$
22	$\mathbb{Q}_{2,3}(T_g)$					3	$\sqrt{3}xy$
23	$\mathbb{G}_{3,1}(T_g, 1)$	T_g	3	G, M	1	1	$\frac{x(2x^2-3y^2-3z^2)}{2}$
24	$\mathbb{G}_{3,2}(T_g, 1)$					2	$-\frac{y(3x^2-2y^2+3z^2)}{2}$
25	$\mathbb{G}_{3,3}(T_g, 1)$					3	$-\frac{z(3x^2+3y^2-2z^2)}{2}$
26	$\mathbb{G}_{3,1}(T_g, 2)$	T_g	3	G, M	2	1	$\frac{\sqrt{15}x(y-z)(y+z)}{2}$

continued ...

Table 2

#	symbol	irrep.	rank	X	multiplicity	component	symmetry
27	$\mathbb{G}_{3,2}(T_g, 2)$					2	$-\frac{\sqrt{15}y(x-z)(x+z)}{2}$
28	$\mathbb{G}_{3,3}(T_g, 2)$					3	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$
29	$\mathbb{Q}_{4,1}(T_g, 1)$	T_g	4	Q, T	1	1	$\frac{\sqrt{35}yz(y-z)(y+z)}{2}$
30	$\mathbb{Q}_{4,2}(T_g, 1)$					2	$-\frac{\sqrt{35}xz(x-z)(x+z)}{2}$
31	$\mathbb{Q}_{4,3}(T_g, 1)$					3	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$
32	$\mathbb{Q}_{4,1}(T_g, 2)$	T_g	4	Q, T	2	1	$\frac{\sqrt{5}yz(6x^2-y^2-z^2)}{2}$
33	$\mathbb{Q}_{4,2}(T_g, 2)$					2	$-\frac{\sqrt{5}xz(x^2-6y^2+z^2)}{2}$
34	$\mathbb{Q}_{4,3}(T_g, 2)$					3	$-\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$
35	$\mathbb{Q}_{1,1}(T_u)$	T_u	1	Q, T	-	1	x
36	$\mathbb{Q}_{1,2}(T_u)$					2	y
37	$\mathbb{Q}_{1,3}(T_u)$					3	z
38	$\mathbb{G}_{2,1}(T_u)$	T_u	2	G, M	-	1	$\sqrt{3}yz$
39	$\mathbb{G}_{2,2}(T_u)$					2	$\sqrt{3}xz$
40	$\mathbb{G}_{2,3}(T_u)$					3	$\sqrt{3}xy$
41	$\mathbb{Q}_{3,1}(T_u, 1)$	T_u	3	Q, T	1	1	$\frac{x(2x^2-3y^2-3z^2)}{2}$
42	$\mathbb{Q}_{3,2}(T_u, 1)$					2	$-\frac{y(3x^2-2y^2+3z^2)}{2}$
43	$\mathbb{Q}_{3,3}(T_u, 1)$					3	$-\frac{z(3x^2+3y^2-2z^2)}{2}$
44	$\mathbb{Q}_{3,1}(T_u, 2)$	T_u	3	Q, T	2	1	$\frac{\sqrt{15}x(y-z)(y+z)}{2}$
45	$\mathbb{Q}_{3,2}(T_u, 2)$					2	$-\frac{\sqrt{15}y(x-z)(x+z)}{2}$
46	$\mathbb{Q}_{3,3}(T_u, 2)$					3	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$
47	$\mathbb{G}_{4,1}(T_u, 1)$	T_u	4	G, M	1	1	$\frac{\sqrt{35}yz(y-z)(y+z)}{2}$

continued ...

Table 2

#	symbol	irrep.	rank	X	multiplicity	component	symmetry
48	$\mathbb{G}_{4,2}(T_u, 1)$					2	$-\frac{\sqrt{35}xz(x-z)(x+z)}{2}$
49	$\mathbb{G}_{4,3}(T_u, 1)$					3	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$
50	$\mathbb{G}_{4,1}(T_u, 2)$	T_u	4	G, M	2	1	$\frac{\sqrt{5}yz(6x^2-y^2-z^2)}{2}$
51	$\mathbb{G}_{4,2}(T_u, 2)$					2	$-\frac{\sqrt{5}xz(x^2-6y^2+z^2)}{2}$
52	$\mathbb{G}_{4,3}(T_u, 2)$					3	$-\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$
53	$\mathbb{Q}_{5,1}(T_u, 3)$	T_u	5	Q, T	3	1	$\frac{\sqrt{105}x(y-z)(y+z)(2x^2-y^2-z^2)}{4}$
54	$\mathbb{Q}_{5,2}(T_u, 3)$					2	$\frac{\sqrt{105}y(x-z)(x+z)(x^2-2y^2+z^2)}{4}$
55	$\mathbb{Q}_{5,3}(T_u, 3)$					3	$-\frac{\sqrt{105}z(x-y)(x+y)(x^2+y^2-2z^2)}{4}$

— Basis in full matrix —

Table 3: dimension = 24

#	orbital@atom(SL)	#	orbital@atom(SL)	#	orbital@atom(SL)	#	orbital@atom(SL)	#	orbital@atom(SL)
0	$ s, \uparrow\rangle @A(1)$	1	$ s, \downarrow\rangle @A(1)$	2	$ p_x, \uparrow\rangle @A(1)$	3	$ p_x, \downarrow\rangle @A(1)$	4	$ p_y, \uparrow\rangle @A(1)$
5	$ p_y, \downarrow\rangle @A(1)$	6	$ p_z, \uparrow\rangle @A(1)$	7	$ p_z, \downarrow\rangle @A(1)$	8	$ s, \uparrow\rangle @A(2)$	9	$ s, \downarrow\rangle @A(2)$
10	$ p_x, \uparrow\rangle @A(2)$	11	$ p_x, \downarrow\rangle @A(2)$	12	$ p_y, \uparrow\rangle @A(2)$	13	$ p_y, \downarrow\rangle @A(2)$	14	$ p_z, \uparrow\rangle @A(2)$
15	$ p_z, \downarrow\rangle @A(2)$	16	$ s, \uparrow\rangle @A(3)$	17	$ s, \downarrow\rangle @A(3)$	18	$ p_x, \uparrow\rangle @A(3)$	19	$ p_x, \downarrow\rangle @A(3)$
20	$ p_y, \uparrow\rangle @A(3)$	21	$ p_y, \downarrow\rangle @A(3)$	22	$ p_z, \uparrow\rangle @A(3)$	23	$ p_z, \downarrow\rangle @A(3)$		

Table 4: Atomic basis (orbital part only)

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

SAMB

610 (all 1428) SAMBs

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

$$\boxed{\text{z1}} \quad \mathbb{Q}_0^{(c)}(A_g) = \mathbb{Q}_0^{(a)}(A_g) \mathbb{Q}_0^{(s)}(A_g)$$

$$\boxed{\text{z70}} \quad \mathbb{Q}_{2,1}^{(c)}(E_g) = \frac{\sqrt{2} \mathbb{Q}_0^{(a)}(A_g) \mathbb{Q}_{2,1}^{(s)}(E_g)}{2}$$

$$\boxed{\text{z71}} \quad \mathbb{Q}_{2,2}^{(c)}(E_g) = \frac{\sqrt{2} \mathbb{Q}_0^{(a)}(A_g) \mathbb{Q}_{2,2}^{(s)}(E_g)}{2}$$

- '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: **3d**

$$\boxed{\text{z685}} \quad \mathbb{Q}_3^{(1,-1;c)}(A_u) = \frac{\sqrt{2}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(s)}(E_g)}{2} - \frac{\sqrt{2}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(s)}(E_g)}{2}$$

$$\boxed{\text{z686}} \quad \mathbb{G}_0^{(1,-1;c)}(A_u) = \frac{\sqrt{2}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(s)}(E_g)}{2} + \frac{\sqrt{2}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(s)}(E_g)}{2}$$

$$\boxed{\text{z687}} \quad \mathbb{G}_0^{(1,1;c)}(A_u) = \mathbb{G}_0^{(1,1;a)}(A_u)\mathbb{Q}_0^{(s)}(A_g)$$

$$\boxed{\text{z750}} \quad \mathbb{G}_{2,1}^{(1,-1;c)}(E_u, a) = \frac{\sqrt{2}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_0^{(s)}(A_g)}{2}$$

$$\boxed{\text{z751}} \quad \mathbb{G}_{2,2}^{(1,-1;c)}(E_u, a) = \frac{\sqrt{2}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_0^{(s)}(A_g)}{2}$$

$$\boxed{\text{z752}} \quad \mathbb{G}_{2,1}^{(1,-1;c)}(E_u, b) = \frac{\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(s)}(E_g)}{2} - \frac{\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(s)}(E_g)}{2}$$

$$\boxed{\text{z753}} \quad \mathbb{G}_{2,2}^{(1,-1;c)}(E_u, b) = -\frac{\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(s)}(E_g)}{2} - \frac{\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(s)}(E_g)}{2}$$

$$\boxed{\text{z754}} \quad \mathbb{G}_{2,1}^{(1,1;c)}(E_u) = \frac{\sqrt{2}\mathbb{G}_0^{(1,1;a)}(A_u)\mathbb{Q}_{2,1}^{(s)}(E_g)}{2}$$

$$\boxed{\text{z755}} \quad \mathbb{G}_{2,2}^{(1,1;c)}(E_u) = \frac{\sqrt{2}\mathbb{G}_0^{(1,1;a)}(A_u)\mathbb{Q}_{2,2}^{(s)}(E_g)}{2}$$

$$\boxed{\text{z880}} \quad \mathbb{Q}_{1,1}^{(c)}(T_u, a) = \frac{\sqrt{3}\mathbb{Q}_{1,1}^{(a)}(T_u)\mathbb{Q}_0^{(s)}(A_g)}{3}$$

$$\boxed{\text{z881}} \quad \mathbb{Q}_{1,2}^{(c)}(T_u, a) = \frac{\sqrt{3}\mathbb{Q}_{1,2}^{(a)}(T_u)\mathbb{Q}_0^{(s)}(A_g)}{3}$$

$$\boxed{\text{z882}} \quad \mathbb{Q}_{1,3}^{(c)}(T_u, a) = \frac{\sqrt{3}\mathbb{Q}_{1,3}^{(a)}(T_u)\mathbb{Q}_0^{(s)}(A_g)}{3}$$

$$\boxed{\text{z883}} \quad \mathbb{Q}_{1,1}^{(c)}(T_u, b) = -\frac{\sqrt{3}\mathbb{Q}_{1,1}^{(a)}(T_u)\mathbb{Q}_{2,1}^{(s)}(E_g)}{6} + \frac{\mathbb{Q}_{1,1}^{(a)}(T_u)\mathbb{Q}_{2,2}^{(s)}(E_g)}{2}$$

$$\boxed{\text{z884}} \quad \mathbb{Q}_{1,2}^{(c)}(T_u, b) = -\frac{\sqrt{3}\mathbb{Q}_{1,2}^{(a)}(T_u)\mathbb{Q}_{2,1}^{(s)}(E_g)}{6} - \frac{\mathbb{Q}_{1,2}^{(a)}(T_u)\mathbb{Q}_{2,2}^{(s)}(E_g)}{2}$$

$$\boxed{\text{z885}} \quad \mathbb{Q}_{1,3}^{(c)}(T_u, b) = \frac{\sqrt{3}\mathbb{Q}_{1,3}^{(a)}(T_u)\mathbb{Q}_{2,1}^{(s)}(E_g)}{3}$$

$$\boxed{\text{z886}} \quad \mathbb{Q}_{3,1}^{(c)}(T_u, 2) = -\frac{\mathbb{Q}_{1,1}^{(a)}(T_u)\mathbb{Q}_{2,1}^{(s)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{Q}_{1,1}^{(a)}(T_u)\mathbb{Q}_{2,2}^{(s)}(E_g)}{6}$$

$$\boxed{\text{z887}} \quad \mathbb{Q}_{3,2}^{(c)}(T_u, 2) = \frac{\mathbb{Q}_{1,2}^{(a)}(T_u)\mathbb{Q}_{2,1}^{(s)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{Q}_{1,2}^{(a)}(T_u)\mathbb{Q}_{2,2}^{(s)}(E_g)}{6}$$

$$\boxed{\text{z888}} \quad \mathbb{Q}_{3,3}^{(c)}(T_u, 2) = \frac{\sqrt{3}\mathbb{Q}_{1,3}^{(a)}(T_u)\mathbb{Q}_{2,2}^{(s)}(E_g)}{3}$$

$$\boxed{\text{z889}} \quad \mathbb{Q}_{1,1}^{(1,-1;c)}(T_u) = \frac{\mathbb{G}_{2,1}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,1}^{(s)}(E_g)}{2} + \frac{\sqrt{3}\mathbb{G}_{2,1}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,2}^{(s)}(E_g)}{6}$$

$$\boxed{\text{z890}} \quad \mathbb{Q}_{1,2}^{(1,-1;c)}(T_u) = -\frac{\mathbb{G}_{2,2}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,1}^{(s)}(E_g)}{2} + \frac{\sqrt{3}\mathbb{G}_{2,2}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,2}^{(s)}(E_g)}{6}$$

$$\boxed{\text{z891}} \quad \mathbb{Q}_{1,3}^{(1,-1;c)}(T_u) = -\frac{\sqrt{3}\mathbb{G}_{2,3}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,2}^{(s)}(E_g)}{3}$$

$$\boxed{\text{z892}} \quad \mathbb{Q}_{3,1}^{(1,-1;c)}(T_u, 2) = -\frac{\sqrt{3}\mathbb{G}_{2,1}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,1}^{(s)}(E_g)}{6} + \frac{\mathbb{G}_{2,1}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,2}^{(s)}(E_g)}{2}$$

$$\boxed{\text{z893}} \quad \mathbb{Q}_{3,2}^{(1,-1;c)}(T_u, 2) = -\frac{\sqrt{3}\mathbb{G}_{2,2}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,1}^{(s)}(E_g)}{6} - \frac{\mathbb{G}_{2,2}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,2}^{(s)}(E_g)}{2}$$

$$\boxed{\text{z894}} \quad \mathbb{Q}_{3,3}^{(1,-1;c)}(T_u, 2) = \frac{\sqrt{3}\mathbb{G}_{2,3}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,1}^{(s)}(E_g)}{3}$$

$$\boxed{\text{z895}} \quad \mathbb{Q}_{1,1}^{(1,0;c)}(T_u, a) = \frac{\sqrt{3}\mathbb{Q}_{1,1}^{(1,0;a)}(T_u)\mathbb{Q}_0^{(s)}(A_g)}{3}$$

$$\boxed{\text{z896}} \quad \mathbb{Q}_{1,2}^{(1,0;c)}(T_u, a) = \frac{\sqrt{3}\mathbb{Q}_{1,2}^{(1,0;a)}(T_u)\mathbb{Q}_0^{(s)}(A_g)}{3}$$

$$\boxed{\text{z897}} \quad \mathbb{Q}_{1,3}^{(1,0;c)}(T_u, a) = \frac{\sqrt{3}\mathbb{Q}_{1,3}^{(1,0;a)}(T_u)\mathbb{Q}_0^{(s)}(A_g)}{3}$$

$$\boxed{\text{z898}} \quad \mathbb{Q}_{1,1}^{(1,0;c)}(T_u, b) = -\frac{\sqrt{3}\mathbb{Q}_{1,1}^{(1,0;a)}(T_u)\mathbb{Q}_{2,1}^{(s)}(E_g)}{6} + \frac{\mathbb{Q}_{1,1}^{(1,0;a)}(T_u)\mathbb{Q}_{2,2}^{(s)}(E_g)}{2}$$

$$\boxed{\text{z899}} \quad \mathbb{Q}_{1,2}^{(1,0;c)}(T_u, b) = -\frac{\sqrt{3}\mathbb{Q}_{1,2}^{(1,0;a)}(T_u)\mathbb{Q}_{2,1}^{(s)}(E_g)}{6} - \frac{\mathbb{Q}_{1,2}^{(1,0;a)}(T_u)\mathbb{Q}_{2,2}^{(s)}(E_g)}{2}$$

$$\boxed{\text{z900}} \quad \mathbb{Q}_{1,3}^{(1,0;c)}(T_u, b) = \frac{\sqrt{3}\mathbb{Q}_{1,3}^{(1,0;a)}(T_u)\mathbb{Q}_{2,1}^{(s)}(E_g)}{3}$$

$$\boxed{\text{z901}} \quad \mathbb{Q}_{3,1}^{(1,0;c)}(T_u, 2) = -\frac{\mathbb{Q}_{1,1}^{(1,0;a)}(T_u)\mathbb{Q}_{2,1}^{(s)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{Q}_{1,1}^{(1,0;a)}(T_u)\mathbb{Q}_{2,2}^{(s)}(E_g)}{6}$$

$$\boxed{\text{z902}} \quad \mathbb{Q}_{3,2}^{(1,0;c)}(T_u, 2) = \frac{\mathbb{Q}_{1,2}^{(1,0;a)}(T_u)\mathbb{Q}_{2,1}^{(s)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{Q}_{1,2}^{(1,0;a)}(T_u)\mathbb{Q}_{2,2}^{(s)}(E_g)}{6}$$

$$\boxed{\text{z903}} \quad \mathbb{Q}_{3,3}^{(1,0;c)}(T_u, 2) = \frac{\sqrt{3}\mathbb{Q}_{1,3}^{(1,0;a)}(T_u)\mathbb{Q}_{2,2}^{(s)}(E_g)}{3}$$

$$\boxed{\text{z904}} \quad \mathbb{G}_{2,1}^{(1,-1;c)}(T_u) = \frac{\sqrt{3}\mathbb{G}_{2,1}^{(1,-1;a)}(T_u)\mathbb{Q}_0^{(s)}(A_g)}{3}$$

$$\boxed{\text{z905}} \quad \mathbb{G}_{2,2}^{(1,-1;c)}(T_u) = \frac{\sqrt{3}\mathbb{G}_{2,2}^{(1,-1;a)}(T_u)\mathbb{Q}_0^{(s)}(A_g)}{3}$$

$$\boxed{\text{z906}} \quad \mathbb{G}_{2,3}^{(1,-1;c)}(T_u) = \frac{\sqrt{3}\mathbb{G}_{2,3}^{(1,-1;a)}(T_u)\mathbb{Q}_0^{(s)}(A_g)}{3}$$

• '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: **3d**

$$\boxed{\text{z2}} \quad \mathbb{Q}_0^{(c)}(A_g, a) = \mathbb{Q}_0^{(a)}(A_g)\mathbb{Q}_0^{(s)}(A_g)$$

$$\boxed{\text{z3}} \quad \mathbb{Q}_0^{(c)}(A_g, b) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(s)}(E_g)}{2} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(s)}(E_g)}{2}$$

$$\boxed{\text{z4}} \quad \mathbb{Q}_0^{(1,-1;c)}(A_g) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(s)}(E_g)}{2} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(s)}(E_g)}{2}$$

$$\boxed{\text{z5}} \quad \mathbb{Q}_0^{(1,1;c)}(A_g) = \mathbb{Q}_0^{(1,1;a)}(A_g)\mathbb{Q}_0^{(s)}(A_g)$$

$$\boxed{\text{z6}} \quad \mathbb{G}_3^{(c)}(A_g) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(s)}(E_g)}{2} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(s)}(E_g)}{2}$$

$$\boxed{\text{z7}} \quad \mathbb{G}_3^{(1,-1;c)}(A_g) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(s)}(E_g)}{2} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(s)}(E_g)}{2}$$

$$\boxed{\text{z72}} \quad \mathbb{Q}_{2,1}^{(c)}(E_g, a) = \frac{\sqrt{2}\mathbb{Q}_0^{(a)}(A_g)\mathbb{Q}_{2,1}^{(s)}(E_g)}{2}$$

$$\boxed{\text{z73}} \quad \mathbb{Q}_{2,2}^{(c)}(E_g, a) = \frac{\sqrt{2}\mathbb{Q}_0^{(a)}(A_g)\mathbb{Q}_{2,2}^{(s)}(E_g)}{2}$$

$$\boxed{\text{z74}} \quad \mathbb{Q}_{2,1}^{(c)}(E_g, b) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_0^{(s)}(A_g)}{2}$$

$$\boxed{\text{z75}} \quad \mathbb{Q}_{2,2}^{(c)}(E_g, b) = \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_0^{(s)}(A_g)}{2}$$

$$\boxed{\text{z76}} \quad \mathbb{Q}_{2,1}^{(c)}(E_g, c) = \frac{\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(s)}(E_g)}{2} - \frac{\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(s)}(E_g)}{2}$$

$$\boxed{\text{z77}} \quad \mathbb{Q}_{2,2}^{(c)}(E_g, c) = -\frac{\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(s)}(E_g)}{2} - \frac{\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(s)}(E_g)}{2}$$

$$\boxed{\text{z78}} \quad \mathbb{Q}_{2,1}^{(1,-1;c)}(E_g, a) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_0^{(s)}(A_g)}{2}$$

$$\boxed{\text{z79}} \quad \mathbb{Q}_{2,2}^{(1,-1;c)}(E_g, a) = \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_0^{(s)}(A_g)}{2}$$

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

$$\boxed{\text{z81}} \quad \mathbb{Q}_{2,2}^{(1,-1;c)}(E_g, b) = -\frac{\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(s)}(E_g)}{2} - \frac{\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(s)}(E_g)}{2}$$

$$\boxed{\text{z82}} \quad \mathbb{Q}_{2,1}^{(1,1;c)}(E_g) = \frac{\sqrt{2}\mathbb{Q}_0^{(1,1;a)}(A_g)\mathbb{Q}_{2,1}^{(s)}(E_g)}{2}$$

$$\boxed{\text{z83}} \quad \mathbb{Q}_{2,2}^{(1,1;c)}(E_g) = \frac{\sqrt{2}\mathbb{Q}_0^{(1,1;a)}(A_g)\mathbb{Q}_{2,2}^{(s)}(E_g)}{2}$$

$$\boxed{\text{z208}} \quad \mathbb{Q}_{2,1}^{(c)}(T_g, a) = \frac{\sqrt{3}\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_0^{(s)}(A_g)}{3}$$

$$\boxed{\text{z209}} \quad \mathbb{Q}_{2,2}^{(c)}(T_g, a) = \frac{\sqrt{3}\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_0^{(s)}(A_g)}{3}$$

$$\boxed{\text{z210}} \quad \mathbb{Q}_{2,3}^{(c)}(T_g, a) = \frac{\sqrt{3}\mathbb{Q}_{2,3}^{(a)}(T_g)\mathbb{Q}_0^{(s)}(A_g)}{3}$$

$$\boxed{\text{z211}} \quad \mathbb{Q}_{2,1}^{(c)}(T_g, b) = \frac{\sqrt{3}\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_{2,1}^{(s)}(E_g)}{6} - \frac{\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_{2,2}^{(s)}(E_g)}{2}$$

$$\boxed{\text{z212}} \quad \mathbb{Q}_{2,2}^{(c)}(T_g, b) = \frac{\sqrt{3}\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_{2,1}^{(s)}(E_g)}{6} + \frac{\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_{2,2}^{(s)}(E_g)}{2}$$

$$\boxed{\text{z213}} \quad \mathbb{Q}_{2,3}^{(c)}(T_g, b) = -\frac{\sqrt{3}\mathbb{Q}_{2,3}^{(a)}(T_g)\mathbb{Q}_{2,1}^{(s)}(E_g)}{3}$$

$$\boxed{\text{z214}} \quad \mathbb{Q}_{4,1}^{(c)}(T_g, 1) = -\frac{\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_{2,1}^{(s)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_{2,2}^{(s)}(E_g)}{6}$$

$$\boxed{\text{z215}} \quad \mathbb{Q}_{4,2}^{(c)}(T_g, 1) = \frac{\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_{2,1}^{(s)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_{2,2}^{(s)}(E_g)}{6}$$

$$\boxed{\text{z216}} \quad \mathbb{Q}_{4,3}^{(c)}(T_g, 1) = \frac{\sqrt{3}\mathbb{Q}_{2,3}^{(a)}(T_g)\mathbb{Q}_{2,2}^{(s)}(E_g)}{3}$$

$$\boxed{\text{z217}} \quad \mathbb{Q}_{2,1}^{(1,-1;c)}(T_g, a) = \frac{\sqrt{3}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_g)\mathbb{Q}_0^{(s)}(A_g)}{3}$$

$$\boxed{\text{z218}} \quad \mathbb{Q}_{2,2}^{(1,-1;c)}(T_g, a) = \frac{\sqrt{3}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_g)\mathbb{Q}_0^{(s)}(A_g)}{3}$$

$$\boxed{\text{z219}} \quad \mathbb{Q}_{2,3}^{(1,-1;c)}(T_g, a) = \frac{\sqrt{3}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_g)\mathbb{Q}_0^{(s)}(A_g)}{3}$$

$$\boxed{\text{z220}} \quad \mathbb{Q}_{2,1}^{(1,-1;c)}(T_g, b) = \frac{\sqrt{3}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,1}^{(s)}(E_g)}{6} - \frac{\mathbb{Q}_{2,1}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,2}^{(s)}(E_g)}{2}$$

$$\begin{aligned}
\boxed{\text{z221}} \quad \mathbb{Q}_{2,2}^{(1,-1;c)}(T_g, b) &= \frac{\sqrt{3}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,1}^{(s)}(E_g)}{6} + \frac{\mathbb{Q}_{2,2}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,2}^{(s)}(E_g)}{2} \\
\boxed{\text{z222}} \quad \mathbb{Q}_{2,3}^{(1,-1;c)}(T_g, b) &= -\frac{\sqrt{3}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,1}^{(s)}(E_g)}{3} \\
\boxed{\text{z223}} \quad \mathbb{Q}_{4,1}^{(1,-1;c)}(T_g, 1) &= -\frac{\mathbb{Q}_{2,1}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,1}^{(s)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,2}^{(s)}(E_g)}{6} \\
\boxed{\text{z224}} \quad \mathbb{Q}_{4,2}^{(1,-1;c)}(T_g, 1) &= \frac{\mathbb{Q}_{2,2}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,1}^{(s)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,2}^{(s)}(E_g)}{6} \\
\boxed{\text{z225}} \quad \mathbb{Q}_{4,3}^{(1,-1;c)}(T_g, 1) &= \frac{\sqrt{3}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,2}^{(s)}(E_g)}{3} \\
\boxed{\text{z226}} \quad \mathbb{Q}_{2,1}^{(1,0;c)}(T_g) &= -\frac{\mathbb{G}_{1,1}^{(1,0;a)}(T_g)\mathbb{Q}_{2,1}^{(s)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{G}_{1,1}^{(1,0;a)}(T_g)\mathbb{Q}_{2,2}^{(s)}(E_g)}{6} \\
\boxed{\text{z227}} \quad \mathbb{Q}_{2,2}^{(1,0;c)}(T_g) &= \frac{\mathbb{G}_{1,2}^{(1,0;a)}(T_g)\mathbb{Q}_{2,1}^{(s)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{G}_{1,2}^{(1,0;a)}(T_g)\mathbb{Q}_{2,2}^{(s)}(E_g)}{6} \\
\boxed{\text{z228}} \quad \mathbb{Q}_{2,3}^{(1,0;c)}(T_g) &= \frac{\sqrt{3}\mathbb{G}_{1,3}^{(1,0;a)}(T_g)\mathbb{Q}_{2,2}^{(s)}(E_g)}{3} \\
\boxed{\text{z229}} \quad \mathbb{G}_{1,1}^{(1,0;c)}(T_g, a) &= \frac{\sqrt{3}\mathbb{G}_{1,1}^{(1,0;a)}(T_g)\mathbb{Q}_0^{(s)}(A_g)}{3} \\
\boxed{\text{z230}} \quad \mathbb{G}_{1,2}^{(1,0;c)}(T_g, a) &= \frac{\sqrt{3}\mathbb{G}_{1,2}^{(1,0;a)}(T_g)\mathbb{Q}_0^{(s)}(A_g)}{3} \\
\boxed{\text{z231}} \quad \mathbb{G}_{1,3}^{(1,0;c)}(T_g, a) &= \frac{\sqrt{3}\mathbb{G}_{1,3}^{(1,0;a)}(T_g)\mathbb{Q}_0^{(s)}(A_g)}{3} \\
\boxed{\text{z232}} \quad \mathbb{G}_{1,1}^{(1,0;c)}(T_g, b) &= -\frac{\sqrt{3}\mathbb{G}_{1,1}^{(1,0;a)}(T_g)\mathbb{Q}_{2,1}^{(s)}(E_g)}{6} + \frac{\mathbb{G}_{1,1}^{(1,0;a)}(T_g)\mathbb{Q}_{2,2}^{(s)}(E_g)}{2} \\
\boxed{\text{z233}} \quad \mathbb{G}_{1,2}^{(1,0;c)}(T_g, b) &= -\frac{\sqrt{3}\mathbb{G}_{1,2}^{(1,0;a)}(T_g)\mathbb{Q}_{2,1}^{(s)}(E_g)}{6} - \frac{\mathbb{G}_{1,2}^{(1,0;a)}(T_g)\mathbb{Q}_{2,2}^{(s)}(E_g)}{2} \\
\boxed{\text{z234}} \quad \mathbb{G}_{1,3}^{(1,0;c)}(T_g, b) &= \frac{\sqrt{3}\mathbb{G}_{1,3}^{(1,0;a)}(T_g)\mathbb{Q}_{2,1}^{(s)}(E_g)}{3}
\end{aligned}$$

- 'A'-A' bond-cluster

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

* ket: $|s, \uparrow\rangle, |s, \downarrow\rangle$

* wyckoff: 12a@12j

$$\boxed{\text{z8}} \quad \mathbb{Q}_0^{(c)}(A_g) = \mathbb{Q}_0^{(a)}(A_g) \mathbb{Q}_0^{(b)}(A_g)$$

$$\boxed{\text{z9}} \quad \mathbb{Q}_0^{(1,-1;c)}(A_g) = \frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{M}_{1,1}^{(b)}(T_g)}{3} + \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{M}_{1,2}^{(b)}(T_g)}{3} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{M}_{1,3}^{(b)}(T_g)}{3}$$

$$\boxed{\text{z84}} \quad \mathbb{G}_0^{(1,-1;c)}(A_u, a) = \frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{3} + \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{3} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{3}$$

$$\boxed{\text{z85}} \quad \mathbb{G}_0^{(1,-1;c)}(A_u, b) = \frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{3} + \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{3} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{3}$$

$$\boxed{\text{z86}} \quad \mathbb{Q}_{2,1}^{(c)}(E_g) = \frac{\sqrt{2}\mathbb{Q}_0^{(a)}(A_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z87}} \quad \mathbb{Q}_{2,2}^{(c)}(E_g) = \frac{\sqrt{2}\mathbb{Q}_0^{(a)}(A_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z235}} \quad \mathbb{Q}_{2,1}^{(1,-1;c)}(E_g) = -\frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{M}_{1,1}^{(b)}(T_g)}{6} - \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{M}_{1,2}^{(b)}(T_g)}{6} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{M}_{1,3}^{(b)}(T_g)}{3}$$

$$\boxed{\text{z236}} \quad \mathbb{Q}_{2,2}^{(1,-1;c)}(E_g) = \frac{\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{M}_{1,1}^{(b)}(T_g)}{2} - \frac{\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{M}_{1,2}^{(b)}(T_g)}{2}$$

$$\boxed{\text{z237}} \quad \mathbb{G}_{2,1}^{(1,-1;c)}(E_u, a) = -\frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{6} - \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{6} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{3}$$

$$\boxed{\text{z238}} \quad \mathbb{G}_{2,2}^{(1,-1;c)}(E_u, a) = \frac{\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{2} - \frac{\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{2}$$

$$\boxed{\text{z239}} \quad \mathbb{G}_{2,1}^{(1,-1;c)}(E_u, b) = -\frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{6} - \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{6} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{3}$$

$$\boxed{\text{z240}} \quad \mathbb{G}_{2,2}^{(1,-1;c)}(E_u, b) = \frac{\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{2} - \frac{\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{2}$$

$$\boxed{\text{z241}} \quad \mathbb{Q}_{2,1}^{(c)}(T_g) = \frac{\sqrt{3}\mathbb{Q}_0^{(a)}(A_g)\mathbb{Q}_{2,1}^{(b)}(T_g)}{3}$$

$$\boxed{\text{z242}} \quad \mathbb{Q}_{2,2}^{(c)}(T_g) = \frac{\sqrt{3}\mathbb{Q}_0^{(a)}(A_g)\mathbb{Q}_{2,2}^{(b)}(T_g)}{3}$$

$$\boxed{\text{z243}} \quad \mathbb{Q}_{2,3}^{(c)}(T_g) = \frac{\sqrt{3}\mathbb{Q}_0^{(a)}(A_g)\mathbb{Q}_{2,3}^{(b)}(T_g)}{3}$$

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

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

$$\boxed{\text{z246}} \quad \mathbb{Q}_{2,3}^{(1,-1;c)}(T_g, a) = \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{3}$$

$$\boxed{\text{z247}} \quad \mathbb{Q}_{2,1}^{(1,-1;c)}(T_g, b) = \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{M}_{1,3}^{(b)}(T_g)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{M}_{1,2}^{(b)}(T_g)}{6}$$

$$\boxed{\text{z248}} \quad \mathbb{Q}_{2,2}^{(1,-1;c)}(T_g, b) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{M}_{1,3}^{(b)}(T_g)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{M}_{1,1}^{(b)}(T_g)}{6}$$

$$\boxed{\text{z249}} \quad \mathbb{Q}_{2,3}^{(1,-1;c)}(T_g, b) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{M}_{1,2}^{(b)}(T_g)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{M}_{1,1}^{(b)}(T_g)}{6}$$

$$\boxed{\text{z250}} \quad \mathbb{G}_{1,1}^{(1,-1;c)}(T_g, a) = \frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_0^{(b)}(A_g)}{3}$$

$$\boxed{\text{z251}} \quad \mathbb{G}_{1,2}^{(1,-1;c)}(T_g, a) = \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_0^{(b)}(A_g)}{3}$$

$$\boxed{\text{z252}} \quad \mathbb{G}_{1,3}^{(1,-1;c)}(T_g, a) = \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_0^{(b)}(A_g)}{3}$$

$$\boxed{\text{z688}} \quad \mathbb{G}_{1,1}^{(1,-1;c)}(T_g, b) = -\frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{6} + \frac{\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z689}} \quad \mathbb{G}_{1,2}^{(1,-1;c)}(T_g, b) = -\frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{6} - \frac{\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{2}$$

$$\begin{aligned}
\boxed{\text{z756}} \quad \mathbb{G}_{1,3}^{(1,-1;c)}(T_g, b) &= \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{3} \\
\boxed{\text{z757}} \quad \mathbb{G}_{1,1}^{(1,-1;c)}(T_g, c) &= \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{M}_{1,3}^{(b)}(T_g)}{6} - \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{M}_{1,2}^{(b)}(T_g)}{6} \\
\boxed{\text{z758}} \quad \mathbb{G}_{1,2}^{(1,-1;c)}(T_g, c) &= -\frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{M}_{1,3}^{(b)}(T_g)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{M}_{1,1}^{(b)}(T_g)}{6} \\
\boxed{\text{z759}} \quad \mathbb{G}_{1,3}^{(1,-1;c)}(T_g, c) &= \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{M}_{1,2}^{(b)}(T_g)}{6} - \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{M}_{1,1}^{(b)}(T_g)}{6} \\
\boxed{\text{z907}} \quad \mathbb{Q}_{1,1}^{(c)}(T_u) &= \frac{\sqrt{3}\mathbb{Q}_0^{(a)}(A_g)\mathbb{Q}_{1,1}^{(b)}(T_u)}{3} \\
\boxed{\text{z908}} \quad \mathbb{Q}_{1,2}^{(c)}(T_u) &= \frac{\sqrt{3}\mathbb{Q}_0^{(a)}(A_g)\mathbb{Q}_{1,2}^{(b)}(T_u)}{3} \\
\boxed{\text{z909}} \quad \mathbb{Q}_{1,3}^{(c)}(T_u) &= \frac{\sqrt{3}\mathbb{Q}_0^{(a)}(A_g)\mathbb{Q}_{1,3}^{(b)}(T_u)}{3} \\
\boxed{\text{z910}} \quad \mathbb{Q}_{3,1}^{(c)}(T_u, 1) &= \frac{\sqrt{3}\mathbb{Q}_0^{(a)}(A_g)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{3} \\
\boxed{\text{z911}} \quad \mathbb{Q}_{3,2}^{(c)}(T_u, 1) &= \frac{\sqrt{3}\mathbb{Q}_0^{(a)}(A_g)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{3} \\
\boxed{\text{z912}} \quad \mathbb{Q}_{3,3}^{(c)}(T_u, 1) &= \frac{\sqrt{3}\mathbb{Q}_0^{(a)}(A_g)\mathbb{Q}_{3,3}^{(b)}(T_u, 1)}{3} \\
\boxed{\text{z913}} \quad \mathbb{Q}_{1,1}^{(1,-1;c)}(T_u, a) &= \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{6} - \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{6} \\
\boxed{\text{z914}} \quad \mathbb{Q}_{1,2}^{(1,-1;c)}(T_u, a) &= -\frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{6} \\
\boxed{\text{z915}} \quad \mathbb{Q}_{1,3}^{(1,-1;c)}(T_u, a) &= \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{6} - \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{6} \\
\boxed{\text{z916}} \quad \mathbb{Q}_{1,1}^{(1,-1;c)}(T_u, b) &= \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{6} - \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{6}
\end{aligned}$$

$$\boxed{\text{z917}} \quad \mathbb{Q}_{1,2}^{(1,-1;c)}(T_u, b) = -\frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{6}$$

$$\boxed{\text{z918}} \quad \mathbb{Q}_{1,3}^{(1,-1;c)}(T_u, b) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{6} - \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{6}$$

$$\boxed{\text{z919}} \quad \mathbb{G}_{2,1}^{(1,-1;c)}(T_u, a) = \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{6}$$

$$\boxed{\text{z920}} \quad \mathbb{G}_{2,2}^{(1,-1;c)}(T_u, a) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{6}$$

$$\boxed{\text{z921}} \quad \mathbb{G}_{2,3}^{(1,-1;c)}(T_u, a) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{6}$$

$$\boxed{\text{z922}} \quad \mathbb{G}_{2,1}^{(1,-1;c)}(T_u, b) = \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{6}$$

$$\boxed{\text{z923}} \quad \mathbb{G}_{2,2}^{(1,-1;c)}(T_u, b) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{6}$$

$$\boxed{\text{z924}} \quad \mathbb{G}_{2,3}^{(1,-1;c)}(T_u, b) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{6}$$

• '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: 12a@12j

$$\boxed{\text{z10}} \quad \mathbb{Q}_0^{(c)}(A_g, a) = \frac{\sqrt{3}\mathbb{Q}_{1,1}^{(a)}(T_u)\mathbb{Q}_{1,1}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{Q}_{1,2}^{(a)}(T_u)\mathbb{Q}_{1,2}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{Q}_{1,3}^{(a)}(T_u)\mathbb{Q}_{1,3}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z11}} \quad \mathbb{Q}_0^{(c)}(A_g, b) = \frac{\sqrt{3}\mathbb{T}_{1,1}^{(a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{3} + \frac{\sqrt{3}\mathbb{T}_{1,2}^{(a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{3} + \frac{\sqrt{3}\mathbb{T}_{1,3}^{(a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{3}$$

$$\boxed{\text{z12}} \quad \mathbb{Q}_0^{(c)}(A_g, c) = \frac{\sqrt{3}\mathbb{T}_{1,1}^{(a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{3} + \frac{\sqrt{3}\mathbb{T}_{1,2}^{(a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{3} + \frac{\sqrt{3}\mathbb{T}_{1,3}^{(a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{3}$$

$$\boxed{\text{z13}} \quad \mathbb{Q}_4^{(c)}(A_g) = \frac{\sqrt{3}\mathbb{Q}_{1,1}^{(a)}(T_u)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{3} + \frac{\sqrt{3}\mathbb{Q}_{1,2}^{(a)}(T_u)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{3} + \frac{\sqrt{3}\mathbb{Q}_{1,3}^{(a)}(T_u)\mathbb{Q}_{3,3}^{(b)}(T_u, 1)}{3}$$

$$\begin{aligned}
\text{z14} \quad \mathbb{Q}_0^{(1,0;c)}(A_g, a) &= \frac{\sqrt{3}\mathbb{Q}_{1,1}^{(1,0;a)}(T_u)\mathbb{Q}_{1,1}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{Q}_{1,2}^{(1,0;a)}(T_u)\mathbb{Q}_{1,2}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{Q}_{1,3}^{(1,0;a)}(T_u)\mathbb{Q}_{1,3}^{(b)}(T_u)}{3} \\
\text{z15} \quad \mathbb{Q}_0^{(1,0;c)}(A_g, b) &= \frac{\sqrt{3}\mathbb{T}_{1,1}^{(1,0;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{3} + \frac{\sqrt{3}\mathbb{T}_{1,2}^{(1,0;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{3} + \frac{\sqrt{3}\mathbb{T}_{1,3}^{(1,0;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{3} \\
\text{z16} \quad \mathbb{Q}_0^{(1,0;c)}(A_g, c) &= \frac{\sqrt{3}\mathbb{T}_{1,1}^{(1,0;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{3} + \frac{\sqrt{3}\mathbb{T}_{1,2}^{(1,0;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{3} + \frac{\sqrt{3}\mathbb{T}_{1,3}^{(1,0;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{3} \\
\text{z17} \quad \mathbb{Q}_4^{(1,0;c)}(A_g) &= \frac{\sqrt{3}\mathbb{Q}_{1,1}^{(1,0;a)}(T_u)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{3} + \frac{\sqrt{3}\mathbb{Q}_{1,2}^{(1,0;a)}(T_u)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{3} + \frac{\sqrt{3}\mathbb{Q}_{1,3}^{(1,0;a)}(T_u)\mathbb{Q}_{3,3}^{(b)}(T_u, 1)}{3} \\
\text{z18} \quad \mathbb{G}_3^{(1,-1;c)}(A_g, a) &= \frac{\sqrt{3}\mathbb{G}_{2,1}^{(1,-1;a)}(T_u)\mathbb{Q}_{1,1}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{G}_{2,2}^{(1,-1;a)}(T_u)\mathbb{Q}_{1,2}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{G}_{2,3}^{(1,-1;a)}(T_u)\mathbb{Q}_{1,3}^{(b)}(T_u)}{3} \\
\text{z19} \quad \mathbb{G}_3^{(1,-1;c)}(A_g, b) &= -\frac{\sqrt{3}\mathbb{G}_{2,1}^{(1,-1;a)}(T_u)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{3} - \frac{\sqrt{3}\mathbb{G}_{2,2}^{(1,-1;a)}(T_u)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{3} - \frac{\sqrt{3}\mathbb{G}_{2,3}^{(1,-1;a)}(T_u)\mathbb{Q}_{3,3}^{(b)}(T_u, 1)}{3} \\
\text{z20} \quad \mathbb{G}_3^{(1,-1;c)}(A_g, c) &= \frac{\sqrt{3}\mathbb{M}_{2,1}^{(1,-1;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{3} + \frac{\sqrt{3}\mathbb{M}_{2,2}^{(1,-1;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{3} + \frac{\sqrt{3}\mathbb{M}_{2,3}^{(1,-1;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{3} \\
\text{z21} \quad \mathbb{G}_3^{(1,-1;c)}(A_g, d) &= \frac{\sqrt{3}\mathbb{M}_{2,1}^{(1,-1;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{3} + \frac{\sqrt{3}\mathbb{M}_{2,2}^{(1,-1;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{3} + \frac{\sqrt{3}\mathbb{M}_{2,3}^{(1,-1;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{3} \\
\text{z88} \quad \mathbb{Q}_3^{(c)}(A_u) &= \frac{\sqrt{3}\mathbb{Q}_{1,1}^{(a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(T_g)}{3} + \frac{\sqrt{3}\mathbb{Q}_{1,2}^{(a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(T_g)}{3} + \frac{\sqrt{3}\mathbb{Q}_{1,3}^{(a)}(T_u)\mathbb{Q}_{2,3}^{(b)}(T_g)}{3} \\
\text{z89} \quad \mathbb{Q}_3^{(1,-1;c)}(A_u, a) &= \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} \\
\text{z90} \quad \mathbb{Q}_3^{(1,-1;c)}(A_u, b) &= \frac{\sqrt{2}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{2,2}^{(b)}(E_g)}{2} - \frac{\sqrt{2}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{2,1}^{(b)}(E_g)}{2} \\
\text{z91} \quad \mathbb{Q}_3^{(1,-1;c)}(A_u, c) &= \frac{\sqrt{3}\mathbb{M}_{2,1}^{(1,-1;a)}(T_u)\mathbb{M}_{1,1}^{(b)}(T_g)}{3} + \frac{\sqrt{3}\mathbb{M}_{2,2}^{(1,-1;a)}(T_u)\mathbb{M}_{1,2}^{(b)}(T_g)}{3} + \frac{\sqrt{3}\mathbb{M}_{2,3}^{(1,-1;a)}(T_u)\mathbb{M}_{1,3}^{(b)}(T_g)}{3} \\
\text{z92} \quad \mathbb{Q}_3^{(1,0;c)}(A_u) &= \frac{\sqrt{3}\mathbb{Q}_{1,1}^{(1,0;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(T_g)}{3} + \frac{\sqrt{3}\mathbb{Q}_{1,2}^{(1,0;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(T_g)}{3} + \frac{\sqrt{3}\mathbb{Q}_{1,3}^{(1,0;a)}(T_u)\mathbb{Q}_{2,3}^{(b)}(T_g)}{3} \\
\text{z93} \quad \mathbb{G}_0^{(c)}(A_u) &= \frac{\sqrt{3}\mathbb{T}_{1,1}^{(a)}(T_u)\mathbb{M}_{1,1}^{(b)}(T_g)}{3} + \frac{\sqrt{3}\mathbb{T}_{1,2}^{(a)}(T_u)\mathbb{M}_{1,2}^{(b)}(T_g)}{3} + \frac{\sqrt{3}\mathbb{T}_{1,3}^{(a)}(T_u)\mathbb{M}_{1,3}^{(b)}(T_g)}{3}
\end{aligned}$$

$$\begin{aligned}
\boxed{\text{z94}} \quad \mathbb{G}_0^{(1,-1;c)}(A_u, a) &= \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_u)\mathbb{Q}_{2,1}^{(b)}(T_g)}{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_u)\mathbb{Q}_{2,2}^{(b)}(T_g)}{5} + \frac{\sqrt{5}\mathbb{G}_{2,3}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,3}^{(b)}(T_g)}{5} \\
\boxed{\text{z95}} \quad \mathbb{G}_0^{(1,-1;c)}(A_u, b) &= \frac{\sqrt{2}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{2,1}^{(b)}(E_g)}{2} + \frac{\sqrt{2}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{2,2}^{(b)}(E_g)}{2} \\
\boxed{\text{z96}} \quad \mathbb{G}_4^{(1,-1;c)}(A_u) &= \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_u)\mathbb{Q}_{2,1}^{(b)}(T_g)}{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_u)\mathbb{Q}_{2,2}^{(b)}(T_g)}{15} - \frac{\sqrt{30}\mathbb{G}_{2,3}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,3}^{(b)}(T_g)}{15} \\
\boxed{\text{z97}} \quad \mathbb{G}_0^{(1,0;c)}(A_u) &= \frac{\sqrt{3}\mathbb{T}_{1,1}^{(1,0;a)}(T_u)\mathbb{M}_{1,1}^{(b)}(T_g)}{3} + \frac{\sqrt{3}\mathbb{T}_{1,2}^{(1,0;a)}(T_u)\mathbb{M}_{1,2}^{(b)}(T_g)}{3} + \frac{\sqrt{3}\mathbb{T}_{1,3}^{(1,0;a)}(T_u)\mathbb{M}_{1,3}^{(b)}(T_g)}{3} \\
\boxed{\text{z98}} \quad \mathbb{G}_0^{(1,1;c)}(A_u, a) &= \mathbb{G}_0^{(1,1;a)}(A_u)\mathbb{Q}_0^{(b)}(A_g) \\
\boxed{\text{z99}} \quad \mathbb{G}_0^{(1,1;c)}(A_u, b) &= \mathbb{M}_0^{(1,1;a)}(A_u)\mathbb{T}_0^{(b)}(A_g) \\
\boxed{\text{z100}} \quad \mathbb{Q}_{2,1}^{(c)}(E_g, a) &= -\frac{\sqrt{3}\mathbb{Q}_{1,1}^{(a)}(T_u)\mathbb{Q}_{1,1}^{(b)}(T_u)}{6} - \frac{\sqrt{3}\mathbb{Q}_{1,2}^{(a)}(T_u)\mathbb{Q}_{1,2}^{(b)}(T_u)}{6} + \frac{\sqrt{3}\mathbb{Q}_{1,3}^{(a)}(T_u)\mathbb{Q}_{1,3}^{(b)}(T_u)}{3} \\
\boxed{\text{z101}} \quad \mathbb{Q}_{2,2}^{(c)}(E_g, a) &= \frac{\mathbb{Q}_{1,1}^{(a)}(T_u)\mathbb{Q}_{1,1}^{(b)}(T_u)}{2} - \frac{\mathbb{Q}_{1,2}^{(a)}(T_u)\mathbb{Q}_{1,2}^{(b)}(T_u)}{2} \\
\boxed{\text{z102}} \quad \mathbb{Q}_{2,1}^{(c)}(E_g, b) &= -\frac{\sqrt{3}\mathbb{Q}_{1,1}^{(a)}(T_u)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{6} - \frac{\sqrt{3}\mathbb{Q}_{1,2}^{(a)}(T_u)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{6} + \frac{\sqrt{3}\mathbb{Q}_{1,3}^{(a)}(T_u)\mathbb{Q}_{3,3}^{(b)}(T_u, 1)}{3} \\
\boxed{\text{z103}} \quad \mathbb{Q}_{2,2}^{(c)}(E_g, b) &= \frac{\mathbb{Q}_{1,1}^{(a)}(T_u)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{2} - \frac{\mathbb{Q}_{1,2}^{(a)}(T_u)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{2} \\
\boxed{\text{z104}} \quad \mathbb{Q}_{2,1}^{(c)}(E_g, c) &= -\frac{\sqrt{3}\mathbb{T}_{1,1}^{(a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{6} - \frac{\sqrt{3}\mathbb{T}_{1,2}^{(a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{6} + \frac{\sqrt{3}\mathbb{T}_{1,3}^{(a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{3} \\
\boxed{\text{z105}} \quad \mathbb{Q}_{2,2}^{(c)}(E_g, c) &= \frac{\mathbb{T}_{1,1}^{(a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{2} - \frac{\mathbb{T}_{1,2}^{(a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{2} \\
\boxed{\text{z106}} \quad \mathbb{Q}_{2,1}^{(c)}(E_g, d) &= -\frac{\sqrt{3}\mathbb{T}_{1,1}^{(a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{6} - \frac{\sqrt{3}\mathbb{T}_{1,2}^{(a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{6} + \frac{\sqrt{3}\mathbb{T}_{1,3}^{(a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{3} \\
\boxed{\text{z107}} \quad \mathbb{Q}_{2,2}^{(c)}(E_g, d) &= \frac{\mathbb{T}_{1,1}^{(a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{2} - \frac{\mathbb{T}_{1,2}^{(a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{2}
\end{aligned}$$

$$\begin{aligned}
\text{z108} \quad \mathbb{Q}_{2,1}^{(1,-1;c)}(E_g, a) &= -\frac{\mathbb{G}_{2,1}^{(1,-1;a)}(Tu)\mathbb{Q}_{1,1}^{(b)}(Tu)}{2} + \frac{\mathbb{G}_{2,2}^{(1,-1;a)}(Tu)\mathbb{Q}_{1,2}^{(b)}(Tu)}{2} \\
\text{z109} \quad \mathbb{Q}_{2,2}^{(1,-1;c)}(E_g, a) &= -\frac{\sqrt{3}\mathbb{G}_{2,1}^{(1,-1;a)}(Tu)\mathbb{Q}_{1,1}^{(b)}(Tu)}{6} - \frac{\sqrt{3}\mathbb{G}_{2,2}^{(1,-1;a)}(Tu)\mathbb{Q}_{1,2}^{(b)}(Tu)}{6} + \frac{\sqrt{3}\mathbb{G}_{2,3}^{(1,-1;a)}(Tu)\mathbb{Q}_{1,3}^{(b)}(Tu)}{3} \\
\text{z110} \quad \mathbb{Q}_{2,1}^{(1,-1;c)}(E_g, b) &= \frac{\mathbb{G}_{2,1}^{(1,-1;a)}(Tu)\mathbb{Q}_{3,1}^{(b)}(Tu, 1)}{2} - \frac{\mathbb{G}_{2,2}^{(1,-1;a)}(Tu)\mathbb{Q}_{3,2}^{(b)}(Tu, 1)}{2} \\
\text{z111} \quad \mathbb{Q}_{2,2}^{(1,-1;c)}(E_g, b) &= \frac{\sqrt{3}\mathbb{G}_{2,1}^{(1,-1;a)}(Tu)\mathbb{Q}_{3,1}^{(b)}(Tu, 1)}{6} + \frac{\sqrt{3}\mathbb{G}_{2,2}^{(1,-1;a)}(Tu)\mathbb{Q}_{3,2}^{(b)}(Tu, 1)}{6} - \frac{\sqrt{3}\mathbb{G}_{2,3}^{(1,-1;a)}(Tu)\mathbb{Q}_{3,3}^{(b)}(Tu, 1)}{3} \\
\text{z253} \quad \mathbb{Q}_{2,1}^{(1,-1;c)}(E_g, c) &= -\frac{\mathbb{M}_{2,1}^{(1,-1;a)}(Tu)\mathbb{T}_{1,1}^{(b)}(Tu, a)}{2} + \frac{\mathbb{M}_{2,2}^{(1,-1;a)}(Tu)\mathbb{T}_{1,2}^{(b)}(Tu, a)}{2} \\
\text{z254} \quad \mathbb{Q}_{2,2}^{(1,-1;c)}(E_g, c) &= -\frac{\sqrt{3}\mathbb{M}_{2,1}^{(1,-1;a)}(Tu)\mathbb{T}_{1,1}^{(b)}(Tu, a)}{6} - \frac{\sqrt{3}\mathbb{M}_{2,2}^{(1,-1;a)}(Tu)\mathbb{T}_{1,2}^{(b)}(Tu, a)}{6} + \frac{\sqrt{3}\mathbb{M}_{2,3}^{(1,-1;a)}(Tu)\mathbb{T}_{1,3}^{(b)}(Tu, a)}{3} \\
\text{z255} \quad \mathbb{Q}_{2,1}^{(1,-1;c)}(E_g, d) &= -\frac{\mathbb{M}_{2,1}^{(1,-1;a)}(Tu)\mathbb{T}_{1,1}^{(b)}(Tu, b)}{2} + \frac{\mathbb{M}_{2,2}^{(1,-1;a)}(Tu)\mathbb{T}_{1,2}^{(b)}(Tu, b)}{2} \\
\text{z256} \quad \mathbb{Q}_{2,2}^{(1,-1;c)}(E_g, d) &= -\frac{\sqrt{3}\mathbb{M}_{2,1}^{(1,-1;a)}(Tu)\mathbb{T}_{1,1}^{(b)}(Tu, b)}{6} - \frac{\sqrt{3}\mathbb{M}_{2,2}^{(1,-1;a)}(Tu)\mathbb{T}_{1,2}^{(b)}(Tu, b)}{6} + \frac{\sqrt{3}\mathbb{M}_{2,3}^{(1,-1;a)}(Tu)\mathbb{T}_{1,3}^{(b)}(Tu, b)}{3} \\
\text{z257} \quad \mathbb{Q}_{2,1}^{(1,0;c)}(E_g, a) &= -\frac{\sqrt{3}\mathbb{Q}_{1,1}^{(1,0;a)}(Tu)\mathbb{Q}_{1,1}^{(b)}(Tu)}{6} - \frac{\sqrt{3}\mathbb{Q}_{1,2}^{(1,0;a)}(Tu)\mathbb{Q}_{1,2}^{(b)}(Tu)}{6} + \frac{\sqrt{3}\mathbb{Q}_{1,3}^{(1,0;a)}(Tu)\mathbb{Q}_{1,3}^{(b)}(Tu)}{3} \\
\text{z258} \quad \mathbb{Q}_{2,2}^{(1,0;c)}(E_g, a) &= \frac{\mathbb{Q}_{1,1}^{(1,0;a)}(Tu)\mathbb{Q}_{1,1}^{(b)}(Tu)}{2} - \frac{\mathbb{Q}_{1,2}^{(1,0;a)}(Tu)\mathbb{Q}_{1,2}^{(b)}(Tu)}{2} \\
\text{z259} \quad \mathbb{Q}_{2,1}^{(1,0;c)}(E_g, b) &= -\frac{\sqrt{3}\mathbb{Q}_{1,1}^{(1,0;a)}(Tu)\mathbb{Q}_{3,1}^{(b)}(Tu, 1)}{6} - \frac{\sqrt{3}\mathbb{Q}_{1,2}^{(1,0;a)}(Tu)\mathbb{Q}_{3,2}^{(b)}(Tu, 1)}{6} + \frac{\sqrt{3}\mathbb{Q}_{1,3}^{(1,0;a)}(Tu)\mathbb{Q}_{3,3}^{(b)}(Tu, 1)}{3} \\
\text{z260} \quad \mathbb{Q}_{2,2}^{(1,0;c)}(E_g, b) &= \frac{\mathbb{Q}_{1,1}^{(1,0;a)}(Tu)\mathbb{Q}_{3,1}^{(b)}(Tu, 1)}{2} - \frac{\mathbb{Q}_{1,2}^{(1,0;a)}(Tu)\mathbb{Q}_{3,2}^{(b)}(Tu, 1)}{2} \\
\text{z261} \quad \mathbb{Q}_{2,1}^{(1,0;c)}(E_g, c) &= -\frac{\sqrt{3}\mathbb{T}_{1,1}^{(1,0;a)}(Tu)\mathbb{T}_{1,1}^{(b)}(Tu, a)}{6} - \frac{\sqrt{3}\mathbb{T}_{1,2}^{(1,0;a)}(Tu)\mathbb{T}_{1,2}^{(b)}(Tu, a)}{6} + \frac{\sqrt{3}\mathbb{T}_{1,3}^{(1,0;a)}(Tu)\mathbb{T}_{1,3}^{(b)}(Tu, a)}{3} \\
\text{z262} \quad \mathbb{Q}_{2,2}^{(1,0;c)}(E_g, c) &= \frac{\mathbb{T}_{1,1}^{(1,0;a)}(Tu)\mathbb{T}_{1,1}^{(b)}(Tu, a)}{2} - \frac{\mathbb{T}_{1,2}^{(1,0;a)}(Tu)\mathbb{T}_{1,2}^{(b)}(Tu, a)}{2}
\end{aligned}$$

$$\boxed{\text{z263}} \quad \mathbb{Q}_{2,1}^{(1,0;c)}(E_g, d) = -\frac{\sqrt{3}\mathbb{T}_{1,1}^{(1,0;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{6} - \frac{\sqrt{3}\mathbb{T}_{1,2}^{(1,0;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{6} + \frac{\sqrt{3}\mathbb{T}_{1,3}^{(1,0;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{3}$$

$$\boxed{\text{z264}} \quad \mathbb{Q}_{2,2}^{(1,0;c)}(E_g, d) = \frac{\mathbb{T}_{1,1}^{(1,0;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{2} - \frac{\mathbb{T}_{1,2}^{(1,0;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{2}$$

$$\boxed{\text{z265}} \quad \mathbb{G}_{2,1}^{(c)}(E_u, a) = \frac{\mathbb{Q}_{1,1}^{(a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(T_g)}{2} - \frac{\mathbb{Q}_{1,2}^{(a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(T_g)}{2}$$

$$\boxed{\text{z266}} \quad \mathbb{G}_{2,2}^{(c)}(E_u, a) = \frac{\sqrt{3}\mathbb{Q}_{1,1}^{(a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(T_g)}{6} + \frac{\sqrt{3}\mathbb{Q}_{1,2}^{(a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(T_g)}{6} - \frac{\sqrt{3}\mathbb{Q}_{1,3}^{(a)}(T_u)\mathbb{Q}_{2,3}^{(b)}(T_g)}{3}$$

$$\boxed{\text{z267}} \quad \mathbb{G}_{2,1}^{(c)}(E_u, b) = -\frac{\sqrt{3}\mathbb{T}_{1,1}^{(a)}(T_u)\mathbb{M}_{1,1}^{(b)}(T_g)}{6} - \frac{\sqrt{3}\mathbb{T}_{1,2}^{(a)}(T_u)\mathbb{M}_{1,2}^{(b)}(T_g)}{6} + \frac{\sqrt{3}\mathbb{T}_{1,3}^{(a)}(T_u)\mathbb{M}_{1,3}^{(b)}(T_g)}{3}$$

$$\boxed{\text{z268}} \quad \mathbb{G}_{2,2}^{(c)}(E_u, b) = \frac{\mathbb{T}_{1,1}^{(a)}(T_u)\mathbb{M}_{1,1}^{(b)}(T_g)}{2} - \frac{\mathbb{T}_{1,2}^{(a)}(T_u)\mathbb{M}_{1,2}^{(b)}(T_g)}{2}$$

$$\boxed{\text{z269}} \quad \mathbb{G}_{2,1}^{(1,-1;c)}(E_u, a) = \frac{\sqrt{2}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_0^{(b)}(A_g)}{2}$$

$$\boxed{\text{z270}} \quad \mathbb{G}_{2,2}^{(1,-1;c)}(E_u, a) = \frac{\sqrt{2}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_0^{(b)}(A_g)}{2}$$

$$\boxed{\text{z271}} \quad \mathbb{G}_{2,1}^{(1,-1;c)}(E_u, b) = \frac{\sqrt{7}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{7} + \frac{\sqrt{7}\mathbb{G}_{2,1}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(T_g)}{14} - \frac{\sqrt{7}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{7} + \frac{\sqrt{7}\mathbb{G}_{2,2}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(T_g)}{14} - \frac{\sqrt{7}\mathbb{G}_{2,3}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,3}^{(b)}(T_g)}{7}$$

$$\boxed{\text{z272}} \quad \mathbb{G}_{2,2}^{(1,-1;c)}(E_u, b) = -\frac{\sqrt{7}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{7} - \frac{\sqrt{21}\mathbb{G}_{2,1}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(T_g)}{14} - \frac{\sqrt{7}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{7} + \frac{\sqrt{21}\mathbb{G}_{2,2}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(T_g)}{14}$$

$$\boxed{\text{z273}} \quad \mathbb{G}_{2,1}^{(1,-1;c)}(E_u, c) = \frac{\sqrt{2}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_0^{(b)}(A_g)}{2}$$

$$\boxed{\text{z274}} \quad \mathbb{G}_{2,2}^{(1,-1;c)}(E_u, c) = \frac{\sqrt{2}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_0^{(b)}(A_g)}{2}$$

$$\boxed{\text{z275}} \quad \mathbb{G}_{2,1}^{(1,-1;c)}(E_u, d) = \frac{\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{2,1}^{(b)}(E_g)}{2} - \frac{\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z276}} \quad \mathbb{G}_{2,2}^{(1,-1;c)}(E_u, d) = -\frac{\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{2,2}^{(b)}(E_g)}{2} - \frac{\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{2,1}^{(b)}(E_g)}{2}$$

$$\begin{aligned}
\text{z277} \quad \mathbb{G}_{2,1}^{(1,-1;c)}(E_u, e) &= -\frac{\mathbb{M}_{2,1}^{(1,-1;a)}(T_u)\mathbb{M}_{1,1}^{(b)}(T_g)}{2} + \frac{\mathbb{M}_{2,2}^{(1,-1;a)}(T_u)\mathbb{M}_{1,2}^{(b)}(T_g)}{2} \\
\text{z278} \quad \mathbb{G}_{2,2}^{(1,-1;c)}(E_u, e) &= -\frac{\sqrt{3}\mathbb{M}_{2,1}^{(1,-1;a)}(T_u)\mathbb{M}_{1,1}^{(b)}(T_g)}{6} - \frac{\sqrt{3}\mathbb{M}_{2,2}^{(1,-1;a)}(T_u)\mathbb{M}_{1,2}^{(b)}(T_g)}{6} + \frac{\sqrt{3}\mathbb{M}_{2,3}^{(1,-1;a)}(T_u)\mathbb{M}_{1,3}^{(b)}(T_g)}{3} \\
\text{z279} \quad \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_u)\mathbb{Q}_{2,1}^{(b)}(T_g)}{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_u)\mathbb{Q}_{2,2}^{(b)}(T_g)}{21} + \frac{2\sqrt{21}\mathbb{G}_{2,3}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,3}^{(b)}(T_g)}{21} \\
\text{z280} \quad \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_u)\mathbb{Q}_{2,1}^{(b)}(T_g)}{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_u)\mathbb{Q}_{2,2}^{(b)}(T_g)}{7} \\
\text{z281} \quad \mathbb{G}_{2,1}^{(1,0;c)}(E_u, a) &= \frac{\mathbb{Q}_{1,1}^{(1,0;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(T_g)}{2} - \frac{\mathbb{Q}_{1,2}^{(1,0;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(T_g)}{2} \\
\text{z282} \quad \mathbb{G}_{2,2}^{(1,0;c)}(E_u, a) &= \frac{\sqrt{3}\mathbb{Q}_{1,1}^{(1,0;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(T_g)}{6} + \frac{\sqrt{3}\mathbb{Q}_{1,2}^{(1,0;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(T_g)}{6} - \frac{\sqrt{3}\mathbb{Q}_{1,3}^{(1,0;a)}(T_u)\mathbb{Q}_{2,3}^{(b)}(T_g)}{3} \\
\text{z283} \quad \mathbb{G}_{2,1}^{(1,0;c)}(E_u, b) &= -\frac{\sqrt{3}\mathbb{T}_{1,1}^{(1,0;a)}(T_u)\mathbb{M}_{1,1}^{(b)}(T_g)}{6} - \frac{\sqrt{3}\mathbb{T}_{1,2}^{(1,0;a)}(T_u)\mathbb{M}_{1,2}^{(b)}(T_g)}{6} + \frac{\sqrt{3}\mathbb{T}_{1,3}^{(1,0;a)}(T_u)\mathbb{M}_{1,3}^{(b)}(T_g)}{3} \\
\text{z284} \quad \mathbb{G}_{2,2}^{(1,0;c)}(E_u, b) &= \frac{\mathbb{T}_{1,1}^{(1,0;a)}(T_u)\mathbb{M}_{1,1}^{(b)}(T_g)}{2} - \frac{\mathbb{T}_{1,2}^{(1,0;a)}(T_u)\mathbb{M}_{1,2}^{(b)}(T_g)}{2} \\
\text{z285} \quad \mathbb{G}_{2,1}^{(1,1;c)}(E_u, a) &= \frac{\sqrt{2}\mathbb{G}_0^{(1,1;a)}(A_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} \\
\text{z286} \quad \mathbb{G}_{2,2}^{(1,1;c)}(E_u, a) &= \frac{\sqrt{2}\mathbb{G}_0^{(1,1;a)}(A_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2} \\
\text{z287} \quad \mathbb{G}_{2,1}^{(1,1;c)}(E_u, b) &= \frac{\sqrt{2}\mathbb{M}_0^{(1,1;a)}(A_u)\mathbb{T}_{2,1}^{(b)}(E_g)}{2} \\
\text{z288} \quad \mathbb{G}_{2,2}^{(1,1;c)}(E_u, b) &= \frac{\sqrt{2}\mathbb{M}_0^{(1,1;a)}(A_u)\mathbb{T}_{2,2}^{(b)}(E_g)}{2} \\
\text{z289} \quad \mathbb{Q}_{2,1}^{(c)}(T_g, a) &= \frac{\sqrt{6}\mathbb{Q}_{1,2}^{(a)}(T_u)\mathbb{Q}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{Q}_{1,3}^{(a)}(T_u)\mathbb{Q}_{1,2}^{(b)}(T_u)}{6} \\
\text{z290} \quad \mathbb{Q}_{2,2}^{(c)}(T_g, a) &= \frac{\sqrt{6}\mathbb{Q}_{1,1}^{(a)}(T_u)\mathbb{Q}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{Q}_{1,3}^{(a)}(T_u)\mathbb{Q}_{1,1}^{(b)}(T_u)}{6}
\end{aligned}$$

$$\begin{aligned}
\boxed{\text{z291}} \quad \mathbb{Q}_{2,3}^{(c)}(T_g, a) &= \frac{\sqrt{6}\mathbb{Q}_{1,1}^{(a)}(T_u)\mathbb{Q}_{1,2}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{Q}_{1,2}^{(a)}(T_u)\mathbb{Q}_{1,1}^{(b)}(T_u)}{6} \\
\boxed{\text{z292}} \quad \mathbb{Q}_{2,1}^{(c)}(T_g, b) &= -\frac{\sqrt{6}\mathbb{Q}_{1,2}^{(a)}(T_u)\mathbb{Q}_{3,3}^{(b)}(T_u, 1)}{6} - \frac{\sqrt{6}\mathbb{Q}_{1,3}^{(a)}(T_u)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{6} \\
\boxed{\text{z293}} \quad \mathbb{Q}_{2,2}^{(c)}(T_g, b) &= -\frac{\sqrt{6}\mathbb{Q}_{1,1}^{(a)}(T_u)\mathbb{Q}_{3,3}^{(b)}(T_u, 1)}{6} - \frac{\sqrt{6}\mathbb{Q}_{1,3}^{(a)}(T_u)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{6} \\
\boxed{\text{z294}} \quad \mathbb{Q}_{2,3}^{(c)}(T_g, b) &= -\frac{\sqrt{6}\mathbb{Q}_{1,1}^{(a)}(T_u)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{6} - \frac{\sqrt{6}\mathbb{Q}_{1,2}^{(a)}(T_u)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{6} \\
\boxed{\text{z295}} \quad \mathbb{Q}_{2,1}^{(c)}(T_g, c) &= \frac{\sqrt{6}\mathbb{T}_{1,2}^{(a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{6} + \frac{\sqrt{6}\mathbb{T}_{1,3}^{(a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{6} \\
\boxed{\text{z296}} \quad \mathbb{Q}_{2,2}^{(c)}(T_g, c) &= \frac{\sqrt{6}\mathbb{T}_{1,1}^{(a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{6} + \frac{\sqrt{6}\mathbb{T}_{1,3}^{(a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{6} \\
\boxed{\text{z297}} \quad \mathbb{Q}_{2,3}^{(c)}(T_g, c) &= \frac{\sqrt{6}\mathbb{T}_{1,1}^{(a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{6} + \frac{\sqrt{6}\mathbb{T}_{1,2}^{(a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{6} \\
\boxed{\text{z298}} \quad \mathbb{Q}_{2,1}^{(c)}(T_g, d) &= \frac{\sqrt{6}\mathbb{T}_{1,2}^{(a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{6} + \frac{\sqrt{6}\mathbb{T}_{1,3}^{(a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{6} \\
\boxed{\text{z299}} \quad \mathbb{Q}_{2,2}^{(c)}(T_g, d) &= \frac{\sqrt{6}\mathbb{T}_{1,1}^{(a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{6} + \frac{\sqrt{6}\mathbb{T}_{1,3}^{(a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{6} \\
\boxed{\text{z300}} \quad \mathbb{Q}_{2,3}^{(c)}(T_g, d) &= \frac{\sqrt{6}\mathbb{T}_{1,1}^{(a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{6} + \frac{\sqrt{6}\mathbb{T}_{1,2}^{(a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{6} \\
\boxed{\text{z301}} \quad \mathbb{Q}_{4,1}^{(c)}(T_g, 1) &= -\frac{\sqrt{6}\mathbb{Q}_{1,2}^{(a)}(T_u)\mathbb{Q}_{3,3}^{(b)}(T_u, 1)}{6} + \frac{\sqrt{6}\mathbb{Q}_{1,3}^{(a)}(T_u)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{6} \\
\boxed{\text{z302}} \quad \mathbb{Q}_{4,2}^{(c)}(T_g, 1) &= \frac{\sqrt{6}\mathbb{Q}_{1,1}^{(a)}(T_u)\mathbb{Q}_{3,3}^{(b)}(T_u, 1)}{6} - \frac{\sqrt{6}\mathbb{Q}_{1,3}^{(a)}(T_u)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{6} \\
\boxed{\text{z303}} \quad \mathbb{Q}_{4,3}^{(c)}(T_g, 1) &= -\frac{\sqrt{6}\mathbb{Q}_{1,1}^{(a)}(T_u)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{6} + \frac{\sqrt{6}\mathbb{Q}_{1,2}^{(a)}(T_u)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{6} \\
\boxed{\text{z304}} \quad \mathbb{Q}_{2,1}^{(1,-1;c)}(T_g, a) &= \frac{\sqrt{6}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{1,1}^{(b)}(T_u)}{6} + \frac{\sqrt{2}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{1,1}^{(b)}(T_u)}{6} - \frac{\sqrt{2}\mathbb{G}_{2,2}^{(1,-1;a)}(T_u)\mathbb{Q}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{2}\mathbb{G}_{2,3}^{(1,-1;a)}(T_u)\mathbb{Q}_{1,2}^{(b)}(T_u)}{6}
\end{aligned}$$

$$\begin{aligned}
\text{z305} \quad \mathbb{Q}_{2,2}^{(1,-1;c)}(T_g, a) &= -\frac{\sqrt{6}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{1,2}^{(b)}(T_u)}{6} + \frac{\sqrt{2}\mathbb{G}_{2,1}^{(1,-1;a)}(T_u)\mathbb{Q}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{2}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{1,2}^{(b)}(T_u)}{6} - \frac{\sqrt{2}\mathbb{G}_{2,3}^{(1,-1;a)}(T_u)\mathbb{Q}_{1,1}^{(b)}(T_u)}{6} \\
\text{z306} \quad \mathbb{Q}_{2,3}^{(1,-1;c)}(T_g, a) &= -\frac{\sqrt{2}\mathbb{G}_{2,1}^{(1,-1;a)}(T_u)\mathbb{Q}_{1,2}^{(b)}(T_u)}{6} - \frac{\sqrt{2}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{1,3}^{(b)}(T_u)}{3} + \frac{\sqrt{2}\mathbb{G}_{2,2}^{(1,-1;a)}(T_u)\mathbb{Q}_{1,1}^{(b)}(T_u)}{6} \\
\text{z307} \quad \mathbb{Q}_{2,1}^{(1,-1;c)}(T_g, b) &= -\frac{\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{6} - \frac{\sqrt{3}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{18} - \frac{2\sqrt{3}\mathbb{G}_{2,2}^{(1,-1;a)}(T_u)\mathbb{Q}_{3,3}^{(b)}(T_u, 1)}{9} + \frac{2\sqrt{3}\mathbb{G}_{2,3}^{(1,-1;a)}(T_u)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{9} \\
\text{z308} \quad \mathbb{Q}_{2,2}^{(1,-1;c)}(T_g, b) &= \frac{\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{6} + \frac{2\sqrt{3}\mathbb{G}_{2,1}^{(1,-1;a)}(T_u)\mathbb{Q}_{3,3}^{(b)}(T_u, 1)}{9} - \frac{\sqrt{3}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{18} - \frac{2\sqrt{3}\mathbb{G}_{2,3}^{(1,-1;a)}(T_u)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{9} \\
\text{z309} \quad \mathbb{Q}_{2,3}^{(1,-1;c)}(T_g, b) &= -\frac{2\sqrt{3}\mathbb{G}_{2,1}^{(1,-1;a)}(T_u)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{9} + \frac{\sqrt{3}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{3,3}^{(b)}(T_u, 1)}{9} + \frac{2\sqrt{3}\mathbb{G}_{2,2}^{(1,-1;a)}(T_u)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{9} \\
\text{z310} \quad \mathbb{Q}_{2,1}^{(1,-1;c)}(T_g, c) &= \frac{\sqrt{6}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{6} + \frac{\sqrt{2}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{6} - \frac{\sqrt{2}\mathbb{M}_{2,2}^{(1,-1;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{6} + \frac{\sqrt{2}\mathbb{M}_{2,3}^{(1,-1;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{6} \\
\text{z311} \quad \mathbb{Q}_{2,2}^{(1,-1;c)}(T_g, c) &= -\frac{\sqrt{6}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{6} + \frac{\sqrt{2}\mathbb{M}_{2,1}^{(1,-1;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{6} + \frac{\sqrt{2}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{6} - \frac{\sqrt{2}\mathbb{M}_{2,3}^{(1,-1;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{6} \\
\text{z312} \quad \mathbb{Q}_{2,3}^{(1,-1;c)}(T_g, c) &= -\frac{\sqrt{2}\mathbb{M}_{2,1}^{(1,-1;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{6} - \frac{\sqrt{2}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{3} + \frac{\sqrt{2}\mathbb{M}_{2,2}^{(1,-1;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{6} \\
\text{z313} \quad \mathbb{Q}_{2,1}^{(1,-1;c)}(T_g, d) &= \frac{\sqrt{6}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{6} + \frac{\sqrt{2}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{6} - \frac{\sqrt{2}\mathbb{M}_{2,2}^{(1,-1;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{6} + \frac{\sqrt{2}\mathbb{M}_{2,3}^{(1,-1;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{6} \\
\text{z314} \quad \mathbb{Q}_{2,2}^{(1,-1;c)}(T_g, d) &= -\frac{\sqrt{6}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{6} + \frac{\sqrt{2}\mathbb{M}_{2,1}^{(1,-1;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{6} + \frac{\sqrt{2}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{6} - \frac{\sqrt{2}\mathbb{M}_{2,3}^{(1,-1;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{6} \\
\text{z315} \quad \mathbb{Q}_{2,3}^{(1,-1;c)}(T_g, d) &= -\frac{\sqrt{2}\mathbb{M}_{2,1}^{(1,-1;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{6} - \frac{\sqrt{2}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{3} + \frac{\sqrt{2}\mathbb{M}_{2,2}^{(1,-1;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{6} \\
\text{z316} \quad \mathbb{Q}_{4,1}^{(1,-1;c)}(T_g, 1) &= \frac{\sqrt{6}\mathbb{G}_{2,2}^{(1,-1;a)}(T_u)\mathbb{Q}_{3,3}^{(b)}(T_u, 1)}{6} + \frac{\sqrt{6}\mathbb{G}_{2,3}^{(1,-1;a)}(T_u)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{6} \\
\text{z317} \quad \mathbb{Q}_{4,2}^{(1,-1;c)}(T_g, 1) &= \frac{\sqrt{6}\mathbb{G}_{2,1}^{(1,-1;a)}(T_u)\mathbb{Q}_{3,3}^{(b)}(T_u, 1)}{6} + \frac{\sqrt{6}\mathbb{G}_{2,3}^{(1,-1;a)}(T_u)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{6} \\
\text{z318} \quad \mathbb{Q}_{4,3}^{(1,-1;c)}(T_g, 1) &= \frac{\sqrt{6}\mathbb{G}_{2,1}^{(1,-1;a)}(T_u)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{6} + \frac{\sqrt{6}\mathbb{G}_{2,2}^{(1,-1;a)}(T_u)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{6}
\end{aligned}$$

$$\begin{aligned}
\text{z319} \quad \mathbb{Q}_{4,1}^{(1,-1;c)}(T_g, 2) &= \frac{\sqrt{2}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{3} + \frac{\sqrt{6}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{9} - \frac{\sqrt{6}\mathbb{G}_{2,2}^{(1,-1;a)}(T_u)\mathbb{Q}_{3,3}^{(b)}(T_u, 1)}{18} + \frac{\sqrt{6}\mathbb{G}_{2,3}^{(1,-1;a)}(T_u)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{18} \\
\text{z320} \quad \mathbb{Q}_{4,2}^{(1,-1;c)}(T_g, 2) &= -\frac{\sqrt{2}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{3} + \frac{\sqrt{6}\mathbb{G}_{2,1}^{(1,-1;a)}(T_u)\mathbb{Q}_{3,3}^{(b)}(T_u, 1)}{18} + \frac{\sqrt{6}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{9} - \frac{\sqrt{6}\mathbb{G}_{2,3}^{(1,-1;a)}(T_u)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{18} \\
\text{z321} \quad \mathbb{Q}_{4,3}^{(1,-1;c)}(T_g, 2) &= -\frac{\sqrt{6}\mathbb{G}_{2,1}^{(1,-1;a)}(T_u)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{18} - \frac{2\sqrt{6}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{3,3}^{(b)}(T_u, 1)}{9} + \frac{\sqrt{6}\mathbb{G}_{2,2}^{(1,-1;a)}(T_u)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{18} \\
\text{z322} \quad \mathbb{Q}_{2,1}^{(1,0;c)}(T_g, a) &= \frac{\sqrt{6}\mathbb{Q}_{1,2}^{(1,0;a)}(T_u)\mathbb{Q}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{Q}_{1,3}^{(1,0;a)}(T_u)\mathbb{Q}_{1,2}^{(b)}(T_u)}{6} \\
\text{z323} \quad \mathbb{Q}_{2,2}^{(1,0;c)}(T_g, a) &= \frac{\sqrt{6}\mathbb{Q}_{1,1}^{(1,0;a)}(T_u)\mathbb{Q}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{Q}_{1,3}^{(1,0;a)}(T_u)\mathbb{Q}_{1,1}^{(b)}(T_u)}{6} \\
\text{z324} \quad \mathbb{Q}_{2,3}^{(1,0;c)}(T_g, a) &= \frac{\sqrt{6}\mathbb{Q}_{1,1}^{(1,0;a)}(T_u)\mathbb{Q}_{1,2}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{Q}_{1,2}^{(1,0;a)}(T_u)\mathbb{Q}_{1,1}^{(b)}(T_u)}{6} \\
\text{z325} \quad \mathbb{Q}_{2,1}^{(1,0;c)}(T_g, b) &= -\frac{\sqrt{6}\mathbb{Q}_{1,2}^{(1,0;a)}(T_u)\mathbb{Q}_{3,3}^{(b)}(T_u, 1)}{6} - \frac{\sqrt{6}\mathbb{Q}_{1,3}^{(1,0;a)}(T_u)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{6} \\
\text{z326} \quad \mathbb{Q}_{2,2}^{(1,0;c)}(T_g, b) &= -\frac{\sqrt{6}\mathbb{Q}_{1,1}^{(1,0;a)}(T_u)\mathbb{Q}_{3,3}^{(b)}(T_u, 1)}{6} - \frac{\sqrt{6}\mathbb{Q}_{1,3}^{(1,0;a)}(T_u)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{6} \\
\text{z327} \quad \mathbb{Q}_{2,3}^{(1,0;c)}(T_g, b) &= -\frac{\sqrt{6}\mathbb{Q}_{1,1}^{(1,0;a)}(T_u)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{6} - \frac{\sqrt{6}\mathbb{Q}_{1,2}^{(1,0;a)}(T_u)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{6} \\
\text{z328} \quad \mathbb{Q}_{2,1}^{(1,0;c)}(T_g, c) &= \frac{\sqrt{6}\mathbb{T}_{1,2}^{(1,0;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{6} + \frac{\sqrt{6}\mathbb{T}_{1,3}^{(1,0;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{6} \\
\text{z329} \quad \mathbb{Q}_{2,2}^{(1,0;c)}(T_g, c) &= \frac{\sqrt{6}\mathbb{T}_{1,1}^{(1,0;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{6} + \frac{\sqrt{6}\mathbb{T}_{1,3}^{(1,0;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{6} \\
\text{z330} \quad \mathbb{Q}_{2,3}^{(1,0;c)}(T_g, c) &= \frac{\sqrt{6}\mathbb{T}_{1,1}^{(1,0;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{6} + \frac{\sqrt{6}\mathbb{T}_{1,2}^{(1,0;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{6} \\
\text{z331} \quad \mathbb{Q}_{2,1}^{(1,0;c)}(T_g, d) &= \frac{\sqrt{6}\mathbb{T}_{1,2}^{(1,0;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{6} + \frac{\sqrt{6}\mathbb{T}_{1,3}^{(1,0;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{6} \\
\text{z332} \quad \mathbb{Q}_{2,2}^{(1,0;c)}(T_g, d) &= \frac{\sqrt{6}\mathbb{T}_{1,1}^{(1,0;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{6} + \frac{\sqrt{6}\mathbb{T}_{1,3}^{(1,0;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{6}
\end{aligned}$$

$$\boxed{\text{z333}} \quad \mathbb{Q}_{2,3}^{(1,0;c)}(T_g, d) = \frac{\sqrt{6}\mathbb{T}_{1,1}^{(1,0;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{6} + \frac{\sqrt{6}\mathbb{T}_{1,2}^{(1,0;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{6}$$

$$\boxed{\text{z334}} \quad \mathbb{Q}_{4,1}^{(1,0;c)}(T_g, 1) = -\frac{\sqrt{6}\mathbb{Q}_{1,2}^{(1,0;a)}(T_u)\mathbb{Q}_{3,3}^{(b)}(T_u, 1)}{6} + \frac{\sqrt{6}\mathbb{Q}_{1,3}^{(1,0;a)}(T_u)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{6}$$

$$\boxed{\text{z335}} \quad \mathbb{Q}_{4,2}^{(1,0;c)}(T_g, 1) = \frac{\sqrt{6}\mathbb{Q}_{1,1}^{(1,0;a)}(T_u)\mathbb{Q}_{3,3}^{(b)}(T_u, 1)}{6} - \frac{\sqrt{6}\mathbb{Q}_{1,3}^{(1,0;a)}(T_u)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{6}$$

$$\boxed{\text{z336}} \quad \mathbb{Q}_{4,3}^{(1,0;c)}(T_g, 1) = -\frac{\sqrt{6}\mathbb{Q}_{1,1}^{(1,0;a)}(T_u)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{6} + \frac{\sqrt{6}\mathbb{Q}_{1,2}^{(1,0;a)}(T_u)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{6}$$

$$\boxed{\text{z337}} \quad \mathbb{G}_{1,1}^{(c)}(T_g, a) = \frac{\sqrt{6}\mathbb{Q}_{1,2}^{(a)}(T_u)\mathbb{Q}_{1,3}^{(b)}(T_u)}{6} - \frac{\sqrt{6}\mathbb{Q}_{1,3}^{(a)}(T_u)\mathbb{Q}_{1,2}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z338}} \quad \mathbb{G}_{1,2}^{(c)}(T_g, a) = -\frac{\sqrt{6}\mathbb{Q}_{1,1}^{(a)}(T_u)\mathbb{Q}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{Q}_{1,3}^{(a)}(T_u)\mathbb{Q}_{1,1}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z339}} \quad \mathbb{G}_{1,3}^{(c)}(T_g, a) = \frac{\sqrt{6}\mathbb{Q}_{1,1}^{(a)}(T_u)\mathbb{Q}_{1,2}^{(b)}(T_u)}{6} - \frac{\sqrt{6}\mathbb{Q}_{1,2}^{(a)}(T_u)\mathbb{Q}_{1,1}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z340}} \quad \mathbb{G}_{1,1}^{(c)}(T_g, b) = \frac{\sqrt{6}\mathbb{T}_{1,2}^{(a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{6} - \frac{\sqrt{6}\mathbb{T}_{1,3}^{(a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{6}$$

$$\boxed{\text{z341}} \quad \mathbb{G}_{1,2}^{(c)}(T_g, b) = -\frac{\sqrt{6}\mathbb{T}_{1,1}^{(a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{6} + \frac{\sqrt{6}\mathbb{T}_{1,3}^{(a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{6}$$

$$\boxed{\text{z342}} \quad \mathbb{G}_{1,3}^{(c)}(T_g, b) = \frac{\sqrt{6}\mathbb{T}_{1,1}^{(a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{6} - \frac{\sqrt{6}\mathbb{T}_{1,2}^{(a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{6}$$

$$\boxed{\text{z343}} \quad \mathbb{G}_{1,1}^{(c)}(T_g, c) = \frac{\sqrt{6}\mathbb{T}_{1,2}^{(a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{6} - \frac{\sqrt{6}\mathbb{T}_{1,3}^{(a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{6}$$

$$\boxed{\text{z344}} \quad \mathbb{G}_{1,2}^{(c)}(T_g, c) = -\frac{\sqrt{6}\mathbb{T}_{1,1}^{(a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{6} + \frac{\sqrt{6}\mathbb{T}_{1,3}^{(a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{6}$$

$$\boxed{\text{z345}} \quad \mathbb{G}_{1,3}^{(c)}(T_g, c) = \frac{\sqrt{6}\mathbb{T}_{1,1}^{(a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{6} - \frac{\sqrt{6}\mathbb{T}_{1,2}^{(a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{6}$$

$$\boxed{\text{z346}} \quad \mathbb{G}_{1,1}^{(1,-1;c)}(T_g, a) = -\frac{\sqrt{30}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{1,1}^{(b)}(T_u)}{30} + \frac{\sqrt{10}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{1,1}^{(b)}(T_u)}{10} + \frac{\sqrt{10}\mathbb{G}_{2,2}^{(1,-1;a)}(T_u)\mathbb{Q}_{1,3}^{(b)}(T_u)}{10} + \frac{\sqrt{10}\mathbb{G}_{2,3}^{(1,-1;a)}(T_u)\mathbb{Q}_{1,2}^{(b)}(T_u)}{10}$$

$$\begin{aligned}
\text{z347} \quad \mathbb{G}_{1,2}^{(1,-1;c)}(T_g, a) &= -\frac{\sqrt{30}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{1,2}^{(b)}(T_u)}{30} + \frac{\sqrt{10}\mathbb{G}_{2,1}^{(1,-1;a)}(T_u)\mathbb{Q}_{1,3}^{(b)}(T_u)}{10} - \frac{\sqrt{10}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{1,2}^{(b)}(T_u)}{10} + \frac{\sqrt{10}\mathbb{G}_{2,3}^{(1,-1;a)}(T_u)\mathbb{Q}_{1,1}^{(b)}(T_u)}{10} \\
\text{z348} \quad \mathbb{G}_{1,3}^{(1,-1;c)}(T_g, a) &= \frac{\sqrt{30}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{1,3}^{(b)}(T_u)}{15} + \frac{\sqrt{10}\mathbb{G}_{2,1}^{(1,-1;a)}(T_u)\mathbb{Q}_{1,2}^{(b)}(T_u)}{10} + \frac{\sqrt{10}\mathbb{G}_{2,2}^{(1,-1;a)}(T_u)\mathbb{Q}_{1,1}^{(b)}(T_u)}{10} \\
\text{z349} \quad \mathbb{G}_{1,1}^{(1,-1;c)}(T_g, b) &= -\frac{\sqrt{3}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{6} + \frac{\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{2} \\
\text{z350} \quad \mathbb{G}_{1,2}^{(1,-1;c)}(T_g, b) &= -\frac{\sqrt{3}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{6} - \frac{\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{2} \\
\text{z351} \quad \mathbb{G}_{1,3}^{(1,-1;c)}(T_g, b) &= \frac{\sqrt{3}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{3,3}^{(b)}(T_u, 1)}{3} \\
\text{z352} \quad \mathbb{G}_{1,1}^{(1,-1;c)}(T_g, c) &= -\frac{\sqrt{30}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{30} + \frac{\sqrt{10}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{10} + \frac{\sqrt{10}\mathbb{M}_{2,2}^{(1,-1;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{10} + \frac{\sqrt{10}\mathbb{M}_{2,3}^{(1,-1;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{10} \\
\text{z353} \quad \mathbb{G}_{1,2}^{(1,-1;c)}(T_g, c) &= -\frac{\sqrt{30}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{30} + \frac{\sqrt{10}\mathbb{M}_{2,1}^{(1,-1;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{10} - \frac{\sqrt{10}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{10} + \frac{\sqrt{10}\mathbb{M}_{2,3}^{(1,-1;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{10} \\
\text{z354} \quad \mathbb{G}_{1,3}^{(1,-1;c)}(T_g, c) &= \frac{\sqrt{30}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{15} + \frac{\sqrt{10}\mathbb{M}_{2,1}^{(1,-1;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{10} + \frac{\sqrt{10}\mathbb{M}_{2,2}^{(1,-1;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{10} \\
\text{z355} \quad \mathbb{G}_{1,1}^{(1,-1;c)}(T_g, d) &= -\frac{\sqrt{30}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{30} + \frac{\sqrt{10}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{10} + \frac{\sqrt{10}\mathbb{M}_{2,2}^{(1,-1;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{10} + \frac{\sqrt{10}\mathbb{M}_{2,3}^{(1,-1;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{10} \\
\text{z356} \quad \mathbb{G}_{1,2}^{(1,-1;c)}(T_g, d) &= -\frac{\sqrt{30}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{30} + \frac{\sqrt{10}\mathbb{M}_{2,1}^{(1,-1;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{10} - \frac{\sqrt{10}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{10} + \frac{\sqrt{10}\mathbb{M}_{2,3}^{(1,-1;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{10} \\
\text{z357} \quad \mathbb{G}_{1,3}^{(1,-1;c)}(T_g, d) &= \frac{\sqrt{30}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{15} + \frac{\sqrt{10}\mathbb{M}_{2,1}^{(1,-1;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{10} + \frac{\sqrt{10}\mathbb{M}_{2,2}^{(1,-1;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{10} \\
\text{z358} \quad \mathbb{G}_{3,1}^{(1,-1;c)}(T_g, 1a) &= -\frac{\sqrt{5}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{1,1}^{(b)}(T_u)}{10} + \frac{\sqrt{15}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{1,1}^{(b)}(T_u)}{10} - \frac{\sqrt{15}\mathbb{G}_{2,2}^{(1,-1;a)}(T_u)\mathbb{Q}_{1,3}^{(b)}(T_u)}{15} - \frac{\sqrt{15}\mathbb{G}_{2,3}^{(1,-1;a)}(T_u)\mathbb{Q}_{1,2}^{(b)}(T_u)}{15} \\
\text{z359} \quad \mathbb{G}_{3,2}^{(1,-1;c)}(T_g, 1a) &= -\frac{\sqrt{5}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{1,2}^{(b)}(T_u)}{10} - \frac{\sqrt{15}\mathbb{G}_{2,1}^{(1,-1;a)}(T_u)\mathbb{Q}_{1,3}^{(b)}(T_u)}{15} - \frac{\sqrt{15}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{1,2}^{(b)}(T_u)}{10} - \frac{\sqrt{15}\mathbb{G}_{2,3}^{(1,-1;a)}(T_u)\mathbb{Q}_{1,1}^{(b)}(T_u)}{15} \\
\text{z360} \quad \mathbb{G}_{3,3}^{(1,-1;c)}(T_g, 1a) &= \frac{\sqrt{5}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{1,3}^{(b)}(T_u)}{5} - \frac{\sqrt{15}\mathbb{G}_{2,1}^{(1,-1;a)}(T_u)\mathbb{Q}_{1,2}^{(b)}(T_u)}{15} - \frac{\sqrt{15}\mathbb{G}_{2,2}^{(1,-1;a)}(T_u)\mathbb{Q}_{1,1}^{(b)}(T_u)}{15}
\end{aligned}$$

$$\boxed{\text{z762}} \quad \mathbb{G}_{3,3}^{(1,-1;c)}(T_g, 2c) = -\frac{\mathbb{M}_{2,1}^{(1,-1;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{3} + \frac{\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{3} + \frac{\mathbb{M}_{2,2}^{(1,-1;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{3}$$

$$\boxed{\text{z763}} \quad \mathbb{G}_{1,1}^{(1,0;c)}(T_g, a) = \frac{\sqrt{6}\mathbb{Q}_{1,2}^{(1,0;a)}(T_u)\mathbb{Q}_{1,3}^{(b)}(T_u)}{6} - \frac{\sqrt{6}\mathbb{Q}_{1,3}^{(1,0;a)}(T_u)\mathbb{Q}_{1,2}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z764}} \quad \mathbb{G}_{1,2}^{(1,0;c)}(T_g, a) = -\frac{\sqrt{6}\mathbb{Q}_{1,1}^{(1,0;a)}(T_u)\mathbb{Q}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{Q}_{1,3}^{(1,0;a)}(T_u)\mathbb{Q}_{1,1}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z765}} \quad \mathbb{G}_{1,3}^{(1,0;c)}(T_g, a) = \frac{\sqrt{6}\mathbb{Q}_{1,1}^{(1,0;a)}(T_u)\mathbb{Q}_{1,2}^{(b)}(T_u)}{6} - \frac{\sqrt{6}\mathbb{Q}_{1,2}^{(1,0;a)}(T_u)\mathbb{Q}_{1,1}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z766}} \quad \mathbb{G}_{1,1}^{(1,0;c)}(T_g, b) = \frac{\sqrt{6}\mathbb{T}_{1,2}^{(1,0;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{6} - \frac{\sqrt{6}\mathbb{T}_{1,3}^{(1,0;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{6}$$

$$\boxed{\text{z767}} \quad \mathbb{G}_{1,2}^{(1,0;c)}(T_g, b) = -\frac{\sqrt{6}\mathbb{T}_{1,1}^{(1,0;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{6} + \frac{\sqrt{6}\mathbb{T}_{1,3}^{(1,0;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{6}$$

$$\boxed{\text{z768}} \quad \mathbb{G}_{1,3}^{(1,0;c)}(T_g, b) = \frac{\sqrt{6}\mathbb{T}_{1,1}^{(1,0;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{6} - \frac{\sqrt{6}\mathbb{T}_{1,2}^{(1,0;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{6}$$

$$\boxed{\text{z769}} \quad \mathbb{G}_{1,1}^{(1,0;c)}(T_g, c) = \frac{\sqrt{6}\mathbb{T}_{1,2}^{(1,0;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{6} - \frac{\sqrt{6}\mathbb{T}_{1,3}^{(1,0;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{6}$$

$$\boxed{\text{z770}} \quad \mathbb{G}_{1,2}^{(1,0;c)}(T_g, c) = -\frac{\sqrt{6}\mathbb{T}_{1,1}^{(1,0;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{6} + \frac{\sqrt{6}\mathbb{T}_{1,3}^{(1,0;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{6}$$

$$\boxed{\text{z771}} \quad \mathbb{G}_{1,3}^{(1,0;c)}(T_g, c) = \frac{\sqrt{6}\mathbb{T}_{1,1}^{(1,0;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{6} - \frac{\sqrt{6}\mathbb{T}_{1,2}^{(1,0;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{6}$$

$$\boxed{\text{z772}} \quad \mathbb{G}_{1,1}^{(1,1;c)}(T_g, a) = \frac{\sqrt{3}\mathbb{G}_0^{(1,1;a)}(A_u)\mathbb{Q}_{1,1}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z773}} \quad \mathbb{G}_{1,2}^{(1,1;c)}(T_g, a) = \frac{\sqrt{3}\mathbb{G}_0^{(1,1;a)}(A_u)\mathbb{Q}_{1,2}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z774}} \quad \mathbb{G}_{1,3}^{(1,1;c)}(T_g, a) = \frac{\sqrt{3}\mathbb{G}_0^{(1,1;a)}(A_u)\mathbb{Q}_{1,3}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z775}} \quad \mathbb{G}_{1,1}^{(1,1;c)}(T_g, b) = \frac{\sqrt{3}\mathbb{M}_0^{(1,1;a)}(A_u)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{3}$$

$$\boxed{\text{z776}} \quad \mathbb{G}_{1,2}^{(1,1;c)}(T_g, b) = \frac{\sqrt{3}\mathbb{M}_0^{(1,1;a)}(A_u)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{3}$$

$$\boxed{\text{z777}} \quad \mathbb{G}_{1,3}^{(1,1;c)}(T_g, b) = \frac{\sqrt{3}\mathbb{M}_0^{(1,1;a)}(A_u)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{3}$$

$$\boxed{\text{z778}} \quad \mathbb{G}_{1,1}^{(1,1;c)}(T_g, c) = \frac{\sqrt{3}\mathbb{M}_0^{(1,1;a)}(A_u)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{3}$$

$$\boxed{\text{z779}} \quad \mathbb{G}_{1,2}^{(1,1;c)}(T_g, c) = \frac{\sqrt{3}\mathbb{M}_0^{(1,1;a)}(A_u)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{3}$$

$$\boxed{\text{z780}} \quad \mathbb{G}_{1,3}^{(1,1;c)}(T_g, c) = \frac{\sqrt{3}\mathbb{M}_0^{(1,1;a)}(A_u)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{3}$$

$$\boxed{\text{z781}} \quad \mathbb{G}_{3,1}^{(1,1;c)}(T_g, 1) = \frac{\sqrt{3}\mathbb{G}_0^{(1,1;a)}(A_u)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{3}$$

$$\boxed{\text{z782}} \quad \mathbb{G}_{3,2}^{(1,1;c)}(T_g, 1) = \frac{\sqrt{3}\mathbb{G}_0^{(1,1;a)}(A_u)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{3}$$

$$\boxed{\text{z783}} \quad \mathbb{G}_{3,3}^{(1,1;c)}(T_g, 1) = \frac{\sqrt{3}\mathbb{G}_0^{(1,1;a)}(A_u)\mathbb{Q}_{3,3}^{(b)}(T_u, 1)}{3}$$

$$\boxed{\text{z925}} \quad \mathbb{Q}_{1,1}^{(c)}(T_u, a) = \frac{\sqrt{3}\mathbb{Q}_{1,1}^{(a)}(T_u)\mathbb{Q}_0^{(b)}(A_g)}{3}$$

$$\boxed{\text{z926}} \quad \mathbb{Q}_{1,2}^{(c)}(T_u, a) = \frac{\sqrt{3}\mathbb{Q}_{1,2}^{(a)}(T_u)\mathbb{Q}_0^{(b)}(A_g)}{3}$$

$$\boxed{\text{z927}} \quad \mathbb{Q}_{1,3}^{(c)}(T_u, a) = \frac{\sqrt{3}\mathbb{Q}_{1,3}^{(a)}(T_u)\mathbb{Q}_0^{(b)}(A_g)}{3}$$

$$\boxed{\text{z928}} \quad \mathbb{Q}_{1,1}^{(c)}(T_u, b) = -\frac{\sqrt{30}\mathbb{Q}_{1,1}^{(a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{30} + \frac{\sqrt{10}\mathbb{Q}_{1,1}^{(a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{10} + \frac{\sqrt{10}\mathbb{Q}_{1,2}^{(a)}(T_u)\mathbb{Q}_{2,3}^{(b)}(T_g)}{10} + \frac{\sqrt{10}\mathbb{Q}_{1,3}^{(a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(T_g)}{10}$$

$$\boxed{\text{z929}} \quad \mathbb{Q}_{1,2}^{(c)}(T_u, b) = \frac{\sqrt{10}\mathbb{Q}_{1,1}^{(a)}(T_u)\mathbb{Q}_{2,3}^{(b)}(T_g)}{10} - \frac{\sqrt{30}\mathbb{Q}_{1,2}^{(a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{30} - \frac{\sqrt{10}\mathbb{Q}_{1,2}^{(a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{10} + \frac{\sqrt{10}\mathbb{Q}_{1,3}^{(a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(T_g)}{10}$$

$$\boxed{\text{z930}} \quad \mathbb{Q}_{1,3}^{(c)}(T_u, b) = \frac{\sqrt{10}\mathbb{Q}_{1,1}^{(a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(T_g)}{10} + \frac{\sqrt{10}\mathbb{Q}_{1,2}^{(a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(T_g)}{10} + \frac{\sqrt{30}\mathbb{Q}_{1,3}^{(a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{15}$$

$$\boxed{\text{z931}} \quad \mathbb{Q}_{1,1}^{(c)}(T_u, c) = \frac{\sqrt{3}\mathbb{T}_{1,1}^{(a)}(T_u)\mathbb{T}_0^{(b)}(A_g)}{3}$$

$$\boxed{\text{z932}} \quad \mathbb{Q}_{1,2}^{(c)}(T_u, c) = \frac{\sqrt{3}\mathbb{T}_{1,2}^{(a)}(T_u)\mathbb{T}_0^{(b)}(A_g)}{3}$$

$$\boxed{\text{z933}} \quad \mathbb{Q}_{1,3}^{(c)}(T_u, c) = \frac{\sqrt{3}\mathbb{T}_{1,3}^{(a)}(T_u)\mathbb{T}_0^{(b)}(A_g)}{3}$$

$$\boxed{\text{z934}} \quad \mathbb{Q}_{1,1}^{(c)}(T_u, d) = -\frac{\sqrt{3}\mathbb{T}_{1,1}^{(a)}(T_u)\mathbb{T}_{2,1}^{(b)}(E_g)}{6} + \frac{\mathbb{T}_{1,1}^{(a)}(T_u)\mathbb{T}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z935}} \quad \mathbb{Q}_{1,2}^{(c)}(T_u, d) = -\frac{\sqrt{3}\mathbb{T}_{1,2}^{(a)}(T_u)\mathbb{T}_{2,1}^{(b)}(E_g)}{6} - \frac{\mathbb{T}_{1,2}^{(a)}(T_u)\mathbb{T}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z936}} \quad \mathbb{Q}_{1,3}^{(c)}(T_u, d) = \frac{\sqrt{3}\mathbb{T}_{1,3}^{(a)}(T_u)\mathbb{T}_{2,1}^{(b)}(E_g)}{3}$$

$$\boxed{\text{z937}} \quad \mathbb{Q}_{1,1}^{(c)}(T_u, e) = \frac{\sqrt{6}\mathbb{T}_{1,2}^{(a)}(T_u)\mathbb{M}_{1,3}^{(b)}(T_g)}{6} - \frac{\sqrt{6}\mathbb{T}_{1,3}^{(a)}(T_u)\mathbb{M}_{1,2}^{(b)}(T_g)}{6}$$

$$\boxed{\text{z938}} \quad \mathbb{Q}_{1,2}^{(c)}(T_u, e) = -\frac{\sqrt{6}\mathbb{T}_{1,1}^{(a)}(T_u)\mathbb{M}_{1,3}^{(b)}(T_g)}{6} + \frac{\sqrt{6}\mathbb{T}_{1,3}^{(a)}(T_u)\mathbb{M}_{1,1}^{(b)}(T_g)}{6}$$

$$\boxed{\text{z939}} \quad \mathbb{Q}_{1,3}^{(c)}(T_u, e) = \frac{\sqrt{6}\mathbb{T}_{1,1}^{(a)}(T_u)\mathbb{M}_{1,2}^{(b)}(T_g)}{6} - \frac{\sqrt{6}\mathbb{T}_{1,2}^{(a)}(T_u)\mathbb{M}_{1,1}^{(b)}(T_g)}{6}$$

$$\boxed{\text{z940}} \quad \mathbb{Q}_{3,1}^{(c)}(T_u, 1) = -\frac{\sqrt{5}\mathbb{Q}_{1,1}^{(a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{10} + \frac{\sqrt{15}\mathbb{Q}_{1,1}^{(a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{10} - \frac{\sqrt{15}\mathbb{Q}_{1,2}^{(a)}(T_u)\mathbb{Q}_{2,3}^{(b)}(T_g)}{15} - \frac{\sqrt{15}\mathbb{Q}_{1,3}^{(a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(T_g)}{15}$$

$$\boxed{\text{z941}} \quad \mathbb{Q}_{3,2}^{(c)}(T_u, 1) = -\frac{\sqrt{15}\mathbb{Q}_{1,1}^{(a)}(T_u)\mathbb{Q}_{2,3}^{(b)}(T_g)}{15} - \frac{\sqrt{5}\mathbb{Q}_{1,2}^{(a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{10} - \frac{\sqrt{15}\mathbb{Q}_{1,2}^{(a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{10} - \frac{\sqrt{15}\mathbb{Q}_{1,3}^{(a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(T_g)}{15}$$

$$\boxed{\text{z942}} \quad \mathbb{Q}_{3,3}^{(c)}(T_u, 1) = -\frac{\sqrt{15}\mathbb{Q}_{1,1}^{(a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(T_g)}{15} - \frac{\sqrt{15}\mathbb{Q}_{1,2}^{(a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(T_g)}{15} + \frac{\sqrt{5}\mathbb{Q}_{1,3}^{(a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{5}$$

$$\boxed{\text{z943}} \quad \mathbb{Q}_{3,1}^{(c)}(T_u, 2a) = -\frac{\sqrt{3}\mathbb{Q}_{1,1}^{(a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} - \frac{\mathbb{Q}_{1,1}^{(a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{6} + \frac{\mathbb{Q}_{1,2}^{(a)}(T_u)\mathbb{Q}_{2,3}^{(b)}(T_g)}{3} - \frac{\mathbb{Q}_{1,3}^{(a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(T_g)}{3}$$

$$\boxed{\text{z944}} \quad \mathbb{Q}_{3,2}^{(c)}(T_u, 2a) = -\frac{\mathbb{Q}_{1,1}^{(a)}(T_u)\mathbb{Q}_{2,3}^{(b)}(T_g)}{3} + \frac{\sqrt{3}\mathbb{Q}_{1,2}^{(a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} - \frac{\mathbb{Q}_{1,2}^{(a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{6} + \frac{\mathbb{Q}_{1,3}^{(a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(T_g)}{3}$$

$$\boxed{\text{z945}} \quad \mathbb{Q}_{3,3}^{(c)}(T_u, 2a) = \frac{\mathbb{Q}_{1,1}^{(a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(T_g)}{3} - \frac{\mathbb{Q}_{1,2}^{(a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(T_g)}{3} + \frac{\mathbb{Q}_{1,3}^{(a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{3}$$

$$\boxed{\text{z946}} \quad \mathbb{Q}_{3,1}^{(c)}(T_u, 2b) = -\frac{\mathbb{T}_{1,1}^{(a)}(T_u)\mathbb{T}_{2,1}^{(b)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{T}_{1,1}^{(a)}(T_u)\mathbb{T}_{2,2}^{(b)}(E_g)}{6}$$

$$\boxed{\text{z947}} \quad \mathbb{Q}_{3,2}^{(c)}(T_u, 2b) = \frac{\mathbb{T}_{1,2}^{(a)}(T_u)\mathbb{T}_{2,1}^{(b)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{T}_{1,2}^{(a)}(T_u)\mathbb{T}_{2,2}^{(b)}(E_g)}{6}$$

$$\boxed{\text{z948}} \quad \mathbb{Q}_{3,3}^{(c)}(T_u, 2b) = \frac{\sqrt{3}\mathbb{T}_{1,3}^{(a)}(T_u)\mathbb{T}_{2,2}^{(b)}(E_g)}{3}$$

$$\boxed{\text{z949}} \quad \mathbb{Q}_{1,1}^{(1,-1;c)}(T_u, a) = -\frac{\sqrt{10}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(b)}(T_g)}{10} + \frac{\sqrt{10}\mathbb{G}_{2,1}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{10} + \frac{\sqrt{30}\mathbb{G}_{2,1}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{30} \\ - \frac{\sqrt{30}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(b)}(T_g)}{30} - \frac{\sqrt{30}\mathbb{G}_{2,2}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,3}^{(b)}(T_g)}{30} + \frac{\sqrt{30}\mathbb{G}_{2,3}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(T_g)}{30}$$

$$\boxed{\text{z950}} \quad \mathbb{Q}_{1,2}^{(1,-1;c)}(T_u, a) = \frac{\sqrt{10}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(T_g)}{10} + \frac{\sqrt{30}\mathbb{G}_{2,1}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,3}^{(b)}(T_g)}{30} - \frac{\sqrt{30}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(T_g)}{30} \\ - \frac{\sqrt{10}\mathbb{G}_{2,2}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{10} + \frac{\sqrt{30}\mathbb{G}_{2,2}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{30} - \frac{\sqrt{30}\mathbb{G}_{2,3}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(T_g)}{30}$$

$$\boxed{\text{z951}} \quad \mathbb{Q}_{1,3}^{(1,-1;c)}(T_u, a) = -\frac{\sqrt{30}\mathbb{G}_{2,1}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(T_g)}{30} + \frac{\sqrt{30}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,3}^{(b)}(T_g)}{15} + \frac{\sqrt{30}\mathbb{G}_{2,2}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(T_g)}{30} - \frac{\sqrt{30}\mathbb{G}_{2,3}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{15}$$

$$\boxed{\text{z952}} \quad \mathbb{Q}_{1,1}^{(1,-1;c)}(T_u, b) = \frac{\mathbb{M}_{2,1}^{(1,-1;a)}(T_u)\mathbb{T}_{2,1}^{(b)}(E_g)}{2} + \frac{\sqrt{3}\mathbb{M}_{2,1}^{(1,-1;a)}(T_u)\mathbb{T}_{2,2}^{(b)}(E_g)}{6}$$

$$\boxed{\text{z953}} \quad \mathbb{Q}_{1,2}^{(1,-1;c)}(T_u, b) = -\frac{\mathbb{M}_{2,2}^{(1,-1;a)}(T_u)\mathbb{T}_{2,1}^{(b)}(E_g)}{2} + \frac{\sqrt{3}\mathbb{M}_{2,2}^{(1,-1;a)}(T_u)\mathbb{T}_{2,2}^{(b)}(E_g)}{6}$$

$$\boxed{\text{z954}} \quad \mathbb{Q}_{1,3}^{(1,-1;c)}(T_u, b) = -\frac{\sqrt{3}\mathbb{M}_{2,3}^{(1,-1;a)}(T_u)\mathbb{T}_{2,2}^{(b)}(E_g)}{3}$$

$$\boxed{\text{z955}} \quad \mathbb{Q}_{1,1}^{(1,-1;c)}(T_u, c) = -\frac{\sqrt{30}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{M}_{1,1}^{(b)}(T_g)}{30} + \frac{\sqrt{10}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{M}_{1,1}^{(b)}(T_g)}{10} + \frac{\sqrt{10}\mathbb{M}_{2,2}^{(1,-1;a)}(T_u)\mathbb{M}_{1,3}^{(b)}(T_g)}{10} + \frac{\sqrt{10}\mathbb{M}_{2,3}^{(1,-1;a)}(T_u)\mathbb{M}_{1,2}^{(b)}(T_g)}{10}$$

$$\boxed{\text{z956}} \quad \mathbb{Q}_{1,2}^{(1,-1;c)}(T_u, c) = -\frac{\sqrt{30}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{M}_{1,2}^{(b)}(T_g)}{30} + \frac{\sqrt{10}\mathbb{M}_{2,1}^{(1,-1;a)}(T_u)\mathbb{M}_{1,3}^{(b)}(T_g)}{10} - \frac{\sqrt{10}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{M}_{1,2}^{(b)}(T_g)}{10} + \frac{\sqrt{10}\mathbb{M}_{2,3}^{(1,-1;a)}(T_u)\mathbb{M}_{1,1}^{(b)}(T_g)}{10}$$

$$\begin{aligned}
\text{z957} \quad \mathbb{Q}_{1,3}^{(1,-1;c)}(T_u, c) &= \frac{\sqrt{30}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{M}_{1,3}^{(b)}(T_g)}{15} + \frac{\sqrt{10}\mathbb{M}_{2,1}^{(1,-1;a)}(T_u)\mathbb{M}_{1,2}^{(b)}(T_g)}{10} + \frac{\sqrt{10}\mathbb{M}_{2,2}^{(1,-1;a)}(T_u)\mathbb{M}_{1,1}^{(b)}(T_g)}{10} \\
\text{z958} \quad \mathbb{Q}_{3,1}^{(1,-1;c)}(T_u, 1a) &= \frac{\sqrt{10}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(b)}(T_g)}{20} - \frac{\sqrt{10}\mathbb{G}_{2,1}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{20} - \frac{\sqrt{30}\mathbb{G}_{2,1}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{60} \\
&\quad + \frac{\sqrt{30}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(b)}(T_g)}{60} - \frac{\sqrt{30}\mathbb{G}_{2,2}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,3}^{(b)}(T_g)}{15} + \frac{\sqrt{30}\mathbb{G}_{2,3}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(T_g)}{15} \\
\text{z959} \quad \mathbb{Q}_{3,2}^{(1,-1;c)}(T_u, 1a) &= -\frac{\sqrt{10}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(T_g)}{20} + \frac{\sqrt{30}\mathbb{G}_{2,1}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,3}^{(b)}(T_g)}{15} + \frac{\sqrt{30}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(T_g)}{60} \\
&\quad + \frac{\sqrt{10}\mathbb{G}_{2,2}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{20} - \frac{\sqrt{30}\mathbb{G}_{2,2}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{60} - \frac{\sqrt{30}\mathbb{G}_{2,3}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(T_g)}{15} \\
\text{z960} \quad \mathbb{Q}_{3,3}^{(1,-1;c)}(T_u, 1a) &= -\frac{\sqrt{30}\mathbb{G}_{2,1}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(T_g)}{15} - \frac{\sqrt{30}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,3}^{(b)}(T_g)}{30} + \frac{\sqrt{30}\mathbb{G}_{2,2}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(T_g)}{15} + \frac{\sqrt{30}\mathbb{G}_{2,3}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{30} \\
\text{z961} \quad \mathbb{Q}_{3,1}^{(1,-1;c)}(T_u, 1b) &= -\frac{\sqrt{5}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{M}_{1,1}^{(b)}(T_g)}{10} + \frac{\sqrt{15}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{M}_{1,1}^{(b)}(T_g)}{10} - \frac{\sqrt{15}\mathbb{M}_{2,2}^{(1,-1;a)}(T_u)\mathbb{M}_{1,3}^{(b)}(T_g)}{15} - \frac{\sqrt{15}\mathbb{M}_{2,3}^{(1,-1;a)}(T_u)\mathbb{M}_{1,2}^{(b)}(T_g)}{15} \\
\text{z962} \quad \mathbb{Q}_{3,2}^{(1,-1;c)}(T_u, 1b) &= -\frac{\sqrt{5}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{M}_{1,2}^{(b)}(T_g)}{10} - \frac{\sqrt{15}\mathbb{M}_{2,1}^{(1,-1;a)}(T_u)\mathbb{M}_{1,3}^{(b)}(T_g)}{15} - \frac{\sqrt{15}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{M}_{1,2}^{(b)}(T_g)}{10} - \frac{\sqrt{15}\mathbb{M}_{2,3}^{(1,-1;a)}(T_u)\mathbb{M}_{1,1}^{(b)}(T_g)}{15} \\
\text{z963} \quad \mathbb{Q}_{3,3}^{(1,-1;c)}(T_u, 1b) &= \frac{\sqrt{5}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{M}_{1,3}^{(b)}(T_g)}{5} - \frac{\sqrt{15}\mathbb{M}_{2,1}^{(1,-1;a)}(T_u)\mathbb{M}_{1,2}^{(b)}(T_g)}{15} - \frac{\sqrt{15}\mathbb{M}_{2,2}^{(1,-1;a)}(T_u)\mathbb{M}_{1,1}^{(b)}(T_g)}{15} \\
\text{z964} \quad \mathbb{Q}_{3,1}^{(1,-1;c)}(T_u, 2a) &= \frac{\sqrt{6}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(b)}(T_g)}{12} - \frac{\sqrt{6}\mathbb{G}_{2,1}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{12} + \frac{\sqrt{2}\mathbb{G}_{2,1}^{(1,-1;a)}(T_u)\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_g)}{4} \\
\text{z965} \quad \mathbb{Q}_{3,2}^{(1,-1;c)}(T_u, 2a) &= \frac{\sqrt{6}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(T_g)}{12} + \frac{\sqrt{2}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(T_g)}{4} - \frac{\sqrt{6}\mathbb{G}_{2,2}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{12} - \frac{\sqrt{2}\mathbb{G}_{2,2}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{4} \\
\text{z966} \quad \mathbb{Q}_{3,3}^{(1,-1;c)}(T_u, 2a) &= -\frac{\sqrt{6}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,3}^{(b)}(T_g)}{6} + \frac{\sqrt{6}\mathbb{G}_{2,3}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} \\
\text{z967} \quad \mathbb{Q}_{3,1}^{(1,-1;c)}(T_u, 2b) &= -\frac{\sqrt{3}\mathbb{M}_{2,1}^{(1,-1;a)}(T_u)\mathbb{T}_{2,1}^{(b)}(E_g)}{6} + \frac{\mathbb{M}_{2,1}^{(1,-1;a)}(T_u)\mathbb{T}_{2,2}^{(b)}(E_g)}{2} \\
\text{z968} \quad \mathbb{Q}_{3,2}^{(1,-1;c)}(T_u, 2b) &= -\frac{\sqrt{3}\mathbb{M}_{2,2}^{(1,-1;a)}(T_u)\mathbb{T}_{2,1}^{(b)}(E_g)}{6} - \frac{\mathbb{M}_{2,2}^{(1,-1;a)}(T_u)\mathbb{T}_{2,2}^{(b)}(E_g)}{2}
\end{aligned}$$

$$\begin{aligned}
\text{z969} \quad \mathbb{Q}_{3,3}^{(1,-1;c)}(T_u, 2b) &= \frac{\sqrt{3}\mathbb{M}_{2,3}^{(1,-1;a)}(T_u)\mathbb{T}_{2,1}^{(b)}(E_g)}{3} \\
\text{z970} \quad \mathbb{Q}_{3,1}^{(1,-1;c)}(T_u, 2c) &= -\frac{\sqrt{3}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{M}_{1,1}^{(b)}(T_g)}{6} - \frac{\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{M}_{1,1}^{(b)}(T_g)}{6} - \frac{\mathbb{M}_{2,2}^{(1,-1;a)}(T_u)\mathbb{M}_{1,3}^{(b)}(T_g)}{3} + \frac{\mathbb{M}_{2,3}^{(1,-1;a)}(T_u)\mathbb{M}_{1,2}^{(b)}(T_g)}{3} \\
\text{z971} \quad \mathbb{Q}_{3,2}^{(1,-1;c)}(T_u, 2c) &= \frac{\sqrt{3}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{M}_{1,2}^{(b)}(T_g)}{6} + \frac{\mathbb{M}_{2,1}^{(1,-1;a)}(T_u)\mathbb{M}_{1,3}^{(b)}(T_g)}{3} - \frac{\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{M}_{1,2}^{(b)}(T_g)}{6} - \frac{\mathbb{M}_{2,3}^{(1,-1;a)}(T_u)\mathbb{M}_{1,1}^{(b)}(T_g)}{3} \\
\text{z972} \quad \mathbb{Q}_{3,3}^{(1,-1;c)}(T_u, 2c) &= -\frac{\mathbb{M}_{2,1}^{(1,-1;a)}(T_u)\mathbb{M}_{1,2}^{(b)}(T_g)}{3} + \frac{\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{M}_{1,3}^{(b)}(T_g)}{3} + \frac{\mathbb{M}_{2,2}^{(1,-1;a)}(T_u)\mathbb{M}_{1,1}^{(b)}(T_g)}{3} \\
\text{z973} \quad \mathbb{Q}_{1,1}^{(1,0;c)}(T_u, a) &= \frac{\sqrt{3}\mathbb{Q}_{1,1}^{(1,0;a)}(T_u)\mathbb{Q}_0^{(b)}(A_g)}{3} \\
\text{z974} \quad \mathbb{Q}_{1,2}^{(1,0;c)}(T_u, a) &= \frac{\sqrt{3}\mathbb{Q}_{1,2}^{(1,0;a)}(T_u)\mathbb{Q}_0^{(b)}(A_g)}{3} \\
\text{z975} \quad \mathbb{Q}_{1,3}^{(1,0;c)}(T_u, a) &= \frac{\sqrt{3}\mathbb{Q}_{1,3}^{(1,0;a)}(T_u)\mathbb{Q}_0^{(b)}(A_g)}{3} \\
\text{z976} \quad \mathbb{Q}_{1,1}^{(1,0;c)}(T_u, b) &= -\frac{\sqrt{30}\mathbb{Q}_{1,1}^{(1,0;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{30} + \frac{\sqrt{10}\mathbb{Q}_{1,1}^{(1,0;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{10} + \frac{\sqrt{10}\mathbb{Q}_{1,2}^{(1,0;a)}(T_u)\mathbb{Q}_{2,3}^{(b)}(T_g)}{10} + \frac{\sqrt{10}\mathbb{Q}_{1,3}^{(1,0;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(T_g)}{10} \\
\text{z977} \quad \mathbb{Q}_{1,2}^{(1,0;c)}(T_u, b) &= \frac{\sqrt{10}\mathbb{Q}_{1,1}^{(1,0;a)}(T_u)\mathbb{Q}_{2,3}^{(b)}(T_g)}{10} - \frac{\sqrt{30}\mathbb{Q}_{1,2}^{(1,0;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{30} - \frac{\sqrt{10}\mathbb{Q}_{1,2}^{(1,0;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{10} + \frac{\sqrt{10}\mathbb{Q}_{1,3}^{(1,0;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(T_g)}{10} \\
\text{z978} \quad \mathbb{Q}_{1,3}^{(1,0;c)}(T_u, b) &= \frac{\sqrt{10}\mathbb{Q}_{1,1}^{(1,0;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(T_g)}{10} + \frac{\sqrt{10}\mathbb{Q}_{1,2}^{(1,0;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(T_g)}{10} + \frac{\sqrt{30}\mathbb{Q}_{1,3}^{(1,0;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{15} \\
\text{z979} \quad \mathbb{Q}_{1,1}^{(1,0;c)}(T_u, c) &= \frac{\sqrt{3}\mathbb{T}_{1,1}^{(1,0;a)}(T_u)\mathbb{T}_0^{(b)}(A_g)}{3} \\
\text{z980} \quad \mathbb{Q}_{1,2}^{(1,0;c)}(T_u, c) &= \frac{\sqrt{3}\mathbb{T}_{1,2}^{(1,0;a)}(T_u)\mathbb{T}_0^{(b)}(A_g)}{3} \\
\text{z981} \quad \mathbb{Q}_{1,3}^{(1,0;c)}(T_u, c) &= \frac{\sqrt{3}\mathbb{T}_{1,3}^{(1,0;a)}(T_u)\mathbb{T}_0^{(b)}(A_g)}{3} \\
\text{z982} \quad \mathbb{Q}_{1,1}^{(1,0;c)}(T_u, d) &= -\frac{\sqrt{3}\mathbb{T}_{1,1}^{(1,0;a)}(T_u)\mathbb{T}_{2,1}^{(b)}(E_g)}{6} + \frac{\mathbb{T}_{1,1}^{(1,0;a)}(T_u)\mathbb{T}_{2,2}^{(b)}(E_g)}{2}
\end{aligned}$$

$$\begin{aligned}
\text{z983} \quad \mathbb{Q}_{1,2}^{(1,0;c)}(T_u, d) &= -\frac{\sqrt{3}\mathbb{T}_{1,2}^{(1,0;a)}(T_u)\mathbb{T}_{2,1}^{(b)}(E_g)}{6} - \frac{\mathbb{T}_{1,2}^{(1,0;a)}(T_u)\mathbb{T}_{2,2}^{(b)}(E_g)}{2} \\
\text{z984} \quad \mathbb{Q}_{1,3}^{(1,0;c)}(T_u, d) &= \frac{\sqrt{3}\mathbb{T}_{1,3}^{(1,0;a)}(T_u)\mathbb{T}_{2,1}^{(b)}(E_g)}{3} \\
\text{z985} \quad \mathbb{Q}_{1,1}^{(1,0;c)}(T_u, e) &= \frac{\sqrt{6}\mathbb{T}_{1,2}^{(1,0;a)}(T_u)\mathbb{M}_{1,3}^{(b)}(T_g)}{6} - \frac{\sqrt{6}\mathbb{T}_{1,3}^{(1,0;a)}(T_u)\mathbb{M}_{1,2}^{(b)}(T_g)}{6} \\
\text{z986} \quad \mathbb{Q}_{1,2}^{(1,0;c)}(T_u, e) &= -\frac{\sqrt{6}\mathbb{T}_{1,1}^{(1,0;a)}(T_u)\mathbb{M}_{1,3}^{(b)}(T_g)}{6} + \frac{\sqrt{6}\mathbb{T}_{1,3}^{(1,0;a)}(T_u)\mathbb{M}_{1,1}^{(b)}(T_g)}{6} \\
\text{z987} \quad \mathbb{Q}_{1,3}^{(1,0;c)}(T_u, e) &= \frac{\sqrt{6}\mathbb{T}_{1,1}^{(1,0;a)}(T_u)\mathbb{M}_{1,2}^{(b)}(T_g)}{6} - \frac{\sqrt{6}\mathbb{T}_{1,2}^{(1,0;a)}(T_u)\mathbb{M}_{1,1}^{(b)}(T_g)}{6} \\
\text{z988} \quad \mathbb{Q}_{3,1}^{(1,0;c)}(T_u, 1) &= -\frac{\sqrt{5}\mathbb{Q}_{1,1}^{(1,0;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{10} + \frac{\sqrt{15}\mathbb{Q}_{1,1}^{(1,0;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{10} - \frac{\sqrt{15}\mathbb{Q}_{1,2}^{(1,0;a)}(T_u)\mathbb{Q}_{2,3}^{(b)}(T_g)}{15} - \frac{\sqrt{15}\mathbb{Q}_{1,3}^{(1,0;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(T_g)}{15} \\
\text{z989} \quad \mathbb{Q}_{3,2}^{(1,0;c)}(T_u, 1) &= -\frac{\sqrt{15}\mathbb{Q}_{1,1}^{(1,0;a)}(T_u)\mathbb{Q}_{2,3}^{(b)}(T_g)}{15} - \frac{\sqrt{5}\mathbb{Q}_{1,2}^{(1,0;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{10} - \frac{\sqrt{15}\mathbb{Q}_{1,2}^{(1,0;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{10} - \frac{\sqrt{15}\mathbb{Q}_{1,3}^{(1,0;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(T_g)}{15} \\
\text{z990} \quad \mathbb{Q}_{3,3}^{(1,0;c)}(T_u, 1) &= -\frac{\sqrt{15}\mathbb{Q}_{1,1}^{(1,0;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(T_g)}{15} - \frac{\sqrt{15}\mathbb{Q}_{1,2}^{(1,0;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(T_g)}{15} + \frac{\sqrt{5}\mathbb{Q}_{1,3}^{(1,0;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{5} \\
\text{z991} \quad \mathbb{Q}_{3,1}^{(1,0;c)}(T_u, 2a) &= -\frac{\sqrt{3}\mathbb{Q}_{1,1}^{(1,0;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} - \frac{\mathbb{Q}_{1,1}^{(1,0;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{6} + \frac{\mathbb{Q}_{1,2}^{(1,0;a)}(T_u)\mathbb{Q}_{2,3}^{(b)}(T_g)}{3} - \frac{\mathbb{Q}_{1,3}^{(1,0;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(T_g)}{3} \\
\text{z992} \quad \mathbb{Q}_{3,2}^{(1,0;c)}(T_u, 2a) &= -\frac{\mathbb{Q}_{1,1}^{(1,0;a)}(T_u)\mathbb{Q}_{2,3}^{(b)}(T_g)}{3} + \frac{\sqrt{3}\mathbb{Q}_{1,2}^{(1,0;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} - \frac{\mathbb{Q}_{1,2}^{(1,0;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{6} + \frac{\mathbb{Q}_{1,3}^{(1,0;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(T_g)}{3} \\
\text{z993} \quad \mathbb{Q}_{3,3}^{(1,0;c)}(T_u, 2a) &= \frac{\mathbb{Q}_{1,1}^{(1,0;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(T_g)}{3} - \frac{\mathbb{Q}_{1,2}^{(1,0;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(T_g)}{3} + \frac{\mathbb{Q}_{1,3}^{(1,0;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{3} \\
\text{z994} \quad \mathbb{Q}_{3,1}^{(1,0;c)}(T_u, 2b) &= -\frac{\mathbb{T}_{1,1}^{(1,0;a)}(T_u)\mathbb{T}_{2,1}^{(b)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{T}_{1,1}^{(1,0;a)}(T_u)\mathbb{T}_{2,2}^{(b)}(E_g)}{6} \\
\text{z995} \quad \mathbb{Q}_{3,2}^{(1,0;c)}(T_u, 2b) &= \frac{\mathbb{T}_{1,2}^{(1,0;a)}(T_u)\mathbb{T}_{2,1}^{(b)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{T}_{1,2}^{(1,0;a)}(T_u)\mathbb{T}_{2,2}^{(b)}(E_g)}{6} \\
\text{z996} \quad \mathbb{Q}_{3,3}^{(1,0;c)}(T_u, 2b) &= \frac{\sqrt{3}\mathbb{T}_{1,3}^{(1,0;a)}(T_u)\mathbb{T}_{2,2}^{(b)}(E_g)}{3}
\end{aligned}$$

$$\boxed{\text{z997}} \quad \mathbb{Q}_{1,1}^{(1,1;c)}(T_u) = \frac{\sqrt{3}\mathbb{M}_0^{(1,1;a)}(A_u)\mathbb{M}_{1,1}^{(b)}(T_g)}{3}$$

$$\boxed{\text{z998}} \quad \mathbb{Q}_{1,2}^{(1,1;c)}(T_u) = \frac{\sqrt{3}\mathbb{M}_0^{(1,1;a)}(A_u)\mathbb{M}_{1,2}^{(b)}(T_g)}{3}$$

$$\boxed{\text{z999}} \quad \mathbb{Q}_{1,3}^{(1,1;c)}(T_u) = \frac{\sqrt{3}\mathbb{M}_0^{(1,1;a)}(A_u)\mathbb{M}_{1,3}^{(b)}(T_g)}{3}$$

$$\boxed{\text{z1000}} \quad \mathbb{G}_{2,1}^{(c)}(T_u, a) = -\frac{\sqrt{6}\mathbb{Q}_{1,1}^{(a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} - \frac{\sqrt{2}\mathbb{Q}_{1,1}^{(a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{6} - \frac{\sqrt{2}\mathbb{Q}_{1,2}^{(a)}(T_u)\mathbb{Q}_{2,3}^{(b)}(T_g)}{6} + \frac{\sqrt{2}\mathbb{Q}_{1,3}^{(a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(T_g)}{6}$$

$$\boxed{\text{z1001}} \quad \mathbb{G}_{2,2}^{(c)}(T_u, a) = \frac{\sqrt{2}\mathbb{Q}_{1,1}^{(a)}(T_u)\mathbb{Q}_{2,3}^{(b)}(T_g)}{6} + \frac{\sqrt{6}\mathbb{Q}_{1,2}^{(a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} - \frac{\sqrt{2}\mathbb{Q}_{1,2}^{(a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{6} - \frac{\sqrt{2}\mathbb{Q}_{1,3}^{(a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(T_g)}{6}$$

$$\boxed{\text{z1002}} \quad \mathbb{G}_{2,3}^{(c)}(T_u, a) = -\frac{\sqrt{2}\mathbb{Q}_{1,1}^{(a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(T_g)}{6} + \frac{\sqrt{2}\mathbb{Q}_{1,2}^{(a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(T_g)}{6} + \frac{\sqrt{2}\mathbb{Q}_{1,3}^{(a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{3}$$

$$\boxed{\text{z1003}} \quad \mathbb{G}_{2,1}^{(c)}(T_u, b) = \frac{\sqrt{6}\mathbb{T}_{1,2}^{(a)}(T_u)\mathbb{M}_{1,3}^{(b)}(T_g)}{6} + \frac{\sqrt{6}\mathbb{T}_{1,3}^{(a)}(T_u)\mathbb{M}_{1,2}^{(b)}(T_g)}{6}$$

$$\boxed{\text{z1004}} \quad \mathbb{G}_{2,2}^{(c)}(T_u, b) = \frac{\sqrt{6}\mathbb{T}_{1,1}^{(a)}(T_u)\mathbb{M}_{1,3}^{(b)}(T_g)}{6} + \frac{\sqrt{6}\mathbb{T}_{1,3}^{(a)}(T_u)\mathbb{M}_{1,1}^{(b)}(T_g)}{6}$$

$$\boxed{\text{z1005}} \quad \mathbb{G}_{2,3}^{(c)}(T_u, b) = \frac{\sqrt{6}\mathbb{T}_{1,1}^{(a)}(T_u)\mathbb{M}_{1,2}^{(b)}(T_g)}{6} + \frac{\sqrt{6}\mathbb{T}_{1,2}^{(a)}(T_u)\mathbb{M}_{1,1}^{(b)}(T_g)}{6}$$

$$\boxed{\text{z1006}} \quad \mathbb{G}_{2,1}^{(1,-1;c)}(T_u, a) = \frac{\sqrt{3}\mathbb{G}_{2,1}^{(1,-1;a)}(T_u)\mathbb{Q}_0^{(b)}(A_g)}{3}$$

$$\boxed{\text{z1007}} \quad \mathbb{G}_{2,2}^{(1,-1;c)}(T_u, a) = \frac{\sqrt{3}\mathbb{G}_{2,2}^{(1,-1;a)}(T_u)\mathbb{Q}_0^{(b)}(A_g)}{3}$$

$$\boxed{\text{z1008}} \quad \mathbb{G}_{2,3}^{(1,-1;c)}(T_u, a) = \frac{\sqrt{3}\mathbb{G}_{2,3}^{(1,-1;a)}(T_u)\mathbb{Q}_0^{(b)}(A_g)}{3}$$

$$\boxed{\text{z1009}} \quad \mathbb{G}_{2,1}^{(1,-1;c)}(T_u, b) = \frac{\sqrt{42}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(b)}(T_g)}{42} + \frac{\sqrt{42}\mathbb{G}_{2,1}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{42} - \frac{\sqrt{14}\mathbb{G}_{2,1}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{14} \\ - \frac{\sqrt{14}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(b)}(T_g)}{14} + \frac{\sqrt{14}\mathbb{G}_{2,2}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,3}^{(b)}(T_g)}{14} + \frac{\sqrt{14}\mathbb{G}_{2,3}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(T_g)}{14}$$

$$\begin{aligned}
\boxed{\text{z1010}} \quad \mathbb{G}_{2,2}^{(1,-1;c)}(T_u, b) &= \frac{\sqrt{42}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(T_g)}{42} + \frac{\sqrt{14}\mathbb{G}_{2,1}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,3}^{(b)}(T_g)}{14} + \frac{\sqrt{14}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(T_g)}{14} \\
&+ \frac{\sqrt{42}\mathbb{G}_{2,2}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{42} + \frac{\sqrt{14}\mathbb{G}_{2,2}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{14} + \frac{\sqrt{14}\mathbb{G}_{2,3}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(T_g)}{14} \\
\boxed{\text{z1011}} \quad \mathbb{G}_{2,3}^{(1,-1;c)}(T_u, b) &= -\frac{\sqrt{42}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,3}^{(b)}(T_g)}{21} + \frac{\sqrt{14}\mathbb{G}_{2,1}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(T_g)}{14} + \frac{\sqrt{14}\mathbb{G}_{2,2}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(T_g)}{14} - \frac{\sqrt{42}\mathbb{G}_{2,3}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{21} \\
\boxed{\text{z1012}} \quad \mathbb{G}_{2,1}^{(1,-1;c)}(T_u, c) &= \frac{\sqrt{3}\mathbb{M}_{2,1}^{(1,-1;a)}(T_u)\mathbb{T}_0^{(b)}(A_g)}{3} \\
\boxed{\text{z1013}} \quad \mathbb{G}_{2,2}^{(1,-1;c)}(T_u, c) &= \frac{\sqrt{3}\mathbb{M}_{2,2}^{(1,-1;a)}(T_u)\mathbb{T}_0^{(b)}(A_g)}{3} \\
\boxed{\text{z1014}} \quad \mathbb{G}_{2,3}^{(1,-1;c)}(T_u, c) &= \frac{\sqrt{3}\mathbb{M}_{2,3}^{(1,-1;a)}(T_u)\mathbb{T}_0^{(b)}(A_g)}{3} \\
\boxed{\text{z1015}} \quad \mathbb{G}_{2,1}^{(1,-1;c)}(T_u, d) &= \frac{\sqrt{6}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{M}_{1,1}^{(b)}(T_g)}{6} + \frac{\sqrt{2}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{M}_{1,1}^{(b)}(T_g)}{6} - \frac{\sqrt{2}\mathbb{M}_{2,2}^{(1,-1;a)}(T_u)\mathbb{M}_{1,3}^{(b)}(T_g)}{6} + \frac{\sqrt{2}\mathbb{M}_{2,3}^{(1,-1;a)}(T_u)\mathbb{M}_{1,2}^{(b)}(T_g)}{6} \\
\boxed{\text{z1016}} \quad \mathbb{G}_{2,2}^{(1,-1;c)}(T_u, d) &= -\frac{\sqrt{6}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{M}_{1,2}^{(b)}(T_g)}{6} + \frac{\sqrt{2}\mathbb{M}_{2,1}^{(1,-1;a)}(T_u)\mathbb{M}_{1,3}^{(b)}(T_g)}{6} + \frac{\sqrt{2}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{M}_{1,2}^{(b)}(T_g)}{6} - \frac{\sqrt{2}\mathbb{M}_{2,3}^{(1,-1;a)}(T_u)\mathbb{M}_{1,1}^{(b)}(T_g)}{6} \\
\boxed{\text{z1017}} \quad \mathbb{G}_{2,3}^{(1,-1;c)}(T_u, d) &= -\frac{\sqrt{2}\mathbb{M}_{2,1}^{(1,-1;a)}(T_u)\mathbb{M}_{1,2}^{(b)}(T_g)}{6} - \frac{\sqrt{2}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{M}_{1,3}^{(b)}(T_g)}{3} + \frac{\sqrt{2}\mathbb{M}_{2,2}^{(1,-1;a)}(T_u)\mathbb{M}_{1,1}^{(b)}(T_g)}{6} \\
\boxed{\text{z1018}} \quad \mathbb{G}_{4,1}^{(1,-1;c)}(T_u, 1) &= -\frac{\sqrt{2}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(b)}(T_g)}{4} - \frac{\sqrt{2}\mathbb{G}_{2,1}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{4} - \frac{\sqrt{6}\mathbb{G}_{2,1}^{(1,-1;a)}(T_u)\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_g)}{12} \\
\boxed{\text{z1019}} \quad \mathbb{G}_{4,2}^{(1,-1;c)}(T_u, 1) &= \frac{\sqrt{2}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(T_g)}{4} - \frac{\sqrt{6}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(T_g)}{12} + \frac{\sqrt{2}\mathbb{G}_{2,2}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{4} - \frac{\sqrt{6}\mathbb{G}_{2,2}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{12} \\
\boxed{\text{z1020}} \quad \mathbb{G}_{4,3}^{(1,-1;c)}(T_u, 1) &= \frac{\sqrt{6}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,3}^{(b)}(T_g)}{6} + \frac{\sqrt{6}\mathbb{G}_{2,3}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{6} \\
\boxed{\text{z1021}} \quad \mathbb{G}_{4,1}^{(1,-1;c)}(T_u, 2) &= -\frac{\sqrt{14}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(b)}(T_g)}{28} - \frac{\sqrt{14}\mathbb{G}_{2,1}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{28} + \frac{\sqrt{42}\mathbb{G}_{2,1}^{(1,-1;a)}(T_u)\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_g)}{28} + \frac{\sqrt{42}\mathbb{G}_{2,2}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,3}^{(b)}(T_g)}{21} + \frac{\sqrt{42}\mathbb{G}_{2,3}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(T_g)}{21}
\end{aligned}$$

$$\boxed{\text{z1022}} \quad \mathbb{G}_{4,2}^{(1,-1;c)}(T_u, 2) = -\frac{\sqrt{14}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(T_g)}{28} + \frac{\sqrt{42}\mathbb{G}_{2,1}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,3}^{(b)}(T_g)}{21} - \frac{\sqrt{42}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(T_g)}{28} \\ - \frac{\sqrt{14}\mathbb{G}_{2,2}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{28} - \frac{\sqrt{42}\mathbb{G}_{2,2}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{28} + \frac{\sqrt{42}\mathbb{G}_{2,3}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(T_g)}{21}$$

$$\boxed{\text{z1023}} \quad \mathbb{G}_{4,3}^{(1,-1;c)}(T_u, 2) = \frac{\sqrt{14}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,3}^{(b)}(T_g)}{14} + \frac{\sqrt{42}\mathbb{G}_{2,1}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(T_g)}{21} + \frac{\sqrt{42}\mathbb{G}_{2,2}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(T_g)}{21} + \frac{\sqrt{14}\mathbb{G}_{2,3}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{14}$$

$$\boxed{\text{z1024}} \quad \mathbb{G}_{2,1}^{(1,0;c)}(T_u, a) = -\frac{\sqrt{6}\mathbb{Q}_{1,1}^{(1,0;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} - \frac{\sqrt{2}\mathbb{Q}_{1,1}^{(1,0;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{6} - \frac{\sqrt{2}\mathbb{Q}_{1,2}^{(1,0;a)}(T_u)\mathbb{Q}_{2,3}^{(b)}(T_g)}{6} + \frac{\sqrt{2}\mathbb{Q}_{1,3}^{(1,0;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(T_g)}{6}$$

$$\boxed{\text{z1025}} \quad \mathbb{G}_{2,2}^{(1,0;c)}(T_u, a) = \frac{\sqrt{2}\mathbb{Q}_{1,1}^{(1,0;a)}(T_u)\mathbb{Q}_{2,3}^{(b)}(T_g)}{6} + \frac{\sqrt{6}\mathbb{Q}_{1,2}^{(1,0;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} - \frac{\sqrt{2}\mathbb{Q}_{1,2}^{(1,0;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{6} - \frac{\sqrt{2}\mathbb{Q}_{1,3}^{(1,0;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(T_g)}{6}$$

$$\boxed{\text{z1026}} \quad \mathbb{G}_{2,3}^{(1,0;c)}(T_u, a) = -\frac{\sqrt{2}\mathbb{Q}_{1,1}^{(1,0;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(T_g)}{6} + \frac{\sqrt{2}\mathbb{Q}_{1,2}^{(1,0;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(T_g)}{6} + \frac{\sqrt{2}\mathbb{Q}_{1,3}^{(1,0;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{3}$$

$$\boxed{\text{z1027}} \quad \mathbb{G}_{2,1}^{(1,0;c)}(T_u, b) = \frac{\sqrt{6}\mathbb{T}_{1,2}^{(1,0;a)}(T_u)\mathbb{M}_{1,3}^{(b)}(T_g)}{6} + \frac{\sqrt{6}\mathbb{T}_{1,3}^{(1,0;a)}(T_u)\mathbb{M}_{1,2}^{(b)}(T_g)}{6}$$

$$\boxed{\text{z1028}} \quad \mathbb{G}_{2,2}^{(1,0;c)}(T_u, b) = \frac{\sqrt{6}\mathbb{T}_{1,1}^{(1,0;a)}(T_u)\mathbb{M}_{1,3}^{(b)}(T_g)}{6} + \frac{\sqrt{6}\mathbb{T}_{1,3}^{(1,0;a)}(T_u)\mathbb{M}_{1,1}^{(b)}(T_g)}{6}$$

$$\boxed{\text{z1029}} \quad \mathbb{G}_{2,3}^{(1,0;c)}(T_u, b) = \frac{\sqrt{6}\mathbb{T}_{1,1}^{(1,0;a)}(T_u)\mathbb{M}_{1,2}^{(b)}(T_g)}{6} + \frac{\sqrt{6}\mathbb{T}_{1,2}^{(1,0;a)}(T_u)\mathbb{M}_{1,1}^{(b)}(T_g)}{6}$$

$$\boxed{\text{z1030}} \quad \mathbb{G}_{2,1}^{(1,1;c)}(T_u) = \frac{\sqrt{3}\mathbb{G}_0^{(1,1;a)}(A_u)\mathbb{Q}_{2,1}^{(b)}(T_g)}{3}$$

$$\boxed{\text{z1031}} \quad \mathbb{G}_{2,2}^{(1,1;c)}(T_u) = \frac{\sqrt{3}\mathbb{G}_0^{(1,1;a)}(A_u)\mathbb{Q}_{2,2}^{(b)}(T_g)}{3}$$

$$\boxed{\text{z1032}} \quad \mathbb{G}_{2,3}^{(1,1;c)}(T_u) = \frac{\sqrt{3}\mathbb{G}_0^{(1,1;a)}(A_u)\mathbb{Q}_{2,3}^{(b)}(T_g)}{3}$$

• '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: 12a@12j

$$\boxed{\text{z22}} \quad \mathbb{Q}_0^{(c)}(A_g, a) = \mathbb{Q}_0^{(a)}(A_g) \mathbb{Q}_0^{(b)}(A_g)$$

$$\boxed{\text{z23}} \quad \mathbb{Q}_0^{(c)}(A_g, b) = \frac{\sqrt{5} \mathbb{Q}_{2,1}^{(a)}(E_g) \mathbb{Q}_{2,1}^{(b)}(E_g)}{5} + \frac{\sqrt{5} \mathbb{Q}_{2,1}^{(a)}(T_g) \mathbb{Q}_{2,1}^{(b)}(T_g)}{5} + \frac{\sqrt{5} \mathbb{Q}_{2,2}^{(a)}(E_g) \mathbb{Q}_{2,2}^{(b)}(E_g)}{5} + \frac{\sqrt{5} \mathbb{Q}_{2,2}^{(a)}(T_g) \mathbb{Q}_{2,2}^{(b)}(T_g)}{5} + \frac{\sqrt{5} \mathbb{Q}_{2,3}^{(a)}(T_g) \mathbb{Q}_{2,3}^{(b)}(T_g)}{5}$$

$$\boxed{\text{z24}} \quad \mathbb{Q}_0^{(c)}(A_g, c) = \frac{\sqrt{3} \mathbb{M}_{1,1}^{(a)}(T_g) \mathbb{M}_{1,1}^{(b)}(T_g)}{3} + \frac{\sqrt{3} \mathbb{M}_{1,2}^{(a)}(T_g) \mathbb{M}_{1,2}^{(b)}(T_g)}{3} + \frac{\sqrt{3} \mathbb{M}_{1,3}^{(a)}(T_g) \mathbb{M}_{1,3}^{(b)}(T_g)}{3}$$

$$\boxed{\text{z25}} \quad \mathbb{Q}_4^{(c)}(A_g) = \frac{\sqrt{30} \mathbb{Q}_{2,1}^{(a)}(E_g) \mathbb{Q}_{2,1}^{(b)}(E_g)}{10} - \frac{\sqrt{30} \mathbb{Q}_{2,1}^{(a)}(T_g) \mathbb{Q}_{2,1}^{(b)}(T_g)}{15} + \frac{\sqrt{30} \mathbb{Q}_{2,2}^{(a)}(E_g) \mathbb{Q}_{2,2}^{(b)}(E_g)}{10} - \frac{\sqrt{30} \mathbb{Q}_{2,2}^{(a)}(T_g) \mathbb{Q}_{2,2}^{(b)}(T_g)}{15} - \frac{\sqrt{30} \mathbb{Q}_{2,3}^{(a)}(T_g) \mathbb{Q}_{2,3}^{(b)}(T_g)}{15}$$

$$\boxed{\text{z26}} \quad \mathbb{Q}_0^{(1,-1;c)}(A_g, a) = \frac{\sqrt{5} \mathbb{Q}_{2,1}^{(1,-1;a)}(E_g) \mathbb{Q}_{2,1}^{(b)}(E_g)}{5} + \frac{\sqrt{5} \mathbb{Q}_{2,1}^{(1,-1;a)}(T_g) \mathbb{Q}_{2,1}^{(b)}(T_g)}{5} + \frac{\sqrt{5} \mathbb{Q}_{2,2}^{(1,-1;a)}(E_g) \mathbb{Q}_{2,2}^{(b)}(E_g)}{5} + \frac{\sqrt{5} \mathbb{Q}_{2,2}^{(1,-1;a)}(T_g) \mathbb{Q}_{2,2}^{(b)}(T_g)}{5} + \frac{\sqrt{5} \mathbb{Q}_{2,3}^{(1,-1;a)}(T_g) \mathbb{Q}_{2,3}^{(b)}(T_g)}{5}$$

$$\boxed{\text{z27}} \quad \mathbb{Q}_0^{(1,-1;c)}(A_g, b) = \frac{\sqrt{3} \mathbb{M}_{1,1}^{(1,-1;a)}(T_g) \mathbb{M}_{1,1}^{(b)}(T_g)}{3} + \frac{\sqrt{3} \mathbb{M}_{1,2}^{(1,-1;a)}(T_g) \mathbb{M}_{1,2}^{(b)}(T_g)}{3} + \frac{\sqrt{3} \mathbb{M}_{1,3}^{(1,-1;a)}(T_g) \mathbb{M}_{1,3}^{(b)}(T_g)}{3}$$

$$\boxed{\text{z28}} \quad \mathbb{Q}_4^{(1,-1;c)}(A_g, a) = \frac{\sqrt{30} \mathbb{Q}_{2,1}^{(1,-1;a)}(E_g) \mathbb{Q}_{2,1}^{(b)}(E_g)}{10} - \frac{\sqrt{30} \mathbb{Q}_{2,1}^{(1,-1;a)}(T_g) \mathbb{Q}_{2,1}^{(b)}(T_g)}{15} + \frac{\sqrt{30} \mathbb{Q}_{2,2}^{(1,-1;a)}(E_g) \mathbb{Q}_{2,2}^{(b)}(E_g)}{10} - \frac{\sqrt{30} \mathbb{Q}_{2,2}^{(1,-1;a)}(T_g) \mathbb{Q}_{2,2}^{(b)}(T_g)}{15} - \frac{\sqrt{30} \mathbb{Q}_{2,3}^{(1,-1;a)}(T_g) \mathbb{Q}_{2,3}^{(b)}(T_g)}{15}$$

$$\boxed{\text{z29}} \quad \mathbb{Q}_4^{(1,-1;c)}(A_g, b) = \frac{\sqrt{3} \mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1) \mathbb{M}_{1,1}^{(b)}(T_g)}{3} + \frac{\sqrt{3} \mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1) \mathbb{M}_{1,2}^{(b)}(T_g)}{3} + \frac{\sqrt{3} \mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1) \mathbb{M}_{1,3}^{(b)}(T_g)}{3}$$

$$\boxed{\text{z30}} \quad \mathbb{Q}_0^{(1,0;c)}(A_g) = \frac{\sqrt{2} \mathbb{T}_{2,1}^{(1,0;a)}(E_g) \mathbb{T}_{2,1}^{(b)}(E_g)}{2} + \frac{\sqrt{2} \mathbb{T}_{2,2}^{(1,0;a)}(E_g) \mathbb{T}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z31}} \quad \mathbb{Q}_0^{(1,1;c)}(A_g, a) = \mathbb{Q}_0^{(1,1;a)}(A_g) \mathbb{Q}_0^{(b)}(A_g)$$

$$\boxed{\text{z32}} \quad \mathbb{Q}_0^{(1,1;c)}(A_g, b) = \frac{\sqrt{3} \mathbb{M}_{1,1}^{(1,1;a)}(T_g) \mathbb{M}_{1,1}^{(b)}(T_g)}{3} + \frac{\sqrt{3} \mathbb{M}_{1,2}^{(1,1;a)}(T_g) \mathbb{M}_{1,2}^{(b)}(T_g)}{3} + \frac{\sqrt{3} \mathbb{M}_{1,3}^{(1,1;a)}(T_g) \mathbb{M}_{1,3}^{(b)}(T_g)}{3}$$

$$\boxed{\text{z33}} \quad \mathbb{G}_3^{(c)}(A_g) = \frac{\sqrt{2} \mathbb{Q}_{2,1}^{(a)}(E_g) \mathbb{Q}_{2,2}^{(b)}(E_g)}{2} - \frac{\sqrt{2} \mathbb{Q}_{2,2}^{(a)}(E_g) \mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z34}} \quad \mathbb{G}_3^{(1,-1;c)}(A_g, a) = \frac{\sqrt{2} \mathbb{Q}_{2,1}^{(1,-1;a)}(E_g) \mathbb{Q}_{2,2}^{(b)}(E_g)}{2} - \frac{\sqrt{2} \mathbb{Q}_{2,2}^{(1,-1;a)}(E_g) \mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z35}} \quad \mathbb{G}_3^{(1,-1;c)}(A_g, b) = \mathbb{M}_3^{(1,-1;a)}(A_g) \mathbb{T}_0^{(b)}(A_g)$$

$$\begin{aligned}
\text{z36} \quad \mathbb{G}_3^{(1,-1;c)}(A_g, c) &= -\frac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{M}_{1,1}^{(b)}(T_g)}{3} - \frac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{M}_{1,2}^{(b)}(T_g)}{3} - \frac{\sqrt{3}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{M}_{1,3}^{(b)}(T_g)}{3} \\
\text{z37} \quad \mathbb{G}_3^{(1,0;c)}(A_g, a) &= \frac{\sqrt{3}\mathbb{G}_{1,1}^{(1,0;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(T_g)}{3} + \frac{\sqrt{3}\mathbb{G}_{1,2}^{(1,0;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(T_g)}{3} + \frac{\sqrt{3}\mathbb{G}_{1,3}^{(1,0;a)}(T_g)\mathbb{Q}_{2,3}^{(b)}(T_g)}{3} \\
\text{z38} \quad \mathbb{G}_3^{(1,0;c)}(A_g, b) &= \frac{\sqrt{2}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{2} - \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{2} \\
\text{z39} \quad \mathbb{G}_3^{(1,0;c)}(A_g, c) &= \frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{M}_{1,1}^{(b)}(T_g)}{3} + \frac{\sqrt{3}\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{M}_{1,2}^{(b)}(T_g)}{3} + \frac{\sqrt{3}\mathbb{T}_{2,3}^{(1,0;a)}(T_g)\mathbb{M}_{1,3}^{(b)}(T_g)}{3} \\
\text{z112} \quad \mathbb{Q}_3^{(c)}(A_u, a) &= \frac{\sqrt{3}\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_{1,1}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_{1,2}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{Q}_{2,3}^{(a)}(T_g)\mathbb{Q}_{1,3}^{(b)}(T_u)}{3} \\
\text{z113} \quad \mathbb{Q}_3^{(c)}(A_u, b) &= -\frac{\sqrt{3}\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{3} - \frac{\sqrt{3}\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{3} - \frac{\sqrt{3}\mathbb{Q}_{2,3}^{(a)}(T_g)\mathbb{Q}_{3,3}^{(b)}(T_u, 1)}{3} \\
\text{z114} \quad \mathbb{Q}_3^{(1,-1;c)}(A_u, a) &= \frac{\sqrt{3}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_g)\mathbb{Q}_{1,1}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_g)\mathbb{Q}_{1,2}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_g)\mathbb{Q}_{1,3}^{(b)}(T_u)}{3} \\
\text{z115} \quad \mathbb{Q}_3^{(1,-1;c)}(A_u, b) &= -\frac{\sqrt{3}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_g)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{3} - \frac{\sqrt{3}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_g)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{3} - \frac{\sqrt{3}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_g)\mathbb{Q}_{3,3}^{(b)}(T_u, 1)}{3} \\
\text{z116} \quad \mathbb{Q}_3^{(1,-1;c)}(A_u, c) &= -\frac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{3} - \frac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{3} - \frac{\sqrt{3}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{3} \\
\text{z117} \quad \mathbb{Q}_3^{(1,-1;c)}(A_u, d) &= -\frac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{3} - \frac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{3} - \frac{\sqrt{3}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{3} \\
\text{z118} \quad \mathbb{Q}_3^{(1,0;c)}(A_u, a) &= \frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{3} + \frac{\sqrt{3}\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{3} + \frac{\sqrt{3}\mathbb{T}_{2,3}^{(1,0;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{3} \\
\text{z119} \quad \mathbb{Q}_3^{(1,0;c)}(A_u, b) &= \frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{3} + \frac{\sqrt{3}\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{3} + \frac{\sqrt{3}\mathbb{T}_{2,3}^{(1,0;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{3} \\
\text{z120} \quad \mathbb{G}_0^{(c)}(A_u, a) &= \frac{\sqrt{3}\mathbb{M}_{1,1}^{(a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{3} + \frac{\sqrt{3}\mathbb{M}_{1,2}^{(a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{3} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{3} \\
\text{z121} \quad \mathbb{G}_0^{(c)}(A_u, b) &= \frac{\sqrt{3}\mathbb{M}_{1,1}^{(a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{3} + \frac{\sqrt{3}\mathbb{M}_{1,2}^{(a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{3} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{3}
\end{aligned}$$

$$\boxed{\text{z122}} \quad \mathbb{G}_0^{(1,-1;c)}(A_u, a) = \frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{3} + \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{3} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{3}$$

$$\boxed{\text{z123}} \quad \mathbb{G}_0^{(1,-1;c)}(A_u, b) = \frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{3} + \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{3} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{3}$$

$$\boxed{\text{z124}} \quad \mathbb{G}_4^{(1,-1;c)}(A_u, a) = \frac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{3} + \frac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{3} + \frac{\sqrt{3}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{3}$$

$$\boxed{\text{z125}} \quad \mathbb{G}_4^{(1,-1;c)}(A_u, b) = \frac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{3} + \frac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{3} + \frac{\sqrt{3}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{3}$$

$$\boxed{\text{z126}} \quad \mathbb{G}_0^{(1,0;c)}(A_u) = \frac{\sqrt{3}\mathbb{G}_{1,1}^{(1,0;a)}(T_g)\mathbb{Q}_{1,1}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{G}_{1,2}^{(1,0;a)}(T_g)\mathbb{Q}_{1,2}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{G}_{1,3}^{(1,0;a)}(T_g)\mathbb{Q}_{1,3}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z127}} \quad \mathbb{G}_4^{(1,0;c)}(A_u) = \frac{\sqrt{3}\mathbb{G}_{1,1}^{(1,0;a)}(T_g)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{3} + \frac{\sqrt{3}\mathbb{G}_{1,2}^{(1,0;a)}(T_g)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{3} + \frac{\sqrt{3}\mathbb{G}_{1,3}^{(1,0;a)}(T_g)\mathbb{Q}_{3,3}^{(b)}(T_u, 1)}{3}$$

$$\boxed{\text{z128}} \quad \mathbb{G}_0^{(1,1;c)}(A_u, a) = \frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{3} + \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{3} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{3}$$

$$\boxed{\text{z129}} \quad \mathbb{G}_0^{(1,1;c)}(A_u, b) = \frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{3} + \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{3} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{3}$$

$$\boxed{\text{z130}} \quad \mathbb{Q}_{2,1}^{(c)}(E_g, a) = \frac{\sqrt{2}\mathbb{Q}_0^{(a)}(A_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z131}} \quad \mathbb{Q}_{2,2}^{(c)}(E_g, a) = \frac{\sqrt{2}\mathbb{Q}_0^{(a)}(A_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z132}} \quad \mathbb{Q}_{2,1}^{(c)}(E_g, b) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_0^{(b)}(A_g)}{2}$$

$$\boxed{\text{z133}} \quad \mathbb{Q}_{2,2}^{(c)}(E_g, b) = \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_0^{(b)}(A_g)}{2}$$

$$\boxed{\text{z134}} \quad \mathbb{Q}_{2,1}^{(c)}(E_g, c) = \frac{\sqrt{7}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{7} + \frac{\sqrt{7}\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(T_g)}{14} - \frac{\sqrt{7}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{7} + \frac{\sqrt{7}\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(T_g)}{14} - \frac{\sqrt{7}\mathbb{Q}_{2,3}^{(a)}(T_g)\mathbb{Q}_{2,3}^{(b)}(T_g)}{7}$$

$$\boxed{\text{z135}} \quad \mathbb{Q}_{2,2}^{(c)}(E_g, c) = -\frac{\sqrt{7}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{7} - \frac{\sqrt{21}\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(T_g)}{14} - \frac{\sqrt{7}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{7} + \frac{\sqrt{21}\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(T_g)}{14}$$

$$\begin{aligned}
\text{z136} \quad \mathbb{Q}_{2,1}^{(c)}(E_g, d) &= -\frac{\sqrt{3}\mathbb{M}_{1,1}^{(a)}(T_g)\mathbb{M}_{1,1}^{(b)}(T_g)}{6} - \frac{\sqrt{3}\mathbb{M}_{1,2}^{(a)}(T_g)\mathbb{M}_{1,2}^{(b)}(T_g)}{6} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(a)}(T_g)\mathbb{M}_{1,3}^{(b)}(T_g)}{3} \\
\text{z137} \quad \mathbb{Q}_{2,2}^{(c)}(E_g, d) &= \frac{\mathbb{M}_{1,1}^{(a)}(T_g)\mathbb{M}_{1,1}^{(b)}(T_g)}{2} - \frac{\mathbb{M}_{1,2}^{(a)}(T_g)\mathbb{M}_{1,2}^{(b)}(T_g)}{2} \\
\text{z138} \quad \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_g)\mathbb{Q}_{2,1}^{(b)}(T_g)}{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_g)\mathbb{Q}_{2,2}^{(b)}(T_g)}{21} + \frac{2\sqrt{21}\mathbb{Q}_{2,3}^{(a)}(T_g)\mathbb{Q}_{2,3}^{(b)}(T_g)}{21} \\
\text{z139} \quad \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_g)\mathbb{Q}_{2,1}^{(b)}(T_g)}{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_g)\mathbb{Q}_{2,2}^{(b)}(T_g)}{7} \\
\text{z140} \quad \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_g)}{2} \\
\text{z141} \quad \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_g)}{2} \\
\text{z142} \quad \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_g)\mathbb{Q}_{2,1}^{(b)}(T_g)}{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_g)\mathbb{Q}_{2,2}^{(b)}(T_g)}{14} - \frac{\sqrt{7}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,3}^{(b)}(T_g)}{7} \\
\text{z143} \quad \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_g)\mathbb{Q}_{2,1}^{(b)}(T_g)}{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_g)\mathbb{Q}_{2,2}^{(b)}(T_g)}{14} \\
\text{z144} \quad \mathbb{Q}_{2,1}^{(1,-1;c)}(E_g, c) &= -\frac{\sqrt{2}\mathbb{M}_3^{(1,-1;a)}(A_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{2} \\
\text{z145} \quad \mathbb{Q}_{2,2}^{(1,-1;c)}(E_g, c) &= \frac{\sqrt{2}\mathbb{M}_3^{(1,-1;a)}(A_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{2} \\
\text{z146} \quad \mathbb{Q}_{2,1}^{(1,-1;c)}(E_g, d) &= -\frac{\sqrt{42}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{M}_{1,1}^{(b)}(T_g)}{28} - \frac{\sqrt{70}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{M}_{1,1}^{(b)}(T_g)}{28} - \frac{\sqrt{42}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{M}_{1,2}^{(b)}(T_g)}{28} + \frac{\sqrt{70}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{M}_{1,2}^{(b)}(T_g)}{28} + \frac{\sqrt{42}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{M}_{1,3}^{(b)}(T_g)}{14} \\
\text{z147} \quad \mathbb{Q}_{2,2}^{(1,-1;c)}(E_g, d) &= \frac{3\sqrt{14}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{M}_{1,1}^{(b)}(T_g)}{28} - \frac{\sqrt{210}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{M}_{1,1}^{(b)}(T_g)}{84} - \frac{3\sqrt{14}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{M}_{1,2}^{(b)}(T_g)}{28} \\
&\quad - \frac{\sqrt{210}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{M}_{1,2}^{(b)}(T_g)}{84} + \frac{\sqrt{210}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{M}_{1,3}^{(b)}(T_g)}{42} \\
\text{z361} \quad \mathbb{Q}_{2,1}^{(1,-1;c)}(E_g, e) &= -\frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{M}_{1,1}^{(b)}(T_g)}{6} - \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{M}_{1,2}^{(b)}(T_g)}{6} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{M}_{1,3}^{(b)}(T_g)}{3}
\end{aligned}$$

$$\begin{aligned}
\text{z362} \quad \mathbb{Q}_{2,2}^{(1,-1;c)}(E_g, e) &= \frac{\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{M}_{1,1}^{(b)}(T_g)}{2} - \frac{\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{M}_{1,2}^{(b)}(T_g)}{2} \\
\text{z363} \quad \mathbb{Q}_{4,1}^{(1,-1;c)}(E_g, a) &= \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_g)\mathbb{Q}_{2,1}^{(b)}(T_g)}{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_g)\mathbb{Q}_{2,2}^{(b)}(T_g)}{21} + \frac{2\sqrt{21}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,3}^{(b)}(T_g)}{21} \\
\text{z364} \quad \mathbb{Q}_{4,2}^{(1,-1;c)}(E_g, a) &= -\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_g)\mathbb{Q}_{2,1}^{(b)}(T_g)}{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_g)\mathbb{Q}_{2,2}^{(b)}(T_g)}{7} \\
\text{z365} \quad \mathbb{Q}_{4,1}^{(1,-1;c)}(E_g, b) &= -\frac{\sqrt{210}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{M}_{1,1}^{(b)}(T_g)}{84} + \frac{3\sqrt{14}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{M}_{1,1}^{(b)}(T_g)}{28} - \frac{\sqrt{210}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{M}_{1,2}^{(b)}(T_g)}{84} \\
&\quad - \frac{3\sqrt{14}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{M}_{1,2}^{(b)}(T_g)}{28} + \frac{\sqrt{210}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{M}_{1,3}^{(b)}(T_g)}{42} \\
\text{z366} \quad \mathbb{Q}_{4,2}^{(1,-1;c)}(E_g, b) &= \frac{\sqrt{70}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{M}_{1,1}^{(b)}(T_g)}{28} + \frac{\sqrt{42}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{M}_{1,1}^{(b)}(T_g)}{28} - \frac{\sqrt{70}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{M}_{1,2}^{(b)}(T_g)}{28} + \frac{\sqrt{42}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{M}_{1,2}^{(b)}(T_g)}{28} - \frac{\sqrt{42}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{M}_{1,3}^{(b)}(T_g)}{14} \\
\text{z367} \quad \mathbb{Q}_{2,1}^{(1,0;c)}(E_g, a) &= \frac{\mathbb{G}_{1,1}^{(1,0;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(T_g)}{2} - \frac{\mathbb{G}_{1,2}^{(1,0;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(T_g)}{2} \\
\text{z368} \quad \mathbb{Q}_{2,2}^{(1,0;c)}(E_g, a) &= \frac{\sqrt{3}\mathbb{G}_{1,1}^{(1,0;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(T_g)}{6} + \frac{\sqrt{3}\mathbb{G}_{1,2}^{(1,0;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(T_g)}{6} - \frac{\sqrt{3}\mathbb{G}_{1,3}^{(1,0;a)}(T_g)\mathbb{Q}_{2,3}^{(b)}(T_g)}{3} \\
\text{z369} \quad \mathbb{Q}_{2,1}^{(1,0;c)}(E_g, b) &= \frac{\sqrt{2}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_0^{(b)}(A_g)}{2} \\
\text{z370} \quad \mathbb{Q}_{2,2}^{(1,0;c)}(E_g, b) &= \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_0^{(b)}(A_g)}{2} \\
\text{z371} \quad \mathbb{Q}_{2,1}^{(1,0;c)}(E_g, c) &= \frac{\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{2} - \frac{\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{2} \\
\text{z372} \quad \mathbb{Q}_{2,2}^{(1,0;c)}(E_g, c) &= -\frac{\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{2} - \frac{\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{2} \\
\text{z373} \quad \mathbb{Q}_{2,1}^{(1,0;c)}(E_g, d) &= -\frac{\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{M}_{1,1}^{(b)}(T_g)}{2} + \frac{\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{M}_{1,2}^{(b)}(T_g)}{2} \\
\text{z374} \quad \mathbb{Q}_{2,2}^{(1,0;c)}(E_g, d) &= -\frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{M}_{1,1}^{(b)}(T_g)}{6} - \frac{\sqrt{3}\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{M}_{1,2}^{(b)}(T_g)}{6} + \frac{\sqrt{3}\mathbb{T}_{2,3}^{(1,0;a)}(T_g)\mathbb{M}_{1,3}^{(b)}(T_g)}{3}
\end{aligned}$$

$$\begin{aligned}
\boxed{\text{z375}} \quad \mathbb{Q}_{2,1}^{(1,1;c)}(E_g, a) &= \frac{\sqrt{2}\mathbb{Q}_0^{(1,1;a)}(A_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} \\
\boxed{\text{z376}} \quad \mathbb{Q}_{2,2}^{(1,1;c)}(E_g, a) &= \frac{\sqrt{2}\mathbb{Q}_0^{(1,1;a)}(A_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2} \\
\boxed{\text{z377}} \quad \mathbb{Q}_{2,1}^{(1,1;c)}(E_g, b) &= -\frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,1;a)}(T_g)\mathbb{M}_{1,1}^{(b)}(T_g)}{6} - \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,1;a)}(T_g)\mathbb{M}_{1,2}^{(b)}(T_g)}{6} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,1;a)}(T_g)\mathbb{M}_{1,3}^{(b)}(T_g)}{3} \\
\boxed{\text{z378}} \quad \mathbb{Q}_{2,2}^{(1,1;c)}(E_g, b) &= \frac{\mathbb{M}_{1,1}^{(1,1;a)}(T_g)\mathbb{M}_{1,1}^{(b)}(T_g)}{2} - \frac{\mathbb{M}_{1,2}^{(1,1;a)}(T_g)\mathbb{M}_{1,2}^{(b)}(T_g)}{2} \\
\boxed{\text{z379}} \quad \mathbb{Q}_{5,1}^{(c)}(E_u) &= \frac{\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{2} - \frac{\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{2} \\
\boxed{\text{z380}} \quad \mathbb{Q}_{5,2}^{(c)}(E_u) &= \frac{\sqrt{3}\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{6} + \frac{\sqrt{3}\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{6} - \frac{\sqrt{3}\mathbb{Q}_{2,3}^{(a)}(T_g)\mathbb{Q}_{3,3}^{(b)}(T_u, 1)}{3} \\
\boxed{\text{z381}} \quad \mathbb{Q}_{5,1}^{(1,-1;c)}(E_u) &= \frac{\mathbb{Q}_{2,1}^{(1,-1;a)}(T_g)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{2} - \frac{\mathbb{Q}_{2,2}^{(1,-1;a)}(T_g)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{2} \\
\boxed{\text{z382}} \quad \mathbb{Q}_{5,2}^{(1,-1;c)}(E_u) &= \frac{\sqrt{3}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_g)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{6} + \frac{\sqrt{3}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_g)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{6} - \frac{\sqrt{3}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_g)\mathbb{Q}_{3,3}^{(b)}(T_u, 1)}{3} \\
\boxed{\text{z383}} \quad \mathbb{G}_{2,1}^{(c)}(E_u, a) &= -\frac{\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_{1,1}^{(b)}(T_u)}{2} + \frac{\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_{1,2}^{(b)}(T_u)}{2} \\
\boxed{\text{z384}} \quad \mathbb{G}_{2,2}^{(c)}(E_u, a) &= -\frac{\sqrt{3}\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_{1,1}^{(b)}(T_u)}{6} - \frac{\sqrt{3}\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_{1,2}^{(b)}(T_u)}{6} + \frac{\sqrt{3}\mathbb{Q}_{2,3}^{(a)}(T_g)\mathbb{Q}_{1,3}^{(b)}(T_u)}{3} \\
\boxed{\text{z385}} \quad \mathbb{G}_{2,1}^{(c)}(E_u, b) &= -\frac{\sqrt{3}\mathbb{M}_{1,1}^{(a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{6} - \frac{\sqrt{3}\mathbb{M}_{1,2}^{(a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{6} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{3} \\
\boxed{\text{z386}} \quad \mathbb{G}_{2,2}^{(c)}(E_u, b) &= \frac{\mathbb{M}_{1,1}^{(a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{2} - \frac{\mathbb{M}_{1,2}^{(a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{2} \\
\boxed{\text{z387}} \quad \mathbb{G}_{2,1}^{(c)}(E_u, c) &= -\frac{\sqrt{3}\mathbb{M}_{1,1}^{(a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{6} - \frac{\sqrt{3}\mathbb{M}_{1,2}^{(a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{6} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{3} \\
\boxed{\text{z388}} \quad \mathbb{G}_{2,2}^{(c)}(E_u, c) &= \frac{\mathbb{M}_{1,1}^{(a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{2} - \frac{\mathbb{M}_{1,2}^{(a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{2}
\end{aligned}$$

$$\begin{aligned}
\text{z389} \quad \mathbb{G}_{2,1}^{(1,-1;c)}(E_u, a) &= -\frac{\mathbb{Q}_{2,1}^{(1,-1;a)}(T_g)\mathbb{Q}_{1,1}^{(b)}(T_u)}{2} + \frac{\mathbb{Q}_{2,2}^{(1,-1;a)}(T_g)\mathbb{Q}_{1,2}^{(b)}(T_u)}{2} \\
\text{z390} \quad \mathbb{G}_{2,2}^{(1,-1;c)}(E_u, a) &= -\frac{\sqrt{3}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_g)\mathbb{Q}_{1,1}^{(b)}(T_u)}{6} - \frac{\sqrt{3}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_g)\mathbb{Q}_{1,2}^{(b)}(T_u)}{6} + \frac{\sqrt{3}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_g)\mathbb{Q}_{1,3}^{(b)}(T_u)}{3} \\
\text{z391} \quad \mathbb{G}_{2,1}^{(1,-1;c)}(E_u, b) &= -\frac{\sqrt{42}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{28} - \frac{\sqrt{70}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{28} - \frac{\sqrt{42}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{28} \\
&\quad + \frac{\sqrt{70}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{28} + \frac{\sqrt{42}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{14} \\
\text{z392} \quad \mathbb{G}_{2,2}^{(1,-1;c)}(E_u, b) &= \frac{3\sqrt{14}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{28} - \frac{\sqrt{210}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{84} - \frac{3\sqrt{14}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{28} \\
&\quad - \frac{\sqrt{210}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{84} + \frac{\sqrt{210}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{42} \\
\text{z393} \quad \mathbb{G}_{2,1}^{(1,-1;c)}(E_u, c) &= -\frac{\sqrt{42}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{28} - \frac{\sqrt{70}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{28} - \frac{\sqrt{42}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{28} \\
&\quad + \frac{\sqrt{70}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{28} + \frac{\sqrt{42}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{14} \\
\text{z394} \quad \mathbb{G}_{2,2}^{(1,-1;c)}(E_u, c) &= \frac{3\sqrt{14}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{28} - \frac{\sqrt{210}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{84} - \frac{3\sqrt{14}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{28} \\
&\quad - \frac{\sqrt{210}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{84} + \frac{\sqrt{210}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{42} \\
\text{z395} \quad \mathbb{G}_{2,1}^{(1,-1;c)}(E_u, d) &= -\frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{6} - \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{6} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{3} \\
\text{z396} \quad \mathbb{G}_{2,2}^{(1,-1;c)}(E_u, d) &= \frac{\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{2} - \frac{\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{2} \\
\text{z397} \quad \mathbb{G}_{2,1}^{(1,-1;c)}(E_u, e) &= -\frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{6} - \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{6} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{3} \\
\text{z398} \quad \mathbb{G}_{2,2}^{(1,-1;c)}(E_u, e) &= \frac{\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{2} - \frac{\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{2}
\end{aligned}$$

$$\begin{aligned}
\text{z399} \quad \mathbb{G}_{4,1}^{(1,-1;c)}(E_u, a) &= -\frac{\sqrt{210}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{84} + \frac{3\sqrt{14}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{28} - \frac{\sqrt{210}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{84} \\
&\quad - \frac{3\sqrt{14}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{28} + \frac{\sqrt{210}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{42} \\
\text{z400} \quad \mathbb{G}_{4,2}^{(1,-1;c)}(E_u, a) &= \frac{\sqrt{70}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{28} + \frac{\sqrt{42}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{28} - \frac{\sqrt{70}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{28} \\
&\quad + \frac{\sqrt{42}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{28} - \frac{\sqrt{42}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{14} \\
\text{z401} \quad \mathbb{G}_{4,1}^{(1,-1;c)}(E_u, b) &= -\frac{\sqrt{210}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{84} + \frac{3\sqrt{14}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{28} - \frac{\sqrt{210}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{84} \\
&\quad - \frac{3\sqrt{14}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{28} + \frac{\sqrt{210}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{42} \\
\text{z402} \quad \mathbb{G}_{4,2}^{(1,-1;c)}(E_u, b) &= \frac{\sqrt{70}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{28} + \frac{\sqrt{42}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{28} - \frac{\sqrt{70}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{28} \\
&\quad + \frac{\sqrt{42}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{28} - \frac{\sqrt{42}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{14} \\
\text{z403} \quad \mathbb{G}_{2,1}^{(1,0;c)}(E_u, a) &= -\frac{\sqrt{3}\mathbb{G}_{1,1}^{(1,0;a)}(T_g)\mathbb{Q}_{1,1}^{(b)}(T_u)}{6} - \frac{\sqrt{3}\mathbb{G}_{1,2}^{(1,0;a)}(T_g)\mathbb{Q}_{1,2}^{(b)}(T_u)}{6} + \frac{\sqrt{3}\mathbb{G}_{1,3}^{(1,0;a)}(T_g)\mathbb{Q}_{1,3}^{(b)}(T_u)}{3} \\
\text{z404} \quad \mathbb{G}_{2,2}^{(1,0;c)}(E_u, a) &= \frac{\mathbb{G}_{1,1}^{(1,0;a)}(T_g)\mathbb{Q}_{1,1}^{(b)}(T_u)}{2} - \frac{\mathbb{G}_{1,2}^{(1,0;a)}(T_g)\mathbb{Q}_{1,2}^{(b)}(T_u)}{2} \\
\text{z405} \quad \mathbb{G}_{2,1}^{(1,0;c)}(E_u, b) &= -\frac{\sqrt{3}\mathbb{G}_{1,1}^{(1,0;a)}(T_g)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{6} - \frac{\sqrt{3}\mathbb{G}_{1,2}^{(1,0;a)}(T_g)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{6} + \frac{\sqrt{3}\mathbb{G}_{1,3}^{(1,0;a)}(T_g)\mathbb{Q}_{3,3}^{(b)}(T_u, 1)}{3} \\
\text{z406} \quad \mathbb{G}_{2,2}^{(1,0;c)}(E_u, b) &= \frac{\mathbb{G}_{1,1}^{(1,0;a)}(T_g)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{2} - \frac{\mathbb{G}_{1,2}^{(1,0;a)}(T_g)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{2} \\
\text{z407} \quad \mathbb{G}_{2,1}^{(1,0;c)}(E_u, c) &= -\frac{\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{2} + \frac{\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{2} \\
\text{z408} \quad \mathbb{G}_{2,2}^{(1,0;c)}(E_u, c) &= -\frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{6} - \frac{\sqrt{3}\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{6} + \frac{\sqrt{3}\mathbb{T}_{2,3}^{(1,0;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{3} \\
\text{z409} \quad \mathbb{G}_{2,1}^{(1,0;c)}(E_u, d) &= -\frac{\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{2} + \frac{\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{2}
\end{aligned}$$

$$\boxed{\text{z410}} \quad \mathbb{G}_{2,2}^{(1,0;c)}(E_u, d) = -\frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{6} - \frac{\sqrt{3}\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{6} + \frac{\sqrt{3}\mathbb{T}_{2,3}^{(1,0;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{3}$$

$$\boxed{\text{z411}} \quad \mathbb{G}_{2,1}^{(1,1;c)}(E_u, a) = -\frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{6} - \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{6} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{3}$$

$$\boxed{\text{z412}} \quad \mathbb{G}_{2,2}^{(1,1;c)}(E_u, a) = \frac{\mathbb{M}_{1,1}^{(1,1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{2} - \frac{\mathbb{M}_{1,2}^{(1,1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{2}$$

$$\boxed{\text{z413}} \quad \mathbb{G}_{2,1}^{(1,1;c)}(E_u, b) = -\frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{6} - \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{6} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{3}$$

$$\boxed{\text{z414}} \quad \mathbb{G}_{2,2}^{(1,1;c)}(E_u, b) = \frac{\mathbb{M}_{1,1}^{(1,1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{2} - \frac{\mathbb{M}_{1,2}^{(1,1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{2}$$

$$\boxed{\text{z415}} \quad \mathbb{Q}_{2,1}^{(c)}(T_g, a) = \frac{\sqrt{3}\mathbb{Q}_0^{(a)}(A_g)\mathbb{Q}_{2,1}^{(b)}(T_g)}{3}$$

$$\boxed{\text{z416}} \quad \mathbb{Q}_{2,2}^{(c)}(T_g, a) = \frac{\sqrt{3}\mathbb{Q}_0^{(a)}(A_g)\mathbb{Q}_{2,2}^{(b)}(T_g)}{3}$$

$$\boxed{\text{z417}} \quad \mathbb{Q}_{2,3}^{(c)}(T_g, a) = \frac{\sqrt{3}\mathbb{Q}_0^{(a)}(A_g)\mathbb{Q}_{2,3}^{(b)}(T_g)}{3}$$

$$\boxed{\text{z418}} \quad \mathbb{Q}_{2,1}^{(c)}(T_g, b) = \frac{\sqrt{3}\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_0^{(b)}(A_g)}{3}$$

$$\boxed{\text{z419}} \quad \mathbb{Q}_{2,2}^{(c)}(T_g, b) = \frac{\sqrt{3}\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_0^{(b)}(A_g)}{3}$$

$$\boxed{\text{z420}} \quad \mathbb{Q}_{2,3}^{(c)}(T_g, b) = \frac{\sqrt{3}\mathbb{Q}_{2,3}^{(a)}(T_g)\mathbb{Q}_0^{(b)}(A_g)}{3}$$

$$\boxed{\text{z421}} \quad \mathbb{Q}_{2,1}^{(c)}(T_g, c) = \frac{\sqrt{42}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(T_g)}{42} + \frac{\sqrt{42}\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{42} - \frac{\sqrt{14}\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{14} - \frac{\sqrt{14}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(T_g)}{14} + \frac{\sqrt{14}\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_{2,3}^{(b)}(T_g)}{14} + \frac{\sqrt{14}\mathbb{Q}_{2,3}^{(a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(T_g)}{14}$$

$$\boxed{\text{z422}} \quad \mathbb{Q}_{2,2}^{(c)}(T_g, c) = \frac{\sqrt{42}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(T_g)}{42} + \frac{\sqrt{14}\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_{2,3}^{(b)}(T_g)}{14} + \frac{\sqrt{14}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(T_g)}{14} + \frac{\sqrt{42}\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{42} + \frac{\sqrt{14}\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{14} + \frac{\sqrt{14}\mathbb{Q}_{2,3}^{(a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(T_g)}{14}$$

$$\boxed{\text{z423}} \quad \mathbb{Q}_{2,3}^{(c)}(T_g, c) = -\frac{\sqrt{42}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,3}^{(b)}(T_g)}{21} + \frac{\sqrt{14}\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(T_g)}{14} + \frac{\sqrt{14}\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(T_g)}{14} - \frac{\sqrt{42}\mathbb{Q}_{2,3}^{(a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{21}$$

$$\boxed{\text{z424}} \quad \mathbb{Q}_{2,1}^{(c)}(T_g, d) = -\frac{\mathbb{M}_{1,1}^{(a)}(T_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{M}_{1,1}^{(a)}(T_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{6}$$

$$\boxed{\text{z425}} \quad \mathbb{Q}_{2,2}^{(c)}(T_g, d) = \frac{\mathbb{M}_{1,2}^{(a)}(T_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{M}_{1,2}^{(a)}(T_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{6}$$

$$\boxed{\text{z426}} \quad \mathbb{Q}_{2,3}^{(c)}(T_g, d) = \frac{\sqrt{3}\mathbb{M}_{1,3}^{(a)}(T_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{3}$$

$$\boxed{\text{z427}} \quad \mathbb{Q}_{2,1}^{(c)}(T_g, e) = \frac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(T_g)\mathbb{M}_{1,3}^{(b)}(T_g)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(a)}(T_g)\mathbb{M}_{1,2}^{(b)}(T_g)}{6}$$

$$\boxed{\text{z428}} \quad \mathbb{Q}_{2,2}^{(c)}(T_g, e) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(T_g)\mathbb{M}_{1,3}^{(b)}(T_g)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(a)}(T_g)\mathbb{M}_{1,1}^{(b)}(T_g)}{6}$$

$$\boxed{\text{z429}} \quad \mathbb{Q}_{2,3}^{(c)}(T_g, e) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(T_g)\mathbb{M}_{1,2}^{(b)}(T_g)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(T_g)\mathbb{M}_{1,1}^{(b)}(T_g)}{6}$$

$$\boxed{\text{z430}} \quad \mathbb{Q}_{4,1}^{(c)}(T_g, 1) = -\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(T_g)}{4} - \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{4} - \frac{\sqrt{6}\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{12} - \frac{\sqrt{6}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(T_g)}{12}$$

$$\boxed{\text{z431}} \quad \mathbb{Q}_{4,2}^{(c)}(T_g, 1) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(T_g)}{4} - \frac{\sqrt{6}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(T_g)}{12} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{4} - \frac{\sqrt{6}\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{12}$$

$$\boxed{\text{z432}} \quad \mathbb{Q}_{4,3}^{(c)}(T_g, 1) = \frac{\sqrt{6}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,3}^{(b)}(T_g)}{6} + \frac{\sqrt{6}\mathbb{Q}_{2,3}^{(a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{6}$$

$$\boxed{\text{z433}} \quad \mathbb{Q}_{4,1}^{(c)}(T_g, 2) = -\frac{\sqrt{14}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(T_g)}{28} - \frac{\sqrt{14}\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{28} + \frac{\sqrt{42}\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{28} + \frac{\sqrt{42}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(T_g)}{28} + \frac{\sqrt{42}\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_{2,3}^{(b)}(E_g)}{21} + \frac{\sqrt{42}\mathbb{Q}_{2,3}^{(a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{21}$$

$$\boxed{\text{z434}} \quad \mathbb{Q}_{4,2}^{(c)}(T_g, 2) = -\frac{\sqrt{14}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(T_g)}{28} + \frac{\sqrt{42}\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_{2,3}^{(b)}(T_g)}{21} - \frac{\sqrt{42}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(T_g)}{28} - \frac{\sqrt{14}\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{28} - \frac{\sqrt{42}\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{28} + \frac{\sqrt{42}\mathbb{Q}_{2,3}^{(a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(T_g)}{21}$$

$$\boxed{\text{z435}} \quad \mathbb{Q}_{4,3}^{(c)}(T_g, 2) = \frac{\sqrt{14}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,3}^{(b)}(T_g)}{14} + \frac{\sqrt{42}\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(T_g)}{21} + \frac{\sqrt{42}\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(T_g)}{21} + \frac{\sqrt{14}\mathbb{Q}_{2,3}^{(a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{14}$$

$$\boxed{\text{z436}} \quad \mathbb{Q}_{2,1}^{(1,-1;c)}(T_g, a) = \frac{\sqrt{3}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_g)\mathbb{Q}_0^{(b)}(A_g)}{3}$$

$$\boxed{\text{z437}} \quad \mathbb{Q}_{2,2}^{(1,-1;c)}(T_g, a) = \frac{\sqrt{3}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_g)\mathbb{Q}_0^{(b)}(A_g)}{3}$$

$$\begin{aligned}
\text{z438} \quad \mathbb{Q}_{2,3}^{(1,-1;c)}(T_g, a) &= \frac{\sqrt{3}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_g)\mathbb{Q}_0^{(b)}(A_g)}{3} \\
\text{z439} \quad \mathbb{Q}_{2,1}^{(1,-1;c)}(T_g, b) &= \frac{\sqrt{42}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(T_g)}{42} + \frac{\sqrt{42}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{42} - \frac{\sqrt{14}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{14} \\
&\quad - \frac{\sqrt{14}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(T_g)}{14} + \frac{\sqrt{14}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,3}^{(b)}(T_g)}{14} + \frac{\sqrt{14}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(T_g)}{14} \\
\text{z440} \quad \mathbb{Q}_{2,2}^{(1,-1;c)}(T_g, b) &= \frac{\sqrt{42}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(T_g)}{42} + \frac{\sqrt{14}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,3}^{(b)}(T_g)}{14} + \frac{\sqrt{14}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(T_g)}{14} \\
&\quad + \frac{\sqrt{42}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{42} + \frac{\sqrt{14}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{14} + \frac{\sqrt{14}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(T_g)}{14} \\
\text{z441} \quad \mathbb{Q}_{2,3}^{(1,-1;c)}(T_g, b) &= -\frac{\sqrt{42}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,3}^{(b)}(T_g)}{21} + \frac{\sqrt{14}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(T_g)}{14} + \frac{\sqrt{14}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(T_g)}{14} - \frac{\sqrt{42}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{21} \\
\text{z442} \quad \mathbb{Q}_{2,1}^{(1,-1;c)}(T_g, c) &= \frac{\sqrt{6}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{2,1}^{(b)}(E_g)}{12} + \frac{\sqrt{2}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{2,2}^{(b)}(E_g)}{12} + \frac{\sqrt{10}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{2,1}^{(b)}(E_g)}{12} - \frac{\sqrt{30}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{2,2}^{(b)}(E_g)}{12} \\
\text{z443} \quad \mathbb{Q}_{2,2}^{(1,-1;c)}(T_g, c) &= -\frac{\sqrt{6}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{2,1}^{(b)}(E_g)}{12} + \frac{\sqrt{2}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{2,2}^{(b)}(E_g)}{12} + \frac{\sqrt{10}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{2,1}^{(b)}(E_g)}{12} + \frac{\sqrt{30}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{2,2}^{(b)}(E_g)}{12} \\
\text{z444} \quad \mathbb{Q}_{2,3}^{(1,-1;c)}(T_g, c) &= -\frac{\sqrt{2}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{2,2}^{(b)}(E_g)}{6} - \frac{\sqrt{10}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{2,1}^{(b)}(E_g)}{6} \\
\text{z445} \quad \mathbb{Q}_{2,1}^{(1,-1;c)}(T_g, d) &= -\frac{\sqrt{21}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{M}_{1,3}^{(b)}(T_g)}{21} + \frac{\sqrt{35}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{M}_{1,3}^{(b)}(T_g)}{21} - \frac{\sqrt{21}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{M}_{1,2}^{(b)}(T_g)}{21} - \frac{\sqrt{35}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{M}_{1,2}^{(b)}(T_g)}{21} + \frac{\sqrt{35}\mathbb{M}_3^{(1,-1;a)}(A_g)\mathbb{M}_{1,1}^{(b)}(T_g)}{21} \\
\text{z446} \quad \mathbb{Q}_{2,2}^{(1,-1;c)}(T_g, d) &= -\frac{\sqrt{21}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{M}_{1,3}^{(b)}(T_g)}{21} - \frac{\sqrt{35}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{M}_{1,3}^{(b)}(T_g)}{21} - \frac{\sqrt{21}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{M}_{1,1}^{(b)}(T_g)}{21} + \frac{\sqrt{35}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{M}_{1,1}^{(b)}(T_g)}{21} + \frac{\sqrt{35}\mathbb{M}_3^{(1,-1;a)}(A_g)\mathbb{M}_{1,2}^{(b)}(T_g)}{21} \\
\text{z447} \quad \mathbb{Q}_{2,3}^{(1,-1;c)}(T_g, d) &= -\frac{\sqrt{21}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{M}_{1,2}^{(b)}(T_g)}{21} + \frac{\sqrt{35}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{M}_{1,2}^{(b)}(T_g)}{21} - \frac{\sqrt{21}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{M}_{1,1}^{(b)}(T_g)}{21} - \frac{\sqrt{35}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{M}_{1,1}^{(b)}(T_g)}{21} + \frac{\sqrt{35}\mathbb{M}_3^{(1,-1;a)}(A_g)\mathbb{M}_{1,3}^{(b)}(T_g)}{21} \\
\text{z448} \quad \mathbb{Q}_{2,1}^{(1,-1;c)}(T_g, e) &= -\frac{\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{6} \\
\text{z449} \quad \mathbb{Q}_{2,2}^{(1,-1;c)}(T_g, e) &= \frac{\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{6}
\end{aligned}$$

$$\begin{aligned}
\text{z450} \quad \mathbb{Q}_{2,3}^{(1,-1;c)}(T_g, e) &= \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{3} \\
\text{z451} \quad \mathbb{Q}_{2,1}^{(1,-1;c)}(T_g, f) &= \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{M}_{1,3}^{(b)}(T_g)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{M}_{1,2}^{(b)}(T_g)}{6} \\
\text{z452} \quad \mathbb{Q}_{2,2}^{(1,-1;c)}(T_g, f) &= \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{M}_{1,3}^{(b)}(T_g)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{M}_{1,1}^{(b)}(T_g)}{6} \\
\text{z453} \quad \mathbb{Q}_{2,3}^{(1,-1;c)}(T_g, f) &= \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{M}_{1,2}^{(b)}(T_g)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{M}_{1,1}^{(b)}(T_g)}{6} \\
\text{z454} \quad \mathbb{Q}_{4,1}^{(1,-1;c)}(T_g, 1a) &= -\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(T_g)}{4} - \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{4} - \frac{\sqrt{6}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_g)\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_g)}{12} \\
\text{z455} \quad \mathbb{Q}_{4,2}^{(1,-1;c)}(T_g, 1a) &= \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(T_g)}{4} - \frac{\sqrt{6}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(T_g)}{12} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{4} - \frac{\sqrt{6}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{12} \\
\text{z456} \quad \mathbb{Q}_{4,3}^{(1,-1;c)}(T_g, 1a) &= \frac{\sqrt{6}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,3}^{(b)}(T_g)}{6} + \frac{\sqrt{6}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{6} \\
\text{z457} \quad \mathbb{Q}_{4,1}^{(1,-1;c)}(T_g, 1b) &= -\frac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{2,1}^{(b)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{2,2}^{(b)}(E_g)}{6} \\
\text{z458} \quad \mathbb{Q}_{4,2}^{(1,-1;c)}(T_g, 1b) &= \frac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{2,1}^{(b)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{2,2}^{(b)}(E_g)}{6} \\
\text{z459} \quad \mathbb{Q}_{4,3}^{(1,-1;c)}(T_g, 1b) &= \frac{\sqrt{3}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{2,2}^{(b)}(E_g)}{3} \\
\text{z460} \quad \mathbb{Q}_{4,1}^{(1,-1;c)}(T_g, 1c) &= \frac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{M}_{1,3}^{(b)}(T_g)}{12} - \frac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{M}_{1,3}^{(b)}(T_g)}{4} - \frac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{M}_{1,2}^{(b)}(T_g)}{12} - \frac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{M}_{1,2}^{(b)}(T_g)}{4} \\
\text{z461} \quad \mathbb{Q}_{4,2}^{(1,-1;c)}(T_g, 1c) &= -\frac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{M}_{1,3}^{(b)}(T_g)}{12} - \frac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{M}_{1,3}^{(b)}(T_g)}{4} + \frac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{M}_{1,1}^{(b)}(T_g)}{12} - \frac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{M}_{1,1}^{(b)}(T_g)}{4} \\
\text{z462} \quad \mathbb{Q}_{4,3}^{(1,-1;c)}(T_g, 1c) &= \frac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{M}_{1,2}^{(b)}(T_g)}{12} - \frac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{M}_{1,2}^{(b)}(T_g)}{4} - \frac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{M}_{1,1}^{(b)}(T_g)}{12} - \frac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{M}_{1,1}^{(b)}(T_g)}{4}
\end{aligned}$$

$$\begin{aligned}
\text{z463} \quad \mathbb{Q}_{4,1}^{(1,-1;c)}(T_g, 2a) &= -\frac{\sqrt{14}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(T_g)}{28} - \frac{\sqrt{14}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{28} + \frac{\sqrt{42}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{28} \\
&\quad + \frac{\sqrt{42}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(T_g)}{28} + \frac{\sqrt{42}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,3}^{(b)}(T_g)}{21} + \frac{\sqrt{42}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(T_g)}{21} \\
\text{z464} \quad \mathbb{Q}_{4,2}^{(1,-1;c)}(T_g, 2a) &= -\frac{\sqrt{14}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(T_g)}{28} + \frac{\sqrt{42}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,3}^{(b)}(T_g)}{21} - \frac{\sqrt{42}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(T_g)}{28} \\
&\quad - \frac{\sqrt{14}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{28} - \frac{\sqrt{42}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{28} + \frac{\sqrt{42}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(T_g)}{21} \\
\text{z465} \quad \mathbb{Q}_{4,3}^{(1,-1;c)}(T_g, 2a) &= \frac{\sqrt{14}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,3}^{(b)}(T_g)}{14} + \frac{\sqrt{42}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(T_g)}{21} + \frac{\sqrt{42}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(T_g)}{21} + \frac{\sqrt{14}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{14} \\
\text{z466} \quad \mathbb{Q}_{4,1}^{(1,-1;c)}(T_g, 2b) &= -\frac{\sqrt{30}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{2,1}^{(b)}(E_g)}{12} - \frac{\sqrt{10}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{2,2}^{(b)}(E_g)}{12} + \frac{\sqrt{2}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{2,1}^{(b)}(E_g)}{12} - \frac{\sqrt{6}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{2,2}^{(b)}(E_g)}{12} \\
\text{z467} \quad \mathbb{Q}_{4,2}^{(1,-1;c)}(T_g, 2b) &= \frac{\sqrt{30}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{2,1}^{(b)}(E_g)}{12} - \frac{\sqrt{10}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{2,2}^{(b)}(E_g)}{12} + \frac{\sqrt{2}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{2,1}^{(b)}(E_g)}{12} + \frac{\sqrt{6}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{2,2}^{(b)}(E_g)}{12} \\
\text{z468} \quad \mathbb{Q}_{4,3}^{(1,-1;c)}(T_g, 2b) &= \frac{\sqrt{10}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{2,2}^{(b)}(E_g)}{6} - \frac{\sqrt{2}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{2,1}^{(b)}(E_g)}{6} \\
\text{z469} \quad \mathbb{Q}_{4,1}^{(1,-1;c)}(T_g, 2c) &= -\frac{\sqrt{105}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{M}_{1,3}^{(b)}(T_g)}{84} - \frac{3\sqrt{7}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{M}_{1,3}^{(b)}(T_g)}{28} - \frac{\sqrt{105}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{M}_{1,2}^{(b)}(T_g)}{84} + \frac{3\sqrt{7}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{M}_{1,2}^{(b)}(T_g)}{28} + \frac{\sqrt{7}\mathbb{M}_3^{(1,-1;a)}(A_g)\mathbb{M}_{1,1}^{(b)}(T_g)}{7} \\
\text{z470} \quad \mathbb{Q}_{4,2}^{(1,-1;c)}(T_g, 2c) &= -\frac{\sqrt{105}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{M}_{1,3}^{(b)}(T_g)}{84} + \frac{3\sqrt{7}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{M}_{1,3}^{(b)}(T_g)}{28} - \frac{\sqrt{105}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{M}_{1,1}^{(b)}(T_g)}{84} - \frac{3\sqrt{7}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{M}_{1,1}^{(b)}(T_g)}{28} + \frac{\sqrt{7}\mathbb{M}_3^{(1,-1;a)}(A_g)\mathbb{M}_{1,2}^{(b)}(T_g)}{7} \\
\text{z471} \quad \mathbb{Q}_{4,3}^{(1,-1;c)}(T_g, 2c) &= -\frac{\sqrt{105}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{M}_{1,2}^{(b)}(T_g)}{84} - \frac{3\sqrt{7}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{M}_{1,2}^{(b)}(T_g)}{28} - \frac{\sqrt{105}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{M}_{1,1}^{(b)}(T_g)}{84} + \frac{3\sqrt{7}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{M}_{1,1}^{(b)}(T_g)}{28} + \frac{\sqrt{7}\mathbb{M}_3^{(1,-1;a)}(A_g)\mathbb{M}_{1,3}^{(b)}(T_g)}{7} \\
\text{z472} \quad \mathbb{Q}_{2,1}^{(1,0;c)}(T_g, a) &= -\frac{\sqrt{6}\mathbb{G}_{1,1}^{(1,0;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} - \frac{\sqrt{2}\mathbb{G}_{1,1}^{(1,0;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{6} - \frac{\sqrt{2}\mathbb{G}_{1,2}^{(1,0;a)}(T_g)\mathbb{Q}_{2,3}^{(b)}(T_g)}{6} + \frac{\sqrt{2}\mathbb{G}_{1,3}^{(1,0;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(T_g)}{6} \\
\text{z473} \quad \mathbb{Q}_{2,2}^{(1,0;c)}(T_g, a) &= \frac{\sqrt{2}\mathbb{G}_{1,1}^{(1,0;a)}(T_g)\mathbb{Q}_{2,3}^{(b)}(T_g)}{6} + \frac{\sqrt{6}\mathbb{G}_{1,2}^{(1,0;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} - \frac{\sqrt{2}\mathbb{G}_{1,2}^{(1,0;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{6} - \frac{\sqrt{2}\mathbb{G}_{1,3}^{(1,0;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(T_g)}{6} \\
\text{z474} \quad \mathbb{Q}_{2,3}^{(1,0;c)}(T_g, a) &= -\frac{\sqrt{2}\mathbb{G}_{1,1}^{(1,0;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(T_g)}{6} + \frac{\sqrt{2}\mathbb{G}_{1,2}^{(1,0;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(T_g)}{6} + \frac{\sqrt{2}\mathbb{G}_{1,3}^{(1,0;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{3}
\end{aligned}$$

$$\boxed{\text{z475}} \quad \mathbb{Q}_{2,1}^{(1,0;c)}(T_g, b) = \frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{T}_0^{(b)}(A_g)}{3}$$

$$\boxed{\text{z476}} \quad \mathbb{Q}_{2,2}^{(1,0;c)}(T_g, b) = \frac{\sqrt{3}\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{T}_0^{(b)}(A_g)}{3}$$

$$\boxed{\text{z477}} \quad \mathbb{Q}_{2,3}^{(1,0;c)}(T_g, b) = \frac{\sqrt{3}\mathbb{T}_{2,3}^{(1,0;a)}(T_g)\mathbb{T}_0^{(b)}(A_g)}{3}$$

$$\boxed{\text{z478}} \quad \mathbb{Q}_{2,1}^{(1,0;c)}(T_g, c) = \frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{6} - \frac{\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z479}} \quad \mathbb{Q}_{2,2}^{(1,0;c)}(T_g, c) = \frac{\sqrt{3}\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{6} + \frac{\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z480}} \quad \mathbb{Q}_{2,3}^{(1,0;c)}(T_g, c) = -\frac{\sqrt{3}\mathbb{T}_{2,3}^{(1,0;a)}(T_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{3}$$

$$\boxed{\text{z481}} \quad \mathbb{Q}_{2,1}^{(1,0;c)}(T_g, d) = \frac{\sqrt{6}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{M}_{1,1}^{(b)}(T_g)}{6} + \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{M}_{1,1}^{(b)}(T_g)}{6} - \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{M}_{1,3}^{(b)}(T_g)}{6} + \frac{\sqrt{2}\mathbb{T}_{2,3}^{(1,0;a)}(T_g)\mathbb{M}_{1,2}^{(b)}(T_g)}{6}$$

$$\boxed{\text{z482}} \quad \mathbb{Q}_{2,2}^{(1,0;c)}(T_g, d) = -\frac{\sqrt{6}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{M}_{1,2}^{(b)}(T_g)}{6} + \frac{\sqrt{2}\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{M}_{1,3}^{(b)}(T_g)}{6} + \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{M}_{1,2}^{(b)}(T_g)}{6} - \frac{\sqrt{2}\mathbb{T}_{2,3}^{(1,0;a)}(T_g)\mathbb{M}_{1,1}^{(b)}(T_g)}{6}$$

$$\boxed{\text{z483}} \quad \mathbb{Q}_{2,3}^{(1,0;c)}(T_g, d) = -\frac{\sqrt{2}\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{M}_{1,2}^{(b)}(T_g)}{6} - \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{M}_{1,3}^{(b)}(T_g)}{3} + \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{M}_{1,1}^{(b)}(T_g)}{6}$$

$$\boxed{\text{z484}} \quad \mathbb{Q}_{4,1}^{(1,0;c)}(T_g, 1) = -\frac{\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{6}$$

$$\boxed{\text{z485}} \quad \mathbb{Q}_{4,2}^{(1,0;c)}(T_g, 1) = \frac{\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{6}$$

$$\boxed{\text{z486}} \quad \mathbb{Q}_{4,3}^{(1,0;c)}(T_g, 1) = \frac{\sqrt{3}\mathbb{T}_{2,3}^{(1,0;a)}(T_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{3}$$

$$\boxed{\text{z487}} \quad \mathbb{Q}_{2,1}^{(1,1;c)}(T_g, a) = \frac{\sqrt{3}\mathbb{Q}_0^{(1,1;a)}(A_g)\mathbb{Q}_{2,1}^{(b)}(T_g)}{3}$$

$$\boxed{\text{z488}} \quad \mathbb{Q}_{2,2}^{(1,1;c)}(T_g, a) = \frac{\sqrt{3}\mathbb{Q}_0^{(1,1;a)}(A_g)\mathbb{Q}_{2,2}^{(b)}(T_g)}{3}$$

$$\begin{aligned}
\boxed{\text{z489}} \quad \mathbb{Q}_{2,3}^{(1,1;c)}(T_g, a) &= \frac{\sqrt{3}\mathbb{Q}_0^{(1,1;a)}(A_g)\mathbb{Q}_{2,3}^{(b)}(T_g)}{3} \\
\boxed{\text{z490}} \quad \mathbb{Q}_{2,1}^{(1,1;c)}(T_g, b) &= -\frac{\mathbb{M}_{1,1}^{(1,1;a)}(T_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,1;a)}(T_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{6} \\
\boxed{\text{z491}} \quad \mathbb{Q}_{2,2}^{(1,1;c)}(T_g, b) &= \frac{\mathbb{M}_{1,2}^{(1,1;a)}(T_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,1;a)}(T_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{6} \\
\boxed{\text{z492}} \quad \mathbb{Q}_{2,3}^{(1,1;c)}(T_g, b) &= \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,1;a)}(T_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{3} \\
\boxed{\text{z493}} \quad \mathbb{Q}_{2,1}^{(1,1;c)}(T_g, c) &= \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,1;a)}(T_g)\mathbb{M}_{1,3}^{(b)}(T_g)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,1;a)}(T_g)\mathbb{M}_{1,2}^{(b)}(T_g)}{6} \\
\boxed{\text{z494}} \quad \mathbb{Q}_{2,2}^{(1,1;c)}(T_g, c) &= \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,1;a)}(T_g)\mathbb{M}_{1,3}^{(b)}(T_g)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,1;a)}(T_g)\mathbb{M}_{1,1}^{(b)}(T_g)}{6} \\
\boxed{\text{z495}} \quad \mathbb{Q}_{2,3}^{(1,1;c)}(T_g, c) &= \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,1;a)}(T_g)\mathbb{M}_{1,2}^{(b)}(T_g)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,1;a)}(T_g)\mathbb{M}_{1,1}^{(b)}(T_g)}{6} \\
\boxed{\text{z496}} \quad \mathbb{G}_{1,1}^{(c)}(T_g, a) &= -\frac{\sqrt{10}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(T_g)}{10} + \frac{\sqrt{10}\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{10} + \frac{\sqrt{30}\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{30} - \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(T_g)}{30} - \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_{2,3}^{(b)}(T_g)}{30} + \frac{\sqrt{30}\mathbb{Q}_{2,3}^{(a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(T_g)}{30} \\
\boxed{\text{z497}} \quad \mathbb{G}_{1,2}^{(c)}(T_g, a) &= \frac{\sqrt{10}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(T_g)}{10} + \frac{\sqrt{30}\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_{2,3}^{(b)}(T_g)}{30} - \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(T_g)}{30} - \frac{\sqrt{10}\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{10} + \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{30} - \frac{\sqrt{30}\mathbb{Q}_{2,3}^{(a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(T_g)}{30} \\
\boxed{\text{z498}} \quad \mathbb{G}_{1,3}^{(c)}(T_g, a) &= -\frac{\sqrt{30}\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(T_g)}{30} + \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,3}^{(b)}(T_g)}{15} + \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(T_g)}{30} - \frac{\sqrt{30}\mathbb{Q}_{2,3}^{(a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{15} \\
\boxed{\text{z499}} \quad \mathbb{G}_{1,1}^{(c)}(T_g, b) &= \frac{\sqrt{3}\mathbb{M}_{1,1}^{(a)}(T_g)\mathbb{T}_0^{(b)}(A_g)}{3} \\
\boxed{\text{z500}} \quad \mathbb{G}_{1,2}^{(c)}(T_g, b) &= \frac{\sqrt{3}\mathbb{M}_{1,2}^{(a)}(T_g)\mathbb{T}_0^{(b)}(A_g)}{3} \\
\boxed{\text{z501}} \quad \mathbb{G}_{1,3}^{(c)}(T_g, b) &= \frac{\sqrt{3}\mathbb{M}_{1,3}^{(a)}(T_g)\mathbb{T}_0^{(b)}(A_g)}{3} \\
\boxed{\text{z502}} \quad \mathbb{G}_{1,1}^{(c)}(T_g, c) &= -\frac{\sqrt{3}\mathbb{M}_{1,1}^{(a)}(T_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{6} + \frac{\mathbb{M}_{1,1}^{(a)}(T_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{2}
\end{aligned}$$

$$\boxed{\text{z503}} \quad \mathbb{G}_{1,2}^{(c)}(T_g, c) = -\frac{\sqrt{3}\mathbb{M}_{1,2}^{(a)}(T_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{6} - \frac{\mathbb{M}_{1,2}^{(a)}(T_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z504}} \quad \mathbb{G}_{1,3}^{(c)}(T_g, c) = \frac{\sqrt{3}\mathbb{M}_{1,3}^{(a)}(T_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{3}$$

$$\boxed{\text{z505}} \quad \mathbb{G}_{1,1}^{(c)}(T_g, d) = \frac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(T_g)\mathbb{M}_{1,3}^{(b)}(T_g)}{6} - \frac{\sqrt{6}\mathbb{M}_{1,3}^{(a)}(T_g)\mathbb{M}_{1,2}^{(b)}(T_g)}{6}$$

$$\boxed{\text{z506}} \quad \mathbb{G}_{1,2}^{(c)}(T_g, d) = -\frac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(T_g)\mathbb{M}_{1,3}^{(b)}(T_g)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(a)}(T_g)\mathbb{M}_{1,1}^{(b)}(T_g)}{6}$$

$$\boxed{\text{z507}} \quad \mathbb{G}_{1,3}^{(c)}(T_g, d) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(T_g)\mathbb{M}_{1,2}^{(b)}(T_g)}{6} - \frac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(T_g)\mathbb{M}_{1,1}^{(b)}(T_g)}{6}$$

$$\boxed{\text{z508}} \quad \mathbb{G}_{3,1}^{(c)}(T_g, 1) = \frac{\sqrt{10}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(T_g)}{20} - \frac{\sqrt{10}\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{20} - \frac{\sqrt{30}\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{60} + \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(T_g)}{60} - \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_{2,3}^{(b)}(T_g)}{15} + \frac{\sqrt{30}\mathbb{Q}_{2,3}^{(a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(T_g)}{15}$$

$$\boxed{\text{z509}} \quad \mathbb{G}_{3,2}^{(c)}(T_g, 1) = -\frac{\sqrt{10}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(T_g)}{20} + \frac{\sqrt{30}\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_{2,3}^{(b)}(T_g)}{15} + \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(T_g)}{60} + \frac{\sqrt{10}\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{20} - \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{60} - \frac{\sqrt{30}\mathbb{Q}_{2,3}^{(a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(T_g)}{15}$$

$$\boxed{\text{z510}} \quad \mathbb{G}_{3,3}^{(c)}(T_g, 1) = -\frac{\sqrt{30}\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(T_g)}{15} - \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,3}^{(b)}(T_g)}{30} + \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(T_g)}{15} + \frac{\sqrt{30}\mathbb{Q}_{2,3}^{(a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{30}$$

$$\boxed{\text{z511}} \quad \mathbb{G}_{3,1}^{(c)}(T_g, 2) = \frac{\sqrt{6}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(T_g)}{12} - \frac{\sqrt{6}\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{12} + \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{4} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(T_g)}{4}$$

$$\boxed{\text{z512}} \quad \mathbb{G}_{3,2}^{(c)}(T_g, 2) = \frac{\sqrt{6}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(T_g)}{12} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(T_g)}{4} - \frac{\sqrt{6}\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{12} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{4}$$

$$\boxed{\text{z513}} \quad \mathbb{G}_{3,3}^{(c)}(T_g, 2) = -\frac{\sqrt{6}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,3}^{(b)}(T_g)}{6} + \frac{\sqrt{6}\mathbb{Q}_{2,3}^{(a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{6}$$

$$\boxed{\text{z514}} \quad \mathbb{G}_{1,1}^{(1,-1;c)}(T_g, a) = -\frac{\sqrt{10}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(T_g)}{10} + \frac{\sqrt{10}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{10} + \frac{\sqrt{30}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{30} \\ - \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(T_g)}{30} - \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,3}^{(b)}(T_g)}{30} + \frac{\sqrt{30}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(T_g)}{30}$$

$$\begin{aligned}
\boxed{\text{z515}} \quad \mathbb{G}_{1,2}^{(1,-1;c)}(T_g, a) &= \frac{\sqrt{10}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(T_g)}{10} + \frac{\sqrt{30}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,3}^{(b)}(T_g)}{30} - \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(T_g)}{30} \\
&\quad - \frac{\sqrt{10}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{10} + \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{30} - \frac{\sqrt{30}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(T_g)}{30} \\
\boxed{\text{z516}} \quad \mathbb{G}_{1,3}^{(1,-1;c)}(T_g, a) &= -\frac{\sqrt{30}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(T_g)}{30} + \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,3}^{(b)}(T_g)}{15} + \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(T_g)}{30} - \frac{\sqrt{30}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{15} \\
\boxed{\text{z517}} \quad \mathbb{G}_{1,1}^{(1,-1;c)}(T_g, b) &= -\frac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{2,1}^{(b)}(E_g)}{6} + \frac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{2,2}^{(b)}(E_g)}{2} \\
\boxed{\text{z518}} \quad \mathbb{G}_{1,2}^{(1,-1;c)}(T_g, b) &= -\frac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{2,1}^{(b)}(E_g)}{6} - \frac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{2,2}^{(b)}(E_g)}{2} \\
\boxed{\text{z519}} \quad \mathbb{G}_{1,3}^{(1,-1;c)}(T_g, b) &= \frac{\sqrt{3}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{2,1}^{(b)}(E_g)}{3} \\
\boxed{\text{z520}} \quad \mathbb{G}_{1,1}^{(1,-1;c)}(T_g, c) &= \frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_0^{(b)}(A_g)}{3} \\
\boxed{\text{z521}} \quad \mathbb{G}_{1,2}^{(1,-1;c)}(T_g, c) &= \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_0^{(b)}(A_g)}{3} \\
\boxed{\text{z522}} \quad \mathbb{G}_{1,3}^{(1,-1;c)}(T_g, c) &= \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_0^{(b)}(A_g)}{3} \\
\boxed{\text{z702}} \quad \mathbb{G}_{1,1}^{(1,-1;c)}(T_g, d) &= -\frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{6} + \frac{\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{2} \\
\boxed{\text{z703}} \quad \mathbb{G}_{1,2}^{(1,-1;c)}(T_g, d) &= -\frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{6} - \frac{\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{2} \\
\boxed{\text{z704}} \quad \mathbb{G}_{1,3}^{(1,-1;c)}(T_g, d) &= \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{3} \\
\boxed{\text{z705}} \quad \mathbb{G}_{1,1}^{(1,-1;c)}(T_g, e) &= \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{M}_{1,3}^{(b)}(T_g)}{6} - \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{M}_{1,2}^{(b)}(T_g)}{6} \\
\boxed{\text{z706}} \quad \mathbb{G}_{1,2}^{(1,-1;c)}(T_g, e) &= -\frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{M}_{1,3}^{(b)}(T_g)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{M}_{1,1}^{(b)}(T_g)}{6}
\end{aligned}$$

$$\begin{aligned}
\boxed{\text{z707}} \quad \mathbb{G}_{1,3}^{(1,-1;c)}(T_g, e) &= \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{M}_{1,2}^{(b)}(T_g)}{6} - \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{M}_{1,1}^{(b)}(T_g)}{6} \\
\boxed{\text{z708}} \quad \mathbb{G}_{3,1}^{(1,-1;c)}(T_g, 1a) &= \frac{\sqrt{10}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(T_g)}{20} - \frac{\sqrt{10}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{20} - \frac{\sqrt{30}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{60} \\
&\quad + \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(T_g)}{60} - \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,3}^{(b)}(T_g)}{15} + \frac{\sqrt{30}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(T_g)}{15} \\
\boxed{\text{z709}} \quad \mathbb{G}_{3,2}^{(1,-1;c)}(T_g, 1a) &= -\frac{\sqrt{10}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(T_g)}{20} + \frac{\sqrt{30}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,3}^{(b)}(T_g)}{15} + \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(T_g)}{60} \\
&\quad + \frac{\sqrt{10}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{20} - \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{60} - \frac{\sqrt{30}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(T_g)}{15} \\
\boxed{\text{z710}} \quad \mathbb{G}_{3,3}^{(1,-1;c)}(T_g, 1a) &= -\frac{\sqrt{30}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(T_g)}{15} - \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,3}^{(b)}(T_g)}{30} + \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(T_g)}{15} + \frac{\sqrt{30}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{30} \\
\boxed{\text{z711}} \quad \mathbb{G}_{3,1}^{(1,-1;c)}(T_g, 1b) &= \frac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_0^{(b)}(A_g)}{3} \\
\boxed{\text{z712}} \quad \mathbb{G}_{3,2}^{(1,-1;c)}(T_g, 1b) &= \frac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_0^{(b)}(A_g)}{3} \\
\boxed{\text{z713}} \quad \mathbb{G}_{3,3}^{(1,-1;c)}(T_g, 1b) &= \frac{\sqrt{3}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{T}_0^{(b)}(A_g)}{3} \\
\boxed{\text{z714}} \quad \mathbb{G}_{3,1}^{(1,-1;c)}(T_g, 1c) &= -\frac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{M}_{1,3}^{(b)}(T_g)}{4} - \frac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{M}_{1,3}^{(b)}(T_g)}{12} + \frac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{M}_{1,2}^{(b)}(T_g)}{4} - \frac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{M}_{1,2}^{(b)}(T_g)}{12} \\
\boxed{\text{z715}} \quad \mathbb{G}_{3,2}^{(1,-1;c)}(T_g, 1c) &= \frac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{M}_{1,3}^{(b)}(T_g)}{4} - \frac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{M}_{1,3}^{(b)}(T_g)}{12} - \frac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{M}_{1,1}^{(b)}(T_g)}{4} - \frac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{M}_{1,1}^{(b)}(T_g)}{12} \\
\boxed{\text{z716}} \quad \mathbb{G}_{3,3}^{(1,-1;c)}(T_g, 1c) &= -\frac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{M}_{1,2}^{(b)}(T_g)}{4} - \frac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{M}_{1,2}^{(b)}(T_g)}{12} + \frac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{M}_{1,1}^{(b)}(T_g)}{4} - \frac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{M}_{1,1}^{(b)}(T_g)}{12} \\
\boxed{\text{z717}} \quad \mathbb{G}_{3,1}^{(1,-1;c)}(T_g, 2a) &= \frac{\sqrt{6}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(T_g)}{12} - \frac{\sqrt{6}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{12} + \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_g)\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_g)}{4} \\
\boxed{\text{z718}} \quad \mathbb{G}_{3,2}^{(1,-1;c)}(T_g, 2a) &= \frac{\sqrt{6}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(T_g)}{12} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(T_g)}{4} - \frac{\sqrt{6}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{12} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{4}
\end{aligned}$$

$$\boxed{\text{z719}} \quad \mathbb{G}_{3,3}^{(1,-1;c)}(T_g, 2a) = -\frac{\sqrt{6}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,3}^{(b)}(T_g)}{6} + \frac{\sqrt{6}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{6}$$

$$\boxed{\text{z784}} \quad \mathbb{G}_{3,1}^{(1,-1;c)}(T_g, 2b) = \frac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_0^{(b)}(A_g)}{3}$$

$$\boxed{\text{z785}} \quad \mathbb{G}_{3,2}^{(1,-1;c)}(T_g, 2b) = \frac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_0^{(b)}(A_g)}{3}$$

$$\boxed{\text{z786}} \quad \mathbb{G}_{3,3}^{(1,-1;c)}(T_g, 2b) = \frac{\sqrt{3}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{T}_0^{(b)}(A_g)}{3}$$

$$\boxed{\text{z787}} \quad \mathbb{G}_{3,1}^{(1,-1;c)}(T_g, 2c) = \frac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{M}_{1,3}^{(b)}(T_g)}{12} + \frac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{M}_{1,3}^{(b)}(T_g)}{12} + \frac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{M}_{1,2}^{(b)}(T_g)}{12} - \frac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{M}_{1,2}^{(b)}(T_g)}{12} + \frac{\mathbb{M}_3^{(1,-1;a)}(A_g)\mathbb{M}_{1,1}^{(b)}(T_g)}{3}$$

$$\boxed{\text{z788}} \quad \mathbb{G}_{3,2}^{(1,-1;c)}(T_g, 2c) = \frac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{M}_{1,3}^{(b)}(T_g)}{12} - \frac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{M}_{1,3}^{(b)}(T_g)}{12} + \frac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{M}_{1,1}^{(b)}(T_g)}{12} + \frac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{M}_{1,1}^{(b)}(T_g)}{12} + \frac{\mathbb{M}_3^{(1,-1;a)}(A_g)\mathbb{M}_{1,2}^{(b)}(T_g)}{3}$$

$$\boxed{\text{z789}} \quad \mathbb{G}_{3,3}^{(1,-1;c)}(T_g, 2c) = \frac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{M}_{1,2}^{(b)}(T_g)}{12} + \frac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{M}_{1,2}^{(b)}(T_g)}{12} + \frac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{M}_{1,1}^{(b)}(T_g)}{12} - \frac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{M}_{1,1}^{(b)}(T_g)}{12} + \frac{\mathbb{M}_3^{(1,-1;a)}(A_g)\mathbb{M}_{1,3}^{(b)}(T_g)}{3}$$

$$\boxed{\text{z790}} \quad \mathbb{G}_{1,1}^{(1,0;c)}(T_g, a) = \frac{\sqrt{3}\mathbb{G}_{1,1}^{(1,0;a)}(T_g)\mathbb{Q}_0^{(b)}(A_g)}{3}$$

$$\boxed{\text{z791}} \quad \mathbb{G}_{1,2}^{(1,0;c)}(T_g, a) = \frac{\sqrt{3}\mathbb{G}_{1,2}^{(1,0;a)}(T_g)\mathbb{Q}_0^{(b)}(A_g)}{3}$$

$$\boxed{\text{z792}} \quad \mathbb{G}_{1,3}^{(1,0;c)}(T_g, a) = \frac{\sqrt{3}\mathbb{G}_{1,3}^{(1,0;a)}(T_g)\mathbb{Q}_0^{(b)}(A_g)}{3}$$

$$\boxed{\text{z793}} \quad \mathbb{G}_{1,1}^{(1,0;c)}(T_g, b) = -\frac{\sqrt{30}\mathbb{G}_{1,1}^{(1,0;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{30} + \frac{\sqrt{10}\mathbb{G}_{1,1}^{(1,0;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{10} + \frac{\sqrt{10}\mathbb{G}_{1,2}^{(1,0;a)}(T_g)\mathbb{Q}_{2,3}^{(b)}(T_g)}{10} + \frac{\sqrt{10}\mathbb{G}_{1,3}^{(1,0;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(T_g)}{10}$$

$$\boxed{\text{z794}} \quad \mathbb{G}_{1,2}^{(1,0;c)}(T_g, b) = \frac{\sqrt{10}\mathbb{G}_{1,1}^{(1,0;a)}(T_g)\mathbb{Q}_{2,3}^{(b)}(T_g)}{10} - \frac{\sqrt{30}\mathbb{G}_{1,2}^{(1,0;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{30} - \frac{\sqrt{10}\mathbb{G}_{1,2}^{(1,0;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{10} + \frac{\sqrt{10}\mathbb{G}_{1,3}^{(1,0;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(T_g)}{10}$$

$$\boxed{\text{z795}} \quad \mathbb{G}_{1,3}^{(1,0;c)}(T_g, b) = \frac{\sqrt{10}\mathbb{G}_{1,1}^{(1,0;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(T_g)}{10} + \frac{\sqrt{10}\mathbb{G}_{1,2}^{(1,0;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(T_g)}{10} + \frac{\sqrt{30}\mathbb{G}_{1,3}^{(1,0;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{15}$$

$$\boxed{\text{z796}} \quad \mathbb{G}_{1,1}^{(1,0;c)}(T_g, c) = -\frac{\sqrt{30}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{M}_{1,1}^{(b)}(T_g)}{30} + \frac{\sqrt{10}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{M}_{1,1}^{(b)}(T_g)}{10} + \frac{\sqrt{10}\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{M}_{1,3}^{(b)}(T_g)}{10} + \frac{\sqrt{10}\mathbb{T}_{2,3}^{(1,0;a)}(T_g)\mathbb{M}_{1,2}^{(b)}(T_g)}{10}$$

$$\begin{aligned}
\text{z797} \quad \mathbb{G}_{1,2}^{(1,0;c)}(T_g, c) &= -\frac{\sqrt{30}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{M}_{1,2}^{(b)}(T_g)}{30} + \frac{\sqrt{10}\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{M}_{1,3}^{(b)}(T_g)}{10} - \frac{\sqrt{10}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{M}_{1,2}^{(b)}(T_g)}{10} + \frac{\sqrt{10}\mathbb{T}_{2,3}^{(1,0;a)}(T_g)\mathbb{M}_{1,1}^{(b)}(T_g)}{10} \\
\text{z798} \quad \mathbb{G}_{1,3}^{(1,0;c)}(T_g, c) &= \frac{\sqrt{30}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{M}_{1,3}^{(b)}(T_g)}{15} + \frac{\sqrt{10}\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{M}_{1,2}^{(b)}(T_g)}{10} + \frac{\sqrt{10}\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{M}_{1,1}^{(b)}(T_g)}{10} \\
\text{z799} \quad \mathbb{G}_{3,1}^{(1,0;c)}(T_g, 1a) &= -\frac{\sqrt{5}\mathbb{G}_{1,1}^{(1,0;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{10} + \frac{\sqrt{15}\mathbb{G}_{1,1}^{(1,0;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{10} - \frac{\sqrt{15}\mathbb{G}_{1,2}^{(1,0;a)}(T_g)\mathbb{Q}_{2,3}^{(b)}(T_g)}{15} - \frac{\sqrt{15}\mathbb{G}_{1,3}^{(1,0;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(T_g)}{15} \\
\text{z800} \quad \mathbb{G}_{3,2}^{(1,0;c)}(T_g, 1a) &= -\frac{\sqrt{15}\mathbb{G}_{1,1}^{(1,0;a)}(T_g)\mathbb{Q}_{2,3}^{(b)}(T_g)}{15} - \frac{\sqrt{5}\mathbb{G}_{1,2}^{(1,0;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{10} - \frac{\sqrt{15}\mathbb{G}_{1,2}^{(1,0;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{10} - \frac{\sqrt{15}\mathbb{G}_{1,3}^{(1,0;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(T_g)}{15} \\
\text{z801} \quad \mathbb{G}_{3,3}^{(1,0;c)}(T_g, 1a) &= -\frac{\sqrt{15}\mathbb{G}_{1,1}^{(1,0;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(T_g)}{15} - \frac{\sqrt{15}\mathbb{G}_{1,2}^{(1,0;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(T_g)}{15} + \frac{\sqrt{5}\mathbb{G}_{1,3}^{(1,0;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{5} \\
\text{z802} \quad \mathbb{G}_{3,1}^{(1,0;c)}(T_g, 1b) &= -\frac{\sqrt{5}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{M}_{1,1}^{(b)}(T_g)}{10} + \frac{\sqrt{15}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{M}_{1,1}^{(b)}(T_g)}{10} - \frac{\sqrt{15}\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{M}_{1,3}^{(b)}(T_g)}{15} - \frac{\sqrt{15}\mathbb{T}_{2,3}^{(1,0;a)}(T_g)\mathbb{M}_{1,2}^{(b)}(T_g)}{15} \\
\text{z803} \quad \mathbb{G}_{3,2}^{(1,0;c)}(T_g, 1b) &= -\frac{\sqrt{5}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{M}_{1,2}^{(b)}(T_g)}{10} - \frac{\sqrt{15}\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{M}_{1,3}^{(b)}(T_g)}{15} - \frac{\sqrt{15}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{M}_{1,2}^{(b)}(T_g)}{10} - \frac{\sqrt{15}\mathbb{T}_{2,3}^{(1,0;a)}(T_g)\mathbb{M}_{1,1}^{(b)}(T_g)}{15} \\
\text{z804} \quad \mathbb{G}_{3,3}^{(1,0;c)}(T_g, 1b) &= \frac{\sqrt{5}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{M}_{1,3}^{(b)}(T_g)}{5} - \frac{\sqrt{15}\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{M}_{1,2}^{(b)}(T_g)}{15} - \frac{\sqrt{15}\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{M}_{1,1}^{(b)}(T_g)}{15} \\
\text{z805} \quad \mathbb{G}_{3,1}^{(1,0;c)}(T_g, 2a) &= -\frac{\sqrt{3}\mathbb{G}_{1,1}^{(1,0;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} - \frac{\mathbb{G}_{1,1}^{(1,0;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{6} + \frac{\mathbb{G}_{1,2}^{(1,0;a)}(T_g)\mathbb{Q}_{2,3}^{(b)}(T_g)}{3} - \frac{\mathbb{G}_{1,3}^{(1,0;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(T_g)}{3} \\
\text{z806} \quad \mathbb{G}_{3,2}^{(1,0;c)}(T_g, 2a) &= -\frac{\mathbb{G}_{1,1}^{(1,0;a)}(T_g)\mathbb{Q}_{2,3}^{(b)}(T_g)}{3} + \frac{\sqrt{3}\mathbb{G}_{1,2}^{(1,0;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} - \frac{\mathbb{G}_{1,2}^{(1,0;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{6} + \frac{\mathbb{G}_{1,3}^{(1,0;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(T_g)}{3} \\
\text{z807} \quad \mathbb{G}_{3,3}^{(1,0;c)}(T_g, 2a) &= \frac{\mathbb{G}_{1,1}^{(1,0;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(T_g)}{3} - \frac{\mathbb{G}_{1,2}^{(1,0;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(T_g)}{3} + \frac{\mathbb{G}_{1,3}^{(1,0;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{3} \\
\text{z808} \quad \mathbb{G}_{3,1}^{(1,0;c)}(T_g, 2b) &= -\frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{M}_{1,1}^{(b)}(T_g)}{6} - \frac{\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{M}_{1,1}^{(b)}(T_g)}{6} - \frac{\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{M}_{1,3}^{(b)}(T_g)}{3} + \frac{\mathbb{T}_{2,3}^{(1,0;a)}(T_g)\mathbb{M}_{1,2}^{(b)}(T_g)}{3} \\
\text{z809} \quad \mathbb{G}_{3,2}^{(1,0;c)}(T_g, 2b) &= \frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{M}_{1,2}^{(b)}(T_g)}{6} + \frac{\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{M}_{1,3}^{(b)}(T_g)}{3} - \frac{\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{M}_{1,2}^{(b)}(T_g)}{6} - \frac{\mathbb{T}_{2,3}^{(1,0;a)}(T_g)\mathbb{M}_{1,1}^{(b)}(T_g)}{3} \\
\text{z810} \quad \mathbb{G}_{3,3}^{(1,0;c)}(T_g, 2b) &= -\frac{\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{M}_{1,2}^{(b)}(T_g)}{3} + \frac{\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{M}_{1,3}^{(b)}(T_g)}{3} + \frac{\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{M}_{1,1}^{(b)}(T_g)}{3}
\end{aligned}$$

$$\boxed{\text{z811}} \quad \mathbb{G}_{1,1}^{(1,1;c)}(T_g, a) = \frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,1;a)}(T_g)\mathbb{T}_0^{(b)}(A_g)}{3}$$

$$\boxed{\text{z812}} \quad \mathbb{G}_{1,2}^{(1,1;c)}(T_g, a) = \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,1;a)}(T_g)\mathbb{T}_0^{(b)}(A_g)}{3}$$

$$\boxed{\text{z813}} \quad \mathbb{G}_{1,3}^{(1,1;c)}(T_g, a) = \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,1;a)}(T_g)\mathbb{T}_0^{(b)}(A_g)}{3}$$

$$\boxed{\text{z814}} \quad \mathbb{G}_{1,1}^{(1,1;c)}(T_g, b) = -\frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,1;a)}(T_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{6} + \frac{\mathbb{M}_{1,1}^{(1,1;a)}(T_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z815}} \quad \mathbb{G}_{1,2}^{(1,1;c)}(T_g, b) = -\frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,1;a)}(T_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{6} - \frac{\mathbb{M}_{1,2}^{(1,1;a)}(T_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z816}} \quad \mathbb{G}_{1,3}^{(1,1;c)}(T_g, b) = \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,1;a)}(T_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{3}$$

$$\boxed{\text{z817}} \quad \mathbb{G}_{1,1}^{(1,1;c)}(T_g, c) = \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,1;a)}(T_g)\mathbb{M}_{1,3}^{(b)}(T_g)}{6} - \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,1;a)}(T_g)\mathbb{M}_{1,2}^{(b)}(T_g)}{6}$$

$$\boxed{\text{z818}} \quad \mathbb{G}_{1,2}^{(1,1;c)}(T_g, c) = -\frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,1;a)}(T_g)\mathbb{M}_{1,3}^{(b)}(T_g)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,1;a)}(T_g)\mathbb{M}_{1,1}^{(b)}(T_g)}{6}$$

$$\boxed{\text{z819}} \quad \mathbb{G}_{1,3}^{(1,1;c)}(T_g, c) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,1;a)}(T_g)\mathbb{M}_{1,2}^{(b)}(T_g)}{6} - \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,1;a)}(T_g)\mathbb{M}_{1,1}^{(b)}(T_g)}{6}$$

$$\boxed{\text{z1033}} \quad \mathbb{Q}_{1,1}^{(c)}(T_u, a) = \frac{\sqrt{3}\mathbb{Q}_0^{(a)}(A_g)\mathbb{Q}_{1,1}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z1034}} \quad \mathbb{Q}_{1,2}^{(c)}(T_u, a) = \frac{\sqrt{3}\mathbb{Q}_0^{(a)}(A_g)\mathbb{Q}_{1,2}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z1035}} \quad \mathbb{Q}_{1,3}^{(c)}(T_u, a) = \frac{\sqrt{3}\mathbb{Q}_0^{(a)}(A_g)\mathbb{Q}_{1,3}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z1036}} \quad \mathbb{Q}_{1,1}^{(c)}(T_u, b) = -\frac{\sqrt{30}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(T_u)}{30} + \frac{\sqrt{10}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(T_u)}{10} + \frac{\sqrt{10}\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_{1,3}^{(b)}(T_u)}{10} + \frac{\sqrt{10}\mathbb{Q}_{2,3}^{(a)}(T_g)\mathbb{Q}_{1,2}^{(b)}(T_u)}{10}$$

$$\boxed{\text{z1037}} \quad \mathbb{Q}_{1,2}^{(c)}(T_u, b) = -\frac{\sqrt{30}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(T_u)}{30} + \frac{\sqrt{10}\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_{1,3}^{(b)}(T_u)}{10} - \frac{\sqrt{10}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(T_u)}{10} + \frac{\sqrt{10}\mathbb{Q}_{2,3}^{(a)}(T_g)\mathbb{Q}_{1,1}^{(b)}(T_u)}{10}$$

$$\begin{aligned}
\boxed{\text{z1038}} \quad \mathbb{Q}_{1,3}^{(c)}(T_u, b) &= \frac{\sqrt{30}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{1,3}^{(b)}(T_u)}{15} + \frac{\sqrt{10}\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_{1,2}^{(b)}(T_u)}{10} + \frac{\sqrt{10}\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_{1,1}^{(b)}(T_u)}{10} \\
\boxed{\text{z1039}} \quad \mathbb{Q}_{1,1}^{(c)}(T_u, c) &= -\frac{\sqrt{5}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{10} + \frac{\sqrt{15}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{10} - \frac{\sqrt{15}\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_{3,3}^{(b)}(T_u, 1)}{15} - \frac{\sqrt{15}\mathbb{Q}_{2,3}^{(a)}(T_g)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{15} \\
\boxed{\text{z1040}} \quad \mathbb{Q}_{1,2}^{(c)}(T_u, c) &= -\frac{\sqrt{5}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{10} - \frac{\sqrt{15}\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_{3,3}^{(b)}(T_u, 1)}{15} - \frac{\sqrt{15}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{10} - \frac{\sqrt{15}\mathbb{Q}_{2,3}^{(a)}(T_g)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{15} \\
\boxed{\text{z1041}} \quad \mathbb{Q}_{1,3}^{(c)}(T_u, c) &= \frac{\sqrt{5}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{3,3}^{(b)}(T_u, 1)}{5} - \frac{\sqrt{15}\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{15} - \frac{\sqrt{15}\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{15} \\
\boxed{\text{z1042}} \quad \mathbb{Q}_{1,1}^{(c)}(T_u, d) &= \frac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{6} - \frac{\sqrt{6}\mathbb{M}_{1,3}^{(a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{6} \\
\boxed{\text{z1043}} \quad \mathbb{Q}_{1,2}^{(c)}(T_u, d) &= -\frac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{6} \\
\boxed{\text{z1044}} \quad \mathbb{Q}_{1,3}^{(c)}(T_u, d) &= \frac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{6} - \frac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{6} \\
\boxed{\text{z1045}} \quad \mathbb{Q}_{1,1}^{(c)}(T_u, e) &= \frac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{6} - \frac{\sqrt{6}\mathbb{M}_{1,3}^{(a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{6} \\
\boxed{\text{z1046}} \quad \mathbb{Q}_{1,2}^{(c)}(T_u, e) &= -\frac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{6} \\
\boxed{\text{z1047}} \quad \mathbb{Q}_{1,3}^{(c)}(T_u, e) &= \frac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{6} - \frac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{6} \\
\boxed{\text{z1048}} \quad \mathbb{Q}_{3,1}^{(c)}(T_u, 1a) &= \frac{\sqrt{3}\mathbb{Q}_0^{(a)}(A_g)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{3} \\
\boxed{\text{z1049}} \quad \mathbb{Q}_{3,2}^{(c)}(T_u, 1a) &= \frac{\sqrt{3}\mathbb{Q}_0^{(a)}(A_g)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{3} \\
\boxed{\text{z1050}} \quad \mathbb{Q}_{3,3}^{(c)}(T_u, 1a) &= \frac{\sqrt{3}\mathbb{Q}_0^{(a)}(A_g)\mathbb{Q}_{3,3}^{(b)}(T_u, 1)}{3} \\
\boxed{\text{z1051}} \quad \mathbb{Q}_{3,1}^{(c)}(T_u, 1b) &= -\frac{\sqrt{5}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(T_u)}{10} + \frac{\sqrt{15}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(T_u)}{10} - \frac{\sqrt{15}\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_{1,3}^{(b)}(T_u)}{15} - \frac{\sqrt{15}\mathbb{Q}_{2,3}^{(a)}(T_g)\mathbb{Q}_{1,2}^{(b)}(T_u)}{15}
\end{aligned}$$

$$\begin{aligned}
\boxed{\text{z1052}} \quad \mathbb{Q}_{3,2}^{(c)}(T_u, 1b) &= -\frac{\sqrt{5}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(T_u)}{10} - \frac{\sqrt{15}\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_{1,3}^{(b)}(T_u)}{15} - \frac{\sqrt{15}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(T_u)}{10} - \frac{\sqrt{15}\mathbb{Q}_{2,3}^{(a)}(T_g)\mathbb{Q}_{1,1}^{(b)}(T_u)}{15} \\
\boxed{\text{z1053}} \quad \mathbb{Q}_{3,3}^{(c)}(T_u, 1b) &= \frac{\sqrt{5}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{1,3}^{(b)}(T_u)}{5} - \frac{\sqrt{15}\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_{1,2}^{(b)}(T_u)}{15} - \frac{\sqrt{15}\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_{1,1}^{(b)}(T_u)}{15} \\
\boxed{\text{z1054}} \quad \mathbb{Q}_{3,1}^{(c)}(T_u, 1c) &= -\frac{\sqrt{30}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{30} + \frac{\sqrt{10}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{10} + \frac{\sqrt{10}\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_{3,3}^{(b)}(T_u, 1)}{10} + \frac{\sqrt{10}\mathbb{Q}_{2,3}^{(a)}(T_g)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{10} \\
\boxed{\text{z1055}} \quad \mathbb{Q}_{3,2}^{(c)}(T_u, 1c) &= -\frac{\sqrt{30}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{30} + \frac{\sqrt{10}\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_{3,3}^{(b)}(T_u, 1)}{10} - \frac{\sqrt{10}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{10} + \frac{\sqrt{10}\mathbb{Q}_{2,3}^{(a)}(T_g)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{10} \\
\boxed{\text{z1056}} \quad \mathbb{Q}_{3,3}^{(c)}(T_u, 1c) &= \frac{\sqrt{30}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{3,3}^{(b)}(T_u, 1)}{15} + \frac{\sqrt{10}\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{10} + \frac{\sqrt{10}\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{10} \\
\boxed{\text{z1057}} \quad \mathbb{Q}_{3,1}^{(c)}(T_u, 2a) &= -\frac{\sqrt{3}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(T_u)}{6} - \frac{\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(T_u)}{6} - \frac{\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_{1,3}^{(b)}(T_u)}{3} + \frac{\mathbb{Q}_{2,3}^{(a)}(T_g)\mathbb{Q}_{1,2}^{(b)}(T_u)}{3} \\
\boxed{\text{z1058}} \quad \mathbb{Q}_{3,2}^{(c)}(T_u, 2a) &= \frac{\sqrt{3}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(T_u)}{6} + \frac{\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_{1,3}^{(b)}(T_u)}{3} - \frac{\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(T_u)}{6} - \frac{\mathbb{Q}_{2,3}^{(a)}(T_g)\mathbb{Q}_{1,1}^{(b)}(T_u)}{3} \\
\boxed{\text{z1059}} \quad \mathbb{Q}_{3,3}^{(c)}(T_u, 2a) &= -\frac{\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_{1,2}^{(b)}(T_u)}{3} + \frac{\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{1,3}^{(b)}(T_u)}{3} + \frac{\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_{1,1}^{(b)}(T_u)}{3} \\
\boxed{\text{z1060}} \quad \mathbb{Q}_{3,1}^{(c)}(T_u, 2b) &= \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{3} + \frac{\sqrt{6}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{9} - \frac{\sqrt{6}\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_{3,3}^{(b)}(T_u, 1)}{18} + \frac{\sqrt{6}\mathbb{Q}_{2,3}^{(a)}(T_g)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{18} \\
\boxed{\text{z1061}} \quad \mathbb{Q}_{3,2}^{(c)}(T_u, 2b) &= -\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{3} + \frac{\sqrt{6}\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_{3,3}^{(b)}(T_u, 1)}{18} + \frac{\sqrt{6}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{9} - \frac{\sqrt{6}\mathbb{Q}_{2,3}^{(a)}(T_g)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{18} \\
\boxed{\text{z1062}} \quad \mathbb{Q}_{3,3}^{(c)}(T_u, 2b) &= -\frac{\sqrt{6}\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{18} - \frac{2\sqrt{6}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{3,3}^{(b)}(T_u, 1)}{9} + \frac{\sqrt{6}\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{18} \\
\boxed{\text{z1063}} \quad \mathbb{Q}_{5,1}^{(c)}(T_u, 3) &= \frac{\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{6} + \frac{\sqrt{3}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{18} + \frac{2\sqrt{3}\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_{3,3}^{(b)}(T_u, 1)}{9} - \frac{2\sqrt{3}\mathbb{Q}_{2,3}^{(a)}(T_g)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{9} \\
\boxed{\text{z1064}} \quad \mathbb{Q}_{5,2}^{(c)}(T_u, 3) &= -\frac{\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{6} - \frac{2\sqrt{3}\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_{3,3}^{(b)}(T_u, 1)}{9} + \frac{\sqrt{3}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{18} + \frac{2\sqrt{3}\mathbb{Q}_{2,3}^{(a)}(T_g)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{9} \\
\boxed{\text{z1065}} \quad \mathbb{Q}_{5,3}^{(c)}(T_u, 3) &= \frac{2\sqrt{3}\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{9} - \frac{\sqrt{3}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{3,3}^{(b)}(T_u, 1)}{9} - \frac{2\sqrt{3}\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{9}
\end{aligned}$$

$$\begin{aligned}
\boxed{\text{z1066}} \quad \mathbb{Q}_{1,1}^{(1,-1;c)}(T_u, a) &= -\frac{\sqrt{30}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(T_u)}{30} + \frac{\sqrt{10}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(T_u)}{10} + \frac{\sqrt{10}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_g)\mathbb{Q}_{1,3}^{(b)}(T_u)}{10} + \frac{\sqrt{10}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_g)\mathbb{Q}_{1,2}^{(b)}(T_u)}{10} \\
\boxed{\text{z1067}} \quad \mathbb{Q}_{1,2}^{(1,-1;c)}(T_u, a) &= -\frac{\sqrt{30}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(T_u)}{30} + \frac{\sqrt{10}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_g)\mathbb{Q}_{1,3}^{(b)}(T_u)}{10} - \frac{\sqrt{10}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(T_u)}{10} + \frac{\sqrt{10}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_g)\mathbb{Q}_{1,1}^{(b)}(T_u)}{10} \\
\boxed{\text{z1068}} \quad \mathbb{Q}_{1,3}^{(1,-1;c)}(T_u, a) &= \frac{\sqrt{30}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{1,3}^{(b)}(T_u)}{15} + \frac{\sqrt{10}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_g)\mathbb{Q}_{1,2}^{(b)}(T_u)}{10} + \frac{\sqrt{10}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_g)\mathbb{Q}_{1,1}^{(b)}(T_u)}{10} \\
\boxed{\text{z1069}} \quad \mathbb{Q}_{1,1}^{(1,-1;c)}(T_u, b) &= -\frac{\sqrt{5}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{10} + \frac{\sqrt{15}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{10} - \frac{\sqrt{15}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_g)\mathbb{Q}_{3,3}^{(b)}(T_u, 1)}{15} - \frac{\sqrt{15}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_g)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{15} \\
\boxed{\text{z1070}} \quad \mathbb{Q}_{1,2}^{(1,-1;c)}(T_u, b) &= -\frac{\sqrt{5}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{10} - \frac{\sqrt{15}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_g)\mathbb{Q}_{3,3}^{(b)}(T_u, 1)}{15} - \frac{\sqrt{15}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{10} - \frac{\sqrt{15}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_g)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{15} \\
\boxed{\text{z1071}} \quad \mathbb{Q}_{1,3}^{(1,-1;c)}(T_u, b) &= \frac{\sqrt{5}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{3,3}^{(b)}(T_u, 1)}{5} - \frac{\sqrt{15}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_g)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{15} - \frac{\sqrt{15}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_g)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{15} \\
\boxed{\text{z1072}} \quad \mathbb{Q}_{1,1}^{(1,-1;c)}(T_u, c) &= \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{6} - \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{6} \\
\boxed{\text{z1073}} \quad \mathbb{Q}_{1,2}^{(1,-1;c)}(T_u, c) &= -\frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{6} \\
\boxed{\text{z1074}} \quad \mathbb{Q}_{1,3}^{(1,-1;c)}(T_u, c) &= \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{6} - \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{6} \\
\boxed{\text{z1075}} \quad \mathbb{Q}_{1,1}^{(1,-1;c)}(T_u, d) &= \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{6} - \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{6} \\
\boxed{\text{z1076}} \quad \mathbb{Q}_{1,2}^{(1,-1;c)}(T_u, d) &= -\frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{6} \\
\boxed{\text{z1077}} \quad \mathbb{Q}_{1,3}^{(1,-1;c)}(T_u, d) &= \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{6} - \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{6} \\
\boxed{\text{z1078}} \quad \mathbb{Q}_{3,1}^{(1,-1;c)}(T_u, 1a) &= -\frac{\sqrt{5}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(T_u)}{10} + \frac{\sqrt{15}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(T_u)}{10} - \frac{\sqrt{15}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_g)\mathbb{Q}_{1,3}^{(b)}(T_u)}{15} - \frac{\sqrt{15}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_g)\mathbb{Q}_{1,2}^{(b)}(T_u)}{15} \\
\boxed{\text{z1079}} \quad \mathbb{Q}_{3,2}^{(1,-1;c)}(T_u, 1a) &= -\frac{\sqrt{5}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(T_u)}{10} - \frac{\sqrt{15}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_g)\mathbb{Q}_{1,3}^{(b)}(T_u)}{15} - \frac{\sqrt{15}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(T_u)}{10} - \frac{\sqrt{15}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_g)\mathbb{Q}_{1,1}^{(b)}(T_u)}{15}
\end{aligned}$$

[illegible]

$$\begin{aligned}
\boxed{\text{z1094}} \quad \mathbb{Q}_{3,2}^{(1,-1;c)}(T_u, 2b) &= -\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{3} + \frac{\sqrt{6}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_g)\mathbb{Q}_{3,3}^{(b)}(T_u, 1)}{18} + \frac{\sqrt{6}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{9} - \frac{\sqrt{6}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_g)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{18} \\
\boxed{\text{z1095}} \quad \mathbb{Q}_{3,3}^{(1,-1;c)}(T_u, 2b) &= -\frac{\sqrt{6}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_g)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{18} - \frac{2\sqrt{6}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{3,3}^{(b)}(T_u, 1)}{9} + \frac{\sqrt{6}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_g)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{18} \\
\boxed{\text{z1096}} \quad \mathbb{Q}_{3,1}^{(1,-1;c)}(T_u, 2c) &= \frac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{12} + \frac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{12} + \frac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{12} - \frac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{12} + \frac{\mathbb{M}_3^{(1,-1;a)}(A_g)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{3} \\
\boxed{\text{z1097}} \quad \mathbb{Q}_{3,2}^{(1,-1;c)}(T_u, 2c) &= \frac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{12} - \frac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{12} + \frac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{12} + \frac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{12} + \frac{\mathbb{M}_3^{(1,-1;a)}(A_g)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{3} \\
\boxed{\text{z1098}} \quad \mathbb{Q}_{3,3}^{(1,-1;c)}(T_u, 2c) &= \frac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{12} + \frac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{12} + \frac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{12} - \frac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{12} + \frac{\mathbb{M}_3^{(1,-1;a)}(A_g)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{3} \\
\boxed{\text{z1099}} \quad \mathbb{Q}_{3,1}^{(1,-1;c)}(T_u, 2d) &= \frac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{12} + \frac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{12} + \frac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{12} - \frac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{12} + \frac{\mathbb{M}_3^{(1,-1;a)}(A_g)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{3} \\
\boxed{\text{z1100}} \quad \mathbb{Q}_{3,2}^{(1,-1;c)}(T_u, 2d) &= \frac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{12} - \frac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{12} + \frac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{12} + \frac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{12} + \frac{\mathbb{M}_3^{(1,-1;a)}(A_g)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{3} \\
\boxed{\text{z1101}} \quad \mathbb{Q}_{3,3}^{(1,-1;c)}(T_u, 2d) &= \frac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{12} + \frac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{12} + \frac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{12} - \frac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{12} + \frac{\mathbb{M}_3^{(1,-1;a)}(A_g)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{3} \\
\boxed{\text{z1102}} \quad \mathbb{Q}_{5,1}^{(1,-1;c)}(T_u, 3) &= \frac{\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{6} + \frac{\sqrt{3}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{18} + \frac{2\sqrt{3}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_g)\mathbb{Q}_{3,3}^{(b)}(T_u, 1)}{9} - \frac{2\sqrt{3}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_g)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{9} \\
\boxed{\text{z1103}} \quad \mathbb{Q}_{5,2}^{(1,-1;c)}(T_u, 3) &= -\frac{\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{6} - \frac{2\sqrt{3}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_g)\mathbb{Q}_{3,3}^{(b)}(T_u, 1)}{9} + \frac{\sqrt{3}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{18} + \frac{2\sqrt{3}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_g)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{9} \\
\boxed{\text{z1104}} \quad \mathbb{Q}_{5,3}^{(1,-1;c)}(T_u, 3) &= \frac{2\sqrt{3}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_g)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{9} - \frac{\sqrt{3}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{3,3}^{(b)}(T_u, 1)}{9} - \frac{2\sqrt{3}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_g)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{9} \\
\boxed{\text{z1105}} \quad \mathbb{Q}_{1,1}^{(1,0;c)}(T_u, a) &= \frac{\sqrt{6}\mathbb{G}_{1,2}^{(1,0;a)}(T_g)\mathbb{Q}_{1,3}^{(b)}(T_u)}{6} - \frac{\sqrt{6}\mathbb{G}_{1,3}^{(1,0;a)}(T_g)\mathbb{Q}_{1,2}^{(b)}(T_u)}{6} \\
\boxed{\text{z1106}} \quad \mathbb{Q}_{1,2}^{(1,0;c)}(T_u, a) &= -\frac{\sqrt{6}\mathbb{G}_{1,1}^{(1,0;a)}(T_g)\mathbb{Q}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{G}_{1,3}^{(1,0;a)}(T_g)\mathbb{Q}_{1,1}^{(b)}(T_u)}{6} \\
\boxed{\text{z1107}} \quad \mathbb{Q}_{1,3}^{(1,0;c)}(T_u, a) &= \frac{\sqrt{6}\mathbb{G}_{1,1}^{(1,0;a)}(T_g)\mathbb{Q}_{1,2}^{(b)}(T_u)}{6} - \frac{\sqrt{6}\mathbb{G}_{1,2}^{(1,0;a)}(T_g)\mathbb{Q}_{1,1}^{(b)}(T_u)}{6}
\end{aligned}$$

$$\boxed{\text{z1109}} \quad \mathbb{Q}_{1,2}^{(1,0;c)}(T_u, b) = -\frac{\sqrt{30}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{30} + \frac{\sqrt{10}\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{10} - \frac{\sqrt{10}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{10} + \frac{\sqrt{10}\mathbb{T}_{2,3}^{(1,0;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{10}$$

$$\boxed{\mathbf{z1111}} \quad \mathbb{Q}_{1,1}^{(1,0;c)}(T_u, c) = -\frac{\sqrt{30}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{30} + \frac{\sqrt{10}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{10} + \frac{\sqrt{10}\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{10} + \frac{\sqrt{10}\mathbb{T}_{2,3}^{(1,0;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{10}$$

$$\boxed{\text{z1113}} \quad \mathbb{Q}_{1,3}^{(1,0;c)}(T_u, c) = \frac{\sqrt{30}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{15} + \frac{\sqrt{10}\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{10} + \frac{\sqrt{10}\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{10}$$

$$\boxed{\text{z1115}} \quad \mathbb{Q}_{3,2}^{(1,0;c)}(T_u, 1a) = \frac{\sqrt{6}\mathbb{G}_{1,1}^{(1,0;a)}(T_g)\mathbb{Q}_{3,3}^{(b)}(T_u, 1)}{6} - \frac{\sqrt{6}\mathbb{G}_{1,3}^{(1,0;a)}(T_g)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{6}$$

$$\boxed{\text{z1117}} \quad \mathbb{Q}_{3,1}^{(1,0;c)}(Tu, 1b) = -\frac{\sqrt{5}\mathbb{T}_{2,1}^{(1,0;a)}(Eg)\mathbb{T}_{1,1}^{(b)}(Tu, a)}{10} + \frac{\sqrt{15}\mathbb{T}_{2,2}^{(1,0;a)}(Eg)\mathbb{T}_{1,1}^{(b)}(Tu, a)}{10} - \frac{\sqrt{15}\mathbb{T}_{2,2}^{(1,0;a)}(Tg)\mathbb{T}_{1,3}^{(b)}(Tu, a)}{15} - \frac{\sqrt{15}\mathbb{T}_{2,3}^{(1,0;a)}(Tg)\mathbb{T}_{1,2}^{(b)}(Tu, a)}{15}$$

$$\boxed{\text{z1119}} \quad \mathbb{Q}_{3,3}^{(1,0;c)}(T_u, 1b) = \frac{\sqrt{5}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{5} - \frac{\sqrt{15}\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{15} - \frac{\sqrt{15}\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{15}$$

$$\boxed{\mathbf{z1121}} \quad \mathbb{Q}_{3,2}^{(1,0;c)}(T_u, 1c) = -\frac{\sqrt{5}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{10} - \frac{\sqrt{15}\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{15} - \frac{\sqrt{15}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{10} - \frac{\sqrt{15}\mathbb{T}_{2,3}^{(1,0;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{15}$$

$$\begin{aligned}
\boxed{\text{z1122}} \quad \mathbb{Q}_{3,3}^{(1,0;c)}(T_u, 1c) &= \frac{\sqrt{5}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{5} - \frac{\sqrt{15}\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{15} - \frac{\sqrt{15}\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{15} \\
\boxed{\text{z1123}} \quad \mathbb{Q}_{3,1}^{(1,0;c)}(T_u, 2a) &= -\frac{\sqrt{6}\mathbb{G}_{1,2}^{(1,0;a)}(T_g)\mathbb{Q}_{3,3}^{(b)}(T_u, 1)}{6} - \frac{\sqrt{6}\mathbb{G}_{1,3}^{(1,0;a)}(T_g)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{6} \\
\boxed{\text{z1124}} \quad \mathbb{Q}_{3,2}^{(1,0;c)}(T_u, 2a) &= -\frac{\sqrt{6}\mathbb{G}_{1,1}^{(1,0;a)}(T_g)\mathbb{Q}_{3,3}^{(b)}(T_u, 1)}{6} - \frac{\sqrt{6}\mathbb{G}_{1,3}^{(1,0;a)}(T_g)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{6} \\
\boxed{\text{z1125}} \quad \mathbb{Q}_{3,3}^{(1,0;c)}(T_u, 2a) &= -\frac{\sqrt{6}\mathbb{G}_{1,1}^{(1,0;a)}(T_g)\mathbb{Q}_{3,2}^{(b)}(T_u, 1)}{6} - \frac{\sqrt{6}\mathbb{G}_{1,2}^{(1,0;a)}(T_g)\mathbb{Q}_{3,1}^{(b)}(T_u, 1)}{6} \\
\boxed{\text{z1126}} \quad \mathbb{Q}_{3,1}^{(1,0;c)}(T_u, 2b) &= -\frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{6} - \frac{\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{6} - \frac{\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{3} + \frac{\mathbb{T}_{2,3}^{(1,0;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{3} \\
\boxed{\text{z1127}} \quad \mathbb{Q}_{3,2}^{(1,0;c)}(T_u, 2b) &= \frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{6} + \frac{\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{3} - \frac{\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{6} - \frac{\mathbb{T}_{2,3}^{(1,0;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{3} \\
\boxed{\text{z1128}} \quad \mathbb{Q}_{3,3}^{(1,0;c)}(T_u, 2b) &= -\frac{\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{3} + \frac{\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{3} + \frac{\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{3} \\
\boxed{\text{z1129}} \quad \mathbb{Q}_{3,1}^{(1,0;c)}(T_u, 2c) &= -\frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{6} - \frac{\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{6} - \frac{\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{3} + \frac{\mathbb{T}_{2,3}^{(1,0;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{3} \\
\boxed{\text{z1130}} \quad \mathbb{Q}_{3,2}^{(1,0;c)}(T_u, 2c) &= \frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{6} + \frac{\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{3} - \frac{\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{6} - \frac{\mathbb{T}_{2,3}^{(1,0;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{3} \\
\boxed{\text{z1131}} \quad \mathbb{Q}_{3,3}^{(1,0;c)}(T_u, 2c) &= -\frac{\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{3} + \frac{\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{3} + \frac{\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{3} \\
\boxed{\text{z1132}} \quad \mathbb{Q}_{1,1}^{(1,1;c)}(T_u, a) &= \frac{\sqrt{3}\mathbb{Q}_0^{(1,1;a)}(A_g)\mathbb{Q}_{1,1}^{(b)}(T_u)}{3} \\
\boxed{\text{z1133}} \quad \mathbb{Q}_{1,2}^{(1,1;c)}(T_u, a) &= \frac{\sqrt{3}\mathbb{Q}_0^{(1,1;a)}(A_g)\mathbb{Q}_{1,2}^{(b)}(T_u)}{3} \\
\boxed{\text{z1134}} \quad \mathbb{Q}_{1,3}^{(1,1;c)}(T_u, a) &= \frac{\sqrt{3}\mathbb{Q}_0^{(1,1;a)}(A_g)\mathbb{Q}_{1,3}^{(b)}(T_u)}{3} \\
\boxed{\text{z1135}} \quad \mathbb{Q}_{1,1}^{(1,1;c)}(T_u, b) &= \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{6} - \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{6}
\end{aligned}$$

$$\boxed{\text{z1136}} \quad \mathbb{Q}_{1,2}^{(1,1;c)}(Tu, b) = -\frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(Tu, a)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(Tu, a)}{6}$$

$$\boxed{\text{z1137}} \quad \mathbb{Q}_{1,3}^{(1,1;c)}(Tu, b) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(Tu, a)}{6} - \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(Tu, a)}{6}$$

$$\boxed{\text{z1138}} \quad \mathbb{Q}_{1,1}^{(1,1;c)}(Tu, c) = \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(Tu, b)}{6} - \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(Tu, b)}{6}$$

$$\boxed{\text{z1139}} \quad \mathbb{Q}_{1,2}^{(1,1;c)}(Tu, c) = -\frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(Tu, b)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(Tu, b)}{6}$$

$$\boxed{\text{z1140}} \quad \mathbb{Q}_{1,3}^{(1,1;c)}(Tu, c) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(Tu, b)}{6} - \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(Tu, b)}{6}$$

$$\boxed{\text{z1141}} \quad \mathbb{Q}_{3,1}^{(1,1;c)}(Tu, 1) = \frac{\sqrt{3}\mathbb{Q}_0^{(1,1;a)}(A_g)\mathbb{Q}_{3,1}^{(b)}(Tu, 1)}{3}$$

$$\boxed{\text{z1142}} \quad \mathbb{Q}_{3,2}^{(1,1;c)}(Tu, 1) = \frac{\sqrt{3}\mathbb{Q}_0^{(1,1;a)}(A_g)\mathbb{Q}_{3,2}^{(b)}(Tu, 1)}{3}$$

$$\boxed{\text{z1143}} \quad \mathbb{Q}_{3,3}^{(1,1;c)}(Tu, 1) = \frac{\sqrt{3}\mathbb{Q}_0^{(1,1;a)}(A_g)\mathbb{Q}_{3,3}^{(b)}(Tu, 1)}{3}$$

$$\boxed{\text{z1144}} \quad \mathbb{G}_{2,1}^{(c)}(Tu, a) = \frac{\sqrt{6}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(Tu)}{6} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(Tu)}{6} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_{1,3}^{(b)}(Tu)}{6} + \frac{\sqrt{2}\mathbb{Q}_{2,3}^{(a)}(T_g)\mathbb{Q}_{1,2}^{(b)}(Tu)}{6}$$

$$\boxed{\text{z1145}} \quad \mathbb{G}_{2,2}^{(c)}(Tu, a) = -\frac{\sqrt{6}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(Tu)}{6} + \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_{1,3}^{(b)}(Tu)}{6} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(Tu)}{6} - \frac{\sqrt{2}\mathbb{Q}_{2,3}^{(a)}(T_g)\mathbb{Q}_{1,1}^{(b)}(Tu)}{6}$$

$$\boxed{\text{z1146}} \quad \mathbb{G}_{2,3}^{(c)}(Tu, a) = -\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_{1,2}^{(b)}(Tu)}{6} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{1,3}^{(b)}(Tu)}{3} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_{1,1}^{(b)}(Tu)}{6}$$

$$\boxed{\text{z1147}} \quad \mathbb{G}_{2,1}^{(c)}(Tu, b) = \frac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(T_g)\mathbb{T}_{1,3}^{(b)}(Tu, a)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(a)}(T_g)\mathbb{T}_{1,2}^{(b)}(Tu, a)}{6}$$

$$\boxed{\text{z1148}} \quad \mathbb{G}_{2,2}^{(c)}(Tu, b) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(T_g)\mathbb{T}_{1,3}^{(b)}(Tu, a)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(a)}(T_g)\mathbb{T}_{1,1}^{(b)}(Tu, a)}{6}$$

$$\boxed{\text{z1149}} \quad \mathbb{G}_{2,3}^{(c)}(Tu, b) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(T_g)\mathbb{T}_{1,2}^{(b)}(Tu, a)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(T_g)\mathbb{T}_{1,1}^{(b)}(Tu, a)}{6}$$

$$\boxed{\text{z1150}} \quad \mathbb{G}_{2,1}^{(c)}(T_u, c) = \frac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{6}$$

$$\boxed{\text{z1151}} \quad \mathbb{G}_{2,2}^{(c)}(T_u, c) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{6}$$

$$\boxed{\text{z1152}} \quad \mathbb{G}_{2,3}^{(c)}(T_u, c) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{6}$$

$$\boxed{\text{z1153}} \quad \mathbb{G}_{2,1}^{(1,-1;c)}(T_u, a) = \frac{\sqrt{6}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(T_u)}{6} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(T_u)}{6} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_g)\mathbb{Q}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{2}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_g)\mathbb{Q}_{1,2}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z1154}} \quad \mathbb{G}_{2,2}^{(1,-1;c)}(T_u, a) = -\frac{\sqrt{6}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(T_u)}{6} + \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_g)\mathbb{Q}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(T_u)}{6} - \frac{\sqrt{2}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_g)\mathbb{Q}_{1,1}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z1155}} \quad \mathbb{G}_{2,3}^{(1,-1;c)}(T_u, a) = -\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_g)\mathbb{Q}_{1,2}^{(b)}(T_u)}{6} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{1,3}^{(b)}(T_u)}{3} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_g)\mathbb{Q}_{1,1}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z1156}} \quad \mathbb{G}_{2,1}^{(1,-1;c)}(T_u, b) = -\frac{\sqrt{21}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{21} + \frac{\sqrt{35}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{21} \\ - \frac{\sqrt{21}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{21} - \frac{\sqrt{35}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{21} + \frac{\sqrt{35}\mathbb{M}_3^{(1,-1;a)}(A_g)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{21}$$

$$\boxed{\text{z1157}} \quad \mathbb{G}_{2,2}^{(1,-1;c)}(T_u, b) = -\frac{\sqrt{21}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{21} - \frac{\sqrt{35}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{21} \\ - \frac{\sqrt{21}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{21} + \frac{\sqrt{35}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{21} + \frac{\sqrt{35}\mathbb{M}_3^{(1,-1;a)}(A_g)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{21}$$

$$\boxed{\text{z1158}} \quad \mathbb{G}_{2,3}^{(1,-1;c)}(T_u, b) = -\frac{\sqrt{21}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{21} + \frac{\sqrt{35}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{21} \\ - \frac{\sqrt{21}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{21} - \frac{\sqrt{35}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{21} + \frac{\sqrt{35}\mathbb{M}_3^{(1,-1;a)}(A_g)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{21}$$

$$\boxed{\text{z1159}} \quad \mathbb{G}_{2,1}^{(1,-1;c)}(T_u, c) = -\frac{\sqrt{21}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{21} + \frac{\sqrt{35}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{21} \\ - \frac{\sqrt{21}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{21} - \frac{\sqrt{35}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{21} + \frac{\sqrt{35}\mathbb{M}_3^{(1,-1;a)}(A_g)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{21}$$

$$\boxed{\text{z1160}} \quad \mathbb{G}_{2,2}^{(1,-1;c)}(T_u, c) = -\frac{\sqrt{21}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{21} - \frac{\sqrt{35}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{21} \\ - \frac{\sqrt{21}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{21} + \frac{\sqrt{35}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{21} + \frac{\sqrt{35}\mathbb{M}_3^{(1,-1;a)}(A_g)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{21}$$

$$\boxed{\text{z1161}} \quad \mathbb{G}_{2,3}^{(1,-1;c)}(T_u, c) = -\frac{\sqrt{21}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{21} + \frac{\sqrt{35}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{21} \\ - \frac{\sqrt{21}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{21} - \frac{\sqrt{35}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{21} + \frac{\sqrt{35}\mathbb{M}_3^{(1,-1;a)}(A_g)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{21}$$

$$\boxed{\text{z1162}} \quad \mathbb{G}_{2,1}^{(1,-1;c)}(T_u, d) = \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{6}$$

$$\boxed{\text{z1163}} \quad \mathbb{G}_{2,2}^{(1,-1;c)}(T_u, d) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{6}$$

$$\boxed{\text{z1164}} \quad \mathbb{G}_{2,3}^{(1,-1;c)}(T_u, d) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{6}$$

$$\boxed{\text{z1165}} \quad \mathbb{G}_{2,1}^{(1,-1;c)}(T_u, e) = \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{6}$$

$$\boxed{\text{z1166}} \quad \mathbb{G}_{2,2}^{(1,-1;c)}(T_u, e) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{6}$$

$$\boxed{\text{z1167}} \quad \mathbb{G}_{2,3}^{(1,-1;c)}(T_u, e) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{6}$$

$$\boxed{\text{z1168}} \quad \mathbb{G}_{4,1}^{(1,-1;c)}(T_u, 1a) = \frac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{12} - \frac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{4} - \frac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{12} - \frac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{4}$$

$$\boxed{\text{z1169}} \quad \mathbb{G}_{4,2}^{(1,-1;c)}(T_u, 1a) = -\frac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{12} - \frac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{4} + \frac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{12} - \frac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{4}$$

$$\boxed{\text{z1170}} \quad \mathbb{G}_{4,3}^{(1,-1;c)}(T_u, 1a) = \frac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{12} - \frac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{4} - \frac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{12} - \frac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{4}$$

$$\boxed{\text{z1171}} \quad \mathbb{G}_{4,1}^{(1,-1;c)}(T_u, 1b) = \frac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{12} - \frac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{4} - \frac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{12} - \frac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{4}$$

$$\begin{aligned}
\boxed{\text{z1172}} \quad \mathbb{G}_{4,2}^{(1,-1;c)}(T_u, 1b) &= -\frac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{12} - \frac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{4} + \frac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{12} - \frac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{4} \\
\boxed{\text{z1173}} \quad \mathbb{G}_{4,3}^{(1,-1;c)}(T_u, 1b) &= \frac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{12} - \frac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{4} - \frac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{12} - \frac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{4} \\
\boxed{\text{z1174}} \quad \mathbb{G}_{4,1}^{(1,-1;c)}(T_u, 2a) &= -\frac{\sqrt{105}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{84} - \frac{3\sqrt{7}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{28} - \frac{\sqrt{105}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{84} \\
&\quad + \frac{3\sqrt{7}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{28} + \frac{\sqrt{7}\mathbb{M}_3^{(1,-1;a)}(A_g)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{7} \\
\boxed{\text{z1175}} \quad \mathbb{G}_{4,2}^{(1,-1;c)}(T_u, 2a) &= -\frac{\sqrt{105}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{84} + \frac{3\sqrt{7}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{28} - \frac{\sqrt{105}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{84} \\
&\quad - \frac{3\sqrt{7}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{28} + \frac{\sqrt{7}\mathbb{M}_3^{(1,-1;a)}(A_g)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{7} \\
\boxed{\text{z1176}} \quad \mathbb{G}_{4,3}^{(1,-1;c)}(T_u, 2a) &= -\frac{\sqrt{105}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{84} - \frac{3\sqrt{7}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{28} - \frac{\sqrt{105}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{84} \\
&\quad + \frac{3\sqrt{7}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{28} + \frac{\sqrt{7}\mathbb{M}_3^{(1,-1;a)}(A_g)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{7} \\
\boxed{\text{z1177}} \quad \mathbb{G}_{4,1}^{(1,-1;c)}(T_u, 2b) &= -\frac{\sqrt{105}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{84} - \frac{3\sqrt{7}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{28} - \frac{\sqrt{105}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{84} \\
&\quad + \frac{3\sqrt{7}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{28} + \frac{\sqrt{7}\mathbb{M}_3^{(1,-1;a)}(A_g)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{7} \\
\boxed{\text{z1178}} \quad \mathbb{G}_{4,2}^{(1,-1;c)}(T_u, 2b) &= -\frac{\sqrt{105}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{84} + \frac{3\sqrt{7}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{28} - \frac{\sqrt{105}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{84} \\
&\quad - \frac{3\sqrt{7}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{28} + \frac{\sqrt{7}\mathbb{M}_3^{(1,-1;a)}(A_g)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{7} \\
\boxed{\text{z1179}} \quad \mathbb{G}_{4,3}^{(1,-1;c)}(T_u, 2b) &= -\frac{\sqrt{105}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{84} - \frac{3\sqrt{7}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{28} - \frac{\sqrt{105}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{84} \\
&\quad + \frac{3\sqrt{7}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{28} + \frac{\sqrt{7}\mathbb{M}_3^{(1,-1;a)}(A_g)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{7} \\
\boxed{\text{z1180}} \quad \mathbb{G}_{2,1}^{(1,0;c)}(T_u, a) &= \frac{\sqrt{6}\mathbb{G}_{1,2}^{(1,0;a)}(T_g)\mathbb{Q}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{G}_{1,3}^{(1,0;a)}(T_g)\mathbb{Q}_{1,2}^{(b)}(T_u)}{6}
\end{aligned}$$

$$\boxed{\text{z1182}} \quad \mathbb{G}_{2,3}^{(1,0;c)}(T_u, a) = \frac{\sqrt{6}\mathbb{G}_{1,1}^{(1,0;a)}(T_g)\mathbb{Q}_{1,2}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{G}_{1,2}^{(1,0;a)}(T_g)\mathbb{Q}_{1,1}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z1183}} \quad \mathbb{G}_{2,1}^{(1,0;c)}(Tu, b) = \frac{\sqrt{6}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(Tu, a)}{6} + \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(Tu, a)}{6} - \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(Tu, a)}{6} + \frac{\sqrt{2}\mathbb{T}_{2,3}^{(1,0;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(Tu, a)}{6}$$

$$\boxed{\text{z1184}} \quad \mathbb{G}_{2,2}^{(1,0;c)}(T_u, b) = -\frac{\sqrt{6}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{6} + \frac{\sqrt{2}\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{6} + \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{6} - \frac{\sqrt{2}\mathbb{T}_{2,3}^{(1,0;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{6}$$

$$\boxed{\text{z1185}} \quad \mathbb{G}_{2,3}^{(1,0;c)}(T_u, b) = -\frac{\sqrt{2}\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{6} - \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{3} + \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{6}$$

$$\boxed{\text{z1186}} \quad \mathbb{G}_{2,1}^{(1,0;c)}(T_u, c) = \frac{\sqrt{6}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{6} + \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{6} - \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{6} + \frac{\sqrt{2}\mathbb{T}_{2,3}^{(1,0;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{6}$$

$$\boxed{\text{z1187}} \quad \mathbb{G}_{2,2}^{(1,0;c)}(Tu, c) = -\frac{\sqrt{6}\mathbb{T}_{2,1}^{(1,0;a)}(Eg)\mathbb{T}_{1,2}^{(b)}(Tu, b)}{6} + \frac{\sqrt{2}\mathbb{T}_{2,1}^{(1,0;a)}(Tg)\mathbb{T}_{1,3}^{(b)}(Tu, b)}{6} + \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(Eg)\mathbb{T}_{1,2}^{(b)}(Tu, b)}{6} - \frac{\sqrt{2}\mathbb{T}_{2,3}^{(1,0;a)}(Tg)\mathbb{T}_{1,1}^{(b)}(Tu, b)}{6}$$

$$\boxed{\text{z1188}} \quad \mathbb{G}_{2,3}^{(1,0;c)}(Tu, c) = -\frac{\sqrt{2}\mathbb{T}_{2,1}^{(1,0;a)}(Tu)\mathbb{T}_{1,2}^{(b)}(Tu, b)}{6} - \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(Eg)\mathbb{T}_{1,3}^{(b)}(Tu, b)}{3} + \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(Tg)\mathbb{T}_{1,1}^{(b)}(Tu, b)}{6}$$

$$\boxed{\text{z1189}} \quad \mathbb{G}_{2,1}^{(1,1;c)}(T_u, a) = \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{6}$$

$$\boxed{\text{z1190}} \quad \mathbb{G}_{2,2}^{(1,1;c)}(T_u, a) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u, a)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{6}$$

$$\boxed{\text{z1191}} \quad \mathbb{G}_{2,3}^{(1,1;c)}(T_u, a) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, a)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, a)}{6}$$

$$\boxed{\text{z1192}} \quad \mathbb{G}_{2,1}^{(1,1;c)}(T_u, b) = \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{6}$$

$$\boxed{\text{z1193}} \quad \mathbb{G}_{2,2}^{(1,1;c)}(T_u, b) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u, b)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{6}$$

$$\boxed{\text{z1194}} \quad \mathbb{G}_{2,3}^{(1,1;c)}(T_u, b) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u, b)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u, b)}{6}$$

- 'A'-'A' bond-cluster

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

* ket: $|s, \uparrow\rangle, |s, \downarrow\rangle$

* wyckoff: **3a@1a**

$$\boxed{\text{z40}} \quad \mathbb{Q}_0^{(c)}(A_g) = \mathbb{Q}_0^{(a)}(A_g)\mathbb{Q}_0^{(b)}(A_g)$$

$$\boxed{\text{z148}} \quad \mathbb{G}_0^{(1,-1;c)}(A_u) = \frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z149}} \quad \mathbb{Q}_{2,1}^{(c)}(E_g) = \frac{\sqrt{2}\mathbb{Q}_0^{(a)}(A_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z720}} \quad \mathbb{Q}_{2,2}^{(c)}(E_g) = \frac{\sqrt{2}\mathbb{Q}_0^{(a)}(A_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z820}} \quad \mathbb{G}_{2,1}^{(1,-1;c)}(E_u) = -\frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} - \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z821}} \quad \mathbb{G}_{2,2}^{(1,-1;c)}(E_u) = \frac{\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{2} - \frac{\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{2}$$

$$\boxed{\text{z1195}} \quad \mathbb{Q}_{1,1}^{(1,-1;c)}(T_u) = \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} - \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z1196}} \quad \mathbb{Q}_{1,2}^{(1,-1;c)}(T_u) = -\frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z1197}} \quad \mathbb{Q}_{1,3}^{(1,-1;c)}(T_u) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} - \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z1198}} \quad \mathbb{G}_{2,1}^{(1,-1;c)}(T_u) = \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z1199}} \quad \mathbb{G}_{2,2}^{(1,-1;c)}(T_u) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z1200}} \quad \mathbb{G}_{2,3}^{(1,-1;c)}(T_u) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6}$$

• '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@1a**

$$\boxed{\text{z41}} \quad \mathbb{Q}_0^{(c)}(A_g) = \frac{\sqrt{3}\mathbb{T}_{1,1}^{(a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{T}_{1,2}^{(a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{T}_{1,3}^{(a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z42}} \quad \mathbb{Q}_0^{(1,0;c)}(A_g) = \frac{\sqrt{3}\mathbb{T}_{1,1}^{(1,0;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{T}_{1,2}^{(1,0;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{T}_{1,3}^{(1,0;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z43}} \quad \mathbb{G}_3^{(1,-1;c)}(A_g) = \frac{\sqrt{3}\mathbb{M}_{2,1}^{(1,-1;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{M}_{2,2}^{(1,-1;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{M}_{2,3}^{(1,-1;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z150}} \quad \mathbb{Q}_3^{(1,-1;c)}(A_u) = \frac{\sqrt{2}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2} - \frac{\sqrt{2}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z151}} \quad \mathbb{G}_0^{(1,-1;c)}(A_u) = \frac{\sqrt{2}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} + \frac{\sqrt{2}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z152}} \quad \mathbb{G}_0^{(1,1;c)}(A_u) = \mathbb{G}_0^{(1,1;a)}(A_u)\mathbb{Q}_0^{(b)}(A_g)$$

$$\boxed{\text{z153}} \quad \mathbb{Q}_{2,1}^{(c)}(E_g) = -\frac{\sqrt{3}\mathbb{T}_{1,1}^{(a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} - \frac{\sqrt{3}\mathbb{T}_{1,2}^{(a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} + \frac{\sqrt{3}\mathbb{T}_{1,3}^{(a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z154}} \quad \mathbb{Q}_{2,2}^{(c)}(E_g) = \frac{\mathbb{T}_{1,1}^{(a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{2} - \frac{\mathbb{T}_{1,2}^{(a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{2}$$

$$\boxed{\text{z155}} \quad \mathbb{Q}_{2,1}^{(1,-1;c)}(E_g) = -\frac{\mathbb{M}_{2,1}^{(1,-1;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{2} + \frac{\mathbb{M}_{2,2}^{(1,-1;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{2}$$

$$\boxed{\text{z523}} \quad \mathbb{Q}_{2,2}^{(1,-1;c)}(E_g) = -\frac{\sqrt{3}\mathbb{M}_{2,1}^{(1,-1;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} - \frac{\sqrt{3}\mathbb{M}_{2,2}^{(1,-1;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} + \frac{\sqrt{3}\mathbb{M}_{2,3}^{(1,-1;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z524}} \quad \mathbb{Q}_{2,1}^{(1,0;c)}(E_g) = -\frac{\sqrt{3}\mathbb{T}_{1,1}^{(1,0;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} - \frac{\sqrt{3}\mathbb{T}_{1,2}^{(1,0;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} + \frac{\sqrt{3}\mathbb{T}_{1,3}^{(1,0;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z525}} \quad \mathbb{Q}_{2,2}^{(1,0;c)}(E_g) = \frac{\mathbb{T}_{1,1}^{(1,0;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{2} - \frac{\mathbb{T}_{1,2}^{(1,0;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{2}$$

$$\boxed{\text{z526}} \quad \mathbb{G}_{2,1}^{(1,-1;c)}(E_u, a) = \frac{\sqrt{2}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_0^{(b)}(A_g)}{2}$$

$$\boxed{\text{z527}} \quad \mathbb{G}_{2,2}^{(1,-1;c)}(E_u, a) = \frac{\sqrt{2}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_0^{(b)}(A_g)}{2}$$

$$\boxed{\text{z528}} \quad \mathbb{G}_{2,1}^{(1,-1;c)}(E_u, b) = \frac{\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \frac{\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z529}} \quad \mathbb{G}_{2,2}^{(1,-1;c)}(E_u, b) = -\frac{\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2} - \frac{\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z530}} \quad \mathbb{G}_{2,1}^{(1,1;c)}(E_u) = \frac{\sqrt{2}\mathbb{G}_0^{(1,1;a)}(A_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z531}} \quad \mathbb{G}_{2,2}^{(1,1;c)}(E_u) = \frac{\sqrt{2}\mathbb{G}_0^{(1,1;a)}(A_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z532}} \quad \mathbb{Q}_{2,1}^{(c)}(T_g) = \frac{\sqrt{6}\mathbb{T}_{1,2}^{(a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{T}_{1,3}^{(a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z533}} \quad \mathbb{Q}_{2,2}^{(c)}(T_g) = \frac{\sqrt{6}\mathbb{T}_{1,1}^{(a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{T}_{1,3}^{(a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z534}} \quad \mathbb{Q}_{2,3}^{(c)}(T_g) = \frac{\sqrt{6}\mathbb{T}_{1,1}^{(a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{T}_{1,2}^{(a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z535}} \quad \mathbb{Q}_{2,1}^{(1,-1;c)}(T_g) = \frac{\sqrt{6}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} + \frac{\sqrt{2}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} - \frac{\sqrt{2}\mathbb{M}_{2,2}^{(1,-1;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{2}\mathbb{M}_{2,3}^{(1,-1;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z536}} \quad \mathbb{Q}_{2,2}^{(1,-1;c)}(T_g) = -\frac{\sqrt{6}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} + \frac{\sqrt{2}\mathbb{M}_{2,1}^{(1,-1;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{2}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} - \frac{\sqrt{2}\mathbb{M}_{2,3}^{(1,-1;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z537}} \quad \mathbb{Q}_{2,3}^{(1,-1;c)}(T_g) = -\frac{\sqrt{2}\mathbb{M}_{2,1}^{(1,-1;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} - \frac{\sqrt{2}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{3} + \frac{\sqrt{2}\mathbb{M}_{2,2}^{(1,-1;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z538}} \quad \mathbb{Q}_{2,1}^{(1,0;c)}(T_g) = \frac{\sqrt{6}\mathbb{T}_{1,2}^{(1,0;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{T}_{1,3}^{(1,0;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z539}} \quad \mathbb{Q}_{2,2}^{(1,0;c)}(T_g) = \frac{\sqrt{6}\mathbb{T}_{1,1}^{(1,0;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{T}_{1,3}^{(1,0;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{6}$$

$$\begin{aligned}
\text{z540} \quad \mathbb{Q}_{2,3}^{(1,0;c)}(T_g) &= \frac{\sqrt{6}\mathbb{T}_{1,1}^{(1,0;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{T}_{1,2}^{(1,0;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} \\
\text{z541} \quad \mathbb{G}_{1,1}^{(c)}(T_g) &= \frac{\sqrt{6}\mathbb{T}_{1,2}^{(a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} - \frac{\sqrt{6}\mathbb{T}_{1,3}^{(a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} \\
\text{z542} \quad \mathbb{G}_{1,2}^{(c)}(T_g) &= -\frac{\sqrt{6}\mathbb{T}_{1,1}^{(a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{T}_{1,3}^{(a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} \\
\text{z543} \quad \mathbb{G}_{1,3}^{(c)}(T_g) &= \frac{\sqrt{6}\mathbb{T}_{1,1}^{(a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} - \frac{\sqrt{6}\mathbb{T}_{1,2}^{(a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} \\
\text{z544} \quad \mathbb{G}_{1,1}^{(1,-1;c)}(T_g) &= -\frac{\sqrt{30}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{30} + \frac{\sqrt{10}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{10} + \frac{\sqrt{10}\mathbb{M}_{2,2}^{(1,-1;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{10} + \frac{\sqrt{10}\mathbb{M}_{2,3}^{(1,-1;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{10} \\
\text{z545} \quad \mathbb{G}_{1,2}^{(1,-1;c)}(T_g) &= -\frac{\sqrt{30}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{30} + \frac{\sqrt{10}\mathbb{M}_{2,1}^{(1,-1;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{10} - \frac{\sqrt{10}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{10} + \frac{\sqrt{10}\mathbb{M}_{2,3}^{(1,-1;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{10} \\
\text{z546} \quad \mathbb{G}_{1,3}^{(1,-1;c)}(T_g) &= \frac{\sqrt{30}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{15} + \frac{\sqrt{10}\mathbb{M}_{2,1}^{(1,-1;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{10} + \frac{\sqrt{10}\mathbb{M}_{2,2}^{(1,-1;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{10} \\
\text{z547} \quad \mathbb{G}_{3,1}^{(1,-1;c)}(T_g, 1) &= -\frac{\sqrt{5}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{10} + \frac{\sqrt{15}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{10} - \frac{\sqrt{15}\mathbb{M}_{2,2}^{(1,-1;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{15} - \frac{\sqrt{15}\mathbb{M}_{2,3}^{(1,-1;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{15} \\
\text{z548} \quad \mathbb{G}_{3,2}^{(1,-1;c)}(T_g, 1) &= -\frac{\sqrt{5}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{10} - \frac{\sqrt{15}\mathbb{M}_{2,1}^{(1,-1;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{15} - \frac{\sqrt{15}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{10} - \frac{\sqrt{15}\mathbb{M}_{2,3}^{(1,-1;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{15} \\
\text{z549} \quad \mathbb{G}_{3,3}^{(1,-1;c)}(T_g, 1) &= \frac{\sqrt{5}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{5} - \frac{\sqrt{15}\mathbb{M}_{2,1}^{(1,-1;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{15} - \frac{\sqrt{15}\mathbb{M}_{2,2}^{(1,-1;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{15} \\
\text{z721} \quad \mathbb{G}_{3,1}^{(1,-1;c)}(T_g, 2) &= -\frac{\sqrt{3}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} - \frac{\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} - \frac{\mathbb{M}_{2,2}^{(1,-1;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{3} + \frac{\mathbb{M}_{2,3}^{(1,-1;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{3} \\
\text{z722} \quad \mathbb{G}_{3,2}^{(1,-1;c)}(T_g, 2) &= \frac{\sqrt{3}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} + \frac{\mathbb{M}_{2,1}^{(1,-1;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{3} - \frac{\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} - \frac{\mathbb{M}_{2,3}^{(1,-1;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{3} \\
\text{z723} \quad \mathbb{G}_{3,3}^{(1,-1;c)}(T_g, 2) &= -\frac{\mathbb{M}_{2,1}^{(1,-1;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{3} + \frac{\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{3} + \frac{\mathbb{M}_{2,2}^{(1,-1;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{3} \\
\text{z822} \quad \mathbb{G}_{1,1}^{(1,0;c)}(T_g) &= \frac{\sqrt{6}\mathbb{T}_{1,2}^{(1,0;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} - \frac{\sqrt{6}\mathbb{T}_{1,3}^{(1,0;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{6}
\end{aligned}$$

$$\boxed{\text{z823}} \quad \mathbb{G}_{1,2}^{(1,0;c)}(T_g) = -\frac{\sqrt{6}\mathbb{T}_{1,1}^{(1,0;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{T}_{1,3}^{(1,0;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z824}} \quad \mathbb{G}_{1,3}^{(1,0;c)}(T_g) = \frac{\sqrt{6}\mathbb{T}_{1,1}^{(1,0;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} - \frac{\sqrt{6}\mathbb{T}_{1,2}^{(1,0;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z825}} \quad \mathbb{G}_{1,1}^{(1,1;c)}(T_g) = \frac{\sqrt{3}\mathbb{M}_0^{(1,1;a)}(A_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z826}} \quad \mathbb{G}_{1,2}^{(1,1;c)}(T_g) = \frac{\sqrt{3}\mathbb{M}_0^{(1,1;a)}(A_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z827}} \quad \mathbb{G}_{1,3}^{(1,1;c)}(T_g) = \frac{\sqrt{3}\mathbb{M}_0^{(1,1;a)}(A_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z1201}} \quad \mathbb{Q}_{1,1}^{(c)}(T_u, a) = \frac{\sqrt{3}\mathbb{Q}_{1,1}^{(a)}(T_u)\mathbb{Q}_0^{(b)}(A_g)}{3}$$

$$\boxed{\text{z1202}} \quad \mathbb{Q}_{1,2}^{(c)}(T_u, a) = \frac{\sqrt{3}\mathbb{Q}_{1,2}^{(a)}(T_u)\mathbb{Q}_0^{(b)}(A_g)}{3}$$

$$\boxed{\text{z1203}} \quad \mathbb{Q}_{1,3}^{(c)}(T_u, a) = \frac{\sqrt{3}\mathbb{Q}_{1,3}^{(a)}(T_u)\mathbb{Q}_0^{(b)}(A_g)}{3}$$

$$\boxed{\text{z1204}} \quad \mathbb{Q}_{1,1}^{(c)}(T_u, b) = -\frac{\sqrt{3}\mathbb{Q}_{1,1}^{(a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} + \frac{\mathbb{Q}_{1,1}^{(a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z1205}} \quad \mathbb{Q}_{1,2}^{(c)}(T_u, b) = -\frac{\sqrt{3}\mathbb{Q}_{1,2}^{(a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} - \frac{\mathbb{Q}_{1,2}^{(a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z1206}} \quad \mathbb{Q}_{1,3}^{(c)}(T_u, b) = \frac{\sqrt{3}\mathbb{Q}_{1,3}^{(a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{3}$$

$$\boxed{\text{z1207}} \quad \mathbb{Q}_{3,1}^{(c)}(T_u, 2) = -\frac{\mathbb{Q}_{1,1}^{(a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{Q}_{1,1}^{(a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{6}$$

$$\boxed{\text{z1208}} \quad \mathbb{Q}_{3,2}^{(c)}(T_u, 2) = \frac{\mathbb{Q}_{1,2}^{(a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{Q}_{1,2}^{(a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{6}$$

$$\boxed{\text{z1209}} \quad \mathbb{Q}_{3,3}^{(c)}(T_u, 2) = \frac{\sqrt{3}\mathbb{Q}_{1,3}^{(a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{3}$$

$$\begin{aligned}
\boxed{\text{z1210}} \quad \mathbb{Q}_{1,1}^{(1,-1;c)}(T_u) &= \frac{\mathbb{G}_{2,1}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} + \frac{\sqrt{3}\mathbb{G}_{2,1}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{6} \\
\boxed{\text{z1211}} \quad \mathbb{Q}_{1,2}^{(1,-1;c)}(T_u) &= -\frac{\mathbb{G}_{2,2}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} + \frac{\sqrt{3}\mathbb{G}_{2,2}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{6} \\
\boxed{\text{z1212}} \quad \mathbb{Q}_{1,3}^{(1,-1;c)}(T_u) &= -\frac{\sqrt{3}\mathbb{G}_{2,3}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{3} \\
\boxed{\text{z1213}} \quad \mathbb{Q}_{3,1}^{(1,-1;c)}(T_u, 2) &= -\frac{\sqrt{3}\mathbb{G}_{2,1}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} + \frac{\mathbb{G}_{2,1}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2} \\
\boxed{\text{z1214}} \quad \mathbb{Q}_{3,2}^{(1,-1;c)}(T_u, 2) &= -\frac{\sqrt{3}\mathbb{G}_{2,2}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} - \frac{\mathbb{G}_{2,2}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2} \\
\boxed{\text{z1215}} \quad \mathbb{Q}_{3,3}^{(1,-1;c)}(T_u, 2) &= \frac{\sqrt{3}\mathbb{G}_{2,3}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{3} \\
\boxed{\text{z1216}} \quad \mathbb{Q}_{1,1}^{(1,0;c)}(T_u, a) &= \frac{\sqrt{3}\mathbb{Q}_{1,1}^{(1,0;a)}(T_u)\mathbb{Q}_0^{(b)}(A_g)}{3} \\
\boxed{\text{z1217}} \quad \mathbb{Q}_{1,2}^{(1,0;c)}(T_u, a) &= \frac{\sqrt{3}\mathbb{Q}_{1,2}^{(1,0;a)}(T_u)\mathbb{Q}_0^{(b)}(A_g)}{3} \\
\boxed{\text{z1218}} \quad \mathbb{Q}_{1,3}^{(1,0;c)}(T_u, a) &= \frac{\sqrt{3}\mathbb{Q}_{1,3}^{(1,0;a)}(T_u)\mathbb{Q}_0^{(b)}(A_g)}{3} \\
\boxed{\text{z1219}} \quad \mathbb{Q}_{1,1}^{(1,0;c)}(T_u, b) &= -\frac{\sqrt{3}\mathbb{Q}_{1,1}^{(1,0;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} + \frac{\mathbb{Q}_{1,1}^{(1,0;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2} \\
\boxed{\text{z1220}} \quad \mathbb{Q}_{1,2}^{(1,0;c)}(T_u, b) &= -\frac{\sqrt{3}\mathbb{Q}_{1,2}^{(1,0;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} - \frac{\mathbb{Q}_{1,2}^{(1,0;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2} \\
\boxed{\text{z1221}} \quad \mathbb{Q}_{1,3}^{(1,0;c)}(T_u, b) &= \frac{\sqrt{3}\mathbb{Q}_{1,3}^{(1,0;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{3} \\
\boxed{\text{z1222}} \quad \mathbb{Q}_{3,1}^{(1,0;c)}(T_u, 2) &= -\frac{\mathbb{Q}_{1,1}^{(1,0;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{Q}_{1,1}^{(1,0;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{6} \\
\boxed{\text{z1223}} \quad \mathbb{Q}_{3,2}^{(1,0;c)}(T_u, 2) &= \frac{\mathbb{Q}_{1,2}^{(1,0;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{Q}_{1,2}^{(1,0;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{6}
\end{aligned}$$

$$\boxed{\text{z1224}} \quad \mathbb{Q}_{3,3}^{(1,0;c)}(T_u, 2) = \frac{\sqrt{3}\mathbb{Q}_{1,3}^{(1,0;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{3}$$

$$\boxed{\text{z1225}} \quad \mathbb{G}_{2,1}^{(1,-1;c)}(T_u) = \frac{\sqrt{3}\mathbb{G}_{2,1}^{(1,-1;a)}(T_u)\mathbb{Q}_0^{(b)}(A_g)}{3}$$

$$\boxed{\text{z1226}} \quad \mathbb{G}_{2,2}^{(1,-1;c)}(T_u) = \frac{\sqrt{3}\mathbb{G}_{2,2}^{(1,-1;a)}(T_u)\mathbb{Q}_0^{(b)}(A_g)}{3}$$

$$\boxed{\text{z1227}} \quad \mathbb{G}_{2,3}^{(1,-1;c)}(T_u) = \frac{\sqrt{3}\mathbb{G}_{2,3}^{(1,-1;a)}(T_u)\mathbb{Q}_0^{(b)}(A_g)}{3}$$

• '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@1a**

$$\boxed{\text{z44}} \quad \mathbb{Q}_0^{(c)}(A_g, a) = \mathbb{Q}_0^{(a)}(A_g)\mathbb{Q}_0^{(b)}(A_g)$$

$$\boxed{\text{z45}} \quad \mathbb{Q}_0^{(c)}(A_g, b) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z46}} \quad \mathbb{Q}_0^{(1,-1;c)}(A_g) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z47}} \quad \mathbb{Q}_0^{(1,1;c)}(A_g) = \mathbb{Q}_0^{(1,1;a)}(A_g)\mathbb{Q}_0^{(b)}(A_g)$$

$$\boxed{\text{z48}} \quad \mathbb{G}_3^{(c)}(A_g) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z49}} \quad \mathbb{G}_3^{(1,-1;c)}(A_g) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z156}} \quad \mathbb{Q}_3^{(1,-1;c)}(A_u) = -\frac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u)}{3} - \frac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,2}^{(b)}(T_u)}{3} - \frac{\sqrt{3}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,3}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z157}} \quad \mathbb{Q}_3^{(1,0;c)}(A_u) = \frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{T}_{2,3}^{(1,0;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z158}} \quad \mathbb{G}_0^{(c)}(A_u) = \frac{\sqrt{3}\mathbb{M}_{1,1}^{(a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{M}_{1,2}^{(a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z159}} \quad \mathbb{G}_0^{(1,-1;c)}(A_u) = \frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z160}} \quad \mathbb{G}_4^{(1,-1;c)}(A_u) = \frac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g,1)\mathbb{T}_{1,1}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g,1)\mathbb{T}_{1,2}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g,1)\mathbb{T}_{1,3}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z161}} \quad \mathbb{G}_0^{(1,1;c)}(A_u) = \frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z162}} \quad \mathbb{Q}_{2,1}^{(c)}(E_g, a) = \frac{\sqrt{2}\mathbb{Q}_0^{(a)}(A_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z163}} \quad \mathbb{Q}_{2,2}^{(c)}(E_g, a) = \frac{\sqrt{2}\mathbb{Q}_0^{(a)}(A_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z164}} \quad \mathbb{Q}_{2,1}^{(c)}(E_g, b) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_0^{(b)}(A_g)}{2}$$

$$\boxed{\text{z165}} \quad \mathbb{Q}_{2,2}^{(c)}(E_g, b) = \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_0^{(b)}(A_g)}{2}$$

$$\boxed{\text{z166}} \quad \mathbb{Q}_{2,1}^{(c)}(E_g, c) = \frac{\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \frac{\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z167}} \quad \mathbb{Q}_{2,2}^{(c)}(E_g, c) = -\frac{\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2} - \frac{\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z550}} \quad \mathbb{Q}_{2,1}^{(1,-1;c)}(E_g, a) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_0^{(b)}(A_g)}{2}$$

$$\boxed{\text{z551}} \quad \mathbb{Q}_{2,2}^{(1,-1;c)}(E_g, a) = \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_0^{(b)}(A_g)}{2}$$

$$\boxed{\text{z552}} \quad \mathbb{Q}_{2,1}^{(1,-1;c)}(E_g, b) = \frac{\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \frac{\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z553}} \quad \mathbb{Q}_{2,2}^{(1,-1;c)}(E_g, b) = -\frac{\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2} - \frac{\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

$$\begin{aligned}
\text{z554} \quad \mathbb{Q}_{2,1}^{(1,1;c)}(E_g) &= \frac{\sqrt{2}\mathbb{Q}_0^{(1,1;a)}(A_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} \\
\text{z555} \quad \mathbb{Q}_{2,2}^{(1,1;c)}(E_g) &= \frac{\sqrt{2}\mathbb{Q}_0^{(1,1;a)}(A_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2} \\
\text{z556} \quad \mathbb{G}_{2,1}^{(c)}(E_u) &= -\frac{\sqrt{3}\mathbb{M}_{1,1}^{(a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} - \frac{\sqrt{3}\mathbb{M}_{1,2}^{(a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{3} \\
\text{z557} \quad \mathbb{G}_{2,2}^{(c)}(E_u) &= \frac{\mathbb{M}_{1,1}^{(a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{2} - \frac{\mathbb{M}_{1,2}^{(a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{2} \\
\text{z558} \quad \mathbb{G}_{2,1}^{(1,-1;c)}(E_u, a) &= -\frac{\sqrt{42}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u)}{28} - \frac{\sqrt{70}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u)}{28} - \frac{\sqrt{42}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,2}^{(b)}(T_u)}{28} + \frac{\sqrt{70}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,2}^{(b)}(T_u)}{28} + \frac{\sqrt{42}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,3}^{(b)}(T_u)}{14} \\
\text{z559} \quad \mathbb{G}_{2,2}^{(1,-1;c)}(E_u, a) &= \frac{3\sqrt{14}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u)}{28} - \frac{\sqrt{210}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u)}{84} - \frac{3\sqrt{14}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,2}^{(b)}(T_u)}{28} - \frac{\sqrt{210}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,2}^{(b)}(T_u)}{84} + \frac{\sqrt{210}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,3}^{(b)}(T_u)}{42} \\
\text{z560} \quad \mathbb{G}_{2,1}^{(1,-1;c)}(E_u, b) &= -\frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} - \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{3} \\
\text{z561} \quad \mathbb{G}_{2,2}^{(1,-1;c)}(E_u, b) &= \frac{\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{2} - \frac{\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{2} \\
\text{z562} \quad \mathbb{G}_{4,1}^{(1,-1;c)}(E_u) &= -\frac{\sqrt{210}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u)}{84} + \frac{3\sqrt{14}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u)}{28} - \frac{\sqrt{210}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,2}^{(b)}(T_u)}{84} - \frac{3\sqrt{14}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,2}^{(b)}(T_u)}{28} + \frac{\sqrt{210}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,3}^{(b)}(T_u)}{42} \\
\text{z563} \quad \mathbb{G}_{4,2}^{(1,-1;c)}(E_u) &= \frac{\sqrt{70}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u)}{28} + \frac{\sqrt{42}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u)}{28} - \frac{\sqrt{70}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,2}^{(b)}(T_u)}{28} + \frac{\sqrt{42}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,2}^{(b)}(T_u)}{28} - \frac{\sqrt{42}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,3}^{(b)}(T_u)}{14} \\
\text{z564} \quad \mathbb{G}_{2,1}^{(1,0;c)}(E_u) &= -\frac{\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{2} + \frac{\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{2} \\
\text{z565} \quad \mathbb{G}_{2,2}^{(1,0;c)}(E_u) &= -\frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} - \frac{\sqrt{3}\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} + \frac{\sqrt{3}\mathbb{T}_{2,3}^{(1,0;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{3} \\
\text{z566} \quad \mathbb{G}_{2,1}^{(1,1;c)}(E_u) &= -\frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} - \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{3} \\
\text{z567} \quad \mathbb{G}_{2,2}^{(1,1;c)}(E_u) &= \frac{\mathbb{M}_{1,1}^{(1,1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{2} - \frac{\mathbb{M}_{1,2}^{(1,1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{2}
\end{aligned}$$

$$\boxed{\text{z568}} \quad \mathbb{Q}_{2,1}^{(c)}(T_g, a) = \frac{\sqrt{3}\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_0^{(b)}(A_g)}{3}$$

$$\boxed{\text{z569}} \quad \mathbb{Q}_{2,2}^{(c)}(T_g, a) = \frac{\sqrt{3}\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_0^{(b)}(A_g)}{3}$$

$$\boxed{\text{z570}} \quad \mathbb{Q}_{2,3}^{(c)}(T_g, a) = \frac{\sqrt{3}\mathbb{Q}_{2,3}^{(a)}(T_g)\mathbb{Q}_0^{(b)}(A_g)}{3}$$

$$\boxed{\text{z571}} \quad \mathbb{Q}_{2,1}^{(c)}(T_g, b) = \frac{\sqrt{3}\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} - \frac{\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z572}} \quad \mathbb{Q}_{2,2}^{(c)}(T_g, b) = \frac{\sqrt{3}\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} + \frac{\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z573}} \quad \mathbb{Q}_{2,3}^{(c)}(T_g, b) = -\frac{\sqrt{3}\mathbb{Q}_{2,3}^{(a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{3}$$

$$\boxed{\text{z574}} \quad \mathbb{Q}_{4,1}^{(c)}(T_g, 1) = -\frac{\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{6}$$

$$\boxed{\text{z575}} \quad \mathbb{Q}_{4,2}^{(c)}(T_g, 1) = \frac{\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{6}$$

$$\boxed{\text{z576}} \quad \mathbb{Q}_{4,3}^{(c)}(T_g, 1) = \frac{\sqrt{3}\mathbb{Q}_{2,3}^{(a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{3}$$

$$\boxed{\text{z724}} \quad \mathbb{Q}_{2,1}^{(1,-1;c)}(T_g, a) = \frac{\sqrt{3}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_g)\mathbb{Q}_0^{(b)}(A_g)}{3}$$

$$\boxed{\text{z725}} \quad \mathbb{Q}_{2,2}^{(1,-1;c)}(T_g, a) = \frac{\sqrt{3}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_g)\mathbb{Q}_0^{(b)}(A_g)}{3}$$

$$\boxed{\text{z726}} \quad \mathbb{Q}_{2,3}^{(1,-1;c)}(T_g, a) = \frac{\sqrt{3}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_g)\mathbb{Q}_0^{(b)}(A_g)}{3}$$

$$\boxed{\text{z727}} \quad \mathbb{Q}_{2,1}^{(1,-1;c)}(T_g, b) = \frac{\sqrt{3}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} - \frac{\mathbb{Q}_{2,1}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z728}} \quad \mathbb{Q}_{2,2}^{(1,-1;c)}(T_g, b) = \frac{\sqrt{3}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} + \frac{\mathbb{Q}_{2,2}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$$\begin{aligned}
\boxed{\text{z729}} \quad \mathbb{Q}_{2,3}^{(1,-1;c)}(T_g, b) &= -\frac{\sqrt{3}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{3} \\
\boxed{\text{z828}} \quad \mathbb{Q}_{4,1}^{(1,-1;c)}(T_g, 1) &= -\frac{\mathbb{Q}_{2,1}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{6} \\
\boxed{\text{z829}} \quad \mathbb{Q}_{4,2}^{(1,-1;c)}(T_g, 1) &= \frac{\mathbb{Q}_{2,2}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{6} \\
\boxed{\text{z830}} \quad \mathbb{Q}_{4,3}^{(1,-1;c)}(T_g, 1) &= \frac{\sqrt{3}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{3} \\
\boxed{\text{z831}} \quad \mathbb{Q}_{2,1}^{(1,0;c)}(T_g) &= -\frac{\mathbb{G}_{1,1}^{(1,0;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{G}_{1,1}^{(1,0;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{6} \\
\boxed{\text{z832}} \quad \mathbb{Q}_{2,2}^{(1,0;c)}(T_g) &= \frac{\mathbb{G}_{1,2}^{(1,0;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{G}_{1,2}^{(1,0;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{6} \\
\boxed{\text{z833}} \quad \mathbb{Q}_{2,3}^{(1,0;c)}(T_g) &= \frac{\sqrt{3}\mathbb{G}_{1,3}^{(1,0;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{3} \\
\boxed{\text{z834}} \quad \mathbb{G}_{1,1}^{(1,0;c)}(T_g, a) &= \frac{\sqrt{3}\mathbb{G}_{1,1}^{(1,0;a)}(T_g)\mathbb{Q}_0^{(b)}(A_g)}{3} \\
\boxed{\text{z835}} \quad \mathbb{G}_{1,2}^{(1,0;c)}(T_g, a) &= \frac{\sqrt{3}\mathbb{G}_{1,2}^{(1,0;a)}(T_g)\mathbb{Q}_0^{(b)}(A_g)}{3} \\
\boxed{\text{z836}} \quad \mathbb{G}_{1,3}^{(1,0;c)}(T_g, a) &= \frac{\sqrt{3}\mathbb{G}_{1,3}^{(1,0;a)}(T_g)\mathbb{Q}_0^{(b)}(A_g)}{3} \\
\boxed{\text{z837}} \quad \mathbb{G}_{1,1}^{(1,0;c)}(T_g, b) &= -\frac{\sqrt{3}\mathbb{G}_{1,1}^{(1,0;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} + \frac{\mathbb{G}_{1,1}^{(1,0;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2} \\
\boxed{\text{z838}} \quad \mathbb{G}_{1,2}^{(1,0;c)}(T_g, b) &= -\frac{\sqrt{3}\mathbb{G}_{1,2}^{(1,0;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} - \frac{\mathbb{G}_{1,2}^{(1,0;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2} \\
\boxed{\text{z839}} \quad \mathbb{G}_{1,3}^{(1,0;c)}(T_g, b) &= \frac{\sqrt{3}\mathbb{G}_{1,3}^{(1,0;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{3} \\
\boxed{\text{z1228}} \quad \mathbb{Q}_{1,1}^{(c)}(T_u) &= \frac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} - \frac{\sqrt{6}\mathbb{M}_{1,3}^{(a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6}
\end{aligned}$$

$$\begin{aligned}
\boxed{\text{z1229}} \quad \mathbb{Q}_{1,2}^{(c)}(T_u) &= -\frac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} \\
\boxed{\text{z1230}} \quad \mathbb{Q}_{1,3}^{(c)}(T_u) &= \frac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} - \frac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} \\
\boxed{\text{z1231}} \quad \mathbb{Q}_{1,1}^{(1,-1;c)}(T_u) &= \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} - \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} \\
\boxed{\text{z1232}} \quad \mathbb{Q}_{1,2}^{(1,-1;c)}(T_u) &= -\frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} \\
\boxed{\text{z1233}} \quad \mathbb{Q}_{1,3}^{(1,-1;c)}(T_u) &= \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} - \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} \\
\boxed{\text{z1234}} \quad \mathbb{Q}_{3,1}^{(1,-1;c)}(T_u, 1) &= -\frac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,3}^{(b)}(T_u)}{4} - \frac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,3}^{(b)}(T_u)}{12} + \frac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,2}^{(b)}(T_u)}{4} - \frac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,2}^{(b)}(T_u)}{12} \\
\boxed{\text{z1235}} \quad \mathbb{Q}_{3,2}^{(1,-1;c)}(T_u, 1) &= \frac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,3}^{(b)}(T_u)}{4} - \frac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,3}^{(b)}(T_u)}{12} - \frac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u)}{4} - \frac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u)}{12} \\
\boxed{\text{z1236}} \quad \mathbb{Q}_{3,3}^{(1,-1;c)}(T_u, 1) &= -\frac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,2}^{(b)}(T_u)}{4} - \frac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,2}^{(b)}(T_u)}{12} + \frac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u)}{4} - \frac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u)}{12} \\
\boxed{\text{z1237}} \quad \mathbb{Q}_{3,1}^{(1,-1;c)}(T_u, 2) &= \frac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,3}^{(b)}(T_u)}{12} + \frac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,3}^{(b)}(T_u)}{12} + \frac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,2}^{(b)}(T_u)}{12} - \frac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,2}^{(b)}(T_u)}{12} + \frac{\mathbb{M}_3^{(1,-1;a)}(A_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{3} \\
\boxed{\text{z1238}} \quad \mathbb{Q}_{3,2}^{(1,-1;c)}(T_u, 2) &= \frac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,3}^{(b)}(T_u)}{12} - \frac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,3}^{(b)}(T_u)}{12} + \frac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u)}{12} + \frac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u)}{12} + \frac{\mathbb{M}_3^{(1,-1;a)}(A_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{3} \\
\boxed{\text{z1239}} \quad \mathbb{Q}_{3,3}^{(1,-1;c)}(T_u, 2) &= \frac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,2}^{(b)}(T_u)}{12} + \frac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,2}^{(b)}(T_u)}{12} + \frac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u)}{12} - \frac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u)}{12} + \frac{\mathbb{M}_3^{(1,-1;a)}(A_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{3} \\
\boxed{\text{z1240}} \quad \mathbb{Q}_{1,1}^{(1,0;c)}(T_u) &= -\frac{\sqrt{30}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{30} + \frac{\sqrt{10}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{10} + \frac{\sqrt{10}\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{10} + \frac{\sqrt{10}\mathbb{T}_{2,3}^{(1,0;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{10} \\
\boxed{\text{z1241}} \quad \mathbb{Q}_{1,2}^{(1,0;c)}(T_u) &= -\frac{\sqrt{30}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{30} + \frac{\sqrt{10}\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{10} - \frac{\sqrt{10}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{10} + \frac{\sqrt{10}\mathbb{T}_{2,3}^{(1,0;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{10} \\
\boxed{\text{z1242}} \quad \mathbb{Q}_{1,3}^{(1,0;c)}(T_u) &= \frac{\sqrt{30}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{15} + \frac{\sqrt{10}\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{10} + \frac{\sqrt{10}\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{10}
\end{aligned}$$

$$\begin{aligned}
\boxed{\text{z1243}} \quad \mathbb{Q}_{3,1}^{(1,0;c)}(T_u, 1) &= -\frac{\sqrt{5}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{10} + \frac{\sqrt{15}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{10} - \frac{\sqrt{15}\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{15} - \frac{\sqrt{15}\mathbb{T}_{2,3}^{(1,0;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{15} \\
\boxed{\text{z1244}} \quad \mathbb{Q}_{3,2}^{(1,0;c)}(T_u, 1) &= -\frac{\sqrt{5}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{10} - \frac{\sqrt{15}\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{15} - \frac{\sqrt{15}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{10} - \frac{\sqrt{15}\mathbb{T}_{2,3}^{(1,0;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{15} \\
\boxed{\text{z1245}} \quad \mathbb{Q}_{3,3}^{(1,0;c)}(T_u, 1) &= \frac{\sqrt{5}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{5} - \frac{\sqrt{15}\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{15} - \frac{\sqrt{15}\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{15} \\
\boxed{\text{z1246}} \quad \mathbb{Q}_{3,1}^{(1,0;c)}(T_u, 2) &= -\frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} - \frac{\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} - \frac{\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{3} + \frac{\mathbb{T}_{2,3}^{(1,0;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{3} \\
\boxed{\text{z1247}} \quad \mathbb{Q}_{3,2}^{(1,0;c)}(T_u, 2) &= \frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} + \frac{\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{3} - \frac{\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} - \frac{\mathbb{T}_{2,3}^{(1,0;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{3} \\
\boxed{\text{z1248}} \quad \mathbb{Q}_{3,3}^{(1,0;c)}(T_u, 2) &= -\frac{\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{3} + \frac{\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{3} + \frac{\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{3} \\
\boxed{\text{z1249}} \quad \mathbb{Q}_{1,1}^{(1,1;c)}(T_u) &= \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} - \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} \\
\boxed{\text{z1250}} \quad \mathbb{Q}_{1,2}^{(1,1;c)}(T_u) &= -\frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} \\
\boxed{\text{z1251}} \quad \mathbb{Q}_{1,3}^{(1,1;c)}(T_u) &= \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} - \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} \\
\boxed{\text{z1252}} \quad \mathbb{G}_{2,1}^{(c)}(T_u) &= \frac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} \\
\boxed{\text{z1253}} \quad \mathbb{G}_{2,2}^{(c)}(T_u) &= \frac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} \\
\boxed{\text{z1254}} \quad \mathbb{G}_{2,3}^{(c)}(T_u) &= \frac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} \\
\boxed{\text{z1255}} \quad \mathbb{G}_{2,1}^{(1,-1;c)}(T_u, a) &= -\frac{\sqrt{21}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,3}^{(b)}(T_u)}{21} + \frac{\sqrt{35}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,3}^{(b)}(T_u)}{21} - \frac{\sqrt{21}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,2}^{(b)}(T_u)}{21} - \frac{\sqrt{35}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,2}^{(b)}(T_u)}{21} + \frac{\sqrt{35}\mathbb{M}_3^{(1,-1;a)}(A_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{21} \\
\boxed{\text{z1256}} \quad \mathbb{G}_{2,2}^{(1,-1;c)}(T_u, a) &= -\frac{\sqrt{21}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,3}^{(b)}(T_u)}{21} - \frac{\sqrt{35}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,3}^{(b)}(T_u)}{21} - \frac{\sqrt{21}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u)}{21} + \frac{\sqrt{35}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u)}{21} + \frac{\sqrt{35}\mathbb{M}_3^{(1,-1;a)}(A_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{21}
\end{aligned}$$

$$\begin{aligned}
\boxed{\text{z1257}} \quad \mathbb{G}_{2,3}^{(1,-1;c)}(T_u, a) &= -\frac{\sqrt{21}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,2}^{(b)}(T_u)}{21} + \frac{\sqrt{35}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,2}^{(b)}(T_u)}{21} - \frac{\sqrt{21}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u)}{21} - \frac{\sqrt{35}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u)}{21} + \frac{\sqrt{35}\mathbb{M}_3^{(1,-1;a)}(A_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{21} \\
\boxed{\text{z1258}} \quad \mathbb{G}_{2,1}^{(1,-1;c)}(T_u, b) &= \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} \\
\boxed{\text{z1259}} \quad \mathbb{G}_{2,2}^{(1,-1;c)}(T_u, b) &= \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} \\
\boxed{\text{z1260}} \quad \mathbb{G}_{2,3}^{(1,-1;c)}(T_u, b) &= \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} \\
\boxed{\text{z1261}} \quad \mathbb{G}_{4,1}^{(1,-1;c)}(T_u, 1) &= \frac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,3}^{(b)}(T_u)}{12} - \frac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,3}^{(b)}(T_u)}{4} - \frac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,2}^{(b)}(T_u)}{12} - \frac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,2}^{(b)}(T_u)}{4} \\
\boxed{\text{z1262}} \quad \mathbb{G}_{4,2}^{(1,-1;c)}(T_u, 1) &= -\frac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,3}^{(b)}(T_u)}{12} - \frac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,3}^{(b)}(T_u)}{4} + \frac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u)}{12} - \frac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u)}{4} \\
\boxed{\text{z1263}} \quad \mathbb{G}_{4,3}^{(1,-1;c)}(T_u, 1) &= \frac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,2}^{(b)}(T_u)}{12} - \frac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,2}^{(b)}(T_u)}{4} - \frac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u)}{12} - \frac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u)}{4} \\
\boxed{\text{z1264}} \quad \mathbb{G}_{4,1}^{(1,-1;c)}(T_u, 2) &= -\frac{\sqrt{105}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,3}^{(b)}(T_u)}{84} - \frac{3\sqrt{7}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,3}^{(b)}(T_u)}{28} - \frac{\sqrt{105}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,2}^{(b)}(T_u)}{84} + \frac{3\sqrt{7}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,2}^{(b)}(T_u)}{28} + \frac{\sqrt{7}\mathbb{M}_3^{(1,-1;a)}(A_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{7} \\
\boxed{\text{z1265}} \quad \mathbb{G}_{4,2}^{(1,-1;c)}(T_u, 2) &= -\frac{\sqrt{105}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,3}^{(b)}(T_u)}{84} + \frac{3\sqrt{7}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,3}^{(b)}(T_u)}{28} - \frac{\sqrt{105}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u)}{84} - \frac{3\sqrt{7}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u)}{28} + \frac{\sqrt{7}\mathbb{M}_3^{(1,-1;a)}(A_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{7} \\
\boxed{\text{z1266}} \quad \mathbb{G}_{4,3}^{(1,-1;c)}(T_u, 2) &= -\frac{\sqrt{105}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,2}^{(b)}(T_u)}{84} - \frac{3\sqrt{7}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,2}^{(b)}(T_u)}{28} - \frac{\sqrt{105}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u)}{84} + \frac{3\sqrt{7}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u)}{28} + \frac{\sqrt{7}\mathbb{M}_3^{(1,-1;a)}(A_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{7} \\
\boxed{\text{z1267}} \quad \mathbb{G}_{2,1}^{(1,0;c)}(T_u) &= \frac{\sqrt{6}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} + \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} - \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{2}\mathbb{T}_{2,3}^{(1,0;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} \\
\boxed{\text{z1268}} \quad \mathbb{G}_{2,2}^{(1,0;c)}(T_u) &= -\frac{\sqrt{6}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} + \frac{\sqrt{2}\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} - \frac{\sqrt{2}\mathbb{T}_{2,3}^{(1,0;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} \\
\boxed{\text{z1269}} \quad \mathbb{G}_{2,3}^{(1,0;c)}(T_u) &= -\frac{\sqrt{2}\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} - \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{3} + \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} \\
\boxed{\text{z1270}} \quad \mathbb{G}_{2,1}^{(1,1;c)}(T_u) &= \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6}
\end{aligned}$$

$$\boxed{\text{z1271}} \quad \mathbb{G}_{2,2}^{(1,1;c)}(T_u) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z1272}} \quad \mathbb{G}_{2,3}^{(1,1;c)}(T_u) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6}$$

• 'A'-'A' bond-cluster

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

* ket: $|s, \uparrow\rangle, |s, \downarrow\rangle$

* wyckoff: **3b@3c**

$$\boxed{\text{z50}} \quad \mathbb{Q}_0^{(c)}(A_g) = \mathbb{Q}_0^{(a)}(A_g)\mathbb{Q}_0^{(b)}(A_g)$$

$$\boxed{\text{z168}} \quad \mathbb{G}_0^{(1,-1;c)}(A_u) = \frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z169}} \quad \mathbb{Q}_{2,1}^{(c)}(E_g) = \frac{\sqrt{2}\mathbb{Q}_0^{(a)}(A_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z730}} \quad \mathbb{Q}_{2,2}^{(c)}(E_g) = \frac{\sqrt{2}\mathbb{Q}_0^{(a)}(A_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z840}} \quad \mathbb{G}_{2,1}^{(1,-1;c)}(E_u) = -\frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} - \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z841}} \quad \mathbb{G}_{2,2}^{(1,-1;c)}(E_u) = \frac{\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{2} - \frac{\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{2}$$

$$\boxed{\text{z1273}} \quad \mathbb{Q}_{1,1}^{(1,-1;c)}(T_u) = \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} - \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z1274}} \quad \mathbb{Q}_{1,2}^{(1,-1;c)}(T_u) = -\frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z1275}} \quad \mathbb{Q}_{1,3}^{(1,-1;c)}(T_u) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} - \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z1276}} \quad \mathbb{G}_{2,1}^{(1,-1;c)}(T_u) = \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z1277}} \quad \mathbb{G}_{2,2}^{(1,-1;c)}(T_u) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z1278}} \quad \mathbb{G}_{2,3}^{(1,-1;c)}(T_u) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6}$$

• '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: **3b@3c**

$$\boxed{\text{z51}} \quad \mathbb{Q}_0^{(c)}(A_g) = \frac{\sqrt{3}\mathbb{T}_{1,1}^{(a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{T}_{1,2}^{(a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{T}_{1,3}^{(a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z52}} \quad \mathbb{Q}_0^{(1,0;c)}(A_g) = \frac{\sqrt{3}\mathbb{T}_{1,1}^{(1,0;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{T}_{1,2}^{(1,0;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{T}_{1,3}^{(1,0;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z53}} \quad \mathbb{G}_3^{(1,-1;c)}(A_g) = \frac{\sqrt{3}\mathbb{M}_{2,1}^{(1,-1;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{M}_{2,2}^{(1,-1;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{M}_{2,3}^{(1,-1;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z170}} \quad \mathbb{Q}_3^{(1,-1;c)}(A_u) = \frac{\sqrt{2}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2} - \frac{\sqrt{2}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z171}} \quad \mathbb{G}_0^{(1,-1;c)}(A_u) = \frac{\sqrt{2}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} + \frac{\sqrt{2}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z172}} \quad \mathbb{G}_0^{(1,1;c)}(A_u) = \mathbb{G}_0^{(1,1;a)}(A_u)\mathbb{Q}_0^{(b)}(A_g)$$

$$\boxed{\text{z173}} \quad \mathbb{Q}_{2,1}^{(c)}(E_g) = -\frac{\sqrt{3}\mathbb{T}_{1,1}^{(a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} - \frac{\sqrt{3}\mathbb{T}_{1,2}^{(a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} + \frac{\sqrt{3}\mathbb{T}_{1,3}^{(a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z174}} \quad \mathbb{Q}_{2,2}^{(c)}(E_g) = \frac{\mathbb{T}_{1,1}^{(a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{2} - \frac{\mathbb{T}_{1,2}^{(a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{2}$$

$$\boxed{\text{z175}} \quad \mathbb{Q}_{2,1}^{(1,-1;c)}(E_g) = -\frac{\mathbb{M}_{2,1}^{(1,-1;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{2} + \frac{\mathbb{M}_{2,2}^{(1,-1;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{2}$$

$$\boxed{\text{z577}} \quad \mathbb{Q}_{2,2}^{(1,-1;c)}(E_g) = -\frac{\sqrt{3}\mathbb{M}_{2,1}^{(1,-1;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} - \frac{\sqrt{3}\mathbb{M}_{2,2}^{(1,-1;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} + \frac{\sqrt{3}\mathbb{M}_{2,3}^{(1,-1;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z578}} \quad \mathbb{Q}_{2,1}^{(1,0;c)}(E_g) = -\frac{\sqrt{3}\mathbb{T}_{1,1}^{(1,0;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} - \frac{\sqrt{3}\mathbb{T}_{1,2}^{(1,0;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} + \frac{\sqrt{3}\mathbb{T}_{1,3}^{(1,0;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z579}} \quad \mathbb{Q}_{2,2}^{(1,0;c)}(E_g) = \frac{\mathbb{T}_{1,1}^{(1,0;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{2} - \frac{\mathbb{T}_{1,2}^{(1,0;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{2}$$

$$\boxed{\text{z580}} \quad \mathbb{G}_{2,1}^{(1,-1;c)}(E_u, a) = \frac{\sqrt{2}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_0^{(b)}(A_g)}{2}$$

$$\boxed{\text{z581}} \quad \mathbb{G}_{2,2}^{(1,-1;c)}(E_u, a) = \frac{\sqrt{2}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_0^{(b)}(A_g)}{2}$$

$$\boxed{\text{z582}} \quad \mathbb{G}_{2,1}^{(1,-1;c)}(E_u, b) = \frac{\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \frac{\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z583}} \quad \mathbb{G}_{2,2}^{(1,-1;c)}(E_u, b) = -\frac{\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2} - \frac{\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z584}} \quad \mathbb{G}_{2,1}^{(1,1;c)}(E_u) = \frac{\sqrt{2}\mathbb{G}_0^{(1,1;a)}(A_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z585}} \quad \mathbb{G}_{2,2}^{(1,1;c)}(E_u) = \frac{\sqrt{2}\mathbb{G}_0^{(1,1;a)}(A_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z586}} \quad \mathbb{Q}_{2,1}^{(c)}(T_g) = \frac{\sqrt{6}\mathbb{T}_{1,2}^{(a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{T}_{1,3}^{(a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z587}} \quad \mathbb{Q}_{2,2}^{(c)}(T_g) = \frac{\sqrt{6}\mathbb{T}_{1,1}^{(a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{T}_{1,3}^{(a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z588}} \quad \mathbb{Q}_{2,3}^{(c)}(T_g) = \frac{\sqrt{6}\mathbb{T}_{1,1}^{(a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{T}_{1,2}^{(a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z589}} \quad \mathbb{Q}_{2,1}^{(1,-1;c)}(T_g) = \frac{\sqrt{6}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} + \frac{\sqrt{2}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} - \frac{\sqrt{2}\mathbb{M}_{2,2}^{(1,-1;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{2}\mathbb{M}_{2,3}^{(1,-1;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z590}} \quad \mathbb{Q}_{2,2}^{(1,-1;c)}(T_g) = -\frac{\sqrt{6}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} + \frac{\sqrt{2}\mathbb{M}_{2,1}^{(1,-1;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{2}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} - \frac{\sqrt{2}\mathbb{M}_{2,3}^{(1,-1;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z591}} \quad \mathbb{Q}_{2,3}^{(1,-1;c)}(T_g) = -\frac{\sqrt{2}\mathbb{M}_{2,1}^{(1,-1;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} - \frac{\sqrt{2}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{3} + \frac{\sqrt{2}\mathbb{M}_{2,2}^{(1,-1;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z592}} \quad \mathbb{Q}_{2,1}^{(1,0;c)}(T_g) = \frac{\sqrt{6}\mathbb{T}_{1,2}^{(1,0;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{T}_{1,3}^{(1,0;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z593}} \quad \mathbb{Q}_{2,2}^{(1,0;c)}(T_g) = \frac{\sqrt{6}\mathbb{T}_{1,1}^{(1,0;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{T}_{1,3}^{(1,0;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z594}} \quad \mathbb{Q}_{2,3}^{(1,0;c)}(T_g) = \frac{\sqrt{6}\mathbb{T}_{1,1}^{(1,0;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{T}_{1,2}^{(1,0;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z595}} \quad \mathbb{G}_{1,1}^{(c)}(T_g) = \frac{\sqrt{6}\mathbb{T}_{1,2}^{(a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} - \frac{\sqrt{6}\mathbb{T}_{1,3}^{(a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z596}} \quad \mathbb{G}_{1,2}^{(c)}(T_g) = -\frac{\sqrt{6}\mathbb{T}_{1,1}^{(a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{T}_{1,3}^{(a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z597}} \quad \mathbb{G}_{1,3}^{(c)}(T_g) = \frac{\sqrt{6}\mathbb{T}_{1,1}^{(a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} - \frac{\sqrt{6}\mathbb{T}_{1,2}^{(a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z598}} \quad \mathbb{G}_{1,1}^{(1,-1;c)}(T_g) = -\frac{\sqrt{30}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{30} + \frac{\sqrt{10}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{10} + \frac{\sqrt{10}\mathbb{M}_{2,2}^{(1,-1;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{10} + \frac{\sqrt{10}\mathbb{M}_{2,3}^{(1,-1;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{10}$$

$$\boxed{\text{z599}} \quad \mathbb{G}_{1,2}^{(1,-1;c)}(T_g) = -\frac{\sqrt{30}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{30} + \frac{\sqrt{10}\mathbb{M}_{2,1}^{(1,-1;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{10} - \frac{\sqrt{10}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{10} + \frac{\sqrt{10}\mathbb{M}_{2,3}^{(1,-1;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{10}$$

$$\boxed{\text{z600}} \quad \mathbb{G}_{1,3}^{(1,-1;c)}(T_g) = \frac{\sqrt{30}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{15} + \frac{\sqrt{10}\mathbb{M}_{2,1}^{(1,-1;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{10} + \frac{\sqrt{10}\mathbb{M}_{2,2}^{(1,-1;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{10}$$

$$\boxed{\text{z601}} \quad \mathbb{G}_{3,1}^{(1,-1;c)}(T_g, 1) = -\frac{\sqrt{5}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{10} + \frac{\sqrt{15}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{10} - \frac{\sqrt{15}\mathbb{M}_{2,2}^{(1,-1;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{15} - \frac{\sqrt{15}\mathbb{M}_{2,3}^{(1,-1;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{15}$$

$$\boxed{\text{z602}} \quad \mathbb{G}_{3,2}^{(1,-1;c)}(T_g, 1) = -\frac{\sqrt{5}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{10} - \frac{\sqrt{15}\mathbb{M}_{2,1}^{(1,-1;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{15} - \frac{\sqrt{15}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{10} - \frac{\sqrt{15}\mathbb{M}_{2,3}^{(1,-1;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{15}$$

$$\boxed{\text{z603}} \quad \mathbb{G}_{3,3}^{(1,-1;c)}(T_g, 1) = \frac{\sqrt{5}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{5} - \frac{\sqrt{15}\mathbb{M}_{2,1}^{(1,-1;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{15} - \frac{\sqrt{15}\mathbb{M}_{2,2}^{(1,-1;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{15}$$

$$\boxed{\text{z731}} \quad \mathbb{G}_{3,1}^{(1,-1;c)}(T_g, 2) = -\frac{\sqrt{3}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} - \frac{\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} - \frac{\mathbb{M}_{2,2}^{(1,-1;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{3} + \frac{\mathbb{M}_{2,3}^{(1,-1;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z732}} \quad \mathbb{G}_{3,2}^{(1,-1;c)}(T_g, 2) = \frac{\sqrt{3}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} + \frac{\mathbb{M}_{2,1}^{(1,-1;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{3} - \frac{\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} - \frac{\mathbb{M}_{2,3}^{(1,-1;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z733}} \quad \mathbb{G}_{3,3}^{(1,-1;c)}(T_g, 2) = -\frac{\mathbb{M}_{2,1}^{(1,-1;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{3} + \frac{\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{3} + \frac{\mathbb{M}_{2,2}^{(1,-1;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z842}} \quad \mathbb{G}_{1,1}^{(1,0;c)}(T_g) = \frac{\sqrt{6}\mathbb{T}_{1,2}^{(1,0;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} - \frac{\sqrt{6}\mathbb{T}_{1,3}^{(1,0;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z843}} \quad \mathbb{G}_{1,2}^{(1,0;c)}(T_g) = -\frac{\sqrt{6}\mathbb{T}_{1,1}^{(1,0;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{T}_{1,3}^{(1,0;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z844}} \quad \mathbb{G}_{1,3}^{(1,0;c)}(T_g) = \frac{\sqrt{6}\mathbb{T}_{1,1}^{(1,0;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} - \frac{\sqrt{6}\mathbb{T}_{1,2}^{(1,0;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z845}} \quad \mathbb{G}_{1,1}^{(1,1;c)}(T_g) = \frac{\sqrt{3}\mathbb{M}_0^{(1,1;a)}(A_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z846}} \quad \mathbb{G}_{1,2}^{(1,1;c)}(T_g) = \frac{\sqrt{3}\mathbb{M}_0^{(1,1;a)}(A_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z847}} \quad \mathbb{G}_{1,3}^{(1,1;c)}(T_g) = \frac{\sqrt{3}\mathbb{M}_0^{(1,1;a)}(A_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z1279}} \quad \mathbb{Q}_{1,1}^{(c)}(T_u, a) = \frac{\sqrt{3}\mathbb{Q}_{1,1}^{(a)}(T_u)\mathbb{Q}_0^{(b)}(A_g)}{3}$$

$$\boxed{\text{z1280}} \quad \mathbb{Q}_{1,2}^{(c)}(T_u, a) = \frac{\sqrt{3}\mathbb{Q}_{1,2}^{(a)}(T_u)\mathbb{Q}_0^{(b)}(A_g)}{3}$$

$$\boxed{\text{z1281}} \quad \mathbb{Q}_{1,3}^{(c)}(T_u, a) = \frac{\sqrt{3}\mathbb{Q}_{1,3}^{(a)}(T_u)\mathbb{Q}_0^{(b)}(A_g)}{3}$$

$$\boxed{\text{z1282}} \quad \mathbb{Q}_{1,1}^{(c)}(T_u, b) = -\frac{\sqrt{3}\mathbb{Q}_{1,1}^{(a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} + \frac{\mathbb{Q}_{1,1}^{(a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z1283}} \quad \mathbb{Q}_{1,2}^{(c)}(T_u, b) = -\frac{\sqrt{3}\mathbb{Q}_{1,2}^{(a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} - \frac{\mathbb{Q}_{1,2}^{(a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z1284}} \quad \mathbb{Q}_{1,3}^{(c)}(T_u, b) = \frac{\sqrt{3}\mathbb{Q}_{1,3}^{(a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{3}$$

$$\boxed{\text{z1285}} \quad \mathbb{Q}_{3,1}^{(c)}(T_u, 2) = -\frac{\mathbb{Q}_{1,1}^{(a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{Q}_{1,1}^{(a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{6}$$

$$\begin{aligned}
\boxed{\text{z1286}} \quad \mathbb{Q}_{3,2}^{(c)}(T_u, 2) &= \frac{\mathbb{Q}_{1,2}^{(a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{Q}_{1,2}^{(a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{6} \\
\boxed{\text{z1287}} \quad \mathbb{Q}_{3,3}^{(c)}(T_u, 2) &= \frac{\sqrt{3}\mathbb{Q}_{1,3}^{(a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{3} \\
\boxed{\text{z1288}} \quad \mathbb{Q}_{1,1}^{(1,-1;c)}(T_u) &= \frac{\mathbb{G}_{2,1}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} + \frac{\sqrt{3}\mathbb{G}_{2,1}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{6} \\
\boxed{\text{z1289}} \quad \mathbb{Q}_{1,2}^{(1,-1;c)}(T_u) &= -\frac{\mathbb{G}_{2,2}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} + \frac{\sqrt{3}\mathbb{G}_{2,2}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{6} \\
\boxed{\text{z1290}} \quad \mathbb{Q}_{1,3}^{(1,-1;c)}(T_u) &= -\frac{\sqrt{3}\mathbb{G}_{2,3}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{3} \\
\boxed{\text{z1291}} \quad \mathbb{Q}_{3,1}^{(1,-1;c)}(T_u, 2) &= -\frac{\sqrt{3}\mathbb{G}_{2,1}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} + \frac{\mathbb{G}_{2,1}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2} \\
\boxed{\text{z1292}} \quad \mathbb{Q}_{3,2}^{(1,-1;c)}(T_u, 2) &= -\frac{\sqrt{3}\mathbb{G}_{2,2}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} - \frac{\mathbb{G}_{2,2}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2} \\
\boxed{\text{z1293}} \quad \mathbb{Q}_{3,3}^{(1,-1;c)}(T_u, 2) &= \frac{\sqrt{3}\mathbb{G}_{2,3}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{3} \\
\boxed{\text{z1294}} \quad \mathbb{Q}_{1,1}^{(1,0;c)}(T_u, a) &= \frac{\sqrt{3}\mathbb{Q}_{1,1}^{(1,0;a)}(T_u)\mathbb{Q}_0^{(b)}(A_g)}{3} \\
\boxed{\text{z1295}} \quad \mathbb{Q}_{1,2}^{(1,0;c)}(T_u, a) &= \frac{\sqrt{3}\mathbb{Q}_{1,2}^{(1,0;a)}(T_u)\mathbb{Q}_0^{(b)}(A_g)}{3} \\
\boxed{\text{z1296}} \quad \mathbb{Q}_{1,3}^{(1,0;c)}(T_u, a) &= \frac{\sqrt{3}\mathbb{Q}_{1,3}^{(1,0;a)}(T_u)\mathbb{Q}_0^{(b)}(A_g)}{3} \\
\boxed{\text{z1297}} \quad \mathbb{Q}_{1,1}^{(1,0;c)}(T_u, b) &= -\frac{\sqrt{3}\mathbb{Q}_{1,1}^{(1,0;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} + \frac{\mathbb{Q}_{1,1}^{(1,0;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2} \\
\boxed{\text{z1298}} \quad \mathbb{Q}_{1,2}^{(1,0;c)}(T_u, b) &= -\frac{\sqrt{3}\mathbb{Q}_{1,2}^{(1,0;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} - \frac{\mathbb{Q}_{1,2}^{(1,0;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2} \\
\boxed{\text{z1299}} \quad \mathbb{Q}_{1,3}^{(1,0;c)}(T_u, b) &= \frac{\sqrt{3}\mathbb{Q}_{1,3}^{(1,0;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{3}
\end{aligned}$$

$$\boxed{\text{z1300}} \quad \mathbb{Q}_{3,1}^{(1,0;c)}(T_u, 2) = -\frac{\mathbb{Q}_{1,1}^{(1,0;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{Q}_{1,1}^{(1,0;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{6}$$

$$\boxed{\text{z1301}} \quad \mathbb{Q}_{3,2}^{(1,0;c)}(T_u, 2) = \frac{\mathbb{Q}_{1,2}^{(1,0;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{Q}_{1,2}^{(1,0;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{6}$$

$$\boxed{\text{z1302}} \quad \mathbb{Q}_{3,3}^{(1,0;c)}(T_u, 2) = \frac{\sqrt{3}\mathbb{Q}_{1,3}^{(1,0;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{3}$$

$$\boxed{\text{z1303}} \quad \mathbb{G}_{2,1}^{(1,-1;c)}(T_u) = \frac{\sqrt{3}\mathbb{G}_{2,1}^{(1,-1;a)}(T_u)\mathbb{Q}_0^{(b)}(A_g)}{3}$$

$$\boxed{\text{z1304}} \quad \mathbb{G}_{2,2}^{(1,-1;c)}(T_u) = \frac{\sqrt{3}\mathbb{G}_{2,2}^{(1,-1;a)}(T_u)\mathbb{Q}_0^{(b)}(A_g)}{3}$$

$$\boxed{\text{z1305}} \quad \mathbb{G}_{2,3}^{(1,-1;c)}(T_u) = \frac{\sqrt{3}\mathbb{G}_{2,3}^{(1,-1;a)}(T_u)\mathbb{Q}_0^{(b)}(A_g)}{3}$$

• '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: **3b03c**

$$\boxed{\text{z54}} \quad \mathbb{Q}_0^{(c)}(A_g, a) = \mathbb{Q}_0^{(a)}(A_g)\mathbb{Q}_0^{(b)}(A_g)$$

$$\boxed{\text{z55}} \quad \mathbb{Q}_0^{(c)}(A_g, b) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z56}} \quad \mathbb{Q}_0^{(1,-1;c)}(A_g) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z57}} \quad \mathbb{Q}_0^{(1,1;c)}(A_g) = \mathbb{Q}_0^{(1,1;a)}(A_g)\mathbb{Q}_0^{(b)}(A_g)$$

$$\boxed{\text{z58}} \quad \mathbb{G}_3^{(c)}(A_g) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z59}} \quad \mathbb{G}_3^{(1,-1;c)}(A_g) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z176}} \quad \mathbb{Q}_3^{(1,-1;c)}(A_u) = -\frac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u)}{3} - \frac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,2}^{(b)}(T_u)}{3} - \frac{\sqrt{3}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,3}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z177}} \quad \mathbb{Q}_3^{(1,0;c)}(A_u) = \frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{T}_{2,3}^{(1,0;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z178}} \quad \mathbb{G}_0^{(c)}(A_u) = \frac{\sqrt{3}\mathbb{M}_{1,1}^{(a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{M}_{1,2}^{(a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z179}} \quad \mathbb{G}_0^{(1,-1;c)}(A_u) = \frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z180}} \quad \mathbb{G}_4^{(1,-1;c)}(A_u) = \frac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,2}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,3}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z181}} \quad \mathbb{G}_0^{(1,1;c)}(A_u) = \frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z182}} \quad \mathbb{Q}_{2,1}^{(c)}(E_g, a) = \frac{\sqrt{2}\mathbb{Q}_0^{(a)}(A_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z183}} \quad \mathbb{Q}_{2,2}^{(c)}(E_g, a) = \frac{\sqrt{2}\mathbb{Q}_0^{(a)}(A_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z184}} \quad \mathbb{Q}_{2,1}^{(c)}(E_g, b) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_0^{(b)}(A_g)}{2}$$

$$\boxed{\text{z185}} \quad \mathbb{Q}_{2,2}^{(c)}(E_g, b) = \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_0^{(b)}(A_g)}{2}$$

$$\boxed{\text{z186}} \quad \mathbb{Q}_{2,1}^{(c)}(E_g, c) = \frac{\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \frac{\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z187}} \quad \mathbb{Q}_{2,2}^{(c)}(E_g, c) = -\frac{\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2} - \frac{\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z604}} \quad \mathbb{Q}_{2,1}^{(1,-1;c)}(E_g, a) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_0^{(b)}(A_g)}{2}$$

$$\boxed{\text{z605}} \quad \mathbb{Q}_{2,2}^{(1,-1;c)}(E_g, a) = \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_0^{(b)}(A_g)}{2}$$

$$\begin{aligned}
\text{z606} \quad \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} \\
\text{z607} \quad \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} \\
\text{z608} \quad \mathbb{Q}_{2,1}^{(1,1;c)}(E_g) &= \frac{\sqrt{2}\mathbb{Q}_0^{(1,1;a)}(A_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} \\
\text{z609} \quad \mathbb{Q}_{2,2}^{(1,1;c)}(E_g) &= \frac{\sqrt{2}\mathbb{Q}_0^{(1,1;a)}(A_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2} \\
\text{z610} \quad \mathbb{G}_{2,1}^{(c)}(E_u) &= -\frac{\sqrt{3}\mathbb{M}_{1,1}^{(a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} - \frac{\sqrt{3}\mathbb{M}_{1,2}^{(a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{3} \\
\text{z611} \quad \mathbb{G}_{2,2}^{(c)}(E_u) &= \frac{\mathbb{M}_{1,1}^{(a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{2} - \frac{\mathbb{M}_{1,2}^{(a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{2} \\
\text{z612} \quad \mathbb{G}_{2,1}^{(1,-1;c)}(E_u, a) &= -\frac{\sqrt{42}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u)}{28} - \frac{\sqrt{70}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u)}{28} - \frac{\sqrt{42}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,2}^{(b)}(T_u)}{28} + \frac{\sqrt{70}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,2}^{(b)}(T_u)}{28} + \frac{\sqrt{42}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,3}^{(b)}(T_u)}{14} \\
\text{z613} \quad \mathbb{G}_{2,2}^{(1,-1;c)}(E_u, a) &= \frac{3\sqrt{14}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u)}{28} - \frac{\sqrt{210}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u)}{84} - \frac{3\sqrt{14}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,2}^{(b)}(T_u)}{28} - \frac{\sqrt{210}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,2}^{(b)}(T_u)}{84} + \frac{\sqrt{210}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,3}^{(b)}(T_u)}{42} \\
\text{z614} \quad \mathbb{G}_{2,1}^{(1,-1;c)}(E_u, b) &= -\frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} - \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{3} \\
\text{z615} \quad \mathbb{G}_{2,2}^{(1,-1;c)}(E_u, b) &= \frac{\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{2} - \frac{\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{2} \\
\text{z616} \quad \mathbb{G}_{4,1}^{(1,-1;c)}(E_u) &= -\frac{\sqrt{210}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u)}{84} + \frac{3\sqrt{14}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u)}{28} - \frac{\sqrt{210}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,2}^{(b)}(T_u)}{84} - \frac{3\sqrt{14}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,2}^{(b)}(T_u)}{28} + \frac{\sqrt{210}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,3}^{(b)}(T_u)}{42} \\
\text{z617} \quad \mathbb{G}_{4,2}^{(1,-1;c)}(E_u) &= \frac{\sqrt{70}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u)}{28} + \frac{\sqrt{42}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u)}{28} - \frac{\sqrt{70}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,2}^{(b)}(T_u)}{28} + \frac{\sqrt{42}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,2}^{(b)}(T_u)}{28} - \frac{\sqrt{42}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,3}^{(b)}(T_u)}{14} \\
\text{z618} \quad \mathbb{G}_{2,1}^{(1,0;c)}(E_u) &= -\frac{\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{2} + \frac{\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{2} \\
\text{z619} \quad \mathbb{G}_{2,2}^{(1,0;c)}(E_u) &= -\frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} - \frac{\sqrt{3}\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} + \frac{\sqrt{3}\mathbb{T}_{2,3}^{(1,0;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{3}
\end{aligned}$$

$$\boxed{\text{z620}} \quad \mathbb{G}_{2,1}^{(1,1;c)}(E_u) = -\frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} - \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z621}} \quad \mathbb{G}_{2,2}^{(1,1;c)}(E_u) = \frac{\mathbb{M}_{1,1}^{(1,1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{2} - \frac{\mathbb{M}_{1,2}^{(1,1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{2}$$

$$\boxed{\text{z622}} \quad \mathbb{Q}_{2,1}^{(c)}(T_g, a) = \frac{\sqrt{3}\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_0^{(b)}(A_g)}{3}$$

$$\boxed{\text{z623}} \quad \mathbb{Q}_{2,2}^{(c)}(T_g, a) = \frac{\sqrt{3}\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_0^{(b)}(A_g)}{3}$$

$$\boxed{\text{z624}} \quad \mathbb{Q}_{2,3}^{(c)}(T_g, a) = \frac{\sqrt{3}\mathbb{Q}_{2,3}^{(a)}(T_g)\mathbb{Q}_0^{(b)}(A_g)}{3}$$

$$\boxed{\text{z625}} \quad \mathbb{Q}_{2,1}^{(c)}(T_g, b) = \frac{\sqrt{3}\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} - \frac{\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z626}} \quad \mathbb{Q}_{2,2}^{(c)}(T_g, b) = \frac{\sqrt{3}\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} + \frac{\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z627}} \quad \mathbb{Q}_{2,3}^{(c)}(T_g, b) = -\frac{\sqrt{3}\mathbb{Q}_{2,3}^{(a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{3}$$

$$\boxed{\text{z628}} \quad \mathbb{Q}_{4,1}^{(c)}(T_g, 1) = -\frac{\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{6}$$

$$\boxed{\text{z629}} \quad \mathbb{Q}_{4,2}^{(c)}(T_g, 1) = \frac{\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{6}$$

$$\boxed{\text{z630}} \quad \mathbb{Q}_{4,3}^{(c)}(T_g, 1) = \frac{\sqrt{3}\mathbb{Q}_{2,3}^{(a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{3}$$

$$\boxed{\text{z734}} \quad \mathbb{Q}_{2,1}^{(1,-1;c)}(T_g, a) = \frac{\sqrt{3}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_g)\mathbb{Q}_0^{(b)}(A_g)}{3}$$

$$\boxed{\text{z735}} \quad \mathbb{Q}_{2,2}^{(1,-1;c)}(T_g, a) = \frac{\sqrt{3}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_g)\mathbb{Q}_0^{(b)}(A_g)}{3}$$

$$\boxed{\text{z736}} \quad \mathbb{Q}_{2,3}^{(1,-1;c)}(T_g, a) = \frac{\sqrt{3}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_g)\mathbb{Q}_0^{(b)}(A_g)}{3}$$

$$\begin{aligned}
\boxed{\text{z737}} \quad \mathbb{Q}_{2,1}^{(1,-1;c)}(T_g, b) &= \frac{\sqrt{3}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} - \frac{\mathbb{Q}_{2,1}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2} \\
\boxed{\text{z738}} \quad \mathbb{Q}_{2,2}^{(1,-1;c)}(T_g, b) &= \frac{\sqrt{3}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} + \frac{\mathbb{Q}_{2,2}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2} \\
\boxed{\text{z739}} \quad \mathbb{Q}_{2,3}^{(1,-1;c)}(T_g, b) &= -\frac{\sqrt{3}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{3} \\
\boxed{\text{z848}} \quad \mathbb{Q}_{4,1}^{(1,-1;c)}(T_g, 1) &= -\frac{\mathbb{Q}_{2,1}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{6} \\
\boxed{\text{z849}} \quad \mathbb{Q}_{4,2}^{(1,-1;c)}(T_g, 1) &= \frac{\mathbb{Q}_{2,2}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{6} \\
\boxed{\text{z850}} \quad \mathbb{Q}_{4,3}^{(1,-1;c)}(T_g, 1) &= \frac{\sqrt{3}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{3} \\
\boxed{\text{z851}} \quad \mathbb{Q}_{2,1}^{(1,0;c)}(T_g) &= -\frac{\mathbb{G}_{1,1}^{(1,0;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{G}_{1,1}^{(1,0;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{6} \\
\boxed{\text{z852}} \quad \mathbb{Q}_{2,2}^{(1,0;c)}(T_g) &= \frac{\mathbb{G}_{1,2}^{(1,0;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{G}_{1,2}^{(1,0;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{6} \\
\boxed{\text{z853}} \quad \mathbb{Q}_{2,3}^{(1,0;c)}(T_g) &= \frac{\sqrt{3}\mathbb{G}_{1,3}^{(1,0;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{3} \\
\boxed{\text{z854}} \quad \mathbb{G}_{1,1}^{(1,0;c)}(T_g, a) &= \frac{\sqrt{3}\mathbb{G}_{1,1}^{(1,0;a)}(T_g)\mathbb{Q}_0^{(b)}(A_g)}{3} \\
\boxed{\text{z855}} \quad \mathbb{G}_{1,2}^{(1,0;c)}(T_g, a) &= \frac{\sqrt{3}\mathbb{G}_{1,2}^{(1,0;a)}(T_g)\mathbb{Q}_0^{(b)}(A_g)}{3} \\
\boxed{\text{z856}} \quad \mathbb{G}_{1,3}^{(1,0;c)}(T_g, a) &= \frac{\sqrt{3}\mathbb{G}_{1,3}^{(1,0;a)}(T_g)\mathbb{Q}_0^{(b)}(A_g)}{3} \\
\boxed{\text{z857}} \quad \mathbb{G}_{1,1}^{(1,0;c)}(T_g, b) &= -\frac{\sqrt{3}\mathbb{G}_{1,1}^{(1,0;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} + \frac{\mathbb{G}_{1,1}^{(1,0;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2} \\
\boxed{\text{z858}} \quad \mathbb{G}_{1,2}^{(1,0;c)}(T_g, b) &= -\frac{\sqrt{3}\mathbb{G}_{1,2}^{(1,0;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} - \frac{\mathbb{G}_{1,2}^{(1,0;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}
\end{aligned}$$

$$\begin{aligned}
\boxed{\text{z859}} \quad \mathbb{G}_{1,3}^{(1,0;c)}(T_g, b) &= \frac{\sqrt{3}\mathbb{G}_{1,3}^{(1,0;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{3} \\
\boxed{\text{z1306}} \quad \mathbb{Q}_{1,1}^{(c)}(T_u) &= \frac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} - \frac{\sqrt{6}\mathbb{M}_{1,3}^{(a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} \\
\boxed{\text{z1307}} \quad \mathbb{Q}_{1,2}^{(c)}(T_u) &= -\frac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} \\
\boxed{\text{z1308}} \quad \mathbb{Q}_{1,3}^{(c)}(T_u) &= \frac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} - \frac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} \\
\boxed{\text{z1309}} \quad \mathbb{Q}_{1,1}^{(1,-1;c)}(T_u) &= \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} - \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} \\
\boxed{\text{z1310}} \quad \mathbb{Q}_{1,2}^{(1,-1;c)}(T_u) &= -\frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} \\
\boxed{\text{z1311}} \quad \mathbb{Q}_{1,3}^{(1,-1;c)}(T_u) &= \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} - \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} \\
\boxed{\text{z1312}} \quad \mathbb{Q}_{3,1}^{(1,-1;c)}(T_u, 1) &= -\frac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,3}^{(b)}(T_u)}{4} - \frac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,3}^{(b)}(T_u)}{12} + \frac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,2}^{(b)}(T_u)}{4} - \frac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,2}^{(b)}(T_u)}{12} \\
\boxed{\text{z1313}} \quad \mathbb{Q}_{3,2}^{(1,-1;c)}(T_u, 1) &= \frac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,3}^{(b)}(T_u)}{4} - \frac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,3}^{(b)}(T_u)}{12} - \frac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u)}{4} - \frac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u)}{12} \\
\boxed{\text{z1314}} \quad \mathbb{Q}_{3,3}^{(1,-1;c)}(T_u, 1) &= -\frac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,2}^{(b)}(T_u)}{4} - \frac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,2}^{(b)}(T_u)}{12} + \frac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u)}{4} - \frac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u)}{12} \\
\boxed{\text{z1315}} \quad \mathbb{Q}_{3,1}^{(1,-1;c)}(T_u, 2) &= \frac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,3}^{(b)}(T_u)}{12} + \frac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,3}^{(b)}(T_u)}{12} + \frac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,2}^{(b)}(T_u)}{12} - \frac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,2}^{(b)}(T_u)}{12} + \frac{\mathbb{M}_3^{(1,-1;a)}(A_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{3} \\
\boxed{\text{z1316}} \quad \mathbb{Q}_{3,2}^{(1,-1;c)}(T_u, 2) &= \frac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,3}^{(b)}(T_u)}{12} - \frac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,3}^{(b)}(T_u)}{12} + \frac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u)}{12} + \frac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u)}{12} + \frac{\mathbb{M}_3^{(1,-1;a)}(A_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{3} \\
\boxed{\text{z1317}} \quad \mathbb{Q}_{3,3}^{(1,-1;c)}(T_u, 2) &= \frac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,2}^{(b)}(T_u)}{12} + \frac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,2}^{(b)}(T_u)}{12} + \frac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u)}{12} - \frac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u)}{12} + \frac{\mathbb{M}_3^{(1,-1;a)}(A_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{3} \\
\boxed{\text{z1318}} \quad \mathbb{Q}_{1,1}^{(1,0;c)}(T_u) &= -\frac{\sqrt{30}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{30} + \frac{\sqrt{10}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{10} + \frac{\sqrt{10}\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{10} + \frac{\sqrt{10}\mathbb{T}_{2,3}^{(1,0;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{10}
\end{aligned}$$

$$\begin{aligned}
\boxed{\text{z1319}} \quad \mathbb{Q}_{1,2}^{(1,0;c)}(T_u) &= -\frac{\sqrt{30}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{30} + \frac{\sqrt{10}\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{10} - \frac{\sqrt{10}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{10} + \frac{\sqrt{10}\mathbb{T}_{2,3}^{(1,0;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{10} \\
\boxed{\text{z1320}} \quad \mathbb{Q}_{1,3}^{(1,0;c)}(T_u) &= \frac{\sqrt{30}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{15} + \frac{\sqrt{10}\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{10} + \frac{\sqrt{10}\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{10} \\
\boxed{\text{z1321}} \quad \mathbb{Q}_{3,1}^{(1,0;c)}(T_u, 1) &= -\frac{\sqrt{5}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{10} + \frac{\sqrt{15}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{10} - \frac{\sqrt{15}\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{15} - \frac{\sqrt{15}\mathbb{T}_{2,3}^{(1,0;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{15} \\
\boxed{\text{z1322}} \quad \mathbb{Q}_{3,2}^{(1,0;c)}(T_u, 1) &= -\frac{\sqrt{5}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{10} - \frac{\sqrt{15}\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{15} - \frac{\sqrt{15}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{10} - \frac{\sqrt{15}\mathbb{T}_{2,3}^{(1,0;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{15} \\
\boxed{\text{z1323}} \quad \mathbb{Q}_{3,3}^{(1,0;c)}(T_u, 1) &= \frac{\sqrt{5}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{5} - \frac{\sqrt{15}\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{15} - \frac{\sqrt{15}\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{15} \\
\boxed{\text{z1324}} \quad \mathbb{Q}_{3,1}^{(1,0;c)}(T_u, 2) &= -\frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} - \frac{\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} - \frac{\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{3} + \frac{\mathbb{T}_{2,3}^{(1,0;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{3} \\
\boxed{\text{z1325}} \quad \mathbb{Q}_{3,2}^{(1,0;c)}(T_u, 2) &= \frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} + \frac{\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{3} - \frac{\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} - \frac{\mathbb{T}_{2,3}^{(1,0;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{3} \\
\boxed{\text{z1326}} \quad \mathbb{Q}_{3,3}^{(1,0;c)}(T_u, 2) &= -\frac{\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{3} + \frac{\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{3} + \frac{\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{3} \\
\boxed{\text{z1327}} \quad \mathbb{Q}_{1,1}^{(1,1;c)}(T_u) &= \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} - \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} \\
\boxed{\text{z1328}} \quad \mathbb{Q}_{1,2}^{(1,1;c)}(T_u) &= -\frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} \\
\boxed{\text{z1329}} \quad \mathbb{Q}_{1,3}^{(1,1;c)}(T_u) &= \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} - \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} \\
\boxed{\text{z1330}} \quad \mathbb{G}_{2,1}^{(c)}(T_u) &= \frac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} \\
\boxed{\text{z1331}} \quad \mathbb{G}_{2,2}^{(c)}(T_u) &= \frac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} \\
\boxed{\text{z1332}} \quad \mathbb{G}_{2,3}^{(c)}(T_u) &= \frac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6}
\end{aligned}$$

[illegible]

$$\boxed{\text{z1347}} \quad \mathbb{G}_{2,3}^{(1,0;c)}(T_u) = -\frac{\sqrt{2}\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} - \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{3} + \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z1348}} \quad \mathbb{G}_{2,1}^{(1,1;c)}(T_u) = \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z1349}} \quad \mathbb{G}_{2,2}^{(1,1;c)}(T_u) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z1350}} \quad \mathbb{G}_{2,3}^{(1,1;c)}(T_u) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6}$$

• 'A'-'A' bond-cluster

- * bra: $\langle s, \uparrow |, \langle s, \downarrow |$
- * ket: $|s, \uparrow\rangle, |s, \downarrow\rangle$
- * wyckoff: **3c@3c**

$$\boxed{\text{z60}} \quad \mathbb{Q}_0^{(c)}(A_g) = \mathbb{Q}_0^{(a)}(A_g)\mathbb{Q}_0^{(b)}(A_g)$$

$$\boxed{\text{z188}} \quad \mathbb{G}_0^{(1,-1;c)}(A_u) = \frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z189}} \quad \mathbb{Q}_{2,1}^{(c)}(E_g) = \frac{\sqrt{2}\mathbb{Q}_0^{(a)}(A_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z740}} \quad \mathbb{Q}_{2,2}^{(c)}(E_g) = \frac{\sqrt{2}\mathbb{Q}_0^{(a)}(A_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z860}} \quad \mathbb{G}_{2,1}^{(1,-1;c)}(E_u) = -\frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} - \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z861}} \quad \mathbb{G}_{2,2}^{(1,-1;c)}(E_u) = \frac{\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{2} - \frac{\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{2}$$

$$\boxed{\text{z1351}} \quad \mathbb{Q}_{1,1}^{(1,-1;c)}(T_u) = \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} - \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z1352}} \quad \mathbb{Q}_{1,2}^{(1,-1;c)}(T_u) = -\frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z1353}} \quad \mathbb{Q}_{1,3}^{(1,-1;c)}(T_u) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} - \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z1354}} \quad \mathbb{G}_{2,1}^{(1,-1;c)}(T_u) = \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z1355}} \quad \mathbb{G}_{2,2}^{(1,-1;c)}(T_u) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z1356}} \quad \mathbb{G}_{2,3}^{(1,-1;c)}(T_u) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6}$$

• '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: **3c@3c**

$$\boxed{\text{z61}} \quad \mathbb{Q}_0^{(c)}(A_g) = \frac{\sqrt{3}\mathbb{T}_{1,1}^{(a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{T}_{1,2}^{(a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{T}_{1,3}^{(a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z62}} \quad \mathbb{Q}_0^{(1,0;c)}(A_g) = \frac{\sqrt{3}\mathbb{T}_{1,1}^{(1,0;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{T}_{1,2}^{(1,0;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{T}_{1,3}^{(1,0;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z63}} \quad \mathbb{G}_3^{(1,-1;c)}(A_g) = \frac{\sqrt{3}\mathbb{M}_{2,1}^{(1,-1;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{M}_{2,2}^{(1,-1;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{M}_{2,3}^{(1,-1;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z190}} \quad \mathbb{Q}_3^{(1,-1;c)}(A_u) = \frac{\sqrt{2}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2} - \frac{\sqrt{2}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z191}} \quad \mathbb{G}_0^{(1,-1;c)}(A_u) = \frac{\sqrt{2}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} + \frac{\sqrt{2}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z192}} \quad \mathbb{G}_0^{(1,1;c)}(A_u) = \mathbb{G}_0^{(1,1;a)}(A_u)\mathbb{Q}_0^{(b)}(A_g)$$

$$\boxed{\text{z193}} \quad \mathbb{Q}_{2,1}^{(c)}(E_g) = -\frac{\sqrt{3}\mathbb{T}_{1,1}^{(a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} - \frac{\sqrt{3}\mathbb{T}_{1,2}^{(a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} + \frac{\sqrt{3}\mathbb{T}_{1,3}^{(a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z194}} \quad \mathbb{Q}_{2,2}^{(c)}(E_g) = \frac{\mathbb{T}_{1,1}^{(a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{2} - \frac{\mathbb{T}_{1,2}^{(a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{2}$$

$$\boxed{\text{z195}} \quad \mathbb{Q}_{2,1}^{(1,-1;c)}(E_g) = -\frac{\mathbb{M}_{2,1}^{(1,-1;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{2} + \frac{\mathbb{M}_{2,2}^{(1,-1;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{2}$$

$$\boxed{\text{z631}} \quad \mathbb{Q}_{2,2}^{(1,-1;c)}(E_g) = -\frac{\sqrt{3}\mathbb{M}_{2,1}^{(1,-1;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} - \frac{\sqrt{3}\mathbb{M}_{2,2}^{(1,-1;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} + \frac{\sqrt{3}\mathbb{M}_{2,3}^{(1,-1;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z632}} \quad \mathbb{Q}_{2,1}^{(1,0;c)}(E_g) = -\frac{\sqrt{3}\mathbb{T}_{1,1}^{(1,0;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} - \frac{\sqrt{3}\mathbb{T}_{1,2}^{(1,0;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} + \frac{\sqrt{3}\mathbb{T}_{1,3}^{(1,0;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z633}} \quad \mathbb{Q}_{2,2}^{(1,0;c)}(E_g) = \frac{\mathbb{T}_{1,1}^{(1,0;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{2} - \frac{\mathbb{T}_{1,2}^{(1,0;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{2}$$

$$\boxed{\text{z634}} \quad \mathbb{G}_{2,1}^{(1,-1;c)}(E_u, a) = \frac{\sqrt{2}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_0^{(b)}(A_g)}{2}$$

$$\boxed{\text{z635}} \quad \mathbb{G}_{2,2}^{(1,-1;c)}(E_u, a) = \frac{\sqrt{2}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_0^{(b)}(A_g)}{2}$$

$$\boxed{\text{z636}} \quad \mathbb{G}_{2,1}^{(1,-1;c)}(E_u, b) = \frac{\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \frac{\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z637}} \quad \mathbb{G}_{2,2}^{(1,-1;c)}(E_u, b) = -\frac{\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2} - \frac{\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z638}} \quad \mathbb{G}_{2,1}^{(1,1;c)}(E_u) = \frac{\sqrt{2}\mathbb{G}_0^{(1,1;a)}(A_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z639}} \quad \mathbb{G}_{2,2}^{(1,1;c)}(E_u) = \frac{\sqrt{2}\mathbb{G}_0^{(1,1;a)}(A_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z640}} \quad \mathbb{Q}_{2,1}^{(c)}(T_g) = \frac{\sqrt{6}\mathbb{T}_{1,2}^{(a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{T}_{1,3}^{(a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z641}} \quad \mathbb{Q}_{2,2}^{(c)}(T_g) = \frac{\sqrt{6}\mathbb{T}_{1,1}^{(a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{T}_{1,3}^{(a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z642}} \quad \mathbb{Q}_{2,3}^{(c)}(T_g) = \frac{\sqrt{6}\mathbb{T}_{1,1}^{(a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{T}_{1,2}^{(a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z643}} \quad \mathbb{Q}_{2,1}^{(1,-1;c)}(T_g) = \frac{\sqrt{6}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} + \frac{\sqrt{2}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} - \frac{\sqrt{2}\mathbb{M}_{2,2}^{(1,-1;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{2}\mathbb{M}_{2,3}^{(1,-1;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z644}} \quad \mathbb{Q}_{2,2}^{(1,-1;c)}(T_g) = -\frac{\sqrt{6}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} + \frac{\sqrt{2}\mathbb{M}_{2,1}^{(1,-1;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{2}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} - \frac{\sqrt{2}\mathbb{M}_{2,3}^{(1,-1;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z645}} \quad \mathbb{Q}_{2,3}^{(1,-1;c)}(T_g) = -\frac{\sqrt{2}\mathbb{M}_{2,1}^{(1,-1;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} - \frac{\sqrt{2}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{3} + \frac{\sqrt{2}\mathbb{M}_{2,2}^{(1,-1;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z646}} \quad \mathbb{Q}_{2,1}^{(1,0;c)}(T_g) = \frac{\sqrt{6}\mathbb{T}_{1,2}^{(1,0;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{T}_{1,3}^{(1,0;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z647}} \quad \mathbb{Q}_{2,2}^{(1,0;c)}(T_g) = \frac{\sqrt{6}\mathbb{T}_{1,1}^{(1,0;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{T}_{1,3}^{(1,0;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z648}} \quad \mathbb{Q}_{2,3}^{(1,0;c)}(T_g) = \frac{\sqrt{6}\mathbb{T}_{1,1}^{(1,0;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{T}_{1,2}^{(1,0;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z649}} \quad \mathbb{G}_{1,1}^{(c)}(T_g) = \frac{\sqrt{6}\mathbb{T}_{1,2}^{(a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} - \frac{\sqrt{6}\mathbb{T}_{1,3}^{(a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z650}} \quad \mathbb{G}_{1,2}^{(c)}(T_g) = -\frac{\sqrt{6}\mathbb{T}_{1,1}^{(a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{T}_{1,3}^{(a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z651}} \quad \mathbb{G}_{1,3}^{(c)}(T_g) = \frac{\sqrt{6}\mathbb{T}_{1,1}^{(a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} - \frac{\sqrt{6}\mathbb{T}_{1,2}^{(a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z652}} \quad \mathbb{G}_{1,1}^{(1,-1;c)}(T_g) = -\frac{\sqrt{30}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{30} + \frac{\sqrt{10}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{10} + \frac{\sqrt{10}\mathbb{M}_{2,2}^{(1,-1;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{10} + \frac{\sqrt{10}\mathbb{M}_{2,3}^{(1,-1;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{10}$$

$$\boxed{\text{z653}} \quad \mathbb{G}_{1,2}^{(1,-1;c)}(T_g) = -\frac{\sqrt{30}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{30} + \frac{\sqrt{10}\mathbb{M}_{2,1}^{(1,-1;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{10} - \frac{\sqrt{10}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{10} + \frac{\sqrt{10}\mathbb{M}_{2,3}^{(1,-1;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{10}$$

$$\boxed{\text{z654}} \quad \mathbb{G}_{1,3}^{(1,-1;c)}(T_g) = \frac{\sqrt{30}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{15} + \frac{\sqrt{10}\mathbb{M}_{2,1}^{(1,-1;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{10} + \frac{\sqrt{10}\mathbb{M}_{2,2}^{(1,-1;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{10}$$

$$\boxed{\text{z655}} \quad \mathbb{G}_{3,1}^{(1,-1;c)}(T_g, 1) = -\frac{\sqrt{5}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{10} + \frac{\sqrt{15}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{10} - \frac{\sqrt{15}\mathbb{M}_{2,2}^{(1,-1;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{15} - \frac{\sqrt{15}\mathbb{M}_{2,3}^{(1,-1;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{15}$$

$$\boxed{\text{z656}} \quad \mathbb{G}_{3,2}^{(1,-1;c)}(T_g, 1) = -\frac{\sqrt{5}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{10} - \frac{\sqrt{15}\mathbb{M}_{2,1}^{(1,-1;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{15} - \frac{\sqrt{15}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{10} - \frac{\sqrt{15}\mathbb{M}_{2,3}^{(1,-1;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{15}$$

$$\boxed{\text{z657}} \quad \mathbb{G}_{3,3}^{(1,-1;c)}(T_g, 1) = \frac{\sqrt{5}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{5} - \frac{\sqrt{15}\mathbb{M}_{2,1}^{(1,-1;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{15} - \frac{\sqrt{15}\mathbb{M}_{2,2}^{(1,-1;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{15}$$

$$\boxed{\text{z741}} \quad \mathbb{G}_{3,1}^{(1,-1;c)}(T_g, 2) = -\frac{\sqrt{3}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} - \frac{\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} - \frac{\mathbb{M}_{2,2}^{(1,-1;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{3} + \frac{\mathbb{M}_{2,3}^{(1,-1;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z742}} \quad \mathbb{G}_{3,2}^{(1,-1;c)}(T_g, 2) = \frac{\sqrt{3}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} + \frac{\mathbb{M}_{2,1}^{(1,-1;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{3} - \frac{\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} - \frac{\mathbb{M}_{2,3}^{(1,-1;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z743}} \quad \mathbb{G}_{3,3}^{(1,-1;c)}(T_g, 2) = -\frac{\mathbb{M}_{2,1}^{(1,-1;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{3} + \frac{\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{3} + \frac{\mathbb{M}_{2,2}^{(1,-1;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z862}} \quad \mathbb{G}_{1,1}^{(1,0;c)}(T_g) = \frac{\sqrt{6}\mathbb{T}_{1,2}^{(1,0;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} - \frac{\sqrt{6}\mathbb{T}_{1,3}^{(1,0;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z863}} \quad \mathbb{G}_{1,2}^{(1,0;c)}(T_g) = -\frac{\sqrt{6}\mathbb{T}_{1,1}^{(1,0;a)}(T_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{T}_{1,3}^{(1,0;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z864}} \quad \mathbb{G}_{1,3}^{(1,0;c)}(T_g) = \frac{\sqrt{6}\mathbb{T}_{1,1}^{(1,0;a)}(T_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} - \frac{\sqrt{6}\mathbb{T}_{1,2}^{(1,0;a)}(T_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z865}} \quad \mathbb{G}_{1,1}^{(1,1;c)}(T_g) = \frac{\sqrt{3}\mathbb{M}_0^{(1,1;a)}(A_u)\mathbb{T}_{1,1}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z866}} \quad \mathbb{G}_{1,2}^{(1,1;c)}(T_g) = \frac{\sqrt{3}\mathbb{M}_0^{(1,1;a)}(A_u)\mathbb{T}_{1,2}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z867}} \quad \mathbb{G}_{1,3}^{(1,1;c)}(T_g) = \frac{\sqrt{3}\mathbb{M}_0^{(1,1;a)}(A_u)\mathbb{T}_{1,3}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z1357}} \quad \mathbb{Q}_{1,1}^{(c)}(T_u, a) = \frac{\sqrt{3}\mathbb{Q}_{1,1}^{(a)}(T_u)\mathbb{Q}_0^{(b)}(A_g)}{3}$$

$$\boxed{\text{z1358}} \quad \mathbb{Q}_{1,2}^{(c)}(T_u, a) = \frac{\sqrt{3}\mathbb{Q}_{1,2}^{(a)}(T_u)\mathbb{Q}_0^{(b)}(A_g)}{3}$$

$$\boxed{\text{z1359}} \quad \mathbb{Q}_{1,3}^{(c)}(T_u, a) = \frac{\sqrt{3}\mathbb{Q}_{1,3}^{(a)}(T_u)\mathbb{Q}_0^{(b)}(A_g)}{3}$$

$$\boxed{\text{z1360}} \quad \mathbb{Q}_{1,1}^{(c)}(T_u, b) = -\frac{\sqrt{3}\mathbb{Q}_{1,1}^{(a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} + \frac{\mathbb{Q}_{1,1}^{(a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z1361}} \quad \mathbb{Q}_{1,2}^{(c)}(T_u, b) = -\frac{\sqrt{3}\mathbb{Q}_{1,2}^{(a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} - \frac{\mathbb{Q}_{1,2}^{(a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z1362}} \quad \mathbb{Q}_{1,3}^{(c)}(T_u, b) = \frac{\sqrt{3}\mathbb{Q}_{1,3}^{(a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{3}$$

$$\boxed{\text{z1363}} \quad \mathbb{Q}_{3,1}^{(c)}(T_u, 2) = -\frac{\mathbb{Q}_{1,1}^{(a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{Q}_{1,1}^{(a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{6}$$

$$\boxed{\text{z1364}} \quad \mathbb{Q}_{3,2}^{(c)}(T_u, 2) = \frac{\mathbb{Q}_{1,2}^{(a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{Q}_{1,2}^{(a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{6}$$

$$\boxed{\text{z1365}} \quad \mathbb{Q}_{3,3}^{(c)}(T_u, 2) = \frac{\sqrt{3}\mathbb{Q}_{1,3}^{(a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{3}$$

$$\boxed{\text{z1366}} \quad \mathbb{Q}_{1,1}^{(1,-1;c)}(T_u) = \frac{\mathbb{G}_{2,1}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} + \frac{\sqrt{3}\mathbb{G}_{2,1}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{6}$$

$$\boxed{\text{z1367}} \quad \mathbb{Q}_{1,2}^{(1,-1;c)}(T_u) = -\frac{\mathbb{G}_{2,2}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} + \frac{\sqrt{3}\mathbb{G}_{2,2}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{6}$$

$$\boxed{\text{z1368}} \quad \mathbb{Q}_{1,3}^{(1,-1;c)}(T_u) = -\frac{\sqrt{3}\mathbb{G}_{2,3}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{3}$$

$$\boxed{\text{z1369}} \quad \mathbb{Q}_{3,1}^{(1,-1;c)}(T_u, 2) = -\frac{\sqrt{3}\mathbb{G}_{2,1}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} + \frac{\mathbb{G}_{2,1}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z1370}} \quad \mathbb{Q}_{3,2}^{(1,-1;c)}(T_u, 2) = -\frac{\sqrt{3}\mathbb{G}_{2,2}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} - \frac{\mathbb{G}_{2,2}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z1371}} \quad \mathbb{Q}_{3,3}^{(1,-1;c)}(T_u, 2) = \frac{\sqrt{3}\mathbb{G}_{2,3}^{(1,-1;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{3}$$

$$\boxed{\text{z1372}} \quad \mathbb{Q}_{1,1}^{(1,0;c)}(T_u, a) = \frac{\sqrt{3}\mathbb{Q}_{1,1}^{(1,0;a)}(T_u)\mathbb{Q}_0^{(b)}(A_g)}{3}$$

$$\boxed{\text{z1373}} \quad \mathbb{Q}_{1,2}^{(1,0;c)}(T_u, a) = \frac{\sqrt{3}\mathbb{Q}_{1,2}^{(1,0;a)}(T_u)\mathbb{Q}_0^{(b)}(A_g)}{3}$$

$$\boxed{\text{z1374}} \quad \mathbb{Q}_{1,3}^{(1,0;c)}(T_u, a) = \frac{\sqrt{3}\mathbb{Q}_{1,3}^{(1,0;a)}(T_u)\mathbb{Q}_0^{(b)}(A_g)}{3}$$

$$\boxed{\text{z1375}} \quad \mathbb{Q}_{1,1}^{(1,0;c)}(T_u, b) = -\frac{\sqrt{3}\mathbb{Q}_{1,1}^{(1,0;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} + \frac{\mathbb{Q}_{1,1}^{(1,0;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z1376}} \quad \mathbb{Q}_{1,2}^{(1,0;c)}(T_u, b) = -\frac{\sqrt{3}\mathbb{Q}_{1,2}^{(1,0;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} - \frac{\mathbb{Q}_{1,2}^{(1,0;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z1377}} \quad \mathbb{Q}_{1,3}^{(1,0;c)}(T_u, b) = \frac{\sqrt{3}\mathbb{Q}_{1,3}^{(1,0;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{3}$$

$$\boxed{\text{z1378}} \quad \mathbb{Q}_{3,1}^{(1,0;c)}(T_u, 2) = -\frac{\mathbb{Q}_{1,1}^{(1,0;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{Q}_{1,1}^{(1,0;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{6}$$

$$\boxed{\text{z1379}} \quad \mathbb{Q}_{3,2}^{(1,0;c)}(T_u, 2) = \frac{\mathbb{Q}_{1,2}^{(1,0;a)}(T_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{Q}_{1,2}^{(1,0;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{6}$$

$$\boxed{\text{z1380}} \quad \mathbb{Q}_{3,3}^{(1,0;c)}(T_u, 2) = \frac{\sqrt{3}\mathbb{Q}_{1,3}^{(1,0;a)}(T_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{3}$$

$$\boxed{\text{z1381}} \quad \mathbb{G}_{2,1}^{(1,-1;c)}(T_u) = \frac{\sqrt{3}\mathbb{G}_{2,1}^{(1,-1;a)}(T_u)\mathbb{Q}_0^{(b)}(A_g)}{3}$$

$$\boxed{\text{z1382}} \quad \mathbb{G}_{2,2}^{(1,-1;c)}(T_u) = \frac{\sqrt{3}\mathbb{G}_{2,2}^{(1,-1;a)}(T_u)\mathbb{Q}_0^{(b)}(A_g)}{3}$$

$$\boxed{\text{z1383}} \quad \mathbb{G}_{2,3}^{(1,-1;c)}(T_u) = \frac{\sqrt{3}\mathbb{G}_{2,3}^{(1,-1;a)}(T_u)\mathbb{Q}_0^{(b)}(A_g)}{3}$$

• '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: **3c03c**

$$\boxed{\text{z64}} \quad \mathbb{Q}_0^{(c)}(A_g, a) = \mathbb{Q}_0^{(a)}(A_g)\mathbb{Q}_0^{(b)}(A_g)$$

$$\boxed{\text{z65}} \quad \mathbb{Q}_0^{(c)}(A_g, b) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z66}} \quad \mathbb{Q}_0^{(1,-1;c)}(A_g) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z67}} \quad \mathbb{Q}_0^{(1,1;c)}(A_g) = \mathbb{Q}_0^{(1,1;a)}(A_g)\mathbb{Q}_0^{(b)}(A_g)$$

$$\boxed{\text{z68}} \quad \mathbb{G}_3^{(c)}(A_g) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z69}} \quad \mathbb{G}_3^{(1,-1;c)}(A_g) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z196}} \quad \mathbb{Q}_3^{(1,-1;c)}(A_u) = -\frac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u)}{3} - \frac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,2}^{(b)}(T_u)}{3} - \frac{\sqrt{3}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,3}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z197}} \quad \mathbb{Q}_3^{(1,0;c)}(A_u) = \frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{T}_{2,3}^{(1,0;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z198}} \quad \mathbb{G}_0^{(c)}(A_u) = \frac{\sqrt{3}\mathbb{M}_{1,1}^{(a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{M}_{1,2}^{(a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z199}} \quad \mathbb{G}_0^{(1,-1;c)}(A_u) = \frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z200}} \quad \mathbb{G}_4^{(1,-1;c)}(A_u) = \frac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,2}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,3}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z201}} \quad \mathbb{G}_0^{(1,1;c)}(A_u) = \frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{3} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z202}} \quad \mathbb{Q}_{2,1}^{(c)}(E_g, a) = \frac{\sqrt{2}\mathbb{Q}_0^{(a)}(A_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z203}} \quad \mathbb{Q}_{2,2}^{(c)}(E_g, a) = \frac{\sqrt{2}\mathbb{Q}_0^{(a)}(A_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z204}} \quad \mathbb{Q}_{2,1}^{(c)}(E_g, b) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_0^{(b)}(A_g)}{2}$$

$$\boxed{\text{z205}} \quad \mathbb{Q}_{2,2}^{(c)}(E_g, b) = \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_0^{(b)}(A_g)}{2}$$

$$\boxed{\text{z206}} \quad \mathbb{Q}_{2,1}^{(c)}(E_g, c) = \frac{\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \frac{\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z207}} \quad \mathbb{Q}_{2,2}^{(c)}(E_g, c) = -\frac{\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2} - \frac{\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z658}} \quad \mathbb{Q}_{2,1}^{(1,-1;c)}(E_g, a) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_0^{(b)}(A_g)}{2}$$

$$\boxed{\text{z659}} \quad \mathbb{Q}_{2,2}^{(1,-1;c)}(E_g, a) = \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_0^{(b)}(A_g)}{2}$$

$$\boxed{\text{z660}} \quad \mathbb{Q}_{2,1}^{(1,-1;c)}(E_g, b) = \frac{\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \frac{\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z661}} \quad \mathbb{Q}_{2,2}^{(1,-1;c)}(E_g, b) = -\frac{\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2} - \frac{\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z662}} \quad \mathbb{Q}_{2,1}^{(1,1;c)}(E_g) = \frac{\sqrt{2}\mathbb{Q}_0^{(1,1;a)}(A_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z663}} \quad \mathbb{Q}_{2,2}^{(1,1;c)}(E_g) = \frac{\sqrt{2}\mathbb{Q}_0^{(1,1;a)}(A_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z664}} \quad \mathbb{G}_{2,1}^{(c)}(E_u) = -\frac{\sqrt{3}\mathbb{M}_{1,1}^{(a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} - \frac{\sqrt{3}\mathbb{M}_{1,2}^{(a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z665}} \quad \mathbb{G}_{2,2}^{(c)}(E_u) = \frac{\mathbb{M}_{1,1}^{(a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{2} - \frac{\mathbb{M}_{1,2}^{(a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{2}$$

$$\boxed{\text{z666}} \quad \mathbb{G}_{2,1}^{(1,-1;c)}(E_u, a) = -\frac{\sqrt{42}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u)}{28} - \frac{\sqrt{70}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u)}{28} - \frac{\sqrt{42}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,2}^{(b)}(T_u)}{28} + \frac{\sqrt{70}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,2}^{(b)}(T_u)}{28} + \frac{\sqrt{42}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,3}^{(b)}(T_u)}{14}$$

$$\boxed{\text{z667}} \quad \mathbb{G}_{2,2}^{(1,-1;c)}(E_u, a) = \frac{3\sqrt{14}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u)}{28} - \frac{\sqrt{210}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u)}{84} - \frac{3\sqrt{14}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,2}^{(b)}(T_u)}{28} - \frac{\sqrt{210}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,2}^{(b)}(T_u)}{84} + \frac{\sqrt{210}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,3}^{(b)}(T_u)}{42}$$

$$\boxed{\text{z668}} \quad \mathbb{G}_{2,1}^{(1,-1;c)}(E_u, b) = -\frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} - \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z669}} \quad \mathbb{G}_{2,2}^{(1,-1;c)}(E_u, b) = \frac{\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{2} - \frac{\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{2}$$

$$\boxed{\text{z670}} \quad \mathbb{G}_{4,1}^{(1,-1;c)}(E_u) = -\frac{\sqrt{210}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u)}{84} + \frac{3\sqrt{14}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u)}{28} - \frac{\sqrt{210}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,2}^{(b)}(T_u)}{84} - \frac{3\sqrt{14}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,2}^{(b)}(T_u)}{28} + \frac{\sqrt{210}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,3}^{(b)}(T_u)}{42}$$

$$\boxed{\text{z671}} \quad \mathbb{G}_{4,2}^{(1,-1;c)}(E_u) = \frac{\sqrt{70}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u)}{28} + \frac{\sqrt{42}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u)}{28} - \frac{\sqrt{70}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,2}^{(b)}(T_u)}{28} + \frac{\sqrt{42}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,2}^{(b)}(T_u)}{28} - \frac{\sqrt{42}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,3}^{(b)}(T_u)}{14}$$

$$\begin{aligned}
\boxed{\text{z672}} \quad \mathbb{G}_{2,1}^{(1,0;c)}(E_u) &= -\frac{\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{2} + \frac{\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{2} \\
\boxed{\text{z673}} \quad \mathbb{G}_{2,2}^{(1,0;c)}(E_u) &= -\frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} - \frac{\sqrt{3}\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} + \frac{\sqrt{3}\mathbb{T}_{2,3}^{(1,0;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{3} \\
\boxed{\text{z674}} \quad \mathbb{G}_{2,1}^{(1,1;c)}(E_u) &= -\frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} - \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{3} \\
\boxed{\text{z675}} \quad \mathbb{G}_{2,2}^{(1,1;c)}(E_u) &= \frac{\mathbb{M}_{1,1}^{(1,1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{2} - \frac{\mathbb{M}_{1,2}^{(1,1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{2} \\
\boxed{\text{z676}} \quad \mathbb{Q}_{2,1}^{(c)}(T_g, a) &= \frac{\sqrt{3}\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_0^{(b)}(A_g)}{3} \\
\boxed{\text{z677}} \quad \mathbb{Q}_{2,2}^{(c)}(T_g, a) &= \frac{\sqrt{3}\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_0^{(b)}(A_g)}{3} \\
\boxed{\text{z678}} \quad \mathbb{Q}_{2,3}^{(c)}(T_g, a) &= \frac{\sqrt{3}\mathbb{Q}_{2,3}^{(a)}(T_g)\mathbb{Q}_0^{(b)}(A_g)}{3} \\
\boxed{\text{z679}} \quad \mathbb{Q}_{2,1}^{(c)}(T_g, b) &= \frac{\sqrt{3}\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} - \frac{\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2} \\
\boxed{\text{z680}} \quad \mathbb{Q}_{2,2}^{(c)}(T_g, b) &= \frac{\sqrt{3}\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} + \frac{\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2} \\
\boxed{\text{z681}} \quad \mathbb{Q}_{2,3}^{(c)}(T_g, b) &= -\frac{\sqrt{3}\mathbb{Q}_{2,3}^{(a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{3} \\
\boxed{\text{z682}} \quad \mathbb{Q}_{4,1}^{(c)}(T_g, 1) &= -\frac{\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{Q}_{2,1}^{(a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{6} \\
\boxed{\text{z683}} \quad \mathbb{Q}_{4,2}^{(c)}(T_g, 1) &= \frac{\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{Q}_{2,2}^{(a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{6} \\
\boxed{\text{z684}} \quad \mathbb{Q}_{4,3}^{(c)}(T_g, 1) &= \frac{\sqrt{3}\mathbb{Q}_{2,3}^{(a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{3} \\
\boxed{\text{z744}} \quad \mathbb{Q}_{2,1}^{(1,-1;c)}(T_g, a) &= \frac{\sqrt{3}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_g)\mathbb{Q}_0^{(b)}(A_g)}{3}
\end{aligned}$$

$$\begin{aligned}
\boxed{\text{z745}} \quad \mathbb{Q}_{2,2}^{(1,-1;c)}(T_g, a) &= \frac{\sqrt{3}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_g)\mathbb{Q}_0^{(b)}(A_g)}{3} \\
\boxed{\text{z746}} \quad \mathbb{Q}_{2,3}^{(1,-1;c)}(T_g, a) &= \frac{\sqrt{3}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_g)\mathbb{Q}_0^{(b)}(A_g)}{3} \\
\boxed{\text{z747}} \quad \mathbb{Q}_{2,1}^{(1,-1;c)}(T_g, b) &= \frac{\sqrt{3}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} - \frac{\mathbb{Q}_{2,1}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2} \\
\boxed{\text{z748}} \quad \mathbb{Q}_{2,2}^{(1,-1;c)}(T_g, b) &= \frac{\sqrt{3}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} + \frac{\mathbb{Q}_{2,2}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2} \\
\boxed{\text{z749}} \quad \mathbb{Q}_{2,3}^{(1,-1;c)}(T_g, b) &= -\frac{\sqrt{3}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{3} \\
\boxed{\text{z868}} \quad \mathbb{Q}_{4,1}^{(1,-1;c)}(T_g, 1) &= -\frac{\mathbb{Q}_{2,1}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{6} \\
\boxed{\text{z869}} \quad \mathbb{Q}_{4,2}^{(1,-1;c)}(T_g, 1) &= \frac{\mathbb{Q}_{2,2}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{6} \\
\boxed{\text{z870}} \quad \mathbb{Q}_{4,3}^{(1,-1;c)}(T_g, 1) &= \frac{\sqrt{3}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{3} \\
\boxed{\text{z871}} \quad \mathbb{Q}_{2,1}^{(1,0;c)}(T_g) &= -\frac{\mathbb{G}_{1,1}^{(1,0;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{G}_{1,1}^{(1,0;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{6} \\
\boxed{\text{z872}} \quad \mathbb{Q}_{2,2}^{(1,0;c)}(T_g) &= \frac{\mathbb{G}_{1,2}^{(1,0;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{G}_{1,2}^{(1,0;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{6} \\
\boxed{\text{z873}} \quad \mathbb{Q}_{2,3}^{(1,0;c)}(T_g) &= \frac{\sqrt{3}\mathbb{G}_{1,3}^{(1,0;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{3} \\
\boxed{\text{z874}} \quad \mathbb{G}_{1,1}^{(1,0;c)}(T_g, a) &= \frac{\sqrt{3}\mathbb{G}_{1,1}^{(1,0;a)}(T_g)\mathbb{Q}_0^{(b)}(A_g)}{3} \\
\boxed{\text{z875}} \quad \mathbb{G}_{1,2}^{(1,0;c)}(T_g, a) &= \frac{\sqrt{3}\mathbb{G}_{1,2}^{(1,0;a)}(T_g)\mathbb{Q}_0^{(b)}(A_g)}{3} \\
\boxed{\text{z876}} \quad \mathbb{G}_{1,3}^{(1,0;c)}(T_g, a) &= \frac{\sqrt{3}\mathbb{G}_{1,3}^{(1,0;a)}(T_g)\mathbb{Q}_0^{(b)}(A_g)}{3}
\end{aligned}$$

$$\boxed{\text{z877}} \quad \mathbb{G}_{1,1}^{(1,0;c)}(T_g, b) = -\frac{\sqrt{3}\mathbb{G}_{1,1}^{(1,0;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} + \frac{\mathbb{G}_{1,1}^{(1,0;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z878}} \quad \mathbb{G}_{1,2}^{(1,0;c)}(T_g, b) = -\frac{\sqrt{3}\mathbb{G}_{1,2}^{(1,0;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} - \frac{\mathbb{G}_{1,2}^{(1,0;a)}(T_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z879}} \quad \mathbb{G}_{1,3}^{(1,0;c)}(T_g, b) = \frac{\sqrt{3}\mathbb{G}_{1,3}^{(1,0;a)}(T_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{3}$$

$$\boxed{\text{z1384}} \quad \mathbb{Q}_{1,1}^{(c)}(T_u) = \frac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} - \frac{\sqrt{6}\mathbb{M}_{1,3}^{(a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z1385}} \quad \mathbb{Q}_{1,2}^{(c)}(T_u) = -\frac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z1386}} \quad \mathbb{Q}_{1,3}^{(c)}(T_u) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} - \frac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z1387}} \quad \mathbb{Q}_{1,1}^{(1,-1;c)}(T_u) = \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} - \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z1388}} \quad \mathbb{Q}_{1,2}^{(1,-1;c)}(T_u) = -\frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z1389}} \quad \mathbb{Q}_{1,3}^{(1,-1;c)}(T_u) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} - \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z1390}} \quad \mathbb{Q}_{3,1}^{(1,-1;c)}(T_u, 1) = -\frac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,3}^{(b)}(T_u)}{4} - \frac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,3}^{(b)}(T_u)}{12} + \frac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,2}^{(b)}(T_u)}{4} - \frac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,2}^{(b)}(T_u)}{12}$$

$$\boxed{\text{z1391}} \quad \mathbb{Q}_{3,2}^{(1,-1;c)}(T_u, 1) = \frac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,3}^{(b)}(T_u)}{4} - \frac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,3}^{(b)}(T_u)}{12} - \frac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u)}{4} - \frac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u)}{12}$$

$$\boxed{\text{z1392}} \quad \mathbb{Q}_{3,3}^{(1,-1;c)}(T_u, 1) = -\frac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,2}^{(b)}(T_u)}{4} - \frac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,2}^{(b)}(T_u)}{12} + \frac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u)}{4} - \frac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u)}{12}$$

$$\boxed{\text{z1393}} \quad \mathbb{Q}_{3,1}^{(1,-1;c)}(T_u, 2) = \frac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,3}^{(b)}(T_u)}{12} + \frac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,3}^{(b)}(T_u)}{12} + \frac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,2}^{(b)}(T_u)}{12} - \frac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,2}^{(b)}(T_u)}{12} + \frac{\mathbb{M}_3^{(1,-1;a)}(A_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{3}$$

$$\boxed{\text{z1394}} \quad \mathbb{Q}_{3,2}^{(1,-1;c)}(T_u, 2) = \frac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,3}^{(b)}(T_u)}{12} - \frac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,3}^{(b)}(T_u)}{12} + \frac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u)}{12} + \frac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u)}{12} + \frac{\mathbb{M}_3^{(1,-1;a)}(A_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{3}$$

$$\begin{aligned}
\boxed{\text{z1395}} \quad \mathbb{Q}_{3,3}^{(1,-1;c)}(T_u, 2) &= \frac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,2}^{(b)}(T_u)}{12} + \frac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,2}^{(b)}(T_u)}{12} + \frac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u)}{12} - \frac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u)}{12} + \frac{\mathbb{M}_3^{(1,-1;a)}(A_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{3} \\
\boxed{\text{z1396}} \quad \mathbb{Q}_{1,1}^{(1,0;c)}(T_u) &= -\frac{\sqrt{30}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{30} + \frac{\sqrt{10}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{10} + \frac{\sqrt{10}\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{10} + \frac{\sqrt{10}\mathbb{T}_{2,3}^{(1,0;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{10} \\
\boxed{\text{z1397}} \quad \mathbb{Q}_{1,2}^{(1,0;c)}(T_u) &= -\frac{\sqrt{30}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{30} + \frac{\sqrt{10}\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{10} - \frac{\sqrt{10}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{10} + \frac{\sqrt{10}\mathbb{T}_{2,3}^{(1,0;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{10} \\
\boxed{\text{z1398}} \quad \mathbb{Q}_{1,3}^{(1,0;c)}(T_u) &= \frac{\sqrt{30}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{15} + \frac{\sqrt{10}\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{10} + \frac{\sqrt{10}\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{10} \\
\boxed{\text{z1399}} \quad \mathbb{Q}_{3,1}^{(1,0;c)}(T_u, 1) &= -\frac{\sqrt{5}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{10} + \frac{\sqrt{15}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{10} - \frac{\sqrt{15}\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{15} - \frac{\sqrt{15}\mathbb{T}_{2,3}^{(1,0;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{15} \\
\boxed{\text{z1400}} \quad \mathbb{Q}_{3,2}^{(1,0;c)}(T_u, 1) &= -\frac{\sqrt{5}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{10} - \frac{\sqrt{15}\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{15} - \frac{\sqrt{15}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{10} - \frac{\sqrt{15}\mathbb{T}_{2,3}^{(1,0;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{15} \\
\boxed{\text{z1401}} \quad \mathbb{Q}_{3,3}^{(1,0;c)}(T_u, 1) &= \frac{\sqrt{5}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{5} - \frac{\sqrt{15}\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{15} - \frac{\sqrt{15}\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{15} \\
\boxed{\text{z1402}} \quad \mathbb{Q}_{3,1}^{(1,0;c)}(T_u, 2) &= -\frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} - \frac{\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} - \frac{\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{3} + \frac{\mathbb{T}_{2,3}^{(1,0;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{3} \\
\boxed{\text{z1403}} \quad \mathbb{Q}_{3,2}^{(1,0;c)}(T_u, 2) &= \frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} + \frac{\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{3} - \frac{\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} - \frac{\mathbb{T}_{2,3}^{(1,0;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{3} \\
\boxed{\text{z1404}} \quad \mathbb{Q}_{3,3}^{(1,0;c)}(T_u, 2) &= -\frac{\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{3} + \frac{\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{3} + \frac{\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{3} \\
\boxed{\text{z1405}} \quad \mathbb{Q}_{1,1}^{(1,1;c)}(T_u) &= \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} - \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} \\
\boxed{\text{z1406}} \quad \mathbb{Q}_{1,2}^{(1,1;c)}(T_u) &= -\frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} \\
\boxed{\text{z1407}} \quad \mathbb{Q}_{1,3}^{(1,1;c)}(T_u) &= \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} - \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} \\
\boxed{\text{z1408}} \quad \mathbb{G}_{2,1}^{(c)}(T_u) &= \frac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6}
\end{aligned}$$

$$\boxed{\text{z1409}} \quad \mathbb{G}_{2,2}^{(c)}(T_u) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z1410}} \quad \mathbb{G}_{2,3}^{(c)}(T_u) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z1411}} \quad \mathbb{G}_{2,1}^{(1,-1;c)}(Tu, a) = -\frac{\sqrt{21}\mathbb{M}_{3,2}^{(1,-1;a)}(Tg, 1)\mathbb{T}_{1,3}^{(b)}(Tu)}{21} + \frac{\sqrt{35}\mathbb{M}_{3,2}^{(1,-1;a)}(Tg, 2)\mathbb{T}_{1,3}^{(b)}(Tu)}{21} - \frac{\sqrt{21}\mathbb{M}_{3,3}^{(1,-1;a)}(Tg, 1)\mathbb{T}_{1,2}^{(b)}(Tu)}{21} - \frac{\sqrt{35}\mathbb{M}_{3,3}^{(1,-1;a)}(Tg, 2)\mathbb{T}_{1,2}^{(b)}(Tu)}{21} + \frac{\sqrt{35}\mathbb{M}_3^{(1,-1;a)}(Ag)\mathbb{T}_{1,1}^{(b)}(Tu)}{21}$$

$$\boxed{\text{z1412}} \quad \mathbb{G}_{2,2}^{(1,-1;c)}(T_u, a) = -\frac{\sqrt{21}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,3}^{(b)}(T_u)}{21} - \frac{\sqrt{35}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,3}^{(b)}(T_u)}{21} - \frac{\sqrt{21}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u)}{21} + \frac{\sqrt{35}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u)}{21} + \frac{\sqrt{35}\mathbb{M}_3^{(1,-1;a)}(A_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{21}$$

$$\boxed{\text{z1413}} \quad \mathbb{G}_{2,3}^{(1,-1;c)}(Tu, a) = -\frac{\sqrt{21}\mathbb{M}_{3,1}^{(1,-1;a)}(Tg, 1)\mathbb{T}_{1,2}^{(b)}(Tu)}{21} + \frac{\sqrt{35}\mathbb{M}_{3,1}^{(1,-1;a)}(Tg, 2)\mathbb{T}_{1,2}^{(b)}(Tu)}{21} - \frac{\sqrt{21}\mathbb{M}_{3,2}^{(1,-1;a)}(Tg, 1)\mathbb{T}_{1,1}^{(b)}(Tu)}{21} - \frac{\sqrt{35}\mathbb{M}_{3,2}^{(1,-1;a)}(Tg, 2)\mathbb{T}_{1,1}^{(b)}(Tu)}{21} + \frac{\sqrt{35}\mathbb{M}_3^{(1,-1;a)}(Ag)\mathbb{T}_{1,3}^{(b)}(Tu)}{21}$$

$$\boxed{\text{z1414}} \quad \mathbb{G}_{2,1}^{(1,-1;c)}(T_u, b) = \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z1415}} \quad \mathbb{G}_{2,2}^{(1,-1;c)}(T_u, b) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z1416}} \quad \mathbb{G}_{2,3}^{(1,-1;c)}(T_u, b) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6}$$

$$\boxed{\text{z1417}} \quad \mathbb{G}_{4,1}^{(1,-1;c)}(T_u, 1) = \frac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,3}^{(b)}(T_u)}{12} - \frac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,3}^{(b)}(T_u)}{4} - \frac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,2}^{(b)}(T_u)}{12} - \frac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,2}^{(b)}(T_u)}{4}$$

$$\boxed{\text{z1418}} \quad \mathbb{G}_{4,2}^{(1,-1;c)}(T_u, 1) = -\frac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,3}^{(b)}(T_u)}{12} - \frac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,3}^{(b)}(T_u)}{4} + \frac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u)}{12} - \frac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u)}{4}$$

$$\boxed{\text{z1419}} \quad \mathbb{G}_{4,3}^{(1,-1;c)}(T_u, 1) = \frac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,2}^{(b)}(T_u)}{12} - \frac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,2}^{(b)}(T_u)}{4} - \frac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u)}{12} - \frac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u)}{4}$$

$$\boxed{\text{z1420}} \quad \mathbb{G}_{4,1}^{(1,-1;c)}(Tu, 2) = -\frac{\sqrt{105}\mathbb{M}_{3,2}^{(1,-1;a)}(Tg, 1)\mathbb{T}_{1,3}^{(b)}(Tu)}{84} - \frac{3\sqrt{7}\mathbb{M}_{3,2}^{(1,-1;a)}(Tg, 2)\mathbb{T}_{1,3}^{(b)}(Tu)}{28} - \frac{\sqrt{105}\mathbb{M}_{3,3}^{(1,-1;a)}(Tg, 1)\mathbb{T}_{1,2}^{(b)}(Tu)}{84} + \frac{3\sqrt{7}\mathbb{M}_{3,3}^{(1,-1;a)}(Tg, 2)\mathbb{T}_{1,2}^{(b)}(Tu)}{28} + \frac{\sqrt{7}\mathbb{M}_3^{(1,-1;a)}(Ag)\mathbb{T}_{1,1}^{(b)}(Tu)}{7}$$

$$\boxed{\text{z1421}} \quad \mathbb{G}_{4,2}^{(1,-1;c)}(T_u, 2) = -\frac{\sqrt{105}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,3}^{(b)}(T_u)}{84} + \frac{3\sqrt{7}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,3}^{(b)}(T_u)}{28} - \frac{\sqrt{105}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u)}{84} - \frac{3\sqrt{7}\mathbb{M}_{3,3}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u)}{28} + \frac{\sqrt{7}\mathbb{M}_3^{(1,-1;a)}(A_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{7}$$

$$\boxed{\text{z1422}} \quad \mathbb{G}_{4,3}^{(1,-1;c)}(T_u, 2) = -\frac{\sqrt{105}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,2}^{(b)}(T_u)}{84} - \frac{3\sqrt{7}\mathbb{M}_{3,1}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,2}^{(b)}(T_u)}{28} - \frac{\sqrt{105}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 1)\mathbb{T}_{1,1}^{(b)}(T_u)}{84} + \frac{3\sqrt{7}\mathbb{M}_{3,2}^{(1,-1;a)}(T_g, 2)\mathbb{T}_{1,1}^{(b)}(T_u)}{28} + \frac{\sqrt{7}\mathbb{M}_3^{(1,-1;a)}(A_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{7}$$

$$\begin{aligned}
\boxed{\text{z1423}} \quad \mathbb{G}_{2,1}^{(1,0;c)}(T_u) &= \frac{\sqrt{6}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} + \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} - \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{2}\mathbb{T}_{2,3}^{(1,0;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} \\
\boxed{\text{z1424}} \quad \mathbb{G}_{2,2}^{(1,0;c)}(T_u) &= -\frac{\sqrt{6}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} + \frac{\sqrt{2}\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} - \frac{\sqrt{2}\mathbb{T}_{2,3}^{(1,0;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} \\
\boxed{\text{z1425}} \quad \mathbb{G}_{2,3}^{(1,0;c)}(T_u) &= -\frac{\sqrt{2}\mathbb{T}_{2,1}^{(1,0;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} - \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{3} + \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} \\
\boxed{\text{z1426}} \quad \mathbb{G}_{2,1}^{(1,1;c)}(T_u) &= \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} \\
\boxed{\text{z1427}} \quad \mathbb{G}_{2,2}^{(1,1;c)}(T_u) &= \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,1;a)}(T_g)\mathbb{T}_{1,3}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6} \\
\boxed{\text{z1428}} \quad \mathbb{G}_{2,3}^{(1,1;c)}(T_u) &= \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,1;a)}(T_g)\mathbb{T}_{1,2}^{(b)}(T_u)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,1;a)}(T_g)\mathbb{T}_{1,1}^{(b)}(T_u)}{6}
\end{aligned}$$

— Atomic SAMB —

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

$$\boxed{\text{x1}} \quad \mathbb{Q}_0^{(a)}(A_g) = \begin{bmatrix} \frac{\sqrt{2}}{2} & 0 \\ 0 & \frac{\sqrt{2}}{2} \end{bmatrix}$$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$$\boxed{\text{x16}} \quad \mathbb{G}_0^{(1,1;a)}(A_u) = \begin{bmatrix} 0 & \frac{\sqrt{3}i}{6} & 0 & \frac{\sqrt{3}}{6} & \frac{\sqrt{3}i}{6} & 0 \\ \frac{\sqrt{3}i}{6} & 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & -\frac{\sqrt{3}i}{6} \end{bmatrix}$$

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

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

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

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

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

$$\boxed{\text{x22}} \quad \mathbb{M}_0^{(1,1;a)}(A_u) = \begin{bmatrix} 0 & \frac{\sqrt{3}}{6} & 0 & -\frac{\sqrt{3}i}{6} & \frac{\sqrt{3}}{6} & 0 \\ \frac{\sqrt{3}}{6} & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 & -\frac{\sqrt{3}}{6} \end{bmatrix}$$

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

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

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

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

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

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

• 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: $|p_x, \uparrow\rangle, |p_x, \downarrow\rangle, |p_y, \uparrow\rangle, |p_y, \downarrow\rangle, |p_z, \uparrow\rangle, |p_z, \downarrow\rangle$

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

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

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

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

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

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

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

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

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

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

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

$$\boxed{\text{x40}} \quad \mathbb{Q}_0^{(1,1;a)}(A_g) = \begin{bmatrix} 0 & 0 & -\frac{\sqrt{3}i}{6} & 0 & 0 & \frac{\sqrt{3}}{6} \\ 0 & 0 & 0 & \frac{\sqrt{3}i}{6} & -\frac{\sqrt{3}}{6} & 0 \\ \frac{\sqrt{3}i}{6} & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{6} \\ 0 & -\frac{\sqrt{3}i}{6} & 0 & 0 & -\frac{\sqrt{3}}{6} & 0 \\ 0 & -\frac{\sqrt{3}}{6} & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 \\ \frac{\sqrt{3}}{6} & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 & 0 \end{bmatrix}$$

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

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

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

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

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

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

$$\boxed{\text{x47}} \quad \mathbb{M}_3^{(1,-1;a)}(A_g) = \begin{bmatrix} 0 & 0 & \frac{\sqrt{3}}{6} & 0 & 0 & -\frac{\sqrt{3}i}{6} \\ 0 & 0 & 0 & -\frac{\sqrt{3}}{6} & \frac{\sqrt{3}i}{6} & 0 \\ \frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{6} \\ 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & \frac{\sqrt{3}}{6} & 0 \\ 0 & -\frac{\sqrt{3}i}{6} & 0 & \frac{\sqrt{3}}{6} & 0 & 0 \\ \frac{\sqrt{3}i}{6} & 0 & \frac{\sqrt{3}}{6} & 0 & 0 & 0 \end{bmatrix}$$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Cluster SAMB

- Site cluster

** Wyckoff: 3d

$$\boxed{\text{y1}} \quad \mathbb{Q}_0^{(s)}(A_g) = \left[\frac{\sqrt{3}}{3}, \frac{\sqrt{3}}{3}, \frac{\sqrt{3}}{3} \right]$$

$$\boxed{\text{y2}} \quad \mathbb{Q}_{2,1}^{(s)}(E_g) = \left[-\frac{10\sqrt{2778}}{1389}, -\frac{23\sqrt{2778}}{2778}, \frac{43\sqrt{2778}}{2778} \right]$$

$$\boxed{\text{y3}} \quad \mathbb{Q}_{2,2}^{(s)}(E_g) = \left[\frac{11\sqrt{926}}{463}, -\frac{21\sqrt{926}}{926}, -\frac{\sqrt{926}}{926} \right]$$

• Bond cluster

** Wyckoff: 3b@3c

$$\boxed{\text{y4}} \quad \mathbb{Q}_0^{(s)}(A_g) = \left[\frac{\sqrt{3}}{3}, \frac{\sqrt{3}}{3}, \frac{\sqrt{3}}{3} \right]$$

$$\boxed{\text{y5}} \quad \mathbb{Q}_{2,1}^{(s)}(E_g) = \left[-\frac{10\sqrt{2778}}{1389}, -\frac{23\sqrt{2778}}{2778}, \frac{43\sqrt{2778}}{2778} \right]$$

$$\boxed{\text{y6}} \quad \mathbb{Q}_{2,2}^{(s)}(E_g) = \left[\frac{11\sqrt{926}}{463}, -\frac{21\sqrt{926}}{926}, -\frac{\sqrt{926}}{926} \right]$$

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

$$\boxed{\text{y8}} \quad \mathbb{T}_{1,2}^{(s)}(T_u) = [0, 0, i]$$

$$\boxed{\text{y9}} \quad \mathbb{T}_{1,3}^{(s)}(T_u) = [i, 0, 0]$$

** Wyckoff: 3c@3c

$$\boxed{\text{y10}} \quad \mathbb{Q}_0^{(s)}(A_g) = \left[\frac{\sqrt{3}}{3}, \frac{\sqrt{3}}{3}, \frac{\sqrt{3}}{3} \right]$$

$$\boxed{\text{y11}} \quad \mathbb{Q}_{2,1}^{(s)}(E_g) = \left[-\frac{10\sqrt{2778}}{1389}, -\frac{23\sqrt{2778}}{2778}, \frac{43\sqrt{2778}}{2778} \right]$$

$$\boxed{\text{y12}} \quad \mathbb{Q}_{2,2}^{(s)}(E_g) = \left[\frac{11\sqrt{926}}{463}, -\frac{21\sqrt{926}}{926}, -\frac{\sqrt{926}}{926} \right]$$

$$\boxed{\text{y13}} \quad \mathbb{T}_{1,1}^{(s)}(T_u) = [0, 0, i]$$

$$\boxed{\text{y14}} \quad \mathbb{T}_{1,2}^{(s)}(T_u) = [i, 0, 0]$$

$$\boxed{\text{y15}} \quad \mathbb{T}_{1,3}^{(s)}(T_u) = [0, i, 0]$$

** Wyckoff: **3a@1a**

$$\boxed{\text{y16}} \quad \mathbb{Q}_0^{(s)}(A_g) = \left[\frac{\sqrt{3}}{3}, \frac{\sqrt{3}}{3}, \frac{\sqrt{3}}{3} \right]$$

$$\boxed{\text{y17}} \quad \mathbb{Q}_{2,1}^{(s)}(E_g) = \left[-\frac{10\sqrt{2778}}{1389}, -\frac{23\sqrt{2778}}{2778}, \frac{43\sqrt{2778}}{2778} \right]$$

$$\boxed{\text{y18}} \quad \mathbb{Q}_{2,2}^{(s)}(E_g) = \left[\frac{11\sqrt{926}}{463}, -\frac{21\sqrt{926}}{926}, -\frac{\sqrt{926}}{926} \right]$$

$$\boxed{\text{y19}} \quad \mathbb{T}_{1,1}^{(s)}(T_u) = [i, 0, 0]$$

$$\boxed{\text{y20}} \quad \mathbb{T}_{1,2}^{(s)}(T_u) = [0, i, 0]$$

$$\boxed{\text{y21}} \quad \mathbb{T}_{1,3}^{(s)}(T_u) = [0, 0, i]$$

** Wyckoff: **12a@12j**

$$\boxed{\text{y22}} \quad \mathbb{Q}_0^{(s)}(A_g) = \left[\frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6} \right]$$

$$\boxed{\text{y23}} \quad \mathbb{T}_0^{(s)}(A_g) = \left[\frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6} \right]$$

$$\boxed{\text{y24}} \quad \mathbb{Q}_{2,1}^{(s)}(E_g) = \left[-\frac{5\sqrt{2778}}{1389}, -\frac{5\sqrt{2778}}{1389}, -\frac{5\sqrt{2778}}{1389}, -\frac{5\sqrt{2778}}{1389}, -\frac{23\sqrt{2778}}{5556}, -\frac{23\sqrt{2778}}{5556}, -\frac{23\sqrt{2778}}{5556}, -\frac{23\sqrt{2778}}{5556}, \frac{43\sqrt{2778}}{5556}, \frac{43\sqrt{2778}}{5556}, \frac{43\sqrt{2778}}{5556}, \frac{43\sqrt{2778}}{5556} \right]$$

$$\boxed{\text{y25}} \quad \mathbb{Q}_{2,2}^{(s)}(E_g) = \left[\frac{11\sqrt{926}}{926}, \frac{11\sqrt{926}}{926}, \frac{11\sqrt{926}}{926}, \frac{11\sqrt{926}}{926}, -\frac{21\sqrt{926}}{1852}, -\frac{21\sqrt{926}}{1852}, -\frac{21\sqrt{926}}{1852}, -\frac{21\sqrt{926}}{1852}, -\frac{\sqrt{926}}{1852}, -\frac{\sqrt{926}}{1852}, -\frac{\sqrt{926}}{1852}, -\frac{\sqrt{926}}{1852} \right]$$

$$\boxed{\text{y26}} \quad \mathbb{T}_{2,1}^{(s)}(E_g) = \left[-\frac{5\sqrt{2778}i}{1389}, -\frac{5\sqrt{2778}i}{1389}, -\frac{5\sqrt{2778}i}{1389}, -\frac{5\sqrt{2778}i}{1389}, -\frac{23\sqrt{2778}i}{5556}, -\frac{23\sqrt{2778}i}{5556}, -\frac{23\sqrt{2778}i}{5556}, -\frac{23\sqrt{2778}i}{5556}, \frac{43\sqrt{2778}i}{5556}, \frac{43\sqrt{2778}i}{5556}, \frac{43\sqrt{2778}i}{5556}, \frac{43\sqrt{2778}i}{5556} \right]$$

$$\boxed{\text{y27}} \quad \mathbb{T}_{2,2}^{(s)}(E_g) = \left[\frac{11\sqrt{926}i}{926}, \frac{11\sqrt{926}i}{926}, \frac{11\sqrt{926}i}{926}, \frac{11\sqrt{926}i}{926}, -\frac{21\sqrt{926}i}{1852}, -\frac{21\sqrt{926}i}{1852}, -\frac{21\sqrt{926}i}{1852}, -\frac{21\sqrt{926}i}{1852}, -\frac{\sqrt{926}i}{1852}, -\frac{\sqrt{926}i}{1852}, -\frac{\sqrt{926}i}{1852}, -\frac{\sqrt{926}i}{1852} \right]$$

$$\boxed{\text{y28}} \quad \mathbb{M}_{1,1}^{(s)}(T_g) = \left[\frac{i}{2}, -\frac{i}{2}, -\frac{i}{2}, \frac{i}{2}, 0, 0, 0, 0, 0, 0, 0, 0 \right]$$

$$\boxed{\text{y29}} \quad \mathbb{M}_{1,2}^{(s)}(T_g) = \left[0, 0, 0, 0, \frac{i}{2}, -\frac{i}{2}, -\frac{i}{2}, \frac{i}{2}, 0, 0, 0, 0 \right]$$

$$\boxed{\text{y30}} \quad \mathbb{M}_{1,3}^{(s)}(T_g) = \left[0, 0, 0, 0, 0, 0, 0, 0, \frac{i}{2}, -\frac{i}{2}, -\frac{i}{2}, \frac{i}{2} \right]$$

$$\boxed{\text{y31}} \quad \mathbb{Q}_{2,1}^{(s)}(T_g) = \left[\frac{1}{2}, -\frac{1}{2}, -\frac{1}{2}, \frac{1}{2}, 0, 0, 0, 0, 0, 0, 0, 0 \right]$$

$$\boxed{\text{y32}} \quad \mathbb{Q}_{2,2}^{(s)}(T_g) = \left[0, 0, 0, 0, \frac{1}{2}, -\frac{1}{2}, -\frac{1}{2}, \frac{1}{2}, 0, 0, 0, 0 \right]$$

$$\boxed{\text{y33}} \quad \mathbb{Q}_{2,3}^{(s)}(T_g) = \left[0, 0, 0, 0, 0, 0, 0, 0, \frac{1}{2}, -\frac{1}{2}, -\frac{1}{2}, \frac{1}{2} \right]$$

$$\boxed{\text{y34}} \quad \mathbb{Q}_{1,1}^{(s)}(T_u) = \left[0, 0, 0, 0, \frac{\sqrt{7}}{7}, \frac{\sqrt{7}}{7}, -\frac{\sqrt{7}}{7}, -\frac{\sqrt{7}}{7}, \frac{\sqrt{21}}{14}, -\frac{\sqrt{21}}{14}, \frac{\sqrt{21}}{14}, -\frac{\sqrt{21}}{14} \right]$$

$$\boxed{\text{y35}} \quad \mathbb{Q}_{1,2}^{(s)}(T_u) = \left[\frac{\sqrt{21}}{14}, -\frac{\sqrt{21}}{14}, \frac{\sqrt{21}}{14}, -\frac{\sqrt{21}}{14}, 0, 0, 0, 0, \frac{\sqrt{7}}{7}, \frac{\sqrt{7}}{7}, -\frac{\sqrt{7}}{7}, -\frac{\sqrt{7}}{7} \right]$$

$$\boxed{\text{y36}} \quad \mathbb{Q}_{1,3}^{(s)}(T_u) = \left[\frac{\sqrt{7}}{7}, \frac{\sqrt{7}}{7}, -\frac{\sqrt{7}}{7}, -\frac{\sqrt{7}}{7}, \frac{\sqrt{21}}{14}, -\frac{\sqrt{21}}{14}, \frac{\sqrt{21}}{14}, -\frac{\sqrt{21}}{14}, 0, 0, 0, 0 \right]$$

$$\boxed{\text{y37}} \quad \mathbb{T}_{1,1}^{(s)}(T_u, a) = \left[0, 0, 0, 0, \frac{\sqrt{7}i}{7}, \frac{\sqrt{7}i}{7}, -\frac{\sqrt{7}i}{7}, -\frac{\sqrt{7}i}{7}, \frac{\sqrt{21}i}{14}, -\frac{\sqrt{21}i}{14}, \frac{\sqrt{21}i}{14}, -\frac{\sqrt{21}i}{14} \right]$$

$$\boxed{\text{y38}} \quad \mathbb{T}_{1,2}^{(s)}(T_u, a) = \left[\frac{\sqrt{21}i}{14}, -\frac{\sqrt{21}i}{14}, \frac{\sqrt{21}i}{14}, -\frac{\sqrt{21}i}{14}, 0, 0, 0, 0, \frac{\sqrt{7}i}{7}, \frac{\sqrt{7}i}{7}, -\frac{\sqrt{7}i}{7}, -\frac{\sqrt{7}i}{7} \right]$$

$$\boxed{\text{y39}} \quad \mathbb{T}_{1,3}^{(s)}(T_u, a) = \left[\frac{\sqrt{7}i}{7}, \frac{\sqrt{7}i}{7}, -\frac{\sqrt{7}i}{7}, -\frac{\sqrt{7}i}{7}, \frac{\sqrt{21}i}{14}, -\frac{\sqrt{21}i}{14}, \frac{\sqrt{21}i}{14}, -\frac{\sqrt{21}i}{14}, 0, 0, 0, 0 \right]$$

$$\boxed{\text{y40}} \quad \mathbb{T}_{1,1}^{(s)}(T_u, b) = \left[0, 0, 0, 0, \frac{\sqrt{21}i}{14}, \frac{\sqrt{21}i}{14}, -\frac{\sqrt{21}i}{14}, -\frac{\sqrt{21}i}{14}, -\frac{\sqrt{7}i}{7}, \frac{\sqrt{7}i}{7}, -\frac{\sqrt{7}i}{7}, \frac{\sqrt{7}i}{7} \right]$$

$$\boxed{\text{y41}} \quad \mathbb{T}_{1,2}^{(s)}(T_u, b) = \left[-\frac{\sqrt{7}i}{7}, \frac{\sqrt{7}i}{7}, -\frac{\sqrt{7}i}{7}, \frac{\sqrt{7}i}{7}, 0, 0, 0, 0, \frac{\sqrt{21}i}{14}, \frac{\sqrt{21}i}{14}, -\frac{\sqrt{21}i}{14}, -\frac{\sqrt{21}i}{14} \right]$$

$$\boxed{\text{y42}} \quad \mathbb{T}_{1,3}^{(s)}(T_u, b) = \left[\frac{\sqrt{21}i}{14}, \frac{\sqrt{21}i}{14}, -\frac{\sqrt{21}i}{14}, -\frac{\sqrt{21}i}{14}, -\frac{\sqrt{7}i}{7}, \frac{\sqrt{7}i}{7}, -\frac{\sqrt{7}i}{7}, \frac{\sqrt{7}i}{7}, 0, 0, 0, 0 \right]$$

$$\boxed{\text{y43}} \quad \mathbb{Q}_{3,1}^{(s)}(T_u, 1) = \left[0, 0, 0, 0, \frac{\sqrt{21}}{14}, \frac{\sqrt{21}}{14}, -\frac{\sqrt{21}}{14}, -\frac{\sqrt{21}}{14}, -\frac{\sqrt{7}}{7}, \frac{\sqrt{7}}{7}, -\frac{\sqrt{7}}{7}, \frac{\sqrt{7}}{7} \right]$$

$$\boxed{\text{y44}} \quad \mathbb{Q}_{3,2}^{(s)}(T_u, 1) = \left[-\frac{\sqrt{7}}{7}, \frac{\sqrt{7}}{7}, -\frac{\sqrt{7}}{7}, \frac{\sqrt{7}}{7}, 0, 0, 0, 0, \frac{\sqrt{21}}{14}, \frac{\sqrt{21}}{14}, -\frac{\sqrt{21}}{14}, -\frac{\sqrt{21}}{14} \right]$$

$$\boxed{\text{y45}} \quad \mathbb{Q}_{3,3}^{(s)}(T_u, 1) = \left[\frac{\sqrt{21}}{14}, \frac{\sqrt{21}}{14}, -\frac{\sqrt{21}}{14}, -\frac{\sqrt{21}}{14}, -\frac{\sqrt{7}}{7}, \frac{\sqrt{7}}{7}, -\frac{\sqrt{7}}{7}, \frac{\sqrt{7}}{7}, 0, 0, 0, 0 \right]$$

— Site and Bond —

Table 5: Orbital of each site

#	site	orbital
1	A	$ s, \uparrow\rangle, s, \downarrow\rangle, p_x, \uparrow\rangle, p_x, \downarrow\rangle, p_y, \uparrow\rangle, p_y, \downarrow\rangle, p_z, \uparrow\rangle, 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 (3d), mmm..

SL	position (<i>s</i>)	mapping
1	[0.50000, 0.00000, 0.00000]	[1,2,3,4,13,14,15,16]
2	[0.00000, 0.50000, 0.00000]	[5,6,7,8,17,18,19,20]
3	[0.00000, 0.00000, 0.50000]	[9,10,11,12,21,22,23,24]

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 (12a@12j), D, $|\mathbf{v}|=0.70711$ (cartesian)

SL	vector (\mathbf{v})	center (\mathbf{c})	mapping	head	tail	\mathbf{R} (primitive)
1	[0.00000, -0.50000, -0.50000]	[0.00000, 0.25000, 0.75000]	[1,16]	(3,1)	(2,1)	[0,0,1]
2	[0.00000, 0.50000, -0.50000]	[0.00000, 0.75000, 0.75000]	[2,15]	(3,1)	(2,1)	[0,-1,1]
3	[0.00000, -0.50000, 0.50000]	[0.00000, 0.25000, 0.25000]	[3,14]	(3,1)	(2,1)	[0,0,0]
4	[0.00000, 0.50000, 0.50000]	[0.00000, 0.75000, 0.25000]	[4,13]	(3,1)	(2,1)	[0,-1,0]
5	[-0.50000, 0.00000, -0.50000]	[0.75000, 0.00000, 0.25000]	[5,20]	(1,1)	(3,1)	[1,0,0]
6	[-0.50000, 0.00000, 0.50000]	[0.75000, 0.00000, 0.75000]	[6,19]	(1,1)	(3,1)	[1,0,-1]
7	[0.50000, 0.00000, -0.50000]	[0.25000, 0.00000, 0.25000]	[7,18]	(1,1)	(3,1)	[0,0,0]
8	[0.50000, 0.00000, 0.50000]	[0.25000, 0.00000, 0.75000]	[8,17]	(1,1)	(3,1)	[0,0,-1]
9	[-0.50000, -0.50000, 0.00000]	[0.25000, 0.75000, 0.00000]	[9,24]	(2,1)	(1,1)	[0,1,0]
10	[0.50000, -0.50000, 0.00000]	[0.75000, 0.75000, 0.00000]	[10,23]	(2,1)	(1,1)	[-1,1,0]
11	[-0.50000, 0.50000, 0.00000]	[0.25000, 0.25000, 0.00000]	[11,22]	(2,1)	(1,1)	[0,0,0]
12	[0.50000, 0.50000, 0.00000]	[0.75000, 0.25000, 0.00000]	[12,21]	(2,1)	(1,1)	[-1,0,0]

Table 9: 2-th 'A'-'A' [1] (#2) bond cluster (3a@1a), ND, $|\mathbf{v}|=1.0$ (cartesian)

SL	vector (\mathbf{v})	center (\mathbf{c})	mapping	head	tail	\mathbf{R} (primitive)
1	[-1.00000, 0.00000, 0.00000]	[0.00000, 0.00000, 0.00000]	[1,-2,-3,4,-13,14,15,-16]	(1,1)	(1,1)	[1,0,0]

continued ...

Table 9

SL	vector (\boldsymbol{v})	center (\boldsymbol{c})	mapping	head	tail	\boldsymbol{R} (primitive)
2	[0.00000, -1.00000, 0.00000]	[0.00000, 0.00000, 0.00000]	[5, -6, -7, 8, -17, 18, 19, -20]	(2, 1)	(2, 1)	[0, 1, 0]
3	[0.00000, 0.00000, -1.00000]	[0.00000, 0.00000, 0.00000]	[9, -10, -11, 12, -21, 22, 23, -24]	(3, 1)	(3, 1)	[0, 0, 1]

Table 10: 2-th 'A'-'A' [2] (#3) bond cluster (3b@3c), ND, $|\boldsymbol{v}|=1.0$ (cartesian)

SL	vector (\boldsymbol{v})	center (\boldsymbol{c})	mapping	head	tail	\boldsymbol{R} (primitive)
1	[0.00000, 0.00000, -1.00000]	[0.00000, 0.50000, 0.50000]	[1, 2, -3, -4, -13, -14, 15, 16]	(2, 1)	(2, 1)	[0, 0, 1]
2	[-1.00000, 0.00000, 0.00000]	[0.50000, 0.00000, 0.50000]	[5, 6, -7, -8, -17, -18, 19, 20]	(3, 1)	(3, 1)	[1, 0, 0]
3	[0.00000, -1.00000, 0.00000]	[0.50000, 0.50000, 0.00000]	[9, 10, -11, -12, -21, -22, 23, 24]	(1, 1)	(1, 1)	[0, 1, 0]

Table 11: 2-th 'A'-'A' [3] (#4) bond cluster (3c@3c), ND, $|\boldsymbol{v}|=1.0$ (cartesian)

SL	vector (\boldsymbol{v})	center (\boldsymbol{c})	mapping	head	tail	\boldsymbol{R} (primitive)
1	[0.00000, -1.00000, 0.00000]	[0.00000, 0.50000, 0.50000]	[1, -2, 3, -4, -13, 14, -15, 16]	(3, 1)	(3, 1)	[0, 1, 0]
2	[0.00000, 0.00000, -1.00000]	[0.50000, 0.00000, 0.50000]	[5, -6, 7, -8, -17, 18, -19, 20]	(1, 1)	(1, 1)	[0, 0, 1]
3	[-1.00000, 0.00000, 0.00000]	[0.50000, 0.50000, 0.00000]	[9, -10, 11, -12, -21, 22, -23, 24]	(2, 1)	(2, 1)	[1, 0, 0]