Model for "O1"

General Condition

- Basis type: `lgs`
- SAMB selection:
  - Type: `[Q, G]`
  - Rank: `[0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11]`
  - Irrep.: $[A_1, A_2, E, T_1, T_2]$
  - 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.: $[A_1, A_2, E, T_1, T_2]$
  - Spin (s): `[0, 1]`
- Site-cluster selection:
  - Rank: `[0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11]`
  - Irrep.: $[A_1, A_2, E, T_1, T_2]$
- Bond-cluster selection:
  - Type: `[Q, G, M, T]`
  - Rank: `[0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11]`
  - Irrep.: $[A_1, A_2, E, T_1, T_2]$
- Max. neighbor: `10`
- Search cell range: `(-2, 3), (-2, 3), (-2, 3)`
- Toroidal priority: `false`

Group and Unit Cell

- Group: SG No. 207 O^1 $P432$ [cubic]
- Associated point group: PG No. 207 O 432   [cubic]
- Unit cell:
  $a = 1.00000, \ b = 1.00000, \ c = 1.00000, \ \alpha = 90.0, \ \beta = 90.0, \ \gamma = 90.0$
- Lattice vectors (conventional cell):
  $\boldsymbol{a}_1 = [\ 1.00000, \ 0.00000, \ 0.00000]$
  $\boldsymbol{a}_2 = [\ 0.00000, \ 1.00000, \ 0.00000]$
  $\boldsymbol{a}_3 = [\ 0.00000, \ 0.00000, \ 1.00000]$

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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	$\{2_{110}\|0\}$	14	$\{2_{1-10}\|0\}$	15	$\{4^{-}_{001}\|0\}$
16	$\{4^{+}_{001}\|0\}$	17	$\{4^{-}_{100}\|0\}$	18	$\{2_{011}\|0\}$	19	$\{2_{01-1}\|0\}$	20	$\{4^{+}_{100}\|0\}$
21	$\{4^{+}_{010}\|0\}$	22	$\{2_{101}\|0\}$	23	$\{4^{-}_{010}\|0\}$	24	$\{2_{-101}\|0\}$		

Table 2: Harmonics

#	symbol	irrep.	rank	X	multiplicity	component	symmetry
1	$\mathbb{G}_0(A_1)$	A_1	0	G, M	-	-	1
2	$\mathbb{Q}_0(A_1)$	A_1	0	Q, T	-	-	1
3	$\mathbb{G}_4(A_1)$	A_1	4	G, M	-	-	$\frac{\sqrt{21}\left(x^4-3x^2y^2-3x^2z^2+y^4-3y^2z^2+z^4\right)}{6}$
4	$\mathbb{Q}_4(A_1)$	A_1	4	Q, T	-	-	$\frac{\sqrt{21}\left(x^4-3x^2y^2-3x^2z^2+y^4-3y^2z^2+z^4\right)}{6}$
5	$\mathbb{G}_3(A_2)$	A_2	3	G, M	-	-	$\sqrt{15}xyz$

continued ...

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Table 2

#	symbol	irrep.	rank	X	multiplicity	component	symmetry
6	$\mathbb{Q}_3(A_2)$	A_2	3	Q, T	-	-	$\sqrt{15}xyz$
7	$\mathbb{G}_{2,1}(E)$	E	2	G, M	-	1	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$
8	$\mathbb{G}_{2,2}(E)$					2	$\frac{\sqrt{3}(x-y)(x+y)}{2}$
9	$\mathbb{Q}_{2,1}(E)$	E	2	Q, T	-	1	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$
10	$\mathbb{Q}_{2,2}(E)$					2	$\frac{\sqrt{3}(x-y)(x+y)}{2}$
11	$\mathbb{G}_{4,1}(E)$	E	4	G, M	-	1	$-\frac{\sqrt{15}\left(x^4 - 12x^2y^2 + 6x^2z^2 + y^4 + 6y^2z^2 - 2z^4\right)}{12}$
12	$\mathbb{G}_{4,2}(E)$					2	$\frac{\sqrt{5}(x-y)(x+y)\left(x^2+y^2-6z^2\right)}{4}$
13	$\mathbb{Q}_{4,1}(E)$	E	4	Q, T	-	1	$-\frac{\sqrt{15}\left(x^4 - 12x^2y^2 + 6x^2z^2 + y^4 + 6y^2z^2 - 2z^4\right)}{12}$
14	$\mathbb{Q}_{4,2}(E)$					2	$\frac{\sqrt{5}(x-y)(x+y)\left(x^2+y^2-6z^2\right)}{4}$
15	$\mathbb{Q}_{5,1}(E)$	E	5	Q, T	-	1	$\frac{3\sqrt{35}xyz(x-y)(x+y)}{2}$
16	$\mathbb{Q}_{5,2}(E)$					2	$\frac{\sqrt{105}xyz\left(x^2+y^2-2z^2\right)}{2}$
17	$\mathbb{G}_{1,1}(T_1)$	T_1	1	G, M	-	1	x
18	$\mathbb{G}_{1,2}(T_1)$					2	y
19	$\mathbb{G}_{1,3}(T_1)$					3	z
20	$\mathbb{Q}_{1,1}(T_1)$	T_1	1	Q, T	-	1	x
21	$\mathbb{Q}_{1,2}(T_1)$					2	y
22	$\mathbb{Q}_{1,3}(T_1)$					3	z
23	$\mathbb{G}_{3,1}(T_1)$	T_1	3	G, M	-	1	$\frac{x\left(2x^2-3y^2-3z^2\right)}{2}$
24	$\mathbb{G}_{3,2}(T_1)$					2	$-\frac{y\left(3x^2-2y^2+3z^2\right)}{2}$
25	$\mathbb{G}_{3,3}(T_1)$					3	$-\frac{z\left(3x^2+3y^2-2z^2\right)}{2}$
26	$\mathbb{Q}_{3,1}(T_1)$	T_1	3	Q, T	-	1	$\frac{x\left(2x^2-3y^2-3z^2\right)}{2}$

continued …

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Table 2

#	symbol	irrep.	rank	X	multiplicity	component	symmetry
27	$\mathbb{Q}_{3,2}(T_1)$					2	$-\frac{y(3x^2-2y^2+3z^2)}{2}$
28	$\mathbb{Q}_{3,3}(T_1)$					3	$-\frac{z(3x^2+3y^2-2z^2)}{2}$
29	$\mathbb{G}_{4,1}(T_1)$	T_1	4	G, M	-	1	$\frac{\sqrt{35}yz(y-z)(y+z)}{2}$
30	$\mathbb{G}_{4,2}(T_1)$					2	$-\frac{\sqrt{35}xz(x-z)(x+z)}{2}$
31	$\mathbb{G}_{4,3}(T_1)$					3	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$
32	$\mathbb{Q}_{4,1}(T_1)$	T_1	4	Q, T	-	1	$\frac{\sqrt{35}yz(y-z)(y+z)}{2}$
33	$\mathbb{Q}_{4,2}(T_1)$					2	$-\frac{\sqrt{35}xz(x-z)(x+z)}{2}$
34	$\mathbb{Q}_{4,3}(T_1)$					3	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$
35	$\mathbb{Q}_{5,1}(T_1,2)$	T_1	5	Q, T	2	1	$\frac{3\sqrt{35}x(y^2-2yz-z^2)(y^2+2yz-z^2)}{8}$
36	$\mathbb{Q}_{5,2}(T_1,2)$					2	$\frac{3\sqrt{35}y(x^2-2xz-z^2)(x^2+2xz-z^2)}{8}$
37	$\mathbb{Q}_{5,3}(T_1,2)$					3	$\frac{3\sqrt{35}z(x^2-2xy-y^2)(x^2+2xy-y^2)}{8}$
38	$\mathbb{G}_{2,1}(T_2)$	T_2	2	G, M	-	1	$\sqrt{3}yz$
39	$\mathbb{G}_{2,2}(T_2)$					2	$\sqrt{3}xz$
40	$\mathbb{G}_{2,3}(T_2)$					3	$\sqrt{3}xy$
41	$\mathbb{Q}_{2,1}(T_2)$	T_2	2	Q, T	-	1	$\sqrt{3}yz$
42	$\mathbb{Q}_{2,2}(T_2)$					2	$\sqrt{3}xz$
43	$\mathbb{Q}_{2,3}(T_2)$					3	$\sqrt{3}xy$
44	$\mathbb{G}_{3,1}(T_2)$	T_2	3	G, M	-	1	$\frac{\sqrt{15}x(y-z)(y+z)}{2}$
45	$\mathbb{G}_{3,2}(T_2)$					2	$-\frac{\sqrt{15}y(x-z)(x+z)}{2}$
46	$\mathbb{G}_{3,3}(T_2)$					3	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$
47	$\mathbb{Q}_{3,1}(T_2)$	T_2	3	Q, T	-	1	$\frac{\sqrt{15}x(y-z)(y+z)}{2}$

Table 2

#	symbol	irrep.	rank	X	multiplicity	component	symmetry
48	$\mathbb{Q}_{3,2}(T_2)$					2	$-\frac{\sqrt{15}y(x-z)(x+z)}{2}$
49	$\mathbb{Q}_{3,3}(T_2)$					3	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$
50	$\mathbb{G}_{4,1}(T_2)$	T_2	4	G, M	-	1	$\frac{\sqrt{5}yz(6x^2-y^2-z^2)}{2}$
51	$\mathbb{G}_{4,2}(T_2)$					2	$-\frac{\sqrt{5}xz(x^2-6y^2+z^2)}{2}$
52	$\mathbb{G}_{4,3}(T_2)$					3	$-\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$
53	$\mathbb{Q}_{4,1}(T_2)$	T_2	4	Q, T	-	1	$\frac{\sqrt{5}yz(6x^2-y^2-z^2)}{2}$
54	$\mathbb{Q}_{4,2}(T_2)$					2	$-\frac{\sqrt{5}xz(x^2-6y^2+z^2)}{2}$
55	$\mathbb{Q}_{4,3}(T_2)$					3	$-\frac{\sqrt{5}xy(x^2+y^2-6z^2)}{2}$
56	$\mathbb{Q}_{5,1}(T_2)$	T_2	5	Q, T	-	1	$\frac{\sqrt{105}x(y-z)(y+z)(2x^2-y^2-z^2)}{4}$
57	$\mathbb{Q}_{5,2}(T_2)$					2	$\frac{\sqrt{105}y(x-z)(x+z)(x^2-2y^2+z^2)}{4}$
58	$\mathbb{Q}_{5,3}(T_2)$					3	$-\frac{\sqrt{105}z(x-y)(x+y)(x^2+y^2-2z^2)}{4}$

— **Basis in full matrix** —

Table 3: dimension = 8

#	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)				

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** ━━

604 (all 604) SAMBs

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

$\boxed{\text{z1}}$ $\quad \mathbb{Q}_0^{(c)}(A_1) = \mathbb{Q}_0^{(a)}(A_1)\mathbb{Q}_0^{(s)}(A_1)$

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

$\boxed{\text{z2}}$ $\quad \mathbb{G}_0^{(1,1;c)}(A_1) = \mathbb{G}_0^{(1,1;a)}(A_1)\mathbb{Q}_0^{(s)}(A_1)$

$\boxed{\text{z61}}$ $\quad \mathbb{G}_{2,1}^{(1,-1;c)}(E) = \dfrac{\sqrt{2}\mathbb{G}_{2,1}^{(1,-1;a)}(E)\mathbb{Q}_0^{(s)}(A_1)}{2}$

$\boxed{\text{z62}}$ $\quad \mathbb{G}_{2,2}^{(1,-1;c)}(E) = \dfrac{\sqrt{2}\,\mathbb{G}_{2,2}^{(1,-1;a)}(E)\mathbb{Q}_0^{(s)}(A_1)}{2}$

$\boxed{\text{z179}}$ $\quad \mathbb{Q}_{1,1}^{(c)}(T_1) = \dfrac{\sqrt{3}\,\mathbb{Q}_{1,1}^{(a)}(T_1)\mathbb{Q}_0^{(s)}(A_1)}{3}$

$\boxed{\text{z180}}$ $\quad \mathbb{Q}_{1,2}^{(c)}(T_1) = \dfrac{\sqrt{3}\,\mathbb{Q}_{1,2}^{(a)}(T_1)\mathbb{Q}_0^{(s)}(A_1)}{3}$

$\boxed{\text{z181}}$ $\quad \mathbb{Q}_{1,3}^{(c)}(T_1) = \dfrac{\sqrt{3}\,\mathbb{Q}_{1,3}^{(a)}(T_1)\mathbb{Q}_0^{(s)}(A_1)}{3}$

$\boxed{\text{z182}}$ $\quad \mathbb{Q}_{1,1}^{(1,0;c)}(T_1) = \dfrac{\sqrt{3}\,\mathbb{Q}_{1,1}^{(1,0;a)}(T_1)\mathbb{Q}_0^{(s)}(A_1)}{3}$

$\boxed{\text{z183}}$ $\quad \mathbb{Q}_{1,2}^{(1,0;c)}(T_1) = \dfrac{\sqrt{3}\,\mathbb{Q}_{1,2}^{(1,0;a)}(T_1)\mathbb{Q}_0^{(s)}(A_1)}{3}$

$\boxed{\text{z184}}$ $\quad \mathbb{Q}_{1,3}^{(1,0;c)}(T_1) = \dfrac{\sqrt{3}\,\mathbb{Q}_{1,3}^{(1,0;a)}(T_1)\mathbb{Q}_0^{(s)}(A_1)}{3}$

$\boxed{\text{z386}}$ $\quad \mathbb{G}_{2,1}^{(1,-1;c)}(T_2) = \dfrac{\sqrt{3}\,\mathbb{G}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_0^{(s)}(A_1)}{3}$

$\boxed{\text{z387}}$ $\quad \mathbb{G}_{2,2}^{(1,-1;c)}(T_2) = \dfrac{\sqrt{3}\,\mathbb{G}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_0^{(s)}(A_1)}{3}$

$\boxed{\text{z388}}$ $\quad \mathbb{G}_{2,3}^{(1,-1;c)}(T_2) = \dfrac{\sqrt{3}\,\mathbb{G}_{2,3}^{(1,-1;a)}(T_2)\mathbb{Q}_0^{(s)}(A_1)}{3}$

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

$\boxed{\text{z3}}$ $\quad \mathbb{Q}_0^{(c)}(A_1) = \mathbb{Q}_0^{(a)}(A_1)\mathbb{Q}_0^{(s)}(A_1)$

$\boxed{\text{z4}}$ $\quad \mathbb{Q}_0^{(1,1;c)}(A_1) = \mathbb{Q}_0^{(1,1;a)}(A_1)\mathbb{Q}_0^{(s)}(A_1)$

$\boxed{\text{z63}}$ $\quad \mathbb{Q}_{2,1}^{(c)}(E) = \dfrac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E)\mathbb{Q}_0^{(s)}(A_1)}{2}$

$\boxed{\text{z64}}$ $\quad \mathbb{Q}_{2,2}^{(c)}(E) = \dfrac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E)\mathbb{Q}_0^{(s)}(A_1)}{2}$

$\boxed{\text{z65}}$ $\quad \mathbb{Q}_{2,1}^{(1,-1;c)}(E) = \dfrac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(E)\mathbb{Q}_0^{(s)}(A_1)}{2}$

$\boxed{\text{z66}}$ $\quad \mathbb{Q}_{2,2}^{(1,-1;c)}(E) = \dfrac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(E)\mathbb{Q}_0^{(s)}(A_1)}{2}$

$\boxed{\text{z185}}$ $\quad \mathbb{G}_{1,1}^{(1,0;c)}(T_1) = \dfrac{\sqrt{3}\mathbb{G}_{1,1}^{(1,0;a)}(T_1)\mathbb{Q}_0^{(s)}(A_1)}{3}$

$\boxed{\text{z186}}$ $\quad \mathbb{G}_{1,2}^{(1,0;c)}(T_1) = \dfrac{\sqrt{3}\mathbb{G}_{1,2}^{(1,0;a)}(T_1)\mathbb{Q}_0^{(s)}(A_1)}{3}$

$\boxed{\text{z187}}$ $\quad \mathbb{G}_{1,3}^{(1,0;c)}(T_1) = \dfrac{\sqrt{3}\mathbb{G}_{1,3}^{(1,0;a)}(T_1)\mathbb{Q}_0^{(s)}(A_1)}{3}$

$\boxed{\text{z389}}$ $\quad \mathbb{Q}_{2,1}^{(c)}(T_2) = \dfrac{\sqrt{3}\mathbb{Q}_{2,1}^{(a)}(T_2)\mathbb{Q}_0^{(s)}(A_1)}{3}$

$\boxed{\text{z390}}$ $\quad \mathbb{Q}_{2,2}^{(c)}(T_2) = \dfrac{\sqrt{3}\mathbb{Q}_{2,2}^{(a)}(T_2)\mathbb{Q}_0^{(s)}(A_1)}{3}$

$\boxed{\text{z391}}$ $\quad \mathbb{Q}_{2,3}^{(c)}(T_2) = \dfrac{\sqrt{3}\mathbb{Q}_{2,3}^{(a)}(T_2)\mathbb{Q}_0^{(s)}(A_1)}{3}$

$\boxed{\text{z392}}$ $\quad \mathbb{Q}_{2,1}^{(1,-1;c)}(T_2) = \dfrac{\sqrt{3}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_0^{(s)}(A_1)}{3}$

$\boxed{\text{z393}}$ $\quad \mathbb{Q}_{2,2}^{(1,-1;c)}(T_2) = \dfrac{\sqrt{3}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_0^{(s)}(A_1)}{3}$

$\boxed{\text{z394}}$ $\quad \mathbb{Q}_{2,3}^{(1,-1;c)}(T_2) = \dfrac{\sqrt{3}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_2)\mathbb{Q}_0^{(s)}(A_1)}{3}$

- 'A'-'A' bond-cluster : `A;A_001_1`

* bra: $\langle s, \uparrow |$, $\langle s, \downarrow |$
* ket: $| s, \uparrow \rangle$, $| s, \downarrow \rangle$
* wyckoff: `3a@3d`

$\boxed{\text{z5}}$ $\mathbb{Q}_0^{(c)}(A_1) = \mathbb{Q}_0^{(a)}(A_1)\mathbb{Q}_0^{(b)}(A_1)$

$\boxed{\text{z6}}$ $\mathbb{G}_0^{(1,-1;c)}(A_1) = \dfrac{\sqrt{3}\mathbb{M}_{1,1}^{(1,-1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{3} + \dfrac{\sqrt{3}\mathbb{M}_{1,2}^{(1,-1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{3} + \dfrac{\sqrt{3}\mathbb{M}_{1,3}^{(1,-1;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{3}$

$\boxed{\text{z67}}$ $\mathbb{Q}_{2,1}^{(c)}(E) = \dfrac{\sqrt{2}\mathbb{Q}_0^{(a)}(A_1)\mathbb{Q}_{2,1}^{(b)}(E)}{2}$

$\boxed{\text{z68}}$ $\mathbb{Q}_{2,2}^{(c)}(E) = \dfrac{\sqrt{2}\mathbb{Q}_0^{(a)}(A_1)\mathbb{Q}_{2,2}^{(b)}(E)}{2}$

$\boxed{\text{z69}}$ $\mathbb{G}_{2,1}^{(1,-1;c)}(E) = -\dfrac{\sqrt{3}\mathbb{M}_{1,1}^{(1,-1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{6} - \dfrac{\sqrt{3}\mathbb{M}_{1,2}^{(1,-1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{6} + \dfrac{\sqrt{3}\mathbb{M}_{1,3}^{(1,-1;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{3}$

$\boxed{\text{z70}}$ $\mathbb{G}_{2,2}^{(1,-1;c)}(E) = \dfrac{\mathbb{M}_{1,1}^{(1,-1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{2} - \dfrac{\mathbb{M}_{1,2}^{(1,-1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{2}$

$\boxed{\text{z188}}$ $\mathbb{Q}_{1,1}^{(1,-1;c)}(T_1) = \dfrac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{6} - \dfrac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{6}$

$\boxed{\text{z189}}$ $\mathbb{Q}_{1,2}^{(1,-1;c)}(T_1) = -\dfrac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{6} + \dfrac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{6}$

$\boxed{\text{z190}}$ $\mathbb{Q}_{1,3}^{(1,-1;c)}(T_1) = \dfrac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{6} - \dfrac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{6}$

$\boxed{\text{z395}}$ $\mathbb{G}_{2,1}^{(1,-1;c)}(T_2) = \dfrac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{6} + \dfrac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{6}$

$\boxed{\text{z396}}$ $\mathbb{G}_{2,2}^{(1,-1;c)}(T_2) = \dfrac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{6} + \dfrac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{6}$

$\boxed{\text{z397}}$ $\mathbb{G}_{2,3}^{(1,-1;c)}(T_2) = \dfrac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{6} + \dfrac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{6}$

- 'A'-'A' bond-cluster : `A;A_001_1`

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

$\boxed{\text{z7}}$ $\quad \mathbb{Q}_0^{(c)}(A_1) = \dfrac{\sqrt{3}\mathbb{T}_{1,1}^{(a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{3} + \dfrac{\sqrt{3}\mathbb{T}_{1,2}^{(a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{3} + \dfrac{\sqrt{3}\mathbb{T}_{1,3}^{(a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{3}$

$\boxed{\text{z8}}$ $\quad \mathbb{Q}_0^{(1,0;c)}(A_1) = \dfrac{\sqrt{3}\mathbb{T}_{1,1}^{(1,0;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{3} + \dfrac{\sqrt{3}\mathbb{T}_{1,2}^{(1,0;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{3} + \dfrac{\sqrt{3}\mathbb{T}_{1,3}^{(1,0;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{3}$

$\boxed{\text{z9}}$ $\quad \mathbb{G}_0^{(1,-1;c)}(A_1) = \dfrac{\sqrt{2}\mathbb{G}_{2,1}^{(1,-1;a)}(E)\mathbb{Q}_{2,1}^{(b)}(E)}{2} + \dfrac{\sqrt{2}\mathbb{G}_{2,2}^{(1,-1;a)}(E)\mathbb{Q}_{2,2}^{(b)}(E)}{2}$

$\boxed{\text{z10}}$ $\quad \mathbb{G}_0^{(1,1;c)}(A_1) = \mathbb{G}_0^{(1,1;a)}(A_1)\mathbb{Q}_0^{(b)}(A_1)$

$\boxed{\text{z39}}$ $\quad \mathbb{Q}_3^{(1,-1;c)}(A_2) = \dfrac{\sqrt{2}\mathbb{G}_{2,1}^{(1,-1;a)}(E)\mathbb{Q}_{2,2}^{(b)}(E)}{2} - \dfrac{\sqrt{2}\mathbb{G}_{2,2}^{(1,-1;a)}(E)\mathbb{Q}_{2,1}^{(b)}(E)}{2}$

$\boxed{\text{z40}}$ $\quad \mathbb{G}_3^{(1,-1;c)}(A_2) = \dfrac{\sqrt{3}\mathbb{M}_{2,1}^{(1,-1;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{3} + \dfrac{\sqrt{3}\mathbb{M}_{2,2}^{(1,-1;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{3} + \dfrac{\sqrt{3}\mathbb{M}_{2,3}^{(1,-1;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{3}$

$\boxed{\text{z71}}$ $\quad \mathbb{Q}_{2,1}^{(c)}(E) = -\dfrac{\sqrt{3}\mathbb{T}_{1,1}^{(a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{6} - \dfrac{\sqrt{3}\mathbb{T}_{1,2}^{(a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{6} + \dfrac{\sqrt{3}\mathbb{T}_{1,3}^{(a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{3}$

$\boxed{\text{z72}}$ $\quad \mathbb{Q}_{2,2}^{(c)}(E) = \dfrac{\mathbb{T}_{1,1}^{(a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{2} - \dfrac{\mathbb{T}_{1,2}^{(a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{2}$

$\boxed{\text{z73}}$ $\quad \mathbb{Q}_{2,1}^{(1,-1;c)}(E) = -\dfrac{\mathbb{M}_{2,1}^{(1,-1;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{2} + \dfrac{\mathbb{M}_{2,2}^{(1,-1;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{2}$

$\boxed{\text{z74}}$ $\quad \mathbb{Q}_{2,2}^{(1,-1;c)}(E) = -\dfrac{\sqrt{3}\mathbb{M}_{2,1}^{(1,-1;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{6} - \dfrac{\sqrt{3}\mathbb{M}_{2,2}^{(1,-1;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{6} + \dfrac{\sqrt{3}\mathbb{M}_{2,3}^{(1,-1;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{3}$

$\boxed{\text{z75}}$ $\quad \mathbb{Q}_{2,1}^{(1,0;c)}(E) = -\dfrac{\sqrt{3}\mathbb{T}_{1,1}^{(1,0;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{6} - \dfrac{\sqrt{3}\mathbb{T}_{1,2}^{(1,0;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{6} + \dfrac{\sqrt{3}\mathbb{T}_{1,3}^{(1,0;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{3}$

$\boxed{\text{z76}}$ $\quad \mathbb{Q}_{2,2}^{(1,0;c)}(E) = \dfrac{\mathbb{T}_{1,1}^{(1,0;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{2} - \dfrac{\mathbb{T}_{1,2}^{(1,0;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{2}$

$\boxed{\text{z77}}$ $\quad \mathbb{G}_{2,1}^{(1,-1;c)}(E,a) = \dfrac{\sqrt{2}\mathbb{G}_{2,1}^{(1,-1;a)}(E)\mathbb{Q}_0^{(b)}(A_1)}{2}$

$$\boxed{\text{z78}} \quad \mathbb{G}_{2,2}^{(1,-1;c)}(E,a) = \frac{\sqrt{2}\mathbb{G}_{2,2}^{(1,-1;a)}(E)\mathbb{Q}_0^{(b)}(A_1)}{2}$$

$$\boxed{\text{z79}} \quad \mathbb{G}_{2,1}^{(1,-1;c)}(E,b) = \frac{\mathbb{G}_{2,1}^{(1,-1;a)}(E)\mathbb{Q}_{2,1}^{(b)}(E)}{2} - \frac{\mathbb{G}_{2,2}^{(1,-1;a)}(E)\mathbb{Q}_{2,2}^{(b)}(E)}{2}$$

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

$$\boxed{\text{z81}} \quad \mathbb{G}_{2,1}^{(1,1;c)}(E) = \frac{\sqrt{2}\mathbb{G}_0^{(1,1;a)}(A_1)\mathbb{Q}_{2,1}^{(b)}(E)}{2}$$

$$\boxed{\text{z82}} \quad \mathbb{G}_{2,2}^{(1,1;c)}(E) = \frac{\sqrt{2}\mathbb{G}_0^{(1,1;a)}(A_1)\mathbb{Q}_{2,2}^{(b)}(E)}{2}$$

$$\boxed{\text{z191}} \quad \mathbb{Q}_{1,1}^{(c)}(T_1,a) = \frac{\sqrt{3}\mathbb{Q}_{1,1}^{(a)}(T_1)\mathbb{Q}_0^{(b)}(A_1)}{3}$$

$$\boxed{\text{z192}} \quad \mathbb{Q}_{1,2}^{(c)}(T_1,a) = \frac{\sqrt{3}\mathbb{Q}_{1,2}^{(a)}(T_1)\mathbb{Q}_0^{(b)}(A_1)}{3}$$

$$\boxed{\text{z193}} \quad \mathbb{Q}_{1,3}^{(c)}(T_1,a) = \frac{\sqrt{3}\mathbb{Q}_{1,3}^{(a)}(T_1)\mathbb{Q}_0^{(b)}(A_1)}{3}$$

$$\boxed{\text{z194}} \quad \mathbb{Q}_{1,1}^{(c)}(T_1,b) = -\frac{\sqrt{3}\mathbb{Q}_{1,1}^{(a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(E)}{6} + \frac{\mathbb{Q}_{1,1}^{(a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(E)}{2}$$

$$\boxed{\text{z195}} \quad \mathbb{Q}_{1,2}^{(c)}(T_1,b) = -\frac{\sqrt{3}\mathbb{Q}_{1,2}^{(a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(E)}{6} - \frac{\mathbb{Q}_{1,2}^{(a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(E)}{2}$$

$$\boxed{\text{z196}} \quad \mathbb{Q}_{1,3}^{(c)}(T_1,b) = \frac{\sqrt{3}\mathbb{Q}_{1,3}^{(a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(E)}{3}$$

$$\boxed{\text{z197}} \quad \mathbb{Q}_{1,1}^{(1,-1;c)}(T_1) = \frac{\mathbb{G}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(E)}{2} + \frac{\sqrt{3}\mathbb{G}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(E)}{6}$$

$$\boxed{\text{z198}} \quad \mathbb{Q}_{1,2}^{(1,-1;c)}(T_1) = -\frac{\mathbb{G}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(E)}{2} + \frac{\sqrt{3}\mathbb{G}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(E)}{6}$$

$$\boxed{\text{z199}} \quad \mathbb{Q}_{1,3}^{(1,-1;c)}(T_1) = -\frac{\sqrt{3}\mathbb{G}_{2,3}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(E)}{3}$$

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$\boxed{\text{z200}}$ $\quad \mathbb{Q}_{1,1}^{(1,0;c)}(T_1,a) = \dfrac{\sqrt{3}\,\mathbb{Q}_{1,1}^{(1,0;a)}(T_1)\mathbb{Q}_0^{(b)}(A_1)}{3}$

$\boxed{\text{z201}}$ $\quad \mathbb{Q}_{1,2}^{(1,0;c)}(T_1,a) = \dfrac{\sqrt{3}\,\mathbb{Q}_{1,2}^{(1,0;a)}(T_1)\mathbb{Q}_0^{(b)}(A_1)}{3}$

$\boxed{\text{z202}}$ $\quad \mathbb{Q}_{1,3}^{(1,0;c)}(T_1,a) = \dfrac{\sqrt{3}\,\mathbb{Q}_{1,3}^{(1,0;a)}(T_1)\mathbb{Q}_0^{(b)}(A_1)}{3}$

$\boxed{\text{z203}}$ $\quad \mathbb{Q}_{1,1}^{(1,0;c)}(T_1,b) = -\dfrac{\sqrt{3}\,\mathbb{Q}_{1,1}^{(1,0;a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(E)}{6} + \dfrac{\mathbb{Q}_{1,1}^{(1,0;a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(E)}{2}$

$\boxed{\text{z204}}$ $\quad \mathbb{Q}_{1,2}^{(1,0;c)}(T_1,b) = -\dfrac{\sqrt{3}\,\mathbb{Q}_{1,2}^{(1,0;a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(E)}{6} - \dfrac{\mathbb{Q}_{1,2}^{(1,0;a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(E)}{2}$

$\boxed{\text{z205}}$ $\quad \mathbb{Q}_{1,3}^{(1,0;c)}(T_1,b) = \dfrac{\sqrt{3}\,\mathbb{Q}_{1,3}^{(1,0;a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(E)}{3}$

$\boxed{\text{z206}}$ $\quad \mathbb{G}_{1,1}^{(c)}(T_1) = \dfrac{\sqrt{6}\,\mathbb{T}_{1,2}^{(a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{6} - \dfrac{\sqrt{6}\,\mathbb{T}_{1,3}^{(a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{6}$

$\boxed{\text{z207}}$ $\quad \mathbb{G}_{1,2}^{(c)}(T_1) = -\dfrac{\sqrt{6}\,\mathbb{T}_{1,1}^{(a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{6} + \dfrac{\sqrt{6}\,\mathbb{T}_{1,3}^{(a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{6}$

$\boxed{\text{z208}}$ $\quad \mathbb{G}_{1,3}^{(c)}(T_1) = \dfrac{\sqrt{6}\,\mathbb{T}_{1,1}^{(a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{6} - \dfrac{\sqrt{6}\,\mathbb{T}_{1,2}^{(a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{6}$

$\boxed{\text{z209}}$ $\quad \mathbb{G}_{1,1}^{(1,-1;c)}(T_1) = -\dfrac{\sqrt{30}\,\mathbb{M}_{2,1}^{(1,-1;a)}(E)\mathbb{T}_{1,1}^{(b)}(T_1)}{30} + \dfrac{\sqrt{10}\,\mathbb{M}_{2,2}^{(1,-1;a)}(E)\mathbb{T}_{1,1}^{(b)}(T_1)}{10} + \dfrac{\sqrt{10}\,\mathbb{M}_{2,2}^{(1,-1;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{10} + \dfrac{\sqrt{10}\,\mathbb{M}_{2,3}^{(1,-1;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{10}$

$\boxed{\text{z210}}$ $\quad \mathbb{G}_{1,2}^{(1,-1;c)}(T_1) = -\dfrac{\sqrt{30}\,\mathbb{M}_{2,1}^{(1,-1;a)}(E)\mathbb{T}_{1,2}^{(b)}(T_1)}{30} + \dfrac{\sqrt{10}\,\mathbb{M}_{2,1}^{(1,-1;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{10} - \dfrac{\sqrt{10}\,\mathbb{M}_{2,2}^{(1,-1;a)}(E)\mathbb{T}_{1,2}^{(b)}(T_1)}{10} + \dfrac{\sqrt{10}\,\mathbb{M}_{2,3}^{(1,-1;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{10}$

$\boxed{\text{z211}}$ $\quad \mathbb{G}_{1,3}^{(1,-1;c)}(T_1) = \dfrac{\sqrt{30}\,\mathbb{M}_{2,1}^{(1,-1;a)}(E)\mathbb{T}_{1,3}^{(b)}(T_1)}{15} + \dfrac{\sqrt{10}\,\mathbb{M}_{2,1}^{(1,-1;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{10} + \dfrac{\sqrt{10}\,\mathbb{M}_{2,2}^{(1,-1;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{10}$

$\boxed{\text{z212}}$ $\quad \mathbb{G}_{3,1}^{(1,-1;c)}(T_1) = -\dfrac{\sqrt{5}\,\mathbb{M}_{2,1}^{(1,-1;a)}(E)\mathbb{T}_{1,1}^{(b)}(T_1)}{10} + \dfrac{\sqrt{15}\,\mathbb{M}_{2,2}^{(1,-1;a)}(E)\mathbb{T}_{1,1}^{(b)}(T_1)}{10} - \dfrac{\sqrt{15}\,\mathbb{M}_{2,2}^{(1,-1;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{15} - \dfrac{\sqrt{15}\,\mathbb{M}_{2,3}^{(1,-1;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{15}$

$\boxed{\text{z213}}$ $\quad \mathbb{G}_{3,2}^{(1,-1;c)}(T_1) = -\dfrac{\sqrt{5}\,\mathbb{M}_{2,1}^{(1,-1;a)}(E)\mathbb{T}_{1,2}^{(b)}(T_1)}{10} - \dfrac{\sqrt{15}\,\mathbb{M}_{2,1}^{(1,-1;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{15} - \dfrac{\sqrt{15}\,\mathbb{M}_{2,2}^{(1,-1;a)}(E)\mathbb{T}_{1,2}^{(b)}(T_1)}{10} - \dfrac{\sqrt{15}\,\mathbb{M}_{2,3}^{(1,-1;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{15}$

$\boxed{\text{z214}}$ $\mathbb{G}_{3,3}^{(1,-1;c)}(T_1) = \dfrac{\sqrt{5}\mathbb{M}_{2,1}^{(1,-1;a)}(E)\mathbb{T}_{1,3}^{(b)}(T_1)}{5} - \dfrac{\sqrt{15}\mathbb{M}_{2,1}^{(1,-1;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{15} - \dfrac{\sqrt{15}\mathbb{M}_{2,2}^{(1,-1;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{15}$

$\boxed{\text{z215}}$ $\mathbb{G}_{1,1}^{(1,0;c)}(T_1) = \dfrac{\sqrt{6}\mathbb{T}_{1,2}^{(1,0;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{6} - \dfrac{\sqrt{6}\mathbb{T}_{1,3}^{(1,0;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{6}$

$\boxed{\text{z216}}$ $\mathbb{G}_{1,2}^{(1,0;c)}(T_1) = -\dfrac{\sqrt{6}\mathbb{T}_{1,1}^{(1,0;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{6} + \dfrac{\sqrt{6}\mathbb{T}_{1,3}^{(1,0;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{6}$

$\boxed{\text{z217}}$ $\mathbb{G}_{1,3}^{(1,0;c)}(T_1) = \dfrac{\sqrt{6}\mathbb{T}_{1,1}^{(1,0;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{6} - \dfrac{\sqrt{6}\mathbb{T}_{1,2}^{(1,0;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{6}$

$\boxed{\text{z218}}$ $\mathbb{G}_{1,1}^{(1,1;c)}(T_1) = \dfrac{\sqrt{3}\mathbb{M}_{0}^{(1,1;a)}(A_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{3}$

$\boxed{\text{z219}}$ $\mathbb{G}_{1,2}^{(1,1;c)}(T_1) = \dfrac{\sqrt{3}\mathbb{M}_{0}^{(1,1;a)}(A_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{3}$

$\boxed{\text{z220}}$ $\mathbb{G}_{1,3}^{(1,1;c)}(T_1) = \dfrac{\sqrt{3}\mathbb{M}_{0}^{(1,1;a)}(A_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{3}$

$\boxed{\text{z398}}$ $\mathbb{Q}_{2,1}^{(c)}(T_2) = \dfrac{\sqrt{6}\mathbb{T}_{1,2}^{(a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{6} + \dfrac{\sqrt{6}\mathbb{T}_{1,3}^{(a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{6}$

$\boxed{\text{z399}}$ $\mathbb{Q}_{2,2}^{(c)}(T_2) = \dfrac{\sqrt{6}\mathbb{T}_{1,1}^{(a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{6} + \dfrac{\sqrt{6}\mathbb{T}_{1,3}^{(a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{6}$

$\boxed{\text{z400}}$ $\mathbb{Q}_{2,3}^{(c)}(T_2) = \dfrac{\sqrt{6}\mathbb{T}_{1,1}^{(a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{6} + \dfrac{\sqrt{6}\mathbb{T}_{1,2}^{(a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{6}$

$\boxed{\text{z401}}$ $\mathbb{Q}_{3,1}^{(c)}(T_2) = -\dfrac{\mathbb{Q}_{1,1}^{(a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(E)}{2} - \dfrac{\sqrt{3}\mathbb{Q}_{1,1}^{(a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(E)}{6}$

$\boxed{\text{z402}}$ $\mathbb{Q}_{3,2}^{(c)}(T_2) = \dfrac{\mathbb{Q}_{1,2}^{(a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(E)}{2} - \dfrac{\sqrt{3}\mathbb{Q}_{1,2}^{(a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(E)}{6}$

$\boxed{\text{z403}}$ $\mathbb{Q}_{3,3}^{(c)}(T_2) = \dfrac{\sqrt{3}\mathbb{Q}_{1,3}^{(a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(E)}{3}$

$\boxed{\text{z404}}$ $\mathbb{Q}_{2,1}^{(1,-1;c)}(T_2) = \dfrac{\sqrt{6}\mathbb{M}_{2,1}^{(1,-1;a)}(E)\mathbb{T}_{1,1}^{(b)}(T_1)}{6} + \dfrac{\sqrt{2}\mathbb{M}_{2,2}^{(1,-1;a)}(E)\mathbb{T}_{1,1}^{(b)}(T_1)}{6} - \dfrac{\sqrt{2}\mathbb{M}_{2,2}^{(1,-1;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{6} + \dfrac{\sqrt{2}\mathbb{M}_{2,3}^{(1,-1;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{6}$

$\boxed{\text{z405}}$ $\mathbb{Q}_{2,2}^{(1,-1;c)}(T_2) = -\dfrac{\sqrt{6}\mathbb{M}_{2,1}^{(1,-1;a)}(E)\mathbb{T}_{1,2}^{(b)}(T_1)}{6} + \dfrac{\sqrt{2}\mathbb{M}_{2,1}^{(1,-1;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{6} + \dfrac{\sqrt{2}\mathbb{M}_{2,2}^{(1,-1;a)}(E)\mathbb{T}_{1,2}^{(b)}(T_1)}{6} - \dfrac{\sqrt{2}\mathbb{M}_{2,3}^{(1,-1;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{6}$

$\boxed{\text{z406}}$ $\mathbb{Q}_{2,3}^{(1,-1;c)}(T_2) = -\dfrac{\sqrt{2}\mathbb{M}_{2,1}^{(1,-1;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{6} - \dfrac{\sqrt{2}\mathbb{M}_{2,2}^{(1,-1;a)}(E)\mathbb{T}_{1,3}^{(b)}(T_1)}{3} + \dfrac{\sqrt{2}\mathbb{M}_{2,2}^{(1,-1;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{6}$

$\boxed{\text{z407}}$ $\mathbb{Q}_{3,1}^{(1,-1;c)}(T_2) = -\dfrac{\sqrt{3}\mathbb{G}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(E)}{6} + \dfrac{\mathbb{G}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(E)}{2}$

$\boxed{\text{z408}}$ $\mathbb{Q}_{3,2}^{(1,-1;c)}(T_2) = -\dfrac{\sqrt{3}\mathbb{G}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(E)}{6} - \dfrac{\mathbb{G}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(E)}{2}$

$\boxed{\text{z409}}$ $\mathbb{Q}_{3,3}^{(1,-1;c)}(T_2) = \dfrac{\sqrt{3}\mathbb{G}_{2,3}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(E)}{3}$

$\boxed{\text{z410}}$ $\mathbb{Q}_{2,1}^{(1,0;c)}(T_2) = \dfrac{\sqrt{6}\mathbb{T}_{1,2}^{(1,0;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{6} + \dfrac{\sqrt{6}\mathbb{T}_{1,3}^{(1,0;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{6}$

$\boxed{\text{z411}}$ $\mathbb{Q}_{2,2}^{(1,0;c)}(T_2) = \dfrac{\sqrt{6}\mathbb{T}_{1,1}^{(1,0;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{6} + \dfrac{\sqrt{6}\mathbb{T}_{1,3}^{(1,0;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{6}$

$\boxed{\text{z412}}$ $\mathbb{Q}_{2,3}^{(1,0;c)}(T_2) = \dfrac{\sqrt{6}\mathbb{T}_{1,1}^{(1,0;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{6} + \dfrac{\sqrt{6}\mathbb{T}_{1,2}^{(1,0;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{6}$

$\boxed{\text{z413}}$ $\mathbb{Q}_{3,1}^{(1,0;c)}(T_2) = -\dfrac{\mathbb{Q}_{1,1}^{(1,0;a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(E)}{2} - \dfrac{\sqrt{3}\mathbb{Q}_{1,1}^{(1,0;a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(E)}{6}$

$\boxed{\text{z414}}$ $\mathbb{Q}_{3,2}^{(1,0;c)}(T_2) = \dfrac{\mathbb{Q}_{1,2}^{(1,0;a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(E)}{2} - \dfrac{\sqrt{3}\mathbb{Q}_{1,2}^{(1,0;a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(E)}{6}$

$\boxed{\text{z415}}$ $\mathbb{Q}_{3,3}^{(1,0;c)}(T_2) = \dfrac{\sqrt{3}\mathbb{Q}_{1,3}^{(1,0;a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(E)}{3}$

$\boxed{\text{z416}}$ $\mathbb{G}_{2,1}^{(1,-1;c)}(T_2) = \dfrac{\sqrt{3}\mathbb{G}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_{0}^{(b)}(A_1)}{3}$

$\boxed{\text{z417}}$ $\mathbb{G}_{2,2}^{(1,-1;c)}(T_2) = \dfrac{\sqrt{3}\mathbb{G}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_{0}^{(b)}(A_1)}{3}$

$\boxed{\text{z418}}$ $\mathbb{G}_{2,3}^{(1,-1;c)}(T_2) = \dfrac{\sqrt{3}\mathbb{G}_{2,3}^{(1,-1;a)}(T_2)\mathbb{Q}_{0}^{(b)}(A_1)}{3}$

$\boxed{\text{z419}}$ $\mathbb{G}_{3,1}^{(1,-1;c)}(T_2) = -\dfrac{\sqrt{3}\mathbb{M}_{2,1}^{(1,-1;a)}(E)\mathbb{T}_{1,1}^{(b)}(T_1)}{6} - \dfrac{\mathbb{M}_{2,2}^{(1,-1;a)}(E)\mathbb{T}_{1,1}^{(b)}(T_1)}{6} - \dfrac{\mathbb{M}_{2,2}^{(1,-1;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{3} + \dfrac{\mathbb{M}_{2,3}^{(1,-1;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{3}$

$\boxed{\text{z420}}$ $\mathbb{G}_{3,2}^{(1,-1;c)}(T_2) = \dfrac{\sqrt{3}\mathbb{M}_{2,1}^{(1,-1;a)}(E)\mathbb{T}_{1,2}^{(b)}(T_1)}{6} + \dfrac{\mathbb{M}_{2,1}^{(1,-1;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{3} - \dfrac{\mathbb{M}_{2,2}^{(1,-1;a)}(E)\mathbb{T}_{1,2}^{(b)}(T_1)}{6} - \dfrac{\mathbb{M}_{2,3}^{(1,-1;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{3}$

$\boxed{\text{z421}}$ $\mathbb{G}_{3,3}^{(1,-1;c)}(T_2) = -\dfrac{\mathbb{M}_{2,1}^{(1,-1;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{3} + \dfrac{\mathbb{M}_{2,2}^{(1,-1;a)}(E)\mathbb{T}_{1,3}^{(b)}(T_1)}{3} + \dfrac{\mathbb{M}_{2,2}^{(1,-1;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{3}$

- 'A'-'A' bond-cluster : `A;A_001_1`
  * bra: $\langle p_x,\uparrow|$, $\langle p_x,\downarrow|$, $\langle p_y,\uparrow|$, $\langle p_y,\downarrow|$, $\langle p_z,\uparrow|$, $\langle p_z,\downarrow|$
  * ket: $|p_x,\uparrow\rangle$, $|p_x,\downarrow\rangle$, $|p_y,\uparrow\rangle$, $|p_y,\downarrow\rangle$, $|p_z,\uparrow\rangle$, $|p_z,\downarrow\rangle$
  * wyckoff: `3a@3d`

$\boxed{\text{z11}}$ $\mathbb{Q}_0^{(c)}(A_1,a) = \mathbb{Q}_0^{(a)}(A_1)\mathbb{Q}_0^{(b)}(A_1)$

$\boxed{\text{z12}}$ $\mathbb{Q}_0^{(c)}(A_1,b) = \dfrac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E)\mathbb{Q}_{2,1}^{(b)}(E)}{2} + \dfrac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E)\mathbb{Q}_{2,2}^{(b)}(E)}{2}$

$\boxed{\text{z13}}$ $\mathbb{Q}_0^{(1,-1;c)}(A_1) = \dfrac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(E)\mathbb{Q}_{2,1}^{(b)}(E)}{2} + \dfrac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(E)\mathbb{Q}_{2,2}^{(b)}(E)}{2}$

$\boxed{\text{z14}}$ $\mathbb{Q}_0^{(1,1;c)}(A_1) = \mathbb{Q}_0^{(1,1;a)}(A_1)\mathbb{Q}_0^{(b)}(A_1)$

$\boxed{\text{z15}}$ $\mathbb{G}_0^{(c)}(A_1) = \dfrac{\sqrt{3}\mathbb{M}_{1,1}^{(a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{3} + \dfrac{\sqrt{3}\mathbb{M}_{1,2}^{(a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{3} + \dfrac{\sqrt{3}\mathbb{M}_{1,3}^{(a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{3}$

$\boxed{\text{z16}}$ $\mathbb{G}_0^{(1,-1;c)}(A_1) = \dfrac{\sqrt{3}\mathbb{M}_{1,1}^{(1,-1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{3} + \dfrac{\sqrt{3}\mathbb{M}_{1,2}^{(1,-1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{3} + \dfrac{\sqrt{3}\mathbb{M}_{1,3}^{(1,-1;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{3}$

$\boxed{\text{z17}}$ $\mathbb{G}_4^{(1,-1;c)}(A_1) = \dfrac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{3} + \dfrac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{3} + \dfrac{\sqrt{3}\mathbb{M}_{3,3}^{(1,-1;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{3}$

$\boxed{\text{z18}}$ $\mathbb{G}_0^{(1,1;c)}(A_1) = \dfrac{\sqrt{3}\mathbb{M}_{1,1}^{(1,1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{3} + \dfrac{\sqrt{3}\mathbb{M}_{1,2}^{(1,1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{3} + \dfrac{\sqrt{3}\mathbb{M}_{1,3}^{(1,1;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{3}$

$\boxed{\text{z41}}$ $\mathbb{Q}_3^{(1,-1;c)}(A_2) = -\dfrac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{3} - \dfrac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{3} - \dfrac{\sqrt{3}\mathbb{M}_{3,3}^{(1,-1;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{3}$

$$\boxed{\text{z42}} \quad \mathbb{Q}_3^{(1,0;c)}(A_2) = \frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{3} + \frac{\sqrt{3}\mathbb{T}_{2,2}^{(1,0;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{3} + \frac{\sqrt{3}\mathbb{T}_{2,3}^{(1,0;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{3}$$

$$\boxed{\text{z43}} \quad \mathbb{G}_3^{(c)}(A_2) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E)\mathbb{Q}_{2,2}^{(b)}(E)}{2} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E)\mathbb{Q}_{2,1}^{(b)}(E)}{2}$$

$$\boxed{\text{z44}} \quad \mathbb{G}_3^{(1,-1;c)}(A_2) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(E)\mathbb{Q}_{2,2}^{(b)}(E)}{2} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(E)\mathbb{Q}_{2,1}^{(b)}(E)}{2}$$

$$\boxed{\text{z83}} \quad \mathbb{Q}_{2,1}^{(c)}(E,a) = \frac{\sqrt{2}\mathbb{Q}_0^{(a)}(A_1)\mathbb{Q}_{2,1}^{(b)}(E)}{2}$$

$$\boxed{\text{z84}} \quad \mathbb{Q}_{2,2}^{(c)}(E,a) = \frac{\sqrt{2}\mathbb{Q}_0^{(a)}(A_1)\mathbb{Q}_{2,2}^{(b)}(E)}{2}$$

$$\boxed{\text{z85}} \quad \mathbb{Q}_{2,1}^{(c)}(E,b) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E)\mathbb{Q}_0^{(b)}(A_1)}{2}$$

$$\boxed{\text{z86}} \quad \mathbb{Q}_{2,2}^{(c)}(E,b) = \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E)\mathbb{Q}_0^{(b)}(A_1)}{2}$$

$$\boxed{\text{z87}} \quad \mathbb{Q}_{2,1}^{(c)}(E,c) = \frac{\mathbb{Q}_{2,1}^{(a)}(E)\mathbb{Q}_{2,1}^{(b)}(E)}{2} - \frac{\mathbb{Q}_{2,2}^{(a)}(E)\mathbb{Q}_{2,2}^{(b)}(E)}{2}$$

$$\boxed{\text{z88}} \quad \mathbb{Q}_{2,2}^{(c)}(E,c) = -\frac{\mathbb{Q}_{2,1}^{(a)}(E)\mathbb{Q}_{2,2}^{(b)}(E)}{2} - \frac{\mathbb{Q}_{2,2}^{(a)}(E)\mathbb{Q}_{2,1}^{(b)}(E)}{2}$$

$$\boxed{\text{z89}} \quad \mathbb{Q}_{2,1}^{(1,-1;c)}(E,a) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(E)\mathbb{Q}_0^{(b)}(A_1)}{2}$$

$$\boxed{\text{z90}} \quad \mathbb{Q}_{2,2}^{(1,-1;c)}(E,a) = \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(E)\mathbb{Q}_0^{(b)}(A_1)}{2}$$

$$\boxed{\text{z91}} \quad \mathbb{Q}_{2,1}^{(1,-1;c)}(E,b) = \frac{\mathbb{Q}_{2,1}^{(1,-1;a)}(E)\mathbb{Q}_{2,1}^{(b)}(E)}{2} - \frac{\mathbb{Q}_{2,2}^{(1,-1;a)}(E)\mathbb{Q}_{2,2}^{(b)}(E)}{2}$$

$$\boxed{\text{z92}} \quad \mathbb{Q}_{2,2}^{(1,-1;c)}(E,b) = -\frac{\mathbb{Q}_{2,1}^{(1,-1;a)}(E)\mathbb{Q}_{2,2}^{(b)}(E)}{2} - \frac{\mathbb{Q}_{2,2}^{(1,-1;a)}(E)\mathbb{Q}_{2,1}^{(b)}(E)}{2}$$

$$\boxed{\text{z93}} \quad \mathbb{Q}_{2,1}^{(1,1;c)}(E) = \frac{\sqrt{2}\mathbb{Q}_0^{(1,1;a)}(A_1)\mathbb{Q}_{2,1}^{(b)}(E)}{2}$$

$\boxed{\text{z94}}$ $\quad \mathbb{Q}_{2,2}^{(1,1;c)}(E) = \dfrac{\sqrt{2}\,\mathbb{Q}_0^{(1,1;a)}(A_1)\mathbb{Q}_{2,2}^{(b)}(E)}{2}$

$\boxed{\text{z95}}$ $\quad \mathbb{G}_{2,1}^{(c)}(E) = -\dfrac{\sqrt{3}\mathbb{M}_{1,1}^{(a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{6} - \dfrac{\sqrt{3}\mathbb{M}_{1,2}^{(a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{6} + \dfrac{\sqrt{3}\mathbb{M}_{1,3}^{(a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{3}$

$\boxed{\text{z96}}$ $\quad \mathbb{G}_{2,2}^{(c)}(E) = \dfrac{\mathbb{M}_{1,1}^{(a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{2} - \dfrac{\mathbb{M}_{1,2}^{(a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{2}$

$\boxed{\text{z97}}$ $\quad \mathbb{G}_{2,1}^{(1,-1;c)}(E,a) = -\dfrac{\sqrt{42}\mathbb{M}_{3,1}^{(1,-1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{28} - \dfrac{\sqrt{70}\mathbb{M}_{3,1}^{(1,-1;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{28} - \dfrac{\sqrt{42}\mathbb{M}_{3,2}^{(1,-1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{28} + \dfrac{\sqrt{70}\mathbb{M}_{3,2}^{(1,-1;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{28} + \dfrac{\sqrt{42}\mathbb{M}_{3,3}^{(1,-1;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{14}$

$\boxed{\text{z98}}$ $\quad \mathbb{G}_{2,2}^{(1,-1;c)}(E,a) = \dfrac{3\sqrt{14}\mathbb{M}_{3,1}^{(1,-1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{28} - \dfrac{\sqrt{210}\mathbb{M}_{3,1}^{(1,-1;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{84} - \dfrac{3\sqrt{14}\mathbb{M}_{3,2}^{(1,-1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{28} - \dfrac{\sqrt{210}\mathbb{M}_{3,2}^{(1,-1;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{84} + \dfrac{\sqrt{210}\mathbb{M}_{3,3}^{(1,-1;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{42}$

$\boxed{\text{z99}}$ $\quad \mathbb{G}_{2,1}^{(1,-1;c)}(E,b) = -\dfrac{\sqrt{3}\mathbb{M}_{1,1}^{(1,-1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{6} - \dfrac{\sqrt{3}\mathbb{M}_{1,2}^{(1,-1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{6} + \dfrac{\sqrt{3}\mathbb{M}_{1,3}^{(1,-1;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{3}$

$\boxed{\text{z100}}$ $\quad \mathbb{G}_{2,2}^{(1,-1;c)}(E,b) = \dfrac{\mathbb{M}_{1,1}^{(1,-1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{2} - \dfrac{\mathbb{M}_{1,2}^{(1,-1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{2}$

$\boxed{\text{z101}}$ $\quad \mathbb{G}_{4,1}^{(1,-1;c)}(E) = -\dfrac{\sqrt{210}\mathbb{M}_{3,1}^{(1,-1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{84} + \dfrac{3\sqrt{14}\mathbb{M}_{3,1}^{(1,-1;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{28} - \dfrac{\sqrt{210}\mathbb{M}_{3,2}^{(1,-1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{84} - \dfrac{3\sqrt{14}\mathbb{M}_{3,2}^{(1,-1;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{28} + \dfrac{\sqrt{210}\mathbb{M}_{3,3}^{(1,-1;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{42}$

$\boxed{\text{z102}}$ $\quad \mathbb{G}_{4,2}^{(1,-1;c)}(E) = \dfrac{\sqrt{70}\mathbb{M}_{3,1}^{(1,-1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{28} + \dfrac{\sqrt{42}\mathbb{M}_{3,1}^{(1,-1;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{28} - \dfrac{\sqrt{70}\mathbb{M}_{3,1}^{(1,-1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{28} + \dfrac{\sqrt{42}\mathbb{M}_{3,2}^{(1,-1;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{28} - \dfrac{\sqrt{42}\mathbb{M}_{3,3}^{(1,-1;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{14}$

$\boxed{\text{z103}}$ $\quad \mathbb{G}_{2,1}^{(1,0;c)}(E) = -\dfrac{\mathbb{T}_{2,1}^{(1,0;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{2} + \dfrac{\mathbb{T}_{2,2}^{(1,0;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{2}$

$\boxed{\text{z104}}$ $\quad \mathbb{G}_{2,2}^{(1,0;c)}(E) = -\dfrac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{6} - \dfrac{\sqrt{3}\mathbb{T}_{2,2}^{(1,0;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{6} + \dfrac{\sqrt{3}\mathbb{T}_{2,3}^{(1,0;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{3}$

$\boxed{\text{z105}}$ $\quad \mathbb{G}_{2,1}^{(1,1;c)}(E) = -\dfrac{\sqrt{3}\mathbb{M}_{1,1}^{(1,1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{6} - \dfrac{\sqrt{3}\mathbb{M}_{1,2}^{(1,1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{6} + \dfrac{\sqrt{3}\mathbb{M}_{1,3}^{(1,1;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{3}$

$\boxed{\text{z106}}$ $\quad \mathbb{G}_{2,2}^{(1,1;c)}(E) = \dfrac{\mathbb{M}_{1,1}^{(1,1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{2} - \dfrac{\mathbb{M}_{1,2}^{(1,1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{2}$

$\boxed{\text{z221}}$ $\quad \mathbb{Q}_{1,1}^{(c)}(T_1) = \dfrac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{6} - \dfrac{\sqrt{6}\mathbb{M}_{1,3}^{(a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{6}$

$\boxed{\text{z222}}$ $\quad \mathbb{Q}_{1,2}^{(c)}(T_1) = -\dfrac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{6} + \dfrac{\sqrt{6}\mathbb{M}_{1,3}^{(a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{6}$

$\boxed{\text{z223}}$ $\quad \mathbb{Q}_{1,3}^{(c)}(T_1) = \dfrac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{6} - \dfrac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{6}$

$\boxed{\text{z224}}$ $\quad \mathbb{Q}_{4,1}^{(c)}(T_1) = -\dfrac{\mathbb{Q}_{2,1}^{(a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(E)}{2} - \dfrac{\sqrt{3}\mathbb{Q}_{2,1}^{(a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(E)}{6}$

$\boxed{\text{z225}}$ $\quad \mathbb{Q}_{4,2}^{(c)}(T_1) = \dfrac{\mathbb{Q}_{2,2}^{(a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(E)}{2} - \dfrac{\sqrt{3}\mathbb{Q}_{2,2}^{(a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(E)}{6}$

$\boxed{\text{z226}}$ $\quad \mathbb{Q}_{4,3}^{(c)}(T_1) = \dfrac{\sqrt{3}\mathbb{Q}_{2,3}^{(a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(E)}{3}$

$\boxed{\text{z227}}$ $\quad \mathbb{Q}_{1,1}^{(1,-1;c)}(T_1) = \dfrac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{6} - \dfrac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{6}$

$\boxed{\text{z228}}$ $\quad \mathbb{Q}_{1,2}^{(1,-1;c)}(T_1) = -\dfrac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{6} + \dfrac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{6}$

$\boxed{\text{z229}}$ $\quad \mathbb{Q}_{1,3}^{(1,-1;c)}(T_1) = \dfrac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{6} - \dfrac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{6}$

$\boxed{\text{z230}}$ $\quad \mathbb{Q}_{3,1}^{(1,-1;c)}(T_1) = -\dfrac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{4} - \dfrac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{12} + \dfrac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{4} - \dfrac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{12}$

$\boxed{\text{z231}}$ $\quad \mathbb{Q}_{3,2}^{(1,-1;c)}(T_1) = \dfrac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{4} - \dfrac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{12} - \dfrac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{4} - \dfrac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{12}$

$\boxed{\text{z232}}$ $\quad \mathbb{Q}_{3,3}^{(1,-1;c)}(T_1) = -\dfrac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{4} - \dfrac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{12} + \dfrac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{4} - \dfrac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{12}$

$\boxed{\text{z233}}$ $\quad \mathbb{Q}_{4,1}^{(1,-1;c)}(T_1) = -\dfrac{\mathbb{Q}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(E)}{2} - \dfrac{\sqrt{3}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(E)}{6}$

$\boxed{\text{z234}}$ $\quad \mathbb{Q}_{4,2}^{(1,-1;c)}(T_1) = \dfrac{\mathbb{Q}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(E)}{2} - \dfrac{\sqrt{3}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(E)}{6}$

$\boxed{\text{z235}}$ $\quad \mathbb{Q}_{4,3}^{(1,-1;c)}(T_1) = \dfrac{\sqrt{3}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(E)}{3}$

$$\boxed{\text{z236}} \quad \mathbb{Q}_{1,1}^{(1,0;c)}(T_1) = -\frac{\sqrt{30}\mathbb{T}_{2,1}^{(1,0;a)}(E)\mathbb{T}_{1,1}^{(b)}(T_1)}{30} + \frac{\sqrt{10}\mathbb{T}_{2,2}^{(1,0;a)}(E)\mathbb{T}_{1,1}^{(b)}(T_1)}{10} + \frac{\sqrt{10}\mathbb{T}_{2,2}^{(1,0;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{10} + \frac{\sqrt{10}\mathbb{T}_{2,3}^{(1,0;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{10}$$

$$\boxed{\text{z237}} \quad \mathbb{Q}_{1,2}^{(1,0;c)}(T_1) = -\frac{\sqrt{30}\mathbb{T}_{2,1}^{(1,0;a)}(E)\mathbb{T}_{1,2}^{(b)}(T_1)}{30} + \frac{\sqrt{10}\mathbb{T}_{2,1}^{(1,0;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{10} - \frac{\sqrt{10}\mathbb{T}_{2,2}^{(1,0;a)}(E)\mathbb{T}_{1,2}^{(b)}(T_1)}{10} + \frac{\sqrt{10}\mathbb{T}_{2,3}^{(1,0;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{10}$$

$$\boxed{\text{z238}} \quad \mathbb{Q}_{1,3}^{(1,0;c)}(T_1) = \frac{\sqrt{30}\mathbb{T}_{2,1}^{(1,0;a)}(E)\mathbb{T}_{1,3}^{(b)}(T_1)}{15} + \frac{\sqrt{10}\mathbb{T}_{2,1}^{(1,0;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{10} + \frac{\sqrt{10}\mathbb{T}_{2,2}^{(1,0;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{10}$$

$$\boxed{\text{z239}} \quad \mathbb{Q}_{3,1}^{(1,0;c)}(T_1) = -\frac{\sqrt{5}\mathbb{T}_{2,1}^{(1,0;a)}(E)\mathbb{T}_{1,1}^{(b)}(T_1)}{10} + \frac{\sqrt{15}\mathbb{T}_{2,2}^{(1,0;a)}(E)\mathbb{T}_{1,1}^{(b)}(T_1)}{10} - \frac{\sqrt{15}\mathbb{T}_{2,2}^{(1,0;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{15} - \frac{\sqrt{15}\mathbb{T}_{2,3}^{(1,0;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{15}$$

$$\boxed{\text{z240}} \quad \mathbb{Q}_{3,2}^{(1,0;c)}(T_1) = -\frac{\sqrt{5}\mathbb{T}_{2,1}^{(1,0;a)}(E)\mathbb{T}_{1,2}^{(b)}(T_1)}{10} - \frac{\sqrt{15}\mathbb{T}_{2,1}^{(1,0;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{15} - \frac{\sqrt{15}\mathbb{T}_{2,2}^{(1,0;a)}(E)\mathbb{T}_{1,2}^{(b)}(T_1)}{10} - \frac{\sqrt{15}\mathbb{T}_{2,3}^{(1,0;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{15}$$

$$\boxed{\text{z241}} \quad \mathbb{Q}_{3,3}^{(1,0;c)}(T_1) = \frac{\sqrt{5}\mathbb{T}_{2,1}^{(1,0;a)}(E)\mathbb{T}_{1,3}^{(b)}(T_1)}{5} - \frac{\sqrt{15}\mathbb{T}_{2,1}^{(1,0;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{15} - \frac{\sqrt{15}\mathbb{T}_{2,2}^{(1,0;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{15}$$

$$\boxed{\text{z242}} \quad \mathbb{Q}_{1,1}^{(1,1;c)}(T_1) = \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,1;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{6} - \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{6}$$

$$\boxed{\text{z243}} \quad \mathbb{Q}_{1,2}^{(1,1;c)}(T_1) = -\frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,1;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{6}$$

$$\boxed{\text{z244}} \quad \mathbb{Q}_{1,3}^{(1,1;c)}(T_1) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{6} - \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{6}$$

$$\boxed{\text{z245}} \quad \mathbb{G}_{4,1}^{(1,-1;c)}(T_1) = \frac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{12} - \frac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{4} - \frac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{12} - \frac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{4}$$

$$\boxed{\text{z246}} \quad \mathbb{G}_{4,2}^{(1,-1;c)}(T_1) = -\frac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{12} - \frac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{4} + \frac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{12} - \frac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{4}$$

$$\boxed{\text{z247}} \quad \mathbb{G}_{4,3}^{(1,-1;c)}(T_1) = \frac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{12} - \frac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{4} - \frac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{12} - \frac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{4}$$

$$\boxed{\text{z248}} \quad \mathbb{G}_{1,1}^{(1,0;c)}(T_1,a) = \frac{\sqrt{3}\mathbb{G}_{1,1}^{(1,0;a)}(T_1)\mathbb{Q}_{0}^{(b)}(A_1)}{3}$$

$$\boxed{\text{z249}} \quad \mathbb{G}_{1,2}^{(1,0;c)}(T_1,a) = \frac{\sqrt{3}\mathbb{G}_{1,2}^{(1,0;a)}(T_1)\mathbb{Q}_{0}^{(b)}(A_1)}{3}$$

$\boxed{\text{z250}}$ $\mathbb{G}_{1,3}^{(1,0;c)}(T_1,a) = \dfrac{\sqrt{3}\mathbb{G}_{1,3}^{(1,0;a)}(T_1)\mathbb{Q}_0^{(b)}(A_1)}{3}$

$\boxed{\text{z251}}$ $\mathbb{G}_{1,1}^{(1,0;c)}(T_1,b) = -\dfrac{\sqrt{3}\mathbb{G}_{1,1}^{(1,0;a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(E)}{6} + \dfrac{\mathbb{G}_{1,1}^{(1,0;a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(E)}{2}$

$\boxed{\text{z252}}$ $\mathbb{G}_{1,2}^{(1,0;c)}(T_1,b) = -\dfrac{\sqrt{3}\mathbb{G}_{1,2}^{(1,0;a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(E)}{6} - \dfrac{\mathbb{G}_{1,2}^{(1,0;a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(E)}{2}$

$\boxed{\text{z253}}$ $\mathbb{G}_{1,3}^{(1,0;c)}(T_1,b) = \dfrac{\sqrt{3}\mathbb{G}_{1,3}^{(1,0;a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(E)}{3}$

$\boxed{\text{z422}}$ $\mathbb{Q}_{2,1}^{(c)}(T_2,a) = \dfrac{\sqrt{3}\mathbb{Q}_{2,1}^{(a)}(T_2)\mathbb{Q}_0^{(b)}(A_1)}{3}$

$\boxed{\text{z423}}$ $\mathbb{Q}_{2,2}^{(c)}(T_2,a) = \dfrac{\sqrt{3}\mathbb{Q}_{2,2}^{(a)}(T_2)\mathbb{Q}_0^{(b)}(A_1)}{3}$

$\boxed{\text{z424}}$ $\mathbb{Q}_{2,3}^{(c)}(T_2,a) = \dfrac{\sqrt{3}\mathbb{Q}_{2,3}^{(a)}(T_2)\mathbb{Q}_0^{(b)}(A_1)}{3}$

$\boxed{\text{z425}}$ $\mathbb{Q}_{2,1}^{(c)}(T_2,b) = \dfrac{\sqrt{3}\mathbb{Q}_{2,1}^{(a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(E)}{6} - \dfrac{\mathbb{Q}_{2,1}^{(a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(E)}{2}$

$\boxed{\text{z426}}$ $\mathbb{Q}_{2,2}^{(c)}(T_2,b) = \dfrac{\sqrt{3}\mathbb{Q}_{2,2}^{(a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(E)}{6} + \dfrac{\mathbb{Q}_{2,2}^{(a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(E)}{2}$

$\boxed{\text{z427}}$ $\mathbb{Q}_{2,3}^{(c)}(T_2,b) = -\dfrac{\sqrt{3}\mathbb{Q}_{2,3}^{(a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(E)}{3}$

$\boxed{\text{z428}}$ $\mathbb{Q}_{2,1}^{(1,-1;c)}(T_2,a) = \dfrac{\sqrt{3}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_0^{(b)}(A_1)}{3}$

$\boxed{\text{z429}}$ $\mathbb{Q}_{2,2}^{(1,-1;c)}(T_2,a) = \dfrac{\sqrt{3}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_0^{(b)}(A_1)}{3}$

$\boxed{\text{z430}}$ $\mathbb{Q}_{2,3}^{(1,-1;c)}(T_2,a) = \dfrac{\sqrt{3}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_2)\mathbb{Q}_0^{(b)}(A_1)}{3}$

$\boxed{\text{z431}}$ $\mathbb{Q}_{2,1}^{(1,-1;c)}(T_2,b) = \dfrac{\sqrt{3}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(E)}{6} - \dfrac{\mathbb{Q}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(E)}{2}$

$\boxed{\text{z432}}$ $\quad \mathbb{Q}_{2,2}^{(1,-1;c)}(T_2, b) = \dfrac{\sqrt{3}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(E)}{6} + \dfrac{\mathbb{Q}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(E)}{2}$

$\boxed{\text{z433}}$ $\quad \mathbb{Q}_{2,3}^{(1,-1;c)}(T_2, b) = -\dfrac{\sqrt{3}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(E)}{3}$

$\boxed{\text{z434}}$ $\quad \mathbb{Q}_{3,1}^{(1,-1;c)}(T_2) = \dfrac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{12} + \dfrac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{12} + \dfrac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{12} - \dfrac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{12} + \dfrac{\mathbb{M}_{3}^{(1,-1;a)}(A_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{3}$

$\boxed{\text{z435}}$ $\quad \mathbb{Q}_{3,2}^{(1,-1;c)}(T_2) = \dfrac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{12} - \dfrac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{12} + \dfrac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{12} + \dfrac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{12} + \dfrac{\mathbb{M}_{3}^{(1,-1;a)}(A_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{3}$

$\boxed{\text{z436}}$ $\quad \mathbb{Q}_{3,3}^{(1,-1;c)}(T_2) = \dfrac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{12} + \dfrac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{12} + \dfrac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{12} - \dfrac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{12} + \dfrac{\mathbb{M}_{3}^{(1,-1;a)}(A_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{3}$

$\boxed{\text{z437}}$ $\quad \mathbb{Q}_{2,1}^{(1,0;c)}(T_2) = -\dfrac{\mathbb{G}_{1,1}^{(1,0;a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(E)}{2} - \dfrac{\sqrt{3}\mathbb{G}_{1,1}^{(1,0;a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(E)}{6}$

$\boxed{\text{z438}}$ $\quad \mathbb{Q}_{2,2}^{(1,0;c)}(T_2) = \dfrac{\mathbb{G}_{1,2}^{(1,0;a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(E)}{2} - \dfrac{\sqrt{3}\mathbb{G}_{1,2}^{(1,0;a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(E)}{6}$

$\boxed{\text{z439}}$ $\quad \mathbb{Q}_{2,3}^{(1,0;c)}(T_2) = \dfrac{\sqrt{3}\mathbb{G}_{1,3}^{(1,0;a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(E)}{3}$

$\boxed{\text{z440}}$ $\quad \mathbb{Q}_{3,1}^{(1,0;c)}(T_2) = -\dfrac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(E)\mathbb{T}_{1,1}^{(b)}(T_1)}{6} - \dfrac{\mathbb{T}_{2,2}^{(1,0;a)}(E)\mathbb{T}_{1,1}^{(b)}(T_1)}{6} - \dfrac{\mathbb{T}_{2,2}^{(1,0;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{3} + \dfrac{\mathbb{T}_{2,3}^{(1,0;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{3}$

$\boxed{\text{z441}}$ $\quad \mathbb{Q}_{3,2}^{(1,0;c)}(T_2) = \dfrac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(E)\mathbb{T}_{1,2}^{(b)}(T_1)}{6} + \dfrac{\mathbb{T}_{2,1}^{(1,0;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{3} - \dfrac{\mathbb{T}_{2,2}^{(1,0;a)}(E)\mathbb{T}_{1,2}^{(b)}(T_1)}{6} - \dfrac{\mathbb{T}_{2,3}^{(1,0;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{3}$

$\boxed{\text{z442}}$ $\quad \mathbb{Q}_{3,3}^{(1,0;c)}(T_2) = -\dfrac{\mathbb{T}_{2,1}^{(1,0;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{3} + \dfrac{\mathbb{T}_{2,2}^{(1,0;a)}(E)\mathbb{T}_{1,3}^{(b)}(T_1)}{3} + \dfrac{\mathbb{T}_{2,2}^{(1,0;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{3}$

$\boxed{\text{z443}}$ $\quad \mathbb{G}_{2,1}^{(c)}(T_2) = \dfrac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{6} + \dfrac{\sqrt{6}\mathbb{M}_{1,3}^{(a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{6}$

$\boxed{\text{z444}}$ $\quad \mathbb{G}_{2,2}^{(c)}(T_2) = \dfrac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{6} + \dfrac{\sqrt{6}\mathbb{M}_{1,3}^{(a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{6}$

$\boxed{\text{z445}}$ $\quad \mathbb{G}_{2,3}^{(c)}(T_2) = \dfrac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{6} + \dfrac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{6}$

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$\boxed{\text{z446}}$ $\mathbb{G}_{2,1}^{(1,-1;c)}(T_2,a) = -\frac{\sqrt{21}\mathrm{M}_{3,2}^{(1,-1;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{21} + \frac{\sqrt{35}\mathrm{M}_{3,2}^{(1,-1;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{21} - \frac{\sqrt{21}\mathrm{M}_{3,3}^{(1,-1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{21} - \frac{\sqrt{35}\mathrm{M}_{3,3}^{(1,-1;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{21} + \frac{\sqrt{35}\mathrm{M}_{3}^{(1,-1;a)}(A_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{21}$

$\boxed{\text{z447}}$ $\mathbb{G}_{2,2}^{(1,-1;c)}(T_2,a) = -\frac{\sqrt{21}\mathrm{M}_{3,1}^{(1,-1;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{21} - \frac{\sqrt{35}\mathrm{M}_{3,1}^{(1,-1;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{21} - \frac{\sqrt{21}\mathrm{M}_{3,3}^{(1,-1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{21} + \frac{\sqrt{35}\mathrm{M}_{3,3}^{(1,-1;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{21} + \frac{\sqrt{35}\mathrm{M}_{3}^{(1,-1;a)}(A_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{21}$

$\boxed{\text{z448}}$ $\mathbb{G}_{2,3}^{(1,-1;c)}(T_2,a) = -\frac{\sqrt{21}\mathrm{M}_{3,1}^{(1,-1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{21} + \frac{\sqrt{35}\mathrm{M}_{3,1}^{(1,-1;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{21} - \frac{\sqrt{21}\mathrm{M}_{3,2}^{(1,-1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{21} - \frac{\sqrt{35}\mathrm{M}_{3,2}^{(1,-1;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{21} + \frac{\sqrt{35}\mathrm{M}_{3}^{(1,-1;a)}(A_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{21}$

$\boxed{\text{z449}}$ $\mathbb{G}_{2,1}^{(1,-1;c)}(T_2,b) = \frac{\sqrt{6}\mathrm{M}_{1,2}^{(1,-1;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{6} + \frac{\sqrt{6}\mathrm{M}_{1,3}^{(1,-1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{6}$

$\boxed{\text{z450}}$ $\mathbb{G}_{2,2}^{(1,-1;c)}(T_2,b) = \frac{\sqrt{6}\mathrm{M}_{1,1}^{(1,-1;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{6} + \frac{\sqrt{6}\mathrm{M}_{1,3}^{(1,-1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{6}$

$\boxed{\text{z451}}$ $\mathbb{G}_{2,3}^{(1,-1;c)}(T_2,b) = \frac{\sqrt{6}\mathrm{M}_{1,1}^{(1,-1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{6} + \frac{\sqrt{6}\mathrm{M}_{1,2}^{(1,-1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{6}$

$\boxed{\text{z452}}$ $\mathbb{G}_{4,1}^{(1,-1;c)}(T_2) = -\frac{\sqrt{105}\mathrm{M}_{3,2}^{(1,-1;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{84} - \frac{3\sqrt{7}\mathrm{M}_{3,2}^{(1,-1;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{28} - \frac{\sqrt{105}\mathrm{M}_{3,3}^{(1,-1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{84} + \frac{3\sqrt{7}\mathrm{M}_{3,3}^{(1,-1;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{28} + \frac{\sqrt{7}\mathrm{M}_{3}^{(1,-1;a)}(A_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{7}$

$\boxed{\text{z453}}$ $\mathbb{G}_{4,2}^{(1,-1;c)}(T_2) = -\frac{\sqrt{105}\mathrm{M}_{3,1}^{(1,-1;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{84} + \frac{3\sqrt{7}\mathrm{M}_{3,1}^{(1,-1;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{28} - \frac{\sqrt{105}\mathrm{M}_{3,3}^{(1,-1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{84} - \frac{3\sqrt{7}\mathrm{M}_{3,3}^{(1,-1;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{28} + \frac{\sqrt{7}\mathrm{M}_{3}^{(1,-1;a)}(A_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{7}$

$\boxed{\text{z454}}$ $\mathbb{G}_{4,3}^{(1,-1;c)}(T_2) = -\frac{\sqrt{105}\mathrm{M}_{3,1}^{(1,-1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{84} - \frac{3\sqrt{7}\mathrm{M}_{3,1}^{(1,-1;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{28} - \frac{\sqrt{105}\mathrm{M}_{3,2}^{(1,-1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{84} + \frac{3\sqrt{7}\mathrm{M}_{3,2}^{(1,-1;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{28} + \frac{\sqrt{7}\mathrm{M}_{3}^{(1,-1;a)}(A_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{7}$

$\boxed{\text{z455}}$ $\mathbb{G}_{2,1}^{(1,0;c)}(T_2) = \frac{\sqrt{6}\mathbb{T}_{2,1}^{(1,0;a)}(E)\mathbb{T}_{1,1}^{(b)}(T_1)}{6} + \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(E)\mathbb{T}_{1,1}^{(b)}(T_1)}{6} - \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{6} + \frac{\sqrt{2}\mathbb{T}_{2,3}^{(1,0;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{6}$

$\boxed{\text{z456}}$ $\mathbb{G}_{2,2}^{(1,0;c)}(T_2) = -\frac{\sqrt{6}\mathbb{T}_{2,1}^{(1,0;a)}(E)\mathbb{T}_{1,2}^{(b)}(T_1)}{6} + \frac{\sqrt{2}\mathbb{T}_{2,1}^{(1,0;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{6} + \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(E)\mathbb{T}_{1,2}^{(b)}(T_1)}{6} - \frac{\sqrt{2}\mathbb{T}_{2,3}^{(1,0;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{6}$

$\boxed{\text{z457}}$ $\mathbb{G}_{2,3}^{(1,0;c)}(T_2) = -\frac{\sqrt{2}\mathbb{T}_{2,1}^{(1,0;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{6} - \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(E)\mathbb{T}_{1,3}^{(b)}(T_1)}{3} + \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{6}$

$\boxed{\text{z458}}$ $\mathbb{G}_{2,1}^{(1,1;c)}(T_2) = \frac{\sqrt{6}\mathrm{M}_{1,2}^{(1,1;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{6} + \frac{\sqrt{6}\mathrm{M}_{1,3}^{(1,1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{6}$

$\boxed{\text{z459}}$ $\mathbb{G}_{2,2}^{(1,1;c)}(T_2) = \frac{\sqrt{6}\mathrm{M}_{1,1}^{(1,1;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{6} + \frac{\sqrt{6}\mathrm{M}_{1,3}^{(1,1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{6}$

$\boxed{\text{z460}}$ $\mathbb{G}_{2,3}^{(1,1;c)}(T_2) = \dfrac{\sqrt{6}\mathbb{M}_{1,1}^{(1,1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{6} + \dfrac{\sqrt{6}\mathbb{M}_{1,2}^{(1,1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{6}$

- 'A'-'A' bond-cluster : `A;A_002_1`
  * bra: $\langle s,\uparrow|$, $\langle s,\downarrow|$
  * ket: $|s,\uparrow\rangle$, $|s,\downarrow\rangle$
  * wyckoff: `6b@3c`

$\boxed{\text{z19}}$ $\mathbb{Q}_0^{(c)}(A_1) = \mathbb{Q}_0^{(a)}(A_1)\mathbb{Q}_0^{(b)}(A_1)$

$\boxed{\text{z20}}$ $\mathbb{G}_0^{(1,-1;c)}(A_1) = \dfrac{\sqrt{3}\mathbb{M}_{1,1}^{(1,-1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{3} + \dfrac{\sqrt{3}\mathbb{M}_{1,2}^{(1,-1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{3} + \dfrac{\sqrt{3}\mathbb{M}_{1,3}^{(1,-1;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{3}$

$\boxed{\text{z45}}$ $\mathbb{Q}_3^{(1,-1;c)}(A_2) = \dfrac{\sqrt{3}\mathbb{M}_{1,1}^{(1,-1;a)}(T_1)\mathbb{M}_{2,1}^{(b)}(T_2)}{3} + \dfrac{\sqrt{3}\mathbb{M}_{1,2}^{(1,-1;a)}(T_1)\mathbb{M}_{2,2}^{(b)}(T_2)}{3} + \dfrac{\sqrt{3}\mathbb{M}_{1,3}^{(1,-1;a)}(T_1)\mathbb{M}_{2,3}^{(b)}(T_2)}{3}$

$\boxed{\text{z107}}$ $\mathbb{Q}_{2,1}^{(c)}(E) = \dfrac{\sqrt{2}\mathbb{Q}_0^{(a)}(A_1)\mathbb{Q}_{2,1}^{(b)}(E)}{2}$

$\boxed{\text{z108}}$ $\mathbb{Q}_{2,2}^{(c)}(E) = \dfrac{\sqrt{2}\mathbb{Q}_0^{(a)}(A_1)\mathbb{Q}_{2,2}^{(b)}(E)}{2}$

$\boxed{\text{z109}}$ $\mathbb{G}_{2,1}^{(1,-1;c)}(E,a) = -\dfrac{\sqrt{3}\mathbb{M}_{1,1}^{(1,-1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{6} - \dfrac{\sqrt{3}\mathbb{M}_{1,2}^{(1,-1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{6} + \dfrac{\sqrt{3}\mathbb{M}_{1,3}^{(1,-1;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{3}$

$\boxed{\text{z110}}$ $\mathbb{G}_{2,2}^{(1,-1;c)}(E,a) = \dfrac{\mathbb{M}_{1,1}^{(1,-1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{2} - \dfrac{\mathbb{M}_{1,2}^{(1,-1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{2}$

$\boxed{\text{z111}}$ $\mathbb{G}_{2,1}^{(1,-1;c)}(E,b) = \dfrac{\mathbb{M}_{1,1}^{(1,-1;a)}(T_1)\mathbb{M}_{2,1}^{(b)}(T_2)}{2} - \dfrac{\mathbb{M}_{1,2}^{(1,-1;a)}(T_1)\mathbb{M}_{2,2}^{(b)}(T_2)}{2}$

$\boxed{\text{z112}}$ $\mathbb{G}_{2,2}^{(1,-1;c)}(E,b) = \dfrac{\sqrt{3}\mathbb{M}_{1,1}^{(1,-1;a)}(T_1)\mathbb{M}_{2,1}^{(b)}(T_2)}{6} + \dfrac{\sqrt{3}\mathbb{M}_{1,2}^{(1,-1;a)}(T_1)\mathbb{M}_{2,2}^{(b)}(T_2)}{6} - \dfrac{\sqrt{3}\mathbb{M}_{1,3}^{(1,-1;a)}(T_1)\mathbb{M}_{2,3}^{(b)}(T_2)}{3}$

$\boxed{\text{z254}}$ $\mathbb{Q}_{1,1}^{(1,-1;c)}(T_1,a) = \dfrac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{6} - \dfrac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{6}$

$\boxed{\text{z255}}$ $\mathbb{Q}_{1,2}^{(1,-1;c)}(T_1,a) = -\dfrac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{6} + \dfrac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{6}$

$\boxed{\text{z256}}$ $\quad \mathbb{Q}_{1,3}^{(1,-1;c)}(T_1,a) = \dfrac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{6} - \dfrac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{6}$

$\boxed{\text{z257}}$ $\quad \mathbb{Q}_{1,1}^{(1,-1;c)}(T_1,b) = \dfrac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_1)\mathbb{M}_{2,3}^{(b)}(T_2)}{6} + \dfrac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_1)\mathbb{M}_{2,2}^{(b)}(T_2)}{6}$

$\boxed{\text{z258}}$ $\quad \mathbb{Q}_{1,2}^{(1,-1;c)}(T_1,b) = \dfrac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_1)\mathbb{M}_{2,3}^{(b)}(T_2)}{6} + \dfrac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_1)\mathbb{M}_{2,1}^{(b)}(T_2)}{6}$

$\boxed{\text{z259}}$ $\quad \mathbb{Q}_{1,3}^{(1,-1;c)}(T_1,b) = \dfrac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_1)\mathbb{M}_{2,2}^{(b)}(T_2)}{6} + \dfrac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_1)\mathbb{M}_{2,1}^{(b)}(T_2)}{6}$

$\boxed{\text{z461}}$ $\quad \mathbb{Q}_{2,1}^{(c)}(T_2) = \dfrac{\sqrt{3}\mathbb{Q}_{0}^{(a)}(A_1)\mathbb{Q}_{2,1}^{(b)}(T_2)}{3}$

$\boxed{\text{z462}}$ $\quad \mathbb{Q}_{2,2}^{(c)}(T_2) = \dfrac{\sqrt{3}\mathbb{Q}_{0}^{(a)}(A_1)\mathbb{Q}_{2,2}^{(b)}(T_2)}{3}$

$\boxed{\text{z463}}$ $\quad \mathbb{Q}_{2,3}^{(c)}(T_2) = \dfrac{\sqrt{3}\mathbb{Q}_{0}^{(a)}(A_1)\mathbb{Q}_{2,3}^{(b)}(T_2)}{3}$

$\boxed{\text{z464}}$ $\quad \mathbb{Q}_{3,1}^{(1,-1;c)}(T_2) = \dfrac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_1)\mathbb{M}_{2,3}^{(b)}(T_2)}{6} - \dfrac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_1)\mathbb{M}_{2,2}^{(b)}(T_2)}{6}$

$\boxed{\text{z465}}$ $\quad \mathbb{Q}_{3,2}^{(1,-1;c)}(T_2) = -\dfrac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_1)\mathbb{M}_{2,3}^{(b)}(T_2)}{6} + \dfrac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_1)\mathbb{M}_{2,1}^{(b)}(T_2)}{6}$

$\boxed{\text{z466}}$ $\quad \mathbb{Q}_{3,3}^{(1,-1;c)}(T_2) = \dfrac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_1)\mathbb{M}_{2,2}^{(b)}(T_2)}{6} - \dfrac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_1)\mathbb{M}_{2,1}^{(b)}(T_2)}{6}$

$\boxed{\text{z467}}$ $\quad \mathbb{G}_{2,1}^{(1,-1;c)}(T_2) = \dfrac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{6} + \dfrac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{6}$

$\boxed{\text{z468}}$ $\quad \mathbb{G}_{2,2}^{(1,-1;c)}(T_2) = \dfrac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{6} + \dfrac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{6}$

$\boxed{\text{z469}}$ $\quad \mathbb{G}_{2,3}^{(1,-1;c)}(T_2) = \dfrac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{6} + \dfrac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{6}$

- 'A'-'A' bond-cluster : `A;A_002_1`

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

$\boxed{\text{z21}}$ $\mathbb{Q}_0^{(c)}(A_1) = \dfrac{\sqrt{3}\mathbb{T}_{1,1}^{(a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{3} + \dfrac{\sqrt{3}\mathbb{T}_{1,2}^{(a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{3} + \dfrac{\sqrt{3}\mathbb{T}_{1,3}^{(a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{3}$

$\boxed{\text{z22}}$ $\mathbb{Q}_0^{(1,-1;c)}(A_1) = \dfrac{\sqrt{3}\mathbb{M}_{2,1}^{(1,-1;a)}(T_2)\mathbb{M}_{2,1}^{(b)}(T_2)}{3} + \dfrac{\sqrt{3}\mathbb{M}_{2,2}^{(1,-1;a)}(T_2)\mathbb{M}_{2,2}^{(b)}(T_2)}{3} + \dfrac{\sqrt{3}\mathbb{M}_{2,3}^{(1,-1;a)}(T_2)\mathbb{M}_{2,3}^{(b)}(T_2)}{3}$

$\boxed{\text{z23}}$ $\mathbb{Q}_0^{(1,0;c)}(A_1) = \dfrac{\sqrt{3}\mathbb{T}_{1,1}^{(1,0;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{3} + \dfrac{\sqrt{3}\mathbb{T}_{1,2}^{(1,0;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{3} + \dfrac{\sqrt{3}\mathbb{T}_{1,3}^{(1,0;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{3}$

$\boxed{\text{z24}}$ $\mathbb{G}_0^{(1,-1;c)}(A_1) = \dfrac{\sqrt{5}\mathbb{G}_{2,1}^{(1,-1;a)}(E)\mathbb{Q}_{2,1}^{(b)}(E)}{5} + \dfrac{\sqrt{5}\mathbb{G}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(T_2)}{5} + \dfrac{\sqrt{5}\mathbb{G}_{2,2}^{(1,-1;a)}(E)\mathbb{Q}_{2,2}^{(b)}(E)}{5} + \dfrac{\sqrt{5}\mathbb{G}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(T_2)}{5} + \dfrac{\sqrt{5}\mathbb{G}_{2,3}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,3}^{(b)}(T_2)}{5}$

$\boxed{\text{z25}}$ $\mathbb{G}_4^{(1,-1;c)}(A_1) = \dfrac{\sqrt{30}\mathbb{G}_{2,1}^{(1,-1;a)}(E)\mathbb{Q}_{2,1}^{(b)}(E)}{10} - \dfrac{\sqrt{30}\mathbb{G}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(T_2)}{15} + \dfrac{\sqrt{30}\mathbb{G}_{2,2}^{(1,-1;a)}(E)\mathbb{Q}_{2,2}^{(b)}(E)}{10} - \dfrac{\sqrt{30}\mathbb{G}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(T_2)}{15} - \dfrac{\sqrt{30}\mathbb{G}_{2,3}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,3}^{(b)}(T_2)}{15}$

$\boxed{\text{z26}}$ $\mathbb{G}_0^{(1,1;c)}(A_1) = \mathbb{G}_0^{(1,1;a)}(A_1)\mathbb{Q}_0^{(b)}(A_1)$

$\boxed{\text{z46}}$ $\mathbb{Q}_3^{(c)}(A_2) = \dfrac{\sqrt{3}\mathbb{Q}_{1,1}^{(a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(T_2)}{3} + \dfrac{\sqrt{3}\mathbb{Q}_{1,2}^{(a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(T_2)}{3} + \dfrac{\sqrt{3}\mathbb{Q}_{1,3}^{(a)}(T_1)\mathbb{Q}_{2,3}^{(b)}(T_2)}{3}$

$\boxed{\text{z47}}$ $\mathbb{Q}_3^{(1,-1;c)}(A_2) = \dfrac{\sqrt{2}\mathbb{G}_{2,1}^{(1,-1;a)}(E)\mathbb{Q}_{2,2}^{(b)}(E)}{2} - \dfrac{\sqrt{2}\mathbb{G}_{2,2}^{(1,-1;a)}(E)\mathbb{Q}_{2,1}^{(b)}(E)}{2}$

$\boxed{\text{z48}}$ $\mathbb{Q}_3^{(1,0;c)}(A_2) = \dfrac{\sqrt{3}\mathbb{Q}_{1,1}^{(1,0;a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(T_2)}{3} + \dfrac{\sqrt{3}\mathbb{Q}_{1,2}^{(1,0;a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(T_2)}{3} + \dfrac{\sqrt{3}\mathbb{Q}_{1,3}^{(1,0;a)}(T_1)\mathbb{Q}_{2,3}^{(b)}(T_2)}{3}$

$\boxed{\text{z49}}$ $\mathbb{G}_3^{(c)}(A_2) = \dfrac{\sqrt{3}\mathbb{T}_{1,1}^{(a)}(T_1)\mathbb{M}_{2,1}^{(b)}(T_2)}{3} + \dfrac{\sqrt{3}\mathbb{T}_{1,2}^{(a)}(T_1)\mathbb{M}_{2,2}^{(b)}(T_2)}{3} + \dfrac{\sqrt{3}\mathbb{T}_{1,3}^{(a)}(T_1)\mathbb{M}_{2,3}^{(b)}(T_2)}{3}$

$\boxed{\text{z50}}$ $\mathbb{G}_3^{(1,-1;c)}(A_2) = \dfrac{\sqrt{3}\mathbb{M}_{2,1}^{(1,-1;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{3} + \dfrac{\sqrt{3}\mathbb{M}_{2,2}^{(1,-1;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{3} + \dfrac{\sqrt{3}\mathbb{M}_{2,3}^{(1,-1;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{3}$

$\boxed{\text{z51}}$ $\mathbb{G}_3^{(1,0;c)}(A_2) = \dfrac{\sqrt{3}\mathbb{T}_{1,1}^{(1,0;a)}(T_1)\mathbb{M}_{2,1}^{(b)}(T_2)}{3} + \dfrac{\sqrt{3}\mathbb{T}_{1,2}^{(1,0;a)}(T_1)\mathbb{M}_{2,2}^{(b)}(T_2)}{3} + \dfrac{\sqrt{3}\mathbb{T}_{1,3}^{(1,0;a)}(T_1)\mathbb{M}_{2,3}^{(b)}(T_2)}{3}$

$\boxed{\text{z113}}$ $\mathbb{Q}_{2,1}^{(c)}(E,a) = -\dfrac{\sqrt{3}\mathbb{T}_{1,1}^{(a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{6} - \dfrac{\sqrt{3}\mathbb{T}_{1,2}^{(a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{6} + \dfrac{\sqrt{3}\mathbb{T}_{1,3}^{(a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{3}$

$\boxed{\text{z114}}$ $\quad \mathbb{Q}_{2,2}^{(c)}(E,a) = \dfrac{\mathbb{T}_{1,1}^{(a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{2} - \dfrac{\mathbb{T}_{1,2}^{(a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{2}$

$\boxed{\text{z115}}$ $\quad \mathbb{Q}_{2,1}^{(c)}(E,b) = \dfrac{\mathbb{T}_{1,1}^{(a)}(T_1)\mathbb{M}_{2,1}^{(b)}(T_2)}{2} - \dfrac{\mathbb{T}_{1,2}^{(a)}(T_1)\mathbb{M}_{2,2}^{(b)}(T_2)}{2}$

$\boxed{\text{z116}}$ $\quad \mathbb{Q}_{2,2}^{(c)}(E,b) = \dfrac{\sqrt{3}\mathbb{T}_{1,1}^{(a)}(T_1)\mathbb{M}_{2,1}^{(b)}(T_2)}{6} + \dfrac{\sqrt{3}\mathbb{T}_{1,2}^{(a)}(T_1)\mathbb{M}_{2,2}^{(b)}(T_2)}{6} - \dfrac{\sqrt{3}\mathbb{T}_{1,3}^{(a)}(T_1)\mathbb{M}_{2,3}^{(b)}(T_2)}{3}$

$\boxed{\text{z117}}$ $\quad \mathbb{Q}_{2,1}^{(1,-1;c)}(E,a) = -\dfrac{\mathbb{M}_{2,1}^{(1,-1;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{2} + \dfrac{\mathbb{M}_{2,2}^{(1,-1;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{2}$

$\boxed{\text{z118}}$ $\quad \mathbb{Q}_{2,2}^{(1,-1;c)}(E,a) = -\dfrac{\sqrt{3}\mathbb{M}_{2,1}^{(1,-1;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{6} - \dfrac{\sqrt{3}\mathbb{M}_{2,2}^{(1,-1;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{6} + \dfrac{\sqrt{3}\mathbb{M}_{2,3}^{(1,-1;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{3}$

$\boxed{\text{z119}}$ $\quad \mathbb{Q}_{2,1}^{(1,-1;c)}(E,b) = \dfrac{\sqrt{3}\mathbb{M}_{2,1}^{(1,-1;a)}(T_2)\mathbb{M}_{2,1}^{(b)}(T_2)}{6} + \dfrac{\sqrt{3}\mathbb{M}_{2,2}^{(1,-1;a)}(T_2)\mathbb{M}_{2,2}^{(b)}(T_2)}{6} - \dfrac{\sqrt{3}\mathbb{M}_{2,3}^{(1,-1;a)}(T_2)\mathbb{M}_{2,3}^{(b)}(T_2)}{3}$

$\boxed{\text{z120}}$ $\quad \mathbb{Q}_{2,2}^{(1,-1;c)}(E,b) = -\dfrac{\mathbb{M}_{2,1}^{(1,-1;a)}(T_2)\mathbb{M}_{2,1}^{(b)}(T_2)}{2} + \dfrac{\mathbb{M}_{2,2}^{(1,-1;a)}(T_2)\mathbb{M}_{2,2}^{(b)}(T_2)}{2}$

$\boxed{\text{z121}}$ $\quad \mathbb{Q}_{2,1}^{(1,0;c)}(E,a) = -\dfrac{\sqrt{3}\mathbb{T}_{1,1}^{(1,0;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{6} - \dfrac{\sqrt{3}\mathbb{T}_{1,2}^{(1,0;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{6} + \dfrac{\sqrt{3}\mathbb{T}_{1,3}^{(1,0;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{3}$

$\boxed{\text{z122}}$ $\quad \mathbb{Q}_{2,2}^{(1,0;c)}(E,a) = \dfrac{\mathbb{T}_{1,1}^{(1,0;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{2} - \dfrac{\mathbb{T}_{1,2}^{(1,0;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{2}$

$\boxed{\text{z123}}$ $\quad \mathbb{Q}_{2,1}^{(1,0;c)}(E,b) = \dfrac{\mathbb{T}_{1,1}^{(1,0;a)}(T_1)\mathbb{M}_{2,1}^{(b)}(T_2)}{2} - \dfrac{\mathbb{T}_{1,2}^{(1,0;a)}(T_1)\mathbb{M}_{2,2}^{(b)}(T_2)}{2}$

$\boxed{\text{z124}}$ $\quad \mathbb{Q}_{2,2}^{(1,0;c)}(E,b) = \dfrac{\sqrt{3}\mathbb{T}_{1,1}^{(1,0;a)}(T_1)\mathbb{M}_{2,1}^{(b)}(T_2)}{6} + \dfrac{\sqrt{3}\mathbb{T}_{1,2}^{(1,0;a)}(T_1)\mathbb{M}_{2,2}^{(b)}(T_2)}{6} - \dfrac{\sqrt{3}\mathbb{T}_{1,3}^{(1,0;a)}(T_1)\mathbb{M}_{2,3}^{(b)}(T_2)}{3}$

$\boxed{\text{z125}}$ $\quad \mathbb{G}_{2,1}^{(c)}(E) = \dfrac{\mathbb{Q}_{1,1}^{(a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(T_2)}{2} - \dfrac{\mathbb{Q}_{1,2}^{(a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(T_2)}{2}$

$\boxed{\text{z126}}$ $\quad \mathbb{G}_{2,2}^{(c)}(E) = \dfrac{\sqrt{3}\mathbb{Q}_{1,1}^{(a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(T_2)}{6} + \dfrac{\sqrt{3}\mathbb{Q}_{1,2}^{(a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(T_2)}{6} - \dfrac{\sqrt{3}\mathbb{Q}_{1,3}^{(a)}(T_1)\mathbb{Q}_{2,3}^{(b)}(T_2)}{3}$

$\boxed{\text{z127}}$ $\quad \mathbb{G}_{2,1}^{(1,-1;c)}(E,a) = \dfrac{\sqrt{2}\mathbb{G}_{2,1}^{(1,-1;a)}(E)\mathbb{Q}_{0}^{(b)}(A_1)}{2}$

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$\boxed{\text{z128}}$ $\quad \mathbb{G}_{2,2}^{(1,-1;c)}(E,a) = \dfrac{\sqrt{2}\,\mathbb{G}_{2,2}^{(1,-1;a)}(E)\mathbb{Q}_0^{(b)}(A_1)}{2}$

$\boxed{\text{z129}}$ $\quad \mathbb{G}_{2,1}^{(1,-1;c)}(E,b) = \dfrac{\sqrt{7}\,\mathbb{G}_{2,1}^{(1,-1;a)}(E)\mathbb{Q}_{2,1}^{(b)}(E)}{7} + \dfrac{\sqrt{7}\,\mathbb{G}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(T_2)}{14} - \dfrac{\sqrt{7}\,\mathbb{G}_{2,2}^{(1,-1;a)}(E)\mathbb{Q}_{2,2}^{(b)}(E)}{7} + \dfrac{\sqrt{7}\,\mathbb{G}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(T_2)}{14} - \dfrac{\sqrt{7}\,\mathbb{G}_{2,3}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,3}^{(b)}(T_2)}{7}$

$\boxed{\text{z130}}$ $\quad \mathbb{G}_{2,2}^{(1,-1;c)}(E,b) = -\dfrac{\sqrt{7}\,\mathbb{G}_{2,1}^{(1,-1;a)}(E)\mathbb{Q}_{2,2}^{(b)}(E)}{7} - \dfrac{\sqrt{21}\,\mathbb{G}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(T_2)}{14} - \dfrac{\sqrt{7}\,\mathbb{G}_{2,2}^{(1,-1;a)}(E)\mathbb{Q}_{2,1}^{(b)}(E)}{7} + \dfrac{\sqrt{21}\,\mathbb{G}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(T_2)}{14}$

$\boxed{\text{z131}}$ $\quad \mathbb{G}_{4,1}^{(1,-1;c)}(E) = \dfrac{\sqrt{21}\,\mathbb{G}_{2,1}^{(1,-1;a)}(E)\mathbb{Q}_{2,1}^{(b)}(E)}{14} - \dfrac{\sqrt{21}\,\mathbb{G}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(T_2)}{21} - \dfrac{\sqrt{21}\,\mathbb{G}_{2,2}^{(1,-1;a)}(E)\mathbb{Q}_{2,2}^{(b)}(E)}{14} - \dfrac{\sqrt{21}\,\mathbb{G}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(T_2)}{21} + \dfrac{2\sqrt{21}\,\mathbb{G}_{2,3}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,3}^{(b)}(T_2)}{21}$

$\boxed{\text{z132}}$ $\quad \mathbb{G}_{4,2}^{(1,-1;c)}(E) = -\dfrac{\sqrt{21}\,\mathbb{G}_{2,1}^{(1,-1;a)}(E)\mathbb{Q}_{2,2}^{(b)}(E)}{14} + \dfrac{\sqrt{7}\,\mathbb{G}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(T_2)}{7} - \dfrac{\sqrt{21}\,\mathbb{G}_{2,2}^{(1,-1;a)}(E)\mathbb{Q}_{2,1}^{(b)}(E)}{14} - \dfrac{\sqrt{7}\,\mathbb{G}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(T_2)}{7}$

$\boxed{\text{z133}}$ $\quad \mathbb{G}_{2,1}^{(1,0;c)}(E) = \dfrac{\mathbb{Q}_{1,1}^{(1,0;a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(T_2)}{2} - \dfrac{\mathbb{Q}_{1,2}^{(1,0;a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(T_2)}{2}$

$\boxed{\text{z134}}$ $\quad \mathbb{G}_{2,2}^{(1,0;c)}(E) = \dfrac{\sqrt{3}\,\mathbb{Q}_{1,1}^{(1,0;a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(T_2)}{6} + \dfrac{\sqrt{3}\,\mathbb{Q}_{1,2}^{(1,0;a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(T_2)}{6} - \dfrac{\sqrt{3}\,\mathbb{Q}_{1,3}^{(1,0;a)}(T_1)\mathbb{Q}_{2,3}^{(b)}(T_2)}{3}$

$\boxed{\text{z135}}$ $\quad \mathbb{G}_{2,1}^{(1,1;c)}(E) = \dfrac{\sqrt{2}\,\mathbb{G}_0^{(1,1;a)}(A_1)\mathbb{Q}_{2,1}^{(b)}(E)}{2}$

$\boxed{\text{z136}}$ $\quad \mathbb{G}_{2,2}^{(1,1;c)}(E) = \dfrac{\sqrt{2}\,\mathbb{G}_0^{(1,1;a)}(A_1)\mathbb{Q}_{2,2}^{(b)}(E)}{2}$

$\boxed{\text{z260}}$ $\quad \mathbb{Q}_{1,1}^{(c)}(T_1,a) = \dfrac{\sqrt{3}\,\mathbb{Q}_{1,1}^{(a)}(T_1)\mathbb{Q}_0^{(b)}(A_1)}{3}$

$\boxed{\text{z261}}$ $\quad \mathbb{Q}_{1,2}^{(c)}(T_1,a) = \dfrac{\sqrt{3}\,\mathbb{Q}_{1,2}^{(a)}(T_1)\mathbb{Q}_0^{(b)}(A_1)}{3}$

$\boxed{\text{z262}}$ $\quad \mathbb{Q}_{1,3}^{(c)}(T_1,a) = \dfrac{\sqrt{3}\,\mathbb{Q}_{1,3}^{(a)}(T_1)\mathbb{Q}_0^{(b)}(A_1)}{3}$

$\boxed{\text{z263}}$ $\quad \mathbb{Q}_{1,1}^{(c)}(T_1,b) = -\dfrac{\sqrt{30}\,\mathbb{Q}_{1,1}^{(a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(E)}{30} + \dfrac{\sqrt{10}\,\mathbb{Q}_{1,1}^{(a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(E)}{10} + \dfrac{\sqrt{10}\,\mathbb{Q}_{1,2}^{(a)}(T_1)\mathbb{Q}_{2,3}^{(b)}(T_2)}{10} + \dfrac{\sqrt{10}\,\mathbb{Q}_{1,3}^{(a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(T_2)}{10}$

$\boxed{\text{z264}}$ $\quad \mathbb{Q}_{1,2}^{(c)}(T_1,b) = \dfrac{\sqrt{10}\,\mathbb{Q}_{1,1}^{(a)}(T_1)\mathbb{Q}_{2,3}^{(b)}(T_2)}{10} - \dfrac{\sqrt{30}\,\mathbb{Q}_{1,2}^{(a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(E)}{30} - \dfrac{\sqrt{10}\,\mathbb{Q}_{1,2}^{(a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(E)}{10} + \dfrac{\sqrt{10}\,\mathbb{Q}_{1,3}^{(a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(T_2)}{10}$

$$\boxed{\text{z265}} \quad \mathbb{Q}_{1,3}^{(c)}(T_1,b) = \frac{\sqrt{10}\mathbb{Q}_{1,1}^{(a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(T_2)}{10} + \frac{\sqrt{10}\mathbb{Q}_{1,2}^{(a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(T_2)}{10} + \frac{\sqrt{30}\mathbb{Q}_{1,3}^{(a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(E)}{15}$$

$$\boxed{\text{z266}} \quad \mathbb{Q}_{3,1}^{(c)}(T_1) = -\frac{\sqrt{5}\mathbb{Q}_{1,1}^{(a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(E)}{10} + \frac{\sqrt{15}\mathbb{Q}_{1,1}^{(a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(E)}{10} - \frac{\sqrt{15}\mathbb{Q}_{1,2}^{(a)}(T_1)\mathbb{Q}_{2,3}^{(b)}(T_2)}{15} - \frac{\sqrt{15}\mathbb{Q}_{1,3}^{(a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(T_2)}{15}$$

$$\boxed{\text{z267}} \quad \mathbb{Q}_{3,2}^{(c)}(T_1) = -\frac{\sqrt{15}\mathbb{Q}_{1,1}^{(a)}(T_1)\mathbb{Q}_{2,3}^{(b)}(T_2)}{15} - \frac{\sqrt{5}\mathbb{Q}_{1,2}^{(a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(E)}{10} - \frac{\sqrt{15}\mathbb{Q}_{1,2}^{(a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(E)}{10} - \frac{\sqrt{15}\mathbb{Q}_{1,3}^{(a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(T_2)}{15}$$

$$\boxed{\text{z268}} \quad \mathbb{Q}_{3,3}^{(c)}(T_1) = -\frac{\sqrt{15}\mathbb{Q}_{1,1}^{(a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(T_2)}{15} - \frac{\sqrt{15}\mathbb{Q}_{1,2}^{(a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(T_2)}{15} + \frac{\sqrt{5}\mathbb{Q}_{1,3}^{(a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(E)}{5}$$

$$\boxed{\text{z269}} \quad \mathbb{Q}_{1,1}^{(1,-1;c)}(T_1) = -\frac{\sqrt{10}\mathbb{G}_{2,1}^{(1,-1;a)}(E)\mathbb{Q}_{2,1}^{(b)}(T_2)}{10} + \frac{\sqrt{10}\mathbb{G}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(E)}{10} + \frac{\sqrt{30}\mathbb{G}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(E)}{30}$$
$$- \frac{\sqrt{30}\mathbb{G}_{2,2}^{(1,-1;a)}(E)\mathbb{Q}_{2,1}^{(b)}(T_2)}{30} - \frac{\sqrt{30}\mathbb{G}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,3}^{(b)}(T_2)}{30} + \frac{\sqrt{30}\mathbb{G}_{2,3}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(T_2)}{30}$$

$$\boxed{\text{z270}} \quad \mathbb{Q}_{1,2}^{(1,-1;c)}(T_1) = \frac{\sqrt{10}\mathbb{G}_{2,1}^{(1,-1;a)}(E)\mathbb{Q}_{2,2}^{(b)}(T_2)}{10} + \frac{\sqrt{30}\mathbb{G}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,3}^{(b)}(T_2)}{30} - \frac{\sqrt{30}\mathbb{G}_{2,2}^{(1,-1;a)}(E)\mathbb{Q}_{2,2}^{(b)}(T_2)}{30}$$
$$- \frac{\sqrt{10}\mathbb{G}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(E)}{10} + \frac{\sqrt{30}\mathbb{G}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(E)}{30} - \frac{\sqrt{30}\mathbb{G}_{2,3}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(T_2)}{30}$$

$$\boxed{\text{z271}} \quad \mathbb{Q}_{1,3}^{(1,-1;c)}(T_1) = -\frac{\sqrt{30}\mathbb{G}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(T_2)}{30} + \frac{\sqrt{30}\mathbb{G}_{2,2}^{(1,-1;a)}(E)\mathbb{Q}_{2,3}^{(b)}(T_2)}{15} + \frac{\sqrt{30}\mathbb{G}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(T_2)}{30} - \frac{\sqrt{30}\mathbb{G}_{2,3}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(E)}{15}$$

$$\boxed{\text{z272}} \quad \mathbb{Q}_{3,1}^{(1,-1;c)}(T_1) = \frac{\sqrt{10}\mathbb{G}_{2,1}^{(1,-1;a)}(E)\mathbb{Q}_{2,1}^{(b)}(T_2)}{20} - \frac{\sqrt{10}\mathbb{G}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(E)}{20} - \frac{\sqrt{30}\mathbb{G}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(E)}{60}$$
$$+ \frac{\sqrt{30}\mathbb{G}_{2,2}^{(1,-1;a)}(E)\mathbb{Q}_{2,1}^{(b)}(T_2)}{60} - \frac{\sqrt{30}\mathbb{G}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,3}^{(b)}(T_2)}{15} + \frac{\sqrt{30}\mathbb{G}_{2,3}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(T_2)}{15}$$

$$\boxed{\text{z273}} \quad \mathbb{Q}_{3,2}^{(1,-1;c)}(T_1) = -\frac{\sqrt{10}\mathbb{G}_{2,1}^{(1,-1;a)}(E)\mathbb{Q}_{2,2}^{(b)}(T_2)}{20} + \frac{\sqrt{30}\mathbb{G}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,3}^{(b)}(T_2)}{15} + \frac{\sqrt{30}\mathbb{G}_{2,2}^{(1,-1;a)}(E)\mathbb{Q}_{2,2}^{(b)}(T_2)}{60}$$
$$+ \frac{\sqrt{10}\mathbb{G}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(E)}{20} - \frac{\sqrt{30}\mathbb{G}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(E)}{60} - \frac{\sqrt{30}\mathbb{G}_{2,3}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(T_2)}{15}$$

$$\boxed{\text{z274}} \quad \mathbb{Q}_{3,3}^{(1,-1;c)}(T_1) = -\frac{\sqrt{30}\mathbb{G}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(T_2)}{15} - \frac{\sqrt{30}\mathbb{G}_{2,2}^{(1,-1;a)}(E)\mathbb{Q}_{2,3}^{(b)}(T_2)}{30} + \frac{\sqrt{30}\mathbb{G}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(T_2)}{15} + \frac{\sqrt{30}\mathbb{G}_{2,3}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(E)}{30}$$

$$\boxed{\text{z275}} \quad \mathbb{Q}_{4,1}^{(1,-1;c)}(T_1) = -\frac{\mathbb{M}_{2,1}^{(1,-1;a)}(E)\mathbb{M}_{2,1}^{(b)}(T_2)}{2} - \frac{\sqrt{3}\mathbb{M}_{2,2}^{(1,-1;a)}(E)\mathbb{M}_{2,1}^{(b)}(T_2)}{6}$$

$$\boxed{\text{z276}} \quad \mathbb{Q}_{4,2}^{(1,-1;c)}(T_1) = \frac{\mathbb{M}_{2,1}^{(1,-1;a)}(E)\mathbb{M}_{2,2}^{(b)}(T_2)}{2} - \frac{\sqrt{3}\mathbb{M}_{2,2}^{(1,-1;a)}(E)\mathbb{M}_{2,2}^{(b)}(T_2)}{6}$$

$$\boxed{\text{z277}} \quad \mathbb{Q}_{4,3}^{(1,-1;c)}(T_1) = \frac{\sqrt{3}\mathbb{M}_{2,2}^{(1,-1;a)}(E)\mathbb{M}_{2,3}^{(b)}(T_2)}{3}$$

$$\boxed{\text{z278}} \quad \mathbb{Q}_{1,1}^{(1,0;c)}(T_1,a) = \frac{\sqrt{3}\mathbb{Q}_{1,1}^{(1,0;a)}(T_1)\mathbb{Q}_0^{(b)}(A_1)}{3}$$

$$\boxed{\text{z279}} \quad \mathbb{Q}_{1,2}^{(1,0;c)}(T_1,a) = \frac{\sqrt{3}\mathbb{Q}_{1,2}^{(1,0;a)}(T_1)\mathbb{Q}_0^{(b)}(A_1)}{3}$$

$$\boxed{\text{z280}} \quad \mathbb{Q}_{1,3}^{(1,0;c)}(T_1,a) = \frac{\sqrt{3}\mathbb{Q}_{1,3}^{(1,0;a)}(T_1)\mathbb{Q}_0^{(b)}(A_1)}{3}$$

$$\boxed{\text{z281}} \quad \mathbb{Q}_{1,1}^{(1,0;c)}(T_1,b) = -\frac{\sqrt{30}\mathbb{Q}_{1,1}^{(1,0;a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(E)}{30} + \frac{\sqrt{10}\mathbb{Q}_{1,1}^{(1,0;a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(E)}{10} + \frac{\sqrt{10}\mathbb{Q}_{1,2}^{(1,0;a)}(T_1)\mathbb{Q}_{2,3}^{(b)}(T_2)}{10} + \frac{\sqrt{10}\mathbb{Q}_{1,3}^{(1,0;a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(T_2)}{10}$$

$$\boxed{\text{z282}} \quad \mathbb{Q}_{1,2}^{(1,0;c)}(T_1,b) = \frac{\sqrt{10}\mathbb{Q}_{1,1}^{(1,0;a)}(T_1)\mathbb{Q}_{2,3}^{(b)}(T_2)}{10} - \frac{\sqrt{30}\mathbb{Q}_{1,2}^{(1,0;a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(E)}{30} - \frac{\sqrt{10}\mathbb{Q}_{1,2}^{(1,0;a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(E)}{10} + \frac{\sqrt{10}\mathbb{Q}_{1,3}^{(1,0;a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(T_2)}{10}$$

$$\boxed{\text{z283}} \quad \mathbb{Q}_{1,3}^{(1,0;c)}(T_1,b) = \frac{\sqrt{10}\mathbb{Q}_{1,1}^{(1,0;a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(T_2)}{10} + \frac{\sqrt{10}\mathbb{Q}_{1,2}^{(1,0;a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(T_2)}{10} + \frac{\sqrt{30}\mathbb{Q}_{1,3}^{(1,0;a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(E)}{15}$$

$$\boxed{\text{z284}} \quad \mathbb{Q}_{3,1}^{(1,0;c)}(T_1) = -\frac{\sqrt{5}\mathbb{Q}_{1,1}^{(1,0;a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(E)}{10} + \frac{\sqrt{15}\mathbb{Q}_{1,1}^{(1,0;a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(E)}{10} - \frac{\sqrt{15}\mathbb{Q}_{1,2}^{(1,0;a)}(T_1)\mathbb{Q}_{2,3}^{(b)}(T_2)}{15} - \frac{\sqrt{15}\mathbb{Q}_{1,3}^{(1,0;a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(T_2)}{15}$$

$$\boxed{\text{z285}} \quad \mathbb{Q}_{3,2}^{(1,0;c)}(T_1) = -\frac{\sqrt{15}\mathbb{Q}_{1,1}^{(1,0;a)}(T_1)\mathbb{Q}_{2,3}^{(b)}(T_2)}{15} - \frac{\sqrt{5}\mathbb{Q}_{1,2}^{(1,0;a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(E)}{10} - \frac{\sqrt{15}\mathbb{Q}_{1,2}^{(1,0;a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(E)}{10} - \frac{\sqrt{15}\mathbb{Q}_{1,3}^{(1,0;a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(T_2)}{15}$$

$$\boxed{\text{z286}} \quad \mathbb{Q}_{3,3}^{(1,0;c)}(T_1) = -\frac{\sqrt{15}\mathbb{Q}_{1,1}^{(1,0;a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(T_2)}{15} - \frac{\sqrt{15}\mathbb{Q}_{1,2}^{(1,0;a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(T_2)}{15} + \frac{\sqrt{5}\mathbb{Q}_{1,3}^{(1,0;a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(E)}{5}$$

$$\boxed{\text{z287}} \quad \mathbb{G}_{1,1}^{(c)}(T_1,a) = \frac{\sqrt{6}\mathbb{T}_{1,2}^{(a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{6} - \frac{\sqrt{6}\mathbb{T}_{1,3}^{(a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{6}$$

$$\boxed{\text{z288}} \quad \mathbb{G}_{1,2}^{(c)}(T_1,a) = -\frac{\sqrt{6}\mathbb{T}_{1,1}^{(a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{6} + \frac{\sqrt{6}\mathbb{T}_{1,3}^{(a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{6}$$

$$\boxed{\text{z289}} \quad \mathbb{G}_{1,3}^{(c)}(T_1,a) = \frac{\sqrt{6}\mathbb{T}_{1,1}^{(a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{6} - \frac{\sqrt{6}\mathbb{T}_{1,2}^{(a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{6}$$

$$\boxed{\text{z290}} \quad \mathbb{G}_{1,1}^{(c)}(T_1, b) = \frac{\sqrt{6}\mathbb{T}_{1,2}^{(a)}(T_1)\mathbb{M}_{2,3}^{(b)}(T_2)}{6} + \frac{\sqrt{6}\mathbb{T}_{1,3}^{(a)}(T_1)\mathbb{M}_{2,2}^{(b)}(T_2)}{6}$$

$$\boxed{\text{z291}} \quad \mathbb{G}_{1,2}^{(c)}(T_1, b) = \frac{\sqrt{6}\mathbb{T}_{1,1}^{(a)}(T_1)\mathbb{M}_{2,3}^{(b)}(T_2)}{6} + \frac{\sqrt{6}\mathbb{T}_{1,3}^{(a)}(T_1)\mathbb{M}_{2,1}^{(b)}(T_2)}{6}$$

$$\boxed{\text{z292}} \quad \mathbb{G}_{1,3}^{(c)}(T_1, b) = \frac{\sqrt{6}\mathbb{T}_{1,1}^{(a)}(T_1)\mathbb{M}_{2,2}^{(b)}(T_2)}{6} + \frac{\sqrt{6}\mathbb{T}_{1,2}^{(a)}(T_1)\mathbb{M}_{2,1}^{(b)}(T_2)}{6}$$

$$\boxed{\text{z293}} \quad \mathbb{G}_{1,1}^{(1,-1;c)}(T_1, a) = -\frac{\sqrt{30}\mathbb{M}_{2,1}^{(1,-1;a)}(E)\mathbb{T}_{1,1}^{(b)}(T_1)}{30} + \frac{\sqrt{10}\mathbb{M}_{2,2}^{(1,-1;a)}(E)\mathbb{T}_{1,1}^{(b)}(T_1)}{10} + \frac{\sqrt{10}\mathbb{M}_{2,2}^{(1,-1;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{10} + \frac{\sqrt{10}\mathbb{M}_{2,3}^{(1,-1;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{10}$$

$$\boxed{\text{z294}} \quad \mathbb{G}_{1,2}^{(1,-1;c)}(T_1, a) = -\frac{\sqrt{30}\mathbb{M}_{2,1}^{(1,-1;a)}(E)\mathbb{T}_{1,2}^{(b)}(T_1)}{30} + \frac{\sqrt{10}\mathbb{M}_{2,1}^{(1,-1;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{10} - \frac{\sqrt{10}\mathbb{M}_{2,2}^{(1,-1;a)}(E)\mathbb{T}_{1,2}^{(b)}(T_1)}{10} + \frac{\sqrt{10}\mathbb{M}_{2,3}^{(1,-1;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{10}$$

$$\boxed{\text{z295}} \quad \mathbb{G}_{1,3}^{(1,-1;c)}(T_1, a) = \frac{\sqrt{30}\mathbb{M}_{2,1}^{(1,-1;a)}(E)\mathbb{T}_{1,3}^{(b)}(T_1)}{15} + \frac{\sqrt{10}\mathbb{M}_{2,1}^{(1,-1;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{10} + \frac{\sqrt{10}\mathbb{M}_{2,2}^{(1,-1;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{10}$$

$$\boxed{\text{z296}} \quad \mathbb{G}_{1,1}^{(1,-1;c)}(T_1, b) = -\frac{\sqrt{6}\mathbb{M}_{2,2}^{(1,-1;a)}(T_2)\mathbb{M}_{2,3}^{(b)}(T_2)}{6} + \frac{\sqrt{6}\mathbb{M}_{2,3}^{(1,-1;a)}(T_2)\mathbb{M}_{2,2}^{(b)}(T_2)}{6}$$

$$\boxed{\text{z297}} \quad \mathbb{G}_{1,2}^{(1,-1;c)}(T_1, b) = \frac{\sqrt{6}\mathbb{M}_{2,1}^{(1,-1;a)}(T_2)\mathbb{M}_{2,3}^{(b)}(T_2)}{6} - \frac{\sqrt{6}\mathbb{M}_{2,3}^{(1,-1;a)}(T_2)\mathbb{M}_{2,1}^{(b)}(T_2)}{6}$$

$$\boxed{\text{z298}} \quad \mathbb{G}_{1,3}^{(1,-1;c)}(T_1, b) = -\frac{\sqrt{6}\mathbb{M}_{2,1}^{(1,-1;a)}(T_2)\mathbb{M}_{2,2}^{(b)}(T_2)}{6} + \frac{\sqrt{6}\mathbb{M}_{2,2}^{(1,-1;a)}(T_2)\mathbb{M}_{2,1}^{(b)}(T_2)}{6}$$

$$\boxed{\text{z299}} \quad \mathbb{G}_{3,1}^{(1,-1;c)}(T_1) = -\frac{\sqrt{5}\mathbb{M}_{2,1}^{(1,-1;a)}(E)\mathbb{T}_{1,1}^{(b)}(T_1)}{10} + \frac{\sqrt{15}\mathbb{M}_{2,2}^{(1,-1;a)}(E)\mathbb{T}_{1,1}^{(b)}(T_1)}{10} - \frac{\sqrt{15}\mathbb{M}_{2,2}^{(1,-1;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{15} - \frac{\sqrt{15}\mathbb{M}_{2,3}^{(1,-1;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{15}$$

$$\boxed{\text{z300}} \quad \mathbb{G}_{3,2}^{(1,-1;c)}(T_1) = -\frac{\sqrt{5}\mathbb{M}_{2,1}^{(1,-1;a)}(E)\mathbb{T}_{1,2}^{(b)}(T_1)}{10} - \frac{\sqrt{15}\mathbb{M}_{2,1}^{(1,-1;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{15} - \frac{\sqrt{15}\mathbb{M}_{2,2}^{(1,-1;a)}(E)\mathbb{T}_{1,2}^{(b)}(T_1)}{10} - \frac{\sqrt{15}\mathbb{M}_{2,3}^{(1,-1;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{15}$$

$$\boxed{\text{z301}} \quad \mathbb{G}_{3,3}^{(1,-1;c)}(T_1) = \frac{\sqrt{5}\mathbb{M}_{2,1}^{(1,-1;a)}(E)\mathbb{T}_{1,3}^{(b)}(T_1)}{5} - \frac{\sqrt{15}\mathbb{M}_{2,1}^{(1,-1;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{15} - \frac{\sqrt{15}\mathbb{M}_{2,2}^{(1,-1;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{15}$$

$$\boxed{\text{z302}} \quad \mathbb{G}_{4,1}^{(1,-1;c)}(T_1) = -\frac{\sqrt{2}\mathbb{G}_{2,1}^{(1,-1;a)}(E)\mathbb{Q}_{2,1}^{(b)}(T_2)}{4} - \frac{\sqrt{2}\mathbb{G}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(E)}{4} - \frac{\sqrt{6}\mathbb{G}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(E)}{12} - \frac{\sqrt{6}\mathbb{G}_{2,2}^{(1,-1;a)}(E)\mathbb{Q}_{2,1}^{(b)}(T_2)}{12}$$

$$\boxed{\text{z303}} \quad \mathbb{G}_{4,2}^{(1,-1;c)}(T_1) = \frac{\sqrt{2}\mathbb{G}_{2,1}^{(1,-1;a)}(E)\mathbb{Q}_{2,2}^{(b)}(T_2)}{4} - \frac{\sqrt{6}\mathbb{G}_{2,2}^{(1,-1;a)}(E)\mathbb{Q}_{2,2}^{(b)}(T_2)}{12} + \frac{\sqrt{2}\mathbb{G}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(E)}{4} - \frac{\sqrt{6}\mathbb{G}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(E)}{12}$$

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z304 $\mathbb{G}_{4,3}^{(1,-1;c)}(T_1) = \dfrac{\sqrt{6}\mathbb{G}_{2,2}^{(1,-1;a)}(E)\mathbb{Q}_{2,3}^{(b)}(T_2)}{6} + \dfrac{\sqrt{6}\mathbb{G}_{2,3}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(E)}{6}$

z305 $\mathbb{G}_{1,1}^{(1,0;c)}(T_1,a) = \dfrac{\sqrt{6}\mathbb{T}_{1,2}^{(1,0;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{6} - \dfrac{\sqrt{6}\mathbb{T}_{1,3}^{(1,0;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{6}$

z306 $\mathbb{G}_{1,2}^{(1,0;c)}(T_1,a) = -\dfrac{\sqrt{6}\mathbb{T}_{1,1}^{(1,0;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{6} + \dfrac{\sqrt{6}\mathbb{T}_{1,3}^{(1,0;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{6}$

z307 $\mathbb{G}_{1,3}^{(1,0;c)}(T_1,a) = \dfrac{\sqrt{6}\mathbb{T}_{1,1}^{(1,0;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{6} - \dfrac{\sqrt{6}\mathbb{T}_{1,2}^{(1,0;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{6}$

z308 $\mathbb{G}_{1,1}^{(1,0;c)}(T_1,b) = \dfrac{\sqrt{6}\mathbb{T}_{1,2}^{(1,0;a)}(T_1)\mathbb{M}_{2,3}^{(b)}(T_2)}{6} + \dfrac{\sqrt{6}\mathbb{T}_{1,3}^{(1,0;a)}(T_1)\mathbb{M}_{2,2}^{(b)}(T_2)}{6}$

z309 $\mathbb{G}_{1,2}^{(1,0;c)}(T_1,b) = \dfrac{\sqrt{6}\mathbb{T}_{1,1}^{(1,0;a)}(T_1)\mathbb{M}_{2,3}^{(b)}(T_2)}{6} + \dfrac{\sqrt{6}\mathbb{T}_{1,3}^{(1,0;a)}(T_1)\mathbb{M}_{2,1}^{(b)}(T_2)}{6}$

z310 $\mathbb{G}_{1,3}^{(1,0;c)}(T_1,b) = \dfrac{\sqrt{6}\mathbb{T}_{1,1}^{(1,0;a)}(T_1)\mathbb{M}_{2,2}^{(b)}(T_2)}{6} + \dfrac{\sqrt{6}\mathbb{T}_{1,2}^{(1,0;a)}(T_1)\mathbb{M}_{2,1}^{(b)}(T_2)}{6}$

z311 $\mathbb{G}_{1,1}^{(1,1;c)}(T_1) = \dfrac{\sqrt{3}\mathbb{M}_{0}^{(1,1;a)}(A_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{3}$

z312 $\mathbb{G}_{1,2}^{(1,1;c)}(T_1) = \dfrac{\sqrt{3}\mathbb{M}_{0}^{(1,1;a)}(A_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{3}$

z313 $\mathbb{G}_{1,3}^{(1,1;c)}(T_1) = \dfrac{\sqrt{3}\mathbb{M}_{0}^{(1,1;a)}(A_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{3}$

z470 $\mathbb{Q}_{2,1}^{(c)}(T_2,a) = \dfrac{\sqrt{6}\mathbb{T}_{1,2}^{(a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{6} + \dfrac{\sqrt{6}\mathbb{T}_{1,3}^{(a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{6}$

z471 $\mathbb{Q}_{2,2}^{(c)}(T_2,a) = \dfrac{\sqrt{6}\mathbb{T}_{1,1}^{(a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{6} + \dfrac{\sqrt{6}\mathbb{T}_{1,3}^{(a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{6}$

z472 $\mathbb{Q}_{2,3}^{(c)}(T_2,a) = \dfrac{\sqrt{6}\mathbb{T}_{1,1}^{(a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{6} + \dfrac{\sqrt{6}\mathbb{T}_{1,2}^{(a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{6}$

z473 $\mathbb{Q}_{2,1}^{(c)}(T_2,b) = -\dfrac{\sqrt{6}\mathbb{T}_{1,2}^{(a)}(T_1)\mathbb{M}_{2,3}^{(b)}(T_2)}{6} + \dfrac{\sqrt{6}\mathbb{T}_{1,3}^{(a)}(T_1)\mathbb{M}_{2,2}^{(b)}(T_2)}{6}$

$$\boxed{\text{z474}} \quad \mathbb{Q}_{2,2}^{(c)}(T_2,b) = \frac{\sqrt{6}\mathbb{T}_{1,1}^{(a)}(T_1)\mathbb{M}_{2,3}^{(b)}(T_2)}{6} - \frac{\sqrt{6}\mathbb{T}_{1,3}^{(a)}(T_1)\mathbb{M}_{2,1}^{(b)}(T_2)}{6}$$

$$\boxed{\text{z475}} \quad \mathbb{Q}_{2,3}^{(c)}(T_2,b) = -\frac{\sqrt{6}\mathbb{T}_{1,1}^{(a)}(T_1)\mathbb{M}_{2,2}^{(b)}(T_2)}{6} + \frac{\sqrt{6}\mathbb{T}_{1,2}^{(a)}(T_1)\mathbb{M}_{2,1}^{(b)}(T_2)}{6}$$

$$\boxed{\text{z476}} \quad \mathbb{Q}_{3,1}^{(c)}(T_2) = -\frac{\sqrt{3}\mathbb{Q}_{1,1}^{(a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(E)}{6} - \frac{\mathbb{Q}_{1,1}^{(a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(E)}{6} + \frac{\mathbb{Q}_{1,2}^{(a)}(T_1)\mathbb{Q}_{2,3}^{(b)}(T_2)}{3} - \frac{\mathbb{Q}_{1,3}^{(a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(T_2)}{3}$$

$$\boxed{\text{z477}} \quad \mathbb{Q}_{3,2}^{(c)}(T_2) = -\frac{\mathbb{Q}_{1,1}^{(a)}(T_1)\mathbb{Q}_{2,3}^{(b)}(T_2)}{3} + \frac{\sqrt{3}\mathbb{Q}_{1,2}^{(a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(E)}{6} - \frac{\mathbb{Q}_{1,2}^{(a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(E)}{6} + \frac{\mathbb{Q}_{1,3}^{(a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(T_2)}{3}$$

$$\boxed{\text{z478}} \quad \mathbb{Q}_{3,3}^{(c)}(T_2) = \frac{\mathbb{Q}_{1,1}^{(a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(T_2)}{3} - \frac{\mathbb{Q}_{1,2}^{(a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(T_2)}{3} + \frac{\mathbb{Q}_{1,3}^{(a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(E)}{3}$$

$$\boxed{\text{z479}} \quad \mathbb{Q}_{2,1}^{(1,-1;c)}(T_2,a) = \frac{\sqrt{6}\mathbb{M}_{2,1}^{(1,-1;a)}(E)\mathbb{T}_{1,1}^{(b)}(T_1)}{6} + \frac{\sqrt{2}\mathbb{M}_{2,2}^{(1,-1;a)}(E)\mathbb{T}_{1,1}^{(b)}(T_1)}{6} - \frac{\sqrt{2}\mathbb{M}_{2,2}^{(1,-1;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{6} + \frac{\sqrt{2}\mathbb{M}_{2,3}^{(1,-1;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{6}$$

$$\boxed{\text{z480}} \quad \mathbb{Q}_{2,2}^{(1,-1;c)}(T_2,a) = -\frac{\sqrt{6}\mathbb{M}_{2,1}^{(1,-1;a)}(E)\mathbb{T}_{1,2}^{(b)}(T_1)}{6} + \frac{\sqrt{2}\mathbb{M}_{2,1}^{(1,-1;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{6} + \frac{\sqrt{2}\mathbb{M}_{2,2}^{(1,-1;a)}(E)\mathbb{T}_{1,2}^{(b)}(T_1)}{6} - \frac{\sqrt{2}\mathbb{M}_{2,3}^{(1,-1;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{6}$$

$$\boxed{\text{z481}} \quad \mathbb{Q}_{2,3}^{(1,-1;c)}(T_2,a) = -\frac{\sqrt{2}\mathbb{M}_{2,1}^{(1,-1;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{6} - \frac{\sqrt{2}\mathbb{M}_{2,2}^{(1,-1;a)}(E)\mathbb{T}_{1,3}^{(b)}(T_1)}{3} + \frac{\sqrt{2}\mathbb{M}_{2,2}^{(1,-1;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{6}$$

$$\boxed{\text{z482}} \quad \mathbb{Q}_{2,1}^{(1,-1;c)}(T_2,b) = \frac{\sqrt{30}\mathbb{M}_{2,1}^{(1,-1;a)}(E)\mathbb{M}_{2,1}^{(b)}(T_2)}{30} - \frac{\sqrt{10}\mathbb{M}_{2,2}^{(1,-1;a)}(E)\mathbb{M}_{2,1}^{(b)}(T_2)}{10} + \frac{\sqrt{10}\mathbb{M}_{2,2}^{(1,-1;a)}(T_2)\mathbb{M}_{2,3}^{(b)}(T_2)}{10} + \frac{\sqrt{10}\mathbb{M}_{2,3}^{(1,-1;a)}(T_2)\mathbb{M}_{2,2}^{(b)}(T_2)}{10}$$

$$\boxed{\text{z483}} \quad \mathbb{Q}_{2,2}^{(1,-1;c)}(T_2,b) = \frac{\sqrt{30}\mathbb{M}_{2,1}^{(1,-1;a)}(E)\mathbb{M}_{2,2}^{(b)}(T_2)}{30} + \frac{\sqrt{10}\mathbb{M}_{2,1}^{(1,-1;a)}(T_2)\mathbb{M}_{2,3}^{(b)}(T_2)}{10} + \frac{\sqrt{10}\mathbb{M}_{2,2}^{(1,-1;a)}(E)\mathbb{M}_{2,2}^{(b)}(T_2)}{10} + \frac{\sqrt{10}\mathbb{M}_{2,3}^{(1,-1;a)}(T_2)\mathbb{M}_{2,1}^{(b)}(T_2)}{10}$$

$$\boxed{\text{z484}} \quad \mathbb{Q}_{2,3}^{(1,-1;c)}(T_2,b) = -\frac{\sqrt{30}\mathbb{M}_{2,1}^{(1,-1;a)}(E)\mathbb{M}_{2,3}^{(b)}(T_2)}{15} + \frac{\sqrt{10}\mathbb{M}_{2,1}^{(1,-1;a)}(T_2)\mathbb{M}_{2,2}^{(b)}(T_2)}{10} + \frac{\sqrt{10}\mathbb{M}_{2,2}^{(1,-1;a)}(T_2)\mathbb{M}_{2,1}^{(b)}(T_2)}{10}$$

$$\boxed{\text{z485}} \quad \mathbb{Q}_{3,1}^{(1,-1;c)}(T_2) = \frac{\sqrt{6}\mathbb{G}_{2,1}^{(1,-1;a)}(E)\mathbb{Q}_{2,1}^{(b)}(T_2)}{12} - \frac{\sqrt{6}\mathbb{G}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(E)}{12} + \frac{\sqrt{2}\mathbb{G}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(E)}{4} - \frac{\sqrt{2}\mathbb{G}_{2,2}^{(1,-1;a)}(E)\mathbb{Q}_{2,1}^{(b)}(T_2)}{4}$$

$$\boxed{\text{z486}} \quad \mathbb{Q}_{3,2}^{(1,-1;c)}(T_2) = \frac{\sqrt{6}\mathbb{G}_{2,1}^{(1,-1;a)}(E)\mathbb{Q}_{2,2}^{(b)}(T_2)}{12} + \frac{\sqrt{2}\mathbb{G}_{2,2}^{(1,-1;a)}(E)\mathbb{Q}_{2,2}^{(b)}(T_2)}{4} - \frac{\sqrt{6}\mathbb{G}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(E)}{12} - \frac{\sqrt{2}\mathbb{G}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(E)}{4}$$

$$\boxed{\text{z487}} \quad \mathbb{Q}_{3,3}^{(1,-1;c)}(T_2) = -\frac{\sqrt{6}\mathbb{G}_{2,1}^{(1,-1;a)}(E)\mathbb{Q}_{2,3}^{(b)}(T_2)}{6} + \frac{\sqrt{6}\mathbb{G}_{2,3}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(E)}{6}$$

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$$\boxed{\text{z488}} \quad \mathbb{Q}_{4,1}^{(1,-1;c)}(T_2) = -\frac{\sqrt{5}\mathbb{M}_{2,1}^{(1,-1;a)}(E)\mathbb{M}_{2,1}^{(b)}(T_2)}{10} + \frac{\sqrt{15}\mathbb{M}_{2,2}^{(1,-1;a)}(E)\mathbb{M}_{2,1}^{(b)}(T_2)}{10} + \frac{\sqrt{15}\mathbb{M}_{2,2}^{(1,-1;a)}(T_2)\mathbb{M}_{2,3}^{(b)}(T_2)}{15} + \frac{\sqrt{15}\mathbb{M}_{2,3}^{(1,-1;a)}(T_2)\mathbb{M}_{2,2}^{(b)}(T_2)}{15}$$

$$\boxed{\text{z489}} \quad \mathbb{Q}_{4,2}^{(1,-1;c)}(T_2) = -\frac{\sqrt{5}\mathbb{M}_{2,1}^{(1,-1;a)}(E)\mathbb{M}_{2,2}^{(b)}(T_2)}{10} + \frac{\sqrt{15}\mathbb{M}_{2,1}^{(1,-1;a)}(T_2)\mathbb{M}_{2,3}^{(b)}(T_2)}{15} - \frac{\sqrt{15}\mathbb{M}_{2,2}^{(1,-1;a)}(E)\mathbb{M}_{2,2}^{(b)}(T_2)}{10} + \frac{\sqrt{15}\mathbb{M}_{2,3}^{(1,-1;a)}(T_2)\mathbb{M}_{2,1}^{(b)}(T_2)}{15}$$

$$\boxed{\text{z490}} \quad \mathbb{Q}_{4,3}^{(1,-1;c)}(T_2) = \frac{\sqrt{5}\mathbb{M}_{2,1}^{(1,-1;a)}(E)\mathbb{M}_{2,3}^{(b)}(T_2)}{5} + \frac{\sqrt{15}\mathbb{M}_{2,1}^{(1,-1;a)}(T_2)\mathbb{M}_{2,2}^{(b)}(T_2)}{15} + \frac{\sqrt{15}\mathbb{M}_{2,2}^{(1,-1;a)}(T_2)\mathbb{M}_{2,1}^{(b)}(T_2)}{15}$$

$$\boxed{\text{z491}} \quad \mathbb{Q}_{2,1}^{(1,0;c)}(T_2,a) = \frac{\sqrt{6}\mathbb{T}_{1,2}^{(1,0;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{6} + \frac{\sqrt{6}\mathbb{T}_{1,3}^{(1,0;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{6}$$

$$\boxed{\text{z492}} \quad \mathbb{Q}_{2,2}^{(1,0;c)}(T_2,a) = \frac{\sqrt{6}\mathbb{T}_{1,1}^{(1,0;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{6} + \frac{\sqrt{6}\mathbb{T}_{1,3}^{(1,0;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{6}$$

$$\boxed{\text{z493}} \quad \mathbb{Q}_{2,3}^{(1,0;c)}(T_2,a) = \frac{\sqrt{6}\mathbb{T}_{1,1}^{(1,0;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{6} + \frac{\sqrt{6}\mathbb{T}_{1,2}^{(1,0;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{6}$$

$$\boxed{\text{z494}} \quad \mathbb{Q}_{2,1}^{(1,0;c)}(T_2,b) = -\frac{\sqrt{6}\mathbb{T}_{1,2}^{(1,0;a)}(T_1)\mathbb{M}_{2,3}^{(b)}(T_2)}{6} + \frac{\sqrt{6}\mathbb{T}_{1,3}^{(1,0;a)}(T_1)\mathbb{M}_{2,2}^{(b)}(T_2)}{6}$$

$$\boxed{\text{z495}} \quad \mathbb{Q}_{2,2}^{(1,0;c)}(T_2,b) = \frac{\sqrt{6}\mathbb{T}_{1,1}^{(1,0;a)}(T_1)\mathbb{M}_{2,3}^{(b)}(T_2)}{6} - \frac{\sqrt{6}\mathbb{T}_{1,3}^{(1,0;a)}(T_1)\mathbb{M}_{2,1}^{(b)}(T_2)}{6}$$

$$\boxed{\text{z496}} \quad \mathbb{Q}_{2,3}^{(1,0;c)}(T_2,b) = -\frac{\sqrt{6}\mathbb{T}_{1,1}^{(1,0;a)}(T_1)\mathbb{M}_{2,2}^{(b)}(T_2)}{6} + \frac{\sqrt{6}\mathbb{T}_{1,2}^{(1,0;a)}(T_1)\mathbb{M}_{2,1}^{(b)}(T_2)}{6}$$

$$\boxed{\text{z497}} \quad \mathbb{Q}_{3,1}^{(1,0;c)}(T_2) = -\frac{\sqrt{3}\mathbb{Q}_{1,1}^{(1,0;a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(E)}{6} - \frac{\mathbb{Q}_{1,1}^{(1,0;a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(E)}{6} + \frac{\mathbb{Q}_{1,2}^{(1,0;a)}(T_1)\mathbb{Q}_{2,3}^{(b)}(T_2)}{3} - \frac{\mathbb{Q}_{1,3}^{(1,0;a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(T_2)}{3}$$

$$\boxed{\text{z498}} \quad \mathbb{Q}_{3,2}^{(1,0;c)}(T_2) = -\frac{\mathbb{Q}_{1,1}^{(1,0;a)}(T_1)\mathbb{Q}_{2,3}^{(b)}(T_2)}{3} + \frac{\sqrt{3}\mathbb{Q}_{1,2}^{(1,0;a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(E)}{6} - \frac{\mathbb{Q}_{1,2}^{(1,0;a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(E)}{6} + \frac{\mathbb{Q}_{1,3}^{(1,0;a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(T_2)}{3}$$

$$\boxed{\text{z499}} \quad \mathbb{Q}_{3,3}^{(1,0;c)}(T_2) = \frac{\mathbb{Q}_{1,1}^{(1,0;a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(T_2)}{3} - \frac{\mathbb{Q}_{1,2}^{(1,0;a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(T_2)}{3} + \frac{\mathbb{Q}_{1,3}^{(1,0;a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(E)}{3}$$

$$\boxed{\text{z500}} \quad \mathbb{Q}_{2,1}^{(1,1;c)}(T_2) = \frac{\sqrt{3}\mathbb{M}_0^{(1,1;a)}(A_1)\mathbb{M}_{2,1}^{(b)}(T_2)}{3}$$

$$\boxed{\text{z501}} \quad \mathbb{Q}_{2,2}^{(1,1;c)}(T_2) = \frac{\sqrt{3}\mathbb{M}_0^{(1,1;a)}(A_1)\mathbb{M}_{2,2}^{(b)}(T_2)}{3}$$

$$\boxed{\text{z502}} \quad \mathbb{Q}_{2,3}^{(1,1;c)}(T_2) = \frac{\sqrt{3}\mathbb{M}_0^{(1,1;a)}(A_1)\mathbb{M}_{2,3}^{(b)}(T_2)}{3}$$

$$\boxed{\text{z503}} \quad \mathbb{G}_{2,1}^{(c)}(T_2) = -\frac{\sqrt{6}\mathbb{Q}_{1,1}^{(a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(E)}{6} - \frac{\sqrt{2}\mathbb{Q}_{1,1}^{(a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(E)}{6} - \frac{\sqrt{2}\mathbb{Q}_{1,2}^{(a)}(T_1)\mathbb{Q}_{2,3}^{(b)}(T_2)}{6} + \frac{\sqrt{2}\mathbb{Q}_{1,3}^{(a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(T_2)}{6}$$

$$\boxed{\text{z504}} \quad \mathbb{G}_{2,2}^{(c)}(T_2) = \frac{\sqrt{2}\mathbb{Q}_{1,1}^{(a)}(T_1)\mathbb{Q}_{2,3}^{(b)}(T_2)}{6} + \frac{\sqrt{6}\mathbb{Q}_{1,2}^{(a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(E)}{6} - \frac{\sqrt{2}\mathbb{Q}_{1,2}^{(a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(E)}{6} - \frac{\sqrt{2}\mathbb{Q}_{1,3}^{(a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(T_2)}{6}$$

$$\boxed{\text{z505}} \quad \mathbb{G}_{2,3}^{(c)}(T_2) = -\frac{\sqrt{2}\mathbb{Q}_{1,1}^{(a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(T_2)}{6} + \frac{\sqrt{2}\mathbb{Q}_{1,2}^{(a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(T_2)}{6} + \frac{\sqrt{2}\mathbb{Q}_{1,3}^{(a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(E)}{3}$$

$$\boxed{\text{z506}} \quad \mathbb{G}_{2,1}^{(1,-1;c)}(T_2,a) = \frac{\sqrt{3}\mathbb{G}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_0^{(b)}(A_1)}{3}$$

$$\boxed{\text{z507}} \quad \mathbb{G}_{2,2}^{(1,-1;c)}(T_2,a) = \frac{\sqrt{3}\mathbb{G}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_0^{(b)}(A_1)}{3}$$

$$\boxed{\text{z508}} \quad \mathbb{G}_{2,3}^{(1,-1;c)}(T_2,a) = \frac{\sqrt{3}\mathbb{G}_{2,3}^{(1,-1;a)}(T_2)\mathbb{Q}_0^{(b)}(A_1)}{3}$$

$$\boxed{\text{z509}} \quad \mathbb{G}_{2,1}^{(1,-1;c)}(T_2,b) = \frac{\sqrt{42}\mathbb{G}_{2,1}^{(1,-1;a)}(E)\mathbb{Q}_{2,1}^{(b)}(T_2)}{42} + \frac{\sqrt{42}\mathbb{G}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(E)}{42} - \frac{\sqrt{14}\mathbb{G}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(E)}{14}$$
$$- \frac{\sqrt{14}\mathbb{G}_{2,2}^{(1,-1;a)}(E)\mathbb{Q}_{2,1}^{(b)}(T_2)}{14} + \frac{\sqrt{14}\mathbb{G}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,3}^{(b)}(T_2)}{14} + \frac{\sqrt{14}\mathbb{G}_{2,3}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(T_2)}{14}$$

$$\boxed{\text{z510}} \quad \mathbb{G}_{2,2}^{(1,-1;c)}(T_2,b) = \frac{\sqrt{42}\mathbb{G}_{2,1}^{(1,-1;a)}(E)\mathbb{Q}_{2,2}^{(b)}(T_2)}{42} + \frac{\sqrt{14}\mathbb{G}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,3}^{(b)}(T_2)}{14} + \frac{\sqrt{14}\mathbb{G}_{2,2}^{(1,-1;a)}(E)\mathbb{Q}_{2,2}^{(b)}(T_2)}{14}$$
$$+ \frac{\sqrt{42}\mathbb{G}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(E)}{42} + \frac{\sqrt{14}\mathbb{G}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(E)}{14} + \frac{\sqrt{14}\mathbb{G}_{2,3}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(T_2)}{14}$$

$$\boxed{\text{z511}} \quad \mathbb{G}_{2,3}^{(1,-1;c)}(T_2,b) = -\frac{\sqrt{42}\mathbb{G}_{2,1}^{(1,-1;a)}(E)\mathbb{Q}_{2,3}^{(b)}(T_2)}{21} + \frac{\sqrt{14}\mathbb{G}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(T_2)}{14} + \frac{\sqrt{14}\mathbb{G}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(T_2)}{14} - \frac{\sqrt{42}\mathbb{G}_{2,3}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(E)}{21}$$

$$\boxed{\text{z512}} \quad \mathbb{G}_{3,1}^{(1,-1;c)}(T_2) = -\frac{\sqrt{3}\mathbb{M}_{2,1}^{(1,-1;a)}(E)\mathbb{T}_{1,1}^{(b)}(T_1)}{6} - \frac{\mathbb{M}_{2,2}^{(1,-1;a)}(E)\mathbb{T}_{1,1}^{(b)}(T_1)}{6} - \frac{\mathbb{M}_{2,2}^{(1,-1;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{3} + \frac{\mathbb{M}_{2,3}^{(1,-1;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{3}$$

$$\boxed{\text{z513}} \quad \mathbb{G}_{3,2}^{(1,-1;c)}(T_2) = \frac{\sqrt{3}\mathbb{M}_{2,1}^{(1,-1;a)}(E)\mathbb{T}_{1,2}^{(b)}(T_1)}{6} + \frac{\mathbb{M}_{2,1}^{(1,-1;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{3} - \frac{\mathbb{M}_{2,2}^{(1,-1;a)}(E)\mathbb{T}_{1,2}^{(b)}(T_1)}{6} - \frac{\mathbb{M}_{2,3}^{(1,-1;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{3}$$

$\boxed{\text{z514}}$ $\quad \mathbb{G}_{3,3}^{(1,-1;c)}(T_2) = -\dfrac{\mathbb{M}_{2,1}^{(1,-1;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{3} + \dfrac{\mathbb{M}_{2,2}^{(1,-1;a)}(E)\mathbb{T}_{1,3}^{(b)}(T_1)}{3} + \dfrac{\mathbb{M}_{2,2}^{(1,-1;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{3}$

$\boxed{\text{z515}}$ $\quad \mathbb{G}_{4,1}^{(1,-1;c)}(T_2) = -\dfrac{\sqrt{14}\,\mathbb{G}_{2,1}^{(1,-1;a)}(E)\mathbb{Q}_{2,1}^{(b)}(T_2)}{28} - \dfrac{\sqrt{14}\,\mathbb{G}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(E)}{28} + \dfrac{\sqrt{42}\,\mathbb{G}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(E)}{28}$
$\qquad\qquad\qquad + \dfrac{\sqrt{42}\,\mathbb{G}_{2,2}^{(1,-1;a)}(E)\mathbb{Q}_{2,1}^{(b)}(T_2)}{28} + \dfrac{\sqrt{42}\,\mathbb{G}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,3}^{(b)}(T_2)}{21} + \dfrac{\sqrt{42}\,\mathbb{G}_{2,3}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(T_2)}{21}$

$\boxed{\text{z516}}$ $\quad \mathbb{G}_{4,2}^{(1,-1;c)}(T_2) = -\dfrac{\sqrt{14}\,\mathbb{G}_{2,1}^{(1,-1;a)}(E)\mathbb{Q}_{2,2}^{(b)}(T_2)}{28} + \dfrac{\sqrt{42}\,\mathbb{G}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,3}^{(b)}(T_2)}{21} - \dfrac{\sqrt{42}\,\mathbb{G}_{2,2}^{(1,-1;a)}(E)\mathbb{Q}_{2,2}^{(b)}(T_2)}{28}$
$\qquad\qquad\qquad - \dfrac{\sqrt{14}\,\mathbb{G}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(E)}{28} - \dfrac{\sqrt{42}\,\mathbb{G}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(E)}{28} + \dfrac{\sqrt{42}\,\mathbb{G}_{2,3}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(T_2)}{21}$

$\boxed{\text{z517}}$ $\quad \mathbb{G}_{4,3}^{(1,-1;c)}(T_2) = \dfrac{\sqrt{14}\,\mathbb{G}_{2,1}^{(1,-1;a)}(E)\mathbb{Q}_{2,3}^{(b)}(T_2)}{14} + \dfrac{\sqrt{42}\,\mathbb{G}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(T_2)}{21} + \dfrac{\sqrt{42}\,\mathbb{G}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(T_2)}{21} + \dfrac{\sqrt{14}\,\mathbb{G}_{2,3}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(E)}{14}$

$\boxed{\text{z518}}$ $\quad \mathbb{G}_{2,1}^{(1,0;c)}(T_2) = -\dfrac{\sqrt{6}\,\mathbb{Q}_{1,1}^{(1,0;a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(E)}{6} - \dfrac{\sqrt{2}\,\mathbb{Q}_{1,1}^{(1,0;a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(E)}{6} - \dfrac{\sqrt{2}\,\mathbb{Q}_{1,2}^{(1,0;a)}(T_1)\mathbb{Q}_{2,3}^{(b)}(T_2)}{6} + \dfrac{\sqrt{2}\,\mathbb{Q}_{1,3}^{(1,0;a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(T_2)}{6}$

$\boxed{\text{z519}}$ $\quad \mathbb{G}_{2,2}^{(1,0;c)}(T_2) = \dfrac{\sqrt{2}\,\mathbb{Q}_{1,1}^{(1,0;a)}(T_1)\mathbb{Q}_{2,3}^{(b)}(T_2)}{6} + \dfrac{\sqrt{6}\,\mathbb{Q}_{1,2}^{(1,0;a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(E)}{6} - \dfrac{\sqrt{2}\,\mathbb{Q}_{1,2}^{(1,0;a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(E)}{6} - \dfrac{\sqrt{2}\,\mathbb{Q}_{1,3}^{(1,0;a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(T_2)}{6}$

$\boxed{\text{z520}}$ $\quad \mathbb{G}_{2,3}^{(1,0;c)}(T_2) = -\dfrac{\sqrt{2}\,\mathbb{Q}_{1,1}^{(1,0;a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(T_2)}{6} + \dfrac{\sqrt{2}\,\mathbb{Q}_{1,2}^{(1,0;a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(T_2)}{6} + \dfrac{\sqrt{2}\,\mathbb{Q}_{1,3}^{(1,0;a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(E)}{3}$

$\boxed{\text{z521}}$ $\quad \mathbb{G}_{2,1}^{(1,1;c)}(T_2) = \dfrac{\sqrt{3}\,\mathbb{G}_{0}^{(1,1;a)}(A_1)\mathbb{Q}_{2,1}^{(b)}(T_2)}{3}$

$\boxed{\text{z522}}$ $\quad \mathbb{G}_{2,2}^{(1,1;c)}(T_2) = \dfrac{\sqrt{3}\,\mathbb{G}_{0}^{(1,1;a)}(A_1)\mathbb{Q}_{2,2}^{(b)}(T_2)}{3}$

$\boxed{\text{z523}}$ $\quad \mathbb{G}_{2,3}^{(1,1;c)}(T_2) = \dfrac{\sqrt{3}\,\mathbb{G}_{0}^{(1,1;a)}(A_1)\mathbb{Q}_{2,3}^{(b)}(T_2)}{3}$

- 'A'-'A' bond-cluster : `A;A_002_1`
  * bra: $\langle p_x,\uparrow|$, $\langle p_x,\downarrow|$, $\langle p_y,\uparrow|$, $\langle p_y,\downarrow|$, $\langle p_z,\uparrow|$, $\langle p_z,\downarrow|$
  * ket: $|p_x,\uparrow\rangle$, $|p_x,\downarrow\rangle$, $|p_y,\uparrow\rangle$, $|p_y,\downarrow\rangle$, $|p_z,\uparrow\rangle$, $|p_z,\downarrow\rangle$
  * wyckoff: `6b@3c`

$\boxed{\text{z27}}$ $\quad \mathbb{Q}_0^{(c)}(A_1, a) = \mathbb{Q}_0^{(a)}(A_1)\mathbb{Q}_0^{(b)}(A_1)$

$\boxed{\text{z28}}$ $\quad \mathbb{Q}_0^{(c)}(A_1, b) = \dfrac{\sqrt{5}\mathbb{Q}_{2,1}^{(a)}(E)\mathbb{Q}_{2,1}^{(b)}(E)}{5} + \dfrac{\sqrt{5}\mathbb{Q}_{2,1}^{(a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(T_2)}{5} + \dfrac{\sqrt{5}\mathbb{Q}_{2,2}^{(a)}(E)\mathbb{Q}_{2,2}^{(b)}(E)}{5} + \dfrac{\sqrt{5}\mathbb{Q}_{2,2}^{(a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(T_2)}{5} + \dfrac{\sqrt{5}\mathbb{Q}_{2,3}^{(a)}(T_2)\mathbb{Q}_{2,3}^{(b)}(T_2)}{5}$

$\boxed{\text{z29}}$ $\quad \mathbb{Q}_4^{(c)}(A_1) = \dfrac{\sqrt{30}\mathbb{Q}_{2,1}^{(a)}(E)\mathbb{Q}_{2,1}^{(b)}(E)}{10} - \dfrac{\sqrt{30}\mathbb{Q}_{2,1}^{(a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(T_2)}{15} + \dfrac{\sqrt{30}\mathbb{Q}_{2,2}^{(a)}(E)\mathbb{Q}_{2,2}^{(b)}(E)}{10} - \dfrac{\sqrt{30}\mathbb{Q}_{2,2}^{(a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(T_2)}{15} - \dfrac{\sqrt{30}\mathbb{Q}_{2,3}^{(a)}(T_2)\mathbb{Q}_{2,3}^{(b)}(T_2)}{15}$

$\boxed{\text{z30}}$ $\quad \mathbb{Q}_0^{(1,-1;c)}(A_1) = \dfrac{\sqrt{5}\mathbb{Q}_{2,1}^{(1,-1;a)}(E)\mathbb{Q}_{2,1}^{(b)}(E)}{5} + \dfrac{\sqrt{5}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(T_2)}{5} + \dfrac{\sqrt{5}\mathbb{Q}_{2,2}^{(1,-1;a)}(E)\mathbb{Q}_{2,2}^{(b)}(E)}{5} + \dfrac{\sqrt{5}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(T_2)}{5} + \dfrac{\sqrt{5}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,3}^{(b)}(T_2)}{5}$

$\boxed{\text{z31}}$ $\quad \mathbb{Q}_4^{(1,-1;c)}(A_1) = \dfrac{\sqrt{30}\mathbb{Q}_{2,1}^{(1,-1;a)}(E)\mathbb{Q}_{2,1}^{(b)}(E)}{10} - \dfrac{\sqrt{30}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(T_2)}{15} + \dfrac{\sqrt{30}\mathbb{Q}_{2,2}^{(1,-1;a)}(E)\mathbb{Q}_{2,2}^{(b)}(E)}{10} - \dfrac{\sqrt{30}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(T_2)}{15} - \dfrac{\sqrt{30}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,3}^{(b)}(T_2)}{15}$

$\boxed{\text{z32}}$ $\quad \mathbb{Q}_0^{(1,1;c)}(A_1) = \mathbb{Q}_0^{(1,1;a)}(A_1)\mathbb{Q}_0^{(b)}(A_1)$

$\boxed{\text{z33}}$ $\quad \mathbb{G}_0^{(c)}(A_1) = \dfrac{\sqrt{3}\mathbb{M}_{1,1}^{(a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{3} + \dfrac{\sqrt{3}\mathbb{M}_{1,2}^{(a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{3} + \dfrac{\sqrt{3}\mathbb{M}_{1,3}^{(a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{3}$

$\boxed{\text{z34}}$ $\quad \mathbb{G}_0^{(1,-1;c)}(A_1) = \dfrac{\sqrt{3}\mathbb{M}_{1,1}^{(1,-1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{3} + \dfrac{\sqrt{3}\mathbb{M}_{1,2}^{(1,-1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{3} + \dfrac{\sqrt{3}\mathbb{M}_{1,3}^{(1,-1;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{3}$

$\boxed{\text{z35}}$ $\quad \mathbb{G}_4^{(1,-1;c)}(A_1, a) = \dfrac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{3} + \dfrac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{3} + \dfrac{\sqrt{3}\mathbb{M}_{3,3}^{(1,-1;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{3}$

$\boxed{\text{z36}}$ $\quad \mathbb{G}_4^{(1,-1;c)}(A_1, b) = -\dfrac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(T_2)\mathbb{M}_{2,1}^{(b)}(T_2)}{3} - \dfrac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(T_2)\mathbb{M}_{2,2}^{(b)}(T_2)}{3} - \dfrac{\sqrt{3}\mathbb{M}_{3,3}^{(1,-1;a)}(T_2)\mathbb{M}_{2,3}^{(b)}(T_2)}{3}$

$\boxed{\text{z37}}$ $\quad \mathbb{G}_0^{(1,0;c)}(A_1) = \dfrac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(T_2)\mathbb{M}_{2,1}^{(b)}(T_2)}{3} + \dfrac{\sqrt{3}\mathbb{T}_{2,2}^{(1,0;a)}(T_2)\mathbb{M}_{2,2}^{(b)}(T_2)}{3} + \dfrac{\sqrt{3}\mathbb{T}_{2,3}^{(1,0;a)}(T_2)\mathbb{M}_{2,3}^{(b)}(T_2)}{3}$

$\boxed{\text{z38}}$ $\quad \mathbb{G}_0^{(1,1;c)}(A_1) = \dfrac{\sqrt{3}\mathbb{M}_{1,1}^{(1,1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{3} + \dfrac{\sqrt{3}\mathbb{M}_{1,2}^{(1,1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{3} + \dfrac{\sqrt{3}\mathbb{M}_{1,3}^{(1,1;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{3}$

$\boxed{\text{z52}}$ $\quad \mathbb{Q}_3^{(c)}(A_2) = \dfrac{\sqrt{3}\mathbb{M}_{1,1}^{(a)}(T_1)\mathbb{M}_{2,1}^{(b)}(T_2)}{3} + \dfrac{\sqrt{3}\mathbb{M}_{1,2}^{(a)}(T_1)\mathbb{M}_{2,2}^{(b)}(T_2)}{3} + \dfrac{\sqrt{3}\mathbb{M}_{1,3}^{(a)}(T_1)\mathbb{M}_{2,3}^{(b)}(T_2)}{3}$

$\boxed{\text{z53}}$ $\quad \mathbb{Q}_3^{(1,-1;c)}(A_2, a) = -\dfrac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{3} - \dfrac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{3} - \dfrac{\sqrt{3}\mathbb{M}_{3,3}^{(1,-1;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{3}$

$$\boxed{\text{z54}} \quad \mathbb{Q}_3^{(1,-1;c)}(A_2,b) = -\frac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(T_1)\mathbb{M}_{2,1}^{(b)}(T_2)}{3} - \frac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(T_1)\mathbb{M}_{2,2}^{(b)}(T_2)}{3} - \frac{\sqrt{3}\mathbb{M}_{3,3}^{(1,-1;a)}(T_1)\mathbb{M}_{2,3}^{(b)}(T_2)}{3}$$

$$\boxed{\text{z55}} \quad \mathbb{Q}_3^{(1,-1;c)}(A_2,c) = \frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,-1;a)}(T_1)\mathbb{M}_{2,1}^{(b)}(T_2)}{3} + \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,-1;a)}(T_1)\mathbb{M}_{2,2}^{(b)}(T_2)}{3} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,-1;a)}(T_1)\mathbb{M}_{2,3}^{(b)}(T_2)}{3}$$

$$\boxed{\text{z56}} \quad \mathbb{Q}_3^{(1,0;c)}(A_2) = \frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{3} + \frac{\sqrt{3}\mathbb{T}_{2,2}^{(1,0;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{3} + \frac{\sqrt{3}\mathbb{T}_{2,3}^{(1,0;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{3}$$

$$\boxed{\text{z57}} \quad \mathbb{Q}_3^{(1,1;c)}(A_2) = \frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,1;a)}(T_1)\mathbb{M}_{2,1}^{(b)}(T_2)}{3} + \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,1;a)}(T_1)\mathbb{M}_{2,2}^{(b)}(T_2)}{3} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,1;a)}(T_1)\mathbb{M}_{2,3}^{(b)}(T_2)}{3}$$

$$\boxed{\text{z58}} \quad \mathbb{G}_3^{(c)}(A_2) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E)\mathbb{Q}_{2,2}^{(b)}(E)}{2} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E)\mathbb{Q}_{2,1}^{(b)}(E)}{2}$$

$$\boxed{\text{z59}} \quad \mathbb{G}_3^{(1,-1;c)}(A_2) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(E)\mathbb{Q}_{2,2}^{(b)}(E)}{2} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(E)\mathbb{Q}_{2,1}^{(b)}(E)}{2}$$

$$\boxed{\text{z60}} \quad \mathbb{G}_3^{(1,0;c)}(A_2) = \frac{\sqrt{3}\mathbb{G}_{1,1}^{(1,0;a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(T_2)}{3} + \frac{\sqrt{3}\mathbb{G}_{1,2}^{(1,0;a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(T_2)}{3} + \frac{\sqrt{3}\mathbb{G}_{1,3}^{(1,0;a)}(T_1)\mathbb{Q}_{2,3}^{(b)}(T_2)}{3}$$

$$\boxed{\text{z137}} \quad \mathbb{Q}_{2,1}^{(c)}(E,a) = \frac{\sqrt{2}\mathbb{Q}_0^{(a)}(A_1)\mathbb{Q}_{2,1}^{(b)}(E)}{2}$$

$$\boxed{\text{z138}} \quad \mathbb{Q}_{2,2}^{(c)}(E,a) = \frac{\sqrt{2}\mathbb{Q}_0^{(a)}(A_1)\mathbb{Q}_{2,2}^{(b)}(E)}{2}$$

$$\boxed{\text{z139}} \quad \mathbb{Q}_{2,1}^{(c)}(E,b) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E)\mathbb{Q}_0^{(b)}(A_1)}{2}$$

$$\boxed{\text{z140}} \quad \mathbb{Q}_{2,2}^{(c)}(E,b) = \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E)\mathbb{Q}_0^{(b)}(A_1)}{2}$$

$$\boxed{\text{z141}} \quad \mathbb{Q}_{2,1}^{(c)}(E,c) = \frac{\sqrt{7}\mathbb{Q}_{2,1}^{(a)}(E)\mathbb{Q}_{2,1}^{(b)}(E)}{7} + \frac{\sqrt{7}\mathbb{Q}_{2,1}^{(a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(T_2)}{14} - \frac{\sqrt{7}\mathbb{Q}_{2,2}^{(a)}(E)\mathbb{Q}_{2,2}^{(b)}(E)}{7} + \frac{\sqrt{7}\mathbb{Q}_{2,2}^{(a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(T_2)}{14} - \frac{\sqrt{7}\mathbb{Q}_{2,3}^{(a)}(T_2)\mathbb{Q}_{2,3}^{(b)}(T_2)}{7}$$

$$\boxed{\text{z142}} \quad \mathbb{Q}_{2,2}^{(c)}(E,c) = -\frac{\sqrt{7}\mathbb{Q}_{2,1}^{(a)}(E)\mathbb{Q}_{2,2}^{(b)}(E)}{7} - \frac{\sqrt{21}\mathbb{Q}_{2,1}^{(a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(T_2)}{14} - \frac{\sqrt{7}\mathbb{Q}_{2,2}^{(a)}(E)\mathbb{Q}_{2,1}^{(b)}(E)}{7} + \frac{\sqrt{21}\mathbb{Q}_{2,2}^{(a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(T_2)}{14}$$

$$\boxed{\text{z143}} \quad \mathbb{Q}_{4,1}^{(c)}(E) = \frac{\sqrt{21}\mathbb{Q}_{2,1}^{(a)}(E)\mathbb{Q}_{2,1}^{(b)}(E)}{14} - \frac{\sqrt{21}\mathbb{Q}_{2,1}^{(a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(T_2)}{21} - \frac{\sqrt{21}\mathbb{Q}_{2,2}^{(a)}(E)\mathbb{Q}_{2,2}^{(b)}(E)}{14} - \frac{\sqrt{21}\mathbb{Q}_{2,2}^{(a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(T_2)}{21} + \frac{2\sqrt{21}\mathbb{Q}_{2,3}^{(a)}(T_2)\mathbb{Q}_{2,3}^{(b)}(T_2)}{21}$$

$$\boxed{\text{z144}} \quad \mathbb{Q}_{4,2}^{(c)}(E) = -\frac{\sqrt{21}\mathbb{Q}_{2,1}^{(a)}(E)\mathbb{Q}_{2,2}^{(b)}(E)}{14} + \frac{\sqrt{7}\mathbb{Q}_{2,1}^{(a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(T_2)}{7} - \frac{\sqrt{21}\mathbb{Q}_{2,2}^{(a)}(E)\mathbb{Q}_{2,1}^{(b)}(E)}{14} - \frac{\sqrt{7}\mathbb{Q}_{2,2}^{(a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(T_2)}{7}$$

$$\boxed{\text{z145}} \quad \mathbb{Q}_{2,1}^{(1,-1;c)}(E,a) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(E)\mathbb{Q}_{0}^{(b)}(A_1)}{2}$$

$$\boxed{\text{z146}} \quad \mathbb{Q}_{2,2}^{(1,-1;c)}(E,a) = \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(E)\mathbb{Q}_{0}^{(b)}(A_1)}{2}$$

$$\boxed{\text{z147}} \quad \mathbb{Q}_{2,1}^{(1,-1;c)}(E,b) = \frac{\sqrt{7}\mathbb{Q}_{2,1}^{(1,-1;a)}(E)\mathbb{Q}_{2,1}^{(b)}(E)}{7} + \frac{\sqrt{7}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(T_2)}{14} - \frac{\sqrt{7}\mathbb{Q}_{2,2}^{(1,-1;a)}(E)\mathbb{Q}_{2,2}^{(b)}(E)}{7} + \frac{\sqrt{7}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(T_2)}{14} - \frac{\sqrt{7}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,3}^{(b)}(T_2)}{7}$$

$$\boxed{\text{z148}} \quad \mathbb{Q}_{2,2}^{(1,-1;c)}(E,b) = -\frac{\sqrt{7}\mathbb{Q}_{2,1}^{(1,-1;a)}(E)\mathbb{Q}_{2,2}^{(b)}(E)}{7} - \frac{\sqrt{21}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(T_2)}{14} - \frac{\sqrt{7}\mathbb{Q}_{2,2}^{(1,-1;a)}(E)\mathbb{Q}_{2,1}^{(b)}(E)}{7} + \frac{\sqrt{21}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(T_2)}{14}$$

$$\boxed{\text{z149}} \quad \mathbb{Q}_{4,1}^{(1,-1;c)}(E) = \frac{\sqrt{21}\mathbb{Q}_{2,1}^{(1,-1;a)}(E)\mathbb{Q}_{2,1}^{(b)}(E)}{14} - \frac{\sqrt{21}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(T_2)}{21} - \frac{\sqrt{21}\mathbb{Q}_{2,2}^{(1,-1;a)}(E)\mathbb{Q}_{2,2}^{(b)}(E)}{14} - \frac{\sqrt{21}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(T_2)}{21} + \frac{2\sqrt{21}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,3}^{(b)}(T_2)}{21}$$

$$\boxed{\text{z150}} \quad \mathbb{Q}_{4,2}^{(1,-1;c)}(E) = -\frac{\sqrt{21}\mathbb{Q}_{2,1}^{(1,-1;a)}(E)\mathbb{Q}_{2,2}^{(b)}(E)}{14} + \frac{\sqrt{7}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(T_2)}{7} - \frac{\sqrt{21}\mathbb{Q}_{2,2}^{(1,-1;a)}(E)\mathbb{Q}_{2,1}^{(b)}(E)}{14} - \frac{\sqrt{7}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(T_2)}{7}$$

$$\boxed{\text{z151}} \quad \mathbb{Q}_{5,1}^{(1,-1;c)}(E) = \frac{\sqrt{70}\mathbb{M}_{3,1}^{(1,-1;a)}(T_1)\mathbb{M}_{2,1}^{(b)}(T_2)}{28} - \frac{\sqrt{42}\mathbb{M}_{3,1}^{(1,-1;a)}(T_2)\mathbb{M}_{2,1}^{(b)}(T_2)}{28} - \frac{\sqrt{70}\mathbb{M}_{3,2}^{(1,-1;a)}(T_1)\mathbb{M}_{2,2}^{(b)}(T_2)}{28} - \frac{\sqrt{42}\mathbb{M}_{3,2}^{(1,-1;a)}(T_2)\mathbb{M}_{2,2}^{(b)}(T_2)}{28} + \frac{\sqrt{42}\mathbb{M}_{3,3}^{(1,-1;a)}(T_2)\mathbb{M}_{2,3}^{(b)}(T_2)}{14}$$

$$\boxed{\text{z152}} \quad \mathbb{Q}_{5,2}^{(1,-1;c)}(E) = \frac{\sqrt{210}\mathbb{M}_{3,1}^{(1,-1;a)}(T_1)\mathbb{M}_{2,1}^{(b)}(T_2)}{84} + \frac{3\sqrt{14}\mathbb{M}_{3,1}^{(1,-1;a)}(T_2)\mathbb{M}_{2,1}^{(b)}(T_2)}{28} + \frac{\sqrt{210}\mathbb{M}_{3,2}^{(1,-1;a)}(T_1)\mathbb{M}_{2,2}^{(b)}(T_2)}{84} - \frac{3\sqrt{14}\mathbb{M}_{3,2}^{(1,-1;a)}(T_2)\mathbb{M}_{2,2}^{(b)}(T_2)}{28} - \frac{\sqrt{210}\mathbb{M}_{3,3}^{(1,-1;a)}(T_1)\mathbb{M}_{2,3}^{(b)}(T_2)}{42}$$

$$\boxed{\text{z153}} \quad \mathbb{Q}_{2,1}^{(1,0;c)}(E) = \frac{\mathbb{G}_{1,1}^{(1,0;a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(T_2)}{2} - \frac{\mathbb{G}_{1,2}^{(1,0;a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(T_2)}{2}$$

$$\boxed{\text{z154}} \quad \mathbb{Q}_{2,2}^{(1,0;c)}(E) = \frac{\sqrt{3}\mathbb{G}_{1,1}^{(1,0;a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(T_2)}{6} + \frac{\sqrt{3}\mathbb{G}_{1,2}^{(1,0;a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(T_2)}{6} - \frac{\sqrt{3}\mathbb{G}_{1,3}^{(1,0;a)}(T_1)\mathbb{Q}_{2,3}^{(b)}(T_2)}{3}$$

$$\boxed{\text{z155}} \quad \mathbb{Q}_{2,1}^{(1,1;c)}(E) = \frac{\sqrt{2}\mathbb{Q}_{0}^{(1,1;a)}(A_1)\mathbb{Q}_{2,1}^{(b)}(E)}{2}$$

$$\boxed{\text{z156}} \quad \mathbb{Q}_{2,2}^{(1,1;c)}(E) = \frac{\sqrt{2}\mathbb{Q}_{0}^{(1,1;a)}(A_1)\mathbb{Q}_{2,2}^{(b)}(E)}{2}$$

$$\boxed{\text{z157}} \quad \mathbb{G}_{2,1}^{(c)}(E,a) = -\frac{\sqrt{3}\mathbb{M}_{1,1}^{(a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{6} - \frac{\sqrt{3}\mathbb{M}_{1,2}^{(a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{6} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{3}$$

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$\boxed{\text{z158}}$ $\mathbb{G}_{2,2}^{(c)}(E,a) = \dfrac{\mathbb{M}_{1,1}^{(a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{2} - \dfrac{\mathbb{M}_{1,2}^{(a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{2}$

$\boxed{\text{z159}}$ $\mathbb{G}_{2,1}^{(c)}(E,b) = \dfrac{\mathbb{M}_{1,1}^{(a)}(T_1)\mathbb{M}_{2,1}^{(b)}(T_2)}{2} - \dfrac{\mathbb{M}_{1,2}^{(a)}(T_1)\mathbb{M}_{2,2}^{(b)}(T_2)}{2}$

$\boxed{\text{z160}}$ $\mathbb{G}_{2,2}^{(c)}(E,b) = \dfrac{\sqrt{3}\mathbb{M}_{1,1}^{(a)}(T_1)\mathbb{M}_{2,1}^{(b)}(T_2)}{6} + \dfrac{\sqrt{3}\mathbb{M}_{1,2}^{(a)}(T_1)\mathbb{M}_{2,2}^{(b)}(T_2)}{6} - \dfrac{\sqrt{3}\mathbb{M}_{1,3}^{(a)}(T_1)\mathbb{M}_{2,3}^{(b)}(T_2)}{3}$

$\boxed{\text{z161}}$ $\mathbb{G}_{2,1}^{(1,-1;c)}(E,a) = -\dfrac{\sqrt{42}\mathbb{M}_{3,1}^{(1,-1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{28} - \dfrac{\sqrt{70}\mathbb{M}_{3,1}^{(1,-1;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{28} - \dfrac{\sqrt{42}\mathbb{M}_{3,2}^{(1,-1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{28} + \dfrac{\sqrt{70}\mathbb{M}_{3,2}^{(1,-1;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{28} + \dfrac{\sqrt{42}\mathbb{M}_{3,3}^{(1,-1;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{14}$

$\boxed{\text{z162}}$ $\mathbb{G}_{2,2}^{(1,-1;c)}(E,a) = \dfrac{3\sqrt{14}\mathbb{M}_{3,1}^{(1,-1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{28} - \dfrac{\sqrt{210}\mathbb{M}_{3,1}^{(1,-1;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{84} - \dfrac{3\sqrt{14}\mathbb{M}_{3,2}^{(1,-1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{28} - \dfrac{\sqrt{210}\mathbb{M}_{3,2}^{(1,-1;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{84} + \dfrac{\sqrt{210}\mathbb{M}_{3,3}^{(1,-1;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{42}$

$\boxed{\text{z163}}$ $\mathbb{G}_{2,1}^{(1,-1;c)}(E,b) = -\dfrac{3\sqrt{14}\mathbb{M}_{3,1}^{(1,-1;a)}(T_1)\mathbb{M}_{2,1}^{(b)}(T_2)}{28} - \dfrac{\sqrt{210}\mathbb{M}_{3,1}^{(1,-1;a)}(T_2)\mathbb{M}_{2,1}^{(b)}(T_2)}{84} + \dfrac{3\sqrt{14}\mathbb{M}_{3,2}^{(1,-1;a)}(T_1)\mathbb{M}_{2,2}^{(b)}(T_2)}{28} - \dfrac{\sqrt{210}\mathbb{M}_{3,2}^{(1,-1;a)}(T_2)\mathbb{M}_{2,2}^{(b)}(T_2)}{84} + \dfrac{\sqrt{210}\mathbb{M}_{3,3}^{(1,-1;a)}(T_2)\mathbb{M}_{2,3}^{(b)}(T_2)}{42}$

$\boxed{\text{z164}}$ $\mathbb{G}_{2,2}^{(1,-1;c)}(E,b) = -\dfrac{\sqrt{42}\mathbb{M}_{3,1}^{(1,-1;a)}(T_1)\mathbb{M}_{2,1}^{(b)}(T_2)}{28} + \dfrac{\sqrt{70}\mathbb{M}_{3,1}^{(1,-1;a)}(T_2)\mathbb{M}_{2,1}^{(b)}(T_2)}{28} - \dfrac{\sqrt{42}\mathbb{M}_{3,2}^{(1,-1;a)}(T_1)\mathbb{M}_{2,2}^{(b)}(T_2)}{28} - \dfrac{\sqrt{70}\mathbb{M}_{3,2}^{(1,-1;a)}(T_2)\mathbb{M}_{2,2}^{(b)}(T_2)}{28} + \dfrac{\sqrt{42}\mathbb{M}_{3,3}^{(1,-1;a)}(T_1)\mathbb{M}_{2,3}^{(b)}(T_2)}{14}$

$\boxed{\text{z165}}$ $\mathbb{G}_{2,1}^{(1,-1;c)}(E,c) = -\dfrac{\sqrt{3}\mathbb{M}_{1,1}^{(1,-1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{6} - \dfrac{\sqrt{3}\mathbb{M}_{1,2}^{(1,-1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{6} + \dfrac{\sqrt{3}\mathbb{M}_{1,3}^{(1,-1;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{3}$

$\boxed{\text{z166}}$ $\mathbb{G}_{2,2}^{(1,-1;c)}(E,c) = \dfrac{\mathbb{M}_{1,1}^{(1,-1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{2} - \dfrac{\mathbb{M}_{1,2}^{(1,-1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{2}$

$\boxed{\text{z167}}$ $\mathbb{G}_{2,1}^{(1,-1;c)}(E,d) = \dfrac{\mathbb{M}_{1,1}^{(1,-1;a)}(T_1)\mathbb{M}_{2,1}^{(b)}(T_2)}{2} - \dfrac{\mathbb{M}_{1,2}^{(1,-1;a)}(T_1)\mathbb{M}_{2,2}^{(b)}(T_2)}{2}$

$\boxed{\text{z168}}$ $\mathbb{G}_{2,2}^{(1,-1;c)}(E,d) = \dfrac{\sqrt{3}\mathbb{M}_{1,1}^{(1,-1;a)}(T_1)\mathbb{M}_{2,1}^{(b)}(T_2)}{6} + \dfrac{\sqrt{3}\mathbb{M}_{1,2}^{(1,-1;a)}(T_1)\mathbb{M}_{2,2}^{(b)}(T_2)}{6} - \dfrac{\sqrt{3}\mathbb{M}_{1,3}^{(1,-1;a)}(T_1)\mathbb{M}_{2,3}^{(b)}(T_2)}{3}$

$\boxed{\text{z169}}$ $\mathbb{G}_{4,1}^{(1,-1;c)}(E) = -\dfrac{\sqrt{210}\mathbb{M}_{3,1}^{(1,-1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{84} + \dfrac{3\sqrt{14}\mathbb{M}_{3,1}^{(1,-1;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{28} - \dfrac{\sqrt{210}\mathbb{M}_{3,2}^{(1,-1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{84} - \dfrac{3\sqrt{14}\mathbb{M}_{3,2}^{(1,-1;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{28} + \dfrac{\sqrt{210}\mathbb{M}_{3,3}^{(1,-1;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{42}$

$\boxed{\text{z170}}$ $\mathbb{G}_{4,2}^{(1,-1;c)}(E) = \dfrac{\sqrt{70}\mathbb{M}_{3,1}^{(1,-1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{28} + \dfrac{\sqrt{42}\mathbb{M}_{3,1}^{(1,-1;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{28} - \dfrac{\sqrt{70}\mathbb{M}_{3,2}^{(1,-1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{28} + \dfrac{\sqrt{42}\mathbb{M}_{3,2}^{(1,-1;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{28} - \dfrac{\sqrt{42}\mathbb{M}_{3,3}^{(1,-1;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{14}$

$\boxed{\text{z171}}$ $\mathbb{G}_{2,1}^{(1,0;c)}(E,a) = -\dfrac{\mathbb{T}_{2,1}^{(1,0;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{2} + \dfrac{\mathbb{T}_{2,2}^{(1,0;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{2}$

$$\boxed{\text{z172}} \quad \mathbb{G}_{2,2}^{(1,0;c)}(E,a) = -\frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{6} - \frac{\sqrt{3}\mathbb{T}_{2,2}^{(1,0;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{6} + \frac{\sqrt{3}\mathbb{T}_{2,3}^{(1,0;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{3}$$

$$\boxed{\text{z173}} \quad \mathbb{G}_{2,1}^{(1,0;c)}(E,b) = \frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(T_2)\mathbb{M}_{2,1}^{(b)}(T_2)}{6} + \frac{\sqrt{3}\mathbb{T}_{2,2}^{(1,0;a)}(T_2)\mathbb{M}_{2,2}^{(b)}(T_2)}{6} - \frac{\sqrt{3}\mathbb{T}_{2,3}^{(1,0;a)}(T_2)\mathbb{M}_{2,3}^{(b)}(T_2)}{3}$$

$$\boxed{\text{z174}} \quad \mathbb{G}_{2,2}^{(1,0;c)}(E,b) = -\frac{\mathbb{T}_{2,1}^{(1,0;a)}(T_2)\mathbb{M}_{2,1}^{(b)}(T_2)}{2} + \frac{\mathbb{T}_{2,2}^{(1,0;a)}(T_2)\mathbb{M}_{2,2}^{(b)}(T_2)}{2}$$

$$\boxed{\text{z175}} \quad \mathbb{G}_{2,1}^{(1,1;c)}(E,a) = -\frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{6} - \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{6} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,1;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{3}$$

$$\boxed{\text{z176}} \quad \mathbb{G}_{2,2}^{(1,1;c)}(E,a) = \frac{\mathbb{M}_{1,1}^{(1,1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{2} - \frac{\mathbb{M}_{1,2}^{(1,1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{2}$$

$$\boxed{\text{z177}} \quad \mathbb{G}_{2,1}^{(1,1;c)}(E,b) = \frac{\mathbb{M}_{1,1}^{(1,1;a)}(T_1)\mathbb{M}_{2,1}^{(b)}(T_2)}{2} - \frac{\mathbb{M}_{1,2}^{(1,1;a)}(T_1)\mathbb{M}_{2,2}^{(b)}(T_2)}{2}$$

$$\boxed{\text{z178}} \quad \mathbb{G}_{2,2}^{(1,1;c)}(E,b) = \frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,1;a)}(T_1)\mathbb{M}_{2,1}^{(b)}(T_2)}{6} + \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,1;a)}(T_1)\mathbb{M}_{2,2}^{(b)}(T_2)}{6} - \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,1;a)}(T_1)\mathbb{M}_{2,3}^{(b)}(T_2)}{3}$$

$$\boxed{\text{z314}} \quad \mathbb{Q}_{1,1}^{(c)}(T_1,a) = \frac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{6} - \frac{\sqrt{6}\mathbb{M}_{1,3}^{(a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{6}$$

$$\boxed{\text{z315}} \quad \mathbb{Q}_{1,2}^{(c)}(T_1,a) = -\frac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{6}$$

$$\boxed{\text{z316}} \quad \mathbb{Q}_{1,3}^{(c)}(T_1,a) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{6} - \frac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{6}$$

$$\boxed{\text{z317}} \quad \mathbb{Q}_{1,1}^{(c)}(T_1,b) = \frac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(T_1)\mathbb{M}_{2,3}^{(b)}(T_2)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(a)}(T_1)\mathbb{M}_{2,2}^{(b)}(T_2)}{6}$$

$$\boxed{\text{z318}} \quad \mathbb{Q}_{1,2}^{(c)}(T_1,b) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(T_1)\mathbb{M}_{2,3}^{(b)}(T_2)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(a)}(T_1)\mathbb{M}_{2,1}^{(b)}(T_2)}{6}$$

$$\boxed{\text{z319}} \quad \mathbb{Q}_{1,3}^{(c)}(T_1,b) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(T_1)\mathbb{M}_{2,2}^{(b)}(T_2)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(T_1)\mathbb{M}_{2,1}^{(b)}(T_2)}{6}$$

$$\boxed{\text{z320}} \quad \mathbb{Q}_{4,1}^{(c)}(T_1) = -\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E)\mathbb{Q}_{2,1}^{(b)}(T_2)}{4} - \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(E)}{4} - \frac{\sqrt{6}\mathbb{Q}_{2,1}^{(a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(E)}{12} - \frac{\sqrt{6}\mathbb{Q}_{2,2}^{(a)}(E)\mathbb{Q}_{2,1}^{(b)}(T_2)}{12}$$

$\boxed{\text{z321}}$ $\quad \mathbb{Q}_{4,2}^{(c)}(T_1) = \dfrac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E)\mathbb{Q}_{2,2}^{(b)}(T_2)}{4} - \dfrac{\sqrt{6}\mathbb{Q}_{2,2}^{(a)}(E)\mathbb{Q}_{2,2}^{(b)}(T_2)}{12} + \dfrac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(E)}{4} - \dfrac{\sqrt{6}\mathbb{Q}_{2,2}^{(a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(E)}{12}$

$\boxed{\text{z322}}$ $\quad \mathbb{Q}_{4,3}^{(c)}(T_1) = \dfrac{\sqrt{6}\mathbb{Q}_{2,2}^{(a)}(E)\mathbb{Q}_{2,3}^{(b)}(T_2)}{6} + \dfrac{\sqrt{6}\mathbb{Q}_{2,3}^{(a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(E)}{6}$

$\boxed{\text{z323}}$ $\quad \mathbb{Q}_{1,1}^{(1,-1;c)}(T_1,a) = -\dfrac{\sqrt{21}\mathbb{M}_{3,2}^{(1,-1;a)}(T_1)\mathbb{M}_{2,3}^{(b)}(T_2)}{21} - \dfrac{\sqrt{35}\mathbb{M}_{3,2}^{(1,-1;a)}(T_2)\mathbb{M}_{2,3}^{(b)}(T_2)}{21} - \dfrac{\sqrt{21}\mathbb{M}_{3,3}^{(1,-1;a)}(T_1)\mathbb{M}_{2,2}^{(b)}(T_2)}{21} + \dfrac{\sqrt{35}\mathbb{M}_{3,3}^{(1,-1;a)}(T_2)\mathbb{M}_{2,2}^{(b)}(T_2)}{21} + \dfrac{\sqrt{35}\mathbb{M}_{3}^{(1,-1;a)}(A_2)\mathbb{M}_{2,1}^{(b)}(T_2)}{21}$

$\boxed{\text{z324}}$ $\quad \mathbb{Q}_{1,2}^{(1,-1;c)}(T_1,a) = -\dfrac{\sqrt{21}\mathbb{M}_{3,1}^{(1,-1;a)}(T_1)\mathbb{M}_{2,3}^{(b)}(T_2)}{21} + \dfrac{\sqrt{35}\mathbb{M}_{3,1}^{(1,-1;a)}(T_2)\mathbb{M}_{2,3}^{(b)}(T_2)}{21} - \dfrac{\sqrt{21}\mathbb{M}_{3,3}^{(1,-1;a)}(T_1)\mathbb{M}_{2,1}^{(b)}(T_2)}{21} - \dfrac{\sqrt{35}\mathbb{M}_{3,3}^{(1,-1;a)}(T_2)\mathbb{M}_{2,1}^{(b)}(T_2)}{21} + \dfrac{\sqrt{35}\mathbb{M}_{3}^{(1,-1;a)}(A_2)\mathbb{M}_{2,2}^{(b)}(T_2)}{21}$

$\boxed{\text{z325}}$ $\quad \mathbb{Q}_{1,3}^{(1,-1;c)}(T_1,a) = -\dfrac{\sqrt{21}\mathbb{M}_{3,1}^{(1,-1;a)}(T_1)\mathbb{M}_{2,2}^{(b)}(T_2)}{21} - \dfrac{\sqrt{35}\mathbb{M}_{3,1}^{(1,-1;a)}(T_2)\mathbb{M}_{2,2}^{(b)}(T_2)}{21} - \dfrac{\sqrt{21}\mathbb{M}_{3,2}^{(1,-1;a)}(T_1)\mathbb{M}_{2,1}^{(b)}(T_2)}{21} + \dfrac{\sqrt{35}\mathbb{M}_{3,2}^{(1,-1;a)}(T_2)\mathbb{M}_{2,1}^{(b)}(T_2)}{21} + \dfrac{\sqrt{35}\mathbb{M}_{3}^{(1,-1;a)}(A_2)\mathbb{M}_{2,3}^{(b)}(T_2)}{21}$

$\boxed{\text{z326}}$ $\quad \mathbb{Q}_{1,1}^{(1,-1;c)}(T_1,b) = \dfrac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{6} - \dfrac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{6}$

$\boxed{\text{z327}}$ $\quad \mathbb{Q}_{1,2}^{(1,-1;c)}(T_1,b) = -\dfrac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{6} + \dfrac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{6}$

$\boxed{\text{z328}}$ $\quad \mathbb{Q}_{1,3}^{(1,-1;c)}(T_1,b) = \dfrac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{6} - \dfrac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{6}$

$\boxed{\text{z329}}$ $\quad \mathbb{Q}_{1,1}^{(1,-1;c)}(T_1,c) = \dfrac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_1)\mathbb{M}_{2,3}^{(b)}(T_2)}{6} + \dfrac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_1)\mathbb{M}_{2,2}^{(b)}(T_2)}{6}$

$\boxed{\text{z330}}$ $\quad \mathbb{Q}_{1,2}^{(1,-1;c)}(T_1,c) = \dfrac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_1)\mathbb{M}_{2,3}^{(b)}(T_2)}{6} + \dfrac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_1)\mathbb{M}_{2,1}^{(b)}(T_2)}{6}$

$\boxed{\text{z331}}$ $\quad \mathbb{Q}_{1,3}^{(1,-1;c)}(T_1,c) = \dfrac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_1)\mathbb{M}_{2,2}^{(b)}(T_2)}{6} + \dfrac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_1)\mathbb{M}_{2,1}^{(b)}(T_2)}{6}$

$\boxed{\text{z332}}$ $\quad \mathbb{Q}_{3,1}^{(1,-1;c)}(T_1,a) = -\dfrac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{4} - \dfrac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{12} + \dfrac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{4} - \dfrac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{12}$

$\boxed{\text{z333}}$ $\quad \mathbb{Q}_{3,2}^{(1,-1;c)}(T_1,a) = \dfrac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{4} - \dfrac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{12} - \dfrac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{4} - \dfrac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{12}$

$\boxed{\text{z334}}$ $\quad \mathbb{Q}_{3,3}^{(1,-1;c)}(T_1,a) = -\dfrac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{4} - \dfrac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{12} + \dfrac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{4} - \dfrac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{12}$

$\boxed{\text{z335}}$ $\quad \mathbb{Q}_{3,1}^{(1,-1;c)}(T_1,b) = -\dfrac{\sqrt{105}\mathbb{M}_{3,2}^{(1,-1;a)}(T_1)\mathbb{M}_{2,3}^{(b)}(T_2)}{84} - \dfrac{5\sqrt{7}\mathbb{M}_{3,2}^{(1,-1;a)}(T_2)\mathbb{M}_{2,3}^{(b)}(T_2)}{84} - \dfrac{\sqrt{105}\mathbb{M}_{3,3}^{(1,-1;a)}(T_1)\mathbb{M}_{2,2}^{(b)}(T_2)}{84} + \dfrac{5\sqrt{7}\mathbb{M}_{3,3}^{(1,-1;a)}(T_2)\mathbb{M}_{2,2}^{(b)}(T_2)}{84} - \dfrac{4\sqrt{7}\mathbb{M}_{3}^{(1,-1;a)}(A_2)\mathbb{M}_{2,1}^{(b)}(T_2)}{21}$

$\boxed{\text{z336}}$ $\quad \mathbb{Q}_{3,2}^{(1,-1;c)}(T_1,b) = -\dfrac{\sqrt{105}\mathbb{M}_{3,1}^{(1,-1;a)}(T_1)\mathbb{M}_{2,3}^{(b)}(T_2)}{84} + \dfrac{5\sqrt{7}\mathbb{M}_{3,1}^{(1,-1;a)}(T_2)\mathbb{M}_{2,3}^{(b)}(T_2)}{84} - \dfrac{\sqrt{105}\mathbb{M}_{3,3}^{(1,-1;a)}(T_1)\mathbb{M}_{2,1}^{(b)}(T_2)}{84} - \dfrac{5\sqrt{7}\mathbb{M}_{3,3}^{(1,-1;a)}(T_2)\mathbb{M}_{2,1}^{(b)}(T_2)}{84} - \dfrac{4\sqrt{7}\mathbb{M}_{3}^{(1,-1;a)}(A_2)\mathbb{M}_{2,2}^{(b)}(T_2)}{21}$

$\boxed{\text{z337}}$ $\quad \mathbb{Q}_{3,3}^{(1,-1;c)}(T_1,b) = -\dfrac{\sqrt{105}\mathbb{M}_{3,1}^{(1,-1;a)}(T_1)\mathbb{M}_{2,2}^{(b)}(T_2)}{84} - \dfrac{5\sqrt{7}\mathbb{M}_{3,1}^{(1,-1;a)}(T_2)\mathbb{M}_{2,2}^{(b)}(T_2)}{84} - \dfrac{\sqrt{105}\mathbb{M}_{3,2}^{(1,-1;a)}(T_1)\mathbb{M}_{2,1}^{(b)}(T_2)}{84} + \dfrac{5\sqrt{7}\mathbb{M}_{3,2}^{(1,-1;a)}(T_2)\mathbb{M}_{2,1}^{(b)}(T_2)}{84} - \dfrac{4\sqrt{7}\mathbb{M}_{3}^{(1,-1;a)}(A_2)\mathbb{M}_{2,3}^{(b)}(T_2)}{21}$

$\boxed{\text{z338}}$ $\quad \mathbb{Q}_{4,1}^{(1,-1;c)}(T_1) = -\dfrac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(E)\mathbb{Q}_{2,1}^{(b)}(T_2)}{4} - \dfrac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(E)}{4} - \dfrac{\sqrt{6}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(E)}{12} - \dfrac{\sqrt{6}\mathbb{Q}_{2,2}^{(1,-1;a)}(E)\mathbb{Q}_{2,1}^{(b)}(T_2)}{12}$

$\boxed{\text{z339}}$ $\quad \mathbb{Q}_{4,2}^{(1,-1;c)}(T_1) = \dfrac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(E)\mathbb{Q}_{2,2}^{(b)}(T_2)}{4} - \dfrac{\sqrt{6}\mathbb{Q}_{2,2}^{(1,-1;a)}(E)\mathbb{Q}_{2,2}^{(b)}(T_2)}{12} + \dfrac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(E)}{4} - \dfrac{\sqrt{6}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(E)}{12}$

$\boxed{\text{z340}}$ $\quad \mathbb{Q}_{4,3}^{(1,-1;c)}(T_1) = \dfrac{\sqrt{6}\mathbb{Q}_{2,2}^{(1,-1;a)}(E)\mathbb{Q}_{2,3}^{(b)}(T_2)}{6} + \dfrac{\sqrt{6}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(E)}{6}$

$\boxed{\text{z341}}$ $\quad \mathbb{Q}_{5,1}^{(1,-1;c)}(T_1,2) = \dfrac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_1)\mathbb{M}_{2,3}^{(b)}(T_2)}{12} - \dfrac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_2)\mathbb{M}_{2,3}^{(b)}(T_2)}{4} + \dfrac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_1)\mathbb{M}_{2,2}^{(b)}(T_2)}{12} + \dfrac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_2)\mathbb{M}_{2,2}^{(b)}(T_2)}{4}$

$\boxed{\text{z342}}$ $\quad \mathbb{Q}_{5,2}^{(1,-1;c)}(T_1,2) = \dfrac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_1)\mathbb{M}_{2,3}^{(b)}(T_2)}{12} + \dfrac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_2)\mathbb{M}_{2,3}^{(b)}(T_2)}{4} + \dfrac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_1)\mathbb{M}_{2,1}^{(b)}(T_2)}{12} - \dfrac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_2)\mathbb{M}_{2,1}^{(b)}(T_2)}{4}$

$\boxed{\text{z343}}$ $\quad \mathbb{Q}_{5,3}^{(1,-1;c)}(T_1,2) = \dfrac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_1)\mathbb{M}_{2,2}^{(b)}(T_2)}{12} - \dfrac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_2)\mathbb{M}_{2,2}^{(b)}(T_2)}{4} + \dfrac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_1)\mathbb{M}_{2,1}^{(b)}(T_2)}{12} + \dfrac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_2)\mathbb{M}_{2,1}^{(b)}(T_2)}{4}$

$\boxed{\text{z344}}$ $\quad \mathbb{Q}_{1,1}^{(1,0;c)}(T_1,a) = -\dfrac{\sqrt{30}\mathbb{T}_{2,1}^{(1,0;a)}(E)\mathbb{T}_{1,1}^{(b)}(T_1)}{30} + \dfrac{\sqrt{10}\mathbb{T}_{2,2}^{(1,0;a)}(E)\mathbb{T}_{1,1}^{(b)}(T_1)}{10} + \dfrac{\sqrt{10}\mathbb{T}_{2,2}^{(1,0;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{10} + \dfrac{\sqrt{10}\mathbb{T}_{2,3}^{(1,0;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{10}$

$\boxed{\text{z345}}$ $\quad \mathbb{Q}_{1,2}^{(1,0;c)}(T_1,a) = -\dfrac{\sqrt{30}\mathbb{T}_{2,1}^{(1,0;a)}(E)\mathbb{T}_{1,2}^{(b)}(T_1)}{30} + \dfrac{\sqrt{10}\mathbb{T}_{2,1}^{(1,0;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{10} - \dfrac{\sqrt{10}\mathbb{T}_{2,2}^{(1,0;a)}(E)\mathbb{T}_{1,2}^{(b)}(T_1)}{10} + \dfrac{\sqrt{10}\mathbb{T}_{2,3}^{(1,0;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{10}$

$\boxed{\text{z346}}$ $\quad \mathbb{Q}_{1,3}^{(1,0;c)}(T_1,a) = \dfrac{\sqrt{30}\mathbb{T}_{2,1}^{(1,0;a)}(E)\mathbb{T}_{1,3}^{(b)}(T_1)}{15} + \dfrac{\sqrt{10}\mathbb{T}_{2,1}^{(1,0;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{10} + \dfrac{\sqrt{10}\mathbb{T}_{2,2}^{(1,0;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{10}$

$\boxed{\text{z347}}$ $\quad \mathbb{Q}_{1,1}^{(1,0;c)}(T_1,b) = -\dfrac{\sqrt{6}\mathbb{T}_{2,1}^{(1,0;a)}(E)\mathbb{M}_{2,1}^{(b)}(T_2)}{6} - \dfrac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(E)\mathbb{M}_{2,1}^{(b)}(T_2)}{6} - \dfrac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(T_2)\mathbb{M}_{2,3}^{(b)}(T_2)}{6} + \dfrac{\sqrt{2}\mathbb{T}_{2,3}^{(1,0;a)}(T_2)\mathbb{M}_{2,2}^{(b)}(T_2)}{6}$

$\boxed{\text{z348}}$ $\quad \mathbb{Q}_{1,2}^{(1,0;c)}(T_1,b) = \dfrac{\sqrt{6}\mathbb{T}_{2,1}^{(1,0;a)}(E)\mathbb{M}_{2,2}^{(b)}(T_2)}{6} + \dfrac{\sqrt{2}\mathbb{T}_{2,1}^{(1,0;a)}(T_2)\mathbb{M}_{2,3}^{(b)}(T_2)}{6} - \dfrac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(E)\mathbb{M}_{2,2}^{(b)}(T_2)}{6} - \dfrac{\sqrt{2}\mathbb{T}_{2,3}^{(1,0;a)}(T_2)\mathbb{M}_{2,1}^{(b)}(T_2)}{6}$

$$\boxed{\text{z349}} \quad \mathbb{Q}_{1,3}^{(1,0;c)}(T_1,b) = -\frac{\sqrt{2}\mathbb{T}_{2,1}^{(1,0;a)}(T_2)\mathbb{M}_{2,2}^{(b)}(T_2)}{6} + \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(E)\mathbb{M}_{2,3}^{(b)}(T_2)}{3} + \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(T_2)\mathbb{M}_{2,1}^{(b)}(T_2)}{6}$$

$$\boxed{\text{z350}} \quad \mathbb{Q}_{3,1}^{(1,0;c)}(T_1,a) = -\frac{\sqrt{5}\mathbb{T}_{2,1}^{(1,0;a)}(E)\mathbb{T}_{1,1}^{(b)}(T_1)}{10} + \frac{\sqrt{15}\mathbb{T}_{2,2}^{(1,0;a)}(E)\mathbb{T}_{1,1}^{(b)}(T_1)}{10} - \frac{\sqrt{15}\mathbb{T}_{2,2}^{(1,0;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{15} - \frac{\sqrt{15}\mathbb{T}_{2,3}^{(1,0;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{15}$$

$$\boxed{\text{z351}} \quad \mathbb{Q}_{3,2}^{(1,0;c)}(T_1,a) = -\frac{\sqrt{5}\mathbb{T}_{2,1}^{(1,0;a)}(E)\mathbb{T}_{1,2}^{(b)}(T_1)}{10} - \frac{\sqrt{15}\mathbb{T}_{2,1}^{(1,0;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{15} - \frac{\sqrt{15}\mathbb{T}_{2,2}^{(1,0;a)}(E)\mathbb{T}_{1,2}^{(b)}(T_1)}{10} - \frac{\sqrt{15}\mathbb{T}_{2,3}^{(1,0;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{15}$$

$$\boxed{\text{z352}} \quad \mathbb{Q}_{3,3}^{(1,0;c)}(T_1,a) = \frac{\sqrt{5}\mathbb{T}_{2,1}^{(1,0;a)}(E)\mathbb{T}_{1,3}^{(b)}(T_1)}{5} - \frac{\sqrt{15}\mathbb{T}_{2,1}^{(1,0;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{15} - \frac{\sqrt{15}\mathbb{T}_{2,2}^{(1,0;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{15}$$

$$\boxed{\text{z353}} \quad \mathbb{Q}_{3,1}^{(1,0;c)}(T_1,b) = \frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(E)\mathbb{M}_{2,1}^{(b)}(T_2)}{6} + \frac{\mathbb{T}_{2,2}^{(1,0;a)}(E)\mathbb{M}_{2,1}^{(b)}(T_2)}{6} - \frac{\mathbb{T}_{2,2}^{(1,0;a)}(T_2)\mathbb{M}_{2,3}^{(b)}(T_2)}{3} + \frac{\mathbb{T}_{2,3}^{(1,0;a)}(T_2)\mathbb{M}_{2,2}^{(b)}(T_2)}{3}$$

$$\boxed{\text{z354}} \quad \mathbb{Q}_{3,2}^{(1,0;c)}(T_1,b) = -\frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(E)\mathbb{M}_{2,2}^{(b)}(T_2)}{6} + \frac{\mathbb{T}_{2,1}^{(1,0;a)}(T_2)\mathbb{M}_{2,3}^{(b)}(T_2)}{3} + \frac{\mathbb{T}_{2,2}^{(1,0;a)}(E)\mathbb{M}_{2,2}^{(b)}(T_2)}{6} - \frac{\mathbb{T}_{2,3}^{(1,0;a)}(T_2)\mathbb{M}_{2,1}^{(b)}(T_2)}{3}$$

$$\boxed{\text{z355}} \quad \mathbb{Q}_{3,3}^{(1,0;c)}(T_1,b) = -\frac{\mathbb{T}_{2,1}^{(1,0;a)}(T_2)\mathbb{M}_{2,2}^{(b)}(T_2)}{3} - \frac{\mathbb{T}_{2,2}^{(1,0;a)}(E)\mathbb{M}_{2,3}^{(b)}(T_2)}{3} + \frac{\mathbb{T}_{2,2}^{(1,0;a)}(T_2)\mathbb{M}_{2,1}^{(b)}(T_2)}{3}$$

$$\boxed{\text{z356}} \quad \mathbb{Q}_{1,1}^{(1,1;c)}(T_1,a) = \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,1;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{6} - \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{6}$$

$$\boxed{\text{z357}} \quad \mathbb{Q}_{1,2}^{(1,1;c)}(T_1,a) = -\frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,1;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{6}$$

$$\boxed{\text{z358}} \quad \mathbb{Q}_{1,3}^{(1,1;c)}(T_1,a) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{6} - \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{6}$$

$$\boxed{\text{z359}} \quad \mathbb{Q}_{1,1}^{(1,1;c)}(T_1,b) = \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,1;a)}(T_1)\mathbb{M}_{2,3}^{(b)}(T_2)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,1;a)}(T_1)\mathbb{M}_{2,2}^{(b)}(T_2)}{6}$$

$$\boxed{\text{z360}} \quad \mathbb{Q}_{1,2}^{(1,1;c)}(T_1,b) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,1;a)}(T_1)\mathbb{M}_{2,3}^{(b)}(T_2)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,1;a)}(T_1)\mathbb{M}_{2,1}^{(b)}(T_2)}{6}$$

$$\boxed{\text{z361}} \quad \mathbb{Q}_{1,3}^{(1,1;c)}(T_1,b) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,1;a)}(T_1)\mathbb{M}_{2,2}^{(b)}(T_2)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,1;a)}(T_1)\mathbb{M}_{2,1}^{(b)}(T_2)}{6}$$

$$\boxed{\text{z362}} \quad \mathbb{G}_{1,1}^{(c)}(T_1) = -\frac{\sqrt{10}\mathbb{Q}_{2,1}^{(a)}(E)\mathbb{Q}_{2,1}^{(b)}(T_2)}{10} + \frac{\sqrt{10}\mathbb{Q}_{2,1}^{(a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(E)}{10} + \frac{\sqrt{30}\mathbb{Q}_{2,1}^{(a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(E)}{30} - \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(a)}(E)\mathbb{Q}_{2,1}^{(b)}(T_2)}{30} - \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(a)}(T_2)\mathbb{Q}_{2,3}^{(b)}(T_2)}{30} + \frac{\sqrt{30}\mathbb{Q}_{2,3}^{(a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(T_2)}{30}$$

$$\boxed{\text{z363}} \quad \mathbb{G}_{1,2}^{(c)}(T_1) = \frac{\sqrt{10}\mathbb{Q}_{2,1}^{(a)}(E)\mathbb{Q}_{2,2}^{(b)}(T_2)}{10} + \frac{\sqrt{30}\mathbb{Q}_{2,1}^{(a)}(T_2)\mathbb{Q}_{2,3}^{(b)}(T_2)}{30} - \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(a)}(E)\mathbb{Q}_{2,2}^{(b)}(T_2)}{30} - \frac{\sqrt{10}\mathbb{Q}_{2,2}^{(a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(E)}{10} + \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(E)}{30} - \frac{\sqrt{30}\mathbb{Q}_{2,3}^{(a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(T_2)}{30}$$

$$\boxed{\text{z364}} \quad \mathbb{G}_{1,3}^{(c)}(T_1) = -\frac{\sqrt{30}\mathbb{Q}_{2,1}^{(a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(T_2)}{30} + \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(a)}(E)\mathbb{Q}_{2,3}^{(b)}(T_2)}{15} + \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(T_2)}{30} - \frac{\sqrt{30}\mathbb{Q}_{2,3}^{(a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(E)}{15}$$

$$\boxed{\text{z365}} \quad \mathbb{G}_{3,1}^{(c)}(T_1) = \frac{\sqrt{10}\mathbb{Q}_{2,1}^{(a)}(E)\mathbb{Q}_{2,1}^{(b)}(T_2)}{20} - \frac{\sqrt{10}\mathbb{Q}_{2,1}^{(a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(E)}{20} - \frac{\sqrt{30}\mathbb{Q}_{2,1}^{(a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(E)}{60} + \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(a)}(E)\mathbb{Q}_{2,1}^{(b)}(T_2)}{60} - \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(a)}(T_2)\mathbb{Q}_{2,3}^{(b)}(T_2)}{15} + \frac{\sqrt{30}\mathbb{Q}_{2,3}^{(a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(T_2)}{15}$$

$$\boxed{\text{z366}} \quad \mathbb{G}_{3,2}^{(c)}(T_1) = -\frac{\sqrt{10}\mathbb{Q}_{2,1}^{(a)}(E)\mathbb{Q}_{2,2}^{(b)}(T_2)}{20} + \frac{\sqrt{30}\mathbb{Q}_{2,1}^{(a)}(T_2)\mathbb{Q}_{2,3}^{(b)}(T_2)}{15} + \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(a)}(E)\mathbb{Q}_{2,2}^{(b)}(T_2)}{60} + \frac{\sqrt{10}\mathbb{Q}_{2,2}^{(a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(E)}{20} - \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(E)}{60} - \frac{\sqrt{30}\mathbb{Q}_{2,3}^{(a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(T_2)}{15}$$

$$\boxed{\text{z367}} \quad \mathbb{G}_{3,3}^{(c)}(T_1) = -\frac{\sqrt{30}\mathbb{Q}_{2,1}^{(a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(T_2)}{15} - \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(a)}(E)\mathbb{Q}_{2,3}^{(b)}(T_2)}{30} + \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(T_2)}{15} + \frac{\sqrt{30}\mathbb{Q}_{2,3}^{(a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(E)}{30}$$

$$\boxed{\text{z368}} \quad \mathbb{G}_{1,1}^{(1,-1;c)}(T_1) = -\frac{\sqrt{10}\mathbb{Q}_{2,1}^{(1,-1;a)}(E)\mathbb{Q}_{2,1}^{(b)}(T_2)}{10} + \frac{\sqrt{10}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(E)}{10} + \frac{\sqrt{30}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(E)}{30}$$
$$- \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(1,-1;a)}(E)\mathbb{Q}_{2,1}^{(b)}(T_2)}{30} - \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,3}^{(b)}(T_2)}{30} + \frac{\sqrt{30}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(T_2)}{30}$$

$$\boxed{\text{z369}} \quad \mathbb{G}_{1,2}^{(1,-1;c)}(T_1) = \frac{\sqrt{10}\mathbb{Q}_{2,1}^{(1,-1;a)}(E)\mathbb{Q}_{2,2}^{(b)}(T_2)}{10} + \frac{\sqrt{30}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,3}^{(b)}(T_2)}{30} - \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(1,-1;a)}(E)\mathbb{Q}_{2,2}^{(b)}(T_2)}{30}$$
$$- \frac{\sqrt{10}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(E)}{10} + \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(E)}{30} - \frac{\sqrt{30}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(T_2)}{30}$$

$$\boxed{\text{z370}} \quad \mathbb{G}_{1,3}^{(1,-1;c)}(T_1) = -\frac{\sqrt{30}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(T_2)}{30} + \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(1,-1;a)}(E)\mathbb{Q}_{2,3}^{(b)}(T_2)}{15} + \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(T_2)}{30} - \frac{\sqrt{30}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(E)}{15}$$

$$\boxed{\text{z371}} \quad \mathbb{G}_{3,1}^{(1,-1;c)}(T_1) = \frac{\sqrt{10}\mathbb{Q}_{2,1}^{(1,-1;a)}(E)\mathbb{Q}_{2,1}^{(b)}(T_2)}{20} - \frac{\sqrt{10}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(E)}{20} - \frac{\sqrt{30}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(E)}{60}$$
$$+ \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(1,-1;a)}(E)\mathbb{Q}_{2,1}^{(b)}(T_2)}{60} - \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,3}^{(b)}(T_2)}{15} + \frac{\sqrt{30}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(T_2)}{15}$$

$$\boxed{\text{z372}} \quad \mathbb{G}_{3,2}^{(1,-1;c)}(T_1) = -\frac{\sqrt{10}\mathbb{Q}_{2,1}^{(1,-1;a)}(E)\mathbb{Q}_{2,2}^{(b)}(T_2)}{20} + \frac{\sqrt{30}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,3}^{(b)}(T_2)}{15} + \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(1,-1;a)}(E)\mathbb{Q}_{2,2}^{(b)}(T_2)}{60}$$
$$+ \frac{\sqrt{10}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(E)}{20} - \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(E)}{60} - \frac{\sqrt{30}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(T_2)}{15}$$

$$\boxed{\text{z373}} \quad \mathbb{G}_{3,3}^{(1,-1;c)}(T_1) = -\frac{\sqrt{30}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(T_2)}{15} - \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(1,-1;a)}(E)\mathbb{Q}_{2,3}^{(b)}(T_2)}{30} + \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(T_2)}{15} + \frac{\sqrt{30}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(E)}{30}$$

$$\boxed{\text{z374}} \quad \mathbb{G}_{4,1}^{(1,-1;c)}(T_1) = \frac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{12} - \frac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{4} - \frac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{12} - \frac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{4}$$

$$\boxed{\text{z375}} \quad \mathbb{G}_{4,2}^{(1,-1;c)}(T_1) = -\frac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{12} - \frac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{4} + \frac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{12} - \frac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{4}$$

$$\boxed{\text{z376}} \quad \mathbb{G}_{4,3}^{(1,-1;c)}(T_1) = \frac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{12} - \frac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{4} - \frac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{12} - \frac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{4}$$

$$\boxed{\text{z377}} \quad \mathbb{G}_{1,1}^{(1,0;c)}(T_1,a) = \frac{\sqrt{3}\mathbb{G}_{1,1}^{(1,0;a)}(T_1)\mathbb{Q}_{0}^{(b)}(A_1)}{3}$$

$$\boxed{\text{z378}} \quad \mathbb{G}_{1,2}^{(1,0;c)}(T_1,a) = \frac{\sqrt{3}\mathbb{G}_{1,2}^{(1,0;a)}(T_1)\mathbb{Q}_{0}^{(b)}(A_1)}{3}$$

$$\boxed{\text{z379}} \quad \mathbb{G}_{1,3}^{(1,0;c)}(T_1,a) = \frac{\sqrt{3}\mathbb{G}_{1,3}^{(1,0;a)}(T_1)\mathbb{Q}_{0}^{(b)}(A_1)}{3}$$

$$\boxed{\text{z380}} \quad \mathbb{G}_{1,1}^{(1,0;c)}(T_1,b) = -\frac{\sqrt{30}\mathbb{G}_{1,1}^{(1,0;a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(E)}{30} + \frac{\sqrt{10}\mathbb{G}_{1,1}^{(1,0;a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(E)}{10} + \frac{\sqrt{10}\mathbb{G}_{1,2}^{(1,0;a)}(T_1)\mathbb{Q}_{2,3}^{(b)}(T_2)}{10} + \frac{\sqrt{10}\mathbb{G}_{1,3}^{(1,0;a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(T_2)}{10}$$

$$\boxed{\text{z381}} \quad \mathbb{G}_{1,2}^{(1,0;c)}(T_1,b) = \frac{\sqrt{10}\mathbb{G}_{1,1}^{(1,0;a)}(T_1)\mathbb{Q}_{2,3}^{(b)}(T_2)}{10} - \frac{\sqrt{30}\mathbb{G}_{1,2}^{(1,0;a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(E)}{30} - \frac{\sqrt{10}\mathbb{G}_{1,2}^{(1,0;a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(E)}{10} + \frac{\sqrt{10}\mathbb{G}_{1,3}^{(1,0;a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(T_2)}{10}$$

$$\boxed{\text{z382}} \quad \mathbb{G}_{1,3}^{(1,0;c)}(T_1,b) = \frac{\sqrt{10}\mathbb{G}_{1,1}^{(1,0;a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(T_2)}{10} + \frac{\sqrt{10}\mathbb{G}_{1,2}^{(1,0;a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(T_2)}{10} + \frac{\sqrt{30}\mathbb{G}_{1,3}^{(1,0;a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(E)}{15}$$

$$\boxed{\text{z383}} \quad \mathbb{G}_{3,1}^{(1,0;c)}(T_1) = -\frac{\sqrt{5}\mathbb{G}_{1,1}^{(1,0;a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(E)}{10} + \frac{\sqrt{15}\mathbb{G}_{1,1}^{(1,0;a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(E)}{10} - \frac{\sqrt{15}\mathbb{G}_{1,2}^{(1,0;a)}(T_1)\mathbb{Q}_{2,3}^{(b)}(T_2)}{15} - \frac{\sqrt{15}\mathbb{G}_{1,3}^{(1,0;a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(T_2)}{15}$$

$$\boxed{\text{z384}} \quad \mathbb{G}_{3,2}^{(1,0;c)}(T_1) = -\frac{\sqrt{15}\mathbb{G}_{1,1}^{(1,0;a)}(T_1)\mathbb{Q}_{2,3}^{(b)}(T_2)}{15} - \frac{\sqrt{5}\mathbb{G}_{1,2}^{(1,0;a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(E)}{10} - \frac{\sqrt{15}\mathbb{G}_{1,2}^{(1,0;a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(E)}{10} - \frac{\sqrt{15}\mathbb{G}_{1,3}^{(1,0;a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(T_2)}{15}$$

$$\boxed{\text{z385}} \quad \mathbb{G}_{3,3}^{(1,0;c)}(T_1) = -\frac{\sqrt{15}\mathbb{G}_{1,1}^{(1,0;a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(T_2)}{15} - \frac{\sqrt{15}\mathbb{G}_{1,2}^{(1,0;a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(T_2)}{15} + \frac{\sqrt{5}\mathbb{G}_{1,3}^{(1,0;a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(E)}{5}$$

$$\boxed{\text{z524}} \quad \mathbb{Q}_{2,1}^{(c)}(T_2,a) = \frac{\sqrt{3}\mathbb{Q}_{0}^{(a)}(A_1)\mathbb{Q}_{2,1}^{(b)}(T_2)}{3}$$

$$\boxed{\text{z525}} \quad \mathbb{Q}_{2,2}^{(c)}(T_2,a) = \frac{\sqrt{3}\mathbb{Q}_{0}^{(a)}(A_1)\mathbb{Q}_{2,2}^{(b)}(T_2)}{3}$$

$\boxed{\text{z526}}$ $\mathbb{Q}_{2,3}^{(c)}(T_2, a) = \dfrac{\sqrt{3}\mathbb{Q}_0^{(a)}(A_1)\mathbb{Q}_{2,3}^{(b)}(T_2)}{3}$

$\boxed{\text{z527}}$ $\mathbb{Q}_{2,1}^{(c)}(T_2, b) = \dfrac{\sqrt{3}\mathbb{Q}_{2,1}^{(a)}(T_2)\mathbb{Q}_0^{(b)}(A_1)}{3}$

$\boxed{\text{z528}}$ $\mathbb{Q}_{2,2}^{(c)}(T_2, b) = \dfrac{\sqrt{3}\mathbb{Q}_{2,2}^{(a)}(T_2)\mathbb{Q}_0^{(b)}(A_1)}{3}$

$\boxed{\text{z529}}$ $\mathbb{Q}_{2,3}^{(c)}(T_2, b) = \dfrac{\sqrt{3}\mathbb{Q}_{2,3}^{(a)}(T_2)\mathbb{Q}_0^{(b)}(A_1)}{3}$

$\boxed{\text{z530}}$ $\mathbb{Q}_{2,1}^{(c)}(T_2, c) = \dfrac{\sqrt{42}\mathbb{Q}_{2,1}^{(a)}(E)\mathbb{Q}_{2,1}^{(b)}(T_2)}{42} + \dfrac{\sqrt{42}\mathbb{Q}_{2,1}^{(a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(E)}{42} - \dfrac{\sqrt{14}\mathbb{Q}_{2,1}^{(a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(E)}{14} - \dfrac{\sqrt{14}\mathbb{Q}_{2,2}^{(a)}(E)\mathbb{Q}_{2,1}^{(b)}(T_2)}{14} + \dfrac{\sqrt{14}\mathbb{Q}_{2,2}^{(a)}(T_2)\mathbb{Q}_{2,3}^{(b)}(T_2)}{14} + \dfrac{\sqrt{14}\mathbb{Q}_{2,3}^{(a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(T_2)}{14}$

$\boxed{\text{z531}}$ $\mathbb{Q}_{2,2}^{(c)}(T_2, c) = \dfrac{\sqrt{42}\mathbb{Q}_{2,1}^{(a)}(E)\mathbb{Q}_{2,2}^{(b)}(T_2)}{42} + \dfrac{\sqrt{14}\mathbb{Q}_{2,1}^{(a)}(T_2)\mathbb{Q}_{2,3}^{(b)}(T_2)}{14} + \dfrac{\sqrt{14}\mathbb{Q}_{2,2}^{(a)}(E)\mathbb{Q}_{2,2}^{(b)}(T_2)}{14} + \dfrac{\sqrt{42}\mathbb{Q}_{2,2}^{(a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(E)}{42} + \dfrac{\sqrt{14}\mathbb{Q}_{2,2}^{(a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(E)}{14} + \dfrac{\sqrt{14}\mathbb{Q}_{2,3}^{(a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(T_2)}{14}$

$\boxed{\text{z532}}$ $\mathbb{Q}_{2,3}^{(c)}(T_2, c) = -\dfrac{\sqrt{42}\mathbb{Q}_{2,1}^{(a)}(E)\mathbb{Q}_{2,3}^{(b)}(T_2)}{21} + \dfrac{\sqrt{14}\mathbb{Q}_{2,1}^{(a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(T_2)}{14} + \dfrac{\sqrt{14}\mathbb{Q}_{2,2}^{(a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(T_2)}{14} - \dfrac{\sqrt{42}\mathbb{Q}_{2,3}^{(a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(E)}{21}$

$\boxed{\text{z533}}$ $\mathbb{Q}_{3,1}^{(c)}(T_2) = \dfrac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(T_1)\mathbb{M}_{2,3}^{(b)}(T_2)}{6} - \dfrac{\sqrt{6}\mathbb{M}_{1,3}^{(a)}(T_1)\mathbb{M}_{2,2}^{(b)}(T_2)}{6}$

$\boxed{\text{z534}}$ $\mathbb{Q}_{3,2}^{(c)}(T_2) = -\dfrac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(T_1)\mathbb{M}_{2,3}^{(b)}(T_2)}{6} + \dfrac{\sqrt{6}\mathbb{M}_{1,3}^{(a)}(T_1)\mathbb{M}_{2,1}^{(b)}(T_2)}{6}$

$\boxed{\text{z535}}$ $\mathbb{Q}_{3,3}^{(c)}(T_2) = \dfrac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(T_1)\mathbb{M}_{2,2}^{(b)}(T_2)}{6} - \dfrac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(T_1)\mathbb{M}_{2,1}^{(b)}(T_2)}{6}$

$\boxed{\text{z536}}$ $\mathbb{Q}_{4,1}^{(c)}(T_2) = -\dfrac{\sqrt{14}\mathbb{Q}_{2,1}^{(a)}(E)\mathbb{Q}_{2,1}^{(b)}(T_2)}{28} - \dfrac{\sqrt{14}\mathbb{Q}_{2,1}^{(a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(E)}{28} + \dfrac{\sqrt{42}\mathbb{Q}_{2,1}^{(a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(E)}{28} + \dfrac{\sqrt{42}\mathbb{Q}_{2,2}^{(a)}(E)\mathbb{Q}_{2,1}^{(b)}(T_2)}{28} + \dfrac{\sqrt{42}\mathbb{Q}_{2,2}^{(a)}(T_2)\mathbb{Q}_{2,3}^{(b)}(T_2)}{21} + \dfrac{\sqrt{42}\mathbb{Q}_{2,3}^{(a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(T_2)}{21}$

$\boxed{\text{z537}}$ $\mathbb{Q}_{4,2}^{(c)}(T_2) = -\dfrac{\sqrt{14}\mathbb{Q}_{2,1}^{(a)}(E)\mathbb{Q}_{2,2}^{(b)}(T_2)}{28} + \dfrac{\sqrt{42}\mathbb{Q}_{2,1}^{(a)}(T_2)\mathbb{Q}_{2,3}^{(b)}(T_2)}{21} - \dfrac{\sqrt{42}\mathbb{Q}_{2,2}^{(a)}(E)\mathbb{Q}_{2,2}^{(b)}(T_2)}{28} - \dfrac{\sqrt{14}\mathbb{Q}_{2,2}^{(a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(E)}{28} - \dfrac{\sqrt{42}\mathbb{Q}_{2,2}^{(a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(E)}{28} + \dfrac{\sqrt{42}\mathbb{Q}_{2,3}^{(a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(T_2)}{21}$

$\boxed{\text{z538}}$ $\mathbb{Q}_{4,3}^{(c)}(T_2) = \dfrac{\sqrt{14}\mathbb{Q}_{2,1}^{(a)}(E)\mathbb{Q}_{2,3}^{(b)}(T_2)}{14} + \dfrac{\sqrt{42}\mathbb{Q}_{2,1}^{(a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(T_2)}{21} + \dfrac{\sqrt{42}\mathbb{Q}_{2,2}^{(a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(T_2)}{21} + \dfrac{\sqrt{14}\mathbb{Q}_{2,3}^{(a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(E)}{14}$

$\boxed{\text{z539}}$ $\mathbb{Q}_{2,1}^{(1,-1;c)}(T_2, a) = \dfrac{\sqrt{3}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_0^{(b)}(A_1)}{3}$

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$\boxed{\text{z540}}$ $\quad \mathbb{Q}_{2,2}^{(1,-1;c)}(T_2,a) = \dfrac{\sqrt{3}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_0^{(b)}(A_1)}{3}$

$\boxed{\text{z541}}$ $\quad \mathbb{Q}_{2,3}^{(1,-1;c)}(T_2,a) = \dfrac{\sqrt{3}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_2)\mathbb{Q}_0^{(b)}(A_1)}{3}$

$\boxed{\text{z542}}$ $\quad \mathbb{Q}_{2,1}^{(1,-1;c)}(T_2,b) = \dfrac{\sqrt{42}\mathbb{Q}_{2,1}^{(1,-1;a)}(E)\mathbb{Q}_{2,1}^{(b)}(T_2)}{42} + \dfrac{\sqrt{42}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(E)}{42} - \dfrac{\sqrt{14}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(E)}{14}$

$\qquad\qquad\qquad\quad - \dfrac{\sqrt{14}\mathbb{Q}_{2,2}^{(1,-1;a)}(E)\mathbb{Q}_{2,1}^{(b)}(T_2)}{14} + \dfrac{\sqrt{14}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,3}^{(b)}(T_2)}{14} + \dfrac{\sqrt{14}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(T_2)}{14}$

$\boxed{\text{z543}}$ $\quad \mathbb{Q}_{2,2}^{(1,-1;c)}(T_2,b) = \dfrac{\sqrt{42}\mathbb{Q}_{2,1}^{(1,-1;a)}(E)\mathbb{Q}_{2,2}^{(b)}(T_2)}{42} + \dfrac{\sqrt{14}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,3}^{(b)}(T_2)}{14} + \dfrac{\sqrt{14}\mathbb{Q}_{2,2}^{(1,-1;a)}(E)\mathbb{Q}_{2,2}^{(b)}(T_2)}{14}$

$\qquad\qquad\qquad\quad + \dfrac{\sqrt{42}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(E)}{42} + \dfrac{\sqrt{14}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(E)}{14} + \dfrac{\sqrt{14}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(T_2)}{14}$

$\boxed{\text{z544}}$ $\quad \mathbb{Q}_{2,3}^{(1,-1;c)}(T_2,b) = -\dfrac{\sqrt{42}\mathbb{Q}_{2,1}^{(1,-1;a)}(E)\mathbb{Q}_{2,3}^{(b)}(T_2)}{21} + \dfrac{\sqrt{14}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(T_2)}{14} + \dfrac{\sqrt{14}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(T_2)}{14} - \dfrac{\sqrt{42}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(E)}{21}$

$\boxed{\text{z545}}$ $\quad \mathbb{Q}_{3,1}^{(1,-1;c)}(T_2,a) = \dfrac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{12} + \dfrac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{12} + \dfrac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{12} - \dfrac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{12} + \dfrac{\mathbb{M}_3^{(1,-1;a)}(A_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{3}$

$\boxed{\text{z546}}$ $\quad \mathbb{Q}_{3,2}^{(1,-1;c)}(T_2,a) = \dfrac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{12} - \dfrac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{12} + \dfrac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{12} + \dfrac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{12} + \dfrac{\mathbb{M}_3^{(1,-1;a)}(A_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{3}$

$\boxed{\text{z547}}$ $\quad \mathbb{Q}_{3,3}^{(1,-1;c)}(T_2,a) = \dfrac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{12} + \dfrac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{12} + \dfrac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{12} - \dfrac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{12} + \dfrac{\mathbb{M}_3^{(1,-1;a)}(A_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{3}$

$\boxed{\text{z548}}$ $\quad \mathbb{Q}_{3,1}^{(1,-1;c)}(T_2,b) = \dfrac{\sqrt{6}\mathbb{M}_{3,2}^{(1,-1;a)}(T_1)\mathbb{M}_{2,3}^{(b)}(T_2)}{24} - \dfrac{\sqrt{10}\mathbb{M}_{3,2}^{(1,-1;a)}(T_2)\mathbb{M}_{2,3}^{(b)}(T_2)}{8} - \dfrac{\sqrt{6}\mathbb{M}_{3,3}^{(1,-1;a)}(T_1)\mathbb{M}_{2,2}^{(b)}(T_2)}{24} - \dfrac{\sqrt{10}\mathbb{M}_{3,3}^{(1,-1;a)}(T_2)\mathbb{M}_{2,2}^{(b)}(T_2)}{8}$

$\boxed{\text{z549}}$ $\quad \mathbb{Q}_{3,2}^{(1,-1;c)}(T_2,b) = -\dfrac{\sqrt{6}\mathbb{M}_{3,1}^{(1,-1;a)}(T_1)\mathbb{M}_{2,3}^{(b)}(T_2)}{24} - \dfrac{\sqrt{10}\mathbb{M}_{3,1}^{(1,-1;a)}(T_2)\mathbb{M}_{2,3}^{(b)}(T_2)}{8} + \dfrac{\sqrt{6}\mathbb{M}_{3,3}^{(1,-1;a)}(T_1)\mathbb{M}_{2,1}^{(b)}(T_2)}{24} - \dfrac{\sqrt{10}\mathbb{M}_{3,3}^{(1,-1;a)}(T_2)\mathbb{M}_{2,1}^{(b)}(T_2)}{8}$

$\boxed{\text{z550}}$ $\quad \mathbb{Q}_{3,3}^{(1,-1;c)}(T_2,b) = \dfrac{\sqrt{6}\mathbb{M}_{3,1}^{(1,-1;a)}(T_1)\mathbb{M}_{2,2}^{(b)}(T_2)}{24} - \dfrac{\sqrt{10}\mathbb{M}_{3,1}^{(1,-1;a)}(T_2)\mathbb{M}_{2,2}^{(b)}(T_2)}{8} - \dfrac{\sqrt{6}\mathbb{M}_{3,2}^{(1,-1;a)}(T_1)\mathbb{M}_{2,1}^{(b)}(T_2)}{24} - \dfrac{\sqrt{10}\mathbb{M}_{3,2}^{(1,-1;a)}(T_2)\mathbb{M}_{2,1}^{(b)}(T_2)}{8}$

$\boxed{\text{z551}}$ $\quad \mathbb{Q}_{3,1}^{(1,-1;c)}(T_2,c) = \dfrac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_1)\mathbb{M}_{2,3}^{(b)}(T_2)}{6} - \dfrac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_1)\mathbb{M}_{2,2}^{(b)}(T_2)}{6}$

$\boxed{\text{z552}}$ $\quad \mathbb{Q}_{3,2}^{(1,-1;c)}(T_2,c) = -\dfrac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_1)\mathbb{M}_{2,3}^{(b)}(T_2)}{6} + \dfrac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_1)\mathbb{M}_{2,1}^{(b)}(T_2)}{6}$

$\boxed{\text{z553}}$ $\quad \mathbb{Q}_{3,3}^{(1,-1;c)}(T_2,c) = \dfrac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_1)\mathbb{M}_{2,2}^{(b)}(T_2)}{6} - \dfrac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_1)\mathbb{M}_{2,1}^{(b)}(T_2)}{6}$

$\boxed{\text{z554}}$ $\quad \mathbb{Q}_{4,1}^{(1,-1;c)}(T_2) = -\dfrac{\sqrt{14}\mathbb{Q}_{2,1}^{(1,-1;a)}(E)\mathbb{Q}_{2,1}^{(b)}(T_2)}{28} - \dfrac{\sqrt{14}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(E)}{28} + \dfrac{\sqrt{42}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(E)}{28}$
$\qquad\qquad\qquad + \dfrac{\sqrt{42}\mathbb{Q}_{2,2}^{(1,-1;a)}(E)\mathbb{Q}_{2,1}^{(b)}(T_2)}{28} + \dfrac{\sqrt{42}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,3}^{(b)}(T_2)}{21} + \dfrac{\sqrt{42}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(T_2)}{21}$

$\boxed{\text{z555}}$ $\quad \mathbb{Q}_{4,2}^{(1,-1;c)}(T_2) = -\dfrac{\sqrt{14}\mathbb{Q}_{2,1}^{(1,-1;a)}(E)\mathbb{Q}_{2,2}^{(b)}(T_2)}{28} + \dfrac{\sqrt{42}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,3}^{(b)}(T_2)}{21} - \dfrac{\sqrt{42}\mathbb{Q}_{2,2}^{(1,-1;a)}(E)\mathbb{Q}_{2,2}^{(b)}(T_2)}{28}$
$\qquad\qquad\qquad - \dfrac{\sqrt{14}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(E)}{28} - \dfrac{\sqrt{42}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(E)}{28} + \dfrac{\sqrt{42}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(T_2)}{21}$

$\boxed{\text{z556}}$ $\quad \mathbb{Q}_{4,3}^{(1,-1;c)}(T_2) = \dfrac{\sqrt{14}\mathbb{Q}_{2,1}^{(1,-1;a)}(E)\mathbb{Q}_{2,3}^{(b)}(T_2)}{14} + \dfrac{\sqrt{42}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(T_2)}{21} + \dfrac{\sqrt{42}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(T_2)}{21} + \dfrac{\sqrt{14}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(E)}{14}$

$\boxed{\text{z557}}$ $\quad \mathbb{Q}_{5,1}^{(1,-1;c)}(T_2) = -\dfrac{\sqrt{10}\mathbb{M}_{3,2}^{(1,-1;a)}(T_1)\mathbb{M}_{2,3}^{(b)}(T_2)}{8} - \dfrac{\sqrt{6}\mathbb{M}_{3,2}^{(1,-1;a)}(T_2)\mathbb{M}_{2,3}^{(b)}(T_2)}{24} + \dfrac{\sqrt{10}\mathbb{M}_{3,3}^{(1,-1;a)}(T_1)\mathbb{M}_{2,2}^{(b)}(T_2)}{8} - \dfrac{\sqrt{6}\mathbb{M}_{3,3}^{(1,-1;a)}(T_2)\mathbb{M}_{2,2}^{(b)}(T_2)}{24}$

$\boxed{\text{z558}}$ $\quad \mathbb{Q}_{5,2}^{(1,-1;c)}(T_2) = \dfrac{\sqrt{10}\mathbb{M}_{3,1}^{(1,-1;a)}(T_1)\mathbb{M}_{2,3}^{(b)}(T_2)}{8} - \dfrac{\sqrt{6}\mathbb{M}_{3,1}^{(1,-1;a)}(T_2)\mathbb{M}_{2,3}^{(b)}(T_2)}{24} - \dfrac{\sqrt{10}\mathbb{M}_{3,3}^{(1,-1;a)}(T_1)\mathbb{M}_{2,1}^{(b)}(T_2)}{8} - \dfrac{\sqrt{6}\mathbb{M}_{3,3}^{(1,-1;a)}(T_2)\mathbb{M}_{2,1}^{(b)}(T_2)}{24}$

$\boxed{\text{z559}}$ $\quad \mathbb{Q}_{5,3}^{(1,-1;c)}(T_2) = -\dfrac{\sqrt{10}\mathbb{M}_{3,1}^{(1,-1;a)}(T_1)\mathbb{M}_{2,2}^{(b)}(T_2)}{8} - \dfrac{\sqrt{6}\mathbb{M}_{3,1}^{(1,-1;a)}(T_2)\mathbb{M}_{2,2}^{(b)}(T_2)}{24} + \dfrac{\sqrt{10}\mathbb{M}_{3,2}^{(1,-1;a)}(T_1)\mathbb{M}_{2,1}^{(b)}(T_2)}{8} - \dfrac{\sqrt{6}\mathbb{M}_{3,2}^{(1,-1;a)}(T_2)\mathbb{M}_{2,1}^{(b)}(T_2)}{24}$

$\boxed{\text{z560}}$ $\quad \mathbb{Q}_{2,1}^{(1,0;c)}(T_2) = -\dfrac{\sqrt{6}\mathbb{G}_{1,1}^{(1,0;a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(E)}{6} - \dfrac{\sqrt{2}\mathbb{G}_{1,1}^{(1,0;a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(E)}{6} - \dfrac{\sqrt{2}\mathbb{G}_{1,2}^{(1,0;a)}(T_1)\mathbb{Q}_{2,3}^{(b)}(T_2)}{6} + \dfrac{\sqrt{2}\mathbb{G}_{1,3}^{(1,0;a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(T_2)}{6}$

$\boxed{\text{z561}}$ $\quad \mathbb{Q}_{2,2}^{(1,0;c)}(T_2) = \dfrac{\sqrt{2}\mathbb{G}_{1,1}^{(1,0;a)}(T_1)\mathbb{Q}_{2,3}^{(b)}(T_2)}{6} + \dfrac{\sqrt{6}\mathbb{G}_{1,2}^{(1,0;a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(E)}{6} - \dfrac{\sqrt{2}\mathbb{G}_{1,2}^{(1,0;a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(E)}{6} - \dfrac{\sqrt{2}\mathbb{G}_{1,3}^{(1,0;a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(T_2)}{6}$

$\boxed{\text{z562}}$ $\quad \mathbb{Q}_{2,3}^{(1,0;c)}(T_2) = -\dfrac{\sqrt{2}\mathbb{G}_{1,1}^{(1,0;a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(T_2)}{6} + \dfrac{\sqrt{2}\mathbb{G}_{1,2}^{(1,0;a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(T_2)}{6} + \dfrac{\sqrt{2}\mathbb{G}_{1,3}^{(1,0;a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(E)}{3}$

$\boxed{\text{z563}}$ $\quad \mathbb{Q}_{3,1}^{(1,0;c)}(T_2,a) = -\dfrac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(E)\mathbb{T}_{1,1}^{(b)}(T_1)}{6} - \dfrac{\mathbb{T}_{2,2}^{(1,0;a)}(E)\mathbb{T}_{1,1}^{(b)}(T_1)}{6} - \dfrac{\mathbb{T}_{2,2}^{(1,0;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{3} + \dfrac{\mathbb{T}_{2,3}^{(1,0;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{3}$

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$$\boxed{\text{z564}} \quad \mathbb{Q}_{3,2}^{(1,0;c)}(T_2,a) = \frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(E)\mathbb{T}_{1,2}^{(b)}(T_1)}{6} + \frac{\mathbb{T}_{2,1}^{(1,0;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{3} - \frac{\mathbb{T}_{2,2}^{(1,0;a)}(E)\mathbb{T}_{1,2}^{(b)}(T_1)}{6} - \frac{\mathbb{T}_{2,3}^{(1,0;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{3}$$

$$\boxed{\text{z565}} \quad \mathbb{Q}_{3,3}^{(1,0;c)}(T_2,a) = -\frac{\mathbb{T}_{2,1}^{(1,0;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{3} + \frac{\mathbb{T}_{2,2}^{(1,0;a)}(E)\mathbb{T}_{1,3}^{(b)}(T_1)}{3} + \frac{\mathbb{T}_{2,2}^{(1,0;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{3}$$

$$\boxed{\text{z566}} \quad \mathbb{Q}_{3,1}^{(1,0;c)}(T_2,b) = \frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(E)\mathbb{M}_{2,1}^{(b)}(T_2)}{6} - \frac{\mathbb{T}_{2,2}^{(1,0;a)}(E)\mathbb{M}_{2,1}^{(b)}(T_2)}{2}$$

$$\boxed{\text{z567}} \quad \mathbb{Q}_{3,2}^{(1,0;c)}(T_2,b) = \frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(E)\mathbb{M}_{2,2}^{(b)}(T_2)}{6} + \frac{\mathbb{T}_{2,2}^{(1,0;a)}(E)\mathbb{M}_{2,2}^{(b)}(T_2)}{2}$$

$$\boxed{\text{z568}} \quad \mathbb{Q}_{3,3}^{(1,0;c)}(T_2,b) = -\frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(E)\mathbb{M}_{2,3}^{(b)}(T_2)}{3}$$

$$\boxed{\text{z569}} \quad \mathbb{Q}_{2,1}^{(1,1;c)}(T_2) = \frac{\sqrt{3}\mathbb{Q}_{0}^{(1,1;a)}(A_1)\mathbb{Q}_{2,1}^{(b)}(T_2)}{3}$$

$$\boxed{\text{z570}} \quad \mathbb{Q}_{2,2}^{(1,1;c)}(T_2) = \frac{\sqrt{3}\mathbb{Q}_{0}^{(1,1;a)}(A_1)\mathbb{Q}_{2,2}^{(b)}(T_2)}{3}$$

$$\boxed{\text{z571}} \quad \mathbb{Q}_{2,3}^{(1,1;c)}(T_2) = \frac{\sqrt{3}\mathbb{Q}_{0}^{(1,1;a)}(A_1)\mathbb{Q}_{2,3}^{(b)}(T_2)}{3}$$

$$\boxed{\text{z572}} \quad \mathbb{Q}_{3,1}^{(1,1;c)}(T_2) = \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,1;a)}(T_1)\mathbb{M}_{2,3}^{(b)}(T_2)}{6} - \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,1;a)}(T_1)\mathbb{M}_{2,2}^{(b)}(T_2)}{6}$$

$$\boxed{\text{z573}} \quad \mathbb{Q}_{3,2}^{(1,1;c)}(T_2) = -\frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,1;a)}(T_1)\mathbb{M}_{2,3}^{(b)}(T_2)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,1;a)}(T_1)\mathbb{M}_{2,1}^{(b)}(T_2)}{6}$$

$$\boxed{\text{z574}} \quad \mathbb{Q}_{3,3}^{(1,1;c)}(T_2) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,1;a)}(T_1)\mathbb{M}_{2,2}^{(b)}(T_2)}{6} - \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,1;a)}(T_1)\mathbb{M}_{2,1}^{(b)}(T_2)}{6}$$

$$\boxed{\text{z575}} \quad \mathbb{G}_{2,1}^{(c)}(T_2) = \frac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{6}$$

$$\boxed{\text{z576}} \quad \mathbb{G}_{2,2}^{(c)}(T_2) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{6}$$

$$\boxed{\text{z577}} \quad \mathbb{G}_{2,3}^{(c)}(T_2) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{6}$$

$$\boxed{\text{z578}} \quad \mathbb{G}_{3,1}^{(c)}(T_2) = \frac{\sqrt{6}\mathbb{Q}_{2,1}^{(a)}(E)\mathbb{Q}_{2,1}^{(b)}(T_2)}{12} - \frac{\sqrt{6}\mathbb{Q}_{2,1}^{(a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(E)}{12} + \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(E)}{4} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E)\mathbb{Q}_{2,1}^{(b)}(T_2)}{4}$$

$$\boxed{\text{z579}} \quad \mathbb{G}_{3,2}^{(c)}(T_2) = \frac{\sqrt{6}\mathbb{Q}_{2,1}^{(a)}(E)\mathbb{Q}_{2,2}^{(b)}(T_2)}{12} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E)\mathbb{Q}_{2,2}^{(b)}(T_2)}{4} - \frac{\sqrt{6}\mathbb{Q}_{2,2}^{(a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(E)}{12} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(E)}{4}$$

$$\boxed{\text{z580}} \quad \mathbb{G}_{3,3}^{(c)}(T_2) = -\frac{\sqrt{6}\mathbb{Q}_{2,1}^{(a)}(E)\mathbb{Q}_{2,3}^{(b)}(T_2)}{6} + \frac{\sqrt{6}\mathbb{Q}_{2,3}^{(a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(E)}{6}$$

$$\boxed{\text{z581}} \quad \mathbb{G}_{2,1}^{(1,-1;c)}(T_2,a) = -\frac{\sqrt{21}\mathrm{M}_{3,2}^{(1,-1;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{21} + \frac{\sqrt{35}\mathrm{M}_{3,2}^{(1,-1;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{21} - \frac{\sqrt{21}\mathrm{M}_{3,3}^{(1,-1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{21} - \frac{\sqrt{35}\mathrm{M}_{3,3}^{(1,-1;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{21} + \frac{\sqrt{35}\mathrm{M}_{3}^{(1,-1;a)}(A_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{21}$$

$$\boxed{\text{z582}} \quad \mathbb{G}_{2,2}^{(1,-1;c)}(T_2,a) = -\frac{\sqrt{21}\mathrm{M}_{3,1}^{(1,-1;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{21} - \frac{\sqrt{35}\mathrm{M}_{3,1}^{(1,-1;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{21} - \frac{\sqrt{21}\mathrm{M}_{3,3}^{(1,-1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{21} + \frac{\sqrt{35}\mathrm{M}_{3,3}^{(1,-1;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{21} + \frac{\sqrt{35}\mathrm{M}_{3}^{(1,-1;a)}(A_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{21}$$

$$\boxed{\text{z583}} \quad \mathbb{G}_{2,3}^{(1,-1;c)}(T_2,a) = -\frac{\sqrt{21}\mathrm{M}_{3,1}^{(1,-1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{21} + \frac{\sqrt{35}\mathrm{M}_{3,1}^{(1,-1;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{21} - \frac{\sqrt{21}\mathrm{M}_{3,2}^{(1,-1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{21} - \frac{\sqrt{35}\mathrm{M}_{3,2}^{(1,-1;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{21} + \frac{\sqrt{35}\mathrm{M}_{3}^{(1,-1;a)}(A_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{21}$$

$$\boxed{\text{z584}} \quad \mathbb{G}_{2,1}^{(1,-1;c)}(T_2,b) = \frac{\sqrt{6}\mathrm{M}_{1,2}^{(1,-1;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{6} + \frac{\sqrt{6}\mathrm{M}_{1,3}^{(1,-1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{6}$$

$$\boxed{\text{z585}} \quad \mathbb{G}_{2,2}^{(1,-1;c)}(T_2,b) = \frac{\sqrt{6}\mathrm{M}_{1,1}^{(1,-1;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{6} + \frac{\sqrt{6}\mathrm{M}_{1,3}^{(1,-1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{6}$$

$$\boxed{\text{z586}} \quad \mathbb{G}_{2,3}^{(1,-1;c)}(T_2,b) = \frac{\sqrt{6}\mathrm{M}_{1,1}^{(1,-1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{6} + \frac{\sqrt{6}\mathrm{M}_{1,2}^{(1,-1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{6}$$

$$\boxed{\text{z587}} \quad \mathbb{G}_{3,1}^{(1,-1;c)}(T_2) = \frac{\sqrt{6}\mathbb{Q}_{2,1}^{(1,-1;a)}(E)\mathbb{Q}_{2,1}^{(b)}(T_2)}{12} - \frac{\sqrt{6}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(E)}{12} + \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(E)}{4} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(E)\mathbb{Q}_{2,1}^{(b)}(T_2)}{4}$$

$$\boxed{\text{z588}} \quad \mathbb{G}_{3,2}^{(1,-1;c)}(T_2) = \frac{\sqrt{6}\mathbb{Q}_{2,1}^{(1,-1;a)}(E)\mathbb{Q}_{2,2}^{(b)}(T_2)}{12} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(E)\mathbb{Q}_{2,2}^{(b)}(T_2)}{4} - \frac{\sqrt{6}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(E)}{12} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,2}^{(b)}(E)}{4}$$

$$\boxed{\text{z589}} \quad \mathbb{G}_{3,3}^{(1,-1;c)}(T_2) = -\frac{\sqrt{6}\mathbb{Q}_{2,1}^{(1,-1;a)}(E)\mathbb{Q}_{2,3}^{(b)}(T_2)}{6} + \frac{\sqrt{6}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_2)\mathbb{Q}_{2,1}^{(b)}(E)}{6}$$

$$\boxed{\text{z590}} \quad \mathbb{G}_{4,1}^{(1,-1;c)}(T_2) = -\frac{\sqrt{105}\mathrm{M}_{3,2}^{(1,-1;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{84} - \frac{3\sqrt{7}\mathrm{M}_{3,2}^{(1,-1;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{28} - \frac{\sqrt{105}\mathrm{M}_{3,3}^{(1,-1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{84} + \frac{3\sqrt{7}\mathrm{M}_{3,3}^{(1,-1;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{28} + \frac{\sqrt{7}\mathrm{M}_{3}^{(1,-1;a)}(A_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{7}$$

$$\boxed{\text{z591}} \quad \mathbb{G}_{4,2}^{(1,-1;c)}(T_2) = -\frac{\sqrt{105}\mathrm{M}_{3,1}^{(1,-1;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{84} + \frac{3\sqrt{7}\mathrm{M}_{3,1}^{(1,-1;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{28} - \frac{\sqrt{105}\mathrm{M}_{3,3}^{(1,-1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{84} - \frac{3\sqrt{7}\mathrm{M}_{3,3}^{(1,-1;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{28} + \frac{\sqrt{7}\mathrm{M}_{3}^{(1,-1;a)}(A_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{7}$$

$\boxed{\text{z592}}$ $\quad \mathbb{G}_{4,3}^{(1,-1;c)}(T_2) = -\dfrac{\sqrt{105}\mathbb{M}_{3,1}^{(1,-1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{84} - \dfrac{3\sqrt{7}\mathbb{M}_{3,1}^{(1,-1;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{28} - \dfrac{\sqrt{105}\mathbb{M}_{3,2}^{(1,-1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{84} + \dfrac{3\sqrt{7}\mathbb{M}_{3,2}^{(1,-1;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{28} + \dfrac{\sqrt{7}\mathbb{M}_{3}^{(1,-1;a)}(A_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{7}$

$\boxed{\text{z593}}$ $\quad \mathbb{G}_{2,1}^{(1,0;c)}(T_2,a) = \dfrac{\sqrt{6}\mathbb{T}_{2,1}^{(1,0;a)}(E)\mathbb{T}_{1,1}^{(b)}(T_1)}{6} + \dfrac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(E)\mathbb{T}_{1,1}^{(b)}(T_1)}{6} - \dfrac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{6} + \dfrac{\sqrt{2}\mathbb{T}_{2,3}^{(1,0;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{6}$

$\boxed{\text{z594}}$ $\quad \mathbb{G}_{2,2}^{(1,0;c)}(T_2,a) = -\dfrac{\sqrt{6}\mathbb{T}_{2,1}^{(1,0;a)}(E)\mathbb{T}_{1,2}^{(b)}(T_1)}{6} + \dfrac{\sqrt{2}\mathbb{T}_{2,1}^{(1,0;a)}(T_2)\mathbb{T}_{1,3}^{(b)}(T_1)}{6} + \dfrac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(E)\mathbb{T}_{1,2}^{(b)}(T_1)}{6} - \dfrac{\sqrt{2}\mathbb{T}_{2,3}^{(1,0;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{6}$

$\boxed{\text{z595}}$ $\quad \mathbb{G}_{2,3}^{(1,0;c)}(T_2,a) = -\dfrac{\sqrt{2}\mathbb{T}_{2,1}^{(1,0;a)}(T_2)\mathbb{T}_{1,2}^{(b)}(T_1)}{6} - \dfrac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(E)\mathbb{T}_{1,3}^{(b)}(T_1)}{3} + \dfrac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(T_2)\mathbb{T}_{1,1}^{(b)}(T_1)}{6}$

$\boxed{\text{z596}}$ $\quad \mathbb{G}_{2,1}^{(1,0;c)}(T_2,b) = \dfrac{\sqrt{6}\mathbb{T}_{2,2}^{(1,0;a)}(T_2)\mathbb{M}_{2,3}^{(b)}(T_2)}{6} + \dfrac{\sqrt{6}\mathbb{T}_{2,3}^{(1,0;a)}(T_2)\mathbb{M}_{2,2}^{(b)}(T_2)}{6}$

$\boxed{\text{z597}}$ $\quad \mathbb{G}_{2,2}^{(1,0;c)}(T_2,b) = \dfrac{\sqrt{6}\mathbb{T}_{2,1}^{(1,0;a)}(T_2)\mathbb{M}_{2,3}^{(b)}(T_2)}{6} + \dfrac{\sqrt{6}\mathbb{T}_{2,3}^{(1,0;a)}(T_2)\mathbb{M}_{2,1}^{(b)}(T_2)}{6}$

$\boxed{\text{z598}}$ $\quad \mathbb{G}_{2,3}^{(1,0;c)}(T_2,b) = \dfrac{\sqrt{6}\mathbb{T}_{2,1}^{(1,0;a)}(T_2)\mathbb{M}_{2,2}^{(b)}(T_2)}{6} + \dfrac{\sqrt{6}\mathbb{T}_{2,2}^{(1,0;a)}(T_2)\mathbb{M}_{2,1}^{(b)}(T_2)}{6}$

$\boxed{\text{z599}}$ $\quad \mathbb{G}_{3,1}^{(1,0;c)}(T_2) = -\dfrac{\sqrt{3}\mathbb{G}_{1,1}^{(1,0;a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(E)}{6} - \dfrac{\mathbb{G}_{1,1}^{(1,0;a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(E)}{6} + \dfrac{\mathbb{G}_{1,2}^{(1,0;a)}(T_1)\mathbb{Q}_{2,3}^{(b)}(T_2)}{3} - \dfrac{\mathbb{G}_{1,3}^{(1,0;a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(T_2)}{3}$

$\boxed{\text{z600}}$ $\quad \mathbb{G}_{3,2}^{(1,0;c)}(T_2) = -\dfrac{\mathbb{G}_{1,1}^{(1,0;a)}(T_1)\mathbb{Q}_{2,3}^{(b)}(T_2)}{3} + \dfrac{\sqrt{3}\mathbb{G}_{1,2}^{(1,0;a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(E)}{6} - \dfrac{\mathbb{G}_{1,2}^{(1,0;a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(E)}{6} + \dfrac{\mathbb{G}_{1,3}^{(1,0;a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(T_2)}{3}$

$\boxed{\text{z601}}$ $\quad \mathbb{G}_{3,3}^{(1,0;c)}(T_2) = \dfrac{\mathbb{G}_{1,1}^{(1,0;a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(T_2)}{3} - \dfrac{\mathbb{G}_{1,2}^{(1,0;a)}(T_1)\mathbb{Q}_{2,1}^{(b)}(T_2)}{3} + \dfrac{\mathbb{G}_{1,3}^{(1,0;a)}(T_1)\mathbb{Q}_{2,2}^{(b)}(E)}{3}$

$\boxed{\text{z602}}$ $\quad \mathbb{G}_{2,1}^{(1,1;c)}(T_2) = \dfrac{\sqrt{6}\mathbb{M}_{1,2}^{(1,1;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{6} + \dfrac{\sqrt{6}\mathbb{M}_{1,3}^{(1,1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{6}$

$\boxed{\text{z603}}$ $\quad \mathbb{G}_{2,2}^{(1,1;c)}(T_2) = \dfrac{\sqrt{6}\mathbb{M}_{1,1}^{(1,1;a)}(T_1)\mathbb{T}_{1,3}^{(b)}(T_1)}{6} + \dfrac{\sqrt{6}\mathbb{M}_{1,3}^{(1,1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{6}$

$\boxed{\text{z604}}$ $\quad \mathbb{G}_{2,3}^{(1,1;c)}(T_2) = \dfrac{\sqrt{6}\mathbb{M}_{1,1}^{(1,1;a)}(T_1)\mathbb{T}_{1,2}^{(b)}(T_1)}{6} + \dfrac{\sqrt{6}\mathbb{M}_{1,2}^{(1,1;a)}(T_1)\mathbb{T}_{1,1}^{(b)}(T_1)}{6}$

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

$\boxed{\text{x1}}$ $\quad \mathbb{Q}_0^{(a)}(A_1) = \begin{bmatrix} \frac{\sqrt{2}}{2} & 0 \\ 0 & \frac{\sqrt{2}}{2} \end{bmatrix}$

$\boxed{\text{x2}}$ $\quad \mathbb{M}_{1,1}^{(1,-1;a)}(T_1) = \begin{bmatrix} 0 & \frac{\sqrt{2}}{2} \\ \frac{\sqrt{2}}{2} & 0 \end{bmatrix}$

$\boxed{\text{x3}}$ $\quad \mathbb{M}_{1,2}^{(1,-1;a)}(T_1) = \begin{bmatrix} 0 & -\frac{\sqrt{2}i}{2} \\ \frac{\sqrt{2}i}{2} & 0 \end{bmatrix}$

$\boxed{\text{x4}}$ $\quad \mathbb{M}_{1,3}^{(1,-1;a)}(T_1) = \begin{bmatrix} \frac{\sqrt{2}}{2} & 0 \\ 0 & -\frac{\sqrt{2}}{2} \end{bmatrix}$

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

$\boxed{\text{x5}}$ $\quad \mathbb{Q}_{1,1}^{(a)}(T_1) = \begin{bmatrix} \frac{1}{2} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{1}{2} & 0 & 0 & 0 & 0 \end{bmatrix}$

$\boxed{\text{x6}}$ $\quad \mathbb{Q}_{1,2}^{(a)}(T_1) = \begin{bmatrix} 0 & 0 & \frac{1}{2} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{1}{2} & 0 & 0 \end{bmatrix}$

$\boxed{\text{x7}}$ $\quad \mathbb{Q}_{1,3}^{(a)}(T_1) = \begin{bmatrix} 0 & 0 & 0 & 0 & \frac{1}{2} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{1}{2} \end{bmatrix}$

$\boxed{\text{x8}}$ $\quad \mathbb{Q}_{1,1}^{(1,0;a)}(T_1) = \begin{bmatrix} 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & \frac{\sqrt{2}}{4} \\ 0 & 0 & 0 & \frac{\sqrt{2}i}{4} & -\frac{\sqrt{2}}{4} & 0 \end{bmatrix}$

$\boxed{\text{x9}}$ $\quad \mathbb{Q}_{1,2}^{(1,0;a)}(T_1) = \begin{bmatrix} \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} \\ 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 \end{bmatrix}$

$\boxed{\text{x10}}$ $\quad \mathbb{Q}_{1,3}^{(1,0;a)}(T_1) = \begin{bmatrix} 0 & -\frac{\sqrt{2}}{4} & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 \\ \frac{\sqrt{2}}{4} & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 \end{bmatrix}$

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

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

$\boxed{\text{x13}}$ $\mathbb{G}_{2,1}^{(1,-1;a)}(T_2) = \begin{bmatrix} 0 & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & \frac{\sqrt{2}}{4} \\ 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & -\frac{\sqrt{2}}{4} & 0 \end{bmatrix}$

$\boxed{\text{x14}}$ $\mathbb{G}_{2,2}^{(1,-1;a)}(T_2) = \begin{bmatrix} \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} \\ 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & \frac{\sqrt{2}i}{4} & 0 \end{bmatrix}$

$\boxed{\text{x15}}$ $\mathbb{G}_{2,3}^{(1,-1;a)}(T_2) = \begin{bmatrix} 0 & \frac{\sqrt{2}}{4} & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 \\ -\frac{\sqrt{2}}{4} & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 \end{bmatrix}$

$\boxed{\text{x16}}$ $\mathbb{G}_{0}^{(1,1;a)}(A_1) = \begin{bmatrix} 0 & \frac{\sqrt{3}i}{6} & 0 & \frac{\sqrt{3}}{6} & \frac{\sqrt{3}i}{6} & 0 \\ \frac{\sqrt{3}i}{6} & 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & -\frac{\sqrt{3}i}{6} \end{bmatrix}$

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

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

$\boxed{\text{x19}}$ $\mathbb{M}_{2,1}^{(1,-1;a)}(T_2) = \begin{bmatrix} 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & -\frac{\sqrt{2}i}{4} \\ 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & \frac{\sqrt{2}i}{4} & 0 \end{bmatrix}$

$\boxed{\text{x20}}$ $\mathbb{M}_{2,2}^{(1,-1;a)}(T_2) = \begin{bmatrix} \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} \\ 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & \frac{\sqrt{2}}{4} & 0 \end{bmatrix}$

$\boxed{\text{x21}}$ $\mathbb{M}_{2,3}^{(1,-1;a)}(T_2) = \begin{bmatrix} 0 & -\frac{\sqrt{2}i}{4} & 0 & \frac{\sqrt{2}}{4} & 0 & 0 \\ \frac{\sqrt{2}i}{4} & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 \end{bmatrix}$

$\boxed{\text{x22}}$ $\mathbb{M}_{0}^{(1,1;a)}(A_1) = \begin{bmatrix} 0 & \frac{\sqrt{3}}{6} & 0 & -\frac{\sqrt{3}i}{6} & \frac{\sqrt{3}}{6} & 0 \\ \frac{\sqrt{3}}{6} & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 & -\frac{\sqrt{3}}{6} \end{bmatrix}$

$\boxed{\text{x23}}$ $\mathbb{T}_{1,1}^{(a)}(T_1) = \begin{bmatrix} \frac{i}{2} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{i}{2} & 0 & 0 & 0 & 0 \end{bmatrix}$

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$\boxed{\text{x24}}$ $\mathbb{T}_{1,2}^{(a)}(T_1) = \begin{bmatrix} 0 & 0 & \frac{i}{2} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{i}{2} & 0 & 0 \end{bmatrix}$

$\boxed{\text{x25}}$ $\mathbb{T}_{1,3}^{(a)}(T_1) = \begin{bmatrix} 0 & 0 & 0 & 0 & \frac{i}{2} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{i}{2} \end{bmatrix}$

$\boxed{\text{x26}}$ $\mathbb{T}_{1,1}^{(1,0;a)}(T_1) = \begin{bmatrix} 0 & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & -\frac{\sqrt{2}i}{4} \\ 0 & 0 & 0 & \frac{\sqrt{2}}{4} & \frac{\sqrt{2}i}{4} & 0 \end{bmatrix}$

$\boxed{\text{x27}}$ $\mathbb{T}_{1,2}^{(1,0;a)}(T_1) = \begin{bmatrix} \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} \\ 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 \end{bmatrix}$

$\boxed{\text{x28}}$ $\mathbb{T}_{1,3}^{(1,0;a)}(T_1) = \begin{bmatrix} 0 & \frac{\sqrt{2}i}{4} & 0 & \frac{\sqrt{2}}{4} & 0 & 0 \\ -\frac{\sqrt{2}i}{4} & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 \end{bmatrix}$

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

$\boxed{\text{x29}}$ $\mathbb{Q}_0^{(a)}(A_1) = \begin{bmatrix} \frac{\sqrt{6}}{6} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{6}}{6} & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{6}}{6} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{6}}{6} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{6} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{6} \end{bmatrix}$

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

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

$$\boxed{\text{x32}} \quad \mathbb{Q}_{2,1}^{(a)}(T_2) = \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{1}{2} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{1}{2} \\ 0 & 0 & \frac{1}{2} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{1}{2} & 0 & 0 \end{bmatrix}$$

$$\boxed{\text{x33}} \quad \mathbb{Q}_{2,2}^{(a)}(T_2) = \begin{bmatrix} 0 & 0 & 0 & 0 & \frac{1}{2} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{1}{2} \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{1}{2} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{1}{2} & 0 & 0 & 0 & 0 \end{bmatrix}$$

$$\boxed{\text{x34}} \quad \mathbb{Q}_{2,3}^{(a)}(T_2) = \begin{bmatrix} 0 & 0 & \frac{1}{2} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{1}{2} & 0 & 0 \\ \frac{1}{2} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{1}{2} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$$

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

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

$$\boxed{\text{x37}} \quad \mathbb{Q}_{2,1}^{(1,-1;a)}(T_2) = \begin{bmatrix} 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & \frac{\sqrt{2}i}{4} & 0 \\ 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & -\frac{\sqrt{2}i}{4} \\ 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 \end{bmatrix}$$

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$$\boxed{\text{x38}} \quad \mathbb{Q}_{2,2}^{(1,-1;a)}(T_2) = \begin{bmatrix} 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 \\ \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} \\ 0 & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 \end{bmatrix}$$

$$\boxed{\text{x39}} \quad \mathbb{Q}_{2,3}^{(1,-1;a)}(T_2) = \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 \\ 0 & -\frac{\sqrt{2}i}{4} & 0 & \frac{\sqrt{2}}{4} & 0 & 0 \\ -\frac{\sqrt{2}i}{4} & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 \end{bmatrix}$$

$$\boxed{\text{x40}} \quad \mathbb{Q}_{0}^{(1,1;a)}(A_1) = \begin{bmatrix} 0 & 0 & -\frac{\sqrt{3}i}{6} & 0 & 0 & \frac{\sqrt{3}}{6} \\ 0 & 0 & 0 & \frac{\sqrt{3}i}{6} & -\frac{\sqrt{3}}{6} & 0 \\ \frac{\sqrt{3}i}{6} & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{6} \\ 0 & -\frac{\sqrt{3}i}{6} & 0 & 0 & -\frac{\sqrt{3}i}{6} & 0 \\ 0 & -\frac{\sqrt{3}}{6} & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 \\ \frac{\sqrt{3}}{6} & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 & 0 \end{bmatrix}$$

$$\boxed{\text{x41}} \quad \mathbb{G}_{1,1}^{(1,0;a)}(T_1) = \begin{bmatrix} 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & -\frac{\sqrt{2}i}{4} & 0 \\ 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & \frac{\sqrt{2}i}{4} \\ 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 \end{bmatrix}$$

$$\boxed{\text{x42}} \quad \mathbb{G}_{1,2}^{(1,0;a)}(T_1) = \begin{bmatrix} 0 & 0 & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 \\ 0 & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 \\ -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} \\ 0 & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 \end{bmatrix}$$

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$$\boxed{\text{x43}} \quad \mathbb{G}_{1,3}^{(1,0;a)}(T_1) = \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 \\ 0 & -\frac{\sqrt{2}i}{4} & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 \\ -\frac{\sqrt{2}i}{4} & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 \end{bmatrix}$$

$$\boxed{\text{x44}} \quad \mathbb{M}_{1,1}^{(a)}(T_1) = \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{i}{2} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{i}{2} \\ 0 & 0 & \frac{i}{2} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{i}{2} & 0 & 0 \end{bmatrix}$$

$$\boxed{\text{x45}} \quad \mathbb{M}_{1,2}^{(a)}(T_1) = \begin{bmatrix} 0 & 0 & 0 & 0 & \frac{i}{2} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{i}{2} \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{i}{2} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{i}{2} & 0 & 0 & 0 & 0 \end{bmatrix}$$

$$\boxed{\text{x46}} \quad \mathbb{M}_{1,3}^{(a)}(T_1) = \begin{bmatrix} 0 & 0 & -\frac{i}{2} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{i}{2} & 0 & 0 \\ \frac{i}{2} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{i}{2} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$$

$$\boxed{\text{x47}} \quad \mathbb{M}_3^{(1,-1;a)}(A_2) = \begin{bmatrix} 0 & 0 & \frac{\sqrt{3}}{6} & 0 & 0 & -\frac{\sqrt{3}i}{6} \\ 0 & 0 & 0 & -\frac{\sqrt{3}}{6} & \frac{\sqrt{3}i}{6} & 0 \\ \frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{6} \\ 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & \frac{\sqrt{3}}{6} & 0 \\ 0 & -\frac{\sqrt{3}i}{6} & 0 & \frac{\sqrt{3}}{6} & 0 & 0 \\ \frac{\sqrt{3}i}{6} & 0 & \frac{\sqrt{3}}{6} & 0 & 0 & 0 \end{bmatrix}$$

$$\boxed{\text{x48}} \quad \mathbb{M}_{1,1}^{(1,-1;a)}(T_1) = \begin{bmatrix} 0 & \frac{\sqrt{6}}{6} & 0 & 0 & 0 & 0 \\ \frac{\sqrt{6}}{6} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{6}}{6} & 0 & 0 \\ 0 & 0 & \frac{\sqrt{6}}{6} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{6} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{6} & 0 \end{bmatrix}$$

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$$\boxed{\text{x49}} \quad \mathbb{M}_{1,2}^{(1,-1;a)}(T_1) = \begin{bmatrix} 0 & -\frac{\sqrt{6}i}{6} & 0 & 0 & 0 & 0 \\ \frac{\sqrt{6}i}{6} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{6}i}{6} & 0 & 0 \\ 0 & 0 & \frac{\sqrt{6}i}{6} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{6} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{6} & 0 \end{bmatrix}$$

$$\boxed{\text{x50}} \quad \mathbb{M}_{1,3}^{(1,-1;a)}(T_1) = \begin{bmatrix} \frac{\sqrt{6}}{6} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{6}}{6} & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{6}}{6} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{6}}{6} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{6} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{6} \end{bmatrix}$$

$$\boxed{\text{x51}} \quad \mathbb{M}_{3,1}^{(1,-1;a)}(T_1) = \begin{bmatrix} 0 & \frac{\sqrt{5}}{5} & 0 & \frac{\sqrt{5}i}{10} & -\frac{\sqrt{5}}{10} & 0 \\ \frac{\sqrt{5}}{5} & 0 & -\frac{\sqrt{5}i}{10} & 0 & 0 & \frac{\sqrt{5}}{10} \\ 0 & \frac{\sqrt{5}i}{10} & 0 & -\frac{\sqrt{5}}{10} & 0 & 0 \\ -\frac{\sqrt{5}i}{10} & 0 & -\frac{\sqrt{5}}{10} & 0 & 0 & 0 \\ -\frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{10} \\ 0 & \frac{\sqrt{5}}{10} & 0 & 0 & -\frac{\sqrt{5}}{10} & 0 \end{bmatrix}$$

$$\boxed{\text{x52}} \quad \mathbb{M}_{3,2}^{(1,-1;a)}(T_1) = \begin{bmatrix} 0 & \frac{\sqrt{5}i}{10} & 0 & -\frac{\sqrt{5}}{10} & 0 & 0 \\ -\frac{\sqrt{5}i}{10} & 0 & -\frac{\sqrt{5}}{10} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{5}}{10} & 0 & -\frac{\sqrt{5}i}{5} & -\frac{\sqrt{5}}{10} & 0 \\ -\frac{\sqrt{5}}{10} & 0 & \frac{\sqrt{5}i}{5} & 0 & 0 & \frac{\sqrt{5}}{10} \\ 0 & 0 & -\frac{\sqrt{5}}{10} & 0 & 0 & \frac{\sqrt{5}i}{10} \\ 0 & 0 & 0 & \frac{\sqrt{5}}{10} & -\frac{\sqrt{5}i}{10} & 0 \end{bmatrix}$$

$$\boxed{\text{x53}} \quad \mathbb{M}_{3,3}^{(1,-1;a)}(T_1) = \begin{bmatrix} -\frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{10} \\ 0 & \frac{\sqrt{5}}{10} & 0 & 0 & -\frac{\sqrt{5}}{10} & 0 \\ 0 & 0 & -\frac{\sqrt{5}}{10} & 0 & 0 & \frac{\sqrt{5}i}{10} \\ 0 & 0 & 0 & \frac{\sqrt{5}}{10} & -\frac{\sqrt{5}i}{10} & 0 \\ 0 & -\frac{\sqrt{5}}{10} & 0 & \frac{\sqrt{5}i}{10} & \frac{\sqrt{5}}{5} & 0 \\ -\frac{\sqrt{5}}{10} & 0 & -\frac{\sqrt{5}i}{10} & 0 & 0 & -\frac{\sqrt{5}}{5} \end{bmatrix}$$

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$$\boxed{\text{x54}} \quad \mathbb{M}_{3,1}^{(1,-1;a)}(T_2) = \begin{bmatrix} 0 & 0 & 0 & -\frac{\sqrt{3}i}{6} & -\frac{\sqrt{3}}{6} & 0 \\ 0 & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 & \frac{\sqrt{3}}{6} \\ 0 & -\frac{\sqrt{3}i}{6} & 0 & \frac{\sqrt{3}}{6} & 0 & 0 \\ \frac{\sqrt{3}i}{6} & 0 & \frac{\sqrt{3}}{6} & 0 & 0 & 0 \\ -\frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{6} \\ 0 & \frac{\sqrt{3}}{6} & 0 & 0 & -\frac{\sqrt{3}}{6} & 0 \end{bmatrix}$$

$$\boxed{\text{x55}} \quad \mathbb{M}_{3,2}^{(1,-1;a)}(T_2) = \begin{bmatrix} 0 & \frac{\sqrt{3}i}{6} & 0 & -\frac{\sqrt{3}}{6} & 0 & 0 \\ -\frac{\sqrt{3}i}{6} & 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & \frac{\sqrt{3}}{6} & 0 \\ -\frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{6} \\ 0 & 0 & \frac{\sqrt{3}}{6} & 0 & 0 & -\frac{\sqrt{3}i}{6} \\ 0 & 0 & 0 & -\frac{\sqrt{3}}{6} & \frac{\sqrt{3}i}{6} & 0 \end{bmatrix}$$

$$\boxed{\text{x56}} \quad \mathbb{M}_{3,3}^{(1,-1;a)}(T_2) = \begin{bmatrix} \frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{6} \\ 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & \frac{\sqrt{3}}{6} & 0 \\ 0 & 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & \frac{\sqrt{3}i}{6} \\ 0 & 0 & 0 & \frac{\sqrt{3}}{6} & -\frac{\sqrt{3}i}{6} & 0 \\ 0 & \frac{\sqrt{3}}{6} & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 \\ \frac{\sqrt{3}}{6} & 0 & -\frac{\sqrt{3}i}{6} & 0 & 0 & 0 \end{bmatrix}$$

$$\boxed{\text{x57}} \quad \mathbb{M}_{1,1}^{(1,1;a)}(T_1) = \begin{bmatrix} 0 & \frac{\sqrt{30}}{15} & 0 & -\frac{\sqrt{30}i}{20} & \frac{\sqrt{30}}{20} & 0 \\ \frac{\sqrt{30}}{15} & 0 & \frac{\sqrt{30}i}{20} & 0 & 0 & -\frac{\sqrt{30}}{20} \\ 0 & -\frac{\sqrt{30}i}{20} & 0 & -\frac{\sqrt{30}}{30} & 0 & 0 \\ \frac{\sqrt{30}i}{20} & 0 & -\frac{\sqrt{30}}{30} & 0 & 0 & 0 \\ \frac{\sqrt{30}}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{30} \\ 0 & -\frac{\sqrt{30}}{20} & 0 & 0 & -\frac{\sqrt{30}}{30} & 0 \end{bmatrix}$$

$$\boxed{\text{x58}} \quad \mathbb{M}_{1,2}^{(1,1;a)}(T_1) = \begin{bmatrix} 0 & \frac{\sqrt{30}i}{30} & 0 & \frac{\sqrt{30}}{20} & 0 & 0 \\ -\frac{\sqrt{30}i}{30} & 0 & \frac{\sqrt{30}}{20} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{30}}{20} & 0 & -\frac{\sqrt{30}i}{15} & \frac{\sqrt{30}}{20} & 0 \\ \frac{\sqrt{30}}{20} & 0 & \frac{\sqrt{30}i}{15} & 0 & 0 & -\frac{\sqrt{30}}{20} \\ 0 & 0 & \frac{\sqrt{30}}{20} & 0 & 0 & \frac{\sqrt{30}i}{30} \\ 0 & 0 & 0 & -\frac{\sqrt{30}}{20} & -\frac{\sqrt{30}i}{30} & 0 \end{bmatrix}$$

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$$\mathbb{M}_{1,3}^{(1,1;a)}(T_1) = \begin{bmatrix} -\frac{\sqrt{30}}{30} & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{20} \\ 0 & \frac{\sqrt{30}}{30} & 0 & 0 & \frac{\sqrt{30}}{20} & 0 \\ 0 & 0 & -\frac{\sqrt{30}}{30} & 0 & 0 & -\frac{\sqrt{30}i}{20} \\ 0 & 0 & 0 & \frac{\sqrt{30}}{30} & \frac{\sqrt{30}i}{20} & 0 \\ 0 & \frac{\sqrt{30}}{20} & 0 & -\frac{\sqrt{30}i}{20} & \frac{\sqrt{30}}{15} & 0 \\ \frac{\sqrt{30}}{20} & 0 & \frac{\sqrt{30}i}{20} & 0 & 0 & -\frac{\sqrt{30}}{15} \end{bmatrix}$$

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

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

$$\mathbb{T}_{2,1}^{(1,0;a)}(T_2) = \begin{bmatrix} 0 & 0 & 0 & \frac{\sqrt{6}i}{12} & \frac{\sqrt{6}}{12} & 0 \\ 0 & 0 & -\frac{\sqrt{6}i}{12} & 0 & 0 & -\frac{\sqrt{6}}{12} \\ 0 & \frac{\sqrt{6}i}{12} & 0 & \frac{\sqrt{6}}{6} & 0 & 0 \\ -\frac{\sqrt{6}i}{12} & 0 & \frac{\sqrt{6}}{6} & 0 & 0 & 0 \\ \frac{\sqrt{6}}{12} & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{6} \\ 0 & -\frac{\sqrt{6}}{12} & 0 & 0 & -\frac{\sqrt{6}}{6} & 0 \end{bmatrix}$$

$$\mathbb{T}_{2,2}^{(1,0;a)}(T_2) = \begin{bmatrix} 0 & \frac{\sqrt{6}i}{6} & 0 & \frac{\sqrt{6}}{12} & 0 & 0 \\ -\frac{\sqrt{6}i}{6} & 0 & \frac{\sqrt{6}}{12} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{6}}{12} & 0 & 0 & -\frac{\sqrt{6}}{12} & 0 \\ \frac{\sqrt{6}}{12} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{12} \\ 0 & 0 & -\frac{\sqrt{6}}{12} & 0 & 0 & -\frac{\sqrt{6}i}{6} \\ 0 & 0 & 0 & \frac{\sqrt{6}}{12} & \frac{\sqrt{6}i}{6} & 0 \end{bmatrix}$$

$$\boxed{\text{x64}} \quad \mathbb{T}_{2,3}^{(1,0;a)}(T_2) = \begin{bmatrix} \frac{\sqrt{6}}{6} & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{12} \\ 0 & -\frac{\sqrt{6}}{6} & 0 & 0 & -\frac{\sqrt{6}}{12} & 0 \\ 0 & 0 & -\frac{\sqrt{6}}{6} & 0 & 0 & -\frac{\sqrt{6}i}{12} \\ 0 & 0 & 0 & \frac{\sqrt{6}}{6} & \frac{\sqrt{6}i}{12} & 0 \\ 0 & -\frac{\sqrt{6}}{12} & 0 & -\frac{\sqrt{6}i}{12} & 0 & 0 \\ -\frac{\sqrt{6}}{12} & 0 & \frac{\sqrt{6}i}{12} & 0 & 0 & 0 \end{bmatrix}$$

──── **Cluster SAMB** ────────────────────────────

- Site cluster

** Wyckoff: `1a`

$\boxed{\text{y1}} \quad \mathbb{Q}_0^{(s)}(A_1) = [1]$

- Bond cluster

** Wyckoff: `3a@3d`

$\boxed{\text{y2}} \quad \mathbb{Q}_0^{(s)}(A_1) = \left[\frac{\sqrt{3}}{3}, \frac{\sqrt{3}}{3}, \frac{\sqrt{3}}{3} \right]$

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

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

$\boxed{\text{y5}} \quad \mathbb{T}_{1,1}^{(s)}(T_1) = [i, 0, 0]$

$\boxed{\text{y6}} \quad \mathbb{T}_{1,2}^{(s)}(T_1) = [0, i, 0]$

$\boxed{\text{y7}} \quad \mathbb{T}_{1,3}^{(s)}(T_1) = [0, 0, i]$

** Wyckoff: `6b@3c`

y8 $\quad \mathbb{Q}_0^{(s)}(A_1) = \left[\dfrac{\sqrt{6}}{6}, \dfrac{\sqrt{6}}{6}, \dfrac{\sqrt{6}}{6}, \dfrac{\sqrt{6}}{6}, \dfrac{\sqrt{6}}{6}, \dfrac{\sqrt{6}}{6} \right]$

y9 $\quad \mathbb{Q}_{2,1}^{(s)}(E) = \left[-\dfrac{\sqrt{3}}{6}, -\dfrac{\sqrt{3}}{6}, -\dfrac{\sqrt{3}}{6}, -\dfrac{\sqrt{3}}{6}, \dfrac{\sqrt{3}}{3}, \dfrac{\sqrt{3}}{3} \right]$

y10 $\quad \mathbb{Q}_{2,2}^{(s)}(E) = \left[\dfrac{1}{2}, \dfrac{1}{2}, -\dfrac{1}{2}, -\dfrac{1}{2}, 0, 0 \right]$

y11 $\quad \mathbb{T}_{1,1}^{(s)}(T_1) = \left[0, 0, \dfrac{i}{2}, \dfrac{i}{2}, \dfrac{i}{2}, -\dfrac{i}{2} \right]$

y12 $\quad \mathbb{T}_{1,2}^{(s)}(T_1) = \left[\dfrac{i}{2}, -\dfrac{i}{2}, 0, 0, \dfrac{i}{2}, \dfrac{i}{2} \right]$

y13 $\quad \mathbb{T}_{1,3}^{(s)}(T_1) = \left[\dfrac{i}{2}, \dfrac{i}{2}, \dfrac{i}{2}, -\dfrac{i}{2}, 0, 0 \right]$

y14 $\quad \mathbb{Q}_{2,1}^{(s)}(T_2) = \left[\dfrac{\sqrt{2}}{2}, -\dfrac{\sqrt{2}}{2}, 0, 0, 0, 0 \right]$

y15 $\quad \mathbb{Q}_{2,2}^{(s)}(T_2) = \left[0, 0, \dfrac{\sqrt{2}}{2}, -\dfrac{\sqrt{2}}{2}, 0, 0 \right]$

y16 $\quad \mathbb{Q}_{2,3}^{(s)}(T_2) = \left[0, 0, 0, 0, \dfrac{\sqrt{2}}{2}, -\dfrac{\sqrt{2}}{2} \right]$

y17 $\quad \mathbb{M}_{2,1}^{(s)}(T_2) = \left[0, 0, -\dfrac{i}{2}, -\dfrac{i}{2}, \dfrac{i}{2}, -\dfrac{i}{2} \right]$

y18 $\quad \mathbb{M}_{2,2}^{(s)}(T_2) = \left[\dfrac{i}{2}, -\dfrac{i}{2}, 0, 0, -\dfrac{i}{2}, -\dfrac{i}{2} \right]$

y19 $\quad \mathbb{M}_{2,3}^{(s)}(T_2) = \left[-\dfrac{i}{2}, -\dfrac{i}{2}, \dfrac{i}{2}, -\dfrac{i}{2}, 0, 0 \right]$

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 (1a), 432

SL	position (s)	mapping
1	[0.00000, 0.00000, 0.00000]	[1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23,24]

— **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 (3a@3d), ND, $|v|= 1.0$ (cartesian)

SL	vector (v)	center (c)	mapping	head	tail	R (primitive)
1	[-1.00000, 0.00000, 0.00000]	[0.50000, 0.00000, 0.00000]	[1,-2,-3,4,17,-18,-19,20]	(1,1)	(1,1)	[1,0,0]
2	[0.00000,-1.00000, 0.00000]	[0.00000, 0.50000, 0.00000]	[5,-6,-7,8,13,-14,-15,16]	(1,1)	(1,1)	[0,1,0]
3	[0.00000, 0.00000,-1.00000]	[0.00000, 0.00000, 0.50000]	[9,-10,-11,12,-21,22,23,-24]	(1,1)	(1,1)	[0,0,1]

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

SL	vector (v)	center (c)	mapping	head	tail	R (primitive)
1	[0.00000,-1.00000,-1.00000]	[0.00000, 0.50000, 0.50000]	[1,-4,18,-19]	(1,1)	(1,1)	[0,1,1]
2	[0.00000, 1.00000,-1.00000]	[0.00000, 0.50000, 0.50000]	[2,-3,-17,20]	(1,1)	(1,1)	[0,-1,1]
3	[-1.00000, 0.00000,-1.00000]	[0.50000, 0.00000, 0.50000]	[5,-8,-14,15]	(1,1)	(1,1)	[1,0,1]
4	[-1.00000, 0.00000, 1.00000]	[0.50000, 0.00000, 0.50000]	[6,-7,13,-16]	(1,1)	(1,1)	[1,0,-1]
5	[-1.00000,-1.00000, 0.00000]	[0.50000, 0.50000, 0.00000]	[9,-12,21,-24]	(1,1)	(1,1)	[1,1,0]
6	[1.00000,-1.00000, 0.00000]	[0.50000, 0.50000, 0.00000]	[10,-11,-22,23]	(1,1)	(1,1)	[-1,1,0]