Model for "`Oh1`"

General Condition

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

Group and Unit Cell

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

Symmetry Operation

Table 1: Symmetry operation

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

continued …

Table 1

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

Harmonics

Table 2: Harmonics

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

continued ...

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Table 2

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

continued …

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Table 2

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

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Table 2

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

Basis in full matrix

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Table 3: dimension = 8

#	orbital@atom(SL)	#	orbital@atom(SL)	#	orbital@atom(SL)	#	orbital@atom(SL)	#	orbital@atom(SL)
0	$\lvert s,\uparrow\rangle$ @A(1)	1	$\lvert s,\downarrow\rangle$ @A(1)	2	$\lvert p_x,\uparrow\rangle$ @A(1)	3	$\lvert p_x,\downarrow\rangle$ @A(1)	4	$\lvert p_y,\uparrow\rangle$ @A(1)
5	$\lvert p_y,\downarrow\rangle$ @A(1)	6	$\lvert p_z,\uparrow\rangle$ @A(1)	7	$\lvert p_z,\downarrow\rangle$ @A(1)				

Table 4: Atomic basis (orbital part only)

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

──── **SAMB** ────────────────────────────────

261 (all 604) SAMBs

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

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

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

$\boxed{\text{z269}}$ $\quad \mathbb{G}_0^{(1,1;c)}(A_{1u}) = \mathbb{G}_0^{(1,1;a)}(A_{1u})\mathbb{Q}_0^{(s)}(A_{1g})$

$\boxed{\text{z300}}$ $\quad \mathbb{G}_{2,1}^{(1,-1;c)}(E_u) = \dfrac{\sqrt{2}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_0^{(s)}(A_{1g})}{2}$

$\boxed{\text{z301}}$ $\quad \mathbb{G}_{2,2}^{(1,-1;c)}(E_u) = \dfrac{\sqrt{2}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_0^{(s)}(A_{1g})}{2}$

$\boxed{\text{z362}}$ $\quad \mathbb{Q}_{1,1}^{(c)}(T_{1u}) = \dfrac{\sqrt{3}\mathbb{Q}_{1,1}^{(a)}(T_{1u})\mathbb{Q}_0^{(s)}(A_{1g})}{3}$

$\boxed{\text{z363}}$ $\quad \mathbb{Q}_{1,2}^{(c)}(T_{1u}) = \dfrac{\sqrt{3}\mathbb{Q}_{1,2}^{(a)}(T_{1u})\mathbb{Q}_0^{(s)}(A_{1g})}{3}$

$\boxed{\text{z364}}$ $\quad \mathbb{Q}_{1,3}^{(c)}(T_{1u}) = \dfrac{\sqrt{3}\mathbb{Q}_{1,3}^{(a)}(T_{1u})\mathbb{Q}_0^{(s)}(A_{1g})}{3}$

$\boxed{\text{z365}}$ $\quad \mathbb{Q}_{1,1}^{(1,0;c)}(T_{1u}) = \dfrac{\sqrt{3}\mathbb{Q}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{Q}_0^{(s)}(A_{1g})}{3}$

$\boxed{\text{z366}}$ $\quad \mathbb{Q}_{1,2}^{(1,0;c)}(T_{1u}) = \dfrac{\sqrt{3}\mathbb{Q}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{Q}_0^{(s)}(A_{1g})}{3}$

$\boxed{\text{z367}}$ $\quad \mathbb{Q}_{1,3}^{(1,0;c)}(T_{1u}) = \dfrac{\sqrt{3}\mathbb{Q}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{Q}_0^{(s)}(A_{1g})}{3}$

$\boxed{\text{z485}}$ $\quad \mathbb{G}_{2,1}^{(1,-1;c)}(T_{2u}) = \dfrac{\sqrt{3}\mathbb{G}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{Q}_0^{(s)}(A_{1g})}{3}$

$\boxed{\text{z486}}$ $\quad \mathbb{G}_{2,2}^{(1,-1;c)}(T_{2u}) = \dfrac{\sqrt{3}\mathbb{G}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{Q}_0^{(s)}(A_{1g})}{3}$

$\boxed{\text{z487}}$ $\quad \mathbb{G}_{2,3}^{(1,-1;c)}(T_{2u}) = \dfrac{\sqrt{3}\mathbb{G}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{Q}_0^{(s)}(A_{1g})}{3}$

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

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

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

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

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

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

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

$\boxed{\text{z86}}$ $\quad \mathbb{G}_{1,1}^{(1,0;c)}(T_{1g}) = \dfrac{\sqrt{3}\mathbb{G}_{1,1}^{(1,0;a)}(T_{1g})\mathbb{Q}_0^{(s)}(A_{1g})}{3}$

$\boxed{\text{z87}}$ $\quad \mathbb{G}_{1,2}^{(1,0;c)}(T_{1g}) = \dfrac{\sqrt{3}\mathbb{G}_{1,2}^{(1,0;a)}(T_{1g})\mathbb{Q}_0^{(s)}(A_{1g})}{3}$

$\boxed{\text{z88}}$ $\quad \mathbb{G}_{1,3}^{(1,0;c)}(T_{1g}) = \dfrac{\sqrt{3}\mathbb{G}_{1,3}^{(1,0;a)}(T_{1g})\mathbb{Q}_0^{(s)}(A_{1g})}{3}$

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

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

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

$\boxed{\text{z173}}$ $\quad \mathbb{Q}_{2,1}^{(1,-1;c)}(T_{2g}) = \dfrac{\sqrt{3}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})\mathbb{Q}_0^{(s)}(A_{1g})}{3}$

$\boxed{\text{z174}}$ $\quad \mathbb{Q}_{2,2}^{(1,-1;c)}(T_{2g}) = \dfrac{\sqrt{3}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})\mathbb{Q}_0^{(s)}(A_{1g})}{3}$

$\boxed{\text{z175}}$ $\quad \mathbb{Q}_{2,3}^{(1,-1;c)}(T_{2g}) = \dfrac{\sqrt{3}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_{2g})\mathbb{Q}_0^{(s)}(A_{1g})}{3}$

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

$\boxed{\text{z4}}$ $\quad \mathbb{Q}_0^{(c)}(A_{1g}) = \mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_0^{(b)}(A_{1g})$

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

$\boxed{\text{z35}}$ $\quad \mathbb{Q}_{2,1}^{(c)}(E_g) = \dfrac{\sqrt{2}\mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$

$\boxed{\text{z270}}$ $\quad \mathbb{Q}_{2,2}^{(c)}(E_g) = \dfrac{\sqrt{2}\mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$

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

$\boxed{\text{z303}}$ $\quad \mathbb{G}_{2,2}^{(1,-1;c)}(E_u) = \dfrac{\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{2} - \dfrac{\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{2}$

$\boxed{\text{z368}}$ $\quad \mathbb{Q}_{1,1}^{(1,-1;c)}(T_{1u}) = \dfrac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} - \dfrac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6}$

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

$\boxed{\text{z370}}$ $\quad \mathbb{Q}_{1,3}^{(1,-1;c)}(T_{1u}) = \dfrac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} - \dfrac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$

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

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

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

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

$\boxed{\text{z5}}$ $\quad \mathbb{Q}_0^{(c)}(A_{1g}) = \dfrac{\sqrt{3}\mathbb{T}_{1,1}^{(a)}(T_{1u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{3} + \dfrac{\sqrt{3}\mathbb{T}_{1,2}^{(a)}(T_{1u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{3} + \dfrac{\sqrt{3}\mathbb{T}_{1,3}^{(a)}(T_{1u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z6}}$ $\quad \mathbb{Q}_0^{(1,0;c)}(A_{1g}) = \dfrac{\sqrt{3}\mathbb{T}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{3} + \dfrac{\sqrt{3}\mathbb{T}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{3} + \dfrac{\sqrt{3}\mathbb{T}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z21}}$ $\quad \mathbb{G}_0^{(1,-1;c)}(A_{1u}) = \dfrac{\sqrt{2}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} + \dfrac{\sqrt{2}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$

$\boxed{\text{z36}}$ $\quad \mathbb{G}_0^{(1,1;c)}(A_{1u}) = \mathbb{G}_0^{(1,1;a)}(A_{1u})\mathbb{Q}_0^{(b)}(A_{1g})$

$\boxed{\text{z37}}$ $\quad \mathbb{G}_3^{(1,-1;c)}(A_{2g}) = \dfrac{\sqrt{3}\mathbb{M}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{3} + \dfrac{\sqrt{3}\mathbb{M}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{3} + \dfrac{\sqrt{3}\mathbb{M}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z38}}$ $\quad \mathbb{Q}_3^{(1,-1;c)}(A_{2u}) = \dfrac{\sqrt{2}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2} - \dfrac{\sqrt{2}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$

$\boxed{\text{z39}}$ $\quad \mathbb{Q}_{2,1}^{(c)}(E_g) = -\dfrac{\sqrt{3}\mathbb{T}_{1,1}^{(a)}(T_{1u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6} - \dfrac{\sqrt{3}\mathbb{T}_{1,2}^{(a)}(T_{1u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} + \dfrac{\sqrt{3}\mathbb{T}_{1,3}^{(a)}(T_{1u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z40}}$ $\quad \mathbb{Q}_{2,2}^{(c)}(E_g) = \dfrac{\mathbb{T}_{1,1}^{(a)}(T_{1u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{2} - \dfrac{\mathbb{T}_{1,2}^{(a)}(T_{1u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{2}$

$\boxed{\text{z41}}$ $\quad \mathbb{Q}_{2,1}^{(1,-1;c)}(E_g) = -\dfrac{\mathbb{M}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{2} + \dfrac{\mathbb{M}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{2}$

$\boxed{\text{z89}}$ $\quad \mathbb{Q}_{2,2}^{(1,-1;c)}(E_g) = -\dfrac{\sqrt{3}\mathbb{M}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6} - \dfrac{\sqrt{3}\mathbb{M}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} + \dfrac{\sqrt{3}\mathbb{M}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$

$$\boxed{z90} \quad \mathbb{Q}_{2,1}^{(1,0;c)}(E_g) = -\frac{\sqrt{3}\mathbb{T}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6} - \frac{\sqrt{3}\mathbb{T}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} + \frac{\sqrt{3}\mathbb{T}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$$

$$\boxed{z91} \quad \mathbb{Q}_{2,2}^{(1,0;c)}(E_g) = \frac{\mathbb{T}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{2} - \frac{\mathbb{T}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{2}$$

$$\boxed{z92} \quad \mathbb{G}_{2,1}^{(1,-1;c)}(E_u,a) = \frac{\sqrt{2}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_0^{(b)}(A_{1g})}{2}$$

$$\boxed{z93} \quad \mathbb{G}_{2,2}^{(1,-1;c)}(E_u,a) = \frac{\sqrt{2}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_0^{(b)}(A_{1g})}{2}$$

$$\boxed{z94} \quad \mathbb{G}_{2,1}^{(1,-1;c)}(E_u,b) = \frac{\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \frac{\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{z95} \quad \mathbb{G}_{2,2}^{(1,-1;c)}(E_u,b) = -\frac{\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2} - \frac{\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

$$\boxed{z96} \quad \mathbb{G}_{2,1}^{(1,1;c)}(E_u) = \frac{\sqrt{2}\mathbb{G}_0^{(1,1;a)}(A_{1u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

$$\boxed{z97} \quad \mathbb{G}_{2,2}^{(1,1;c)}(E_u) = \frac{\sqrt{2}\mathbb{G}_0^{(1,1;a)}(A_{1u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{z98} \quad \mathbb{G}_{1,1}^{(c)}(T_{1g}) = \frac{\sqrt{6}\mathbb{T}_{1,2}^{(a)}(T_{1u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} - \frac{\sqrt{6}\mathbb{T}_{1,3}^{(a)}(T_{1u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6}$$

$$\boxed{z99} \quad \mathbb{G}_{1,2}^{(c)}(T_{1g}) = -\frac{\sqrt{6}\mathbb{T}_{1,1}^{(a)}(T_{1u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \frac{\sqrt{6}\mathbb{T}_{1,3}^{(a)}(T_{1u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$$

$$\boxed{z100} \quad \mathbb{G}_{1,3}^{(c)}(T_{1g}) = \frac{\sqrt{6}\mathbb{T}_{1,1}^{(a)}(T_{1u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} - \frac{\sqrt{6}\mathbb{T}_{1,2}^{(a)}(T_{1u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$$

$$\boxed{z101} \quad \mathbb{G}_{1,1}^{(1,-1;c)}(T_{1g}) = -\frac{\sqrt{30}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,1}^{(b)}(T_{1u})}{30} + \frac{\sqrt{10}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,1}^{(b)}(T_{1u})}{10} + \frac{\sqrt{10}\mathbb{M}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{10} + \frac{\sqrt{10}\mathbb{M}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{10}$$

$$\boxed{z102} \quad \mathbb{G}_{1,2}^{(1,-1;c)}(T_{1g}) = -\frac{\sqrt{30}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,2}^{(b)}(T_{1u})}{30} + \frac{\sqrt{10}\mathbb{M}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{10} - \frac{\sqrt{10}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,2}^{(b)}(T_{1u})}{10} + \frac{\sqrt{10}\mathbb{M}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{10}$$

$$\boxed{z103} \quad \mathbb{G}_{1,3}^{(1,-1;c)}(T_{1g}) = \frac{\sqrt{30}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,3}^{(b)}(T_{1u})}{15} + \frac{\sqrt{10}\mathbb{M}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{10} + \frac{\sqrt{10}\mathbb{M}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{10}$$

$\boxed{\text{z176}}$ $\quad \mathbb{G}_{3,1}^{(1,-1;c)}(T_{1g}) = -\dfrac{\sqrt{5}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,1}^{(b)}(T_{1u})}{10} + \dfrac{\sqrt{15}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,1}^{(b)}(T_{1u})}{10} - \dfrac{\sqrt{15}\mathbb{M}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{15} - \dfrac{\sqrt{15}\mathbb{M}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{15}$

$\boxed{\text{z177}}$ $\quad \mathbb{G}_{3,2}^{(1,-1;c)}(T_{1g}) = -\dfrac{\sqrt{5}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,2}^{(b)}(T_{1u})}{10} - \dfrac{\sqrt{15}\mathbb{M}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{15} - \dfrac{\sqrt{15}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,2}^{(b)}(T_{1u})}{10} - \dfrac{\sqrt{15}\mathbb{M}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{15}$

$\boxed{\text{z178}}$ $\quad \mathbb{G}_{3,3}^{(1,-1;c)}(T_{1g}) = \dfrac{\sqrt{5}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,3}^{(b)}(T_{1u})}{5} - \dfrac{\sqrt{15}\mathbb{M}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{15} - \dfrac{\sqrt{15}\mathbb{M}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{15}$

$\boxed{\text{z179}}$ $\quad \mathbb{G}_{1,1}^{(1,0;c)}(T_{1g}) = \dfrac{\sqrt{6}\mathbb{T}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} - \dfrac{\sqrt{6}\mathbb{T}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z180}}$ $\quad \mathbb{G}_{1,2}^{(1,0;c)}(T_{1g}) = -\dfrac{\sqrt{6}\mathbb{T}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \dfrac{\sqrt{6}\mathbb{T}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z181}}$ $\quad \mathbb{G}_{1,3}^{(1,0;c)}(T_{1g}) = \dfrac{\sqrt{6}\mathbb{T}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} - \dfrac{\sqrt{6}\mathbb{T}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z182}}$ $\quad \mathbb{G}_{1,1}^{(1,1;c)}(T_{1g}) = \dfrac{\sqrt{3}\mathbb{M}_{0}^{(1,1;a)}(A_{1u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z183}}$ $\quad \mathbb{G}_{1,2}^{(1,1;c)}(T_{1g}) = \dfrac{\sqrt{3}\mathbb{M}_{0}^{(1,1;a)}(A_{1u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z184}}$ $\quad \mathbb{G}_{1,3}^{(1,1;c)}(T_{1g}) = \dfrac{\sqrt{3}\mathbb{M}_{0}^{(1,1;a)}(A_{1u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z185}}$ $\quad \mathbb{Q}_{1,1}^{(c)}(T_{1u},a) = \dfrac{\sqrt{3}\mathbb{Q}_{1,1}^{(a)}(T_{1u})\mathbb{Q}_{0}^{(b)}(A_{1g})}{3}$

$\boxed{\text{z186}}$ $\quad \mathbb{Q}_{1,2}^{(c)}(T_{1u},a) = \dfrac{\sqrt{3}\mathbb{Q}_{1,2}^{(a)}(T_{1u})\mathbb{Q}_{0}^{(b)}(A_{1g})}{3}$

$\boxed{\text{z187}}$ $\quad \mathbb{Q}_{1,3}^{(c)}(T_{1u},a) = \dfrac{\sqrt{3}\mathbb{Q}_{1,3}^{(a)}(T_{1u})\mathbb{Q}_{0}^{(b)}(A_{1g})}{3}$

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

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

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

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

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

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

$\boxed{\text{z307}}$ $\mathbb{Q}_{1,1}^{(1,0;c)}(T_{1u},a) = \dfrac{\sqrt{3}\mathbb{Q}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{Q}_{0}^{(b)}(A_{1g})}{3}$

$\boxed{\text{z308}}$ $\mathbb{Q}_{1,2}^{(1,0;c)}(T_{1u},a) = \dfrac{\sqrt{3}\mathbb{Q}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{Q}_{0}^{(b)}(A_{1g})}{3}$

$\boxed{\text{z309}}$ $\mathbb{Q}_{1,3}^{(1,0;c)}(T_{1u},a) = \dfrac{\sqrt{3}\mathbb{Q}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{Q}_{0}^{(b)}(A_{1g})}{3}$

$\boxed{\text{z371}}$ $\mathbb{Q}_{1,1}^{(1,0;c)}(T_{1u},b) = -\dfrac{\sqrt{3}\mathbb{Q}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} + \dfrac{\mathbb{Q}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$

$\boxed{\text{z372}}$ $\mathbb{Q}_{1,2}^{(1,0;c)}(T_{1u},b) = -\dfrac{\sqrt{3}\mathbb{Q}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} - \dfrac{\mathbb{Q}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$

$\boxed{\text{z373}}$ $\mathbb{Q}_{1,3}^{(1,0;c)}(T_{1u},b) = \dfrac{\sqrt{3}\mathbb{Q}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{3}$

$\boxed{\text{z374}}$ $\mathbb{Q}_{2,1}^{(c)}(T_{2g}) = \dfrac{\sqrt{6}\mathbb{T}_{1,2}^{(a)}(T_{1u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \dfrac{\sqrt{6}\mathbb{T}_{1,3}^{(a)}(T_{1u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z375}}$ $\mathbb{Q}_{2,2}^{(c)}(T_{2g}) = \dfrac{\sqrt{6}\mathbb{T}_{1,1}^{(a)}(T_{1u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \dfrac{\sqrt{6}\mathbb{T}_{1,3}^{(a)}(T_{1u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z376}}$ $\mathbb{Q}_{2,3}^{(c)}(T_{2g}) = \dfrac{\sqrt{6}\mathbb{T}_{1,1}^{(a)}(T_{1u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} + \dfrac{\sqrt{6}\mathbb{T}_{1,2}^{(a)}(T_{1u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z377}}$ $\mathbb{Q}_{2,1}^{(1,-1;c)}(T_{2g}) = \dfrac{\sqrt{6}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6} + \dfrac{\sqrt{2}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6} - \dfrac{\sqrt{2}\mathbb{M}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \dfrac{\sqrt{2}\mathbb{M}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6}$

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

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

$$\boxed{\text{z380}} \quad \mathbb{Q}_{2,1}^{(1,0;c)}(T_{2g}) = \frac{\sqrt{6}\mathbb{T}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \frac{\sqrt{6}\mathbb{T}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6}$$

$$\boxed{\text{z381}} \quad \mathbb{Q}_{2,2}^{(1,0;c)}(T_{2g}) = \frac{\sqrt{6}\mathbb{T}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \frac{\sqrt{6}\mathbb{T}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$$

$$\boxed{\text{z382}} \quad \mathbb{Q}_{2,3}^{(1,0;c)}(T_{2g}) = \frac{\sqrt{6}\mathbb{T}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} + \frac{\sqrt{6}\mathbb{T}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$$

$$\boxed{\text{z383}} \quad \mathbb{G}_{3,1}^{(1,-1;c)}(T_{2g}) = -\frac{\sqrt{3}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6} - \frac{\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6} - \frac{\mathbb{M}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3} + \frac{\mathbb{M}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{3}$$

$$\boxed{\text{z384}} \quad \mathbb{G}_{3,2}^{(1,-1;c)}(T_{2g}) = \frac{\sqrt{3}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} + \frac{\mathbb{M}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3} - \frac{\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} - \frac{\mathbb{M}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{3}$$

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

$$\boxed{\text{z491}} \quad \mathbb{Q}_{3,1}^{(c)}(T_{2u}) = -\frac{\mathbb{Q}_{1,1}^{(a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{Q}_{1,1}^{(a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{6}$$

$$\boxed{\text{z492}} \quad \mathbb{Q}_{3,2}^{(c)}(T_{2u}) = \frac{\mathbb{Q}_{1,2}^{(a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \frac{\sqrt{3}\mathbb{Q}_{1,2}^{(a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{6}$$

$$\boxed{\text{z493}} \quad \mathbb{Q}_{3,3}^{(c)}(T_{2u}) = \frac{\sqrt{3}\mathbb{Q}_{1,3}^{(a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{3}$$

$$\boxed{\text{z494}} \quad \mathbb{Q}_{3,1}^{(1,-1;c)}(T_{2u}) = -\frac{\sqrt{3}\mathbb{G}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} + \frac{\mathbb{G}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z495}} \quad \mathbb{Q}_{3,2}^{(1,-1;c)}(T_{2u}) = -\frac{\sqrt{3}\mathbb{G}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} - \frac{\mathbb{G}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z496}} \quad \mathbb{Q}_{3,3}^{(1,-1;c)}(T_{2u}) = \frac{\sqrt{3}\mathbb{G}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{3}$$

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$\boxed{\text{z497}}$ $\mathbb{Q}_{3,1}^{(1,0;c)}(T_{2u}) = -\dfrac{\mathbb{Q}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \dfrac{\sqrt{3}\mathbb{Q}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{6}$

$\boxed{\text{z498}}$ $\mathbb{Q}_{3,2}^{(1,0;c)}(T_{2u}) = \dfrac{\mathbb{Q}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \dfrac{\sqrt{3}\mathbb{Q}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{6}$

$\boxed{\text{z499}}$ $\mathbb{Q}_{3,3}^{(1,0;c)}(T_{2u}) = \dfrac{\sqrt{3}\mathbb{Q}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{3}$

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

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

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

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

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

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

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

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

$\boxed{\text{z22}}$ $\mathbb{G}_{0}^{(c)}(A_{1u}) = \dfrac{\sqrt{3}\mathbb{M}_{1,1}^{(a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{3} + \dfrac{\sqrt{3}\mathbb{M}_{1,2}^{(a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{3} + \dfrac{\sqrt{3}\mathbb{M}_{1,3}^{(a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$

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

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$$\boxed{\text{z42}} \quad \mathbb{G}_4^{(1,-1;c)}(A_{1u}) = \frac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{3} + \frac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{3} + \frac{\sqrt{3}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$$

$$\boxed{\text{z43}} \quad \mathbb{G}_0^{(1,1;c)}(A_{1u}) = \frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{3} + \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{3} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$$

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

$$\boxed{\text{z45}} \quad \mathbb{G}_3^{(1,-1;c)}(A_{2g}) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z46}} \quad \mathbb{Q}_3^{(1,-1;c)}(A_{2u}) = -\frac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{3} - \frac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{3} - \frac{\sqrt{3}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$$

$$\boxed{\text{z47}} \quad \mathbb{Q}_3^{(1,0;c)}(A_{2u}) = \frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{3} + \frac{\sqrt{3}\mathbb{T}_{2,2}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{3} + \frac{\sqrt{3}\mathbb{T}_{2,3}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$$

$$\boxed{\text{z48}} \quad \mathbb{Q}_{2,1}^{(c)}(E_g,a) = \frac{\sqrt{2}\mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z49}} \quad \mathbb{Q}_{2,2}^{(c)}(E_g,a) = \frac{\sqrt{2}\mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z50}} \quad \mathbb{Q}_{2,1}^{(c)}(E_g,b) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_0^{(b)}(A_{1g})}{2}$$

$$\boxed{\text{z51}} \quad \mathbb{Q}_{2,2}^{(c)}(E_g,b) = \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_0^{(b)}(A_{1g})}{2}$$

$$\boxed{\text{z52}} \quad \mathbb{Q}_{2,1}^{(c)}(E_g,c) = \frac{\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \frac{\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z53}} \quad \mathbb{Q}_{2,2}^{(c)}(E_g,c) = -\frac{\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2} - \frac{\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z104}} \quad \mathbb{Q}_{2,1}^{(1,-1;c)}(E_g,a) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_0^{(b)}(A_{1g})}{2}$$

$$\boxed{\text{z105}} \quad \mathbb{Q}_{2,2}^{(1,-1;c)}(E_g,a) = \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_0^{(b)}(A_{1g})}{2}$$

$\boxed{\text{z106}}$ $\quad \mathbb{Q}_{2,1}^{(1,-1;c)}(E_g,b) = \dfrac{\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \dfrac{\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$

$\boxed{\text{z107}}$ $\quad \mathbb{Q}_{2,2}^{(1,-1;c)}(E_g,b) = -\dfrac{\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2} - \dfrac{\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$

$\boxed{\text{z108}}$ $\quad \mathbb{Q}_{2,1}^{(1,1;c)}(E_g) = \dfrac{\sqrt{2}\mathbb{Q}_0^{(1,1;a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$

$\boxed{\text{z109}}$ $\quad \mathbb{Q}_{2,2}^{(1,1;c)}(E_g) = \dfrac{\sqrt{2}\mathbb{Q}_0^{(1,1;a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$

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

$\boxed{\text{z111}}$ $\quad \mathbb{G}_{2,2}^{(c)}(E_u) = \dfrac{\mathbb{M}_{1,1}^{(a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{2} - \dfrac{\mathbb{M}_{1,2}^{(a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{2}$

$\boxed{\text{z112}}$ $\quad \mathbb{G}_{2,1}^{(1,-1;c)}(E_u,a) = -\dfrac{\sqrt{42}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{28} - \dfrac{\sqrt{70}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{28} - \dfrac{\sqrt{42}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{28} + \dfrac{\sqrt{70}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{28} + \dfrac{\sqrt{42}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{14}$

$\boxed{\text{z113}}$ $\quad \mathbb{G}_{2,2}^{(1,-1;c)}(E_u,a) = \dfrac{3\sqrt{14}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{28} - \dfrac{\sqrt{210}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{84} - \dfrac{3\sqrt{14}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{28} - \dfrac{\sqrt{210}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{84} + \dfrac{\sqrt{210}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{42}$

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

$\boxed{\text{z115}}$ $\quad \mathbb{G}_{2,2}^{(1,-1;c)}(E_u,b) = \dfrac{\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{2} - \dfrac{\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{2}$

$\boxed{\text{z188}}$ $\quad \mathbb{G}_{4,1}^{(1,-1;c)}(E_u) = -\dfrac{\sqrt{210}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{84} + \dfrac{3\sqrt{14}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{28} - \dfrac{\sqrt{210}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{84} - \dfrac{3\sqrt{14}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{28} + \dfrac{\sqrt{210}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{42}$

$\boxed{\text{z189}}$ $\quad \mathbb{G}_{4,2}^{(1,-1;c)}(E_u) = \dfrac{\sqrt{70}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{28} + \dfrac{\sqrt{42}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{28} - \dfrac{\sqrt{70}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{28} + \dfrac{\sqrt{42}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{28} - \dfrac{\sqrt{42}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{14}$

$\boxed{\text{z190}}$ $\quad \mathbb{G}_{2,1}^{(1,0;c)}(E_u) = -\dfrac{\mathbb{T}_{2,1}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{2} + \dfrac{\mathbb{T}_{2,2}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{2}$

$\boxed{\text{z191}}$ $\quad \mathbb{G}_{2,2}^{(1,0;c)}(E_u) = -\dfrac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6} - \dfrac{\sqrt{3}\mathbb{T}_{2,2}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} + \dfrac{\sqrt{3}\mathbb{T}_{2,3}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z192}}$ $\quad \mathbb{G}_{2,1}^{(1,1;c)}(E_u) = -\dfrac{\sqrt{3}\mathbb{M}_{1,1}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6} - \dfrac{\sqrt{3}\mathbb{M}_{1,2}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} + \dfrac{\sqrt{3}\mathbb{M}_{1,3}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z193}}$ $\quad \mathbb{G}_{2,2}^{(1,1;c)}(E_u) = \dfrac{\mathbb{M}_{1,1}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{2} - \dfrac{\mathbb{M}_{1,2}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{2}$

$\boxed{\text{z194}}$ $\quad \mathbb{Q}_{4,1}^{(c)}(T_{1g}) = -\dfrac{\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \dfrac{\sqrt{3}\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{6}$

$\boxed{\text{z195}}$ $\quad \mathbb{Q}_{4,2}^{(c)}(T_{1g}) = \dfrac{\mathbb{Q}_{2,2}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \dfrac{\sqrt{3}\mathbb{Q}_{2,2}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{6}$

$\boxed{\text{z196}}$ $\quad \mathbb{Q}_{4,3}^{(c)}(T_{1g}) = \dfrac{\sqrt{3}\mathbb{Q}_{2,3}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{3}$

$\boxed{\text{z197}}$ $\quad \mathbb{Q}_{4,1}^{(1,-1;c)}(T_{1g}) = -\dfrac{\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \dfrac{\sqrt{3}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{6}$

$\boxed{\text{z198}}$ $\quad \mathbb{Q}_{4,2}^{(1,-1;c)}(T_{1g}) = \dfrac{\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \dfrac{\sqrt{3}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{6}$

$\boxed{\text{z199}}$ $\quad \mathbb{Q}_{4,3}^{(1,-1;c)}(T_{1g}) = \dfrac{\sqrt{3}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{3}$

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

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

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

$\boxed{\text{z273}}$ $\quad \mathbb{G}_{1,1}^{(1,0;c)}(T_{1g},b) = -\dfrac{\sqrt{3}\mathbb{G}_{1,1}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} + \dfrac{\mathbb{G}_{1,1}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$

$\boxed{\text{z274}}$ $\quad \mathbb{G}_{1,2}^{(1,0;c)}(T_{1g},b) = -\dfrac{\sqrt{3}\mathbb{G}_{1,2}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} - \dfrac{\mathbb{G}_{1,2}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$

$\boxed{\text{z275}}$ $\quad \mathbb{G}_{1,3}^{(1,0;c)}(T_{1g},b) = \dfrac{\sqrt{3}\mathbb{G}_{1,3}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{3}$

$\boxed{\text{z276}}$ $\mathbb{Q}_{1,1}^{(c)}(T_{1u}) = \dfrac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} - \dfrac{\sqrt{6}\mathbb{M}_{1,3}^{(a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z288}}$ $\mathbb{Q}_{1,2}^{(c)}(T_{1u}) = -\dfrac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \dfrac{\sqrt{6}\mathbb{M}_{1,3}^{(a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z289}}$ $\mathbb{Q}_{1,3}^{(c)}(T_{1u}) = \dfrac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} - \dfrac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z310}}$ $\mathbb{Q}_{1,1}^{(1,-1;c)}(T_{1u}) = \dfrac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} - \dfrac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6}$

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

$\boxed{\text{z312}}$ $\mathbb{Q}_{1,3}^{(1,-1;c)}(T_{1u}) = \dfrac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} - \dfrac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z313}}$ $\mathbb{Q}_{3,1}^{(1,-1;c)}(T_{1u}) = -\dfrac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{4} - \dfrac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{12} + \dfrac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{4} - \dfrac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{12}$

$\boxed{\text{z314}}$ $\mathbb{Q}_{3,2}^{(1,-1;c)}(T_{1u}) = \dfrac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{4} - \dfrac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{12} - \dfrac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{4} - \dfrac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{12}$

$\boxed{\text{z315}}$ $\mathbb{Q}_{3,3}^{(1,-1;c)}(T_{1u}) = -\dfrac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{4} - \dfrac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{12} + \dfrac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{4} - \dfrac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{12}$

$\boxed{\text{z316}}$ $\mathbb{Q}_{1,1}^{(1,0;c)}(T_{1u}) = -\dfrac{\sqrt{30}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(T_{1u})}{30} + \dfrac{\sqrt{10}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(T_{1u})}{10} + \dfrac{\sqrt{10}\mathbb{T}_{2,2}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{10} + \dfrac{\sqrt{10}\mathbb{T}_{2,3}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{10}$

$\boxed{\text{z317}}$ $\mathbb{Q}_{1,2}^{(1,0;c)}(T_{1u}) = -\dfrac{\sqrt{30}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(T_{1u})}{30} + \dfrac{\sqrt{10}\mathbb{T}_{2,1}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{10} - \dfrac{\sqrt{10}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(T_{1u})}{10} + \dfrac{\sqrt{10}\mathbb{T}_{2,3}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{10}$

$\boxed{\text{z318}}$ $\mathbb{Q}_{1,3}^{(1,0;c)}(T_{1u}) = \dfrac{\sqrt{30}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,3}^{(b)}(T_{1u})}{15} + \dfrac{\sqrt{10}\mathbb{T}_{2,1}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{10} + \dfrac{\sqrt{10}\mathbb{T}_{2,2}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{10}$

$\boxed{\text{z319}}$ $\mathbb{Q}_{3,1}^{(1,0;c)}(T_{1u}) = -\dfrac{\sqrt{5}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(T_{1u})}{10} + \dfrac{\sqrt{15}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(T_{1u})}{10} - \dfrac{\sqrt{15}\mathbb{T}_{2,2}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{15} - \dfrac{\sqrt{15}\mathbb{T}_{2,3}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{15}$

$\boxed{\text{z320}}$ $\mathbb{Q}_{3,2}^{(1,0;c)}(T_{1u}) = -\dfrac{\sqrt{5}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(T_{1u})}{10} - \dfrac{\sqrt{15}\mathbb{T}_{2,1}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{15} - \dfrac{\sqrt{15}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(T_{1u})}{10} - \dfrac{\sqrt{15}\mathbb{T}_{2,3}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{15}$

$\boxed{\text{z321}}$ $\mathbb{Q}_{3,3}^{(1,0;c)}(T_{1u}) = \dfrac{\sqrt{5}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,3}^{(b)}(T_{1u})}{5} - \dfrac{\sqrt{15}\mathbb{T}_{2,1}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{15} - \dfrac{\sqrt{15}\mathbb{T}_{2,2}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{15}$

$\boxed{\text{z386}}$ $\mathbb{Q}_{1,1}^{(1,1;c)}(T_{1u}) = \dfrac{\sqrt{6}\mathbb{M}_{1,2}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} - \dfrac{\sqrt{6}\mathbb{M}_{1,3}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z387}}$ $\mathbb{Q}_{1,2}^{(1,1;c)}(T_{1u}) = -\dfrac{\sqrt{6}\mathbb{M}_{1,1}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \dfrac{\sqrt{6}\mathbb{M}_{1,3}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z388}}$ $\mathbb{Q}_{1,3}^{(1,1;c)}(T_{1u}) = \dfrac{\sqrt{6}\mathbb{M}_{1,1}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} - \dfrac{\sqrt{6}\mathbb{M}_{1,2}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z389}}$ $\mathbb{G}_{4,1}^{(1,-1;c)}(T_{1u}) = \dfrac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{12} - \dfrac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{4} - \dfrac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{12} - \dfrac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{4}$

$\boxed{\text{z390}}$ $\mathbb{G}_{4,2}^{(1,-1;c)}(T_{1u}) = -\dfrac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{12} - \dfrac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{4} + \dfrac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{12} - \dfrac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{4}$

$\boxed{\text{z391}}$ $\mathbb{G}_{4,3}^{(1,-1;c)}(T_{1u}) = \dfrac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{12} - \dfrac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{4} - \dfrac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{12} - \dfrac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{4}$

$\boxed{\text{z392}}$ $\mathbb{Q}_{2,1}^{(c)}(T_{2g},a) = \dfrac{\sqrt{3}\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_{0}^{(b)}(A_{1g})}{3}$

$\boxed{\text{z393}}$ $\mathbb{Q}_{2,2}^{(c)}(T_{2g},a) = \dfrac{\sqrt{3}\mathbb{Q}_{2,2}^{(a)}(T_{2g})\mathbb{Q}_{0}^{(b)}(A_{1g})}{3}$

$\boxed{\text{z394}}$ $\mathbb{Q}_{2,3}^{(c)}(T_{2g},a) = \dfrac{\sqrt{3}\mathbb{Q}_{2,3}^{(a)}(T_{2g})\mathbb{Q}_{0}^{(b)}(A_{1g})}{3}$

$\boxed{\text{z395}}$ $\mathbb{Q}_{2,1}^{(c)}(T_{2g},b) = \dfrac{\sqrt{3}\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} - \dfrac{\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$

$\boxed{\text{z396}}$ $\mathbb{Q}_{2,2}^{(c)}(T_{2g},b) = \dfrac{\sqrt{3}\mathbb{Q}_{2,2}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} + \dfrac{\mathbb{Q}_{2,2}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$

$\boxed{\text{z397}}$ $\mathbb{Q}_{2,3}^{(c)}(T_{2g},b) = -\dfrac{\sqrt{3}\mathbb{Q}_{2,3}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{3}$

$\boxed{\text{z398}}$ $\mathbb{Q}_{2,1}^{(1,-1;c)}(T_{2g},a) = \dfrac{\sqrt{3}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{0}^{(b)}(A_{1g})}{3}$

$\boxed{\text{z399}}$ $\quad \mathbb{Q}_{2,2}^{(1,-1;c)}(T_{2g},a) = \dfrac{\sqrt{3}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})\mathbb{Q}_0^{(b)}(A_{1g})}{3}$

$\boxed{\text{z400}}$ $\quad \mathbb{Q}_{2,3}^{(1,-1;c)}(T_{2g},a) = \dfrac{\sqrt{3}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_{2g})\mathbb{Q}_0^{(b)}(A_{1g})}{3}$

$\boxed{\text{z401}}$ $\quad \mathbb{Q}_{2,1}^{(1,-1;c)}(T_{2g},b) = \dfrac{\sqrt{3}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} - \dfrac{\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$

$\boxed{\text{z402}}$ $\quad \mathbb{Q}_{2,2}^{(1,-1;c)}(T_{2g},b) = \dfrac{\sqrt{3}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} + \dfrac{\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$

$\boxed{\text{z403}}$ $\quad \mathbb{Q}_{2,3}^{(1,-1;c)}(T_{2g},b) = -\dfrac{\sqrt{3}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{3}$

$\boxed{\text{z404}}$ $\quad \mathbb{Q}_{2,1}^{(1,0;c)}(T_{2g}) = -\dfrac{\mathbb{G}_{1,1}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \dfrac{\sqrt{3}\mathbb{G}_{1,1}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{6}$

$\boxed{\text{z405}}$ $\quad \mathbb{Q}_{2,2}^{(1,0;c)}(T_{2g}) = \dfrac{\mathbb{G}_{1,2}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \dfrac{\sqrt{3}\mathbb{G}_{1,2}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{6}$

$\boxed{\text{z406}}$ $\quad \mathbb{Q}_{2,3}^{(1,0;c)}(T_{2g}) = \dfrac{\sqrt{3}\mathbb{G}_{1,3}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{3}$

$\boxed{\text{z503}}$ $\quad \mathbb{Q}_{3,1}^{(1,-1;c)}(T_{2u}) = \dfrac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{12} + \dfrac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{12} + \dfrac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{12} - \dfrac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{12} + \dfrac{\mathbb{M}_3^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z504}}$ $\quad \mathbb{Q}_{3,2}^{(1,-1;c)}(T_{2u}) = \dfrac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{12} - \dfrac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{12} + \dfrac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{12} + \dfrac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{12} + \dfrac{\mathbb{M}_3^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z505}}$ $\quad \mathbb{Q}_{3,3}^{(1,-1;c)}(T_{2u}) = \dfrac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{12} + \dfrac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{12} + \dfrac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{12} - \dfrac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{12} + \dfrac{\mathbb{M}_3^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z506}}$ $\quad \mathbb{Q}_{3,1}^{(1,0;c)}(T_{2u}) = -\dfrac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6} - \dfrac{\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6} - \dfrac{\mathbb{T}_{2,2}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3} + \dfrac{\mathbb{T}_{2,3}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z507}}$ $\quad \mathbb{Q}_{3,2}^{(1,0;c)}(T_{2u}) = \dfrac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} + \dfrac{\mathbb{T}_{2,1}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3} - \dfrac{\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} - \dfrac{\mathbb{T}_{2,3}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z508}}$ $\quad \mathbb{Q}_{3,3}^{(1,0;c)}(T_{2u}) = -\dfrac{\mathbb{T}_{2,1}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{3} + \dfrac{\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3} + \dfrac{\mathbb{T}_{2,2}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{3}$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$\boxed{\text{z11}}$ $\quad \mathbb{Q}_0^{(c)}(A_{1g}) = \mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_0^{(b)}(A_{1g})$

$\boxed{\text{z54}}$ $\quad \mathbb{G}_0^{(1,-1;c)}(A_{1u}) = \dfrac{\sqrt{3}\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{3} + \dfrac{\sqrt{3}\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{3} + \dfrac{\sqrt{3}\mathbb{M}_{1,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z55}}$ $\quad \mathbb{Q}_3^{(1,-1;c)}(A_{2u}) = \dfrac{\sqrt{3}\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{3} + \dfrac{\sqrt{3}\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{3} + \dfrac{\sqrt{3}\mathbb{M}_{1,3}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{3}$

$\boxed{\text{z203}}$ $\quad \mathbb{Q}_{2,1}^{(c)}(E_g) = \dfrac{\sqrt{2}\mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$

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

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

$\boxed{\text{z277}}$ $\quad \mathbb{G}_{2,2}^{(1,-1;c)}(E_u,a) = \dfrac{\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{2} - \dfrac{\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{2}$

$\boxed{\text{z290}}$ $\quad \mathbb{G}_{2,1}^{(1,-1;c)}(E_u,b) = \dfrac{\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{2} - \dfrac{\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{2}$

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

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

$$\boxed{\text{z324}} \quad \mathbb{Q}_{1,2}^{(1,-1;c)}(T_{1u},a) = -\frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$$

$$\boxed{\text{z325}} \quad \mathbb{Q}_{1,3}^{(1,-1;c)}(T_{1u},a) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} - \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$$

$$\boxed{\text{z407}} \quad \mathbb{Q}_{1,1}^{(1,-1;c)}(T_{1u},b) = \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6}$$

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

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

$$\boxed{\text{z410}} \quad \mathbb{Q}_{2,1}^{(c)}(T_{2g}) = \frac{\sqrt{3}\mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{3}$$

$$\boxed{\text{z411}} \quad \mathbb{Q}_{2,2}^{(c)}(T_{2g}) = \frac{\sqrt{3}\mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{3}$$

$$\boxed{\text{z412}} \quad \mathbb{Q}_{2,3}^{(c)}(T_{2g}) = \frac{\sqrt{3}\mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{3}$$

$$\boxed{\text{z527}} \quad \mathbb{Q}_{3,1}^{(1,-1;c)}(T_{2u}) = \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{6} - \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6}$$

$$\boxed{\text{z528}} \quad \mathbb{Q}_{3,2}^{(1,-1;c)}(T_{2u}) = -\frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6}$$

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

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

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

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

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

$\boxed{\text{z12}}$ $\mathbb{Q}_0^{(c)}(A_{1g}) = \dfrac{\sqrt{3}\mathbb{T}_{1,1}^{(a)}(T_{1u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{3} + \dfrac{\sqrt{3}\mathbb{T}_{1,2}^{(a)}(T_{1u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{3} + \dfrac{\sqrt{3}\mathbb{T}_{1,3}^{(a)}(T_{1u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z13}}$ $\mathbb{Q}_0^{(1,-1;c)}(A_{1g}) = \dfrac{\sqrt{3}\mathbb{M}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{3} + \dfrac{\sqrt{3}\mathbb{M}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{3} + \dfrac{\sqrt{3}\mathbb{M}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{3}$

$\boxed{\text{z14}}$ $\mathbb{Q}_0^{(1,0;c)}(A_{1g}) = \dfrac{\sqrt{3}\mathbb{T}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{3} + \dfrac{\sqrt{3}\mathbb{T}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{3} + \dfrac{\sqrt{3}\mathbb{T}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z24}}$ $\mathbb{G}_0^{(1,-1;c)}(A_{1u}) = \dfrac{\sqrt{5}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{5} + \dfrac{\sqrt{5}\mathbb{G}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{5} + \dfrac{\sqrt{5}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{5} + \dfrac{\sqrt{5}\mathbb{G}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{5} + \dfrac{\sqrt{5}\mathbb{G}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{5}$

$\boxed{\text{z25}}$ $\mathbb{G}_4^{(1,-1;c)}(A_{1u}) = \dfrac{\sqrt{30}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{10} - \dfrac{\sqrt{30}\mathbb{G}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{15} + \dfrac{\sqrt{30}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{10} - \dfrac{\sqrt{30}\mathbb{G}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{15} - \dfrac{\sqrt{30}\mathbb{G}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{15}$

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

$\boxed{\text{z56}}$ $\mathbb{G}_3^{(c)}(A_{2g}) = \dfrac{\sqrt{3}\mathbb{T}_{1,1}^{(a)}(T_{1u})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{3} + \dfrac{\sqrt{3}\mathbb{T}_{1,2}^{(a)}(T_{1u})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{3} + \dfrac{\sqrt{3}\mathbb{T}_{1,3}^{(a)}(T_{1u})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{3}$

$\boxed{\text{z57}}$ $\mathbb{G}_3^{(1,-1;c)}(A_{2g}) = \dfrac{\sqrt{3}\mathbb{M}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{3} + \dfrac{\sqrt{3}\mathbb{M}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{3} + \dfrac{\sqrt{3}\mathbb{M}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z58}}$ $\mathbb{G}_3^{(1,0;c)}(A_{2g}) = \dfrac{\sqrt{3}\mathbb{T}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{3} + \dfrac{\sqrt{3}\mathbb{T}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{3} + \dfrac{\sqrt{3}\mathbb{T}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{3}$

$\boxed{\text{z59}}$ $\mathbb{Q}_3^{(c)}(A_{2u}) = \dfrac{\sqrt{3}\mathbb{Q}_{1,1}^{(a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{3} + \dfrac{\sqrt{3}\mathbb{Q}_{1,2}^{(a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{3} + \dfrac{\sqrt{3}\mathbb{Q}_{1,3}^{(a)}(T_{1u})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{3}$

$$\boxed{\text{z60}} \quad \mathbb{Q}_3^{(1,-1;c)}(A_{2u}) = \frac{\sqrt{2}\,\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2} - \frac{\sqrt{2}\,\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z61}} \quad \mathbb{Q}_3^{(1,0;c)}(A_{2u}) = \frac{\sqrt{3}\,\mathbb{Q}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{3} + \frac{\sqrt{3}\,\mathbb{Q}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{3} + \frac{\sqrt{3}\,\mathbb{Q}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{3}$$

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

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

$$\boxed{\text{z64}} \quad \mathbb{Q}_{2,1}^{(c)}(E_g, b) = \frac{\mathbb{T}_{1,1}^{(a)}(T_{1u})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{2} - \frac{\mathbb{T}_{1,2}^{(a)}(T_{1u})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{2}$$

$$\boxed{\text{z65}} \quad \mathbb{Q}_{2,2}^{(c)}(E_g, b) = \frac{\sqrt{3}\,\mathbb{T}_{1,1}^{(a)}(T_{1u})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6} + \frac{\sqrt{3}\,\mathbb{T}_{1,2}^{(a)}(T_{1u})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6} - \frac{\sqrt{3}\,\mathbb{T}_{1,3}^{(a)}(T_{1u})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{3}$$

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

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

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

$$\boxed{\text{z117}} \quad \mathbb{Q}_{2,2}^{(1,-1;c)}(E_g, b) = -\frac{\mathbb{M}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{2} + \frac{\mathbb{M}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{2}$$

$$\boxed{\text{z118}} \quad \mathbb{Q}_{2,1}^{(1,0;c)}(E_g, a) = -\frac{\sqrt{3}\,\mathbb{T}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6} - \frac{\sqrt{3}\,\mathbb{T}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} + \frac{\sqrt{3}\,\mathbb{T}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$$

$$\boxed{\text{z119}} \quad \mathbb{Q}_{2,2}^{(1,0;c)}(E_g, a) = \frac{\mathbb{T}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{2} - \frac{\mathbb{T}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{2}$$

$$\boxed{\text{z120}} \quad \mathbb{Q}_{2,1}^{(1,0;c)}(E_g, b) = \frac{\mathbb{T}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{2} - \frac{\mathbb{T}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{2}$$

$$\boxed{\text{z121}} \quad \mathbb{Q}_{2,2}^{(1,0;c)}(E_g, b) = \frac{\sqrt{3}\,\mathbb{T}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6} + \frac{\sqrt{3}\,\mathbb{T}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6} - \frac{\sqrt{3}\,\mathbb{T}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{3}$$

$$\boxed{\text{z122}} \quad \mathbb{G}_{2,1}^{(c)}(E_u) = \frac{\mathbb{Q}_{1,1}^{(a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{2} - \frac{\mathbb{Q}_{1,2}^{(a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{2}$$

$$\boxed{\text{z123}} \quad \mathbb{G}_{2,2}^{(c)}(E_u) = \frac{\sqrt{3}\mathbb{Q}_{1,1}^{(a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{6} + \frac{\sqrt{3}\mathbb{Q}_{1,2}^{(a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{6} - \frac{\sqrt{3}\mathbb{Q}_{1,3}^{(a)}(T_{1u})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{3}$$

$$\boxed{\text{z124}} \quad \mathbb{G}_{2,1}^{(1,-1;c)}(E_u,a) = \frac{\sqrt{2}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_0^{(b)}(A_{1g})}{2}$$

$$\boxed{\text{z125}} \quad \mathbb{G}_{2,2}^{(1,-1;c)}(E_u,a) = \frac{\sqrt{2}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_0^{(b)}(A_{1g})}{2}$$

$$\boxed{\text{z126}} \quad \mathbb{G}_{2,1}^{(1,-1;c)}(E_u,b) = \frac{\sqrt{7}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{7} + \frac{\sqrt{7}\mathbb{G}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{14} - \frac{\sqrt{7}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{7} + \frac{\sqrt{7}\mathbb{G}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{14} - \frac{\sqrt{7}\mathbb{G}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{7}$$

$$\boxed{\text{z127}} \quad \mathbb{G}_{2,2}^{(1,-1;c)}(E_u,b) = -\frac{\sqrt{7}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{7} - \frac{\sqrt{21}\mathbb{G}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{14} - \frac{\sqrt{7}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{7} + \frac{\sqrt{21}\mathbb{G}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{14}$$

$$\boxed{\text{z128}} \quad \mathbb{G}_{4,1}^{(1,-1;c)}(E_u) = \frac{\sqrt{21}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{14} - \frac{\sqrt{21}\mathbb{G}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{21} - \frac{\sqrt{21}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{14} - \frac{\sqrt{21}\mathbb{G}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{21} + \frac{2\sqrt{21}\mathbb{G}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{21}$$

$$\boxed{\text{z129}} \quad \mathbb{G}_{4,2}^{(1,-1;c)}(E_u) = -\frac{\sqrt{21}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(E_g)}{14} + \frac{\sqrt{7}\mathbb{G}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{7} - \frac{\sqrt{21}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(b)}(E_g)}{14} - \frac{\sqrt{7}\mathbb{G}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{7}$$

$$\boxed{\text{z130}} \quad \mathbb{G}_{2,1}^{(1,0;c)}(E_u) = \frac{\mathbb{Q}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{2} - \frac{\mathbb{Q}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{2}$$

$$\boxed{\text{z131}} \quad \mathbb{G}_{2,2}^{(1,0;c)}(E_u) = \frac{\sqrt{3}\mathbb{Q}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{6} + \frac{\sqrt{3}\mathbb{Q}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{6} - \frac{\sqrt{3}\mathbb{Q}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{3}$$

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

$$\boxed{\text{z133}} \quad \mathbb{G}_{2,2}^{(1,1;c)}(E_u) = \frac{\sqrt{2}\mathbb{G}_0^{(1,1;a)}(A_{1u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z134}} \quad \mathbb{Q}_{4,1}^{(1,-1;c)}(T_{1g}) = -\frac{\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{M}_{2,1}^{(b)}(T_{2u})}{2} - \frac{\sqrt{3}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6}$$

$$\boxed{\text{z135}} \quad \mathbb{Q}_{4,2}^{(1,-1;c)}(T_{1g}) = \frac{\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{M}_{2,2}^{(b)}(T_{2u})}{2} - \frac{\sqrt{3}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6}$$

$\boxed{\text{z136}}$ $\quad \mathbb{Q}_{4,3}^{(1,-1;c)}(T_{1g}) = \dfrac{\sqrt{3}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{M}_{2,3}^{(b)}(T_{2u})}{3}$

$\boxed{\text{z137}}$ $\quad \mathbb{G}_{1,1}^{(c)}(T_{1g},a) = \dfrac{\sqrt{6}\mathbb{T}_{1,2}^{(a)}(T_{1u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} - \dfrac{\sqrt{6}\mathbb{T}_{1,3}^{(a)}(T_{1u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z138}}$ $\quad \mathbb{G}_{1,2}^{(c)}(T_{1g},a) = -\dfrac{\sqrt{6}\mathbb{T}_{1,1}^{(a)}(T_{1u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \dfrac{\sqrt{6}\mathbb{T}_{1,3}^{(a)}(T_{1u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z139}}$ $\quad \mathbb{G}_{1,3}^{(c)}(T_{1g},a) = \dfrac{\sqrt{6}\mathbb{T}_{1,1}^{(a)}(T_{1u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} - \dfrac{\sqrt{6}\mathbb{T}_{1,2}^{(a)}(T_{1u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z140}}$ $\quad \mathbb{G}_{1,1}^{(c)}(T_{1g},b) = \dfrac{\sqrt{6}\mathbb{T}_{1,2}^{(a)}(T_{1u})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{6} + \dfrac{\sqrt{6}\mathbb{T}_{1,3}^{(a)}(T_{1u})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6}$

$\boxed{\text{z141}}$ $\quad \mathbb{G}_{1,2}^{(c)}(T_{1g},b) = \dfrac{\sqrt{6}\mathbb{T}_{1,1}^{(a)}(T_{1u})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{6} + \dfrac{\sqrt{6}\mathbb{T}_{1,3}^{(a)}(T_{1u})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6}$

$\boxed{\text{z142}}$ $\quad \mathbb{G}_{1,3}^{(c)}(T_{1g},b) = \dfrac{\sqrt{6}\mathbb{T}_{1,1}^{(a)}(T_{1u})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6} + \dfrac{\sqrt{6}\mathbb{T}_{1,2}^{(a)}(T_{1u})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6}$

$\boxed{\text{z206}}$ $\quad \mathbb{G}_{1,1}^{(1,-1;c)}(T_{1g},a) = -\dfrac{\sqrt{30}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,1}^{(b)}(T_{1u})}{30} + \dfrac{\sqrt{10}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,1}^{(b)}(T_{1u})}{10} + \dfrac{\sqrt{10}\mathbb{M}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{10} + \dfrac{\sqrt{10}\mathbb{M}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{10}$

$\boxed{\text{z207}}$ $\quad \mathbb{G}_{1,2}^{(1,-1;c)}(T_{1g},a) = -\dfrac{\sqrt{30}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,2}^{(b)}(T_{1u})}{30} + \dfrac{\sqrt{10}\mathbb{M}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{10} - \dfrac{\sqrt{10}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,2}^{(b)}(T_{1u})}{10} + \dfrac{\sqrt{10}\mathbb{M}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{10}$

$\boxed{\text{z208}}$ $\quad \mathbb{G}_{1,3}^{(1,-1;c)}(T_{1g},a) = \dfrac{\sqrt{30}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,3}^{(b)}(T_{1u})}{15} + \dfrac{\sqrt{10}\mathbb{M}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{10} + \dfrac{\sqrt{10}\mathbb{M}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{10}$

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

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

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

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

z213 $\quad \mathbb{G}_{3,2}^{(1,-1;c)}(T_{1g}) = -\dfrac{\sqrt{5}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,2}^{(b)}(T_{1u})}{10} - \dfrac{\sqrt{15}\mathbb{M}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{15} - \dfrac{\sqrt{15}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,2}^{(b)}(T_{1u})}{10} - \dfrac{\sqrt{15}\mathbb{M}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{15}$

z214 $\quad \mathbb{G}_{3,3}^{(1,-1;c)}(T_{1g}) = \dfrac{\sqrt{5}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,3}^{(b)}(T_{1u})}{5} - \dfrac{\sqrt{15}\mathbb{M}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{15} - \dfrac{\sqrt{15}\mathbb{M}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{15}$

z215 $\quad \mathbb{G}_{1,1}^{(1,0;c)}(T_{1g},a) = \dfrac{\sqrt{6}\mathbb{T}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} - \dfrac{\sqrt{6}\mathbb{T}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6}$

z216 $\quad \mathbb{G}_{1,2}^{(1,0;c)}(T_{1g},a) = -\dfrac{\sqrt{6}\mathbb{T}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \dfrac{\sqrt{6}\mathbb{T}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$

z217 $\quad \mathbb{G}_{1,3}^{(1,0;c)}(T_{1g},a) = \dfrac{\sqrt{6}\mathbb{T}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} - \dfrac{\sqrt{6}\mathbb{T}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$

z218 $\quad \mathbb{G}_{1,1}^{(1,0;c)}(T_{1g},b) = \dfrac{\sqrt{6}\mathbb{T}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{6} + \dfrac{\sqrt{6}\mathbb{T}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6}$

z219 $\quad \mathbb{G}_{1,2}^{(1,0;c)}(T_{1g},b) = \dfrac{\sqrt{6}\mathbb{T}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{6} + \dfrac{\sqrt{6}\mathbb{T}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6}$

z220 $\quad \mathbb{G}_{1,3}^{(1,0;c)}(T_{1g},b) = \dfrac{\sqrt{6}\mathbb{T}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6} + \dfrac{\sqrt{6}\mathbb{T}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6}$

z221 $\quad \mathbb{G}_{1,1}^{(1,1;c)}(T_{1g}) = \dfrac{\sqrt{3}\mathbb{M}_0^{(1,1;a)}(A_{1u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{3}$

z222 $\quad \mathbb{G}_{1,2}^{(1,1;c)}(T_{1g}) = \dfrac{\sqrt{3}\mathbb{M}_0^{(1,1;a)}(A_{1u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{3}$

z223 $\quad \mathbb{G}_{1,3}^{(1,1;c)}(T_{1g}) = \dfrac{\sqrt{3}\mathbb{M}_0^{(1,1;a)}(A_{1u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$

z224 $\quad \mathbb{Q}_{1,1}^{(c)}(T_{1u},a) = \dfrac{\sqrt{3}\mathbb{Q}_{1,1}^{(a)}(T_{1u})\mathbb{Q}_0^{(b)}(A_{1g})}{3}$

z225 $\quad \mathbb{Q}_{1,2}^{(c)}(T_{1u},a) = \dfrac{\sqrt{3}\mathbb{Q}_{1,2}^{(a)}(T_{1u})\mathbb{Q}_0^{(b)}(A_{1g})}{3}$

z226 $\quad \mathbb{Q}_{1,3}^{(c)}(T_{1u},a) = \dfrac{\sqrt{3}\mathbb{Q}_{1,3}^{(a)}(T_{1u})\mathbb{Q}_0^{(b)}(A_{1g})}{3}$

$$\boxed{\text{z227}} \quad \mathbb{Q}_{1,1}^{(c)}(T_{1u},b) = -\frac{\sqrt{30}\mathbb{Q}_{1,1}^{(a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{30} + \frac{\sqrt{10}\mathbb{Q}_{1,1}^{(a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{10} + \frac{\sqrt{10}\mathbb{Q}_{1,2}^{(a)}(T_{1u})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{10} + \frac{\sqrt{10}\mathbb{Q}_{1,3}^{(a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{10}$$

$$\boxed{\text{z228}} \quad \mathbb{Q}_{1,2}^{(c)}(T_{1u},b) = \frac{\sqrt{10}\mathbb{Q}_{1,1}^{(a)}(T_{1u})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{10} - \frac{\sqrt{30}\mathbb{Q}_{1,2}^{(a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{30} - \frac{\sqrt{10}\mathbb{Q}_{1,2}^{(a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{10} + \frac{\sqrt{10}\mathbb{Q}_{1,3}^{(a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{10}$$

$$\boxed{\text{z229}} \quad \mathbb{Q}_{1,3}^{(c)}(T_{1u},b) = \frac{\sqrt{10}\mathbb{Q}_{1,1}^{(a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{10} + \frac{\sqrt{10}\mathbb{Q}_{1,2}^{(a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{10} + \frac{\sqrt{30}\mathbb{Q}_{1,3}^{(a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{15}$$

$$\boxed{\text{z230}} \quad \mathbb{Q}_{3,1}^{(c)}(T_{1u}) = -\frac{\sqrt{5}\mathbb{Q}_{1,1}^{(a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{10} + \frac{\sqrt{15}\mathbb{Q}_{1,1}^{(a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{10} - \frac{\sqrt{15}\mathbb{Q}_{1,2}^{(a)}(T_{1u})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{15} - \frac{\sqrt{15}\mathbb{Q}_{1,3}^{(a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{15}$$

$$\boxed{\text{z231}} \quad \mathbb{Q}_{3,2}^{(c)}(T_{1u}) = -\frac{\sqrt{15}\mathbb{Q}_{1,1}^{(a)}(T_{1u})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{15} - \frac{\sqrt{5}\mathbb{Q}_{1,2}^{(a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{10} - \frac{\sqrt{15}\mathbb{Q}_{1,2}^{(a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{10} - \frac{\sqrt{15}\mathbb{Q}_{1,3}^{(a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{15}$$

$$\boxed{\text{z232}} \quad \mathbb{Q}_{3,3}^{(c)}(T_{1u}) = -\frac{\sqrt{15}\mathbb{Q}_{1,1}^{(a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{15} - \frac{\sqrt{15}\mathbb{Q}_{1,2}^{(a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{15} + \frac{\sqrt{5}\mathbb{Q}_{1,3}^{(a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{5}$$

$$\boxed{\text{z278}} \quad \mathbb{Q}_{1,1}^{(1,-1;c)}(T_{1u}) = -\frac{\sqrt{10}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{10} + \frac{\sqrt{10}\mathbb{G}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{10} + \frac{\sqrt{30}\mathbb{G}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{30}$$
$$\qquad - \frac{\sqrt{30}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{30} - \frac{\sqrt{30}\mathbb{G}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{30} + \frac{\sqrt{30}\mathbb{G}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{30}$$

$$\boxed{\text{z279}} \quad \mathbb{Q}_{1,2}^{(1,-1;c)}(T_{1u}) = \frac{\sqrt{10}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{10} + \frac{\sqrt{30}\mathbb{G}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{30} - \frac{\sqrt{30}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{30}$$
$$\qquad - \frac{\sqrt{10}\mathbb{G}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{10} + \frac{\sqrt{30}\mathbb{G}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{30} - \frac{\sqrt{30}\mathbb{G}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{30}$$

$$\boxed{\text{z280}} \quad \mathbb{Q}_{1,3}^{(1,-1;c)}(T_{1u}) = -\frac{\sqrt{30}\mathbb{G}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{30} + \frac{\sqrt{30}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{15} + \frac{\sqrt{30}\mathbb{G}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{30} - \frac{\sqrt{30}\mathbb{G}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{15}$$

$$\boxed{\text{z291}} \quad \mathbb{Q}_{3,1}^{(1,-1;c)}(T_{1u}) = \frac{\sqrt{10}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{20} - \frac{\sqrt{10}\mathbb{G}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{20} - \frac{\sqrt{30}\mathbb{G}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{60}$$
$$\qquad + \frac{\sqrt{30}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{60} - \frac{\sqrt{30}\mathbb{G}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{15} + \frac{\sqrt{30}\mathbb{G}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{15}$$

$$\boxed{\text{z292}} \quad \mathbb{Q}_{3,2}^{(1,-1;c)}(T_{1u}) = -\frac{\sqrt{10}\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{20} + \frac{\sqrt{30}\mathbb{G}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{15} + \frac{\sqrt{30}\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{60}$$
$$\qquad + \frac{\sqrt{10}\mathbb{G}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{20} - \frac{\sqrt{30}\mathbb{G}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{60} - \frac{\sqrt{30}\mathbb{G}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{15}$$

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$$\boxed{\text{z293}} \quad \mathbb{Q}_{3,3}^{(1,-1;c)}(T_{1u}) = -\frac{\sqrt{30}\,\mathbb{G}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{15} - \frac{\sqrt{30}\,\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{30} + \frac{\sqrt{30}\,\mathbb{G}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{15} + \frac{\sqrt{30}\,\mathbb{G}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{30}$$

$$\boxed{\text{z326}} \quad \mathbb{Q}_{1,1}^{(1,0;c)}(T_{1u},a) = \frac{\sqrt{3}\,\mathbb{Q}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{Q}_{0}^{(b)}(A_{1g})}{3}$$

$$\boxed{\text{z327}} \quad \mathbb{Q}_{1,2}^{(1,0;c)}(T_{1u},a) = \frac{\sqrt{3}\,\mathbb{Q}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{Q}_{0}^{(b)}(A_{1g})}{3}$$

$$\boxed{\text{z328}} \quad \mathbb{Q}_{1,3}^{(1,0;c)}(T_{1u},a) = \frac{\sqrt{3}\,\mathbb{Q}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{Q}_{0}^{(b)}(A_{1g})}{3}$$

$$\boxed{\text{z329}} \quad \mathbb{Q}_{1,1}^{(1,0;c)}(T_{1u},b) = -\frac{\sqrt{30}\,\mathbb{Q}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{30} + \frac{\sqrt{10}\,\mathbb{Q}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{10} + \frac{\sqrt{10}\,\mathbb{Q}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{10} + \frac{\sqrt{10}\,\mathbb{Q}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{10}$$

$$\boxed{\text{z330}} \quad \mathbb{Q}_{1,2}^{(1,0;c)}(T_{1u},b) = \frac{\sqrt{10}\,\mathbb{Q}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{10} - \frac{\sqrt{30}\,\mathbb{Q}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{30} - \frac{\sqrt{10}\,\mathbb{Q}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{10} + \frac{\sqrt{10}\,\mathbb{Q}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{10}$$

$$\boxed{\text{z331}} \quad \mathbb{Q}_{1,3}^{(1,0;c)}(T_{1u},b) = \frac{\sqrt{10}\,\mathbb{Q}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{10} + \frac{\sqrt{10}\,\mathbb{Q}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{10} + \frac{\sqrt{30}\,\mathbb{Q}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{15}$$

$$\boxed{\text{z332}} \quad \mathbb{Q}_{3,1}^{(1,0;c)}(T_{1u}) = -\frac{\sqrt{5}\,\mathbb{Q}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{10} + \frac{\sqrt{15}\,\mathbb{Q}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{10} - \frac{\sqrt{15}\,\mathbb{Q}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{15} - \frac{\sqrt{15}\,\mathbb{Q}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{15}$$

$$\boxed{\text{z333}} \quad \mathbb{Q}_{3,2}^{(1,0;c)}(T_{1u}) = -\frac{\sqrt{15}\,\mathbb{Q}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{15} - \frac{\sqrt{5}\,\mathbb{Q}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{10} - \frac{\sqrt{15}\,\mathbb{Q}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{10} - \frac{\sqrt{15}\,\mathbb{Q}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{15}$$

$$\boxed{\text{z334}} \quad \mathbb{Q}_{3,3}^{(1,0;c)}(T_{1u}) = -\frac{\sqrt{15}\,\mathbb{Q}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{15} - \frac{\sqrt{15}\,\mathbb{Q}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{15} + \frac{\sqrt{5}\,\mathbb{Q}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{5}$$

$$\boxed{\text{z335}} \quad \mathbb{G}_{4,1}^{(1,-1;c)}(T_{1u}) = -\frac{\sqrt{2}\,\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{4} - \frac{\sqrt{2}\,\mathbb{G}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{4} - \frac{\sqrt{6}\,\mathbb{G}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{12} - \frac{\sqrt{6}\,\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{12}$$

$$\boxed{\text{z336}} \quad \mathbb{G}_{4,2}^{(1,-1;c)}(T_{1u}) = \frac{\sqrt{2}\,\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{4} - \frac{\sqrt{6}\,\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{12} + \frac{\sqrt{2}\,\mathbb{G}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{4} - \frac{\sqrt{6}\,\mathbb{G}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{12}$$

$$\boxed{\text{z337}} \quad \mathbb{G}_{4,3}^{(1,-1;c)}(T_{1u}) = \frac{\sqrt{6}\,\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{6} + \frac{\sqrt{6}\,\mathbb{G}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{6}$$

$$\boxed{\text{z413}} \quad \mathbb{Q}_{2,1}^{(c)}(T_{2g},a) = \frac{\sqrt{6}\,\mathbb{T}_{1,2}^{(a)}(T_{1u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \frac{\sqrt{6}\,\mathbb{T}_{1,3}^{(a)}(T_{1u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6}$$

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$\boxed{\text{z414}}$ $\quad \mathbb{Q}_{2,2}^{(c)}(T_{2g}, a) = \dfrac{\sqrt{6}\mathbb{T}_{1,1}^{(a)}(T_{1u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \dfrac{\sqrt{6}\mathbb{T}_{1,3}^{(a)}(T_{1u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z415}}$ $\quad \mathbb{Q}_{2,3}^{(c)}(T_{2g}, a) = \dfrac{\sqrt{6}\mathbb{T}_{1,1}^{(a)}(T_{1u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} + \dfrac{\sqrt{6}\mathbb{T}_{1,2}^{(a)}(T_{1u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z416}}$ $\quad \mathbb{Q}_{2,1}^{(c)}(T_{2g}, b) = -\dfrac{\sqrt{6}\mathbb{T}_{1,2}^{(a)}(T_{1u})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{6} + \dfrac{\sqrt{6}\mathbb{T}_{1,3}^{(a)}(T_{1u})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6}$

$\boxed{\text{z417}}$ $\quad \mathbb{Q}_{2,2}^{(c)}(T_{2g}, b) = \dfrac{\sqrt{6}\mathbb{T}_{1,1}^{(a)}(T_{1u})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{6} - \dfrac{\sqrt{6}\mathbb{T}_{1,3}^{(a)}(T_{1u})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6}$

$\boxed{\text{z418}}$ $\quad \mathbb{Q}_{2,3}^{(c)}(T_{2g}, b) = -\dfrac{\sqrt{6}\mathbb{T}_{1,1}^{(a)}(T_{1u})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6} + \dfrac{\sqrt{6}\mathbb{T}_{1,2}^{(a)}(T_{1u})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6}$

$\boxed{\text{z419}}$ $\quad \mathbb{Q}_{2,1}^{(1,-1;c)}(T_{2g}, a) = \dfrac{\sqrt{6}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6} + \dfrac{\sqrt{2}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6} - \dfrac{\sqrt{2}\mathbb{M}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \dfrac{\sqrt{2}\mathbb{M}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z420}}$ $\quad \mathbb{Q}_{2,2}^{(1,-1;c)}(T_{2g}, a) = -\dfrac{\sqrt{6}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} + \dfrac{\sqrt{2}\mathbb{M}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \dfrac{\sqrt{2}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} - \dfrac{\sqrt{2}\mathbb{M}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z421}}$ $\quad \mathbb{Q}_{2,3}^{(1,-1;c)}(T_{2g}, a) = -\dfrac{\sqrt{2}\mathbb{M}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} - \dfrac{\sqrt{2}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3} + \dfrac{\sqrt{2}\mathbb{M}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z422}}$ $\quad \mathbb{Q}_{2,1}^{(1,-1;c)}(T_{2g}, b) = \dfrac{\sqrt{30}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{M}_{2,1}^{(b)}(T_{2u})}{30} - \dfrac{\sqrt{10}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{M}_{2,1}^{(b)}(T_{2u})}{10} + \dfrac{\sqrt{10}\mathbb{M}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{10} + \dfrac{\sqrt{10}\mathbb{M}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{10}$

$\boxed{\text{z423}}$ $\quad \mathbb{Q}_{2,2}^{(1,-1;c)}(T_{2g}, b) = \dfrac{\sqrt{30}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{M}_{2,2}^{(b)}(T_{2u})}{30} + \dfrac{\sqrt{10}\mathbb{M}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{10} + \dfrac{\sqrt{10}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{M}_{2,2}^{(b)}(T_{2u})}{10} + \dfrac{\sqrt{10}\mathbb{M}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{10}$

$\boxed{\text{z424}}$ $\quad \mathbb{Q}_{2,3}^{(1,-1;c)}(T_{2g}, b) = -\dfrac{\sqrt{30}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{M}_{2,3}^{(b)}(T_{2u})}{15} + \dfrac{\sqrt{10}\mathbb{M}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{10} + \dfrac{\sqrt{10}\mathbb{M}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{10}$

$\boxed{\text{z425}}$ $\quad \mathbb{Q}_{4,1}^{(1,-1;c)}(T_{2g}) = -\dfrac{\sqrt{5}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{M}_{2,1}^{(b)}(T_{2u})}{10} + \dfrac{\sqrt{15}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{M}_{2,1}^{(b)}(T_{2u})}{10} + \dfrac{\sqrt{15}\mathbb{M}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{15} + \dfrac{\sqrt{15}\mathbb{M}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{15}$

$\boxed{\text{z426}}$ $\quad \mathbb{Q}_{4,2}^{(1,-1;c)}(T_{2g}) = -\dfrac{\sqrt{5}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{M}_{2,2}^{(b)}(T_{2u})}{10} + \dfrac{\sqrt{15}\mathbb{M}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{15} - \dfrac{\sqrt{15}\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{M}_{2,2}^{(b)}(T_{2u})}{10} + \dfrac{\sqrt{15}\mathbb{M}_{2,3}^{(1,-1;a)}(T_{2u})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{15}$

$\boxed{\text{z427}}$ $\quad \mathbb{Q}_{4,3}^{(1,-1;c)}(T_{2g}) = \dfrac{\sqrt{5}\mathbb{M}_{2,1}^{(1,-1;a)}(E_u)\mathbb{M}_{2,3}^{(b)}(T_{2u})}{5} + \dfrac{\sqrt{15}\mathbb{M}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{15} + \dfrac{\sqrt{15}\mathbb{M}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{15}$

$\boxed{\text{z428}}$ $\quad \mathbb{Q}_{2,1}^{(1,0;c)}(T_{2g}, a) = \dfrac{\sqrt{6}\mathbb{T}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \dfrac{\sqrt{6}\mathbb{T}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z429}}$ $\quad \mathbb{Q}_{2,2}^{(1,0;c)}(T_{2g}, a) = \dfrac{\sqrt{6}\mathbb{T}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \dfrac{\sqrt{6}\mathbb{T}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z430}}$ $\quad \mathbb{Q}_{2,3}^{(1,0;c)}(T_{2g}, a) = \dfrac{\sqrt{6}\mathbb{T}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} + \dfrac{\sqrt{6}\mathbb{T}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z431}}$ $\quad \mathbb{Q}_{2,1}^{(1,0;c)}(T_{2g}, b) = -\dfrac{\sqrt{6}\mathbb{T}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{6} + \dfrac{\sqrt{6}\mathbb{T}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6}$

$\boxed{\text{z432}}$ $\quad \mathbb{Q}_{2,2}^{(1,0;c)}(T_{2g}, b) = \dfrac{\sqrt{6}\mathbb{T}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{6} - \dfrac{\sqrt{6}\mathbb{T}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6}$

$\boxed{\text{z433}}$ $\quad \mathbb{Q}_{2,3}^{(1,0;c)}(T_{2g}, b) = -\dfrac{\sqrt{6}\mathbb{T}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6} + \dfrac{\sqrt{6}\mathbb{T}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6}$

$\boxed{\text{z434}}$ $\quad \mathbb{Q}_{2,1}^{(1,1;c)}(T_{2g}) = \dfrac{\sqrt{3}\mathbb{M}_{0}^{(1,1;a)}(A_{1u})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{3}$

$\boxed{\text{z435}}$ $\quad \mathbb{Q}_{2,2}^{(1,1;c)}(T_{2g}) = \dfrac{\sqrt{3}\mathbb{M}_{0}^{(1,1;a)}(A_{1u})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{3}$

$\boxed{\text{z436}}$ $\quad \mathbb{Q}_{2,3}^{(1,1;c)}(T_{2g}) = \dfrac{\sqrt{3}\mathbb{M}_{0}^{(1,1;a)}(A_{1u})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{3}$

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

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

$\boxed{\text{z439}}$ $\quad \mathbb{G}_{3,3}^{(1,-1;c)}(T_{2g}) = -\dfrac{\mathbb{M}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{3} + \dfrac{\mathbb{M}_{2,2}^{(1,-1;a)}(E_u)\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3} + \dfrac{\mathbb{M}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z533}}$ $\quad \mathbb{Q}_{3,1}^{(c)}(T_{2u}) = -\dfrac{\sqrt{3}\mathbb{Q}_{1,1}^{(a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} - \dfrac{\mathbb{Q}_{1,1}^{(a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{6} + \dfrac{\mathbb{Q}_{1,2}^{(a)}(T_{1u})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{3} - \dfrac{\mathbb{Q}_{1,3}^{(a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{3}$

$\boxed{\text{z534}}$ $\quad \mathbb{Q}_{3,2}^{(c)}(T_{2u}) = -\dfrac{\mathbb{Q}_{1,1}^{(a)}(T_{1u})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{3} + \dfrac{\sqrt{3}\mathbb{Q}_{1,2}^{(a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} - \dfrac{\mathbb{Q}_{1,2}^{(a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{6} + \dfrac{\mathbb{Q}_{1,3}^{(a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{3}$

$\boxed{\text{z535}}$ $\mathbb{Q}_{3,3}^{(c)}(T_{2u}) = \dfrac{\mathbb{Q}_{1,1}^{(a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{3} - \dfrac{\mathbb{Q}_{1,2}^{(a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{3} + \dfrac{\mathbb{Q}_{1,3}^{(a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{3}$

$\boxed{\text{z536}}$ $\mathbb{Q}_{3,1}^{(1,-1;c)}(T_{2u}) = \dfrac{\sqrt{6}\,\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{12} - \dfrac{\sqrt{6}\,\mathbb{G}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{12} + \dfrac{\sqrt{2}\,\mathbb{G}_{2,1}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{4} - \dfrac{\sqrt{2}\,\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{4}$

$\boxed{\text{z537}}$ $\mathbb{Q}_{3,2}^{(1,-1;c)}(T_{2u}) = \dfrac{\sqrt{6}\,\mathbb{G}_{2,1}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{12} + \dfrac{\sqrt{2}\,\mathbb{G}_{2,2}^{(1,-1;a)}(E_u)\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{4} - \dfrac{\sqrt{6}\,\mathbb{G}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{12} - \dfrac{\sqrt{2}\,\mathbb{G}_{2,2}^{(1,-1;a)}(T_{2u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{4}$

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

$\boxed{\text{z539}}$ $\mathbb{Q}_{3,1}^{(1,0;c)}(T_{2u}) = -\dfrac{\sqrt{3}\,\mathbb{Q}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} - \dfrac{\mathbb{Q}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{6} + \dfrac{\mathbb{Q}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{3} - \dfrac{\mathbb{Q}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{3}$

$\boxed{\text{z540}}$ $\mathbb{Q}_{3,2}^{(1,0;c)}(T_{2u}) = -\dfrac{\mathbb{Q}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{3} + \dfrac{\sqrt{3}\,\mathbb{Q}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} - \dfrac{\mathbb{Q}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{6} + \dfrac{\mathbb{Q}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{3}$

$\boxed{\text{z541}}$ $\mathbb{Q}_{3,3}^{(1,0;c)}(T_{2u}) = \dfrac{\mathbb{Q}_{1,1}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{3} - \dfrac{\mathbb{Q}_{1,2}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{3} + \dfrac{\mathbb{Q}_{1,3}^{(1,0;a)}(T_{1u})\mathbb{Q}_{2,2}^{(b)}(E_g)}{3}$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$$\boxed{\text{z557}} \quad \mathbb{G}_{2,1}^{(1,1;c)}(T_{2u}) = \frac{\sqrt{3}\mathbb{G}_0^{(1,1;a)}(A_{1u})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{3}$$

$$\boxed{\text{z558}} \quad \mathbb{G}_{2,2}^{(1,1;c)}(T_{2u}) = \frac{\sqrt{3}\mathbb{G}_0^{(1,1;a)}(A_{1u})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{3}$$

$\boxed{\text{z559}}$ $\quad \mathbb{G}_{2,3}^{(1,1;c)}(T_{2u}) = \dfrac{\sqrt{3}\mathbb{G}_0^{(1,1;a)}(A_{1u})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{3}$

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

$\boxed{\text{z15}}$ $\quad \mathbb{Q}_0^{(c)}(A_{1g},a) = \mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_0^{(b)}(A_{1g})$

$\boxed{\text{z16}}$ $\quad \mathbb{Q}_0^{(c)}(A_{1g},b) = \dfrac{\sqrt{5}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{5} + \dfrac{\sqrt{5}\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{5} + \dfrac{\sqrt{5}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{5} + \dfrac{\sqrt{5}\mathbb{Q}_{2,2}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{5} + \dfrac{\sqrt{5}\mathbb{Q}_{2,3}^{(a)}(T_{2g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{5}$

$\boxed{\text{z17}}$ $\quad \mathbb{Q}_4^{(c)}(A_{1g}) = \dfrac{\sqrt{30}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{10} - \dfrac{\sqrt{30}\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{15} + \dfrac{\sqrt{30}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{10} - \dfrac{\sqrt{30}\mathbb{Q}_{2,2}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{15} - \dfrac{\sqrt{30}\mathbb{Q}_{2,3}^{(a)}(T_{2g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{15}$

$\boxed{\text{z18}}$ $\quad \mathbb{Q}_0^{(1,-1;c)}(A_{1g}) = \dfrac{\sqrt{5}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{5} + \dfrac{\sqrt{5}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{5} + \dfrac{\sqrt{5}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{5} + \dfrac{\sqrt{5}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{5} + \dfrac{\sqrt{5}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{5}$

$\boxed{\text{z19}}$ $\quad \mathbb{Q}_4^{(1,-1;c)}(A_{1g}) = \dfrac{\sqrt{30}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{10} - \dfrac{\sqrt{30}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{15} + \dfrac{\sqrt{30}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{10} - \dfrac{\sqrt{30}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{15} - \dfrac{\sqrt{30}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{15}$

$\boxed{\text{z20}}$ $\quad \mathbb{Q}_0^{(1,1;c)}(A_{1g}) = \mathbb{Q}_0^{(1,1;a)}(A_{1g})\mathbb{Q}_0^{(b)}(A_{1g})$

$\boxed{\text{z27}}$ $\quad \mathbb{G}_0^{(c)}(A_{1u}) = \dfrac{\sqrt{3}\mathbb{M}_{1,1}^{(a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{3} + \dfrac{\sqrt{3}\mathbb{M}_{1,2}^{(a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{3} + \dfrac{\sqrt{3}\mathbb{M}_{1,3}^{(a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z28}}$ $\quad \mathbb{G}_0^{(1,-1;c)}(A_{1u}) = \dfrac{\sqrt{3}\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{3} + \dfrac{\sqrt{3}\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{3} + \dfrac{\sqrt{3}\mathbb{M}_{1,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z29}}$ $\quad \mathbb{G}_4^{(1,-1;c)}(A_{1u},a) = \dfrac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{3} + \dfrac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{3} + \dfrac{\sqrt{3}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z68}}$ $\quad \mathbb{G}_4^{(1,-1;c)}(A_{1u},b) = -\dfrac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{3} - \dfrac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{3} - \dfrac{\sqrt{3}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{3}$

$\boxed{\text{z69}}$ $\quad \mathbb{G}_0^{(1,0;c)}(A_{1u}) = \dfrac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(T_{2g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{3} + \dfrac{\sqrt{3}\mathbb{T}_{2,2}^{(1,0;a)}(T_{2g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{3} + \dfrac{\sqrt{3}\mathbb{T}_{2,3}^{(1,0;a)}(T_{2g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{3}$

$$\boxed{\text{z70}} \quad \mathbb{G}_0^{(1,1;c)}(A_{1u}) = \frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{3} + \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{3} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$$

$$\boxed{\text{z71}} \quad \mathbb{G}_3^{(c)}(A_{2g}) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z72}} \quad \mathbb{G}_3^{(1,-1;c)}(A_{2g}) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z73}} \quad \mathbb{G}_3^{(1,0;c)}(A_{2g}) = \frac{\sqrt{3}\mathbb{G}_{1,1}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{3} + \frac{\sqrt{3}\mathbb{G}_{1,2}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{3} + \frac{\sqrt{3}\mathbb{G}_{1,3}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{3}$$

$$\boxed{\text{z74}} \quad \mathbb{Q}_3^{(c)}(A_{2u}) = \frac{\sqrt{3}\mathbb{M}_{1,1}^{(a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{3} + \frac{\sqrt{3}\mathbb{M}_{1,2}^{(a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{3} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{3}$$

$$\boxed{\text{z75}} \quad \mathbb{Q}_3^{(1,-1;c)}(A_{2u},a) = -\frac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{3} - \frac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{3} - \frac{\sqrt{3}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$$

$$\boxed{\text{z76}} \quad \mathbb{Q}_3^{(1,-1;c)}(A_{2u},b) = -\frac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{3} - \frac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{3} - \frac{\sqrt{3}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{3}$$

$$\boxed{\text{z77}} \quad \mathbb{Q}_3^{(1,-1;c)}(A_{2u},c) = \frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{3} + \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{3} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{3}$$

$$\boxed{\text{z78}} \quad \mathbb{Q}_3^{(1,0;c)}(A_{2u}) = \frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{3} + \frac{\sqrt{3}\mathbb{T}_{2,2}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{3} + \frac{\sqrt{3}\mathbb{T}_{2,3}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$$

$$\boxed{\text{z79}} \quad \mathbb{Q}_3^{(1,1;c)}(A_{2u}) = \frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{3} + \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{3} + \frac{\sqrt{3}\mathbb{M}_{1,3}^{(1,1;a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{3}$$

$$\boxed{\text{z80}} \quad \mathbb{Q}_{2,1}^{(c)}(E_g,a) = \frac{\sqrt{2}\mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z81}} \quad \mathbb{Q}_{2,2}^{(c)}(E_g,a) = \frac{\sqrt{2}\mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

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

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

$$\boxed{\text{z84}} \quad \mathbb{Q}_{2,1}^{(c)}(E_g,c) = \frac{\sqrt{7}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{7} + \frac{\sqrt{7}\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{14} - \frac{\sqrt{7}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{7} + \frac{\sqrt{7}\mathbb{Q}_{2,2}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{14} - \frac{\sqrt{7}\mathbb{Q}_{2,3}^{(a)}(T_{2g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{7}$$

$$\boxed{\text{z85}} \quad \mathbb{Q}_{2,2}^{(c)}(E_g,c) = -\frac{\sqrt{7}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{7} - \frac{\sqrt{21}\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{14} - \frac{\sqrt{7}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{7} + \frac{\sqrt{21}\mathbb{Q}_{2,2}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{14}$$

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

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

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

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

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

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

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

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

$$\boxed{\text{z151}} \quad \mathbb{Q}_{2,1}^{(1,0;c)}(E_g) = \frac{\mathbb{G}_{1,1}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{2} - \frac{\mathbb{G}_{1,2}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{2}$$

$$\boxed{\text{z152}} \quad \mathbb{Q}_{2,2}^{(1,0;c)}(E_g) = \frac{\sqrt{3}\mathbb{G}_{1,1}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{6} + \frac{\sqrt{3}\mathbb{G}_{1,2}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{6} - \frac{\sqrt{3}\mathbb{G}_{1,3}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{3}$$

$$\boxed{\text{z153}} \quad \mathbb{Q}_{2,1}^{(1,1;c)}(E_g) = \frac{\sqrt{2}\mathbb{Q}_{0}^{(1,1;a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z154}} \quad \mathbb{Q}_{2,2}^{(1,1;c)}(E_g) = \frac{\sqrt{2}\mathbb{Q}_{0}^{(1,1;a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$\boxed{\text{z155}}$ $\mathbb{Q}_{5,1}^{(1,-1;c)}(E_u) = \dfrac{\sqrt{70}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{28} - \dfrac{\sqrt{42}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{28} - \dfrac{\sqrt{70}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{28} - \dfrac{\sqrt{42}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{28} + \dfrac{\sqrt{42}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{14}$

$\boxed{\text{z156}}$ $\mathbb{Q}_{5,2}^{(1,-1;c)}(E_u) = \dfrac{\sqrt{210}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{84} + \dfrac{3\sqrt{14}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{28} + \dfrac{\sqrt{210}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{84} - \dfrac{3\sqrt{14}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{28} - \dfrac{\sqrt{210}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{42}$

$\boxed{\text{z157}}$ $\mathbb{G}_{2,1}^{(c)}(E_u, a) = -\dfrac{\sqrt{3}\mathbb{M}_{1,1}^{(a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6} - \dfrac{\sqrt{3}\mathbb{M}_{1,2}^{(a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} + \dfrac{\sqrt{3}\mathbb{M}_{1,3}^{(a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$

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

$\boxed{\text{z159}}$ $\mathbb{G}_{2,1}^{(c)}(E_u, b) = \dfrac{\mathbb{M}_{1,1}^{(a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{2} - \dfrac{\mathbb{M}_{1,2}^{(a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{2}$

$\boxed{\text{z160}}$ $\mathbb{G}_{2,2}^{(c)}(E_u, b) = \dfrac{\sqrt{3}\mathbb{M}_{1,1}^{(a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6} + \dfrac{\sqrt{3}\mathbb{M}_{1,2}^{(a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6} - \dfrac{\sqrt{3}\mathbb{M}_{1,3}^{(a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{3}$

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

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

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

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

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

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

$\boxed{\text{z167}}$ $\mathbb{G}_{2,1}^{(1,-1;c)}(E_u, d) = \dfrac{\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{2} - \dfrac{\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{2}$

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

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

$\boxed{\text{z233}}$ $\mathbb{G}_{4,2}^{(1,-1;c)}(E_u) = \dfrac{\sqrt{70}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{28} + \dfrac{\sqrt{42}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{28} - \dfrac{\sqrt{70}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{28} + \dfrac{\sqrt{42}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{28} - \dfrac{\sqrt{42}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{14}$

$\boxed{\text{z234}}$ $\mathbb{G}_{2,1}^{(1,0;c)}(E_u,a) = -\dfrac{\mathbb{T}_{2,1}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{2} + \dfrac{\mathbb{T}_{2,2}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{2}$

$\boxed{\text{z235}}$ $\mathbb{G}_{2,2}^{(1,0;c)}(E_u,a) = -\dfrac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6} - \dfrac{\sqrt{3}\mathbb{T}_{2,2}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} + \dfrac{\sqrt{3}\mathbb{T}_{2,3}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z236}}$ $\mathbb{G}_{2,1}^{(1,0;c)}(E_u,b) = \dfrac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(T_{2g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6} + \dfrac{\sqrt{3}\mathbb{T}_{2,2}^{(1,0;a)}(T_{2g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6} - \dfrac{\sqrt{3}\mathbb{T}_{2,3}^{(1,0;a)}(T_{2g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{3}$

$\boxed{\text{z237}}$ $\mathbb{G}_{2,2}^{(1,0;c)}(E_u,b) = -\dfrac{\mathbb{T}_{2,1}^{(1,0;a)}(T_{2g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{2} + \dfrac{\mathbb{T}_{2,2}^{(1,0;a)}(T_{2g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{2}$

$\boxed{\text{z238}}$ $\mathbb{G}_{2,1}^{(1,1;c)}(E_u,a) = -\dfrac{\sqrt{3}\mathbb{M}_{1,1}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6} - \dfrac{\sqrt{3}\mathbb{M}_{1,2}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} + \dfrac{\sqrt{3}\mathbb{M}_{1,3}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z239}}$ $\mathbb{G}_{2,2}^{(1,1;c)}(E_u,a) = \dfrac{\mathbb{M}_{1,1}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{2} - \dfrac{\mathbb{M}_{1,2}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{2}$

$\boxed{\text{z240}}$ $\mathbb{G}_{2,1}^{(1,1;c)}(E_u,b) = \dfrac{\mathbb{M}_{1,1}^{(1,1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{2} - \dfrac{\mathbb{M}_{1,2}^{(1,1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{2}$

$\boxed{\text{z241}}$ $\mathbb{G}_{2,2}^{(1,1;c)}(E_u,b) = \dfrac{\sqrt{3}\mathbb{M}_{1,1}^{(1,1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6} + \dfrac{\sqrt{3}\mathbb{M}_{1,2}^{(1,1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6} - \dfrac{\sqrt{3}\mathbb{M}_{1,3}^{(1,1;a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{3}$

$\boxed{\text{z242}}$ $\mathbb{Q}_{4,1}^{(c)}(T_{1g}) = -\dfrac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{4} - \dfrac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{4} - \dfrac{\sqrt{6}\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{12} - \dfrac{\sqrt{6}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{12}$

$\boxed{\text{z243}}$ $\mathbb{Q}_{4,2}^{(c)}(T_{1g}) = \dfrac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{4} - \dfrac{\sqrt{6}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{12} + \dfrac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{4} - \dfrac{\sqrt{6}\mathbb{Q}_{2,2}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{12}$

$\boxed{\text{z244}}$ $\mathbb{Q}_{4,3}^{(c)}(T_{1g}) = \dfrac{\sqrt{6}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{6} + \dfrac{\sqrt{6}\mathbb{Q}_{2,3}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{6}$

$$\boxed{\text{z245}} \quad \mathbb{Q}_{4,1}^{(1,-1;c)}(T_{1g}) = -\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{4} - \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{4} - \frac{\sqrt{6}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{12} - \frac{\sqrt{6}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{12}$$

$$\boxed{\text{z246}} \quad \mathbb{Q}_{4,2}^{(1,-1;c)}(T_{1g}) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{4} - \frac{\sqrt{6}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{12} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{4} - \frac{\sqrt{6}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{12}$$

$$\boxed{\text{z247}} \quad \mathbb{Q}_{4,3}^{(1,-1;c)}(T_{1g}) = \frac{\sqrt{6}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{6} + \frac{\sqrt{6}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{6}$$

$$\boxed{\text{z248}} \quad \mathbb{G}_{1,1}^{(c)}(T_{1g}) = -\frac{\sqrt{10}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{10} + \frac{\sqrt{10}\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{10} + \frac{\sqrt{30}\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{30} - \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{30} - \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(a)}(T_{2g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{30} + \frac{\sqrt{30}\mathbb{Q}_{2,3}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{30}$$

$$\boxed{\text{z249}} \quad \mathbb{G}_{1,2}^{(c)}(T_{1g}) = \frac{\sqrt{10}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{10} + \frac{\sqrt{30}\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{30} - \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{30} - \frac{\sqrt{10}\mathbb{Q}_{2,2}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{10} + \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{30} - \frac{\sqrt{30}\mathbb{Q}_{2,3}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{30}$$

$$\boxed{\text{z250}} \quad \mathbb{G}_{1,3}^{(c)}(T_{1g}) = -\frac{\sqrt{30}\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{30} + \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{15} + \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{30} - \frac{\sqrt{30}\mathbb{Q}_{2,3}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{15}$$

$$\boxed{\text{z251}} \quad \mathbb{G}_{3,1}^{(c)}(T_{1g}) = \frac{\sqrt{10}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{20} - \frac{\sqrt{10}\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{20} - \frac{\sqrt{30}\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{60} + \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{60} - \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(a)}(T_{2g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{15} + \frac{\sqrt{30}\mathbb{Q}_{2,3}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{15}$$

$$\boxed{\text{z252}} \quad \mathbb{G}_{3,2}^{(c)}(T_{1g}) = -\frac{\sqrt{10}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{20} + \frac{\sqrt{30}\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{15} + \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{60} + \frac{\sqrt{10}\mathbb{Q}_{2,2}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{20} - \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{60} - \frac{\sqrt{30}\mathbb{Q}_{2,3}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{15}$$

$$\boxed{\text{z253}} \quad \mathbb{G}_{3,3}^{(c)}(T_{1g}) = -\frac{\sqrt{30}\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{15} - \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{30} + \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{15} + \frac{\sqrt{30}\mathbb{Q}_{2,3}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{30}$$

$$\boxed{\text{z254}} \quad \mathbb{G}_{1,1}^{(1,-1;c)}(T_{1g}) = -\frac{\sqrt{10}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{10} + \frac{\sqrt{10}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{10} + \frac{\sqrt{30}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{30}$$
$$- \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{30} - \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{30} + \frac{\sqrt{30}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{30}$$

$$\boxed{\text{z255}} \quad \mathbb{G}_{1,2}^{(1,-1;c)}(T_{1g}) = \frac{\sqrt{10}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{10} + \frac{\sqrt{30}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{30} - \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{30}$$
$$- \frac{\sqrt{10}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{10} + \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{30} - \frac{\sqrt{30}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{30}$$

$$\boxed{\text{z256}} \quad \mathbb{G}_{1,3}^{(1,-1;c)}(T_{1g}) = -\frac{\sqrt{30}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{30} + \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{15} + \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{30} - \frac{\sqrt{30}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{15}$$

$\boxed{\text{z257}}$ $\mathbb{G}_{3,1}^{(1,-1;c)}(T_{1g}) = \dfrac{\sqrt{10}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{20} - \dfrac{\sqrt{10}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{20} - \dfrac{\sqrt{30}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{60}$

$\qquad\qquad + \dfrac{\sqrt{30}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{60} - \dfrac{\sqrt{30}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{15} + \dfrac{\sqrt{30}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{15}$

$\boxed{\text{z258}}$ $\mathbb{G}_{3,2}^{(1,-1;c)}(T_{1g}) = -\dfrac{\sqrt{10}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{20} + \dfrac{\sqrt{30}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{15} + \dfrac{\sqrt{30}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{60}$

$\qquad\qquad + \dfrac{\sqrt{10}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{20} - \dfrac{\sqrt{30}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{60} - \dfrac{\sqrt{30}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{15}$

$\boxed{\text{z259}}$ $\mathbb{G}_{3,3}^{(1,-1;c)}(T_{1g}) = -\dfrac{\sqrt{30}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{15} - \dfrac{\sqrt{30}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{30} + \dfrac{\sqrt{30}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{15} + \dfrac{\sqrt{30}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{30}$

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

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

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

$\boxed{\text{z263}}$ $\mathbb{G}_{1,1}^{(1,0;c)}(T_{1g},b) = -\dfrac{\sqrt{30}\mathbb{G}_{1,1}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{30} + \dfrac{\sqrt{10}\mathbb{G}_{1,1}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{10} + \dfrac{\sqrt{10}\mathbb{G}_{1,2}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{10} + \dfrac{\sqrt{10}\mathbb{G}_{1,3}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{10}$

$\boxed{\text{z264}}$ $\mathbb{G}_{1,2}^{(1,0;c)}(T_{1g},b) = \dfrac{\sqrt{10}\mathbb{G}_{1,1}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{10} - \dfrac{\sqrt{30}\mathbb{G}_{1,2}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{30} - \dfrac{\sqrt{10}\mathbb{G}_{1,2}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{10} + \dfrac{\sqrt{10}\mathbb{G}_{1,3}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{10}$

$\boxed{\text{z265}}$ $\mathbb{G}_{1,3}^{(1,0;c)}(T_{1g},b) = \dfrac{\sqrt{10}\mathbb{G}_{1,1}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{10} + \dfrac{\sqrt{10}\mathbb{G}_{1,2}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{10} + \dfrac{\sqrt{30}\mathbb{G}_{1,3}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{15}$

$\boxed{\text{z266}}$ $\mathbb{G}_{3,1}^{(1,0;c)}(T_{1g}) = -\dfrac{\sqrt{5}\mathbb{G}_{1,1}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{10} + \dfrac{\sqrt{15}\mathbb{G}_{1,1}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{10} - \dfrac{\sqrt{15}\mathbb{G}_{1,2}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{15} - \dfrac{\sqrt{15}\mathbb{G}_{1,3}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{15}$

$\boxed{\text{z267}}$ $\mathbb{G}_{3,2}^{(1,0;c)}(T_{1g}) = -\dfrac{\sqrt{15}\mathbb{G}_{1,1}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{15} - \dfrac{\sqrt{5}\mathbb{G}_{1,2}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{10} - \dfrac{\sqrt{15}\mathbb{G}_{1,2}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{10} - \dfrac{\sqrt{15}\mathbb{G}_{1,3}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{15}$

$\boxed{\text{z268}}$ $\mathbb{G}_{3,3}^{(1,0;c)}(T_{1g}) = -\dfrac{\sqrt{15}\mathbb{G}_{1,1}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{15} - \dfrac{\sqrt{15}\mathbb{G}_{1,2}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{15} + \dfrac{\sqrt{5}\mathbb{G}_{1,3}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{5}$

$\boxed{\text{z281}}$ $\quad \mathbb{Q}_{1,1}^{(c)}(T_{1u},a) = \dfrac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} - \dfrac{\sqrt{6}\mathbb{M}_{1,3}^{(a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z282}}$ $\quad \mathbb{Q}_{1,2}^{(c)}(T_{1u},a) = -\dfrac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \dfrac{\sqrt{6}\mathbb{M}_{1,3}^{(a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z283}}$ $\quad \mathbb{Q}_{1,3}^{(c)}(T_{1u},a) = \dfrac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} - \dfrac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z284}}$ $\quad \mathbb{Q}_{1,1}^{(c)}(T_{1u},b) = \dfrac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{6} + \dfrac{\sqrt{6}\mathbb{M}_{1,3}^{(a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6}$

$\boxed{\text{z285}}$ $\quad \mathbb{Q}_{1,2}^{(c)}(T_{1u},b) = \dfrac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{6} + \dfrac{\sqrt{6}\mathbb{M}_{1,3}^{(a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6}$

$\boxed{\text{z286}}$ $\quad \mathbb{Q}_{1,3}^{(c)}(T_{1u},b) = \dfrac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6} + \dfrac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6}$

$\boxed{\text{z294}}$ $\quad \mathbb{Q}_{1,1}^{(1,-1;c)}(T_{1u},a) = -\dfrac{\sqrt{21}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{21} - \dfrac{\sqrt{35}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{21} - \dfrac{\sqrt{21}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{21} + \dfrac{\sqrt{35}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{21} + \dfrac{\sqrt{35}\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{21}$

$\boxed{\text{z295}}$ $\quad \mathbb{Q}_{1,2}^{(1,-1;c)}(T_{1u},a) = -\dfrac{\sqrt{21}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{21} + \dfrac{\sqrt{35}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{21} - \dfrac{\sqrt{21}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{21} - \dfrac{\sqrt{35}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{21} + \dfrac{\sqrt{35}\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{21}$

$\boxed{\text{z296}}$ $\quad \mathbb{Q}_{1,3}^{(1,-1;c)}(T_{1u},a) = -\dfrac{\sqrt{21}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{21} - \dfrac{\sqrt{35}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{21} - \dfrac{\sqrt{21}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{21} + \dfrac{\sqrt{35}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{21} + \dfrac{\sqrt{35}\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{21}$

$\boxed{\text{z297}}$ $\quad \mathbb{Q}_{1,1}^{(1,-1;c)}(T_{1u},b) = \dfrac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} - \dfrac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z298}}$ $\quad \mathbb{Q}_{1,2}^{(1,-1;c)}(T_{1u},b) = -\dfrac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \dfrac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z299}}$ $\quad \mathbb{Q}_{1,3}^{(1,-1;c)}(T_{1u},b) = \dfrac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} - \dfrac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z338}}$ $\quad \mathbb{Q}_{1,1}^{(1,-1;c)}(T_{1u},c) = \dfrac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{6} + \dfrac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6}$

$\boxed{\text{z339}}$ $\quad \mathbb{Q}_{1,2}^{(1,-1;c)}(T_{1u},c) = \dfrac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{6} + \dfrac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6}$

$\boxed{\text{z340}}$ $\mathbb{Q}_{1,3}^{(1,-1;c)}(T_{1u},c) = \dfrac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6} + \dfrac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6}$

$\boxed{\text{z341}}$ $\mathbb{Q}_{3,1}^{(1,-1;c)}(T_{1u},a) = -\dfrac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{4} - \dfrac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{12} + \dfrac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{4} - \dfrac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{12}$

$\boxed{\text{z342}}$ $\mathbb{Q}_{3,2}^{(1,-1;c)}(T_{1u},a) = \dfrac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{4} - \dfrac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{12} - \dfrac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{4} - \dfrac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{12}$

$\boxed{\text{z343}}$ $\mathbb{Q}_{3,3}^{(1,-1;c)}(T_{1u},a) = -\dfrac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{4} - \dfrac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{12} + \dfrac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{4} - \dfrac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{12}$

$\boxed{\text{z344}}$ $\mathbb{Q}_{3,1}^{(1,-1;c)}(T_{1u},b) = -\dfrac{\sqrt{105}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{84} - \dfrac{5\sqrt{7}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{84} - \dfrac{\sqrt{105}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{84}$

$\qquad\qquad + \dfrac{5\sqrt{7}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{84} - \dfrac{4\sqrt{7}\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{21}$

$\boxed{\text{z345}}$ $\mathbb{Q}_{3,2}^{(1,-1;c)}(T_{1u},b) = -\dfrac{\sqrt{105}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{84} + \dfrac{5\sqrt{7}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{84} - \dfrac{\sqrt{105}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{84}$

$\qquad\qquad - \dfrac{5\sqrt{7}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{84} - \dfrac{4\sqrt{7}\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{21}$

$\boxed{\text{z346}}$ $\mathbb{Q}_{3,3}^{(1,-1;c)}(T_{1u},b) = -\dfrac{\sqrt{105}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{84} - \dfrac{5\sqrt{7}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{84} - \dfrac{\sqrt{105}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{84}$

$\qquad\qquad + \dfrac{5\sqrt{7}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{84} - \dfrac{4\sqrt{7}\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{21}$

$\boxed{\text{z347}}$ $\mathbb{Q}_{5,1}^{(1,-1;c)}(T_{1u},2) = \dfrac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{12} - \dfrac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{4} + \dfrac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{12} + \dfrac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{4}$

$\boxed{\text{z348}}$ $\mathbb{Q}_{5,2}^{(1,-1;c)}(T_{1u},2) = \dfrac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{12} + \dfrac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{4} + \dfrac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{12} - \dfrac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{4}$

$\boxed{\text{z349}}$ $\mathbb{Q}_{5,3}^{(1,-1;c)}(T_{1u},2) = \dfrac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{12} - \dfrac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{4} + \dfrac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{12} + \dfrac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{4}$

$\boxed{\text{z350}}$ $\mathbb{Q}_{1,1}^{(1,0;c)}(T_{1u},a) = -\dfrac{\sqrt{30}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(T_{1u})}{30} + \dfrac{\sqrt{10}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(T_{1u})}{10} + \dfrac{\sqrt{10}\mathbb{T}_{2,2}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{10} + \dfrac{\sqrt{10}\mathbb{T}_{2,3}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{10}$

$\boxed{\text{z351}}$ $\quad \mathbb{Q}_{1,2}^{(1,0;c)}(T_{1u},a) = -\dfrac{\sqrt{30}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(T_{1u})}{30} + \dfrac{\sqrt{10}\mathbb{T}_{2,1}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{10} - \dfrac{\sqrt{10}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(T_{1u})}{10} + \dfrac{\sqrt{10}\mathbb{T}_{2,3}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{10}$

$\boxed{\text{z352}}$ $\quad \mathbb{Q}_{1,3}^{(1,0;c)}(T_{1u},a) = \dfrac{\sqrt{30}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,3}^{(b)}(T_{1u})}{15} + \dfrac{\sqrt{10}\mathbb{T}_{2,1}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{10} + \dfrac{\sqrt{10}\mathbb{T}_{2,2}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{10}$

$\boxed{\text{z353}}$ $\quad \mathbb{Q}_{1,1}^{(1,0;c)}(T_{1u},b) = -\dfrac{\sqrt{6}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6} - \dfrac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6} - \dfrac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(T_{2g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{6} + \dfrac{\sqrt{2}\mathbb{T}_{2,3}^{(1,0;a)}(T_{2g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6}$

$\boxed{\text{z354}}$ $\quad \mathbb{Q}_{1,2}^{(1,0;c)}(T_{1u},b) = \dfrac{\sqrt{6}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6} + \dfrac{\sqrt{2}\mathbb{T}_{2,1}^{(1,0;a)}(T_{2g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{6} - \dfrac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6} - \dfrac{\sqrt{2}\mathbb{T}_{2,3}^{(1,0;a)}(T_{2g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6}$

$\boxed{\text{z355}}$ $\quad \mathbb{Q}_{1,3}^{(1,0;c)}(T_{1u},b) = -\dfrac{\sqrt{2}\mathbb{T}_{2,1}^{(1,0;a)}(T_{2g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6} + \dfrac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{M}_{2,3}^{(b)}(T_{2u})}{3} + \dfrac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(T_{2g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6}$

$\boxed{\text{z356}}$ $\quad \mathbb{Q}_{3,1}^{(1,0;c)}(T_{1u},a) = -\dfrac{\sqrt{5}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(T_{1u})}{10} + \dfrac{\sqrt{15}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(T_{1u})}{10} - \dfrac{\sqrt{15}\mathbb{T}_{2,2}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{15} - \dfrac{\sqrt{15}\mathbb{T}_{2,3}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{15}$

$\boxed{\text{z357}}$ $\quad \mathbb{Q}_{3,2}^{(1,0;c)}(T_{1u},a) = -\dfrac{\sqrt{5}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(T_{1u})}{10} - \dfrac{\sqrt{15}\mathbb{T}_{2,1}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{15} - \dfrac{\sqrt{15}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(T_{1u})}{10} - \dfrac{\sqrt{15}\mathbb{T}_{2,3}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{15}$

$\boxed{\text{z358}}$ $\quad \mathbb{Q}_{3,3}^{(1,0;c)}(T_{1u},a) = \dfrac{\sqrt{5}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,3}^{(b)}(T_{1u})}{5} - \dfrac{\sqrt{15}\mathbb{T}_{2,1}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{15} - \dfrac{\sqrt{15}\mathbb{T}_{2,2}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{15}$

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

$\boxed{\text{z360}}$ $\quad \mathbb{Q}_{3,2}^{(1,0;c)}(T_{1u},b) = -\dfrac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6} + \dfrac{\mathbb{T}_{2,1}^{(1,0;a)}(T_{2g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{3} + \dfrac{\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6} - \dfrac{\mathbb{T}_{2,3}^{(1,0;a)}(T_{2g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{3}$

$\boxed{\text{z361}}$ $\quad \mathbb{Q}_{3,3}^{(1,0;c)}(T_{1u},b) = -\dfrac{\mathbb{T}_{2,1}^{(1,0;a)}(T_{2g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{3} - \dfrac{\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{M}_{2,3}^{(b)}(T_{2u})}{3} + \dfrac{\mathbb{T}_{2,2}^{(1,0;a)}(T_{2g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{3}$

$\boxed{\text{z440}}$ $\quad \mathbb{Q}_{1,1}^{(1,1;c)}(T_{1u},a) = \dfrac{\sqrt{6}\mathbb{M}_{1,2}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} - \dfrac{\sqrt{6}\mathbb{M}_{1,3}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6}$

$\boxed{\text{z441}}$ $\quad \mathbb{Q}_{1,2}^{(1,1;c)}(T_{1u},a) = -\dfrac{\sqrt{6}\mathbb{M}_{1,1}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{6} + \dfrac{\sqrt{6}\mathbb{M}_{1,3}^{(1,1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6}$

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

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

$\boxed{\text{z444}}$ $\quad \mathbb{Q}_{1,2}^{(1,1;c)}(T_{1u}, b) = \dfrac{\sqrt{6}\mathbb{M}_{1,1}^{(1,1;a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{6} + \dfrac{\sqrt{6}\mathbb{M}_{1,3}^{(1,1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6}$

$\boxed{\text{z445}}$ $\quad \mathbb{Q}_{1,3}^{(1,1;c)}(T_{1u}, b) = \dfrac{\sqrt{6}\mathbb{M}_{1,1}^{(1,1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6} + \dfrac{\sqrt{6}\mathbb{M}_{1,2}^{(1,1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6}$

$\boxed{\text{z446}}$ $\quad \mathbb{G}_{4,1}^{(1,-1;c)}(T_{1u}) = \dfrac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{12} - \dfrac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{4} - \dfrac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{12} - \dfrac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{4}$

$\boxed{\text{z447}}$ $\quad \mathbb{G}_{4,2}^{(1,-1;c)}(T_{1u}) = -\dfrac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{12} - \dfrac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{4} + \dfrac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{12} - \dfrac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{4}$

$\boxed{\text{z448}}$ $\quad \mathbb{G}_{4,3}^{(1,-1;c)}(T_{1u}) = \dfrac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{12} - \dfrac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{4} - \dfrac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{12} - \dfrac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{4}$

$\boxed{\text{z449}}$ $\quad \mathbb{Q}_{2,1}^{(c)}(T_{2g}, a) = \dfrac{\sqrt{3}\mathbb{Q}_{0}^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{3}$

$\boxed{\text{z450}}$ $\quad \mathbb{Q}_{2,2}^{(c)}(T_{2g}, a) = \dfrac{\sqrt{3}\mathbb{Q}_{0}^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{3}$

$\boxed{\text{z451}}$ $\quad \mathbb{Q}_{2,3}^{(c)}(T_{2g}, a) = \dfrac{\sqrt{3}\mathbb{Q}_{0}^{(a)}(A_{1g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{3}$

$\boxed{\text{z452}}$ $\quad \mathbb{Q}_{2,1}^{(c)}(T_{2g}, b) = \dfrac{\sqrt{3}\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_{0}^{(b)}(A_{1g})}{3}$

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

$\boxed{\text{z454}}$ $\quad \mathbb{Q}_{2,3}^{(c)}(T_{2g}, b) = \dfrac{\sqrt{3}\mathbb{Q}_{2,3}^{(a)}(T_{2g})\mathbb{Q}_{0}^{(b)}(A_{1g})}{3}$

$\boxed{\text{z455}}$ $\quad \mathbb{Q}_{2,1}^{(c)}(T_{2g}, c) = \dfrac{\sqrt{42}\mathbb{Q}_{2,1}^{(a)}(E_{g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{42} + \dfrac{\sqrt{42}\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{g})}{42} - \dfrac{\sqrt{14}\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{g})}{14} - \dfrac{\sqrt{14}\mathbb{Q}_{2,2}^{(a)}(E_{g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{14} + \dfrac{\sqrt{14}\mathbb{Q}_{2,2}^{(a)}(T_{2g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{14} + \dfrac{\sqrt{14}\mathbb{Q}_{2,3}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{14}$

$\boxed{\text{z456}}$ $\quad \mathbb{Q}_{2,2}^{(c)}(T_{2g}, c) = \dfrac{\sqrt{42}\mathbb{Q}_{2,1}^{(a)}(E_{g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{42} + \dfrac{\sqrt{14}\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{14} + \dfrac{\sqrt{14}\mathbb{Q}_{2,2}^{(a)}(E_{g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{14} + \dfrac{\sqrt{42}\mathbb{Q}_{2,2}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{g})}{42} + \dfrac{\sqrt{14}\mathbb{Q}_{2,2}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{g})}{14} + \dfrac{\sqrt{14}\mathbb{Q}_{2,3}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{14}$

$\boxed{\text{z457}}$ $\mathbb{Q}_{2,3}^{(c)}(T_{2g},c) = -\dfrac{\sqrt{42}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{21} + \dfrac{\sqrt{14}\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{14} + \dfrac{\sqrt{14}\mathbb{Q}_{2,2}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{14} - \dfrac{\sqrt{42}\mathbb{Q}_{2,3}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{21}$

$\boxed{\text{z458}}$ $\mathbb{Q}_{4,1}^{(c)}(T_{2g}) = -\dfrac{\sqrt{14}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{28} - \dfrac{\sqrt{14}\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{28} + \dfrac{\sqrt{42}\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{28} + \dfrac{\sqrt{42}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{28} + \dfrac{\sqrt{42}\mathbb{Q}_{2,2}^{(a)}(T_{2g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{21} + \dfrac{\sqrt{42}\mathbb{Q}_{2,3}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{21}$

$\boxed{\text{z459}}$ $\mathbb{Q}_{4,2}^{(c)}(T_{2g}) = -\dfrac{\sqrt{14}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{28} + \dfrac{\sqrt{42}\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{21} - \dfrac{\sqrt{42}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{28} - \dfrac{\sqrt{14}\mathbb{Q}_{2,2}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{28} - \dfrac{\sqrt{42}\mathbb{Q}_{2,2}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{28} + \dfrac{\sqrt{42}\mathbb{Q}_{2,3}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{21}$

$\boxed{\text{z460}}$ $\mathbb{Q}_{4,3}^{(c)}(T_{2g}) = \dfrac{\sqrt{14}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{14} + \dfrac{\sqrt{42}\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{21} + \dfrac{\sqrt{42}\mathbb{Q}_{2,2}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{21} + \dfrac{\sqrt{14}\mathbb{Q}_{2,3}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{14}$

$\boxed{\text{z461}}$ $\mathbb{Q}_{2,1}^{(1,-1;c)}(T_{2g},a) = \dfrac{\sqrt{3}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{0}^{(b)}(A_{1g})}{3}$

$\boxed{\text{z462}}$ $\mathbb{Q}_{2,2}^{(1,-1;c)}(T_{2g},a) = \dfrac{\sqrt{3}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{0}^{(b)}(A_{1g})}{3}$

$\boxed{\text{z463}}$ $\mathbb{Q}_{2,3}^{(1,-1;c)}(T_{2g},a) = \dfrac{\sqrt{3}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{0}^{(b)}(A_{1g})}{3}$

$\boxed{\text{z464}}$ $\mathbb{Q}_{2,1}^{(1,-1;c)}(T_{2g},b) = \dfrac{\sqrt{42}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{42} + \dfrac{\sqrt{42}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{42} - \dfrac{\sqrt{14}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{14}$
$\qquad\qquad - \dfrac{\sqrt{14}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{14} + \dfrac{\sqrt{14}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{14} + \dfrac{\sqrt{14}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{14}$

$\boxed{\text{z465}}$ $\mathbb{Q}_{2,2}^{(1,-1;c)}(T_{2g},b) = \dfrac{\sqrt{42}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{42} + \dfrac{\sqrt{14}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{14} + \dfrac{\sqrt{14}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{14}$
$\qquad\qquad + \dfrac{\sqrt{42}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{42} + \dfrac{\sqrt{14}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{14} + \dfrac{\sqrt{14}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{14}$

$\boxed{\text{z466}}$ $\mathbb{Q}_{2,3}^{(1,-1;c)}(T_{2g},b) = -\dfrac{\sqrt{42}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{21} + \dfrac{\sqrt{14}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{14} + \dfrac{\sqrt{14}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{14} - \dfrac{\sqrt{42}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{21}$

$\boxed{\text{z467}}$ $\mathbb{Q}_{4,1}^{(1,-1;c)}(T_{2g}) = -\dfrac{\sqrt{14}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{28} - \dfrac{\sqrt{14}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{28} + \dfrac{\sqrt{42}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{28}$
$\qquad\qquad + \dfrac{\sqrt{42}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{28} + \dfrac{\sqrt{42}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{21} + \dfrac{\sqrt{42}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{21}$

$\boxed{\text{z468}}$ $\mathbb{Q}_{4,2}^{(1,-1;c)}(T_{2g}) = -\dfrac{\sqrt{14}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{28} + \dfrac{\sqrt{42}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{21} - \dfrac{\sqrt{42}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{28}$

$\qquad\qquad\qquad - \dfrac{\sqrt{14}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{28} - \dfrac{\sqrt{42}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{28} + \dfrac{\sqrt{42}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{21}$

$\boxed{\text{z469}}$ $\mathbb{Q}_{4,3}^{(1,-1;c)}(T_{2g}) = \dfrac{\sqrt{14}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{14} + \dfrac{\sqrt{42}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{21} + \dfrac{\sqrt{42}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{21} + \dfrac{\sqrt{14}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{14}$

$\boxed{\text{z470}}$ $\mathbb{Q}_{2,1}^{(1,0;c)}(T_{2g}) = -\dfrac{\sqrt{6}\mathbb{G}_{1,1}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} - \dfrac{\sqrt{2}\mathbb{G}_{1,1}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{6} - \dfrac{\sqrt{2}\mathbb{G}_{1,2}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{6} + \dfrac{\sqrt{2}\mathbb{G}_{1,3}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{6}$

$\boxed{\text{z471}}$ $\mathbb{Q}_{2,2}^{(1,0;c)}(T_{2g}) = \dfrac{\sqrt{2}\mathbb{G}_{1,1}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{6} + \dfrac{\sqrt{6}\mathbb{G}_{1,2}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} - \dfrac{\sqrt{2}\mathbb{G}_{1,2}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{6} - \dfrac{\sqrt{2}\mathbb{G}_{1,3}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{6}$

$\boxed{\text{z472}}$ $\mathbb{Q}_{2,3}^{(1,0;c)}(T_{2g}) = -\dfrac{\sqrt{2}\mathbb{G}_{1,1}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{6} + \dfrac{\sqrt{2}\mathbb{G}_{1,2}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{6} + \dfrac{\sqrt{2}\mathbb{G}_{1,3}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{3}$

$\boxed{\text{z473}}$ $\mathbb{Q}_{2,1}^{(1,1;c)}(T_{2g}) = \dfrac{\sqrt{3}\mathbb{Q}_{0}^{(1,1;a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{3}$

$\boxed{\text{z474}}$ $\mathbb{Q}_{2,2}^{(1,1;c)}(T_{2g}) = \dfrac{\sqrt{3}\mathbb{Q}_{0}^{(1,1;a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{3}$

$\boxed{\text{z475}}$ $\mathbb{Q}_{2,3}^{(1,1;c)}(T_{2g}) = \dfrac{\sqrt{3}\mathbb{Q}_{0}^{(1,1;a)}(A_{1g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{3}$

$\boxed{\text{z476}}$ $\mathbb{G}_{3,1}^{(c)}(T_{2g}) = \dfrac{\sqrt{6}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{12} - \dfrac{\sqrt{6}\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{12} + \dfrac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{4} - \dfrac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{4}$

$\boxed{\text{z477}}$ $\mathbb{G}_{3,2}^{(c)}(T_{2g}) = \dfrac{\sqrt{6}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{12} + \dfrac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{4} - \dfrac{\sqrt{6}\mathbb{Q}_{2,2}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{12} - \dfrac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{4}$

$\boxed{\text{z478}}$ $\mathbb{G}_{3,3}^{(c)}(T_{2g}) = -\dfrac{\sqrt{6}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{6} + \dfrac{\sqrt{6}\mathbb{Q}_{2,3}^{(a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{6}$

$\boxed{\text{z479}}$ $\mathbb{G}_{3,1}^{(1,-1;c)}(T_{2g}) = \dfrac{\sqrt{6}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{12} - \dfrac{\sqrt{6}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{12} + \dfrac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{4} - \dfrac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{4}$

$\boxed{\text{z480}}$ $\mathbb{G}_{3,2}^{(1,-1;c)}(T_{2g}) = \dfrac{\sqrt{6}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{12} + \dfrac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{4} - \dfrac{\sqrt{6}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{12} - \dfrac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{4}$

$\boxed{\text{z481}}$ $\quad \mathbb{G}_{3,3}^{(1,-1;c)}(T_{2g}) = -\dfrac{\sqrt{6}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{6} + \dfrac{\sqrt{6}\mathbb{Q}_{2,3}^{(1,-1;a)}(T_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{6}$

$\boxed{\text{z482}}$ $\quad \mathbb{G}_{3,1}^{(1,0;c)}(T_{2g}) = -\dfrac{\sqrt{3}\mathbb{G}_{1,1}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} - \dfrac{\mathbb{G}_{1,1}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{6} + \dfrac{\mathbb{G}_{1,2}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{3} - \dfrac{\mathbb{G}_{1,3}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{3}$

$\boxed{\text{z483}}$ $\quad \mathbb{G}_{3,2}^{(1,0;c)}(T_{2g}) = -\dfrac{\mathbb{G}_{1,1}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,3}^{(b)}(T_{2g})}{3} + \dfrac{\sqrt{3}\mathbb{G}_{1,2}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} - \dfrac{\mathbb{G}_{1,2}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{6} + \dfrac{\mathbb{G}_{1,3}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{3}$

$\boxed{\text{z484}}$ $\quad \mathbb{G}_{3,3}^{(1,0;c)}(T_{2g}) = \dfrac{\mathbb{G}_{1,1}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,2}^{(b)}(T_{2g})}{3} - \dfrac{\mathbb{G}_{1,2}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,1}^{(b)}(T_{2g})}{3} + \dfrac{\mathbb{G}_{1,3}^{(1,0;a)}(T_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{3}$

$\boxed{\text{z560}}$ $\quad \mathbb{Q}_{3,1}^{(c)}(T_{2u}) = \dfrac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{6} - \dfrac{\sqrt{6}\mathbb{M}_{1,3}^{(a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6}$

$\boxed{\text{z561}}$ $\quad \mathbb{Q}_{3,2}^{(c)}(T_{2u}) = -\dfrac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{6} + \dfrac{\sqrt{6}\mathbb{M}_{1,3}^{(a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6}$

$\boxed{\text{z562}}$ $\quad \mathbb{Q}_{3,3}^{(c)}(T_{2u}) = \dfrac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6} - \dfrac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6}$

$\boxed{\text{z563}}$ $\quad \mathbb{Q}_{3,1}^{(1,-1;c)}(T_{2u},a) = \dfrac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{12} + \dfrac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{12} + \dfrac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{12} - \dfrac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{12} + \dfrac{\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z564}}$ $\quad \mathbb{Q}_{3,2}^{(1,-1;c)}(T_{2u},a) = \dfrac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{12} - \dfrac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{12} + \dfrac{\sqrt{15}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{12} + \dfrac{\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{12} + \dfrac{\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z565}}$ $\quad \mathbb{Q}_{3,3}^{(1,-1;c)}(T_{2u},a) = \dfrac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{12} + \dfrac{\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{12} + \dfrac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{12} - \dfrac{\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{12} + \dfrac{\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3}$

$\boxed{\text{z566}}$ $\quad \mathbb{Q}_{3,1}^{(1,-1;c)}(T_{2u},b) = \dfrac{\sqrt{6}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{24} - \dfrac{\sqrt{10}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{8} - \dfrac{\sqrt{6}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{24} - \dfrac{\sqrt{10}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{8}$

$\boxed{\text{z567}}$ $\quad \mathbb{Q}_{3,2}^{(1,-1;c)}(T_{2u},b) = -\dfrac{\sqrt{6}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{24} - \dfrac{\sqrt{10}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{8} + \dfrac{\sqrt{6}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{24} - \dfrac{\sqrt{10}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{8}$

$\boxed{\text{z568}}$ $\quad \mathbb{Q}_{3,3}^{(1,-1;c)}(T_{2u},b) = \dfrac{\sqrt{6}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{24} - \dfrac{\sqrt{10}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{8} - \dfrac{\sqrt{6}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{24} - \dfrac{\sqrt{10}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{8}$

$\boxed{\text{z569}}$ $\quad \mathbb{Q}_{3,1}^{(1,-1;c)}(T_{2u},c) = \dfrac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{6} - \dfrac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6}$

$$\boxed{\text{z570}} \quad \mathbb{Q}_{3,2}^{(1,-1;c)}(T_{2u},c) = -\frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{6} + \frac{\sqrt{6}\mathbb{M}_{1,3}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6}$$

$$\boxed{\text{z571}} \quad \mathbb{Q}_{3,3}^{(1,-1;c)}(T_{2u},c) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6} - \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6}$$

$$\boxed{\text{z572}} \quad \mathbb{Q}_{5,1}^{(1,-1;c)}(T_{2u}) = -\frac{\sqrt{10}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{8} - \frac{\sqrt{6}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{24} + \frac{\sqrt{10}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{8} - \frac{\sqrt{6}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{24}$$

$$\boxed{\text{z573}} \quad \mathbb{Q}_{5,2}^{(1,-1;c)}(T_{2u}) = \frac{\sqrt{10}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{8} - \frac{\sqrt{6}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,3}^{(b)}(T_{2u})}{24} - \frac{\sqrt{10}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{8} - \frac{\sqrt{6}\mathbb{M}_{3,3}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{24}$$

$$\boxed{\text{z574}} \quad \mathbb{Q}_{5,3}^{(1,-1;c)}(T_{2u}) = -\frac{\sqrt{10}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{8} - \frac{\sqrt{6}\mathbb{M}_{3,1}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{24} + \frac{\sqrt{10}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{8} - \frac{\sqrt{6}\mathbb{M}_{3,2}^{(1,-1;a)}(T_{2g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{24}$$

$$\boxed{\text{z575}} \quad \mathbb{Q}_{3,1}^{(1,0;c)}(T_{2u},a) = -\frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6} - \frac{\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(T_{1u})}{6} - \frac{\mathbb{T}_{2,2}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3} + \frac{\mathbb{T}_{2,3}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{3}$$

$$\boxed{\text{z576}} \quad \mathbb{Q}_{3,2}^{(1,0;c)}(T_{2u},a) = \frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} + \frac{\mathbb{T}_{2,1}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3} - \frac{\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(T_{1u})}{6} - \frac{\mathbb{T}_{2,3}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{3}$$

$$\boxed{\text{z577}} \quad \mathbb{Q}_{3,3}^{(1,0;c)}(T_{2u},a) = -\frac{\mathbb{T}_{2,1}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,2}^{(b)}(T_{1u})}{3} + \frac{\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,3}^{(b)}(T_{1u})}{3} + \frac{\mathbb{T}_{2,2}^{(1,0;a)}(T_{2g})\mathbb{T}_{1,1}^{(b)}(T_{1u})}{3}$$

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

$$\boxed{\text{z579}} \quad \mathbb{Q}_{3,2}^{(1,0;c)}(T_{2u},b) = \frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6} + \frac{\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{M}_{2,2}^{(b)}(T_{2u})}{2}$$

$$\boxed{\text{z580}} \quad \mathbb{Q}_{3,3}^{(1,0;c)}(T_{2u},b) = -\frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{M}_{2,3}^{(b)}(T_{2u})}{3}$$

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

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

$$\boxed{\text{z583}} \quad \mathbb{Q}_{3,3}^{(1,1;c)}(T_{2u}) = \frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,1;a)}(T_{1g})\mathbb{M}_{2,2}^{(b)}(T_{2u})}{6} - \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,1;a)}(T_{1g})\mathbb{M}_{2,1}^{(b)}(T_{2u})}{6}$$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

— Atomic SAMB —

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

$\boxed{\text{x1}}$ $\mathbb{Q}_0^{(a)}(A_{1g}) = \begin{bmatrix} \frac{\sqrt{2}}{2} & 0 \\ 0 & \frac{\sqrt{2}}{2} \end{bmatrix}$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$$\boxed{\text{x40}} \quad \mathbb{Q}_0^{(1,1;a)}(A_{1g}) = \begin{bmatrix} 0 & 0 & -\frac{\sqrt{3}i}{6} & 0 & 0 & \frac{\sqrt{3}}{6} \\ 0 & 0 & 0 & \frac{\sqrt{3}i}{6} & -\frac{\sqrt{3}}{6} & 0 \\ \frac{\sqrt{3}i}{6} & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{6} \\ 0 & -\frac{\sqrt{3}i}{6} & 0 & 0 & -\frac{\sqrt{3}i}{6} & 0 \\ 0 & -\frac{\sqrt{3}}{6} & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 \\ \frac{\sqrt{3}}{6} & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 & 0 \end{bmatrix}$$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

—— **Cluster SAMB** ——————————————————————————————

- Site cluster

** Wyckoff: **1a**

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

- Bond cluster

** Wyckoff: `3a@3d`

y2 $\mathbb{Q}_0^{(s)}(A_{1g}) = \left[\dfrac{\sqrt{3}}{3},\ \dfrac{\sqrt{3}}{3},\ \dfrac{\sqrt{3}}{3}\right]$

y3 $\mathbb{Q}_{2,1}^{(s)}(E_g) = \left[-\dfrac{\sqrt{6}}{6},\ -\dfrac{\sqrt{6}}{6},\ \dfrac{\sqrt{6}}{3}\right]$

y4 $\mathbb{Q}_{2,2}^{(s)}(E_g) = \left[\dfrac{\sqrt{2}}{2},\ -\dfrac{\sqrt{2}}{2},\ 0\right]$

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

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

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

** Wyckoff: `6b@3c`

y8 $\mathbb{Q}_0^{(s)}(A_{1g}) = \left[\dfrac{\sqrt{6}}{6},\ \dfrac{\sqrt{6}}{6},\ \dfrac{\sqrt{6}}{6},\ \dfrac{\sqrt{6}}{6},\ \dfrac{\sqrt{6}}{6},\ \dfrac{\sqrt{6}}{6}\right]$

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

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

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

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

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

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

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

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

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

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

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

--- **Site and Bond** ---

Table 5: Orbital of each site

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

Table 6: Neighbor and bra-ket of each bond

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

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

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

SL	position (s)	mapping
1	[0.00000, 0.00000, 0.00000]	[1,2,3,4,$\cdots$,48]

— Bond in Unit Cell ——————————————————————————————————

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

Table 8: 1-th 'A'-'A' [1] (#1) bond cluster (3a@3d), ND, $|v|=$ 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,-25,26,27,-28,-41,42,43,-44]	(1,1)	(1,1)	[1,0,0]
2	[0.00000,-1.00000, 0.00000]	[0.00000, 0.50000, 0.00000]	[5,-6,-7,8,13,-14,-15,16,-29,30,31,-32,-37,38,39,-40]	(1,1)	(1,1)	[0,1,0]
3	[0.00000, 0.00000,-1.00000]	[0.00000, 0.00000, 0.50000]	[9,-10,-11,12,-21,22,23,-24,-33,34,35,-36,45,-46,-47,48]	(1,1)	(1,1)	[0,0,1]

Table 9: 2-th 'A'-'A' [1] (#2) bond cluster (6b@3c), ND, $|v|=$ 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,-25,28,-42,43]	(1,1)	(1,1)	[0,1,1]
2	[0.00000, 1.00000,-1.00000]	[0.00000, 0.50000, 0.50000]	[2,-3,-17,20,-26,27,41,-44]	(1,1)	(1,1)	[0,-1,1]
3	[-1.00000, 0.00000,-1.00000]	[0.50000, 0.00000, 0.50000]	[5,-8,-14,15,-29,32,38,-39]	(1,1)	(1,1)	[1,0,1]
4	[-1.00000, 0.00000, 1.00000]	[0.50000, 0.00000, 0.50000]	[6,-7,13,-16,-30,31,-37,40]	(1,1)	(1,1)	[1,0,-1]
5	[-1.00000,-1.00000, 0.00000]	[0.50000, 0.50000, 0.00000]	[9,-12,21,-24,-33,36,-45,48]	(1,1)	(1,1)	[1,1,0]
6	[1.00000,-1.00000, 0.00000]	[0.50000, 0.50000, 0.00000]	[10,-11,-22,23,-34,35,46,-47]	(1,1)	(1,1)	[-1,1,0]