Model for "CeCoSi"

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General Condition

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

Group and Unit Cell

- Group: SG No. 129 D_{4h}^{7} $P4/nmm$ [tetragonal]
- Associated point group: PG No. 129 D_{4h} $4/mmm$ [tetragonal]
- Unit cell:
  $a =$ `4.05700`, $b =$ `4.05700`, $c =$ `6.98700`, $\alpha =$ `90.0`, $\beta =$ `90.0`, $\gamma =$ `90.0`
- Lattice vectors (conventional cell):
  $\boldsymbol{a}_1 =$ `[ 4.05700, 0.00000, 0.00000]`
  $\boldsymbol{a}_2 =$ `[ 0.00000, 4.05700, 0.00000]`
  $\boldsymbol{a}_3 =$ `[ 0.00000, 0.00000, 6.98700]`

Symmetry Operation

Table 1: Symmetry operation

#	SO	#	SO	#	SO	#	SO	#	SO
1	$\{1\vert 0\}$	2	$\{2_{001}\vert \frac{1}{2}\frac{1}{2}0\}$	3	$\{4^{+}_{001}\vert \frac{1}{2}00\}$	4	$\{4^{-}_{001}\vert 0\frac{1}{2}0\}$	5	$\{2_{010}\vert 0\frac{1}{2}0\}$
6	$\{2_{100}\vert \frac{1}{2}00\}$	7	$\{2_{110}\vert \frac{1}{2}\frac{1}{2}0\}$	8	$\{2_{1-10}\vert 0\}$	9	$\{-1\vert 0\}$	10	$\{\mathrm{m}_{001}\vert \frac{1}{2}\frac{1}{2}0\}$
11	$\{-4^{+}_{001}\vert \frac{1}{2}00\}$	12	$\{-4^{-}_{001}\vert 0\frac{1}{2}0\}$	13	$\{\mathrm{m}_{010}\vert 0\frac{1}{2}0\}$	14	$\{\mathrm{m}_{100}\vert \frac{1}{2}00\}$	15	$\{\mathrm{m}_{110}\vert \frac{1}{2}\frac{1}{2}0\}$
16	$\{\mathrm{m}_{1-10}\vert 0\}$								

Harmonics

Table 2: Harmonics

#	symbol	irrep.	rank	X	multiplicity	component	symmetry
1	$\mathbb{Q}_0(A_{1g})$	A_{1g}	0	Q, T	-	-	1
2	$\mathbb{Q}_2(A_{1g})$	A_{1g}	2	Q, T	-	-	$-\frac{x^2}{2}-\frac{y^2}{2}+z^2$
3	$\mathbb{Q}_4(A_{1g},1)$	A_{1g}	4	Q, T	1	-	$\frac{\sqrt{21}\left(x^4-3x^2y^2-3x^2z^2+y^4-3y^2z^2+z^4\right)}{6}$
4	$\mathbb{Q}_4(A_{1g},2)$	A_{1g}	4	Q, T	2	-	$-\frac{\sqrt{15}\left(x^4-12x^2y^2+6x^2z^2+y^4+6y^2z^2-2z^4\right)}{12}$
5	$\mathbb{G}_0(A_{1u})$	A_{1u}	0	G, M	-	-	1
6	$\mathbb{G}_2(A_{1u})$	A_{1u}	2	G, M	-	-	$-\frac{x^2}{2}-\frac{y^2}{2}+z^2$

continued ...

Table 2

#	symbol	irrep.	rank	X	multiplicity	component	symmetry
7	$\mathbb{G}_4(A_{1u},1)$	A_{1u}	4	G, M	1	-	$\frac{\sqrt{21}\left(x^4-3x^2y^2-3x^2z^2+y^4-3y^2z^2+z^4\right)}{6}$
8	$\mathbb{G}_4(A_{1u},2)$	A_{1u}	4	G, M	2	-	$-\frac{\sqrt{15}\left(x^4-12x^2y^2+6x^2z^2+y^4+6y^2z^2-2z^4\right)}{12}$
9	$\mathbb{Q}_5(A_{1u})$	A_{1u}	5	Q, T	-	-	$\frac{3\sqrt{35}xyz(x-y)(x+y)}{2}$
10	$\mathbb{G}_1(A_{2g})$	A_{2g}	1	G, M	-	-	z
11	$\mathbb{G}_3(A_{2g})$	A_{2g}	3	G, M	-	-	$-\frac{z\left(3x^2+3y^2-2z^2\right)}{2}$
12	$\mathbb{Q}_4(A_{2g})$	A_{2g}	4	Q, T	-	-	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$
13	$\mathbb{Q}_1(A_{2u})$	A_{2u}	1	Q, T	-	-	z
14	$\mathbb{Q}_3(A_{2u})$	A_{2u}	3	Q, T	-	-	$-\frac{z\left(3x^2+3y^2-2z^2\right)}{2}$
15	$\mathbb{G}_4(A_{2u})$	A_{2u}	4	G, M	-	-	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$
16	$\mathbb{Q}_2(B_{1g})$	B_{1g}	2	Q, T	-	-	$\frac{\sqrt{3}(x-y)(x+y)}{2}$
17	$\mathbb{G}_3(B_{1g})$	B_{1g}	3	G, M	-	-	$\sqrt{15}xyz$
18	$\mathbb{Q}_4(B_{1g})$	B_{1g}	4	Q, T	-	-	$\frac{\sqrt{5}(x-y)(x+y)\left(x^2+y^2-6z^2\right)}{4}$
19	$\mathbb{G}_2(B_{1u})$	B_{1u}	2	G, M	-	-	$\frac{\sqrt{3}(x-y)(x+y)}{2}$
20	$\mathbb{Q}_3(B_{1u})$	B_{1u}	3	Q, T	-	-	$\sqrt{15}xyz$
21	$\mathbb{G}_4(B_{1u})$	B_{1u}	4	G, M	-	-	$\frac{\sqrt{5}(x-y)(x+y)\left(x^2+y^2-6z^2\right)}{4}$
22	$\mathbb{Q}_5(B_{1u})$	B_{1u}	5	Q, T	-	-	$\frac{\sqrt{105}xyz\left(x^2+y^2-2z^2\right)}{2}$
23	$\mathbb{Q}_2(B_{2g})$	B_{2g}	2	Q, T	-	-	$\sqrt{3}xy$
24	$\mathbb{G}_3(B_{2g})$	B_{2g}	3	G, M	-	-	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$
25	$\mathbb{Q}_4(B_{2g})$	B_{2g}	4	Q, T	-	-	$-\frac{\sqrt{5}xy\left(x^2+y^2-6z^2\right)}{2}$
26	$\mathbb{G}_2(B_{2u})$	B_{2u}	2	G, M	-	-	$\sqrt{3}xy$
27	$\mathbb{Q}_3(B_{2u})$	B_{2u}	3	Q, T	-	-	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$

continued ...

Table 2

#	symbol	irrep.	rank	X	multiplicity	component	symmetry
28	$\mathbb{G}_4(B_{2u})$	B_{2u}	4	G, M	-	-	$-\frac{\sqrt{5}xy\left(x^2+y^2-6z^2\right)}{2}$
29	$\mathbb{Q}_5(B_{2u})$	B_{2u}	5	Q, T	-	-	$-\frac{\sqrt{105}z(x-y)(x+y)\left(x^2+y^2-2z^2\right)}{4}$
30	$\mathbb{G}_{1,1}(E_g)$	E_g	1	G, M	-	1	x
31	$\mathbb{G}_{1,2}(E_g)$					2	$-y$
32	$\mathbb{Q}_{2,1}(E_g)$	E_g	2	Q, T	-	1	$\sqrt{3}yz$
33	$\mathbb{Q}_{2,2}(E_g)$					2	$\sqrt{3}xz$
34	$\mathbb{G}_{3,1}(E_g,1)$	E_g	3	G, M	1	1	$\frac{x\left(2x^2-3y^2-3z^2\right)}{2}$
35	$\mathbb{G}_{3,2}(E_g,1)$					2	$\frac{y\left(3x^2-2y^2+3z^2\right)}{2}$
36	$\mathbb{G}_{3,1}(E_g,2)$	E_g	3	G, M	2	1	$\frac{\sqrt{15}x(y-z)(y+z)}{2}$
37	$\mathbb{G}_{3,2}(E_g,2)$					2	$-\frac{\sqrt{15}y(x-z)(x+z)}{2}$
38	$\mathbb{Q}_{4,1}(E_g,1)$	E_g	4	Q, T	1	1	$\frac{\sqrt{35}yz(y-z)(y+z)}{2}$
39	$\mathbb{Q}_{4,2}(E_g,1)$					2	$\frac{\sqrt{35}xz(x-z)(x+z)}{2}$
40	$\mathbb{Q}_{4,1}(E_g,2)$	E_g	4	Q, T	2	1	$\frac{\sqrt{5}yz\left(6x^2-y^2-z^2\right)}{2}$
41	$\mathbb{Q}_{4,2}(E_g,2)$					2	$-\frac{\sqrt{5}xz\left(x^2-6y^2+z^2\right)}{2}$
42	$\mathbb{Q}_{1,1}(E_u)$	E_u	1	Q, T	-	1	x
43	$\mathbb{Q}_{1,2}(E_u)$					2	y
44	$\mathbb{G}_{2,1}(E_u)$	E_u	2	G, M	-	1	$\sqrt{3}yz$
45	$\mathbb{G}_{2,2}(E_u)$					2	$-\sqrt{3}xz$
46	$\mathbb{Q}_{3,1}(E_u,1)$	E_u	3	Q, T	1	1	$\frac{x\left(2x^2-3y^2-3z^2\right)}{2}$
47	$\mathbb{Q}_{3,2}(E_u,1)$					2	$-\frac{y\left(3x^2-2y^2+3z^2\right)}{2}$
48	$\mathbb{Q}_{3,1}(E_u,2)$	E_u	3	Q, T	2	1	$\frac{\sqrt{15}x(y-z)(y+z)}{2}$

continued ...

Table 2

#	symbol	irrep.	rank	X	multiplicity	component	symmetry
49	$\mathbb{Q}_{3,2}(E_u, 2)$					2	$\frac{\sqrt{15}y(x-z)(x+z)}{2}$
50	$\mathbb{G}_{4,1}(E_u, 1)$	E_u	4	G, M	1	1	$\frac{\sqrt{35}yz(y-z)(y+z)}{2}$
51	$\mathbb{G}_{4,2}(E_u, 1)$					2	$-\frac{\sqrt{35}xz(x-z)(x+z)}{2}$
52	$\mathbb{G}_{4,1}(E_u, 2)$	E_u	4	G, M	2	1	$\frac{\sqrt{5}yz\left(6x^2-y^2-z^2\right)}{2}$
53	$\mathbb{G}_{4,2}(E_u, 2)$					2	$\frac{\sqrt{5}xz\left(x^2-6y^2+z^2\right)}{2}$

Basis in full matrix

Table 3: dimension = 36

#	orbital@atom(SL)	#	orbital@atom(SL)	#	orbital@atom(SL)	#	orbital@atom(SL)	#	orbital@atom(SL)
0	$\lvert p_x, \uparrow\rangle$ @Ce(1)	1	$\lvert p_x, \downarrow\rangle$ @Ce(1)	2	$\lvert p_y, \uparrow\rangle$ @Ce(1)	3	$\lvert p_y, \downarrow\rangle$ @Ce(1)	4	$\lvert p_z, \uparrow\rangle$ @Ce(1)
5	$\lvert p_z, \downarrow\rangle$ @Ce(1)	6	$\lvert p_x, \uparrow\rangle$ @Ce(2)	7	$\lvert p_x, \downarrow\rangle$ @Ce(2)	8	$\lvert p_y, \uparrow\rangle$ @Ce(2)	9	$\lvert p_y, \downarrow\rangle$ @Ce(2)
10	$\lvert p_z, \uparrow\rangle$ @Ce(2)	11	$\lvert p_z, \downarrow\rangle$ @Ce(2)	12	$\lvert p_x, \uparrow\rangle$ @Co(1)	13	$\lvert p_x, \downarrow\rangle$ @Co(1)	14	$\lvert p_y, \uparrow\rangle$ @Co(1)
15	$\lvert p_y, \downarrow\rangle$ @Co(1)	16	$\lvert p_z, \uparrow\rangle$ @Co(1)	17	$\lvert p_z, \downarrow\rangle$ @Co(1)	18	$\lvert p_x, \uparrow\rangle$ @Co(2)	19	$\lvert p_x, \downarrow\rangle$ @Co(2)
20	$\lvert p_y, \uparrow\rangle$ @Co(2)	21	$\lvert p_y, \downarrow\rangle$ @Co(2)	22	$\lvert p_z, \uparrow\rangle$ @Co(2)	23	$\lvert p_z, \downarrow\rangle$ @Co(2)	24	$\lvert p_x, \uparrow\rangle$ @Si(1)
25	$\lvert p_x, \downarrow\rangle$ @Si(1)	26	$\lvert p_y, \uparrow\rangle$ @Si(1)	27	$\lvert p_y, \downarrow\rangle$ @Si(1)	28	$\lvert p_z, \uparrow\rangle$ @Si(1)	29	$\lvert p_z, \downarrow\rangle$ @Si(1)
30	$\lvert p_x, \uparrow\rangle$ @Si(2)	31	$\lvert p_x, \downarrow\rangle$ @Si(2)	32	$\lvert p_y, \uparrow\rangle$ @Si(2)	33	$\lvert p_y, \downarrow\rangle$ @Si(2)	34	$\lvert p_z, \uparrow\rangle$ @Si(2)
35	$\lvert p_z, \downarrow\rangle$ @Si(2)								

Table 4: Atomic basis (orbital part only)

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

SAMB

954 (all 954) SAMBs

- 'Ce' site-cluster : `Ce`
  * 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: `2c`

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

$\boxed{\text{z2}}$ $\mathbb{Q}_2^{(c)}(A_{1g}) = \mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_0^{(s)}(A_{1g})$

$\boxed{\text{z3}}$ $\mathbb{Q}_2^{(1,-1;c)}(A_{1g}) = \mathbb{Q}_2^{(1,-1;a)}(A_{1g})\mathbb{Q}_0^{(s)}(A_{1g})$

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

$\boxed{\text{z67}}$ $\mathbb{G}_0^{(1,0;c)}(A_{1u}) = \mathbb{G}_1^{(1,0;a)}(A_{2g})\mathbb{Q}_1^{(s)}(A_{2u})$

$\boxed{\text{z124}}$ $\mathbb{G}_1^{(1,0;c)}(A_{2g}) = \mathbb{G}_1^{(1,0;a)}(A_{2g})\mathbb{Q}_0^{(s)}(A_{1g})$

$\boxed{\text{z125}}$ $\mathbb{Q}_1^{(c)}(A_{2u}, a) = \mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_1^{(s)}(A_{2u})$

$\boxed{\text{z184}}$ $\mathbb{Q}_1^{(c)}(A_{2u}, b) = \mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_1^{(s)}(A_{2u})$

$\boxed{\text{z185}}$ $\mathbb{Q}_1^{(1,-1;c)}(A_{2u}) = \mathbb{Q}_2^{(1,-1;a)}(A_{1g})\mathbb{Q}_1^{(s)}(A_{2u})$

$\boxed{\text{z244}}$ $\mathbb{Q}_1^{(1,1;c)}(A_{2u}) = \mathbb{Q}_0^{(1,1;a)}(A_{1g})\mathbb{Q}_1^{(s)}(A_{2u})$

$\boxed{\text{z245}}$ $\mathbb{Q}_2^{(c)}(B_{1g}) = \mathbb{Q}_2^{(a)}(B_{1g})\mathbb{Q}_0^{(s)}(A_{1g})$

$\boxed{\text{z246}}$ $\mathbb{Q}_2^{(1,-1;c)}(B_{1g}) = \mathbb{Q}_2^{(1,-1;a)}(B_{1g})\mathbb{Q}_0^{(s)}(A_{1g})$

$\boxed{\text{z247}}$ $\mathbb{Q}_3^{(c)}(B_{1u}) = \mathbb{Q}_2^{(a)}(B_{2g})\mathbb{Q}_1^{(s)}(A_{2u})$

$\boxed{\text{z248}}$ $\mathbb{Q}_3^{(1,-1;c)}(B_{1u}) = \mathbb{Q}_2^{(1,-1;a)}(B_{2g})\mathbb{Q}_1^{(s)}(A_{2u})$

$\boxed{\text{z249}}$ $\mathbb{Q}_2^{(c)}(B_{2g}) = \mathbb{Q}_2^{(a)}(B_{2g})\mathbb{Q}_0^{(s)}(A_{1g})$

$\boxed{\text{z478}}$ $\mathbb{Q}_2^{(1,-1;c)}(B_{2g}) = \mathbb{Q}_2^{(1,-1;a)}(B_{2g})\mathbb{Q}_0^{(s)}(A_{1g})$

$\boxed{\text{z536}}$ $\mathbb{Q}_3^{(c)}(B_{2u}) = \mathbb{Q}_2^{(a)}(B_{1g})\mathbb{Q}_1^{(s)}(A_{2u})$

$\boxed{\text{z537}}$ $\mathbb{Q}_3^{(1,-1;c)}(B_{2u}) = \mathbb{Q}_2^{(1,-1;a)}(B_{1g})\mathbb{Q}_1^{(s)}(A_{2u})$

$\boxed{\text{z538}}$ $\mathbb{Q}_{2,1}^{(c)}(E_g) = \dfrac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_0^{(s)}(A_{1g})}{2}$

$\boxed{\text{z539}}$ $\mathbb{Q}_{2,2}^{(c)}(E_g) = \dfrac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_0^{(s)}(A_{1g})}{2}$

$\boxed{\text{z600}}$ $\mathbb{Q}_{2,1}^{(1,-1;c)}(E_g) = \dfrac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_0^{(s)}(A_{1g})}{2}$

$\boxed{\text{z601}}$ $\mathbb{Q}_{2,2}^{(1,-1;c)}(E_g) = \dfrac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_0^{(s)}(A_{1g})}{2}$

$\boxed{\text{z659}}$ $\mathbb{G}_{1,1}^{(1,0;c)}(E_g) = \dfrac{\sqrt{2}\mathbb{G}_{1,1}^{(1,0;a)}(E_g)\mathbb{Q}_0^{(s)}(A_{1g})}{2}$

$\boxed{\text{z660}}$ $\mathbb{G}_{1,2}^{(1,0;c)}(E_g) = \frac{\sqrt{2}\mathbb{G}_{1,2}^{(1,0;a)}(E_g)\mathbb{Q}_0^{(s)}(A_{1g})}{2}$

$\boxed{\text{z721}}$ $\mathbb{Q}_{1,1}^{(c)}(E_u) = \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_1^{(s)}(A_{2u})}{2}$

$\boxed{\text{z722}}$ $\mathbb{Q}_{1,2}^{(c)}(E_u) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_1^{(s)}(A_{2u})}{2}$

$\boxed{\text{z723}}$ $\mathbb{Q}_{1,1}^{(1,-1;c)}(E_u) = \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_1^{(s)}(A_{2u})}{2}$

$\boxed{\text{z724}}$ $\mathbb{Q}_{1,2}^{(1,-1;c)}(E_u) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_1^{(s)}(A_{2u})}{2}$

$\boxed{\text{z725}}$ $\mathbb{Q}_{1,1}^{(1,0;c)}(E_u) = -\frac{\sqrt{2}\mathbb{G}_{1,2}^{(1,0;a)}(E_g)\mathbb{Q}_1^{(s)}(A_{2u})}{2}$

$\boxed{\text{z726}}$ $\mathbb{Q}_{1,2}^{(1,0;c)}(E_u) = -\frac{\sqrt{2}\mathbb{G}_{1,1}^{(1,0;a)}(E_g)\mathbb{Q}_1^{(s)}(A_{2u})}{2}$

- 'Co' site-cluster : Co
  * 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: 2a

$\boxed{\text{z5}}$ $\mathbb{Q}_0^{(c)}(A_{1g}) = \mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_0^{(s)}(A_{1g})$

$\boxed{\text{z6}}$ $\mathbb{Q}_2^{(c)}(A_{1g}) = \mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_0^{(s)}(A_{1g})$

$\boxed{\text{z7}}$ $\mathbb{Q}_2^{(1,-1;c)}(A_{1g}) = \mathbb{Q}_2^{(1,-1;a)}(A_{1g})\mathbb{Q}_0^{(s)}(A_{1g})$

$\boxed{\text{z8}}$ $\mathbb{Q}_0^{(1,1;c)}(A_{1g}) = \mathbb{Q}_0^{(1,1;a)}(A_{1g})\mathbb{Q}_0^{(s)}(A_{1g})$

$\boxed{\text{z68}}$ $\mathbb{Q}_5^{(c)}(A_{1u}) = \mathbb{Q}_2^{(a)}(B_{2g})\mathbb{Q}_3^{(s)}(B_{2u})$

$\boxed{\text{z126}}$ $\mathbb{Q}_5^{(1,-1;c)}(A_{1u}) = \mathbb{Q}_2^{(1,-1;a)}(B_{2g})\mathbb{Q}_3^{(s)}(B_{2u})$

$\boxed{\text{z127}}$ $\mathbb{G}_1^{(1,0;c)}(A_{2g}) = \mathbb{G}_1^{(1,0;a)}(A_{2g})\mathbb{Q}_0^{(s)}(A_{1g})$

$\boxed{\text{z186}}$ $\mathbb{Q}_1^{(c)}(A_{2u}) = \mathbb{Q}_2^{(a)}(B_{1g})\mathbb{Q}_3^{(s)}(B_{2u})$

$\boxed{\text{z187}}$ $\mathbb{Q}_1^{(1,-1;c)}(A_{2u}) = \mathbb{Q}_2^{(1,-1;a)}(B_{1g})\mathbb{Q}_3^{(s)}(B_{2u})$

$\boxed{\text{z250}}$ $\mathbb{Q}_2^{(c)}(B_{1g}) = \mathbb{Q}_2^{(a)}(B_{1g})\mathbb{Q}_0^{(s)}(A_{1g})$

$\boxed{\text{z251}}$ $\mathbb{Q}_2^{(1,-1;c)}(B_{1g}) = \mathbb{Q}_2^{(1,-1;a)}(B_{1g})\mathbb{Q}_0^{(s)}(A_{1g})$

$\boxed{\text{z252}}$ $\mathbb{Q}_3^{(1,0;c)}(B_{1u}) = \mathbb{G}_1^{(1,0;a)}(A_{2g})\mathbb{Q}_3^{(s)}(B_{2u})$

$\boxed{\text{z253}}$ $\mathbb{Q}_2^{(c)}(B_{2g}) = \mathbb{Q}_2^{(a)}(B_{2g})\mathbb{Q}_0^{(s)}(A_{1g})$

$\boxed{\text{z254}}$ $\mathbb{Q}_2^{(1,-1;c)}(B_{2g}) = \mathbb{Q}_2^{(1,-1;a)}(B_{2g})\mathbb{Q}_0^{(s)}(A_{1g})$

$\boxed{\text{z255}}$ $\mathbb{Q}_3^{(c)}(B_{2u}) = \mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_3^{(s)}(B_{2u})$

$\boxed{\text{z479}}$ $\mathbb{Q}_5^{(c)}(B_{2u}) = \mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_3^{(s)}(B_{2u})$

$\boxed{\text{z480}}$ $\mathbb{Q}_5^{(1,-1;c)}(B_{2u}) = \mathbb{Q}_2^{(1,-1;a)}(A_{1g})\mathbb{Q}_3^{(s)}(B_{2u})$

$\boxed{\text{z540}}$ $\mathbb{Q}_3^{(1,1;c)}(B_{2u}) = \mathbb{Q}_0^{(1,1;a)}(A_{1g})\mathbb{Q}_3^{(s)}(B_{2u})$

$\boxed{\text{z541}}$ $\mathbb{Q}_{2,1}^{(c)}(E_g) = \dfrac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_0^{(s)}(A_{1g})}{2}$

$\boxed{\text{z602}}$ $\mathbb{Q}_{2,2}^{(c)}(E_g) = \dfrac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_0^{(s)}(A_{1g})}{2}$

$\boxed{\text{z661}}$ $\mathbb{Q}_{2,1}^{(1,-1;c)}(E_g) = \dfrac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_0^{(s)}(A_{1g})}{2}$

$\boxed{\text{z662}}$ $\mathbb{Q}_{2,2}^{(1,-1;c)}(E_g) = \dfrac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_0^{(s)}(A_{1g})}{2}$

$\boxed{\text{z663}}$ $\mathbb{G}_{1,1}^{(1,0;c)}(E_g) = \dfrac{\sqrt{2}\mathbb{G}_{1,1}^{(1,0;a)}(E_g)\mathbb{Q}_0^{(s)}(A_{1g})}{2}$

$\boxed{\text{z664}}$ $\mathbb{G}_{1,2}^{(1,0;c)}(E_g) = \dfrac{\sqrt{2}\mathbb{G}_{1,2}^{(1,0;a)}(E_g)\mathbb{Q}_0^{(s)}(A_{1g})}{2}$

$\boxed{\text{z727}}$ $\mathbb{Q}_{1,1}^{(c)}(E_u) = \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_3^{(s)}(B_{2u})}{2}$

$\boxed{\text{z728}}$ $\mathbb{Q}_{1,2}^{(c)}(E_u) = -\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_3^{(s)}(B_{2u})}{2}$

$\boxed{\text{z729}}$ $\mathbb{Q}_{1,1}^{(1,-1;c)}(E_u) = \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_3^{(s)}(B_{2u})}{2}$

$\boxed{\text{z730}}$ $\mathbb{Q}_{1,2}^{(1,-1;c)}(E_u) = -\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_3^{(s)}(B_{2u})}{2}$

$\boxed{\text{z731}}$ $\mathbb{Q}_{3,1}^{(1,0;c)}(E_u,1) = -\frac{\sqrt{2}\mathbb{G}_{1,2}^{(1,0;a)}(E_g)\mathbb{Q}_3^{(s)}(B_{2u})}{2}$

$\boxed{\text{z732}}$ $\mathbb{Q}_{3,2}^{(1,0;c)}(E_u,1) = \frac{\sqrt{2}\mathbb{G}_{1,1}^{(1,0;a)}(E_g)\mathbb{Q}_3^{(s)}(B_{2u})}{2}$

- '`Si`' site-cluster : `Si`
  - * 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: `2c`

$\boxed{\text{z9}}$ $\mathbb{Q}_0^{(c)}(A_{1g}) = \mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_0^{(s)}(A_{1g})$

$\boxed{\text{z10}}$ $\mathbb{Q}_2^{(c)}(A_{1g}) = \mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_0^{(s)}(A_{1g})$

$\boxed{\text{z11}}$ $\mathbb{Q}_2^{(1,-1;c)}(A_{1g}) = \mathbb{Q}_2^{(1,-1;a)}(A_{1g})\mathbb{Q}_0^{(s)}(A_{1g})$

$\boxed{\text{z12}}$ $\mathbb{Q}_0^{(1,1;c)}(A_{1g}) = \mathbb{Q}_0^{(1,1;a)}(A_{1g})\mathbb{Q}_0^{(s)}(A_{1g})$

$\boxed{\text{z69}}$ $\mathbb{G}_0^{(1,0;c)}(A_{1u}) = \mathbb{G}_1^{(1,0;a)}(A_{2g})\mathbb{Q}_1^{(s)}(A_{2u})$

$\boxed{\text{z128}}$ $\mathbb{G}_1^{(1,0;c)}(A_{2g}) = \mathbb{G}_1^{(1,0;a)}(A_{2g})\mathbb{Q}_0^{(s)}(A_{1g})$

$\boxed{\text{z129}}$ $\mathbb{Q}_1^{(c)}(A_{2u},a) = \mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_1^{(s)}(A_{2u})$

$\boxed{\text{z188}}$ $\mathbb{Q}_1^{(c)}(A_{2u},b) = \mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_1^{(s)}(A_{2u})$

$\boxed{\text{z189}}$ $\mathbb{Q}_1^{(1,-1;c)}(A_{2u}) = \mathbb{Q}_2^{(1,-1;a)}(A_{1g})\mathbb{Q}_1^{(s)}(A_{2u})$

$\boxed{\text{z256}}$ $\mathbb{Q}_1^{(1,1;c)}(A_{2u}) = \mathbb{Q}_0^{(1,1;a)}(A_{1g})\mathbb{Q}_1^{(s)}(A_{2u})$

$\boxed{\text{z257}}$ $\mathbb{Q}_2^{(c)}(B_{1g}) = \mathbb{Q}_2^{(a)}(B_{1g})\mathbb{Q}_0^{(s)}(A_{1g})$

$\boxed{\text{z258}}$ $\mathbb{Q}_2^{(1,-1;c)}(B_{1g}) = \mathbb{Q}_2^{(1,-1;a)}(B_{1g})\mathbb{Q}_0^{(s)}(A_{1g})$

$\boxed{\text{z259}}$ $\mathbb{Q}_3^{(c)}(B_{1u}) = \mathbb{Q}_2^{(a)}(B_{2g})\mathbb{Q}_1^{(s)}(A_{2u})$

$\boxed{\text{z260}}$ $\mathbb{Q}_3^{(1,-1;c)}(B_{1u}) = \mathbb{Q}_2^{(1,-1;a)}(B_{2g})\mathbb{Q}_1^{(s)}(A_{2u})$

$\boxed{\text{z261}}$ $\mathbb{Q}_2^{(c)}(B_{2g}) = \mathbb{Q}_2^{(a)}(B_{2g})\mathbb{Q}_0^{(s)}(A_{1g})$

$\boxed{\text{z481}}$ $\mathbb{Q}_2^{(1,-1;c)}(B_{2g}) = \mathbb{Q}_2^{(1,-1;a)}(B_{2g})\mathbb{Q}_0^{(s)}(A_{1g})$

$\boxed{\text{z542}}$ $\mathbb{Q}_3^{(c)}(B_{2u}) = \mathbb{Q}_2^{(a)}(B_{1g})\mathbb{Q}_1^{(s)}(A_{2u})$

$\boxed{\text{z543}}$ $\mathbb{Q}_3^{(1,-1;c)}(B_{2u}) = \mathbb{Q}_2^{(1,-1;a)}(B_{1g})\mathbb{Q}_1^{(s)}(A_{2u})$

$\boxed{\text{z544}}$ $\mathbb{Q}_{2,1}^{(c)}(E_g) = \dfrac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_0^{(s)}(A_{1g})}{2}$

$\boxed{\text{z545}}$ $\mathbb{Q}_{2,2}^{(c)}(E_g) = \dfrac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_0^{(s)}(A_{1g})}{2}$

$\boxed{\text{z603}}$ $\mathbb{Q}_{2,1}^{(1,-1;c)}(E_g) = \dfrac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_0^{(s)}(A_{1g})}{2}$

$\boxed{\text{z604}}$ $\mathbb{Q}_{2,2}^{(1,-1;c)}(E_g) = \dfrac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_0^{(s)}(A_{1g})}{2}$

$\boxed{\text{z665}}$ $\mathbb{G}_{1,1}^{(1,0;c)}(E_g) = \dfrac{\sqrt{2}\mathbb{G}_{1,1}^{(1,0;a)}(E_g)\mathbb{Q}_0^{(s)}(A_{1g})}{2}$

$\boxed{\text{z666}}$ $\mathbb{G}_{1,2}^{(1,0;c)}(E_g) = \dfrac{\sqrt{2}\mathbb{G}_{1,2}^{(1,0;a)}(E_g)\mathbb{Q}_0^{(s)}(A_{1g})}{2}$

z733 $\mathbb{Q}_{1,1}^{(c)}(E_u) = \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{1}^{(s)}(A_{2u})}{2}$

z734 $\mathbb{Q}_{1,2}^{(c)}(E_u) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{1}^{(s)}(A_{2u})}{2}$

z735 $\mathbb{Q}_{1,1}^{(1,-1;c)}(E_u) = \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{1}^{(s)}(A_{2u})}{2}$

z736 $\mathbb{Q}_{1,2}^{(1,-1;c)}(E_u) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{1}^{(s)}(A_{2u})}{2}$

z737 $\mathbb{Q}_{1,1}^{(1,0;c)}(E_u) = -\frac{\sqrt{2}\mathbb{G}_{1,2}^{(1,0;a)}(E_g)\mathbb{Q}_{1}^{(s)}(A_{2u})}{2}$

z738 $\mathbb{Q}_{1,2}^{(1,0;c)}(E_u) = -\frac{\sqrt{2}\mathbb{G}_{1,1}^{(1,0;a)}(E_g)\mathbb{Q}_{1}^{(s)}(A_{2u})}{2}$

- 'Ce'-'Co' bond-cluster : `Co;Ce_001_1`
  * bra: $\langle p_x,\uparrow|$, $\langle p_x,\downarrow|$, $\langle p_y,\uparrow|$, $\langle p_y,\downarrow|$, $\langle p_z,\uparrow|$, $\langle p_z,\downarrow|$
  * ket: $|p_x,\uparrow\rangle$, $|p_x,\downarrow\rangle$, $|p_y,\uparrow\rangle$, $|p_y,\downarrow\rangle$, $|p_z,\uparrow\rangle$, $|p_z,\downarrow\rangle$
  * wyckoff: `8a@8i`

z13 $\mathbb{Q}_{0}^{(c)}(A_{1g},a) = \mathbb{Q}_{0}^{(a)}(A_{1g})\mathbb{Q}_{0}^{(b)}(A_{1g})$

z14 $\mathbb{Q}_{0}^{(c)}(A_{1g},b) = \frac{\sqrt{3}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{3} + \frac{\sqrt{3}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{3} + \frac{\sqrt{3}\mathbb{Q}_{2}^{(a)}(B_{1g})\mathbb{Q}_{2}^{(b)}(B_{1g})}{3}$

z15 $\mathbb{Q}_{2}^{(c)}(A_{1g},a) = \mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{0}^{(b)}(A_{1g})$

z16 $\mathbb{Q}_{2}^{(c)}(A_{1g},b) = \frac{\sqrt{6}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} + \frac{\sqrt{6}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{6} - \frac{\sqrt{6}\mathbb{Q}_{2}^{(a)}(B_{1g})\mathbb{Q}_{2}^{(b)}(B_{1g})}{3}$

z17 $\mathbb{Q}_{2}^{(c)}(A_{1g},c) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{2} + \frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{2}$

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

z19 $\mathbb{Q}_{2}^{(1,-1;c)}(A_{1g},a) = \mathbb{Q}_{2}^{(1,-1;a)}(A_{1g})\mathbb{Q}_{0}^{(b)}(A_{1g})$

$\boxed{\text{z20}}$ $\mathbb{Q}_2^{(1,-1;c)}(A_{1g},b) = \frac{\sqrt{6}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} + \frac{\sqrt{6}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{6} - \frac{\sqrt{6}\mathbb{Q}_2^{(1,-1;a)}(B_{1g})\mathbb{Q}_2^{(b)}(B_{1g})}{3}$

$\boxed{\text{z21}}$ $\mathbb{Q}_2^{(1,-1;c)}(A_{1g},c) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(1,-1;a)}(E_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{2} + \frac{\sqrt{2}\mathbb{M}_{1,2}^{(1,-1;a)}(E_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{2}$

$\boxed{\text{z22}}$ $\mathbb{Q}_2^{(1,-1;c)}(A_{1g},d) = -\frac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_{2,1}^{(b)}(E_g)}{6} - \frac{\sqrt{5}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_{2,1}^{(b)}(E_g)}{6} - \frac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_{2,2}^{(b)}(E_g)}{6} - \frac{\sqrt{5}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_{2,2}^{(b)}(E_g)}{6} - \frac{\sqrt{5}\mathbb{M}_3^{(1,-1;a)}(B_{1g})\mathbb{T}_2^{(b)}(B_{1g})}{3}$

$\boxed{\text{z23}}$ $\mathbb{Q}_4^{(1,-1;c)}(A_{1g},1) = \frac{\sqrt{195}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_{2,1}^{(b)}(E_g)}{78} - \frac{\sqrt{13}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_{2,1}^{(b)}(E_g)}{6} + \frac{\sqrt{195}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_{2,2}^{(b)}(E_g)}{78} - \frac{\sqrt{13}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_{2,2}^{(b)}(E_g)}{6} + \frac{5\sqrt{13}\mathbb{M}_3^{(1,-1;a)}(B_{1g})\mathbb{T}_2^{(b)}(B_{1g})}{39}$

$\boxed{\text{z24}}$ $\mathbb{Q}_4^{(1,-1;c)}(A_{1g},2) = -\frac{\sqrt{65}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_{2,1}^{(b)}(E_g)}{13} - \frac{\sqrt{65}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_{2,2}^{(b)}(E_g)}{13} + \frac{\sqrt{39}\mathbb{M}_3^{(1,-1;a)}(B_{1g})\mathbb{T}_2^{(b)}(B_{1g})}{13}$

$\boxed{\text{z25}}$ $\mathbb{Q}_0^{(1,0;c)}(A_{1g}) = \frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{3} + \frac{\sqrt{3}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{3} + \frac{\sqrt{3}\mathbb{T}_2^{(1,0;a)}(B_{1g})\mathbb{T}_2^{(b)}(B_{1g})}{3}$

$\boxed{\text{z26}}$ $\mathbb{Q}_2^{(1,0;c)}(A_{1g},a) = \frac{\sqrt{2}\mathbb{G}_{1,1}^{(1,0;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} + \frac{\sqrt{2}\mathbb{G}_{1,2}^{(1,0;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$

$\boxed{\text{z27}}$ $\mathbb{Q}_2^{(1,0;c)}(A_{1g},b) = \mathbb{T}_2^{(1,0;a)}(A_{1g})\mathbb{T}_0^{(b)}(A_{1g})$

$\boxed{\text{z28}}$ $\mathbb{Q}_2^{(1,0;c)}(A_{1g},c) = \frac{\sqrt{6}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{6} + \frac{\sqrt{6}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{6} - \frac{\sqrt{6}\mathbb{T}_2^{(1,0;a)}(B_{1g})\mathbb{T}_2^{(b)}(B_{1g})}{3}$

$\boxed{\text{z29}}$ $\mathbb{Q}_0^{(1,1;c)}(A_{1g}) = \mathbb{Q}_0^{(1,1;a)}(A_{1g})\mathbb{Q}_0^{(b)}(A_{1g})$

$\boxed{\text{z30}}$ $\mathbb{Q}_2^{(1,1;c)}(A_{1g}) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(1,1;a)}(E_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{2} + \frac{\sqrt{2}\mathbb{M}_{1,2}^{(1,1;a)}(E_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{2}$

$\boxed{\text{z70}}$ $\mathbb{Q}_5^{(c)}(A_{1u}) = \mathbb{Q}_2^{(a)}(B_{2g})\mathbb{Q}_3^{(b)}(B_{2u})$

$\boxed{\text{z71}}$ $\mathbb{Q}_5^{(1,-1;c)}(A_{1u},a) = \mathbb{Q}_2^{(1,-1;a)}(B_{2g})\mathbb{Q}_3^{(b)}(B_{2u})$

$\boxed{\text{z72}}$ $\mathbb{Q}_5^{(1,-1;c)}(A_{1u},b) = \mathbb{M}_3^{(1,-1;a)}(B_{2g})\mathbb{M}_2^{(b)}(B_{2u})$

$\boxed{\text{z73}}$ $\mathbb{G}_0^{(c)}(A_{1u}) = \frac{\sqrt{3}\mathbb{M}_{1,1}^{(a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{3} - \frac{\sqrt{3}\mathbb{M}_{1,2}^{(a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{3} + \frac{\sqrt{3}\mathbb{M}_1^{(a)}(A_{2g})\mathbb{T}_1^{(b)}(A_{2u})}{3}$

$\boxed{\text{z74}}$ $$\mathbb{G}_2^{(c)}(A_{1u},a) = -\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(E_u)}{2} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(E_u)}{2}$$

$\boxed{\text{z75}}$ $$\mathbb{G}_2^{(c)}(A_{1u},b) = -\frac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{6} + \frac{\sqrt{6}\mathbb{M}_1^{(a)}(A_{2g})\mathbb{T}_1^{(b)}(A_{2u})}{3}$$

$\boxed{\text{z76}}$ $$\mathbb{G}_0^{(1,-1;c)}(A_{1u}) = \frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,-1;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{3} - \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,-1;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{3} + \frac{\sqrt{3}\mathbb{M}_1^{(1,-1;a)}(A_{2g})\mathbb{T}_1^{(b)}(A_{2u})}{3}$$

$\boxed{\text{z77}}$ $$\mathbb{G}_2^{(1,-1;c)}(A_{1u},a) = -\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(E_u)}{2} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(E_u)}{2}$$

$\boxed{\text{z78}}$ $$\mathbb{G}_2^{(1,-1;c)}(A_{1u},b) = -\frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{6} + \frac{\sqrt{6}\mathbb{M}_1^{(1,-1;a)}(A_{2g})\mathbb{T}_1^{(b)}(A_{2u})}{3}$$

$\boxed{\text{z79}}$ $$\mathbb{G}_2^{(1,-1;c)}(A_{1u},c) = -\frac{\sqrt{21}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1,1}^{(b)}(E_u)}{14} - \frac{\sqrt{35}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1,1}^{(b)}(E_u)}{14} + \frac{\sqrt{21}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1,2}^{(b)}(E_u)}{14} + \frac{\sqrt{35}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1,2}^{(b)}(E_u)}{14} + \frac{\sqrt{21}\mathbb{M}_3^{(1,-1;a)}(A_{2g})\mathbb{T}_1^{(b)}(A_{2u})}{7}$$

$\boxed{\text{z80}}$ $$\mathbb{G}_4^{(1,-1;c)}(A_{1u},1) = \frac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1,1}^{(b)}(E_u)}{3} - \frac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1,2}^{(b)}(E_u)}{3} + \frac{\sqrt{3}\mathbb{M}_3^{(1,-1;a)}(A_{2g})\mathbb{T}_1^{(b)}(A_{2u})}{3}$$

$\boxed{\text{z81}}$ $$\begin{aligned}\mathbb{G}_4^{(1,-1;c)}(A_{1u},2) = &-\frac{\sqrt{105}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1,1}^{(b)}(E_u)}{42} + \frac{3\sqrt{7}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1,1}^{(b)}(E_u)}{14} + \frac{\sqrt{105}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1,2}^{(b)}(E_u)}{42}\\ &- \frac{3\sqrt{7}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1,2}^{(b)}(E_u)}{14} + \frac{\sqrt{105}\mathbb{M}_3^{(1,-1;a)}(A_{2g})\mathbb{T}_1^{(b)}(A_{2u})}{21}\end{aligned}$$

$\boxed{\text{z82}}$ $$\mathbb{G}_0^{(1,0;c)}(A_{1u},a) = \frac{\sqrt{3}\mathbb{G}_{1,1}^{(1,0;a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(E_u)}{3} - \frac{\sqrt{3}\mathbb{G}_{1,2}^{(1,0;a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(E_u)}{3} + \frac{\sqrt{3}\mathbb{G}_1^{(1,0;a)}(A_{2g})\mathbb{Q}_1^{(b)}(A_{2u})}{3}$$

$\boxed{\text{z83}}$ $$\mathbb{G}_0^{(1,0;c)}(A_{1u},b) = \mathbb{T}_2^{(1,0;a)}(B_{2g})\mathbb{M}_2^{(b)}(B_{2u})$$

$\boxed{\text{z84}}$ $$\mathbb{G}_2^{(1,0;c)}(A_{1u},a) = -\frac{\sqrt{6}\mathbb{G}_{1,1}^{(1,0;a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(E_u)}{6} + \frac{\sqrt{6}\mathbb{G}_{1,2}^{(1,0;a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(E_u)}{6} + \frac{\sqrt{6}\mathbb{G}_1^{(1,0;a)}(A_{2g})\mathbb{Q}_1^{(b)}(A_{2u})}{3}$$

$\boxed{\text{z85}}$ $$\mathbb{G}_2^{(1,0;c)}(A_{1u},b) = -\frac{\sqrt{2}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{2} + \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{2}$$

$\boxed{\text{z86}}$ $$\mathbb{G}_0^{(1,1;c)}(A_{1u}) = \frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,1;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{3} - \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,1;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{3} + \frac{\sqrt{3}\mathbb{M}_1^{(1,1;a)}(A_{2g})\mathbb{T}_1^{(b)}(A_{2u})}{3}$$

$\boxed{\text{z87}}$ $$\mathbb{G}_{2}^{(1,1;c)}(A_{1u}) = -\frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,1;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,1;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{6} + \frac{\sqrt{6}\mathbb{M}_{1}^{(1,1;a)}(A_{2g})\mathbb{T}_{1}^{(b)}(A_{2u})}{3}$$

$\boxed{\text{z130}}$ $$\mathbb{Q}_{4}^{(c)}(A_{2g}) = \mathbb{Q}_{2}^{(a)}(B_{2g})\mathbb{Q}_{2}^{(b)}(B_{1g})$$

$\boxed{\text{z131}}$ $$\mathbb{Q}_{4}^{(1,-1;c)}(A_{2g},a) = \mathbb{Q}_{2}^{(1,-1;a)}(B_{2g})\mathbb{Q}_{2}^{(b)}(B_{1g})$$

$\boxed{\text{z132}}$ $$\mathbb{Q}_{4}^{(1,-1;c)}(A_{2g},b) = -\frac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_{2,2}^{(b)}(E_g)}{8} + \frac{3\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_{2,2}^{(b)}(E_g)}{8} + \frac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_{2,1}^{(b)}(E_g)}{8} - \frac{3\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_{2,1}^{(b)}(E_g)}{8} + \frac{\mathbb{M}_{3}^{(1,-1;a)}(B_{2g})\mathbb{T}_{2}^{(b)}(B_{1g})}{2}$$

$\boxed{\text{z133}}$ $$\mathbb{Q}_{4}^{(1,0;c)}(A_{2g}) = \mathbb{T}_{2}^{(1,0;a)}(B_{2g})\mathbb{T}_{2}^{(b)}(B_{1g})$$

$\boxed{\text{z134}}$ $$\mathbb{G}_{1}^{(c)}(A_{2g},a) = -\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

$\boxed{\text{z135}}$ $$\mathbb{G}_{1}^{(c)}(A_{2g},b) = \mathbb{M}_{1}^{(a)}(A_{2g})\mathbb{T}_{0}^{(b)}(A_{1g})$$

$\boxed{\text{z136}}$ $$\mathbb{G}_{1}^{(c)}(A_{2g},c) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{2} - \frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{2}$$

$\boxed{\text{z137}}$ $$\mathbb{G}_{1}^{(1,-1;c)}(A_{2g},a) = -\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

$\boxed{\text{z138}}$ $$\mathbb{G}_{1}^{(1,-1;c)}(A_{2g},b) = \mathbb{M}_{1}^{(1,-1;a)}(A_{2g})\mathbb{T}_{0}^{(b)}(A_{1g})$$

$\boxed{\text{z139}}$ $$\mathbb{G}_{1}^{(1,-1;c)}(A_{2g},c) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(1,-1;a)}(E_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{2} - \frac{\sqrt{2}\mathbb{M}_{1,2}^{(1,-1;a)}(E_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{2}$$

$\boxed{\text{z140}}$ $$\mathbb{G}_{1}^{(1,-1;c)}(A_{2g},d) = -\frac{11\sqrt{237}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_{2,2}^{(b)}(E_g)}{632} - \frac{19\sqrt{395}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_{2,2}^{(b)}(E_g)}{632} + \frac{11\sqrt{237}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_{2,1}^{(b)}(E_g)}{632} + \frac{19\sqrt{395}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_{2,1}^{(b)}(E_g)}{632} + \frac{3\sqrt{395}\mathbb{M}_{3}^{(1,-1;a)}(B_{2g})\mathbb{T}_{2}^{(b)}(B_{1g})}{158}$$

$\boxed{\text{z141}}$ $$\mathbb{G}_{3}^{(1,-1;c)}(A_{2g},a) = \mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{T}_{0}^{(b)}(A_{1g})$$

$\boxed{\text{z142}}$ $$\mathbb{G}_{3}^{(1,-1;c)}(A_{2g},b) = -\frac{7\sqrt{395}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_{2,2}^{(b)}(E_g)}{316} - \frac{\sqrt{237}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_{2,2}^{(b)}(E_g)}{316} + \frac{7\sqrt{395}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_{2,1}^{(b)}(E_g)}{316} + \frac{\sqrt{237}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_{2,1}^{(b)}(E_g)}{316} - \frac{4\sqrt{237}\mathbb{M}_{3}^{(1,-1;a)}(B_{2g})\mathbb{T}_{2}^{(b)}(B_{1g})}{79}$$

$\boxed{\text{z143}}$ $\mathbb{G}_1^{(1,0;c)}(A_{2g},a) = \mathbb{G}_1^{(1,0;a)}(A_{2g})\mathbb{Q}_0^{(b)}(A_{1g})$

$\boxed{\text{z144}}$ $\mathbb{G}_1^{(1,0;c)}(A_{2g},b) = \frac{\sqrt{2}\mathbb{G}_{1,1}^{(1,0;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2} - \frac{\sqrt{2}\mathbb{G}_{1,2}^{(1,0;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$

$\boxed{\text{z145}}$ $\mathbb{G}_1^{(1,0;c)}(A_{2g},c) = -\frac{\sqrt{2}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{2} + \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{2}$

$\boxed{\text{z146}}$ $\mathbb{G}_1^{(1,1;c)}(A_{2g},a) = \mathbb{M}_1^{(1,1;a)}(A_{2g})\mathbb{T}_0^{(b)}(A_{1g})$

$\boxed{\text{z147}}$ $\mathbb{G}_1^{(1,1;c)}(A_{2g},b) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(1,1;a)}(E_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{2} - \frac{\sqrt{2}\mathbb{M}_{1,2}^{(1,1;a)}(E_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{2}$

$\boxed{\text{z190}}$ $\mathbb{Q}_1^{(c)}(A_{2u},a) = \mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_1^{(b)}(A_{2u})$

$\boxed{\text{z191}}$ $\mathbb{Q}_1^{(c)}(A_{2u},b) = \frac{\sqrt{30}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(E_u)}{10} + \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(E_u)}{10} + \frac{\sqrt{10}\mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_1^{(b)}(A_{2u})}{5}$

$\boxed{\text{z192}}$ $\mathbb{Q}_1^{(c)}(A_{2u},c) = \mathbb{Q}_2^{(a)}(B_{1g})\mathbb{Q}_3^{(b)}(B_{2u})$

$\boxed{\text{z193}}$ $\mathbb{Q}_1^{(c)}(A_{2u},d) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{2} + \frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{2}$

$\boxed{\text{z194}}$ $\mathbb{Q}_3^{(c)}(A_{2u}) = -\frac{\sqrt{5}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(E_u)}{5} - \frac{\sqrt{5}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(E_u)}{5} + \frac{\sqrt{15}\mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_1^{(b)}(A_{2u})}{5}$

$\boxed{\text{z195}}$ $\mathbb{Q}_1^{(1,-1;c)}(A_{2u},a) = \frac{\sqrt{30}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(E_u)}{10} + \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(E_u)}{10} + \frac{\sqrt{10}\mathbb{Q}_2^{(1,-1;a)}(A_{1g})\mathbb{Q}_1^{(b)}(A_{2u})}{5}$

$\boxed{\text{z196}}$ $\mathbb{Q}_1^{(1,-1;c)}(A_{2u},b) = \mathbb{Q}_2^{(1,-1;a)}(B_{1g})\mathbb{Q}_3^{(b)}(B_{2u})$

$\boxed{\text{z197}}$ $\mathbb{Q}_1^{(1,-1;c)}(A_{2u},c) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(1,-1;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{2} + \frac{\sqrt{2}\mathbb{M}_{1,2}^{(1,-1;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{2}$

$\boxed{\text{z198}}$ $\mathbb{Q}_1^{(1,-1;c)}(A_{2u},d) = \mathbb{M}_3^{(1,-1;a)}(B_{1g})\mathbb{M}_2^{(b)}(B_{2u})$

$\boxed{\text{z199}}$ $\mathbb{Q}_3^{(1,-1;c)}(A_{2u},a) = -\frac{\sqrt{5}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(E_u)}{5} - \frac{\sqrt{5}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(E_u)}{5} + \frac{\sqrt{15}\mathbb{Q}_2^{(1,-1;a)}(A_{1g})\mathbb{Q}_1^{(b)}(A_{2u})}{5}$

$\boxed{\text{z200}}$ $\mathbb{Q}_3^{(1,-1;c)}(A_{2u},b) = -\frac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1,2}^{(b)}(E_u)}{4} - \frac{\sqrt{5}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1,2}^{(b)}(E_u)}{4} - \frac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1,1}^{(b)}(E_u)}{4} - \frac{\sqrt{5}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1,1}^{(b)}(E_u)}{4}$

$\boxed{\text{z201}}$ $\mathbb{Q}_1^{(1,0;c)}(A_{2u},a) = \frac{\sqrt{2}\mathbb{G}_{1,1}^{(1,0;a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(E_u)}{2} + \frac{\sqrt{2}\mathbb{G}_{1,2}^{(1,0;a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(E_u)}{2}$

$\boxed{\text{z202}}$ $\mathbb{Q}_1^{(1,0;c)}(A_{2u},b) = \frac{\sqrt{30}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{10} + \frac{\sqrt{30}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{10} + \frac{\sqrt{10}\mathbb{T}_{2}^{(1,0;a)}(A_{1g})\mathbb{T}_{1}^{(b)}(A_{2u})}{5}$

$\boxed{\text{z203}}$ $\mathbb{Q}_1^{(1,0;c)}(A_{2u},c) = \mathbb{T}_2^{(1,0;a)}(B_{1g})\mathbb{M}_2^{(b)}(B_{2u})$

$\boxed{\text{z204}}$ $\mathbb{Q}_3^{(1,0;c)}(A_{2u}) = -\frac{\sqrt{5}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{5} - \frac{\sqrt{5}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{5} + \frac{\sqrt{15}\mathbb{T}_{2}^{(1,0;a)}(A_{1g})\mathbb{T}_{1}^{(b)}(A_{2u})}{5}$

$\boxed{\text{z205}}$ $\mathbb{Q}_1^{(1,1;c)}(A_{2u},a) = \mathbb{Q}_0^{(1,1;a)}(A_{1g})\mathbb{Q}_1^{(b)}(A_{2u})$

$\boxed{\text{z206}}$ $\mathbb{Q}_1^{(1,1;c)}(A_{2u},b) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(1,1;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{2} + \frac{\sqrt{2}\mathbb{M}_{1,2}^{(1,1;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{2}$

$\boxed{\text{z207}}$ $\mathbb{G}_4^{(1,-1;c)}(A_{2u}) = \frac{\sqrt{5}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1,2}^{(b)}(E_u)}{4} - \frac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1,2}^{(b)}(E_u)}{4} + \frac{\sqrt{5}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1,1}^{(b)}(E_u)}{4} - \frac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1,1}^{(b)}(E_u)}{4}$

$\boxed{\text{z262}}$ $\mathbb{Q}_2^{(c)}(B_{1g},a) = \mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_2^{(b)}(B_{1g})$

$\boxed{\text{z263}}$ $\mathbb{Q}_2^{(c)}(B_{1g},b) = \mathbb{Q}_2^{(a)}(B_{1g})\mathbb{Q}_0^{(b)}(A_{1g})$

$\boxed{\text{z264}}$ $\mathbb{Q}_2^{(c)}(B_{1g},c) = -\frac{\sqrt{30}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{10} + \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{10} - \frac{\sqrt{10}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{2}^{(b)}(B_{1g})}{5}$

$\boxed{\text{z265}}$ $\mathbb{Q}_2^{(c)}(B_{1g},d) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{2} - \frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{2}$

$\boxed{\text{z266}}$ $\mathbb{Q}_4^{(c)}(B_{1g}) = \frac{\sqrt{5}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{5} - \frac{\sqrt{5}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{5} - \frac{\sqrt{15}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{2}^{(b)}(B_{1g})}{5}$

$\boxed{\text{z267}}$ $\mathbb{Q}_2^{(1,-1;c)}(B_{1g},a) = \mathbb{Q}_2^{(1,-1;a)}(B_{1g})\mathbb{Q}_0^{(b)}(A_{1g})$

$\boxed{\text{z268}}$ $\mathbb{Q}_2^{(1,-1;c)}(B_{1g},b) = -\frac{\sqrt{30}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{10} + \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{10} - \frac{\sqrt{10}\mathbb{Q}_{2}^{(1,-1;a)}(A_{1g})\mathbb{Q}_{2}^{(b)}(B_{1g})}{5}$

$\boxed{\text{z269}}$ $\mathbb{Q}_2^{(1,-1;c)}(B_{1g},c)=\frac{\sqrt{2}\mathbb{M}_{1,1}^{(1,-1;a)}(E_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{2}-\frac{\sqrt{2}\mathbb{M}_{1,2}^{(1,-1;a)}(E_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{2}$

$\boxed{\text{z270}}$ $\mathbb{Q}_2^{(1,-1;c)}(B_{1g},d)=-\frac{\sqrt{2}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_{2,1}^{(b)}(E_g)}{8}+\frac{\sqrt{30}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_{2,1}^{(b)}(E_g)}{8}+\frac{\sqrt{2}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_{2,2}^{(b)}(E_g)}{8}-\frac{\sqrt{30}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_{2,2}^{(b)}(E_g)}{8}$

$\boxed{\text{z271}}$ $\mathbb{Q}_4^{(1,-1;c)}(B_{1g},a)=\frac{\sqrt{5}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{5}-\frac{\sqrt{5}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{5}-\frac{\sqrt{15}\mathbb{Q}_{2}^{(1,-1;a)}(A_{1g})\mathbb{Q}_{2}^{(b)}(B_{1g})}{5}$

$\boxed{\text{z272}}$ $\mathbb{Q}_4^{(1,-1;c)}(B_{1g},b)=-\frac{\sqrt{30}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_{2,1}^{(b)}(E_g)}{8}-\frac{\sqrt{2}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_{2,1}^{(b)}(E_g)}{8}+\frac{\sqrt{30}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_{2,2}^{(b)}(E_g)}{8}+\frac{\sqrt{2}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_{2,2}^{(b)}(E_g)}{8}$

$\boxed{\text{z273}}$ $\mathbb{Q}_2^{(1,0;c)}(B_{1g},a)=\frac{\sqrt{2}\mathbb{G}_{1,1}^{(1,0;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}-\frac{\sqrt{2}\mathbb{G}_{1,2}^{(1,0;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$

$\boxed{\text{z274}}$ $\mathbb{Q}_2^{(1,0;c)}(B_{1g},b)=\mathbb{T}_2^{(1,0;a)}(B_{1g})\mathbb{T}_0^{(b)}(A_{1g})$

$\boxed{\text{z275}}$ $\mathbb{Q}_2^{(1,0;c)}(B_{1g},c)=-\frac{\sqrt{30}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{10}+\frac{\sqrt{30}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{10}-\frac{\sqrt{10}\mathbb{T}_{2}^{(1,0;a)}(A_{1g})\mathbb{T}_{2}^{(b)}(B_{1g})}{5}$

$\boxed{\text{z276}}$ $\mathbb{Q}_4^{(1,0;c)}(B_{1g})=\frac{\sqrt{5}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{5}-\frac{\sqrt{5}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{5}-\frac{\sqrt{15}\mathbb{T}_{2}^{(1,0;a)}(A_{1g})\mathbb{T}_{2}^{(b)}(B_{1g})}{5}$

$\boxed{\text{z277}}$ $\mathbb{Q}_2^{(1,1;c)}(B_{1g},a)=\mathbb{Q}_0^{(1,1;a)}(A_{1g})\mathbb{Q}_2^{(b)}(B_{1g})$

$\boxed{\text{z278}}$ $\mathbb{Q}_2^{(1,1;c)}(B_{1g},b)=\frac{\sqrt{2}\mathbb{M}_{1,1}^{(1,1;a)}(E_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{2}-\frac{\sqrt{2}\mathbb{M}_{1,2}^{(1,1;a)}(E_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{2}$

$\boxed{\text{z279}}$ $\mathbb{G}_3^{(1,-1;c)}(B_{1g})=\mathbb{M}_3^{(1,-1;a)}(B_{1g})\mathbb{T}_0^{(b)}(A_{1g})$

$\boxed{\text{z280}}$ $\mathbb{Q}_3^{(c)}(B_{1u},a)=\frac{\sqrt{3}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(E_u)}{3}+\frac{\sqrt{3}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(E_u)}{3}+\frac{\sqrt{3}\mathbb{Q}_{2}^{(a)}(B_{2g})\mathbb{Q}_{1}^{(b)}(A_{2u})}{3}$

$\boxed{\text{z281}}$ $\mathbb{Q}_3^{(c)}(B_{1u},b)=\mathbb{M}_1^{(a)}(A_{2g})\mathbb{M}_2^{(b)}(B_{2u})$

$\boxed{\text{z282}}$ $\mathbb{Q}_3^{(1,-1;c)}(B_{1u},a)=\frac{\sqrt{3}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(E_u)}{3}+\frac{\sqrt{3}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(E_u)}{3}+\frac{\sqrt{3}\mathbb{Q}_{2}^{(1,-1;a)}(B_{2g})\mathbb{Q}_{1}^{(b)}(A_{2u})}{3}$

$\boxed{\text{z283}}$ $\mathbb{Q}_3^{(1,-1;c)}(B_{1u},b)=\mathbb{M}_1^{(1,-1;a)}(A_{2g})\mathbb{M}_2^{(b)}(B_{2u})$

$\boxed{\text{z284}}$ $\mathbb{Q}_3^{(1,-1;c)}(B_{1u},c) = -\frac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1,1}^{(b)}(E_u)}{3} - \frac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1,2}^{(b)}(E_u)}{3} - \frac{\sqrt{3}\mathbb{M}_{3}^{(1,-1;a)}(B_{2g})\mathbb{T}_{1}^{(b)}(A_{2u})}{3}$

$\boxed{\text{z285}}$ $\mathbb{Q}_3^{(1,-1;c)}(B_{1u},d) = -\mathbb{M}_3^{(1,-1;a)}(A_{2g})\mathbb{M}_2^{(b)}(B_{2u})$

$\boxed{\text{z286}}$ $\mathbb{Q}_3^{(1,0;c)}(B_{1u},a) = \mathbb{G}_1^{(1,0;a)}(A_{2g})\mathbb{Q}_3^{(b)}(B_{2u})$

$\boxed{\text{z287}}$ $\mathbb{Q}_3^{(1,0;c)}(B_{1u},b) = \frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{3} + \frac{\sqrt{3}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{3} + \frac{\sqrt{3}\mathbb{T}_{2}^{(1,0;a)}(B_{2g})\mathbb{T}_{1}^{(b)}(A_{2u})}{3}$

$\boxed{\text{z288}}$ $\mathbb{Q}_3^{(1,1;c)}(B_{1u}) = \mathbb{M}_1^{(1,1;a)}(A_{2g})\mathbb{M}_2^{(b)}(B_{2u})$

$\boxed{\text{z289}}$ $\mathbb{G}_2^{(c)}(B_{1u},a) = -\frac{\sqrt{6}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(E_u)}{6} - \frac{\sqrt{6}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(E_u)}{6} + \frac{\sqrt{6}\mathbb{Q}_{2}^{(a)}(B_{2g})\mathbb{Q}_{1}^{(b)}(A_{2u})}{3}$

$\boxed{\text{z290}}$ $\mathbb{G}_2^{(c)}(B_{1u},b) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{2} + \frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{2}$

$\boxed{\text{z291}}$ $\mathbb{G}_2^{(1,-1;c)}(B_{1u},a) = -\frac{\sqrt{6}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(E_u)}{6} - \frac{\sqrt{6}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(E_u)}{6} + \frac{\sqrt{6}\mathbb{Q}_{2}^{(1,-1;a)}(B_{2g})\mathbb{Q}_{1}^{(b)}(A_{2u})}{3}$

$\boxed{\text{z292}}$ $\mathbb{G}_2^{(1,-1;c)}(B_{1u},b) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(1,-1;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{2} + \frac{\sqrt{2}\mathbb{M}_{1,2}^{(1,-1;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{2}$

$\boxed{\text{z293}}$ $\mathbb{G}_2^{(1,-1;c)}(B_{1u},c) = \frac{3\sqrt{7}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1,1}^{(b)}(E_u)}{14} - \frac{\sqrt{105}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1,1}^{(b)}(E_u)}{42} + \frac{3\sqrt{7}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1,2}^{(b)}(E_u)}{14} - \frac{\sqrt{105}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1,2}^{(b)}(E_u)}{42} + \frac{\sqrt{105}\mathbb{M}_{3}^{(1,-1;a)}(B_{2g})\mathbb{T}_{1}^{(b)}(A_{2u})}{21}$

$\boxed{\text{z294}}$ $\mathbb{G}_4^{(1,-1;c)}(B_{1u}) = \frac{\sqrt{35}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1,1}^{(b)}(E_u)}{14} + \frac{\sqrt{21}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1,1}^{(b)}(E_u)}{14} + \frac{\sqrt{35}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1,2}^{(b)}(E_u)}{14} + \frac{\sqrt{21}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1,2}^{(b)}(E_u)}{14} - \frac{\sqrt{21}\mathbb{M}_{3}^{(1,-1;a)}(B_{2g})\mathbb{T}_{1}^{(b)}(A_{2u})}{7}$

$\boxed{\text{z295}}$ $\mathbb{G}_2^{(1,0;c)}(B_{1u},a) = \frac{\sqrt{2}\mathbb{G}_{1,1}^{(1,0;a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(E_u)}{2} + \frac{\sqrt{2}\mathbb{G}_{1,2}^{(1,0;a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(E_u)}{2}$

$\boxed{\text{z296}}$ $\mathbb{G}_2^{(1,0;c)}(B_{1u},b) = -\frac{\sqrt{6}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{6} - \frac{\sqrt{6}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{6} + \frac{\sqrt{6}\mathbb{T}_{2}^{(1,0;a)}(B_{2g})\mathbb{T}_{1}^{(b)}(A_{2u})}{3}$

$\boxed{\text{z297}}$ $\mathbb{G}_2^{(1,1;c)}(B_{1u}) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(1,1;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{2} + \frac{\sqrt{2}\mathbb{M}_{1,2}^{(1,1;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{2}$

$$\boxed{\text{z298}}\quad \mathbb{Q}_{2}^{(c)}(B_{2g},a) = \mathbb{Q}_{2}^{(a)}(B_{2g})\mathbb{Q}_{0}^{(b)}(A_{1g})$$

$$\boxed{\text{z299}}\quad \mathbb{Q}_{2}^{(c)}(B_{2g},b) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z300}}\quad \mathbb{Q}_{2}^{(c)}(B_{2g},c) = -\frac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(E_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{6} - \frac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(E_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{6} + \frac{\sqrt{6}\mathbb{M}_{1}^{(a)}(A_{2g})\mathbb{T}_{2}^{(b)}(B_{1g})}{3}$$

$$\boxed{\text{z301}}\quad \mathbb{Q}_{2}^{(1,-1;c)}(B_{2g},a) = \mathbb{Q}_{2}^{(1,-1;a)}(B_{2g})\mathbb{Q}_{0}^{(b)}(A_{1g})$$

$$\boxed{\text{z302}}\quad \mathbb{Q}_{2}^{(1,-1;c)}(B_{2g},b) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

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

$$\boxed{\text{z304}}\quad \mathbb{Q}_{2}^{(1,-1;c)}(B_{2g},d) = -\frac{2\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_{2,2}^{(b)}(E_g)}{3} - \frac{2\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_{2,1}^{(b)}(E_g)}{3} - \frac{\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{T}_{2}^{(b)}(B_{1g})}{3}$$

$$\boxed{\text{z305}}\quad \mathbb{Q}_{4}^{(1,-1;c)}(B_{2g}) = -\frac{\sqrt{5}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_{2,2}^{(b)}(E_g)}{12} - \frac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_{2,2}^{(b)}(E_g)}{4} - \frac{\sqrt{5}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_{2,1}^{(b)}(E_g)}{12} - \frac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_{2,1}^{(b)}(E_g)}{4} + \frac{\sqrt{5}\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{T}_{2}^{(b)}(B_{1g})}{3}$$

$$\boxed{\text{z306}}\quad \mathbb{Q}_{2}^{(1,0;c)}(B_{2g},a) = -\frac{\sqrt{6}\mathbb{G}_{1,1}^{(1,0;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{6} - \frac{\sqrt{6}\mathbb{G}_{1,2}^{(1,0;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} + \frac{\sqrt{6}\mathbb{G}_{1}^{(1,0;a)}(A_{2g})\mathbb{Q}_{2}^{(b)}(B_{1g})}{3}$$

$$\boxed{\text{z307}}\quad \mathbb{Q}_{2}^{(1,0;c)}(B_{2g},b) = \mathbb{T}_{2}^{(1,0;a)}(B_{2g})\mathbb{T}_{0}^{(b)}(A_{1g})$$

$$\boxed{\text{z308}}\quad \mathbb{Q}_{2}^{(1,0;c)}(B_{2g},c) = \frac{\sqrt{2}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{2} + \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{2}$$

$$\boxed{\text{z309}}\quad \mathbb{Q}_{2}^{(1,1;c)}(B_{2g}) = -\frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,1;a)}(E_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{6} - \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,1;a)}(E_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{6} + \frac{\sqrt{6}\mathbb{M}_{1}^{(1,1;a)}(A_{2g})\mathbb{T}_{2}^{(b)}(B_{1g})}{3}$$

$$\boxed{\text{z310}}\quad \mathbb{G}_{3}^{(c)}(B_{2g}) = \frac{\sqrt{3}\mathbb{M}_{1,1}^{(a)}(E_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{3} + \frac{\sqrt{3}\mathbb{M}_{1,2}^{(a)}(E_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{3} + \frac{\sqrt{3}\mathbb{M}_{1}^{(a)}(A_{2g})\mathbb{T}_{2}^{(b)}(B_{1g})}{3}$$

$$\boxed{\text{z311}}\quad \mathbb{G}_{3}^{(1,-1;c)}(B_{2g},a) = \frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,-1;a)}(E_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{3} + \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,-1;a)}(E_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{3} + \frac{\sqrt{3}\mathbb{M}_{1}^{(1,-1;a)}(A_{2g})\mathbb{T}_{2}^{(b)}(B_{1g})}{3}$$

$\boxed{\text{z312}}$ $\mathbb{G}_{3}^{(1,-1;c)}(B_{2g},b)=\mathbb{M}_{3}^{(1,-1;a)}(B_{2g})\mathbb{T}_{0}^{(b)}(A_{1g})$

$\boxed{\text{z313}}$ $\mathbb{G}_{3}^{(1,-1;c)}(B_{2g},c)=\frac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_{2,2}^{(b)}(E_g)}{12}-\frac{\sqrt{5}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_{2,2}^{(b)}(E_g)}{4}+\frac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_{2,1}^{(b)}(E_g)}{12}-\frac{\sqrt{5}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_{2,1}^{(b)}(E_g)}{4}-\frac{\sqrt{3}\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{T}_{2}^{(b)}(B_{1g})}{3}$

$\boxed{\text{z314}}$ $\mathbb{G}_{3}^{(1,0;c)}(B_{2g})=\frac{\sqrt{3}\mathbb{G}_{1,1}^{(1,0;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{3}+\frac{\sqrt{3}\mathbb{G}_{1,2}^{(1,0;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{3}+\frac{\sqrt{3}\mathbb{G}_{1}^{(1,0;a)}(A_{2g})\mathbb{Q}_{2}^{(b)}(B_{1g})}{3}$

$\boxed{\text{z315}}$ $\mathbb{G}_{3}^{(1,1;c)}(B_{2g})=\frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,1;a)}(E_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{3}+\frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,1;a)}(E_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{3}+\frac{\sqrt{3}\mathbb{M}_{1}^{(1,1;a)}(A_{2g})\mathbb{T}_{2}^{(b)}(B_{1g})}{3}$

$\boxed{\text{z316}}$ $\mathbb{Q}_{3}^{(c)}(B_{2u},a)=\mathbb{Q}_{0}^{(a)}(A_{1g})\mathbb{Q}_{3}^{(b)}(B_{2u})$

$\boxed{\text{z317}}$ $\mathbb{Q}_{3}^{(c)}(B_{2u},b)=-\frac{\sqrt{3}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(E_u)}{3}+\frac{\sqrt{3}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(E_u)}{3}+\frac{\sqrt{3}\mathbb{Q}_{2}^{(a)}(B_{1g})\mathbb{Q}_{1}^{(b)}(A_{2u})}{3}$

$\boxed{\text{z318}}$ $\mathbb{Q}_{5}^{(c)}(B_{2u})=\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{3}^{(b)}(B_{2u})$

$\boxed{\text{z319}}$ $\mathbb{Q}_{3}^{(1,-1;c)}(B_{2u},a)=-\frac{\sqrt{3}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(E_u)}{3}+\frac{\sqrt{3}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(E_u)}{3}+\frac{\sqrt{3}\mathbb{Q}_{2}^{(1,-1;a)}(B_{1g})\mathbb{Q}_{1}^{(b)}(A_{2u})}{3}$

$\boxed{\text{z320}}$ $\mathbb{Q}_{3}^{(1,-1;c)}(B_{2u},b)=\frac{\sqrt{5}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1,2}^{(b)}(E_u)}{4}+\frac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1,2}^{(b)}(E_u)}{12}-\frac{\sqrt{5}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1,1}^{(b)}(E_u)}{4}-\frac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1,1}^{(b)}(E_u)}{12}+\frac{\sqrt{3}\mathbb{M}_{3}^{(1,-1;a)}(B_{1g})\mathbb{T}_{1}^{(b)}(A_{2u})}{3}$

$\boxed{\text{z321}}$ $\mathbb{Q}_{5}^{(1,-1;c)}(B_{2u})=\mathbb{Q}_{2}^{(1,-1;a)}(A_{1g})\mathbb{Q}_{3}^{(b)}(B_{2u})$

$\boxed{\text{z322}}$ $\mathbb{Q}_{3}^{(1,0;c)}(B_{2u},a)=-\frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{3}+\frac{\sqrt{3}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{3}+\frac{\sqrt{3}\mathbb{T}_{2}^{(1,0;a)}(B_{1g})\mathbb{T}_{1}^{(b)}(A_{2u})}{3}$

$\boxed{\text{z323}}$ $\mathbb{Q}_{3}^{(1,0;c)}(B_{2u},b)=-\mathbb{T}_{2}^{(1,0;a)}(A_{1g})\mathbb{M}_{2}^{(b)}(B_{2u})$

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

$\boxed{\text{z325}}$ $\mathbb{G}_{2}^{(c)}(B_{2u},a)=-\frac{\sqrt{6}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(E_u)}{6}+\frac{\sqrt{6}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(E_u)}{6}-\frac{\sqrt{6}\mathbb{Q}_{2}^{(a)}(B_{1g})\mathbb{Q}_{1}^{(b)}(A_{2u})}{3}$

$\boxed{\text{z326}}$ $\mathbb{G}_{2}^{(c)}(B_{2u},b)=\frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{2}-\frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{2}$

$\boxed{\text{z327}}$ $$\mathbb{G}_{2}^{(1,-1;c)}(B_{2u},a) = -\frac{\sqrt{6}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(E_u)}{6} + \frac{\sqrt{6}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(E_u)}{6} - \frac{\sqrt{6}\mathbb{Q}_{2}^{(1,-1;a)}(B_{1g})\mathbb{Q}_{1}^{(b)}(A_{2u})}{3}$$

$\boxed{\text{z328}}$ $$\mathbb{G}_{2}^{(1,-1;c)}(B_{2u},b) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(1,-1;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{2} - \frac{\sqrt{2}\mathbb{M}_{1,2}^{(1,-1;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{2}$$

$\boxed{\text{z329}}$ $$\mathbb{G}_{2}^{(1,-1;c)}(B_{2u},c) = -\frac{\sqrt{7}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1,2}^{(b)}(E_u)}{7} + \frac{\sqrt{105}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1,2}^{(b)}(E_u)}{21} + \frac{\sqrt{7}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1,1}^{(b)}(E_u)}{7} - \frac{\sqrt{105}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1,1}^{(b)}(E_u)}{21} + \frac{\sqrt{105}\mathbb{M}_{3}^{(1,-1;a)}(B_{1g})\mathbb{T}_{1}^{(b)}(A_{2u})}{21}$$

$\boxed{\text{z330}}$ $$\mathbb{G}_{4}^{(1,-1;c)}(B_{2u}) = -\frac{\sqrt{35}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1,2}^{(b)}(E_u)}{28} - \frac{3\sqrt{21}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1,2}^{(b)}(E_u)}{28} + \frac{\sqrt{35}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1,1}^{(b)}(E_u)}{28} + \frac{3\sqrt{21}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1,1}^{(b)}(E_u)}{28} + \frac{\sqrt{21}\mathbb{M}_{3}^{(1,-1;a)}(B_{1g})\mathbb{T}_{1}^{(b)}(A_{2u})}{7}$$

$\boxed{\text{z331}}$ $$\mathbb{G}_{2}^{(1,0;c)}(B_{2u},a) = \frac{\sqrt{2}\mathbb{G}_{1,1}^{(1,0;a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(E_u)}{2} - \frac{\sqrt{2}\mathbb{G}_{1,2}^{(1,0;a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(E_u)}{2}$$

$\boxed{\text{z332}}$ $$\mathbb{G}_{2}^{(1,0;c)}(B_{2u},b) = -\frac{\sqrt{6}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{6} + \frac{\sqrt{6}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{6} - \frac{\sqrt{6}\mathbb{T}_{2}^{(1,0;a)}(B_{1g})\mathbb{T}_{1}^{(b)}(A_{2u})}{3}$$

$\boxed{\text{z333}}$ $$\mathbb{G}_{2}^{(1,1;c)}(B_{2u}) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(1,1;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{2} - \frac{\sqrt{2}\mathbb{M}_{1,2}^{(1,1;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{2}$$

$\boxed{\text{z482}}$ $$\mathbb{Q}_{2,1}^{(c)}(E_g,a) = \frac{\sqrt{2}\mathbb{Q}_{0}^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

$\boxed{\text{z483}}$ $$\mathbb{Q}_{2,2}^{(c)}(E_g,a) = \frac{\sqrt{2}\mathbb{Q}_{0}^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$\boxed{\text{z484}}$ $$\mathbb{Q}_{2,1}^{(c)}(E_g,b) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$$

$\boxed{\text{z485}}$ $$\mathbb{Q}_{2,2}^{(c)}(E_g,b) = \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$$

$\boxed{\text{z486}}$ $$\mathbb{Q}_{2,1}^{(c)}(E_g,c) = -\frac{\sqrt{15}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2}^{(b)}(B_{1g})}{10} + \frac{\sqrt{5}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{10} - \frac{\sqrt{15}\mathbb{Q}_{2}^{(a)}(B_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{10} + \frac{\sqrt{15}\mathbb{Q}_{2}^{(a)}(B_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{10}$$

$\boxed{\text{z487}}$ $$\mathbb{Q}_{2,2}^{(c)}(E_g,c) = \frac{\sqrt{15}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2}^{(b)}(B_{1g})}{10} + \frac{\sqrt{5}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{10} + \frac{\sqrt{15}\mathbb{Q}_{2}^{(a)}(B_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{10} + \frac{\sqrt{15}\mathbb{Q}_{2}^{(a)}(B_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{10}$$

$\boxed{\text{z488}}$ $\mathbb{Q}_{2,1}^{(c)}(E_g,d) = -\frac{\mathbb{M}_{1,1}^{(a)}(E_g)\mathbb{T}_2^{(b)}(B_{1g})}{2} + \frac{\mathbb{M}_1^{(a)}(A_{2g})\mathbb{T}_{2,2}^{(b)}(E_g)}{2}$

$\boxed{\text{z489}}$ $\mathbb{Q}_{2,2}^{(c)}(E_g,d) = \frac{\mathbb{M}_{1,2}^{(a)}(E_g)\mathbb{T}_2^{(b)}(B_{1g})}{2} - \frac{\mathbb{M}_1^{(a)}(A_{2g})\mathbb{T}_{2,1}^{(b)}(E_g)}{2}$

$\boxed{\text{z490}}$ $\mathbb{Q}_{4,1}^{(c)}(E_g,1) = -\frac{7\sqrt{235}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_2^{(b)}(B_{1g})}{470} - \frac{11\sqrt{705}\mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{470} - \frac{7\sqrt{235}\mathbb{Q}_2^{(a)}(B_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{470} - \frac{3\sqrt{235}\mathbb{Q}_2^{(a)}(B_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{470}$

$\boxed{\text{z491}}$ $\mathbb{Q}_{4,2}^{(c)}(E_g,1) = \frac{7\sqrt{235}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_2^{(b)}(B_{1g})}{470} - \frac{11\sqrt{705}\mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{470} + \frac{7\sqrt{235}\mathbb{Q}_2^{(a)}(B_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{470} - \frac{3\sqrt{235}\mathbb{Q}_2^{(a)}(B_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{470}$

$\boxed{\text{z492}}$ $\mathbb{Q}_{4,1}^{(c)}(E_g,2) = \frac{3\sqrt{47}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_2^{(b)}(B_{1g})}{94} - \frac{\sqrt{141}\mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{47} + \frac{3\sqrt{47}\mathbb{Q}_2^{(a)}(B_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{94} + \frac{4\sqrt{47}\mathbb{Q}_2^{(a)}(B_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{47}$

$\boxed{\text{z493}}$ $\mathbb{Q}_{4,2}^{(c)}(E_g,2) = -\frac{3\sqrt{47}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_2^{(b)}(B_{1g})}{94} - \frac{\sqrt{141}\mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{47} - \frac{3\sqrt{47}\mathbb{Q}_2^{(a)}(B_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{94} + \frac{4\sqrt{47}\mathbb{Q}_2^{(a)}(B_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{47}$

$\boxed{\text{z494}}$ $\mathbb{Q}_{2,1}^{(1,-1;c)}(E_g,a) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_0^{(b)}(A_{1g})}{2}$

$\boxed{\text{z495}}$ $\mathbb{Q}_{2,2}^{(1,-1;c)}(E_g,a) = \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_0^{(b)}(A_{1g})}{2}$

$\boxed{\text{z496}}$ $\mathbb{Q}_{2,1}^{(1,-1;c)}(E_g,b) = -\frac{\sqrt{15}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_2^{(b)}(B_{1g})}{10} + \frac{\sqrt{5}\mathbb{Q}_2^{(1,-1;a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{10} - \frac{\sqrt{15}\mathbb{Q}_2^{(1,-1;a)}(B_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{10} + \frac{\sqrt{15}\mathbb{Q}_2^{(1,-1;a)}(B_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{10}$

$\boxed{\text{z497}}$ $\mathbb{Q}_{2,2}^{(1,-1;c)}(E_g,b) = \frac{\sqrt{15}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_2^{(b)}(B_{1g})}{10} + \frac{\sqrt{5}\mathbb{Q}_2^{(1,-1;a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{10} + \frac{\sqrt{15}\mathbb{Q}_2^{(1,-1;a)}(B_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{10} + \frac{\sqrt{15}\mathbb{Q}_2^{(1,-1;a)}(B_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{10}$

$\boxed{\text{z498}}$ $\mathbb{Q}_{2,1}^{(1,-1;c)}(E_g,c) = -\frac{\mathbb{M}_{1,1}^{(1,-1;a)}(E_g)\mathbb{T}_2^{(b)}(B_{1g})}{2} + \frac{\mathbb{M}_1^{(1,-1;a)}(A_{2g})\mathbb{T}_{2,2}^{(b)}(E_g)}{2}$

$\boxed{\text{z499}}$ $\mathbb{Q}_{2,2}^{(1,-1;c)}(E_g,c) = \frac{\mathbb{M}_{1,2}^{(1,-1;a)}(E_g)\mathbb{T}_2^{(b)}(B_{1g})}{2} - \frac{\mathbb{M}_1^{(1,-1;a)}(A_{2g})\mathbb{T}_{2,1}^{(b)}(E_g)}{2}$

$\boxed{\text{z546}}$ $\mathbb{Q}_{2,1}^{(1,-1;c)}(E_g,d) = \frac{\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_2^{(b)}(B_{1g})}{8} - \frac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_2^{(b)}(B_{1g})}{8} + \frac{\mathbb{M}_3^{(1,-1;a)}(A_{2g})\mathbb{T}_{2,2}^{(b)}(E_g)}{2}$

$\boxed{\text{z547}}$ $\mathbb{Q}_{2,2}^{(1,-1;c)}(E_g,d) = -\frac{\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_2^{(b)}(B_{1g})}{8} + \frac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_2^{(b)}(B_{1g})}{8} - \frac{\mathbb{M}_3^{(1,-1;a)}(A_{2g})\mathbb{T}_{2,1}^{(b)}(E_g)}{2}$

$\boxed{\text{z548}}$ $$\mathbb{Q}_{4,1}^{(1,-1;c)}(E_g,1a) = -\frac{7\sqrt{235}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2}^{(b)}(B_{1g})}{470} - \frac{11\sqrt{705}\mathbb{Q}_{2}^{(1,-1;a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{470} - \frac{7\sqrt{235}\mathbb{Q}_{2}^{(1,-1;a)}(B_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{470} - \frac{3\sqrt{235}\mathbb{Q}_{2}^{(1,-1;a)}(B_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{470}$$

$\boxed{\text{z549}}$ $$\mathbb{Q}_{4,2}^{(1,-1;c)}(E_g,1a) = \frac{7\sqrt{235}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2}^{(b)}(B_{1g})}{470} - \frac{11\sqrt{705}\mathbb{Q}_{2}^{(1,-1;a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{470} + \frac{7\sqrt{235}\mathbb{Q}_{2}^{(1,-1;a)}(B_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{470} - \frac{3\sqrt{235}\mathbb{Q}_{2}^{(1,-1;a)}(B_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{470}$$

$\boxed{\text{z550}}$ $$\mathbb{Q}_{4,1}^{(1,-1;c)}(E_g,1b) = \frac{\sqrt{5055}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_{2}^{(b)}(B_{1g})}{2696} - \frac{47\sqrt{337}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_{2}^{(b)}(B_{1g})}{2696} - \frac{3\sqrt{5055}\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{T}_{2,2}^{(b)}(E_g)}{674} - \frac{8\sqrt{337}\mathbb{M}_{3}^{(1,-1;a)}(B_{1g})\mathbb{T}_{2,1}^{(b)}(E_g)}{337} - \frac{6\sqrt{337}\mathbb{M}_{3}^{(1,-1;a)}(B_{2g})\mathbb{T}_{2,2}^{(b)}(E_g)}{337}$$

$\boxed{\text{z551}}$ $$\mathbb{Q}_{4,2}^{(1,-1;c)}(E_g,1b) = -\frac{\sqrt{5055}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_{2}^{(b)}(B_{1g})}{2696} + \frac{47\sqrt{337}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_{2}^{(b)}(B_{1g})}{2696} + \frac{3\sqrt{5055}\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{T}_{2,1}^{(b)}(E_g)}{674} + \frac{8\sqrt{337}\mathbb{M}_{3}^{(1,-1;a)}(B_{1g})\mathbb{T}_{2,2}^{(b)}(E_g)}{337} - \frac{6\sqrt{337}\mathbb{M}_{3}^{(1,-1;a)}(B_{2g})\mathbb{T}_{2,1}^{(b)}(E_g)}{337}$$

$\boxed{\text{z552}}$ $$\mathbb{Q}_{4,1}^{(1,-1;c)}(E_g,2a) = \frac{3\sqrt{47}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2}^{(b)}(B_{1g})}{94} - \frac{\sqrt{141}\mathbb{Q}_{2}^{(1,-1;a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{47} + \frac{3\sqrt{47}\mathbb{Q}_{2}^{(1,-1;a)}(B_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{94} + \frac{4\sqrt{47}\mathbb{Q}_{2}^{(1,-1;a)}(B_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{47}$$

$\boxed{\text{z553}}$ $$\mathbb{Q}_{4,2}^{(1,-1;c)}(E_g,2a) = -\frac{3\sqrt{47}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2}^{(b)}(B_{1g})}{94} - \frac{\sqrt{141}\mathbb{Q}_{2}^{(1,-1;a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{47} - \frac{3\sqrt{47}\mathbb{Q}_{2}^{(1,-1;a)}(B_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{94} + \frac{4\sqrt{47}\mathbb{Q}_{2}^{(1,-1;a)}(B_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{47}$$

$\boxed{\text{z554}}$ $$\mathbb{Q}_{4,1}^{(1,-1;c)}(E_g,2b) = -\frac{55\sqrt{10110}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_{2}^{(b)}(B_{1g})}{10784} - \frac{111\sqrt{674}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_{2}^{(b)}(B_{1g})}{10784} - \frac{7\sqrt{10110}\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{T}_{2,2}^{(b)}(E_g)}{5392} + \frac{75\sqrt{674}\mathbb{M}_{3}^{(1,-1;a)}(B_{1g})\mathbb{T}_{2,1}^{(b)}(E_g)}{5392} - \frac{7\sqrt{674}\mathbb{M}_{3}^{(1,-1;a)}(B_{2g})\mathbb{T}_{2,2}^{(b)}(E_g)}{1348}$$

$\boxed{\text{z555}}$ $$\mathbb{Q}_{4,2}^{(1,-1;c)}(E_g,2b) = \frac{55\sqrt{10110}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_{2}^{(b)}(B_{1g})}{10784} + \frac{111\sqrt{674}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_{2}^{(b)}(B_{1g})}{10784} + \frac{7\sqrt{10110}\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{T}_{2,1}^{(b)}(E_g)}{5392} - \frac{75\sqrt{674}\mathbb{M}_{3}^{(1,-1;a)}(B_{1g})\mathbb{T}_{2,2}^{(b)}(E_g)}{5392} - \frac{7\sqrt{674}\mathbb{M}_{3}^{(1,-1;a)}(B_{2g})\mathbb{T}_{2,1}^{(b)}(E_g)}{1348}$$

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

$\boxed{\text{z557}}$ $$\mathbb{Q}_{2,2}^{(1,0;c)}(E_g,a) = \frac{\mathbb{G}_{1,2}^{(1,0;a)}(E_g)\mathbb{Q}_{2}^{(b)}(B_{1g})}{2} - \frac{\mathbb{G}_{1}^{(1,0;a)}(A_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

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

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

$\boxed{\text{z560}}$ $\mathbb{Q}_{2,1}^{(1,0;c)}(E_g,c)=-\frac{\sqrt{15}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{2}^{(b)}(B_{1g})}{10}+\frac{\sqrt{5}\mathbb{T}_{2}^{(1,0;a)}(A_{1g})\mathbb{T}_{2,1}^{(b)}(E_g)}{10}-\frac{\sqrt{15}\mathbb{T}_{2}^{(1,0;a)}(B_{1g})\mathbb{T}_{2,1}^{(b)}(E_g)}{10}+\frac{\sqrt{15}\mathbb{T}_{2}^{(1,0;a)}(B_{2g})\mathbb{T}_{2,2}^{(b)}(E_g)}{10}$

$\boxed{\text{z561}}$ $\mathbb{Q}_{2,2}^{(1,0;c)}(E_g,c)=\frac{\sqrt{15}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{2}^{(b)}(B_{1g})}{10}+\frac{\sqrt{5}\mathbb{T}_{2}^{(1,0;a)}(A_{1g})\mathbb{T}_{2,2}^{(b)}(E_g)}{10}+\frac{\sqrt{15}\mathbb{T}_{2}^{(1,0;a)}(B_{1g})\mathbb{T}_{2,2}^{(b)}(E_g)}{10}+\frac{\sqrt{15}\mathbb{T}_{2}^{(1,0;a)}(B_{2g})\mathbb{T}_{2,1}^{(b)}(E_g)}{10}$

$\boxed{\text{z562}}$ $\mathbb{Q}_{4,1}^{(1,0;c)}(E_g,1)=-\frac{7\sqrt{235}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{2}^{(b)}(B_{1g})}{470}-\frac{11\sqrt{705}\mathbb{T}_{2}^{(1,0;a)}(A_{1g})\mathbb{T}_{2,1}^{(b)}(E_g)}{470}-\frac{7\sqrt{235}\mathbb{T}_{2}^{(1,0;a)}(B_{1g})\mathbb{T}_{2,1}^{(b)}(E_g)}{470}-\frac{3\sqrt{235}\mathbb{T}_{2}^{(1,0;a)}(B_{2g})\mathbb{T}_{2,2}^{(b)}(E_g)}{470}$

$\boxed{\text{z563}}$ $\mathbb{Q}_{4,2}^{(1,0;c)}(E_g,1)=\frac{7\sqrt{235}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{2}^{(b)}(B_{1g})}{470}-\frac{11\sqrt{705}\mathbb{T}_{2}^{(1,0;a)}(A_{1g})\mathbb{T}_{2,2}^{(b)}(E_g)}{470}+\frac{7\sqrt{235}\mathbb{T}_{2}^{(1,0;a)}(B_{1g})\mathbb{T}_{2,2}^{(b)}(E_g)}{470}-\frac{3\sqrt{235}\mathbb{T}_{2}^{(1,0;a)}(B_{2g})\mathbb{T}_{2,1}^{(b)}(E_g)}{470}$

$\boxed{\text{z605}}$ $\mathbb{Q}_{4,1}^{(1,0;c)}(E_g,2)=\frac{3\sqrt{47}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{2}^{(b)}(B_{1g})}{94}-\frac{\sqrt{141}\mathbb{T}_{2}^{(1,0;a)}(A_{1g})\mathbb{T}_{2,1}^{(b)}(E_g)}{47}+\frac{3\sqrt{47}\mathbb{T}_{2}^{(1,0;a)}(B_{1g})\mathbb{T}_{2,1}^{(b)}(E_g)}{94}+\frac{4\sqrt{47}\mathbb{T}_{2}^{(1,0;a)}(B_{2g})\mathbb{T}_{2,2}^{(b)}(E_g)}{47}$

$\boxed{\text{z606}}$ $\mathbb{Q}_{4,2}^{(1,0;c)}(E_g,2)=-\frac{3\sqrt{47}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{2}^{(b)}(B_{1g})}{94}-\frac{\sqrt{141}\mathbb{T}_{2}^{(1,0;a)}(A_{1g})\mathbb{T}_{2,2}^{(b)}(E_g)}{47}-\frac{3\sqrt{47}\mathbb{T}_{2}^{(1,0;a)}(B_{1g})\mathbb{T}_{2,2}^{(b)}(E_g)}{94}+\frac{4\sqrt{47}\mathbb{T}_{2}^{(1,0;a)}(B_{2g})\mathbb{T}_{2,1}^{(b)}(E_g)}{47}$

$\boxed{\text{z607}}$ $\mathbb{Q}_{2,1}^{(1,1;c)}(E_g,a)=\frac{\sqrt{2}\mathbb{Q}_{0}^{(1,1;a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$

$\boxed{\text{z608}}$ $\mathbb{Q}_{2,2}^{(1,1;c)}(E_g,a)=\frac{\sqrt{2}\mathbb{Q}_{0}^{(1,1;a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$

$\boxed{\text{z609}}$ $\mathbb{Q}_{2,1}^{(1,1;c)}(E_g,b)=-\frac{\mathbb{M}_{1,1}^{(1,1;a)}(E_g)\mathbb{T}_{2}^{(b)}(B_{1g})}{2}+\frac{\mathbb{M}_{1}^{(1,1;a)}(A_{2g})\mathbb{T}_{2,2}^{(b)}(E_g)}{2}$

$\boxed{\text{z610}}$ $\mathbb{Q}_{2,2}^{(1,1;c)}(E_g,b)=\frac{\mathbb{M}_{1,2}^{(1,1;a)}(E_g)\mathbb{T}_{2}^{(b)}(B_{1g})}{2}-\frac{\mathbb{M}_{1}^{(1,1;a)}(A_{2g})\mathbb{T}_{2,1}^{(b)}(E_g)}{2}$

$\boxed{\text{z611}}$ $\mathbb{G}_{1,1}^{(c)}(E_g,a)=\frac{\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2}^{(b)}(B_{1g})}{2}-\frac{\mathbb{Q}_{2}^{(a)}(B_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$

$\boxed{\text{z612}}$ $\mathbb{G}_{1,2}^{(c)}(E_g,a)=-\frac{\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2}^{(b)}(B_{1g})}{2}+\frac{\mathbb{Q}_{2}^{(a)}(B_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$

$\boxed{\text{z613}}$ $\mathbb{G}_{1,1}^{(c)}(E_g,b)=\frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_g)\mathbb{T}_{0}^{(b)}(A_{1g})}{2}$

$\boxed{\text{z614}}$ $$\mathbb{G}_{1,2}^{(c)}(E_g,b)=\frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_g)\mathbb{T}_0^{(b)}(A_{1g})}{2}$$

$\boxed{\text{z615}}$ $$\mathbb{G}_{1,1}^{(c)}(E_g,c)=\frac{\mathbb{M}_{1,1}^{(a)}(E_g)\mathbb{T}_2^{(b)}(B_{1g})}{2}+\frac{\mathbb{M}_1^{(a)}(A_{2g})\mathbb{T}_{2,2}^{(b)}(E_g)}{2}$$

$\boxed{\text{z616}}$ $$\mathbb{G}_{1,2}^{(c)}(E_g,c)=-\frac{\mathbb{M}_{1,2}^{(a)}(E_g)\mathbb{T}_2^{(b)}(B_{1g})}{2}-\frac{\mathbb{M}_1^{(a)}(A_{2g})\mathbb{T}_{2,1}^{(b)}(E_g)}{2}$$

$\boxed{\text{z617}}$ $$\mathbb{G}_{1,1}^{(1,-1;c)}(E_g,a)=\frac{\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_2^{(b)}(B_{1g})}{2}-\frac{\mathbb{Q}_2^{(1,-1;a)}(B_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

$\boxed{\text{z618}}$ $$\mathbb{G}_{1,2}^{(1,-1;c)}(E_g,a)=-\frac{\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_2^{(b)}(B_{1g})}{2}+\frac{\mathbb{Q}_2^{(1,-1;a)}(B_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$\boxed{\text{z619}}$ $$\mathbb{G}_{1,1}^{(1,-1;c)}(E_g,b)=\frac{\sqrt{2}\mathbb{M}_{1,1}^{(1,-1;a)}(E_g)\mathbb{T}_0^{(b)}(A_{1g})}{2}$$

$\boxed{\text{z620}}$ $$\mathbb{G}_{1,2}^{(1,-1;c)}(E_g,b)=\frac{\sqrt{2}\mathbb{M}_{1,2}^{(1,-1;a)}(E_g)\mathbb{T}_0^{(b)}(A_{1g})}{2}$$

$\boxed{\text{z621}}$ $$\mathbb{G}_{1,1}^{(1,-1;c)}(E_g,c)=\frac{\mathbb{M}_{1,1}^{(1,-1;a)}(E_g)\mathbb{T}_2^{(b)}(B_{1g})}{2}+\frac{\mathbb{M}_1^{(1,-1;a)}(A_{2g})\mathbb{T}_{2,2}^{(b)}(E_g)}{2}$$

$\boxed{\text{z622}}$ $$\mathbb{G}_{1,2}^{(1,-1;c)}(E_g,c)=-\frac{\mathbb{M}_{1,2}^{(1,-1;a)}(E_g)\mathbb{T}_2^{(b)}(B_{1g})}{2}-\frac{\mathbb{M}_1^{(1,-1;a)}(A_{2g})\mathbb{T}_{2,1}^{(b)}(E_g)}{2}$$

$\boxed{\text{z667}}$ $$\begin{aligned}\mathbb{G}_{1,1}^{(1,-1;c)}(E_g,d)=&\frac{43\sqrt{474}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_2^{(b)}(B_{1g})}{2528}-\frac{25\sqrt{790}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_2^{(b)}(B_{1g})}{2528}-\frac{21\sqrt{474}\mathbb{M}_3^{(1,-1;a)}(A_{2g})\mathbb{T}_{2,2}^{(b)}(E_g)}{1264}\\&+\frac{13\sqrt{790}\mathbb{M}_3^{(1,-1;a)}(B_{1g})\mathbb{T}_{2,1}^{(b)}(E_g)}{1264}+\frac{3\sqrt{790}\mathbb{M}_3^{(1,-1;a)}(B_{2g})\mathbb{T}_{2,2}^{(b)}(E_g)}{316}\end{aligned}$$

$\boxed{\text{z668}}$ $$\begin{aligned}\mathbb{G}_{1,2}^{(1,-1;c)}(E_g,d)=&-\frac{43\sqrt{474}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_2^{(b)}(B_{1g})}{2528}+\frac{25\sqrt{790}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_2^{(b)}(B_{1g})}{2528}+\frac{21\sqrt{474}\mathbb{M}_3^{(1,-1;a)}(A_{2g})\mathbb{T}_{2,1}^{(b)}(E_g)}{1264}\\&-\frac{13\sqrt{790}\mathbb{M}_3^{(1,-1;a)}(B_{1g})\mathbb{T}_{2,2}^{(b)}(E_g)}{1264}+\frac{3\sqrt{790}\mathbb{M}_3^{(1,-1;a)}(B_{2g})\mathbb{T}_{2,1}^{(b)}(E_g)}{316}\end{aligned}$$

$\boxed{\text{z669}}$ $$\mathbb{G}_{3,1}^{(1,-1;c)}(E_g,1a)=\frac{\sqrt{2}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_0^{(b)}(A_{1g})}{2}$$

$\boxed{\text{z670}}$ $\mathbb{G}_{3,2}^{(1,-1;c)}(E_g,1a)=\frac{\sqrt{2}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_0^{(b)}(A_{1g})}{2}$

$\boxed{\text{z671}}$ $\mathbb{G}_{3,1}^{(1,-1;c)}(E_g,1b)=-\frac{13\sqrt{790}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_2^{(b)}(B_{1g})}{1264}-\frac{7\sqrt{474}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_2^{(b)}(B_{1g})}{1264}-\frac{\sqrt{790}\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{T}_{2,2}^{(b)}(E_g)}{632}$
$-\frac{9\sqrt{474}\mathbb{M}_{3}^{(1,-1;a)}(B_{1g})\mathbb{T}_{2,1}^{(b)}(E_g)}{632}+\frac{2\sqrt{474}\mathbb{M}_{3}^{(1,-1;a)}(B_{2g})\mathbb{T}_{2,2}^{(b)}(E_g)}{79}$

$\boxed{\text{z672}}$ $\mathbb{G}_{3,2}^{(1,-1;c)}(E_g,1b)=\frac{13\sqrt{790}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_2^{(b)}(B_{1g})}{1264}+\frac{7\sqrt{474}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_2^{(b)}(B_{1g})}{1264}+\frac{\sqrt{790}\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{T}_{2,1}^{(b)}(E_g)}{632}$
$+\frac{9\sqrt{474}\mathbb{M}_{3}^{(1,-1;a)}(B_{1g})\mathbb{T}_{2,2}^{(b)}(E_g)}{632}+\frac{2\sqrt{474}\mathbb{M}_{3}^{(1,-1;a)}(B_{2g})\mathbb{T}_{2,1}^{(b)}(E_g)}{79}$

$\boxed{\text{z673}}$ $\mathbb{G}_{3,1}^{(1,-1;c)}(E_g,2)=\frac{\sqrt{2}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_0^{(b)}(A_{1g})}{2}$

$\boxed{\text{z674}}$ $\mathbb{G}_{3,2}^{(1,-1;c)}(E_g,2)=\frac{\sqrt{2}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_0^{(b)}(A_{1g})}{2}$

$\boxed{\text{z675}}$ $\mathbb{G}_{1,1}^{(1,0;c)}(E_g,a)=\frac{\sqrt{2}\mathbb{G}_{1,1}^{(1,0;a)}(E_g)\mathbb{Q}_0^{(b)}(A_{1g})}{2}$

$\boxed{\text{z676}}$ $\mathbb{G}_{1,2}^{(1,0;c)}(E_g,a)=\frac{\sqrt{2}\mathbb{G}_{1,2}^{(1,0;a)}(E_g)\mathbb{Q}_0^{(b)}(A_{1g})}{2}$

$\boxed{\text{z677}}$ $\mathbb{G}_{1,1}^{(1,0;c)}(E_g,b)=\frac{\mathbb{G}_{1,1}^{(1,0;a)}(E_g)\mathbb{Q}_2^{(b)}(B_{1g})}{2}+\frac{\mathbb{G}_{1}^{(1,0;a)}(A_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$

$\boxed{\text{z678}}$ $\mathbb{G}_{1,2}^{(1,0;c)}(E_g,b)=-\frac{\mathbb{G}_{1,2}^{(1,0;a)}(E_g)\mathbb{Q}_2^{(b)}(B_{1g})}{2}-\frac{\mathbb{G}_{1}^{(1,0;a)}(A_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$

$\boxed{\text{z679}}$ $\mathbb{G}_{1,1}^{(1,0;c)}(E_g,c)=\frac{\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_2^{(b)}(B_{1g})}{2}-\frac{\mathbb{T}_{2}^{(1,0;a)}(B_{1g})\mathbb{T}_{2,1}^{(b)}(E_g)}{2}$

$\boxed{\text{z680}}$ $\mathbb{G}_{1,2}^{(1,0;c)}(E_g,c)=-\frac{\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_2^{(b)}(B_{1g})}{2}+\frac{\mathbb{T}_{2}^{(1,0;a)}(B_{1g})\mathbb{T}_{2,2}^{(b)}(E_g)}{2}$

$\boxed{\text{z681}}$ $\mathbb{G}_{1,1}^{(1,1;c)}(E_g,a)=\frac{\sqrt{2}\mathbb{M}_{1,1}^{(1,1;a)}(E_g)\mathbb{T}_0^{(b)}(A_{1g})}{2}$

$\boxed{\text{z682}}$ $\mathbb{G}_{1,2}^{(1,1;c)}(E_g,a)=\frac{\sqrt{2}\mathbb{M}_{1,2}^{(1,1;a)}(E_g)\mathbb{T}_{0}^{(b)}(A_{1g})}{2}$

$\boxed{\text{z683}}$ $\mathbb{G}_{1,1}^{(1,1;c)}(E_g,b)=\frac{\mathbb{M}_{1,1}^{(1,1;a)}(E_g)\mathbb{T}_{2}^{(b)}(B_{1g})}{2}+\frac{\mathbb{M}_{1}^{(1,1;a)}(A_{2g})\mathbb{T}_{2,2}^{(b)}(E_g)}{2}$

$\boxed{\text{z684}}$ $\mathbb{G}_{1,2}^{(1,1;c)}(E_g,b)=-\frac{\mathbb{M}_{1,2}^{(1,1;a)}(E_g)\mathbb{T}_{2}^{(b)}(B_{1g})}{2}-\frac{\mathbb{M}_{1}^{(1,1;a)}(A_{2g})\mathbb{T}_{2,1}^{(b)}(E_g)}{2}$

$\boxed{\text{z739}}$ $\mathbb{Q}_{1,1}^{(c)}(E_u,a)=\frac{\sqrt{2}\mathbb{Q}_{0}^{(a)}(A_{1g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{2}$

$\boxed{\text{z740}}$ $\mathbb{Q}_{1,2}^{(c)}(E_u,a)=\frac{\sqrt{2}\mathbb{Q}_{0}^{(a)}(A_{1g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{2}$

$\boxed{\text{z741}}$ $\mathbb{Q}_{1,1}^{(c)}(E_u,b)=\frac{\sqrt{15}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{1}^{(b)}(A_{2u})}{10}-\frac{\sqrt{5}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{10}+\frac{\sqrt{15}\mathbb{Q}_{2}^{(a)}(B_{1g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{10}+\frac{\sqrt{15}\mathbb{Q}_{2}^{(a)}(B_{2g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{10}$

$\boxed{\text{z742}}$ $\mathbb{Q}_{1,2}^{(c)}(E_u,b)=\frac{\sqrt{15}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{1}^{(b)}(A_{2u})}{10}-\frac{\sqrt{5}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{10}-\frac{\sqrt{15}\mathbb{Q}_{2}^{(a)}(B_{1g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{10}+\frac{\sqrt{15}\mathbb{Q}_{2}^{(a)}(B_{2g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{10}$

$\boxed{\text{z743}}$ $\mathbb{Q}_{1,1}^{(c)}(E_u,c)=\frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{3}^{(b)}(B_{2u})}{2}$

$\boxed{\text{z744}}$ $\mathbb{Q}_{1,2}^{(c)}(E_u,c)=-\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{3}^{(b)}(B_{2u})}{2}$

$\boxed{\text{z745}}$ $\mathbb{Q}_{1,1}^{(c)}(E_u,d)=-\frac{\mathbb{M}_{1,2}^{(a)}(E_g)\mathbb{T}_{1}^{(b)}(A_{2u})}{2}-\frac{\mathbb{M}_{1}^{(a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(E_u)}{2}$

$\boxed{\text{z746}}$ $\mathbb{Q}_{1,2}^{(c)}(E_u,d)=-\frac{\mathbb{M}_{1,1}^{(a)}(E_g)\mathbb{T}_{1}^{(b)}(A_{2u})}{2}+\frac{\mathbb{M}_{1}^{(a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(E_u)}{2}$

$\boxed{\text{z747}}$ $\mathbb{Q}_{1,1}^{(c)}(E_u,e)=-\frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_g)\mathbb{M}_{2}^{(b)}(B_{2u})}{2}$

$\boxed{\text{z748}}$ $\mathbb{Q}_{1,2}^{(c)}(E_u,e)=\frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_g)\mathbb{M}_{2}^{(b)}(B_{2u})}{2}$

$\boxed{\text{z749}}$ $\mathbb{Q}_{3,1}^{(c)}(E_u,1)=-\frac{\sqrt{10}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{1}^{(b)}(A_{2u})}{10}-\frac{\sqrt{30}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{20}+\frac{3\sqrt{10}\mathbb{Q}_{2}^{(a)}(B_{1g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{20}-\frac{\sqrt{10}\mathbb{Q}_{2}^{(a)}(B_{2g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{10}$

$\boxed{\text{z750}}$ $$\mathbb{Q}_{3,2}^{(c)}(E_u,1) = -\frac{\sqrt{10}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{1}^{(b)}(A_{2u})}{10} - \frac{\sqrt{30}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{20} - \frac{3\sqrt{10}\mathbb{Q}_{2}^{(a)}(B_{1g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{20} - \frac{\sqrt{10}\mathbb{Q}_{2}^{(a)}(B_{2g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{10}$$

$\boxed{\text{z751}}$ $$\mathbb{Q}_{3,1}^{(c)}(E_u,2) = -\frac{\sqrt{6}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{1}^{(b)}(A_{2u})}{6} - \frac{\sqrt{2}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{4} - \frac{\sqrt{6}\mathbb{Q}_{2}^{(a)}(B_{1g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{12} + \frac{\sqrt{6}\mathbb{Q}_{2}^{(a)}(B_{2g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{6}$$

$\boxed{\text{z752}}$ $$\mathbb{Q}_{3,2}^{(c)}(E_u,2) = -\frac{\sqrt{6}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{1}^{(b)}(A_{2u})}{6} - \frac{\sqrt{2}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{4} + \frac{\sqrt{6}\mathbb{Q}_{2}^{(a)}(B_{1g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{12} + \frac{\sqrt{6}\mathbb{Q}_{2}^{(a)}(B_{2g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{6}$$

$\boxed{\text{z753}}$ $$\mathbb{Q}_{1,1}^{(1,-1;c)}(E_u,a) = \frac{\sqrt{15}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{1}^{(b)}(A_{2u})}{10} - \frac{\sqrt{5}\mathbb{Q}_{2}^{(1,-1;a)}(A_{1g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{10} + \frac{\sqrt{15}\mathbb{Q}_{2}^{(1,-1;a)}(B_{1g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{10} + \frac{\sqrt{15}\mathbb{Q}_{2}^{(1,-1;a)}(B_{2g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{10}$$

$\boxed{\text{z754}}$ $$\mathbb{Q}_{1,2}^{(1,-1;c)}(E_u,a) = \frac{\sqrt{15}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{1}^{(b)}(A_{2u})}{10} - \frac{\sqrt{5}\mathbb{Q}_{2}^{(1,-1;a)}(A_{1g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{10} - \frac{\sqrt{15}\mathbb{Q}_{2}^{(1,-1;a)}(B_{1g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{10} + \frac{\sqrt{15}\mathbb{Q}_{2}^{(1,-1;a)}(B_{2g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{10}$$

$\boxed{\text{z755}}$ $$\mathbb{Q}_{1,1}^{(1,-1;c)}(E_u,b) = \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{3}^{(b)}(B_{2u})}{2}$$

$\boxed{\text{z756}}$ $$\mathbb{Q}_{1,2}^{(1,-1;c)}(E_u,b) = -\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{3}^{(b)}(B_{2u})}{2}$$

$\boxed{\text{z757}}$ $$\mathbb{Q}_{1,1}^{(1,-1;c)}(E_u,c) = -\frac{\mathbb{M}_{1,2}^{(1,-1;a)}(E_g)\mathbb{T}_{1}^{(b)}(A_{2u})}{2} - \frac{\mathbb{M}_{1}^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(E_u)}{2}$$

$\boxed{\text{z758}}$ $$\mathbb{Q}_{1,2}^{(1,-1;c)}(E_u,c) = -\frac{\mathbb{M}_{1,1}^{(1,-1;a)}(E_g)\mathbb{T}_{1}^{(b)}(A_{2u})}{2} + \frac{\mathbb{M}_{1}^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(E_u)}{2}$$

$\boxed{\text{z759}}$ $$\mathbb{Q}_{1,1}^{(1,-1;c)}(E_u,d) = -\frac{\sqrt{2}\mathbb{M}_{1,2}^{(1,-1;a)}(E_g)\mathbb{M}_{2}^{(b)}(B_{2u})}{2}$$

$\boxed{\text{z760}}$ $$\mathbb{Q}_{1,2}^{(1,-1;c)}(E_u,d) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(1,-1;a)}(E_g)\mathbb{M}_{2}^{(b)}(B_{2u})}{2}$$

$\boxed{\text{z761}}$ $$\mathbb{Q}_{1,1}^{(1,-1;c)}(E_u,e) = \frac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{M}_{2}^{(b)}(B_{2u})}{4} - \frac{\sqrt{5}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{M}_{2}^{(b)}(B_{2u})}{4}$$

$\boxed{\text{z762}}$ $$\mathbb{Q}_{1,2}^{(1,-1;c)}(E_u,e) = -\frac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{M}_{2}^{(b)}(B_{2u})}{4} + \frac{\sqrt{5}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{M}_{2}^{(b)}(B_{2u})}{4}$$

$\boxed{\text{z763}}$ $$\mathbb{Q}_{3,1}^{(1,-1;c)}(E_u,1a) = -\frac{\sqrt{10}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{1}^{(b)}(A_{2u})}{10} - \frac{\sqrt{30}\mathbb{Q}_{2}^{(1,-1;a)}(A_{1g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{20} + \frac{3\sqrt{10}\mathbb{Q}_{2}^{(1,-1;a)}(B_{1g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{20} - \frac{\sqrt{10}\mathbb{Q}_{2}^{(1,-1;a)}(B_{2g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{10}$$

$\boxed{\text{z764}}$ $\mathbb{Q}_{3,2}^{(1,-1;c)}(E_u,1a) = -\frac{\sqrt{10}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_1^{(b)}(A_{2u})}{10} - \frac{\sqrt{30}\mathbb{Q}_2^{(1,-1;a)}(A_{1g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{20} - \frac{3\sqrt{10}\mathbb{Q}_2^{(1,-1;a)}(B_{1g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{20} - \frac{\sqrt{10}\mathbb{Q}_2^{(1,-1;a)}(B_{2g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{10}$

$\boxed{\text{z765}}$ $\mathbb{Q}_{3,1}^{(1,-1;c)}(E_u,1b) = \frac{\sqrt{6}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_1^{(b)}(A_{2u})}{8} - \frac{\sqrt{10}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_1^{(b)}(A_{2u})}{8} + \frac{\sqrt{6}\mathbb{M}_3^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(E_u)}{8} - \frac{\sqrt{10}\mathbb{M}_3^{(1,-1;a)}(B_{2g})\mathbb{T}_{1,2}^{(b)}(E_u)}{8}$

$\boxed{\text{z766}}$ $\mathbb{Q}_{3,2}^{(1,-1;c)}(E_u,1b) = \frac{\sqrt{6}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_1^{(b)}(A_{2u})}{8} - \frac{\sqrt{10}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_1^{(b)}(A_{2u})}{8} - \frac{\sqrt{6}\mathbb{M}_3^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(E_u)}{8} - \frac{\sqrt{10}\mathbb{M}_3^{(1,-1;a)}(B_{2g})\mathbb{T}_{1,1}^{(b)}(E_u)}{8}$

$\boxed{\text{z767}}$ $\mathbb{Q}_{3,1}^{(1,-1;c)}(E_u,2a) = -\frac{\sqrt{6}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_1^{(b)}(A_{2u})}{6} - \frac{\sqrt{2}\mathbb{Q}_2^{(1,-1;a)}(A_{1g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{4} - \frac{\sqrt{6}\mathbb{Q}_2^{(1,-1;a)}(B_{1g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{12} + \frac{\sqrt{6}\mathbb{Q}_2^{(1,-1;a)}(B_{2g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{6}$

$\boxed{\text{z768}}$ $\mathbb{Q}_{3,2}^{(1,-1;c)}(E_u,2a) = -\frac{\sqrt{6}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_1^{(b)}(A_{2u})}{6} - \frac{\sqrt{2}\mathbb{Q}_2^{(1,-1;a)}(A_{1g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{4} + \frac{\sqrt{6}\mathbb{Q}_2^{(1,-1;a)}(B_{1g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{12} + \frac{\sqrt{6}\mathbb{Q}_2^{(1,-1;a)}(B_{2g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{6}$

$\boxed{\text{z769}}$ $\mathbb{Q}_{3,1}^{(1,-1;c)}(E_u,2b) = -\frac{\sqrt{10}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_1^{(b)}(A_{2u})}{8} + \frac{\sqrt{6}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_1^{(b)}(A_{2u})}{24} + \frac{\sqrt{10}\mathbb{M}_3^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(E_u)}{8} + \frac{\sqrt{6}\mathbb{M}_3^{(1,-1;a)}(B_{1g})\mathbb{T}_{1,1}^{(b)}(E_u)}{6} - \frac{\sqrt{6}\mathbb{M}_3^{(1,-1;a)}(B_{2g})\mathbb{T}_{1,2}^{(b)}(E_u)}{24}$

$\boxed{\text{z770}}$ $\mathbb{Q}_{3,2}^{(1,-1;c)}(E_u,2b) = -\frac{\sqrt{10}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_1^{(b)}(A_{2u})}{8} + \frac{\sqrt{6}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_1^{(b)}(A_{2u})}{24} - \frac{\sqrt{10}\mathbb{M}_3^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(E_u)}{8} - \frac{\sqrt{6}\mathbb{M}_3^{(1,-1;a)}(B_{1g})\mathbb{T}_{1,2}^{(b)}(E_u)}{6} - \frac{\sqrt{6}\mathbb{M}_3^{(1,-1;a)}(B_{2g})\mathbb{T}_{1,1}^{(b)}(E_u)}{24}$

$\boxed{\text{z771}}$ $\mathbb{Q}_{3,1}^{(1,-1;c)}(E_u,2c) = -\frac{\sqrt{5}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{M}_2^{(b)}(B_{2u})}{4} - \frac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{M}_2^{(b)}(B_{2u})}{4}$

$\boxed{\text{z772}}$ $\mathbb{Q}_{3,2}^{(1,-1;c)}(E_u,2c) = \frac{\sqrt{5}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{M}_2^{(b)}(B_{2u})}{4} + \frac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{M}_2^{(b)}(B_{2u})}{4}$

$\boxed{\text{z773}}$ $\mathbb{Q}_{1,1}^{(1,0;c)}(E_u,a) = -\frac{\mathbb{G}_{1,2}^{(1,0;a)}(E_g)\mathbb{Q}_1^{(b)}(A_{2u})}{2} - \frac{\mathbb{G}_1^{(1,0;a)}(A_{2g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{2}$

$\boxed{\text{z774}}$ $\mathbb{Q}_{1,2}^{(1,0;c)}(E_u,a) = -\frac{\mathbb{G}_{1,1}^{(1,0;a)}(E_g)\mathbb{Q}_1^{(b)}(A_{2u})}{2} + \frac{\mathbb{G}_1^{(1,0;a)}(A_{2g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{2}$

$\boxed{\text{z775}}$ $\mathbb{Q}_{1,1}^{(1,0;c)}(E_u,b) = \frac{\sqrt{15}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_1^{(b)}(A_{2u})}{10} - \frac{\sqrt{5}\mathbb{T}_2^{(1,0;a)}(A_{1g})\mathbb{T}_{1,1}^{(b)}(E_u)}{10} + \frac{\sqrt{15}\mathbb{T}_2^{(1,0;a)}(B_{1g})\mathbb{T}_{1,1}^{(b)}(E_u)}{10} + \frac{\sqrt{15}\mathbb{T}_2^{(1,0;a)}(B_{2g})\mathbb{T}_{1,2}^{(b)}(E_u)}{10}$

$\boxed{\text{z776}}$ $\mathbb{Q}_{1,2}^{(1,0;c)}(E_u,b) = \frac{\sqrt{15}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_1^{(b)}(A_{2u})}{10} - \frac{\sqrt{5}\mathbb{T}_2^{(1,0;a)}(A_{1g})\mathbb{T}_{1,2}^{(b)}(E_u)}{10} - \frac{\sqrt{15}\mathbb{T}_2^{(1,0;a)}(B_{1g})\mathbb{T}_{1,2}^{(b)}(E_u)}{10} + \frac{\sqrt{15}\mathbb{T}_2^{(1,0;a)}(B_{2g})\mathbb{T}_{1,1}^{(b)}(E_u)}{10}$

$\boxed{\text{z777}}$ $\mathbb{Q}_{1,1}^{(1,0;c)}(E_u,c) = -\frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{M}_2^{(b)}(B_{2u})}{2}$

$\boxed{\text{z778}}$ $$\mathbb{Q}_{1,2}^{(1,0;c)}(E_u,c)=\frac{\sqrt{2}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{M}_{2}^{(b)}(B_{2u})}{2}$$

$\boxed{\text{z779}}$ $$\mathbb{Q}_{3,1}^{(1,0;c)}(E_u,1a)=-\frac{\sqrt{2}\mathbb{G}_{1,2}^{(1,0;a)}(E_g)\mathbb{Q}_{3}^{(b)}(B_{2u})}{2}$$

$\boxed{\text{z780}}$ $$\mathbb{Q}_{3,2}^{(1,0;c)}(E_u,1a)=\frac{\sqrt{2}\mathbb{G}_{1,1}^{(1,0;a)}(E_g)\mathbb{Q}_{3}^{(b)}(B_{2u})}{2}$$

$\boxed{\text{z781}}$ $$\mathbb{Q}_{3,1}^{(1,0;c)}(E_u,1b)=-\frac{\sqrt{10}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1}^{(b)}(A_{2u})}{10}-\frac{\sqrt{30}\mathbb{T}_{2}^{(1,0;a)}(A_{1g})\mathbb{T}_{1,1}^{(b)}(E_u)}{20}+\frac{3\sqrt{10}\mathbb{T}_{2}^{(1,0;a)}(B_{1g})\mathbb{T}_{1,1}^{(b)}(E_u)}{20}-\frac{\sqrt{10}\mathbb{T}_{2}^{(1,0;a)}(B_{2g})\mathbb{T}_{1,2}^{(b)}(E_u)}{10}$$

$\boxed{\text{z782}}$ $$\mathbb{Q}_{3,2}^{(1,0;c)}(E_u,1b)=-\frac{\sqrt{10}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1}^{(b)}(A_{2u})}{10}-\frac{\sqrt{30}\mathbb{T}_{2}^{(1,0;a)}(A_{1g})\mathbb{T}_{1,2}^{(b)}(E_u)}{20}-\frac{3\sqrt{10}\mathbb{T}_{2}^{(1,0;a)}(B_{1g})\mathbb{T}_{1,2}^{(b)}(E_u)}{20}-\frac{\sqrt{10}\mathbb{T}_{2}^{(1,0;a)}(B_{2g})\mathbb{T}_{1,1}^{(b)}(E_u)}{10}$$

$\boxed{\text{z783}}$ $$\mathbb{Q}_{3,1}^{(1,0;c)}(E_u,2)=-\frac{\sqrt{6}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1}^{(b)}(A_{2u})}{6}-\frac{\sqrt{2}\mathbb{T}_{2}^{(1,0;a)}(A_{1g})\mathbb{T}_{1,1}^{(b)}(E_u)}{4}-\frac{\sqrt{6}\mathbb{T}_{2}^{(1,0;a)}(B_{1g})\mathbb{T}_{1,1}^{(b)}(E_u)}{12}+\frac{\sqrt{6}\mathbb{T}_{2}^{(1,0;a)}(B_{2g})\mathbb{T}_{1,2}^{(b)}(E_u)}{6}$$

$\boxed{\text{z784}}$ $$\mathbb{Q}_{3,2}^{(1,0;c)}(E_u,2)=-\frac{\sqrt{6}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1}^{(b)}(A_{2u})}{6}-\frac{\sqrt{2}\mathbb{T}_{2}^{(1,0;a)}(A_{1g})\mathbb{T}_{1,2}^{(b)}(E_u)}{4}+\frac{\sqrt{6}\mathbb{T}_{2}^{(1,0;a)}(B_{1g})\mathbb{T}_{1,2}^{(b)}(E_u)}{12}+\frac{\sqrt{6}\mathbb{T}_{2}^{(1,0;a)}(B_{2g})\mathbb{T}_{1,1}^{(b)}(E_u)}{6}$$

$\boxed{\text{z785}}$ $$\mathbb{Q}_{1,1}^{(1,1;c)}(E_u,a)=\frac{\sqrt{2}\mathbb{Q}_{0}^{(1,1;a)}(A_{1g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{2}$$

$\boxed{\text{z786}}$ $$\mathbb{Q}_{1,2}^{(1,1;c)}(E_u,a)=\frac{\sqrt{2}\mathbb{Q}_{0}^{(1,1;a)}(A_{1g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{2}$$

$\boxed{\text{z787}}$ $$\mathbb{Q}_{1,1}^{(1,1;c)}(E_u,b)=-\frac{\mathbb{M}_{1,2}^{(1,1;a)}(E_g)\mathbb{T}_{1}^{(b)}(A_{2u})}{2}-\frac{\mathbb{M}_{1}^{(1,1;a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(E_u)}{2}$$

$\boxed{\text{z788}}$ $$\mathbb{Q}_{1,2}^{(1,1;c)}(E_u,b)=-\frac{\mathbb{M}_{1,1}^{(1,1;a)}(E_g)\mathbb{T}_{1}^{(b)}(A_{2u})}{2}+\frac{\mathbb{M}_{1}^{(1,1;a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(E_u)}{2}$$

$\boxed{\text{z789}}$ $$\mathbb{Q}_{1,1}^{(1,1;c)}(E_u,c)=-\frac{\sqrt{2}\mathbb{M}_{1,2}^{(1,1;a)}(E_g)\mathbb{M}_{2}^{(b)}(B_{2u})}{2}$$

$\boxed{\text{z790}}$ $$\mathbb{Q}_{1,2}^{(1,1;c)}(E_u,c)=\frac{\sqrt{2}\mathbb{M}_{1,1}^{(1,1;a)}(E_g)\mathbb{M}_{2}^{(b)}(B_{2u})}{2}$$

$\boxed{\text{z791}}$ $$\mathbb{G}_{2,1}^{(c)}(E_u,a)=-\frac{\sqrt{3}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{1}^{(b)}(A_{2u})}{6}+\frac{\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{2}+\frac{\sqrt{3}\mathbb{Q}_{2}^{(a)}(B_{1g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{6}+\frac{\sqrt{3}\mathbb{Q}_{2}^{(a)}(B_{2g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{6}$$

$\boxed{\text{z792}}$ $\mathbb{G}_{2,2}^{(c)}(E_u,a) = -\frac{\sqrt{3}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{1}^{(b)}(A_{2u})}{6} + \frac{\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{2} - \frac{\sqrt{3}\mathbb{Q}_{2}^{(a)}(B_{1g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{6} + \frac{\sqrt{3}\mathbb{Q}_{2}^{(a)}(B_{2g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{6}$

$\boxed{\text{z793}}$ $\mathbb{G}_{2,1}^{(c)}(E_u,b) = -\frac{\mathbb{M}_{1,2}^{(a)}(E_g)\mathbb{T}_{1}^{(b)}(A_{2u})}{2} + \frac{\mathbb{M}_{1}^{(a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(E_u)}{2}$

$\boxed{\text{z794}}$ $\mathbb{G}_{2,2}^{(c)}(E_u,b) = -\frac{\mathbb{M}_{1,1}^{(a)}(E_g)\mathbb{T}_{1}^{(b)}(A_{2u})}{2} - \frac{\mathbb{M}_{1}^{(a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(E_u)}{2}$

$\boxed{\text{z795}}$ $\mathbb{G}_{2,1}^{(1,-1;c)}(E_u,a) = -\frac{\sqrt{3}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{1}^{(b)}(A_{2u})}{6} + \frac{\mathbb{Q}_{2}^{(1,-1;a)}(A_{1g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{2} + \frac{\sqrt{3}\mathbb{Q}_{2}^{(1,-1;a)}(B_{1g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{6} + \frac{\sqrt{3}\mathbb{Q}_{2}^{(1,-1;a)}(B_{2g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{6}$

$\boxed{\text{z796}}$ $\mathbb{G}_{2,2}^{(1,-1;c)}(E_u,a) = -\frac{\sqrt{3}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{1}^{(b)}(A_{2u})}{6} + \frac{\mathbb{Q}_{2}^{(1,-1;a)}(A_{1g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{2} - \frac{\sqrt{3}\mathbb{Q}_{2}^{(1,-1;a)}(B_{1g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{6} + \frac{\sqrt{3}\mathbb{Q}_{2}^{(1,-1;a)}(B_{2g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{6}$

$\boxed{\text{z797}}$ $\mathbb{G}_{2,1}^{(1,-1;c)}(E_u,b) = -\frac{\mathbb{M}_{1,2}^{(1,-1;a)}(E_g)\mathbb{T}_{1}^{(b)}(A_{2u})}{2} + \frac{\mathbb{M}_{1}^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(E_u)}{2}$

$\boxed{\text{z798}}$ $\mathbb{G}_{2,2}^{(1,-1;c)}(E_u,b) = -\frac{\mathbb{M}_{1,1}^{(1,-1;a)}(E_g)\mathbb{T}_{1}^{(b)}(A_{2u})}{2} - \frac{\mathbb{M}_{1}^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(E_u)}{2}$

$\boxed{\text{z799}}$ $\mathbb{G}_{2,1}^{(1,-1;c)}(E_u,c) = \frac{\sqrt{14}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1}^{(b)}(A_{2u})}{14} + \frac{\sqrt{210}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1}^{(b)}(A_{2u})}{42} - \frac{\sqrt{14}\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(E_u)}{14} + \frac{\sqrt{210}\mathbb{M}_{3}^{(1,-1;a)}(B_{1g})\mathbb{T}_{1,1}^{(b)}(E_u)}{42} - \frac{\sqrt{210}\mathbb{M}_{3}^{(1,-1;a)}(B_{2g})\mathbb{T}_{1,2}^{(b)}(E_u)}{42}$

$\boxed{\text{z800}}$ $\mathbb{G}_{2,2}^{(1,-1;c)}(E_u,c) = \frac{\sqrt{14}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1}^{(b)}(A_{2u})}{14} + \frac{\sqrt{210}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1}^{(b)}(A_{2u})}{42} + \frac{\sqrt{14}\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(E_u)}{14} - \frac{\sqrt{210}\mathbb{M}_{3}^{(1,-1;a)}(B_{1g})\mathbb{T}_{1,2}^{(b)}(E_u)}{42} - \frac{\sqrt{210}\mathbb{M}_{3}^{(1,-1;a)}(B_{2g})\mathbb{T}_{1,1}^{(b)}(E_u)}{42}$

$\boxed{\text{z801}}$ $\mathbb{G}_{4,1}^{(1,-1;c)}(E_u,1) = -\frac{\sqrt{10}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1}^{(b)}(A_{2u})}{8} - \frac{\sqrt{6}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1}^{(b)}(A_{2u})}{8} - \frac{\sqrt{10}\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(E_u)}{8} - \frac{\sqrt{6}\mathbb{M}_{3}^{(1,-1;a)}(B_{2g})\mathbb{T}_{1,2}^{(b)}(E_u)}{8}$

$\boxed{\text{z802}}$ $\mathbb{G}_{4,2}^{(1,-1;c)}(E_u,1) = -\frac{\sqrt{10}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1}^{(b)}(A_{2u})}{8} - \frac{\sqrt{6}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1}^{(b)}(A_{2u})}{8} + \frac{\sqrt{10}\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(E_u)}{8} - \frac{\sqrt{6}\mathbb{M}_{3}^{(1,-1;a)}(B_{2g})\mathbb{T}_{1,1}^{(b)}(E_u)}{8}$

$\boxed{\text{z803}}$ $\mathbb{G}_{4,1}^{(1,-1;c)}(E_u,2) = \frac{\sqrt{70}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1}^{(b)}(A_{2u})}{56} - \frac{3\sqrt{42}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1}^{(b)}(A_{2u})}{56} - \frac{\sqrt{70}\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(E_u)}{56} + \frac{\sqrt{42}\mathbb{M}_{3}^{(1,-1;a)}(B_{1g})\mathbb{T}_{1,1}^{(b)}(E_u)}{14} + \frac{3\sqrt{42}\mathbb{M}_{3}^{(1,-1;a)}(B_{2g})\mathbb{T}_{1,2}^{(b)}(E_u)}{56}$

$\boxed{\text{z804}}$ $\mathbb{G}_{4,2}^{(1,-1;c)}(E_u,2) = \frac{\sqrt{70}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1}^{(b)}(A_{2u})}{56} - \frac{3\sqrt{42}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1}^{(b)}(A_{2u})}{56} + \frac{\sqrt{70}\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(E_u)}{56} - \frac{\sqrt{42}\mathbb{M}_{3}^{(1,-1;a)}(B_{1g})\mathbb{T}_{1,2}^{(b)}(E_u)}{14} + \frac{3\sqrt{42}\mathbb{M}_{3}^{(1,-1;a)}(B_{2g})\mathbb{T}_{1,1}^{(b)}(E_u)}{56}$

$\boxed{\text{z805}}$ $\mathbb{G}_{2,1}^{(1,0;c)}(E_u,a) = -\frac{\mathbb{G}_{1,2}^{(1,0;a)}(E_g)\mathbb{Q}_{1}^{(b)}(A_{2u})}{2} + \frac{\mathbb{G}_{1}^{(1,0;a)}(A_{2g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{2}$

z806 $\mathbb{G}_{2,2}^{(1,0;c)}(E_u,a) = -\frac{\mathbb{G}_{1,1}^{(1,0;a)}(E_g)\mathbb{Q}_{1}^{(b)}(A_{2u})}{2} - \frac{\mathbb{G}_{1}^{(1,0;a)}(A_{2g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{2}$

z807 $\mathbb{G}_{2,1}^{(1,0;c)}(E_u,b) = -\frac{\sqrt{3}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1}^{(b)}(A_{2u})}{6} + \frac{\mathbb{T}_{2}^{(1,0;a)}(A_{1g})\mathbb{T}_{1,1}^{(b)}(E_u)}{2} + \frac{\sqrt{3}\mathbb{T}_{2}^{(1,0;a)}(B_{1g})\mathbb{T}_{1,1}^{(b)}(E_u)}{6} + \frac{\sqrt{3}\mathbb{T}_{2}^{(1,0;a)}(B_{2g})\mathbb{T}_{1,2}^{(b)}(E_u)}{6}$

z808 $\mathbb{G}_{2,2}^{(1,0;c)}(E_u,b) = -\frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1}^{(b)}(A_{2u})}{6} + \frac{\mathbb{T}_{2}^{(1,0;a)}(A_{1g})\mathbb{T}_{1,2}^{(b)}(E_u)}{2} - \frac{\sqrt{3}\mathbb{T}_{2}^{(1,0;a)}(B_{1g})\mathbb{T}_{1,2}^{(b)}(E_u)}{6} + \frac{\sqrt{3}\mathbb{T}_{2}^{(1,0;a)}(B_{2g})\mathbb{T}_{1,1}^{(b)}(E_u)}{6}$

z809 $\mathbb{G}_{2,1}^{(1,1;c)}(E_u) = -\frac{\mathbb{M}_{1,2}^{(1,1;a)}(E_g)\mathbb{T}_{1}^{(b)}(A_{2u})}{2} + \frac{\mathbb{M}_{1}^{(1,1;a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(E_u)}{2}$

z810 $\mathbb{G}_{2,2}^{(1,1;c)}(E_u) = -\frac{\mathbb{M}_{1,1}^{(1,1;a)}(E_g)\mathbb{T}_{1}^{(b)}(A_{2u})}{2} - \frac{\mathbb{M}_{1}^{(1,1;a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(E_u)}{2}$

- 'Ce'-'Si' bond-cluster : `Si;Ce_001_1`
  * bra: $\langle p_x,\uparrow|$, $\langle p_x,\downarrow|$, $\langle p_y,\uparrow|$, $\langle p_y,\downarrow|$, $\langle p_z,\uparrow|$, $\langle p_z,\downarrow|$
  * ket: $|p_x,\uparrow\rangle$, $|p_x,\downarrow\rangle$, $|p_y,\uparrow\rangle$, $|p_y,\downarrow\rangle$, $|p_z,\uparrow\rangle$, $|p_z,\downarrow\rangle$
  * wyckoff: `8a@8j`

z31 $\mathbb{Q}_{0}^{(c)}(A_{1g},a) = \mathbb{Q}_{0}^{(a)}(A_{1g})\mathbb{Q}_{0}^{(b)}(A_{1g})$

z32 $\mathbb{Q}_{0}^{(c)}(A_{1g},b) = \frac{\sqrt{3}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{3} + \frac{\sqrt{3}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{3} + \frac{\sqrt{3}\mathbb{Q}_{2}^{(a)}(B_{2g})\mathbb{Q}_{2}^{(b)}(B_{2g})}{3}$

z33 $\mathbb{Q}_{0}^{(c)}(A_{1g},c) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_g)\mathbb{M}_{1,1}^{(b)}(E_g)}{2} + \frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_g)\mathbb{M}_{1,2}^{(b)}(E_g)}{2}$

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

z35 $\mathbb{Q}_{2}^{(c)}(A_{1g},b) = \frac{\sqrt{6}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} + \frac{\sqrt{6}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{6} - \frac{\sqrt{6}\mathbb{Q}_{2}^{(a)}(B_{2g})\mathbb{Q}_{2}^{(b)}(B_{2g})}{3}$

z36 $\mathbb{Q}_{0}^{(1,-1;c)}(A_{1g},a) = \frac{\sqrt{3}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{3} + \frac{\sqrt{3}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{3} + \frac{\sqrt{3}\mathbb{Q}_{2}^{(1,-1;a)}(B_{2g})\mathbb{Q}_{2}^{(b)}(B_{2g})}{3}$

z37 $\mathbb{Q}_{0}^{(1,-1;c)}(A_{1g},b) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(1,-1;a)}(E_g)\mathbb{M}_{1,1}^{(b)}(E_g)}{2} + \frac{\sqrt{2}\mathbb{M}_{1,2}^{(1,-1;a)}(E_g)\mathbb{M}_{1,2}^{(b)}(E_g)}{2}$

z38 $\mathbb{Q}_{2}^{(1,-1;c)}(A_{1g},a) = \mathbb{Q}_{2}^{(1,-1;a)}(A_{1g})\mathbb{Q}_{0}^{(b)}(A_{1g})$

$\boxed{\text{z39}}$ $\mathbb{Q}_2^{(1,-1;c)}(A_{1g},b) = \frac{\sqrt{6}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} + \frac{\sqrt{6}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{6} - \frac{\sqrt{6}\mathbb{Q}_{2}^{(1,-1;a)}(B_{2g})\mathbb{Q}_{2}^{(b)}(B_{2g})}{3}$

$\boxed{\text{z40}}$ $\mathbb{Q}_2^{(1,-1;c)}(A_{1g},c) = \mathbb{M}_3^{(1,-1;a)}(B_{2g})\mathbb{T}_2^{(b)}(B_{2g})$

$\boxed{\text{z41}}$ $\mathbb{Q}_2^{(1,-1;c)}(A_{1g},d) = -\frac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{M}_{1,1}^{(b)}(E_g)}{4} - \frac{\sqrt{5}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{M}_{1,1}^{(b)}(E_g)}{4} - \frac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{M}_{1,2}^{(b)}(E_g)}{4} - \frac{\sqrt{5}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{M}_{1,2}^{(b)}(E_g)}{4}$

$\boxed{\text{z42}}$ $\mathbb{Q}_4^{(1,-1;c)}(A_{1g},1) = \frac{\sqrt{5}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{M}_{1,1}^{(b)}(E_g)}{4} - \frac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{M}_{1,1}^{(b)}(E_g)}{4} + \frac{\sqrt{5}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{M}_{1,2}^{(b)}(E_g)}{4} - \frac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{M}_{1,2}^{(b)}(E_g)}{4}$

$\boxed{\text{z43}}$ $\mathbb{Q}_0^{(1,0;c)}(A_{1g}) = \mathbb{T}_2^{(1,0;a)}(B_{2g})\mathbb{T}_2^{(b)}(B_{2g})$

$\boxed{\text{z44}}$ $\mathbb{Q}_2^{(1,0;c)}(A_{1g},a) = \frac{\sqrt{2}\mathbb{G}_{1,1}^{(1,0;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} + \frac{\sqrt{2}\mathbb{G}_{1,2}^{(1,0;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$

$\boxed{\text{z45}}$ $\mathbb{Q}_2^{(1,0;c)}(A_{1g},b) = \mathbb{T}_2^{(1,0;a)}(A_{1g})\mathbb{T}_0^{(b)}(A_{1g})$

$\boxed{\text{z46}}$ $\mathbb{Q}_2^{(1,0;c)}(A_{1g},c) = -\frac{\sqrt{2}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{M}_{1,1}^{(b)}(E_g)}{2} - \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{M}_{1,2}^{(b)}(E_g)}{2}$

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

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

$\boxed{\text{z88}}$ $\mathbb{Q}_5^{(c)}(A_{1u}) = \mathbb{Q}_2^{(a)}(B_{1g})\mathbb{Q}_3^{(b)}(B_{1u})$

$\boxed{\text{z89}}$ $\mathbb{Q}_5^{(1,-1;c)}(A_{1u},a) = \mathbb{Q}_2^{(1,-1;a)}(B_{1g})\mathbb{Q}_3^{(b)}(B_{1u})$

$\boxed{\text{z90}}$ $\mathbb{Q}_5^{(1,-1;c)}(A_{1u},b) = \mathbb{M}_3^{(1,-1;a)}(B_{1g})\mathbb{M}_2^{(b)}(B_{1u})$

$\boxed{\text{z91}}$ $\mathbb{G}_0^{(c)}(A_{1u}) = \frac{\sqrt{3}\mathbb{M}_{1,1}^{(a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{3} - \frac{\sqrt{3}\mathbb{M}_{1,2}^{(a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{3} + \frac{\sqrt{3}\mathbb{M}_{1}^{(a)}(A_{2g})\mathbb{T}_{1}^{(b)}(A_{2u})}{3}$

$\boxed{\text{z92}}$ $\mathbb{G}_2^{(c)}(A_{1u},a) = -\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(E_u)}{2} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(E_u)}{2}$

$\boxed{\text{z93}}$ $\mathbb{G}_2^{(c)}(A_{1u},b) = -\frac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{6} + \frac{\sqrt{6}\mathbb{M}_{1}^{(a)}(A_{2g})\mathbb{T}_{1}^{(b)}(A_{2u})}{3}$

$\boxed{\text{z94}}$ $\mathbb{G}_0^{(1,-1;c)}(A_{1u}) = \frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,-1;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{3} - \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,-1;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{3} + \frac{\sqrt{3}\mathbb{M}_{1}^{(1,-1;a)}(A_{2g})\mathbb{T}_{1}^{(b)}(A_{2u})}{3}$

$\boxed{\text{z95}}$ $\mathbb{G}_2^{(1,-1;c)}(A_{1u}, a) = -\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(E_u)}{2} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(E_u)}{2}$

$\boxed{\text{z96}}$ $\mathbb{G}_2^{(1,-1;c)}(A_{1u}, b) = -\frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{6} + \frac{\sqrt{6}\mathbb{M}_{1}^{(1,-1;a)}(A_{2g})\mathbb{T}_{1}^{(b)}(A_{2u})}{3}$

$\boxed{\text{z97}}$ $\mathbb{G}_2^{(1,-1;c)}(A_{1u}, c) = -\frac{\sqrt{21}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1,1}^{(b)}(E_u)}{14} - \frac{\sqrt{35}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1,1}^{(b)}(E_u)}{14} + \frac{\sqrt{21}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1,2}^{(b)}(E_u)}{14} + \frac{\sqrt{35}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1,2}^{(b)}(E_u)}{14} + \frac{\sqrt{21}\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{T}_{1}^{(b)}(A_{2u})}{7}$

$\boxed{\text{z98}}$ $\mathbb{G}_4^{(1,-1;c)}(A_{1u}, 1) = \frac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1,1}^{(b)}(E_u)}{3} - \frac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1,2}^{(b)}(E_u)}{3} + \frac{\sqrt{3}\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{T}_{1}^{(b)}(A_{2u})}{3}$

$\boxed{\text{z99}}$ $\mathbb{G}_4^{(1,-1;c)}(A_{1u}, 2) = -\frac{\sqrt{105}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1,1}^{(b)}(E_u)}{42} + \frac{3\sqrt{7}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1,1}^{(b)}(E_u)}{14} + \frac{\sqrt{105}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1,2}^{(b)}(E_u)}{42} - \frac{3\sqrt{7}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1,2}^{(b)}(E_u)}{14} + \frac{\sqrt{105}\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{T}_{1}^{(b)}(A_{2u})}{21}$

$\boxed{\text{z100}}$ $\mathbb{G}_0^{(1,0;c)}(A_{1u}, a) = \frac{\sqrt{3}\mathbb{G}_{1,1}^{(1,0;a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(E_u)}{3} - \frac{\sqrt{3}\mathbb{G}_{1,2}^{(1,0;a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(E_u)}{3} + \frac{\sqrt{3}\mathbb{G}_{1}^{(1,0;a)}(A_{2g})\mathbb{Q}_{1}^{(b)}(A_{2u})}{3}$

$\boxed{\text{z101}}$ $\mathbb{G}_0^{(1,0;c)}(A_{1u}, b) = \mathbb{T}_2^{(1,0;a)}(B_{1g})\mathbb{M}_2^{(b)}(B_{1u})$

$\boxed{\text{z102}}$ $\mathbb{G}_2^{(1,0;c)}(A_{1u}, a) = -\frac{\sqrt{6}\mathbb{G}_{1,1}^{(1,0;a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(E_u)}{6} + \frac{\sqrt{6}\mathbb{G}_{1,2}^{(1,0;a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(E_u)}{6} + \frac{\sqrt{6}\mathbb{G}_{1}^{(1,0;a)}(A_{2g})\mathbb{Q}_{1}^{(b)}(A_{2u})}{3}$

$\boxed{\text{z103}}$ $\mathbb{G}_2^{(1,0;c)}(A_{1u}, b) = -\frac{\sqrt{2}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{2} + \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{2}$

$\boxed{\text{z104}}$ $\mathbb{G}_0^{(1,1;c)}(A_{1u}) = \frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,1;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{3} - \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,1;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{3} + \frac{\sqrt{3}\mathbb{M}_{1}^{(1,1;a)}(A_{2g})\mathbb{T}_{1}^{(b)}(A_{2u})}{3}$

$\boxed{\text{z105}}$ $\mathbb{G}_2^{(1,1;c)}(A_{1u}) = -\frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,1;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,1;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{6} + \frac{\sqrt{6}\mathbb{M}_{1}^{(1,1;a)}(A_{2g})\mathbb{T}_{1}^{(b)}(A_{2u})}{3}$

$\boxed{\text{z148}}$ $\mathbb{Q}_4^{(c)}(A_{2g}) = \mathbb{Q}_2^{(a)}(B_{1g})\mathbb{Q}_2^{(b)}(B_{2g})$

$\boxed{\text{z149}}$ $\mathbb{Q}_4^{(1,-1;c)}(A_{2g},a) = \mathbb{Q}_2^{(1,-1;a)}(B_{1g})\mathbb{Q}_2^{(b)}(B_{2g})$

$\boxed{\text{z150}}$ $\mathbb{Q}_4^{(1,-1;c)}(A_{2g},b) = -\mathbb{M}_3^{(1,-1;a)}(B_{1g})\mathbb{T}_2^{(b)}(B_{2g})$

$\boxed{\text{z151}}$ $\mathbb{Q}_4^{(1,-1;c)}(A_{2g},c) = -\frac{\sqrt{5}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{M}_{1,2}^{(b)}(E_g)}{4} + \frac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{M}_{1,2}^{(b)}(E_g)}{4} + \frac{\sqrt{5}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{M}_{1,1}^{(b)}(E_g)}{4} - \frac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{M}_{1,1}^{(b)}(E_g)}{4}$

$\boxed{\text{z152}}$ $\mathbb{Q}_4^{(1,0;c)}(A_{2g}) = \mathbb{T}_2^{(1,0;a)}(B_{1g})\mathbb{T}_2^{(b)}(B_{2g})$

$\boxed{\text{z153}}$ $\mathbb{G}_1^{(c)}(A_{2g},a) = -\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$

$\boxed{\text{z154}}$ $\mathbb{G}_1^{(c)}(A_{2g},b) = \mathbb{M}_1^{(a)}(A_{2g})\mathbb{T}_0^{(b)}(A_{1g})$

$\boxed{\text{z155}}$ $\mathbb{G}_1^{(c)}(A_{2g},c) = -\frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_g)\mathbb{M}_{1,2}^{(b)}(E_g)}{2} + \frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_g)\mathbb{M}_{1,1}^{(b)}(E_g)}{2}$

$\boxed{\text{z156}}$ $\mathbb{G}_1^{(1,-1;c)}(A_{2g},a) = -\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$

$\boxed{\text{z157}}$ $\mathbb{G}_1^{(1,-1;c)}(A_{2g},b) = \mathbb{M}_1^{(1,-1;a)}(A_{2g})\mathbb{T}_0^{(b)}(A_{1g})$

$\boxed{\text{z158}}$ $\mathbb{G}_1^{(1,-1;c)}(A_{2g},c) = -\frac{\sqrt{2}\mathbb{M}_{1,1}^{(1,-1;a)}(E_g)\mathbb{M}_{1,2}^{(b)}(E_g)}{2} + \frac{\sqrt{2}\mathbb{M}_{1,2}^{(1,-1;a)}(E_g)\mathbb{M}_{1,1}^{(b)}(E_g)}{2}$

$\boxed{\text{z159}}$ $\mathbb{G}_3^{(1,-1;c)}(A_{2g},a) = \mathbb{M}_3^{(1,-1;a)}(A_{2g})\mathbb{T}_0^{(b)}(A_{1g})$

$\boxed{\text{z160}}$ $\mathbb{G}_3^{(1,-1;c)}(A_{2g},b) = \frac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{M}_{1,2}^{(b)}(E_g)}{4} + \frac{\sqrt{5}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{M}_{1,2}^{(b)}(E_g)}{4} - \frac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{M}_{1,1}^{(b)}(E_g)}{4} - \frac{\sqrt{5}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{M}_{1,1}^{(b)}(E_g)}{4}$

$\boxed{\text{z161}}$ $\mathbb{G}_1^{(1,0;c)}(A_{2g},a) = \mathbb{G}_1^{(1,0;a)}(A_{2g})\mathbb{Q}_0^{(b)}(A_{1g})$

$\boxed{\text{z162}}$ $\mathbb{G}_1^{(1,0;c)}(A_{2g},b) = \frac{\sqrt{2}\mathbb{G}_{1,1}^{(1,0;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2} - \frac{\sqrt{2}\mathbb{G}_{1,2}^{(1,0;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$

$\boxed{\text{z163}}$ $\mathbb{G}_1^{(1,0;c)}(A_{2g},c) = -\frac{\sqrt{2}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{M}_{1,2}^{(b)}(E_g)}{2} + \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{M}_{1,1}^{(b)}(E_g)}{2}$

$$\boxed{\text{z164}} \quad \mathbb{G}_{1}^{(1,1;c)}(A_{2g}, a) = \mathbb{M}_{1}^{(1,1;a)}(A_{2g})\mathbb{T}_{0}^{(b)}(A_{1g})$$

$$\boxed{\text{z165}} \quad \mathbb{G}_{1}^{(1,1;c)}(A_{2g}, b) = -\frac{\sqrt{2}\mathbb{M}_{1,1}^{(1,1;a)}(E_{g})\mathbb{M}_{1,2}^{(b)}(E_{g})}{2} + \frac{\sqrt{2}\mathbb{M}_{1,2}^{(1,1;a)}(E_{g})\mathbb{M}_{1,1}^{(b)}(E_{g})}{2}$$

$$\boxed{\text{z208}} \quad \mathbb{Q}_{1}^{(c)}(A_{2u}, a) = \mathbb{Q}_{0}^{(a)}(A_{1g})\mathbb{Q}_{1}^{(b)}(A_{2u})$$

$$\boxed{\text{z209}} \quad \mathbb{Q}_{1}^{(c)}(A_{2u}, b) = \frac{\sqrt{30}\mathbb{Q}_{2,1}^{(a)}(E_{g})\mathbb{Q}_{1,2}^{(b)}(E_{u})}{10} + \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(a)}(E_{g})\mathbb{Q}_{1,1}^{(b)}(E_{u})}{10} + \frac{\sqrt{10}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{1}^{(b)}(A_{2u})}{5}$$

$$\boxed{\text{z210}} \quad \mathbb{Q}_{1}^{(c)}(A_{2u}, c) = \mathbb{Q}_{2}^{(a)}(B_{2g})\mathbb{Q}_{3}^{(b)}(B_{1u})$$

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

$$\boxed{\text{z212}} \quad \mathbb{Q}_{3}^{(c)}(A_{2u}) = -\frac{\sqrt{5}\mathbb{Q}_{2,1}^{(a)}(E_{g})\mathbb{Q}_{1,2}^{(b)}(E_{u})}{5} - \frac{\sqrt{5}\mathbb{Q}_{2,2}^{(a)}(E_{g})\mathbb{Q}_{1,1}^{(b)}(E_{u})}{5} + \frac{\sqrt{15}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{1}^{(b)}(A_{2u})}{5}$$

$$\boxed{\text{z213}} \quad \mathbb{Q}_{1}^{(1,-1;c)}(A_{2u}, a) = \frac{\sqrt{30}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_{g})\mathbb{Q}_{1,2}^{(b)}(E_{u})}{10} + \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_{g})\mathbb{Q}_{1,1}^{(b)}(E_{u})}{10} + \frac{\sqrt{10}\mathbb{Q}_{2}^{(1,-1;a)}(A_{1g})\mathbb{Q}_{1}^{(b)}(A_{2u})}{5}$$

$$\boxed{\text{z214}} \quad \mathbb{Q}_{1}^{(1,-1;c)}(A_{2u}, b) = \mathbb{Q}_{2}^{(1,-1;a)}(B_{2g})\mathbb{Q}_{3}^{(b)}(B_{1u})$$

$$\boxed{\text{z215}} \quad \mathbb{Q}_{1}^{(1,-1;c)}(A_{2u}, c) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(1,-1;a)}(E_{g})\mathbb{T}_{1,2}^{(b)}(E_{u})}{2} + \frac{\sqrt{2}\mathbb{M}_{1,2}^{(1,-1;a)}(E_{g})\mathbb{T}_{1,1}^{(b)}(E_{u})}{2}$$

$$\boxed{\text{z216}} \quad \mathbb{Q}_{1}^{(1,-1;c)}(A_{2u}, d) = \mathbb{M}_{3}^{(1,-1;a)}(B_{2g})\mathbb{M}_{2}^{(b)}(B_{1u})$$

$$\boxed{\text{z217}} \quad \mathbb{Q}_{3}^{(1,-1;c)}(A_{2u}, a) = -\frac{\sqrt{5}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_{g})\mathbb{Q}_{1,2}^{(b)}(E_{u})}{5} - \frac{\sqrt{5}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_{g})\mathbb{Q}_{1,1}^{(b)}(E_{u})}{5} + \frac{\sqrt{15}\mathbb{Q}_{2}^{(1,-1;a)}(A_{1g})\mathbb{Q}_{1}^{(b)}(A_{2u})}{5}$$

$$\boxed{\text{z218}} \quad \mathbb{Q}_{3}^{(1,-1;c)}(A_{2u}, b) = -\frac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(E_{g},1)\mathbb{T}_{1,2}^{(b)}(E_{u})}{4} - \frac{\sqrt{5}\mathbb{M}_{3,1}^{(1,-1;a)}(E_{g},2)\mathbb{T}_{1,2}^{(b)}(E_{u})}{4} - \frac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(E_{g},1)\mathbb{T}_{1,1}^{(b)}(E_{u})}{4} - \frac{\sqrt{5}\mathbb{M}_{3,2}^{(1,-1;a)}(E_{g},2)\mathbb{T}_{1,1}^{(b)}(E_{u})}{4}$$

$$\boxed{\text{z219}} \quad \mathbb{Q}_{1}^{(1,0;c)}(A_{2u}, a) = \frac{\sqrt{2}\mathbb{G}_{1,1}^{(1,0;a)}(E_{g})\mathbb{Q}_{1,2}^{(b)}(E_{u})}{2} + \frac{\sqrt{2}\mathbb{G}_{1,2}^{(1,0;a)}(E_{g})\mathbb{Q}_{1,1}^{(b)}(E_{u})}{2}$$

$$\boxed{\text{z220}} \quad \mathbb{Q}_{1}^{(1,0;c)}(A_{2u}, b) = \frac{\sqrt{30}\mathbb{T}_{2,1}^{(1,0;a)}(E_{g})\mathbb{T}_{1,2}^{(b)}(E_{u})}{10} + \frac{\sqrt{30}\mathbb{T}_{2,2}^{(1,0;a)}(E_{g})\mathbb{T}_{1,1}^{(b)}(E_{u})}{10} + \frac{\sqrt{10}\mathbb{T}_{2}^{(1,0;a)}(A_{1g})\mathbb{T}_{1}^{(b)}(A_{2u})}{5}$$

$\boxed{\text{z221}}$ $\mathbb{Q}_1^{(1,0;c)}(A_{2u},c) = -\mathbb{T}_2^{(1,0;a)}(B_{2g})\mathbb{M}_2^{(b)}(B_{1u})$

$\boxed{\text{z222}}$ $\mathbb{Q}_3^{(1,0;c)}(A_{2u}) = -\frac{\sqrt{5}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{5} - \frac{\sqrt{5}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{5} + \frac{\sqrt{15}\mathbb{T}_2^{(1,0;a)}(A_{1g})\mathbb{T}_1^{(b)}(A_{2u})}{5}$

$\boxed{\text{z223}}$ $\mathbb{Q}_1^{(1,1;c)}(A_{2u},a) = \mathbb{Q}_0^{(1,1;a)}(A_{1g})\mathbb{Q}_1^{(b)}(A_{2u})$

$\boxed{\text{z224}}$ $\mathbb{Q}_1^{(1,1;c)}(A_{2u},b) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(1,1;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{2} + \frac{\sqrt{2}\mathbb{M}_{1,2}^{(1,1;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{2}$

$\boxed{\text{z225}}$ $\mathbb{G}_4^{(1,-1;c)}(A_{2u}) = \frac{\sqrt{5}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1,2}^{(b)}(E_u)}{4} - \frac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1,2}^{(b)}(E_u)}{4} + \frac{\sqrt{5}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1,1}^{(b)}(E_u)}{4} - \frac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1,1}^{(b)}(E_u)}{4}$

$\boxed{\text{z334}}$ $\mathbb{Q}_2^{(c)}(B_{1g},a) = \mathbb{Q}_2^{(a)}(B_{1g})\mathbb{Q}_0^{(b)}(A_{1g})$

$\boxed{\text{z335}}$ $\mathbb{Q}_2^{(c)}(B_{1g},b) = -\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$

$\boxed{\text{z336}}$ $\mathbb{Q}_2^{(c)}(B_{1g},c) = -\mathbb{M}_1^{(a)}(A_{2g})\mathbb{T}_2^{(b)}(B_{2g})$

$\boxed{\text{z337}}$ $\mathbb{Q}_2^{(c)}(B_{1g},d) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_g)\mathbb{M}_{1,1}^{(b)}(E_g)}{2} - \frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_g)\mathbb{M}_{1,2}^{(b)}(E_g)}{2}$

$\boxed{\text{z338}}$ $\mathbb{Q}_2^{(1,-1;c)}(B_{1g},a) = \mathbb{Q}_2^{(1,-1;a)}(B_{1g})\mathbb{Q}_0^{(b)}(A_{1g})$

$\boxed{\text{z339}}$ $\mathbb{Q}_2^{(1,-1;c)}(B_{1g},b) = -\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$

$\boxed{\text{z340}}$ $\mathbb{Q}_2^{(1,-1;c)}(B_{1g},c) = -\mathbb{M}_1^{(1,-1;a)}(A_{2g})\mathbb{T}_2^{(b)}(B_{2g})$

$\boxed{\text{z341}}$ $\mathbb{Q}_2^{(1,-1;c)}(B_{1g},d) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(1,-1;a)}(E_g)\mathbb{M}_{1,1}^{(b)}(E_g)}{2} - \frac{\sqrt{2}\mathbb{M}_{1,2}^{(1,-1;a)}(E_g)\mathbb{M}_{1,2}^{(b)}(E_g)}{2}$

$\boxed{\text{z342}}$ $\mathbb{Q}_2^{(1,-1;c)}(B_{1g},e) = \mathbb{M}_3^{(1,-1;a)}(A_{2g})\mathbb{T}_2^{(b)}(B_{2g})$

$\boxed{\text{z343}}$ $\mathbb{Q}_2^{(1,-1;c)}(B_{1g},f) = \frac{3\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{M}_{1,1}^{(b)}(E_g)}{8} - \frac{\sqrt{5}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{M}_{1,1}^{(b)}(E_g)}{8} - \frac{3\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{M}_{1,2}^{(b)}(E_g)}{8} + \frac{\sqrt{5}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{M}_{1,2}^{(b)}(E_g)}{8}$

$\boxed{\text{z344}}$ $\mathbb{Q}_4^{(1,-1;c)}(B_{1g}) = \frac{\sqrt{5}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{M}_{1,1}^{(b)}(E_g)}{8} + \frac{3\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{M}_{1,1}^{(b)}(E_g)}{8} - \frac{\sqrt{5}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{M}_{1,2}^{(b)}(E_g)}{8} - \frac{3\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{M}_{1,2}^{(b)}(E_g)}{8}$

$\boxed{\text{z345}}$ $\mathbb{Q}_2^{(1,0;c)}(B_{1g},a) = \frac{\sqrt{6}\mathbb{G}_{1,1}^{(1,0;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} - \frac{\sqrt{6}\mathbb{G}_{1,2}^{(1,0;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{6} - \frac{\sqrt{6}\mathbb{G}_{1}^{(1,0;a)}(A_{2g})\mathbb{Q}_{2}^{(b)}(B_{2g})}{3}$

$\boxed{\text{z346}}$ $\mathbb{Q}_2^{(1,0;c)}(B_{1g},b) = \mathbb{T}_2^{(1,0;a)}(B_{1g})\mathbb{T}_0^{(b)}(A_{1g})$

$\boxed{\text{z347}}$ $\mathbb{Q}_2^{(1,0;c)}(B_{1g},c) = -\frac{\sqrt{2}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{M}_{1,1}^{(b)}(E_g)}{2} + \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{M}_{1,2}^{(b)}(E_g)}{2}$

$\boxed{\text{z348}}$ $\mathbb{Q}_2^{(1,1;c)}(B_{1g},a) = -\mathbb{M}_1^{(1,1;a)}(A_{2g})\mathbb{T}_2^{(b)}(B_{2g})$

$\boxed{\text{z349}}$ $\mathbb{Q}_2^{(1,1;c)}(B_{1g},b) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(1,1;a)}(E_g)\mathbb{M}_{1,1}^{(b)}(E_g)}{2} - \frac{\sqrt{2}\mathbb{M}_{1,2}^{(1,1;a)}(E_g)\mathbb{M}_{1,2}^{(b)}(E_g)}{2}$

$\boxed{\text{z350}}$ $\mathbb{G}_3^{(1,-1;c)}(B_{1g}) = \mathbb{M}_3^{(1,-1;a)}(B_{1g})\mathbb{T}_0^{(b)}(A_{1g})$

$\boxed{\text{z351}}$ $\mathbb{G}_3^{(1,0;c)}(B_{1g}) = \frac{\sqrt{3}\mathbb{G}_{1,1}^{(1,0;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{3} - \frac{\sqrt{3}\mathbb{G}_{1,2}^{(1,0;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{3} + \frac{\sqrt{3}\mathbb{G}_{1}^{(1,0;a)}(A_{2g})\mathbb{Q}_{2}^{(b)}(B_{2g})}{3}$

$\boxed{\text{z352}}$ $\mathbb{Q}_3^{(c)}(B_{1u},a) = \mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_3^{(b)}(B_{1u})$

$\boxed{\text{z353}}$ $\mathbb{Q}_3^{(c)}(B_{1u},b) = \frac{\sqrt{3}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(E_u)}{3} + \frac{\sqrt{3}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(E_u)}{3} + \frac{\sqrt{3}\mathbb{Q}_{2}^{(a)}(B_{2g})\mathbb{Q}_{1}^{(b)}(A_{2u})}{3}$

$\boxed{\text{z354}}$ $\mathbb{Q}_5^{(c)}(B_{1u}) = -\mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_3^{(b)}(B_{1u})$

$\boxed{\text{z355}}$ $\mathbb{Q}_3^{(1,-1;c)}(B_{1u},a) = \frac{\sqrt{3}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(E_u)}{3} + \frac{\sqrt{3}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(E_u)}{3} + \frac{\sqrt{3}\mathbb{Q}_{2}^{(1,-1;a)}(B_{2g})\mathbb{Q}_{1}^{(b)}(A_{2u})}{3}$

$\boxed{\text{z356}}$ $\mathbb{Q}_3^{(1,-1;c)}(B_{1u},b) = -\frac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1,1}^{(b)}(E_u)}{3} - \frac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1,2}^{(b)}(E_u)}{3} - \frac{\sqrt{3}\mathbb{M}_{3}^{(1,-1;a)}(B_{2g})\mathbb{T}_{1}^{(b)}(A_{2u})}{3}$

$\boxed{\text{z357}}$ $\mathbb{Q}_5^{(1,-1;c)}(B_{1u}) = -\mathbb{Q}_2^{(1,-1;a)}(A_{1g})\mathbb{Q}_3^{(b)}(B_{1u})$

$\boxed{\text{z358}}$ $\mathbb{Q}_3^{(1,0;c)}(B_{1u},a) = \frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{3} + \frac{\sqrt{3}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{3} + \frac{\sqrt{3}\mathbb{T}_{2}^{(1,0;a)}(B_{2g})\mathbb{T}_{1}^{(b)}(A_{2u})}{3}$

$\boxed{\text{z359}}$ $\mathbb{Q}_3^{(1,0;c)}(B_{1u}, b) = \mathbb{T}_2^{(1,0;a)}(A_{1g})\mathbb{M}_2^{(b)}(B_{1u})$

$\boxed{\text{z360}}$ $\mathbb{Q}_3^{(1,1;c)}(B_{1u}) = \mathbb{Q}_0^{(1,1;a)}(A_{1g})\mathbb{Q}_3^{(b)}(B_{1u})$

$\boxed{\text{z361}}$ $\mathbb{G}_2^{(c)}(B_{1u}, a) = -\frac{\sqrt{6}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(E_u)}{6} - \frac{\sqrt{6}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(E_u)}{6} + \frac{\sqrt{6}\mathbb{Q}_2^{(a)}(B_{2g})\mathbb{Q}_1^{(b)}(A_{2u})}{3}$

$\boxed{\text{z362}}$ $\mathbb{G}_2^{(c)}(B_{1u}, b) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{2} + \frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{2}$

$\boxed{\text{z363}}$ $\mathbb{G}_2^{(1,-1;c)}(B_{1u}, a) = -\frac{\sqrt{6}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(E_u)}{6} - \frac{\sqrt{6}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(E_u)}{6} + \frac{\sqrt{6}\mathbb{Q}_2^{(1,-1;a)}(B_{2g})\mathbb{Q}_1^{(b)}(A_{2u})}{3}$

$\boxed{\text{z364}}$ $\mathbb{G}_2^{(1,-1;c)}(B_{1u}, b) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(1,-1;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{2} + \frac{\sqrt{2}\mathbb{M}_{1,2}^{(1,-1;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{2}$

$\boxed{\text{z365}}$ $\mathbb{G}_2^{(1,-1;c)}(B_{1u}, c) = \frac{3\sqrt{7}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1,1}^{(b)}(E_u)}{14} - \frac{\sqrt{105}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1,1}^{(b)}(E_u)}{42} + \frac{3\sqrt{7}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1,2}^{(b)}(E_u)}{14}$
$- \frac{\sqrt{105}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1,2}^{(b)}(E_u)}{42} + \frac{\sqrt{105}\mathbb{M}_3^{(1,-1;a)}(B_{2g})\mathbb{T}_1^{(b)}(A_{2u})}{21}$

$\boxed{\text{z366}}$ $\mathbb{G}_4^{(1,-1;c)}(B_{1u}) = \frac{\sqrt{35}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1,1}^{(b)}(E_u)}{14} + \frac{\sqrt{21}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1,1}^{(b)}(E_u)}{14} + \frac{\sqrt{35}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1,2}^{(b)}(E_u)}{14} + \frac{\sqrt{21}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1,2}^{(b)}(E_u)}{14} - \frac{\sqrt{21}\mathbb{M}_3^{(1,-1;a)}(B_{2g})\mathbb{T}_1^{(b)}(A_{2u})}{7}$

$\boxed{\text{z367}}$ $\mathbb{G}_2^{(1,0;c)}(B_{1u}, a) = \frac{\sqrt{2}\mathbb{G}_{1,1}^{(1,0;a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(E_u)}{2} + \frac{\sqrt{2}\mathbb{G}_{1,2}^{(1,0;a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(E_u)}{2}$

$\boxed{\text{z368}}$ $\mathbb{G}_2^{(1,0;c)}(B_{1u}, b) = -\frac{\sqrt{6}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{6} - \frac{\sqrt{6}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{6} + \frac{\sqrt{6}\mathbb{T}_2^{(1,0;a)}(B_{2g})\mathbb{T}_1^{(b)}(A_{2u})}{3}$

$\boxed{\text{z369}}$ $\mathbb{G}_2^{(1,1;c)}(B_{1u}) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(1,1;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{2} + \frac{\sqrt{2}\mathbb{M}_{1,2}^{(1,1;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{2}$

$\boxed{\text{z370}}$ $\mathbb{Q}_2^{(c)}(B_{2g}, a) = \mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_2^{(b)}(B_{2g})$

$\boxed{\text{z371}}$ $\mathbb{Q}_2^{(c)}(B_{2g}, b) = \mathbb{Q}_2^{(a)}(B_{2g})\mathbb{Q}_0^{(b)}(A_{1g})$

$\boxed{\text{z372}}$ $\mathbb{Q}_2^{(c)}(B_{2g}, c) = \frac{\sqrt{30}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{10} + \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{10} - \frac{\sqrt{10}\mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_2^{(b)}(B_{2g})}{5}$

$\boxed{\text{z373}}$ $\mathbb{Q}_2^{(c)}(B_{2g},d)=-\frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_g)\mathbb{M}_{1,2}^{(b)}(E_g)}{2}-\frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_g)\mathbb{M}_{1,1}^{(b)}(E_g)}{2}$

$\boxed{\text{z374}}$ $\mathbb{Q}_4^{(c)}(B_{2g})=\frac{\sqrt{5}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{5}+\frac{\sqrt{5}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{5}+\frac{\sqrt{15}\mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_2^{(b)}(B_{2g})}{5}$

$\boxed{\text{z375}}$ $\mathbb{Q}_2^{(1,-1;c)}(B_{2g},a)=\mathbb{Q}_2^{(1,-1;a)}(B_{2g})\mathbb{Q}_0^{(b)}(A_{1g})$

$\boxed{\text{z376}}$ $\mathbb{Q}_2^{(1,-1;c)}(B_{2g},b)=\frac{\sqrt{30}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{10}+\frac{\sqrt{30}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{10}-\frac{\sqrt{10}\mathbb{Q}_2^{(1,-1;a)}(A_{1g})\mathbb{Q}_2^{(b)}(B_{2g})}{5}$

$\boxed{\text{z377}}$ $\mathbb{Q}_2^{(1,-1;c)}(B_{2g},c)=-\frac{\sqrt{2}\mathbb{M}_{1,1}^{(1,-1;a)}(E_g)\mathbb{M}_{1,2}^{(b)}(E_g)}{2}-\frac{\sqrt{2}\mathbb{M}_{1,2}^{(1,-1;a)}(E_g)\mathbb{M}_{1,1}^{(b)}(E_g)}{2}$

$\boxed{\text{z378}}$ $\mathbb{Q}_2^{(1,-1;c)}(B_{2g},d)=\frac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{M}_{1,2}^{(b)}(E_g)}{4}-\frac{\sqrt{5}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{M}_{1,2}^{(b)}(E_g)}{4}+\frac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{M}_{1,1}^{(b)}(E_g)}{4}-\frac{\sqrt{5}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{M}_{1,1}^{(b)}(E_g)}{4}$

$\boxed{\text{z379}}$ $\mathbb{Q}_4^{(1,-1;c)}(B_{2g},a)=\frac{\sqrt{5}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{5}+\frac{\sqrt{5}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{5}+\frac{\sqrt{15}\mathbb{Q}_2^{(1,-1;a)}(A_{1g})\mathbb{Q}_2^{(b)}(B_{2g})}{5}$

$\boxed{\text{z380}}$ $\mathbb{Q}_4^{(1,-1;c)}(B_{2g},b)=\frac{\sqrt{5}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{M}_{1,2}^{(b)}(E_g)}{4}+\frac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{M}_{1,2}^{(b)}(E_g)}{4}+\frac{\sqrt{5}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{M}_{1,1}^{(b)}(E_g)}{4}+\frac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{M}_{1,1}^{(b)}(E_g)}{4}$

$\boxed{\text{z381}}$ $\mathbb{Q}_2^{(1,0;c)}(B_{2g},a)=-\frac{\sqrt{2}\mathbb{G}_{1,1}^{(1,0;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}-\frac{\sqrt{2}\mathbb{G}_{1,2}^{(1,0;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$

$\boxed{\text{z382}}$ $\mathbb{Q}_2^{(1,0;c)}(B_{2g},b)=\mathbb{T}_2^{(1,0;a)}(B_{2g})\mathbb{T}_0^{(b)}(A_{1g})$

$\boxed{\text{z383}}$ $\mathbb{Q}_2^{(1,0;c)}(B_{2g},c)=-\mathbb{T}_2^{(1,0;a)}(A_{1g})\mathbb{T}_2^{(b)}(B_{2g})$

$\boxed{\text{z384}}$ $\mathbb{Q}_2^{(1,0;c)}(B_{2g},d)=\frac{\sqrt{2}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{M}_{1,2}^{(b)}(E_g)}{2}+\frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{M}_{1,1}^{(b)}(E_g)}{2}$

$\boxed{\text{z385}}$ $\mathbb{Q}_2^{(1,1;c)}(B_{2g},a)=\mathbb{Q}_0^{(1,1;a)}(A_{1g})\mathbb{Q}_2^{(b)}(B_{2g})$

$\boxed{\text{z386}}$ $\mathbb{Q}_2^{(1,1;c)}(B_{2g},b)=-\frac{\sqrt{2}\mathbb{M}_{1,1}^{(1,1;a)}(E_g)\mathbb{M}_{1,2}^{(b)}(E_g)}{2}-\frac{\sqrt{2}\mathbb{M}_{1,2}^{(1,1;a)}(E_g)\mathbb{M}_{1,1}^{(b)}(E_g)}{2}$

$\boxed{\text{z387}}$ $\mathbb{G}_3^{(1,-1;c)}(B_{2g})=\mathbb{M}_3^{(1,-1;a)}(B_{2g})\mathbb{T}_0^{(b)}(A_{1g})$

$\boxed{\text{z388}}$ $$\mathbb{Q}_3^{(c)}(B_{2u},a) = -\frac{\sqrt{3}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(E_u)}{3} + \frac{\sqrt{3}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(E_u)}{3} + \frac{\sqrt{3}\mathbb{Q}_{2}^{(a)}(B_{1g})\mathbb{Q}_{1}^{(b)}(A_{2u})}{3}$$

$\boxed{\text{z389}}$ $$\mathbb{Q}_3^{(c)}(B_{2u},b) = \mathbb{M}_1^{(a)}(A_{2g})\mathbb{M}_2^{(b)}(B_{1u})$$

$\boxed{\text{z390}}$ $$\mathbb{Q}_3^{(1,-1;c)}(B_{2u},a) = -\frac{\sqrt{3}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(E_u)}{3} + \frac{\sqrt{3}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(E_u)}{3} + \frac{\sqrt{3}\mathbb{Q}_{2}^{(1,-1;a)}(B_{1g})\mathbb{Q}_{1}^{(b)}(A_{2u})}{3}$$

$\boxed{\text{z391}}$ $$\mathbb{Q}_3^{(1,-1;c)}(B_{2u},b) = \mathbb{M}_1^{(1,-1;a)}(A_{2g})\mathbb{M}_2^{(b)}(B_{1u})$$

$\boxed{\text{z392}}$ $$\mathbb{Q}_3^{(1,-1;c)}(B_{2u},c) = \frac{\sqrt{5}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1,2}^{(b)}(E_u)}{4} + \frac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1,2}^{(b)}(E_u)}{12} - \frac{\sqrt{5}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1,1}^{(b)}(E_u)}{4} - \frac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1,1}^{(b)}(E_u)}{12} + \frac{\sqrt{3}\mathbb{M}_{3}^{(1,-1;a)}(B_{1g})\mathbb{T}_{1}^{(b)}(A_{2u})}{3}$$

$\boxed{\text{z393}}$ $$\mathbb{Q}_3^{(1,-1;c)}(B_{2u},d) = -\mathbb{M}_3^{(1,-1;a)}(A_{2g})\mathbb{M}_2^{(b)}(B_{1u})$$

$\boxed{\text{z394}}$ $$\mathbb{Q}_3^{(1,0;c)}(B_{2u},a) = -\mathbb{G}_1^{(1,0;a)}(A_{2g})\mathbb{Q}_3^{(b)}(B_{1u})$$

$\boxed{\text{z395}}$ $$\mathbb{Q}_3^{(1,0;c)}(B_{2u},b) = -\frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{3} + \frac{\sqrt{3}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{3} + \frac{\sqrt{3}\mathbb{T}_{2}^{(1,0;a)}(B_{1g})\mathbb{T}_{1}^{(b)}(A_{2u})}{3}$$

$\boxed{\text{z396}}$ $$\mathbb{Q}_3^{(1,1;c)}(B_{2u}) = \mathbb{M}_1^{(1,1;a)}(A_{2g})\mathbb{M}_2^{(b)}(B_{1u})$$

$\boxed{\text{z397}}$ $$\mathbb{G}_2^{(c)}(B_{2u},a) = -\frac{\sqrt{6}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(E_u)}{6} + \frac{\sqrt{6}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(E_u)}{6} - \frac{\sqrt{6}\mathbb{Q}_{2}^{(a)}(B_{1g})\mathbb{Q}_{1}^{(b)}(A_{2u})}{3}$$

$\boxed{\text{z398}}$ $$\mathbb{G}_2^{(c)}(B_{2u},b) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{2} - \frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{2}$$

$\boxed{\text{z399}}$ $$\mathbb{G}_2^{(1,-1;c)}(B_{2u},a) = -\frac{\sqrt{6}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(E_u)}{6} + \frac{\sqrt{6}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(E_u)}{6} - \frac{\sqrt{6}\mathbb{Q}_{2}^{(1,-1;a)}(B_{1g})\mathbb{Q}_{1}^{(b)}(A_{2u})}{3}$$

$\boxed{\text{z400}}$ $$\mathbb{G}_2^{(1,-1;c)}(B_{2u},b) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(1,-1;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{2} - \frac{\sqrt{2}\mathbb{M}_{1,2}^{(1,-1;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{2}$$

$\boxed{\text{z401}}$ $$\mathbb{G}_2^{(1,-1;c)}(B_{2u},c) = -\frac{\sqrt{7}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1,2}^{(b)}(E_u)}{7} + \frac{\sqrt{105}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1,2}^{(b)}(E_u)}{21} + \frac{\sqrt{7}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1,1}^{(b)}(E_u)}{7} - \frac{\sqrt{105}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1,1}^{(b)}(E_u)}{21} + \frac{\sqrt{105}\mathbb{M}_{3}^{(1,-1;a)}(B_{1g})\mathbb{T}_{1}^{(b)}(A_{2u})}{21}$$

$\boxed{\text{z402}}$ $\mathbb{G}_4^{(1,-1;c)}(B_{2u}) = -\frac{\sqrt{35}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1,2}^{(b)}(E_u)}{28} - \frac{3\sqrt{21}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1,2}^{(b)}(E_u)}{28} + \frac{\sqrt{35}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1,1}^{(b)}(E_u)}{28} + \frac{3\sqrt{21}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1,1}^{(b)}(E_u)}{28} + \frac{\sqrt{21}\mathbb{M}_3^{(1,-1;a)}(B_{1g})\mathbb{T}_1^{(b)}(A_{2u})}{7}$

$\boxed{\text{z403}}$ $\mathbb{G}_2^{(1,0;c)}(B_{2u},a) = \frac{\sqrt{2}\mathbb{G}_{1,1}^{(1,0;a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(E_u)}{2} - \frac{\sqrt{2}\mathbb{G}_{1,2}^{(1,0;a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(E_u)}{2}$

$\boxed{\text{z404}}$ $\mathbb{G}_2^{(1,0;c)}(B_{2u},b) = -\frac{\sqrt{6}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{6} + \frac{\sqrt{6}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{6} - \frac{\sqrt{6}\mathbb{T}_2^{(1,0;a)}(B_{1g})\mathbb{T}_1^{(b)}(A_{2u})}{3}$

$\boxed{\text{z405}}$ $\mathbb{G}_2^{(1,1;c)}(B_{2u}) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(1,1;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{2} - \frac{\sqrt{2}\mathbb{M}_{1,2}^{(1,1;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{2}$

$\boxed{\text{z500}}$ $\mathbb{Q}_{2,1}^{(c)}(E_g,a) = \frac{\sqrt{2}\mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$

$\boxed{\text{z501}}$ $\mathbb{Q}_{2,2}^{(c)}(E_g,a) = \frac{\sqrt{2}\mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$

$\boxed{\text{z502}}$ $\mathbb{Q}_{2,1}^{(c)}(E_g,b) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_0^{(b)}(A_{1g})}{2}$

$\boxed{\text{z503}}$ $\mathbb{Q}_{2,2}^{(c)}(E_g,b) = \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_0^{(b)}(A_{1g})}{2}$

$\boxed{\text{z504}}$ $\mathbb{Q}_{2,1}^{(c)}(E_g,c) = \frac{\sqrt{15}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_2^{(b)}(B_{2g})}{10} + \frac{\sqrt{5}\mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{10} - \frac{\sqrt{15}\mathbb{Q}_2^{(a)}(B_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{10} + \frac{\sqrt{15}\mathbb{Q}_2^{(a)}(B_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{10}$

$\boxed{\text{z505}}$ $\mathbb{Q}_{2,2}^{(c)}(E_g,c) = \frac{\sqrt{15}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_2^{(b)}(B_{2g})}{10} + \frac{\sqrt{5}\mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{10} + \frac{\sqrt{15}\mathbb{Q}_2^{(a)}(B_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{10} + \frac{\sqrt{15}\mathbb{Q}_2^{(a)}(B_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{10}$

$\boxed{\text{z506}}$ $\mathbb{Q}_{2,1}^{(c)}(E_g,d) = \frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_g)\mathbb{T}_2^{(b)}(B_{2g})}{2}$

$\boxed{\text{z507}}$ $\mathbb{Q}_{2,2}^{(c)}(E_g,d) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_g)\mathbb{T}_2^{(b)}(B_{2g})}{2}$

$\boxed{\text{z508}}$ $\mathbb{Q}_{2,1}^{(c)}(E_g,e) = -\frac{\sqrt{2}\mathbb{M}_1^{(a)}(A_{2g})\mathbb{M}_{1,2}^{(b)}(E_g)}{2}$

$\boxed{\text{z509}}$ $\mathbb{Q}_{2,2}^{(c)}(E_g,e) = \frac{\sqrt{2}\mathbb{M}_1^{(a)}(A_{2g})\mathbb{M}_{1,1}^{(b)}(E_g)}{2}$

$\boxed{\text{z510}}$ $\mathbb{Q}_{4,1}^{(c)}(E_g,1) = -\frac{\sqrt{6}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{4} - \frac{\sqrt{2}\mathbb{Q}_{2}^{(a)}(B_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{4}$

$\boxed{\text{z511}}$ $\mathbb{Q}_{4,2}^{(c)}(E_g,1) = -\frac{\sqrt{6}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{4} + \frac{\sqrt{2}\mathbb{Q}_{2}^{(a)}(B_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{4}$

$\boxed{\text{z512}}$ $\mathbb{Q}_{4,1}^{(c)}(E_g,2) = \frac{\sqrt{10}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2}^{(b)}(B_{2g})}{10} - \frac{\sqrt{30}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{20} + \frac{3\sqrt{10}\mathbb{Q}_{2}^{(a)}(B_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{20} + \frac{\sqrt{10}\mathbb{Q}_{2}^{(a)}(B_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{10}$

$\boxed{\text{z513}}$ $\mathbb{Q}_{4,2}^{(c)}(E_g,2) = \frac{\sqrt{10}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2}^{(b)}(B_{2g})}{10} - \frac{\sqrt{30}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{20} - \frac{3\sqrt{10}\mathbb{Q}_{2}^{(a)}(B_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{20} + \frac{\sqrt{10}\mathbb{Q}_{2}^{(a)}(B_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{10}$

$\boxed{\text{z514}}$ $\mathbb{Q}_{2,1}^{(1,-1;c)}(E_g,a) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$

$\boxed{\text{z515}}$ $\mathbb{Q}_{2,2}^{(1,-1;c)}(E_g,a) = \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$

$\boxed{\text{z516}}$ $\mathbb{Q}_{2,1}^{(1,-1;c)}(E_g,b) = \frac{\sqrt{15}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2}^{(b)}(B_{2g})}{10} + \frac{\sqrt{5}\mathbb{Q}_{2}^{(1,-1;a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{10} - \frac{\sqrt{15}\mathbb{Q}_{2}^{(1,-1;a)}(B_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{10} + \frac{\sqrt{15}\mathbb{Q}_{2}^{(1,-1;a)}(B_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{10}$

$\boxed{\text{z517}}$ $\mathbb{Q}_{2,2}^{(1,-1;c)}(E_g,b) = \frac{\sqrt{15}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2}^{(b)}(B_{2g})}{10} + \frac{\sqrt{5}\mathbb{Q}_{2}^{(1,-1;a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{10} + \frac{\sqrt{15}\mathbb{Q}_{2}^{(1,-1;a)}(B_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{10} + \frac{\sqrt{15}\mathbb{Q}_{2}^{(1,-1;a)}(B_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{10}$

$\boxed{\text{z564}}$ $\mathbb{Q}_{2,1}^{(1,-1;c)}(E_g,c) = \frac{\sqrt{2}\mathbb{M}_{1,2}^{(1,-1;a)}(E_g)\mathbb{T}_{2}^{(b)}(B_{2g})}{2}$

$\boxed{\text{z565}}$ $\mathbb{Q}_{2,2}^{(1,-1;c)}(E_g,c) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(1,-1;a)}(E_g)\mathbb{T}_{2}^{(b)}(B_{2g})}{2}$

$\boxed{\text{z566}}$ $\mathbb{Q}_{2,1}^{(1,-1;c)}(E_g,d) = -\frac{\sqrt{2}\mathbb{M}_{1}^{(1,-1;a)}(A_{2g})\mathbb{M}_{1,2}^{(b)}(E_g)}{2}$

$\boxed{\text{z567}}$ $\mathbb{Q}_{2,2}^{(1,-1;c)}(E_g,d) = \frac{\sqrt{2}\mathbb{M}_{1}^{(1,-1;a)}(A_{2g})\mathbb{M}_{1,1}^{(b)}(E_g)}{2}$

$\boxed{\text{z568}}$ $\mathbb{Q}_{2,1}^{(1,-1;c)}(E_g,e) = \frac{\sqrt{2}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_{2}^{(b)}(B_{2g})}{2}$

$\boxed{\text{z569}}$ $\mathbb{Q}_{2,2}^{(1,-1;c)}(E_g,e) = \frac{\sqrt{2}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_{2}^{(b)}(B_{2g})}{2}$

$\boxed{\text{z570}}$ $$\mathbb{Q}_{2,1}^{(1,-1;c)}(E_g,f)=\frac{\sqrt{78}\mathbb{M}_3^{(1,-1;a)}(A_{2g})\mathbb{M}_{1,2}^{(b)}(E_g)}{26}+\frac{\sqrt{130}\mathbb{M}_3^{(1,-1;a)}(B_{1g})\mathbb{M}_{1,1}^{(b)}(E_g)}{26}+\frac{\sqrt{130}\mathbb{M}_3^{(1,-1;a)}(B_{2g})\mathbb{M}_{1,2}^{(b)}(E_g)}{26}$$

$\boxed{\text{z571}}$ $$\mathbb{Q}_{2,2}^{(1,-1;c)}(E_g,f)=-\frac{\sqrt{78}\mathbb{M}_3^{(1,-1;a)}(A_{2g})\mathbb{M}_{1,1}^{(b)}(E_g)}{26}-\frac{\sqrt{130}\mathbb{M}_3^{(1,-1;a)}(B_{1g})\mathbb{M}_{1,2}^{(b)}(E_g)}{26}+\frac{\sqrt{130}\mathbb{M}_3^{(1,-1;a)}(B_{2g})\mathbb{M}_{1,1}^{(b)}(E_g)}{26}$$

$\boxed{\text{z572}}$ $$\mathbb{Q}_{4,1}^{(1,-1;c)}(E_g,1a)=-\frac{\sqrt{6}\mathbb{Q}_2^{(1,-1;a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{4}-\frac{\sqrt{2}\mathbb{Q}_2^{(1,-1;a)}(B_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{4}$$

$\boxed{\text{z573}}$ $$\mathbb{Q}_{4,2}^{(1,-1;c)}(E_g,1a)=-\frac{\sqrt{6}\mathbb{Q}_2^{(1,-1;a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{4}+\frac{\sqrt{2}\mathbb{Q}_2^{(1,-1;a)}(B_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{4}$$

$\boxed{\text{z574}}$ $$\mathbb{Q}_{4,1}^{(1,-1;c)}(E_g,1b)=\frac{\sqrt{2}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_2^{(b)}(B_{2g})}{2}$$

$\boxed{\text{z575}}$ $$\mathbb{Q}_{4,2}^{(1,-1;c)}(E_g,1b)=\frac{\sqrt{2}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_2^{(b)}(B_{2g})}{2}$$

$\boxed{\text{z576}}$ $$\mathbb{Q}_{4,1}^{(1,-1;c)}(E_g,1c)=\frac{7\sqrt{1430}\mathbb{M}_3^{(1,-1;a)}(A_{2g})\mathbb{M}_{1,2}^{(b)}(E_g)}{572}-\frac{5\sqrt{858}\mathbb{M}_3^{(1,-1;a)}(B_{1g})\mathbb{M}_{1,1}^{(b)}(E_g)}{286}+\frac{3\sqrt{858}\mathbb{M}_3^{(1,-1;a)}(B_{2g})\mathbb{M}_{1,2}^{(b)}(E_g)}{572}$$

$\boxed{\text{z577}}$ $$\mathbb{Q}_{4,2}^{(1,-1;c)}(E_g,1c)=-\frac{7\sqrt{1430}\mathbb{M}_3^{(1,-1;a)}(A_{2g})\mathbb{M}_{1,1}^{(b)}(E_g)}{572}+\frac{5\sqrt{858}\mathbb{M}_3^{(1,-1;a)}(B_{1g})\mathbb{M}_{1,2}^{(b)}(E_g)}{286}+\frac{3\sqrt{858}\mathbb{M}_3^{(1,-1;a)}(B_{2g})\mathbb{M}_{1,1}^{(b)}(E_g)}{572}$$

$\boxed{\text{z578}}$ $$\mathbb{Q}_{4,1}^{(1,-1;c)}(E_g,2a)=\frac{\sqrt{10}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_2^{(b)}(B_{2g})}{10}-\frac{\sqrt{30}\mathbb{Q}_2^{(1,-1;a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{20}+\frac{3\sqrt{10}\mathbb{Q}_2^{(1,-1;a)}(B_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{20}+\frac{\sqrt{10}\mathbb{Q}_2^{(1,-1;a)}(B_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{10}$$

$\boxed{\text{z579}}$ $$\mathbb{Q}_{4,2}^{(1,-1;c)}(E_g,2a)=\frac{\sqrt{10}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_2^{(b)}(B_{2g})}{10}-\frac{\sqrt{30}\mathbb{Q}_2^{(1,-1;a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{20}-\frac{3\sqrt{10}\mathbb{Q}_2^{(1,-1;a)}(B_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{20}+\frac{\sqrt{10}\mathbb{Q}_2^{(1,-1;a)}(B_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{10}$$

$\boxed{\text{z580}}$ $$\mathbb{Q}_{4,1}^{(1,-1;c)}(E_g,2b)=\frac{\sqrt{330}\mathbb{M}_3^{(1,-1;a)}(A_{2g})\mathbb{M}_{1,2}^{(b)}(E_g)}{44}+\frac{\sqrt{22}\mathbb{M}_3^{(1,-1;a)}(B_{1g})\mathbb{M}_{1,1}^{(b)}(E_g)}{22}-\frac{5\sqrt{22}\mathbb{M}_3^{(1,-1;a)}(B_{2g})\mathbb{M}_{1,2}^{(b)}(E_g)}{44}$$

$\boxed{\text{z581}}$ $$\mathbb{Q}_{4,2}^{(1,-1;c)}(E_g,2b)=-\frac{\sqrt{330}\mathbb{M}_3^{(1,-1;a)}(A_{2g})\mathbb{M}_{1,1}^{(b)}(E_g)}{44}-\frac{\sqrt{22}\mathbb{M}_3^{(1,-1;a)}(B_{1g})\mathbb{M}_{1,2}^{(b)}(E_g)}{22}-\frac{5\sqrt{22}\mathbb{M}_3^{(1,-1;a)}(B_{2g})\mathbb{M}_{1,1}^{(b)}(E_g)}{44}$$

$\boxed{\text{z623}}$ $$\mathbb{Q}_{2,1}^{(1,0;c)}(E_g,a)=\frac{\mathbb{G}_{1,2}^{(1,0;a)}(E_g)\mathbb{Q}_2^{(b)}(B_{2g})}{2}+\frac{\mathbb{G}_1^{(1,0;a)}(A_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$\boxed{\text{z624}}$ $$\mathbb{Q}_{2,2}^{(1,0;c)}(E_g,a)=\frac{\mathbb{G}_{1,1}^{(1,0;a)}(E_g)\mathbb{Q}_2^{(b)}(B_{2g})}{2}-\frac{\mathbb{G}_1^{(1,0;a)}(A_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

$\boxed{\text{z625}}$ $\mathbb{Q}_{2,1}^{(1,0;c)}(E_g, b) = \frac{\sqrt{2}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_0^{(b)}(A_{1g})}{2}$

$\boxed{\text{z626}}$ $\mathbb{Q}_{2,2}^{(1,0;c)}(E_g, b) = \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_0^{(b)}(A_{1g})}{2}$

$\boxed{\text{z627}}$ $\mathbb{Q}_{2,1}^{(1,0;c)}(E_g, c) = \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_2^{(b)}(B_{2g})}{2}$

$\boxed{\text{z628}}$ $\mathbb{Q}_{2,2}^{(1,0;c)}(E_g, c) = \frac{\sqrt{2}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_2^{(b)}(B_{2g})}{2}$

$\boxed{\text{z629}}$ $\mathbb{Q}_{2,1}^{(1,0;c)}(E_g, d) = \frac{\sqrt{30}\mathbb{T}_2^{(1,0;a)}(A_{1g})\mathbb{M}_{1,1}^{(b)}(E_g)}{10} + \frac{\sqrt{10}\mathbb{T}_2^{(1,0;a)}(B_{1g})\mathbb{M}_{1,1}^{(b)}(E_g)}{10} - \frac{\sqrt{10}\mathbb{T}_2^{(1,0;a)}(B_{2g})\mathbb{M}_{1,2}^{(b)}(E_g)}{10}$

$\boxed{\text{z630}}$ $\mathbb{Q}_{2,2}^{(1,0;c)}(E_g, d) = \frac{\sqrt{30}\mathbb{T}_2^{(1,0;a)}(A_{1g})\mathbb{M}_{1,2}^{(b)}(E_g)}{10} - \frac{\sqrt{10}\mathbb{T}_2^{(1,0;a)}(B_{1g})\mathbb{M}_{1,2}^{(b)}(E_g)}{10} - \frac{\sqrt{10}\mathbb{T}_2^{(1,0;a)}(B_{2g})\mathbb{M}_{1,1}^{(b)}(E_g)}{10}$

$\boxed{\text{z631}}$ $\mathbb{Q}_{2,1}^{(1,1;c)}(E_g, a) = \frac{\sqrt{2}\mathbb{Q}_0^{(1,1;a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$

$\boxed{\text{z632}}$ $\mathbb{Q}_{2,2}^{(1,1;c)}(E_g, a) = \frac{\sqrt{2}\mathbb{Q}_0^{(1,1;a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$

$\boxed{\text{z633}}$ $\mathbb{Q}_{2,1}^{(1,1;c)}(E_g, b) = \frac{\sqrt{2}\mathbb{M}_{1,2}^{(1,1;a)}(E_g)\mathbb{T}_2^{(b)}(B_{2g})}{2}$

$\boxed{\text{z634}}$ $\mathbb{Q}_{2,2}^{(1,1;c)}(E_g, b) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(1,1;a)}(E_g)\mathbb{T}_2^{(b)}(B_{2g})}{2}$

$\boxed{\text{z635}}$ $\mathbb{Q}_{2,1}^{(1,1;c)}(E_g, c) = -\frac{\sqrt{2}\mathbb{M}_1^{(1,1;a)}(A_{2g})\mathbb{M}_{1,2}^{(b)}(E_g)}{2}$

$\boxed{\text{z636}}$ $\mathbb{Q}_{2,2}^{(1,1;c)}(E_g, c) = \frac{\sqrt{2}\mathbb{M}_1^{(1,1;a)}(A_{2g})\mathbb{M}_{1,1}^{(b)}(E_g)}{2}$

$\boxed{\text{z637}}$ $\mathbb{G}_{1,1}^{(c)}(E_g, a) = -\frac{\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_2^{(b)}(B_{2g})}{2} + \frac{\mathbb{Q}_2^{(a)}(B_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$

$\boxed{\text{z638}}$ $\mathbb{G}_{1,2}^{(c)}(E_g, a) = -\frac{\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_2^{(b)}(B_{2g})}{2} + \frac{\mathbb{Q}_2^{(a)}(B_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$

$\boxed{\text{z639}}$ $$\mathbb{G}_{1,1}^{(c)}(E_g,b)=\frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_g)\mathbb{T}_{0}^{(b)}(A_{1g})}{2}$$

$\boxed{\text{z640}}$ $$\mathbb{G}_{1,2}^{(c)}(E_g,b)=\frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_g)\mathbb{T}_{0}^{(b)}(A_{1g})}{2}$$

$\boxed{\text{z685}}$ $$\mathbb{G}_{1,1}^{(1,-1;c)}(E_g,a)=-\frac{\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2}^{(b)}(B_{2g})}{2}+\frac{\mathbb{Q}_{2}^{(1,-1;a)}(B_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$\boxed{\text{z686}}$ $$\mathbb{G}_{1,2}^{(1,-1;c)}(E_g,a)=-\frac{\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2}^{(b)}(B_{2g})}{2}+\frac{\mathbb{Q}_{2}^{(1,-1;a)}(B_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

$\boxed{\text{z687}}$ $$\mathbb{G}_{1,1}^{(1,-1;c)}(E_g,b)=\frac{\sqrt{2}\mathbb{M}_{1,1}^{(1,-1;a)}(E_g)\mathbb{T}_{0}^{(b)}(A_{1g})}{2}$$

$\boxed{\text{z688}}$ $$\mathbb{G}_{1,2}^{(1,-1;c)}(E_g,b)=\frac{\sqrt{2}\mathbb{M}_{1,2}^{(1,-1;a)}(E_g)\mathbb{T}_{0}^{(b)}(A_{1g})}{2}$$

$\boxed{\text{z689}}$ $$\mathbb{G}_{3,1}^{(1,-1;c)}(E_g,1)=\frac{\sqrt{2}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_{0}^{(b)}(A_{1g})}{2}$$

$\boxed{\text{z690}}$ $$\mathbb{G}_{3,2}^{(1,-1;c)}(E_g,1)=\frac{\sqrt{2}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_{0}^{(b)}(A_{1g})}{2}$$

$\boxed{\text{z691}}$ $$\mathbb{G}_{3,1}^{(1,-1;c)}(E_g,2)=\frac{\sqrt{2}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_{0}^{(b)}(A_{1g})}{2}$$

$\boxed{\text{z692}}$ $$\mathbb{G}_{3,2}^{(1,-1;c)}(E_g,2)=\frac{\sqrt{2}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_{0}^{(b)}(A_{1g})}{2}$$

$\boxed{\text{z693}}$ $$\mathbb{G}_{1,1}^{(1,0;c)}(E_g,a)=\frac{\sqrt{2}\mathbb{G}_{1,1}^{(1,0;a)}(E_g)\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$$

$\boxed{\text{z694}}$ $$\mathbb{G}_{1,2}^{(1,0;c)}(E_g,a)=\frac{\sqrt{2}\mathbb{G}_{1,2}^{(1,0;a)}(E_g)\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$$

$\boxed{\text{z695}}$ $$\mathbb{G}_{1,1}^{(1,0;c)}(E_g,b)=-\frac{\mathbb{G}_{1,2}^{(1,0;a)}(E_g)\mathbb{Q}_{2}^{(b)}(B_{2g})}{2}+\frac{\mathbb{G}_{1}^{(1,0;a)}(A_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$\boxed{\text{z696}}$ $$\mathbb{G}_{1,2}^{(1,0;c)}(E_g,b)=-\frac{\mathbb{G}_{1,1}^{(1,0;a)}(E_g)\mathbb{Q}_{2}^{(b)}(B_{2g})}{2}-\frac{\mathbb{G}_{1}^{(1,0;a)}(A_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

$\boxed{\text{z697}}$ $\mathbb{G}_{1,1}^{(1,0;c)}(E_g,c) = -\frac{\sqrt{5}\mathbb{T}_2^{(1,0;a)}(A_{1g})\mathbb{M}_{1,1}^{(b)}(E_g)}{5} + \frac{\sqrt{15}\mathbb{T}_2^{(1,0;a)}(B_{1g})\mathbb{M}_{1,1}^{(b)}(E_g)}{10} - \frac{\sqrt{15}\mathbb{T}_2^{(1,0;a)}(B_{2g})\mathbb{M}_{1,2}^{(b)}(E_g)}{10}$

$\boxed{\text{z698}}$ $\mathbb{G}_{1,2}^{(1,0;c)}(E_g,c) = -\frac{\sqrt{5}\mathbb{T}_2^{(1,0;a)}(A_{1g})\mathbb{M}_{1,2}^{(b)}(E_g)}{5} - \frac{\sqrt{15}\mathbb{T}_2^{(1,0;a)}(B_{1g})\mathbb{M}_{1,2}^{(b)}(E_g)}{10} - \frac{\sqrt{15}\mathbb{T}_2^{(1,0;a)}(B_{2g})\mathbb{M}_{1,1}^{(b)}(E_g)}{10}$

$\boxed{\text{z699}}$ $\mathbb{G}_{3,1}^{(1,0;c)}(E_g,1) = \frac{\mathbb{T}_2^{(1,0;a)}(B_{1g})\mathbb{M}_{1,1}^{(b)}(E_g)}{2} + \frac{\mathbb{T}_2^{(1,0;a)}(B_{2g})\mathbb{M}_{1,2}^{(b)}(E_g)}{2}$

$\boxed{\text{z700}}$ $\mathbb{G}_{3,2}^{(1,0;c)}(E_g,1) = -\frac{\mathbb{T}_2^{(1,0;a)}(B_{1g})\mathbb{M}_{1,2}^{(b)}(E_g)}{2} + \frac{\mathbb{T}_2^{(1,0;a)}(B_{2g})\mathbb{M}_{1,1}^{(b)}(E_g)}{2}$

$\boxed{\text{z701}}$ $\mathbb{G}_{1,1}^{(1,1;c)}(E_g) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(1,1;a)}(E_g)\mathbb{T}_0^{(b)}(A_{1g})}{2}$

$\boxed{\text{z702}}$ $\mathbb{G}_{1,2}^{(1,1;c)}(E_g) = \frac{\sqrt{2}\mathbb{M}_{1,2}^{(1,1;a)}(E_g)\mathbb{T}_0^{(b)}(A_{1g})}{2}$

$\boxed{\text{z811}}$ $\mathbb{Q}_{1,1}^{(c)}(E_u,a) = \frac{\sqrt{2}\mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{2}$

$\boxed{\text{z812}}$ $\mathbb{Q}_{1,2}^{(c)}(E_u,a) = \frac{\sqrt{2}\mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{2}$

$\boxed{\text{z813}}$ $\mathbb{Q}_{1,1}^{(c)}(E_u,b) = \frac{\sqrt{15}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_1^{(b)}(A_{2u})}{10} - \frac{\sqrt{5}\mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{10} + \frac{\sqrt{15}\mathbb{Q}_2^{(a)}(B_{1g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{10} + \frac{\sqrt{15}\mathbb{Q}_2^{(a)}(B_{2g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{10}$

$\boxed{\text{z814}}$ $\mathbb{Q}_{1,2}^{(c)}(E_u,b) = \frac{\sqrt{15}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_1^{(b)}(A_{2u})}{10} - \frac{\sqrt{5}\mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{10} - \frac{\sqrt{15}\mathbb{Q}_2^{(a)}(B_{1g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{10} + \frac{\sqrt{15}\mathbb{Q}_2^{(a)}(B_{2g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{10}$

$\boxed{\text{z815}}$ $\mathbb{Q}_{1,1}^{(c)}(E_u,c) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_3^{(b)}(B_{1u})}{2}$

$\boxed{\text{z816}}$ $\mathbb{Q}_{1,2}^{(c)}(E_u,c) = \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_3^{(b)}(B_{1u})}{2}$

$\boxed{\text{z817}}$ $\mathbb{Q}_{1,1}^{(c)}(E_u,d) = -\frac{\mathbb{M}_{1,2}^{(a)}(E_g)\mathbb{T}_1^{(b)}(A_{2u})}{2} - \frac{\mathbb{M}_1^{(a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(E_u)}{2}$

$\boxed{\text{z818}}$ $\mathbb{Q}_{1,2}^{(c)}(E_u,d) = -\frac{\mathbb{M}_{1,1}^{(a)}(E_g)\mathbb{T}_1^{(b)}(A_{2u})}{2} + \frac{\mathbb{M}_1^{(a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(E_u)}{2}$

$\boxed{\text{z819}}$ $\mathbb{Q}_{1,1}^{(c)}(E_u, e) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_g)\mathbb{M}_{2}^{(b)}(B_{1u})}{2}$

$\boxed{\text{z820}}$ $\mathbb{Q}_{1,2}^{(c)}(E_u, e) = \frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_g)\mathbb{M}_{2}^{(b)}(B_{1u})}{2}$

$\boxed{\text{z821}}$ $\mathbb{Q}_{3,1}^{(c)}(E_u, 1) = -\frac{\sqrt{10}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{1}^{(b)}(A_{2u})}{10} - \frac{\sqrt{30}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{20} + \frac{3\sqrt{10}\mathbb{Q}_{2}^{(a)}(B_{1g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{20} - \frac{\sqrt{10}\mathbb{Q}_{2}^{(a)}(B_{2g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{10}$

$\boxed{\text{z822}}$ $\mathbb{Q}_{3,2}^{(c)}(E_u, 1) = -\frac{\sqrt{10}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{1}^{(b)}(A_{2u})}{10} - \frac{\sqrt{30}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{20} - \frac{3\sqrt{10}\mathbb{Q}_{2}^{(a)}(B_{1g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{20} - \frac{\sqrt{10}\mathbb{Q}_{2}^{(a)}(B_{2g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{10}$

$\boxed{\text{z823}}$ $\mathbb{Q}_{3,1}^{(c)}(E_u, 2) = -\frac{\sqrt{6}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{1}^{(b)}(A_{2u})}{6} - \frac{\sqrt{2}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{4} - \frac{\sqrt{6}\mathbb{Q}_{2}^{(a)}(B_{1g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{12} + \frac{\sqrt{6}\mathbb{Q}_{2}^{(a)}(B_{2g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{6}$

$\boxed{\text{z824}}$ $\mathbb{Q}_{3,2}^{(c)}(E_u, 2) = -\frac{\sqrt{6}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{1}^{(b)}(A_{2u})}{6} - \frac{\sqrt{2}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{4} + \frac{\sqrt{6}\mathbb{Q}_{2}^{(a)}(B_{1g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{12} + \frac{\sqrt{6}\mathbb{Q}_{2}^{(a)}(B_{2g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{6}$

$\boxed{\text{z825}}$ $\mathbb{Q}_{1,1}^{(1,-1;c)}(E_u, a) = \frac{\sqrt{15}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{1}^{(b)}(A_{2u})}{10} - \frac{\sqrt{5}\mathbb{Q}_{2}^{(1,-1;a)}(A_{1g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{10} + \frac{\sqrt{15}\mathbb{Q}_{2}^{(1,-1;a)}(B_{1g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{10} + \frac{\sqrt{15}\mathbb{Q}_{2}^{(1,-1;a)}(B_{2g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{10}$

$\boxed{\text{z826}}$ $\mathbb{Q}_{1,2}^{(1,-1;c)}(E_u, a) = \frac{\sqrt{15}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{1}^{(b)}(A_{2u})}{10} - \frac{\sqrt{5}\mathbb{Q}_{2}^{(1,-1;a)}(A_{1g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{10} - \frac{\sqrt{15}\mathbb{Q}_{2}^{(1,-1;a)}(B_{1g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{10} + \frac{\sqrt{15}\mathbb{Q}_{2}^{(1,-1;a)}(B_{2g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{10}$

$\boxed{\text{z827}}$ $\mathbb{Q}_{1,1}^{(1,-1;c)}(E_u, b) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{3}^{(b)}(B_{1u})}{2}$

$\boxed{\text{z828}}$ $\mathbb{Q}_{1,2}^{(1,-1;c)}(E_u, b) = \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{3}^{(b)}(B_{1u})}{2}$

$\boxed{\text{z829}}$ $\mathbb{Q}_{1,1}^{(1,-1;c)}(E_u, c) = -\frac{\mathbb{M}_{1,2}^{(1,-1;a)}(E_g)\mathbb{T}_{1}^{(b)}(A_{2u})}{2} - \frac{\mathbb{M}_{1}^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(E_u)}{2}$

$\boxed{\text{z830}}$ $\mathbb{Q}_{1,2}^{(1,-1;c)}(E_u, c) = -\frac{\mathbb{M}_{1,1}^{(1,-1;a)}(E_g)\mathbb{T}_{1}^{(b)}(A_{2u})}{2} + \frac{\mathbb{M}_{1}^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(E_u)}{2}$

$\boxed{\text{z831}}$ $\mathbb{Q}_{1,1}^{(1,-1;c)}(E_u, d) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(1,-1;a)}(E_g)\mathbb{M}_{2}^{(b)}(B_{1u})}{2}$

$\boxed{\text{z832}}$ $\mathbb{Q}_{1,2}^{(1,-1;c)}(E_u, d) = \frac{\sqrt{2}\mathbb{M}_{1,2}^{(1,-1;a)}(E_g)\mathbb{M}_{2}^{(b)}(B_{1u})}{2}$

$\boxed{\text{z833}}$ $\mathbb{Q}_{1,1}^{(1,-1;c)}(E_u,e) = \frac{3\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{M}_2^{(b)}(B_{1u})}{8} - \frac{\sqrt{5}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{M}_2^{(b)}(B_{1u})}{8}$

$\boxed{\text{z834}}$ $\mathbb{Q}_{1,2}^{(1,-1;c)}(E_u,e) = \frac{3\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{M}_2^{(b)}(B_{1u})}{8} - \frac{\sqrt{5}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{M}_2^{(b)}(B_{1u})}{8}$

$\boxed{\text{z835}}$ $\mathbb{Q}_{3,1}^{(1,-1;c)}(E_u,1a) = -\frac{\sqrt{10}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_1^{(b)}(A_{2u})}{10} - \frac{\sqrt{30}\mathbb{Q}_2^{(1,-1;a)}(A_{1g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{20} + \frac{3\sqrt{10}\mathbb{Q}_2^{(1,-1;a)}(B_{1g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{20} - \frac{\sqrt{10}\mathbb{Q}_2^{(1,-1;a)}(B_{2g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{10}$

$\boxed{\text{z836}}$ $\mathbb{Q}_{3,2}^{(1,-1;c)}(E_u,1a) = -\frac{\sqrt{10}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_1^{(b)}(A_{2u})}{10} - \frac{\sqrt{30}\mathbb{Q}_2^{(1,-1;a)}(A_{1g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{20} - \frac{3\sqrt{10}\mathbb{Q}_2^{(1,-1;a)}(B_{1g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{20} - \frac{\sqrt{10}\mathbb{Q}_2^{(1,-1;a)}(B_{2g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{10}$

$\boxed{\text{z837}}$ $\mathbb{Q}_{3,1}^{(1,-1;c)}(E_u,1b) = \frac{\sqrt{6}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_1^{(b)}(A_{2u})}{8} - \frac{\sqrt{10}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_1^{(b)}(A_{2u})}{8} + \frac{\sqrt{6}\mathbb{M}_3^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(E_u)}{8} - \frac{\sqrt{10}\mathbb{M}_3^{(1,-1;a)}(B_{2g})\mathbb{T}_{1,2}^{(b)}(E_u)}{8}$

$\boxed{\text{z838}}$ $\mathbb{Q}_{3,2}^{(1,-1;c)}(E_u,1b) = \frac{\sqrt{6}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_1^{(b)}(A_{2u})}{8} - \frac{\sqrt{10}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_1^{(b)}(A_{2u})}{8} - \frac{\sqrt{6}\mathbb{M}_3^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(E_u)}{8} - \frac{\sqrt{10}\mathbb{M}_3^{(1,-1;a)}(B_{2g})\mathbb{T}_{1,1}^{(b)}(E_u)}{8}$

$\boxed{\text{z839}}$ $\mathbb{Q}_{3,1}^{(1,-1;c)}(E_u,1c) = \frac{\sqrt{5}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{M}_2^{(b)}(B_{1u})}{8} + \frac{3\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{M}_2^{(b)}(B_{1u})}{8}$

$\boxed{\text{z840}}$ $\mathbb{Q}_{3,2}^{(1,-1;c)}(E_u,1c) = \frac{\sqrt{5}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{M}_2^{(b)}(B_{1u})}{8} + \frac{3\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{M}_2^{(b)}(B_{1u})}{8}$

$\boxed{\text{z841}}$ $\mathbb{Q}_{3,1}^{(1,-1;c)}(E_u,2a) = -\frac{\sqrt{6}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_1^{(b)}(A_{2u})}{6} - \frac{\sqrt{2}\mathbb{Q}_2^{(1,-1;a)}(A_{1g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{4} - \frac{\sqrt{6}\mathbb{Q}_2^{(1,-1;a)}(B_{1g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{12} + \frac{\sqrt{6}\mathbb{Q}_2^{(1,-1;a)}(B_{2g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{6}$

$\boxed{\text{z842}}$ $\mathbb{Q}_{3,2}^{(1,-1;c)}(E_u,2a) = -\frac{\sqrt{6}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_1^{(b)}(A_{2u})}{6} - \frac{\sqrt{2}\mathbb{Q}_2^{(1,-1;a)}(A_{1g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{4} + \frac{\sqrt{6}\mathbb{Q}_2^{(1,-1;a)}(B_{1g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{12} + \frac{\sqrt{6}\mathbb{Q}_2^{(1,-1;a)}(B_{2g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{6}$

$\boxed{\text{z843}}$ $\mathbb{Q}_{3,1}^{(1,-1;c)}(E_u,2b) = -\frac{\sqrt{10}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_1^{(b)}(A_{2u})}{8} + \frac{\sqrt{6}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_1^{(b)}(A_{2u})}{24} + \frac{\sqrt{10}\mathbb{M}_3^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(E_u)}{8} + \frac{\sqrt{6}\mathbb{M}_3^{(1,-1;a)}(B_{1g})\mathbb{T}_{1,1}^{(b)}(E_u)}{6} - \frac{\sqrt{6}\mathbb{M}_3^{(1,-1;a)}(B_{2g})\mathbb{T}_{1,2}^{(b)}(E_u)}{24}$

$\boxed{\text{z844}}$ $\mathbb{Q}_{3,2}^{(1,-1;c)}(E_u,2b) = -\frac{\sqrt{10}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_1^{(b)}(A_{2u})}{8} + \frac{\sqrt{6}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_1^{(b)}(A_{2u})}{24} - \frac{\sqrt{10}\mathbb{M}_3^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(E_u)}{8} - \frac{\sqrt{6}\mathbb{M}_3^{(1,-1;a)}(B_{1g})\mathbb{T}_{1,2}^{(b)}(E_u)}{6} - \frac{\sqrt{6}\mathbb{M}_3^{(1,-1;a)}(B_{2g})\mathbb{T}_{1,1}^{(b)}(E_u)}{24}$

$\boxed{\text{z845}}$ $\mathbb{Q}_{1,1}^{(1,0;c)}(E_u,a) = -\frac{\mathbb{G}_{1,2}^{(1,0;a)}(E_g)\mathbb{Q}_1^{(b)}(A_{2u})}{2} - \frac{\mathbb{G}_1^{(1,0;a)}(A_{2g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{2}$

$\boxed{\text{z846}}$ $\mathbb{Q}_{1,2}^{(1,0;c)}(E_u,a) = -\frac{\mathbb{G}_{1,1}^{(1,0;a)}(E_g)\mathbb{Q}_1^{(b)}(A_{2u})}{2} + \frac{\mathbb{G}_1^{(1,0;a)}(A_{2g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{2}$

$\boxed{\text{z847}}$ $$\mathbb{Q}_{1,1}^{(1,0;c)}(E_u,b) = \frac{\sqrt{15}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1}^{(b)}(A_{2u})}{10} - \frac{\sqrt{5}\mathbb{T}_{2}^{(1,0;a)}(A_{1g})\mathbb{T}_{1,1}^{(b)}(E_u)}{10} + \frac{\sqrt{15}\mathbb{T}_{2}^{(1,0;a)}(B_{1g})\mathbb{T}_{1,1}^{(b)}(E_u)}{10} + \frac{\sqrt{15}\mathbb{T}_{2}^{(1,0;a)}(B_{2g})\mathbb{T}_{1,2}^{(b)}(E_u)}{10}$$

$\boxed{\text{z848}}$ $$\mathbb{Q}_{1,2}^{(1,0;c)}(E_u,b) = \frac{\sqrt{15}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1}^{(b)}(A_{2u})}{10} - \frac{\sqrt{5}\mathbb{T}_{2}^{(1,0;a)}(A_{1g})\mathbb{T}_{1,2}^{(b)}(E_u)}{10} - \frac{\sqrt{15}\mathbb{T}_{2}^{(1,0;a)}(B_{1g})\mathbb{T}_{1,2}^{(b)}(E_u)}{10} + \frac{\sqrt{15}\mathbb{T}_{2}^{(1,0;a)}(B_{2g})\mathbb{T}_{1,1}^{(b)}(E_u)}{10}$$

$\boxed{\text{z849}}$ $$\mathbb{Q}_{1,1}^{(1,0;c)}(E_u,c) = \frac{\sqrt{2}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{M}_{2}^{(b)}(B_{1u})}{2}$$

$\boxed{\text{z850}}$ $$\mathbb{Q}_{1,2}^{(1,0;c)}(E_u,c) = \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{M}_{2}^{(b)}(B_{1u})}{2}$$

$\boxed{\text{z851}}$ $$\mathbb{Q}_{3,1}^{(1,0;c)}(E_u,1) = -\frac{\sqrt{10}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1}^{(b)}(A_{2u})}{10} - \frac{\sqrt{30}\mathbb{T}_{2}^{(1,0;a)}(A_{1g})\mathbb{T}_{1,1}^{(b)}(E_u)}{20} + \frac{3\sqrt{10}\mathbb{T}_{2}^{(1,0;a)}(B_{1g})\mathbb{T}_{1,1}^{(b)}(E_u)}{20} - \frac{\sqrt{10}\mathbb{T}_{2}^{(1,0;a)}(B_{2g})\mathbb{T}_{1,2}^{(b)}(E_u)}{10}$$

$\boxed{\text{z852}}$ $$\mathbb{Q}_{3,2}^{(1,0;c)}(E_u,1) = -\frac{\sqrt{10}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1}^{(b)}(A_{2u})}{10} - \frac{\sqrt{30}\mathbb{T}_{2}^{(1,0;a)}(A_{1g})\mathbb{T}_{1,2}^{(b)}(E_u)}{20} - \frac{3\sqrt{10}\mathbb{T}_{2}^{(1,0;a)}(B_{1g})\mathbb{T}_{1,2}^{(b)}(E_u)}{20} - \frac{\sqrt{10}\mathbb{T}_{2}^{(1,0;a)}(B_{2g})\mathbb{T}_{1,1}^{(b)}(E_u)}{10}$$

$\boxed{\text{z853}}$ $$\mathbb{Q}_{3,1}^{(1,0;c)}(E_u,2a) = -\frac{\sqrt{2}\mathbb{G}_{1,1}^{(1,0;a)}(E_g)\mathbb{Q}_{3}^{(b)}(B_{1u})}{2}$$

$\boxed{\text{z854}}$ $$\mathbb{Q}_{3,2}^{(1,0;c)}(E_u,2a) = -\frac{\sqrt{2}\mathbb{G}_{1,2}^{(1,0;a)}(E_g)\mathbb{Q}_{3}^{(b)}(B_{1u})}{2}$$

$\boxed{\text{z855}}$ $$\mathbb{Q}_{3,1}^{(1,0;c)}(E_u,2b) = -\frac{\sqrt{6}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1}^{(b)}(A_{2u})}{6} - \frac{\sqrt{2}\mathbb{T}_{2}^{(1,0;a)}(A_{1g})\mathbb{T}_{1,1}^{(b)}(E_u)}{4} - \frac{\sqrt{6}\mathbb{T}_{2}^{(1,0;a)}(B_{1g})\mathbb{T}_{1,1}^{(b)}(E_u)}{12} + \frac{\sqrt{6}\mathbb{T}_{2}^{(1,0;a)}(B_{2g})\mathbb{T}_{1,2}^{(b)}(E_u)}{6}$$

$\boxed{\text{z856}}$ $$\mathbb{Q}_{3,2}^{(1,0;c)}(E_u,2b) = -\frac{\sqrt{6}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1}^{(b)}(A_{2u})}{6} - \frac{\sqrt{2}\mathbb{T}_{2}^{(1,0;a)}(A_{1g})\mathbb{T}_{1,2}^{(b)}(E_u)}{4} + \frac{\sqrt{6}\mathbb{T}_{2}^{(1,0;a)}(B_{1g})\mathbb{T}_{1,2}^{(b)}(E_u)}{12} + \frac{\sqrt{6}\mathbb{T}_{2}^{(1,0;a)}(B_{2g})\mathbb{T}_{1,1}^{(b)}(E_u)}{6}$$

$\boxed{\text{z857}}$ $$\mathbb{Q}_{1,1}^{(1,1;c)}(E_u,a) = \frac{\sqrt{2}\mathbb{Q}_{0}^{(1,1;a)}(A_{1g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{2}$$

$\boxed{\text{z858}}$ $$\mathbb{Q}_{1,2}^{(1,1;c)}(E_u,a) = \frac{\sqrt{2}\mathbb{Q}_{0}^{(1,1;a)}(A_{1g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{2}$$

$\boxed{\text{z859}}$ $$\mathbb{Q}_{1,1}^{(1,1;c)}(E_u,b) = -\frac{\mathbb{M}_{1,2}^{(1,1;a)}(E_g)\mathbb{T}_{1}^{(b)}(A_{2u})}{2} - \frac{\mathbb{M}_{1}^{(1,1;a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(E_u)}{2}$$

$\boxed{\text{z860}}$ $$\mathbb{Q}_{1,2}^{(1,1;c)}(E_u,b) = -\frac{\mathbb{M}_{1,1}^{(1,1;a)}(E_g)\mathbb{T}_{1}^{(b)}(A_{2u})}{2} + \frac{\mathbb{M}_{1}^{(1,1;a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(E_u)}{2}$$

$\boxed{\text{z861}}$ $\mathbb{Q}_{1,1}^{(1,1;c)}(E_u,c) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(1,1;a)}(E_g)\mathbb{M}_{2}^{(b)}(B_{1u})}{2}$

$\boxed{\text{z862}}$ $\mathbb{Q}_{1,2}^{(1,1;c)}(E_u,c) = \frac{\sqrt{2}\mathbb{M}_{1,2}^{(1,1;a)}(E_g)\mathbb{M}_{2}^{(b)}(B_{1u})}{2}$

$\boxed{\text{z863}}$ $\mathbb{G}_{2,1}^{(c)}(E_u,a) = -\frac{\sqrt{3}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{1}^{(b)}(A_{2u})}{6} + \frac{\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{2} + \frac{\sqrt{3}\mathbb{Q}_{2}^{(a)}(B_{1g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{6} + \frac{\sqrt{3}\mathbb{Q}_{2}^{(a)}(B_{2g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{6}$

$\boxed{\text{z864}}$ $\mathbb{G}_{2,2}^{(c)}(E_u,a) = -\frac{\sqrt{3}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{1}^{(b)}(A_{2u})}{6} + \frac{\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{2} - \frac{\sqrt{3}\mathbb{Q}_{2}^{(a)}(B_{1g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{6} + \frac{\sqrt{3}\mathbb{Q}_{2}^{(a)}(B_{2g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{6}$

$\boxed{\text{z865}}$ $\mathbb{G}_{2,1}^{(c)}(E_u,b) = -\frac{\mathbb{M}_{1,2}^{(a)}(E_g)\mathbb{T}_{1}^{(b)}(A_{2u})}{2} + \frac{\mathbb{M}_{1}^{(a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(E_u)}{2}$

$\boxed{\text{z866}}$ $\mathbb{G}_{2,2}^{(c)}(E_u,b) = -\frac{\mathbb{M}_{1,1}^{(a)}(E_g)\mathbb{T}_{1}^{(b)}(A_{2u})}{2} - \frac{\mathbb{M}_{1}^{(a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(E_u)}{2}$

$\boxed{\text{z867}}$ $\mathbb{G}_{2,1}^{(1,-1;c)}(E_u,a) = -\frac{\sqrt{3}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{1}^{(b)}(A_{2u})}{6} + \frac{\mathbb{Q}_{2}^{(1,-1;a)}(A_{1g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{2} + \frac{\sqrt{3}\mathbb{Q}_{2}^{(1,-1;a)}(B_{1g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{6} + \frac{\sqrt{3}\mathbb{Q}_{2}^{(1,-1;a)}(B_{2g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{6}$

$\boxed{\text{z868}}$ $\mathbb{G}_{2,2}^{(1,-1;c)}(E_u,a) = -\frac{\sqrt{3}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{1}^{(b)}(A_{2u})}{6} + \frac{\mathbb{Q}_{2}^{(1,-1;a)}(A_{1g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{2} - \frac{\sqrt{3}\mathbb{Q}_{2}^{(1,-1;a)}(B_{1g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{6} + \frac{\sqrt{3}\mathbb{Q}_{2}^{(1,-1;a)}(B_{2g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{6}$

$\boxed{\text{z869}}$ $\mathbb{G}_{2,1}^{(1,-1;c)}(E_u,b) = -\frac{\mathbb{M}_{1,2}^{(1,-1;a)}(E_g)\mathbb{T}_{1}^{(b)}(A_{2u})}{2} + \frac{\mathbb{M}_{1}^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(E_u)}{2}$

$\boxed{\text{z870}}$ $\mathbb{G}_{2,2}^{(1,-1;c)}(E_u,b) = -\frac{\mathbb{M}_{1,1}^{(1,-1;a)}(E_g)\mathbb{T}_{1}^{(b)}(A_{2u})}{2} - \frac{\mathbb{M}_{1}^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(E_u)}{2}$

$\boxed{\text{z871}}$ $\mathbb{G}_{2,1}^{(1,-1;c)}(E_u,c) = \frac{\sqrt{14}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1}^{(b)}(A_{2u})}{14} + \frac{\sqrt{210}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1}^{(b)}(A_{2u})}{42} - \frac{\sqrt{14}\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(E_u)}{14} + \frac{\sqrt{210}\mathbb{M}_{3}^{(1,-1;a)}(B_{1g})\mathbb{T}_{1,1}^{(b)}(E_u)}{42} - \frac{\sqrt{210}\mathbb{M}_{3}^{(1,-1;a)}(B_{2g})\mathbb{T}_{1,2}^{(b)}(E_u)}{42}$

$\boxed{\text{z872}}$ $\mathbb{G}_{2,2}^{(1,-1;c)}(E_u,c) = \frac{\sqrt{14}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1}^{(b)}(A_{2u})}{14} + \frac{\sqrt{210}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1}^{(b)}(A_{2u})}{42} + \frac{\sqrt{14}\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(E_u)}{14} - \frac{\sqrt{210}\mathbb{M}_{3}^{(1,-1;a)}(B_{1g})\mathbb{T}_{1,2}^{(b)}(E_u)}{42} - \frac{\sqrt{210}\mathbb{M}_{3}^{(1,-1;a)}(B_{2g})\mathbb{T}_{1,1}^{(b)}(E_u)}{42}$

$\boxed{\text{z873}}$ $\mathbb{G}_{4,1}^{(1,-1;c)}(E_u,1) = -\frac{\sqrt{10}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1}^{(b)}(A_{2u})}{8} - \frac{\sqrt{6}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1}^{(b)}(A_{2u})}{8} - \frac{\sqrt{10}\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(E_u)}{8} - \frac{\sqrt{6}\mathbb{M}_{3}^{(1,-1;a)}(B_{2g})\mathbb{T}_{1,2}^{(b)}(E_u)}{8}$

$\boxed{\text{z874}}$ $\mathbb{G}_{4,2}^{(1,-1;c)}(E_u,1) = -\frac{\sqrt{10}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1}^{(b)}(A_{2u})}{8} - \frac{\sqrt{6}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1}^{(b)}(A_{2u})}{8} + \frac{\sqrt{10}\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(E_u)}{8} - \frac{\sqrt{6}\mathbb{M}_{3}^{(1,-1;a)}(B_{2g})\mathbb{T}_{1,1}^{(b)}(E_u)}{8}$

$\boxed{\text{z875}}$ $\mathbb{G}_{4,1}^{(1,-1;c)}(E_u,2) = \frac{\sqrt{70}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_1^{(b)}(A_{2u})}{56} - \frac{3\sqrt{42}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_1^{(b)}(A_{2u})}{56} - \frac{\sqrt{70}\mathbb{M}_3^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(E_u)}{56} + \frac{\sqrt{42}\mathbb{M}_3^{(1,-1;a)}(B_{1g})\mathbb{T}_{1,1}^{(b)}(E_u)}{14} + \frac{3\sqrt{42}\mathbb{M}_3^{(1,-1;a)}(B_{2g})\mathbb{T}_{1,2}^{(b)}(E_u)}{56}$

$\boxed{\text{z876}}$ $\mathbb{G}_{4,2}^{(1,-1;c)}(E_u,2) = \frac{\sqrt{70}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_1^{(b)}(A_{2u})}{56} - \frac{3\sqrt{42}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_1^{(b)}(A_{2u})}{56} + \frac{\sqrt{70}\mathbb{M}_3^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(E_u)}{56} - \frac{\sqrt{42}\mathbb{M}_3^{(1,-1;a)}(B_{1g})\mathbb{T}_{1,2}^{(b)}(E_u)}{14} + \frac{3\sqrt{42}\mathbb{M}_3^{(1,-1;a)}(B_{2g})\mathbb{T}_{1,1}^{(b)}(E_u)}{56}$

$\boxed{\text{z877}}$ $\mathbb{G}_{2,1}^{(1,0;c)}(E_u,a) = -\frac{\mathbb{G}_{1,2}^{(1,0;a)}(E_g)\mathbb{Q}_1^{(b)}(A_{2u})}{2} + \frac{\mathbb{G}_1^{(1,0;a)}(A_{2g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{2}$

$\boxed{\text{z878}}$ $\mathbb{G}_{2,2}^{(1,0;c)}(E_u,a) = -\frac{\mathbb{G}_{1,1}^{(1,0;a)}(E_g)\mathbb{Q}_1^{(b)}(A_{2u})}{2} - \frac{\mathbb{G}_1^{(1,0;a)}(A_{2g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{2}$

$\boxed{\text{z879}}$ $\mathbb{G}_{2,1}^{(1,0;c)}(E_u,b) = -\frac{\sqrt{3}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_1^{(b)}(A_{2u})}{6} + \frac{\mathbb{T}_2^{(1,0;a)}(A_{1g})\mathbb{T}_{1,1}^{(b)}(E_u)}{2} + \frac{\sqrt{3}\mathbb{T}_2^{(1,0;a)}(B_{1g})\mathbb{T}_{1,1}^{(b)}(E_u)}{6} + \frac{\sqrt{3}\mathbb{T}_2^{(1,0;a)}(B_{2g})\mathbb{T}_{1,2}^{(b)}(E_u)}{6}$

$\boxed{\text{z880}}$ $\mathbb{G}_{2,2}^{(1,0;c)}(E_u,b) = -\frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_1^{(b)}(A_{2u})}{6} + \frac{\mathbb{T}_2^{(1,0;a)}(A_{1g})\mathbb{T}_{1,2}^{(b)}(E_u)}{2} - \frac{\sqrt{3}\mathbb{T}_2^{(1,0;a)}(B_{1g})\mathbb{T}_{1,2}^{(b)}(E_u)}{6} + \frac{\sqrt{3}\mathbb{T}_2^{(1,0;a)}(B_{2g})\mathbb{T}_{1,1}^{(b)}(E_u)}{6}$

$\boxed{\text{z881}}$ $\mathbb{G}_{2,1}^{(1,1;c)}(E_u) = -\frac{\mathbb{M}_{1,2}^{(1,1;a)}(E_g)\mathbb{T}_1^{(b)}(A_{2u})}{2} + \frac{\mathbb{M}_1^{(1,1;a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(E_u)}{2}$

$\boxed{\text{z882}}$ $\mathbb{G}_{2,2}^{(1,1;c)}(E_u) = -\frac{\mathbb{M}_{1,1}^{(1,1;a)}(E_g)\mathbb{T}_1^{(b)}(A_{2u})}{2} - \frac{\mathbb{M}_1^{(1,1;a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(E_u)}{2}$

- 'Co'-'Si' bond-cluster : `Si;Co_001_1`
  - * bra: $\langle p_x,\uparrow|$, $\langle p_x,\downarrow|$, $\langle p_y,\uparrow|$, $\langle p_y,\downarrow|$, $\langle p_z,\uparrow|$, $\langle p_z,\downarrow|$
  - * ket: $|p_x,\uparrow\rangle$, $|p_x,\downarrow\rangle$, $|p_y,\uparrow\rangle$, $|p_y,\downarrow\rangle$, $|p_z,\uparrow\rangle$, $|p_z,\downarrow\rangle$
  - * wyckoff: `8a@8i`

$\boxed{\text{z49}}$ $\mathbb{Q}_0^{(c)}(A_{1g},a) = \mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_0^{(b)}(A_{1g})$

$\boxed{\text{z50}}$ $\mathbb{Q}_0^{(c)}(A_{1g},b) = \frac{\sqrt{3}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{3} + \frac{\sqrt{3}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{3} + \frac{\sqrt{3}\mathbb{Q}_2^{(a)}(B_{1g})\mathbb{Q}_2^{(b)}(B_{1g})}{3}$

$\boxed{\text{z51}}$ $\mathbb{Q}_2^{(c)}(A_{1g},a) = \mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_0^{(b)}(A_{1g})$

$\boxed{\text{z52}}$ $\mathbb{Q}_2^{(c)}(A_{1g},b) = \frac{\sqrt{6}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{6} + \frac{\sqrt{6}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{6} - \frac{\sqrt{6}\mathbb{Q}_2^{(a)}(B_{1g})\mathbb{Q}_2^{(b)}(B_{1g})}{3}$

$\boxed{\text{z53}}$ $$\mathbb{Q}_2^{(c)}(A_{1g},c)=\frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{2}+\frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{2}$$

$\boxed{\text{z54}}$ $$\mathbb{Q}_0^{(1,-1;c)}(A_{1g})=\frac{\sqrt{3}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{3}+\frac{\sqrt{3}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{3}+\frac{\sqrt{3}\mathbb{Q}_{2}^{(1,-1;a)}(B_{1g})\mathbb{Q}_{2}^{(b)}(B_{1g})}{3}$$

$\boxed{\text{z55}}$ $$\mathbb{Q}_2^{(1,-1;c)}(A_{1g},a)=\mathbb{Q}_2^{(1,-1;a)}(A_{1g})\mathbb{Q}_0^{(b)}(A_{1g})$$

$\boxed{\text{z56}}$ $$\mathbb{Q}_2^{(1,-1;c)}(A_{1g},b)=\frac{\sqrt{6}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{6}+\frac{\sqrt{6}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{6}-\frac{\sqrt{6}\mathbb{Q}_{2}^{(1,-1;a)}(B_{1g})\mathbb{Q}_{2}^{(b)}(B_{1g})}{3}$$

$\boxed{\text{z57}}$ $$\mathbb{Q}_2^{(1,-1;c)}(A_{1g},c)=\frac{\sqrt{2}\mathbb{M}_{1,1}^{(1,-1;a)}(E_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{2}+\frac{\sqrt{2}\mathbb{M}_{1,2}^{(1,-1;a)}(E_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{2}$$

$\boxed{\text{z58}}$ $$\mathbb{Q}_2^{(1,-1;c)}(A_{1g},d)=-\frac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_{2,1}^{(b)}(E_g)}{6}-\frac{\sqrt{5}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_{2,1}^{(b)}(E_g)}{6}-\frac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_{2,2}^{(b)}(E_g)}{6}-\frac{\sqrt{5}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_{2,2}^{(b)}(E_g)}{6}-\frac{\sqrt{5}\mathbb{M}_{3}^{(1,-1;a)}(B_{1g})\mathbb{T}_{2}^{(b)}(B_{1g})}{3}$$

$\boxed{\text{z59}}$ $$\mathbb{Q}_4^{(1,-1;c)}(A_{1g},1)=\frac{\sqrt{195}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_{2,1}^{(b)}(E_g)}{78}-\frac{\sqrt{13}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_{2,1}^{(b)}(E_g)}{6}+\frac{\sqrt{195}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_{2,2}^{(b)}(E_g)}{78}-\frac{\sqrt{13}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_{2,2}^{(b)}(E_g)}{6}+\frac{5\sqrt{13}\mathbb{M}_{3}^{(1,-1;a)}(B_{1g})\mathbb{T}_{2}^{(b)}(B_{1g})}{39}$$

$\boxed{\text{z60}}$ $$\mathbb{Q}_4^{(1,-1;c)}(A_{1g},2)=-\frac{\sqrt{65}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_{2,1}^{(b)}(E_g)}{13}-\frac{\sqrt{65}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_{2,2}^{(b)}(E_g)}{13}+\frac{\sqrt{39}\mathbb{M}_{3}^{(1,-1;a)}(B_{1g})\mathbb{T}_{2}^{(b)}(B_{1g})}{13}$$

$\boxed{\text{z61}}$ $$\mathbb{Q}_0^{(1,0;c)}(A_{1g})=\frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{3}+\frac{\sqrt{3}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{3}+\frac{\sqrt{3}\mathbb{T}_{2}^{(1,0;a)}(B_{1g})\mathbb{T}_{2}^{(b)}(B_{1g})}{3}$$

$\boxed{\text{z62}}$ $$\mathbb{Q}_2^{(1,0;c)}(A_{1g},a)=\frac{\sqrt{2}\mathbb{G}_{1,1}^{(1,0;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}+\frac{\sqrt{2}\mathbb{G}_{1,2}^{(1,0;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$\boxed{\text{z63}}$ $$\mathbb{Q}_2^{(1,0;c)}(A_{1g},b)=\mathbb{T}_2^{(1,0;a)}(A_{1g})\mathbb{T}_0^{(b)}(A_{1g})$$

$\boxed{\text{z64}}$ $$\mathbb{Q}_2^{(1,0;c)}(A_{1g},c)=\frac{\sqrt{6}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{6}+\frac{\sqrt{6}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{6}-\frac{\sqrt{6}\mathbb{T}_{2}^{(1,0;a)}(B_{1g})\mathbb{T}_{2}^{(b)}(B_{1g})}{3}$$

$\boxed{\text{z65}}$ $$\mathbb{Q}_0^{(1,1;c)}(A_{1g})=\mathbb{Q}_0^{(1,1;a)}(A_{1g})\mathbb{Q}_0^{(b)}(A_{1g})$$

$\boxed{\text{z66}}$ $$\mathbb{Q}_2^{(1,1;c)}(A_{1g})=\frac{\sqrt{2}\mathbb{M}_{1,1}^{(1,1;a)}(E_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{2}+\frac{\sqrt{2}\mathbb{M}_{1,2}^{(1,1;a)}(E_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{2}$$

$\boxed{\text{z106}}$ $\mathbb{Q}_5^{(c)}(A_{1u}) = \mathbb{Q}_2^{(a)}(B_{2g})\mathbb{Q}_3^{(b)}(B_{2u})$

$\boxed{\text{z107}}$ $\mathbb{Q}_5^{(1,-1;c)}(A_{1u},a) = \mathbb{Q}_2^{(1,-1;a)}(B_{2g})\mathbb{Q}_3^{(b)}(B_{2u})$

$\boxed{\text{z108}}$ $\mathbb{Q}_5^{(1,-1;c)}(A_{1u},b) = \mathbb{M}_3^{(1,-1;a)}(B_{2g})\mathbb{M}_2^{(b)}(B_{2u})$

$\boxed{\text{z109}}$ $\mathbb{G}_0^{(c)}(A_{1u}) = \frac{\sqrt{3}\mathbb{M}_{1,1}^{(a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{3} - \frac{\sqrt{3}\mathbb{M}_{1,2}^{(a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{3} + \frac{\sqrt{3}\mathbb{M}_1^{(a)}(A_{2g})\mathbb{T}_1^{(b)}(A_{2u})}{3}$

$\boxed{\text{z110}}$ $\mathbb{G}_2^{(c)}(A_{1u},a) = -\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(E_u)}{2} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(E_u)}{2}$

$\boxed{\text{z111}}$ $\mathbb{G}_2^{(c)}(A_{1u},b) = -\frac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{6} + \frac{\sqrt{6}\mathbb{M}_1^{(a)}(A_{2g})\mathbb{T}_1^{(b)}(A_{2u})}{3}$

$\boxed{\text{z112}}$ $\mathbb{G}_0^{(1,-1;c)}(A_{1u}) = \frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,-1;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{3} - \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,-1;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{3} + \frac{\sqrt{3}\mathbb{M}_1^{(1,-1;a)}(A_{2g})\mathbb{T}_1^{(b)}(A_{2u})}{3}$

$\boxed{\text{z113}}$ $\mathbb{G}_2^{(1,-1;c)}(A_{1u},a) = -\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(E_u)}{2} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(E_u)}{2}$

$\boxed{\text{z114}}$ $\mathbb{G}_2^{(1,-1;c)}(A_{1u},b) = -\frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{6} + \frac{\sqrt{6}\mathbb{M}_1^{(1,-1;a)}(A_{2g})\mathbb{T}_1^{(b)}(A_{2u})}{3}$

$\boxed{\text{z115}}$ $\mathbb{G}_2^{(1,-1;c)}(A_{1u},c) = -\frac{\sqrt{21}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1,1}^{(b)}(E_u)}{14} - \frac{\sqrt{35}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1,1}^{(b)}(E_u)}{14} + \frac{\sqrt{21}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1,2}^{(b)}(E_u)}{14} + \frac{\sqrt{35}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1,2}^{(b)}(E_u)}{14} + \frac{\sqrt{21}\mathbb{M}_3^{(1,-1;a)}(A_{2g})\mathbb{T}_1^{(b)}(A_{2u})}{7}$

$\boxed{\text{z116}}$ $\mathbb{G}_4^{(1,-1;c)}(A_{1u},1) = \frac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1,1}^{(b)}(E_u)}{3} - \frac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1,2}^{(b)}(E_u)}{3} + \frac{\sqrt{3}\mathbb{M}_3^{(1,-1;a)}(A_{2g})\mathbb{T}_1^{(b)}(A_{2u})}{3}$

$\boxed{\text{z117}}$ $$\begin{aligned}\mathbb{G}_4^{(1,-1;c)}(A_{1u},2) = &-\frac{\sqrt{105}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1,1}^{(b)}(E_u)}{42} + \frac{3\sqrt{7}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1,1}^{(b)}(E_u)}{14} + \frac{\sqrt{105}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1,2}^{(b)}(E_u)}{42}\\ &- \frac{3\sqrt{7}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1,2}^{(b)}(E_u)}{14} + \frac{\sqrt{105}\mathbb{M}_3^{(1,-1;a)}(A_{2g})\mathbb{T}_1^{(b)}(A_{2u})}{21}\end{aligned}$$

$\boxed{\text{z118}}$ $\mathbb{G}_0^{(1,0;c)}(A_{1u},a) = \frac{\sqrt{3}\mathbb{G}_{1,1}^{(1,0;a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(E_u)}{3} - \frac{\sqrt{3}\mathbb{G}_{1,2}^{(1,0;a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(E_u)}{3} + \frac{\sqrt{3}\mathbb{G}_1^{(1,0;a)}(A_{2g})\mathbb{Q}_1^{(b)}(A_{2u})}{3}$

$\boxed{\text{z119}}$ $\mathbb{G}_0^{(1,0;c)}(A_{1u},b) = \mathbb{T}_2^{(1,0;a)}(B_{2g})\mathbb{M}_2^{(b)}(B_{2u})$

$\boxed{\text{z120}}$ $\mathbb{G}_{2}^{(1,0;c)}(A_{1u},a) = -\frac{\sqrt{6}\mathbb{G}_{1,1}^{(1,0;a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(E_u)}{6} + \frac{\sqrt{6}\mathbb{G}_{1,2}^{(1,0;a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(E_u)}{6} + \frac{\sqrt{6}\mathbb{G}_{1}^{(1,0;a)}(A_{2g})\mathbb{Q}_{1}^{(b)}(A_{2u})}{3}$

$\boxed{\text{z121}}$ $\mathbb{G}_{2}^{(1,0;c)}(A_{1u},b) = -\frac{\sqrt{2}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{2} + \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{2}$

$\boxed{\text{z122}}$ $\mathbb{G}_{0}^{(1,1;c)}(A_{1u}) = \frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,1;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{3} - \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,1;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{3} + \frac{\sqrt{3}\mathbb{M}_{1}^{(1,1;a)}(A_{2g})\mathbb{T}_{1}^{(b)}(A_{2u})}{3}$

$\boxed{\text{z123}}$ $\mathbb{G}_{2}^{(1,1;c)}(A_{1u}) = -\frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,1;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{6} + \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,1;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{6} + \frac{\sqrt{6}\mathbb{M}_{1}^{(1,1;a)}(A_{2g})\mathbb{T}_{1}^{(b)}(A_{2u})}{3}$

$\boxed{\text{z166}}$ $\mathbb{Q}_{4}^{(c)}(A_{2g}) = \mathbb{Q}_{2}^{(a)}(B_{2g})\mathbb{Q}_{2}^{(b)}(B_{1g})$

$\boxed{\text{z167}}$ $\mathbb{Q}_{4}^{(1,-1;c)}(A_{2g},a) = \mathbb{Q}_{2}^{(1,-1;a)}(B_{2g})\mathbb{Q}_{2}^{(b)}(B_{1g})$

$\boxed{\text{z168}}$ $\mathbb{Q}_{4}^{(1,-1;c)}(A_{2g},b) = -\frac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_{2,2}^{(b)}(E_g)}{8} + \frac{3\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_{2,2}^{(b)}(E_g)}{8} + \frac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_{2,1}^{(b)}(E_g)}{8} - \frac{3\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_{2,1}^{(b)}(E_g)}{8} + \frac{\mathbb{M}_{3}^{(1,-1;a)}(B_{2g})\mathbb{T}_{2}^{(b)}(B_{1g})}{2}$

$\boxed{\text{z169}}$ $\mathbb{Q}_{4}^{(1,0;c)}(A_{2g}) = \mathbb{T}_{2}^{(1,0;a)}(B_{2g})\mathbb{T}_{2}^{(b)}(B_{1g})$

$\boxed{\text{z170}}$ $\mathbb{G}_{1}^{(c)}(A_{2g},a) = -\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$

$\boxed{\text{z171}}$ $\mathbb{G}_{1}^{(c)}(A_{2g},b) = \mathbb{M}_{1}^{(a)}(A_{2g})\mathbb{T}_{0}^{(b)}(A_{1g})$

$\boxed{\text{z172}}$ $\mathbb{G}_{1}^{(c)}(A_{2g},c) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{2} - \frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{2}$

$\boxed{\text{z173}}$ $\mathbb{G}_{1}^{(1,-1;c)}(A_{2g},a) = -\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$

$\boxed{\text{z174}}$ $\mathbb{G}_{1}^{(1,-1;c)}(A_{2g},b) = \mathbb{M}_{1}^{(1,-1;a)}(A_{2g})\mathbb{T}_{0}^{(b)}(A_{1g})$

$\boxed{\text{z175}}$ $\mathbb{G}_{1}^{(1,-1;c)}(A_{2g},c) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(1,-1;a)}(E_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{2} - \frac{\sqrt{2}\mathbb{M}_{1,2}^{(1,-1;a)}(E_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{2}$

$\boxed{\text{z176}}$ $\mathbb{G}_{1}^{(1,-1;c)}(A_{2g},d) = -\frac{11\sqrt{237}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_{2,2}^{(b)}(E_g)}{632} - \frac{19\sqrt{395}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_{2,2}^{(b)}(E_g)}{632} + \frac{11\sqrt{237}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_{2,1}^{(b)}(E_g)}{632}$
$+ \frac{19\sqrt{395}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_{2,1}^{(b)}(E_g)}{632} + \frac{3\sqrt{395}\mathbb{M}_{3}^{(1,-1;a)}(B_{2g})\mathbb{T}_{2}^{(b)}(B_{1g})}{158}$

$\boxed{\text{z177}}$ $\mathbb{G}_3^{(1,-1;c)}(A_{2g},a) = \mathbb{M}_3^{(1,-1;a)}(A_{2g})\mathbb{T}_0^{(b)}(A_{1g})$

$\boxed{\text{z178}}$ $\mathbb{G}_3^{(1,-1;c)}(A_{2g},b) = -\frac{7\sqrt{395}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_{2,2}^{(b)}(E_g)}{316} - \frac{\sqrt{237}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_{2,2}^{(b)}(E_g)}{316} + \frac{7\sqrt{395}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_{2,1}^{(b)}(E_g)}{316} + \frac{\sqrt{237}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_{2,1}^{(b)}(E_g)}{316} - \frac{4\sqrt{237}\mathbb{M}_3^{(1,-1;a)}(B_{2g})\mathbb{T}_2^{(b)}(B_{1g})}{79}$

$\boxed{\text{z179}}$ $\mathbb{G}_1^{(1,0;c)}(A_{2g},a) = \mathbb{G}_1^{(1,0;a)}(A_{2g})\mathbb{Q}_0^{(b)}(A_{1g})$

$\boxed{\text{z180}}$ $\mathbb{G}_1^{(1,0;c)}(A_{2g},b) = \frac{\sqrt{2}\mathbb{G}_{1,1}^{(1,0;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2} - \frac{\sqrt{2}\mathbb{G}_{1,2}^{(1,0;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$

$\boxed{\text{z181}}$ $\mathbb{G}_1^{(1,0;c)}(A_{2g},c) = -\frac{\sqrt{2}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{2} + \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{2}$

$\boxed{\text{z182}}$ $\mathbb{G}_1^{(1,1;c)}(A_{2g},a) = \mathbb{M}_1^{(1,1;a)}(A_{2g})\mathbb{T}_0^{(b)}(A_{1g})$

$\boxed{\text{z183}}$ $\mathbb{G}_1^{(1,1;c)}(A_{2g},b) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(1,1;a)}(E_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{2} - \frac{\sqrt{2}\mathbb{M}_{1,2}^{(1,1;a)}(E_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{2}$

$\boxed{\text{z226}}$ $\mathbb{Q}_1^{(c)}(A_{2u},a) = \mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_1^{(b)}(A_{2u})$

$\boxed{\text{z227}}$ $\mathbb{Q}_1^{(c)}(A_{2u},b) = \frac{\sqrt{30}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(E_u)}{10} + \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(E_u)}{10} + \frac{\sqrt{10}\mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_1^{(b)}(A_{2u})}{5}$

$\boxed{\text{z228}}$ $\mathbb{Q}_1^{(c)}(A_{2u},c) = \mathbb{Q}_2^{(a)}(B_{1g})\mathbb{Q}_3^{(b)}(B_{2u})$

$\boxed{\text{z229}}$ $\mathbb{Q}_1^{(c)}(A_{2u},d) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{2} + \frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{2}$

$\boxed{\text{z230}}$ $\mathbb{Q}_3^{(c)}(A_{2u}) = -\frac{\sqrt{5}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(E_u)}{5} - \frac{\sqrt{5}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(E_u)}{5} + \frac{\sqrt{15}\mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_1^{(b)}(A_{2u})}{5}$

$\boxed{\text{z231}}$ $\mathbb{Q}_1^{(1,-1;c)}(A_{2u},a) = \frac{\sqrt{30}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(E_u)}{10} + \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(E_u)}{10} + \frac{\sqrt{10}\mathbb{Q}_2^{(1,-1;a)}(A_{1g})\mathbb{Q}_1^{(b)}(A_{2u})}{5}$

$\boxed{\text{z232}}$ $\mathbb{Q}_1^{(1,-1;c)}(A_{2u},b) = \mathbb{Q}_2^{(1,-1;a)}(B_{1g})\mathbb{Q}_3^{(b)}(B_{2u})$

$\boxed{\text{z233}}$ $\mathbb{Q}_1^{(1,-1;c)}(A_{2u},c) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(1,-1;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{2} + \frac{\sqrt{2}\mathbb{M}_{1,2}^{(1,-1;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{2}$

$\boxed{\text{z234}}$ $\mathbb{Q}_1^{(1,-1;c)}(A_{2u},d) = \mathbb{M}_3^{(1,-1;a)}(B_{1g})\mathbb{M}_2^{(b)}(B_{2u})$

$\boxed{\text{z235}}$ $\mathbb{Q}_3^{(1,-1;c)}(A_{2u},a) = -\frac{\sqrt{5}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(E_u)}{5} - \frac{\sqrt{5}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(E_u)}{5} + \frac{\sqrt{15}\mathbb{Q}_2^{(1,-1;a)}(A_{1g})\mathbb{Q}_1^{(b)}(A_{2u})}{5}$

$\boxed{\text{z236}}$ $\mathbb{Q}_3^{(1,-1;c)}(A_{2u},b) = -\frac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1,2}^{(b)}(E_u)}{4} - \frac{\sqrt{5}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1,2}^{(b)}(E_u)}{4} - \frac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1,1}^{(b)}(E_u)}{4} - \frac{\sqrt{5}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1,1}^{(b)}(E_u)}{4}$

$\boxed{\text{z237}}$ $\mathbb{Q}_1^{(1,0;c)}(A_{2u},a) = \frac{\sqrt{2}\mathbb{G}_{1,1}^{(1,0;a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(E_u)}{2} + \frac{\sqrt{2}\mathbb{G}_{1,2}^{(1,0;a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(E_u)}{2}$

$\boxed{\text{z238}}$ $\mathbb{Q}_1^{(1,0;c)}(A_{2u},b) = \frac{\sqrt{30}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{10} + \frac{\sqrt{30}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{10} + \frac{\sqrt{10}\mathbb{T}_2^{(1,0;a)}(A_{1g})\mathbb{T}_1^{(b)}(A_{2u})}{5}$

$\boxed{\text{z239}}$ $\mathbb{Q}_1^{(1,0;c)}(A_{2u},c) = \mathbb{T}_2^{(1,0;a)}(B_{1g})\mathbb{M}_2^{(b)}(B_{2u})$

$\boxed{\text{z240}}$ $\mathbb{Q}_3^{(1,0;c)}(A_{2u}) = -\frac{\sqrt{5}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{5} - \frac{\sqrt{5}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{5} + \frac{\sqrt{15}\mathbb{T}_2^{(1,0;a)}(A_{1g})\mathbb{T}_1^{(b)}(A_{2u})}{5}$

$\boxed{\text{z241}}$ $\mathbb{Q}_1^{(1,1;c)}(A_{2u},a) = \mathbb{Q}_0^{(1,1;a)}(A_{1g})\mathbb{Q}_1^{(b)}(A_{2u})$

$\boxed{\text{z242}}$ $\mathbb{Q}_1^{(1,1;c)}(A_{2u},b) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(1,1;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{2} + \frac{\sqrt{2}\mathbb{M}_{1,2}^{(1,1;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{2}$

$\boxed{\text{z243}}$ $\mathbb{G}_4^{(1,-1;c)}(A_{2u}) = \frac{\sqrt{5}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1,2}^{(b)}(E_u)}{4} - \frac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1,2}^{(b)}(E_u)}{4} + \frac{\sqrt{5}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1,1}^{(b)}(E_u)}{4} - \frac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1,1}^{(b)}(E_u)}{4}$

$\boxed{\text{z406}}$ $\mathbb{Q}_2^{(c)}(B_{1g},a) = \mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_2^{(b)}(B_{1g})$

$\boxed{\text{z407}}$ $\mathbb{Q}_2^{(c)}(B_{1g},b) = \mathbb{Q}_2^{(a)}(B_{1g})\mathbb{Q}_0^{(b)}(A_{1g})$

$\boxed{\text{z408}}$ $\mathbb{Q}_2^{(c)}(B_{1g},c) = -\frac{\sqrt{30}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{10} + \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{10} - \frac{\sqrt{10}\mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_2^{(b)}(B_{1g})}{5}$

$\boxed{\text{z409}}$ $\mathbb{Q}_2^{(c)}(B_{1g},d) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{2} - \frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{2}$

$\boxed{\text{z410}}$ $\mathbb{Q}_4^{(c)}(B_{1g}) = \frac{\sqrt{5}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{5} - \frac{\sqrt{5}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{5} - \frac{\sqrt{15}\mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_2^{(b)}(B_{1g})}{5}$

$\boxed{\text{z411}}$ $\mathbb{Q}_2^{(1,-1;c)}(B_{1g}, a) = \mathbb{Q}_2^{(1,-1;a)}(B_{1g})\mathbb{Q}_0^{(b)}(A_{1g})$

$\boxed{\text{z412}}$ $\mathbb{Q}_2^{(1,-1;c)}(B_{1g}, b) = -\frac{\sqrt{30}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{10} + \frac{\sqrt{30}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{10} - \frac{\sqrt{10}\mathbb{Q}_2^{(1,-1;a)}(A_{1g})\mathbb{Q}_2^{(b)}(B_{1g})}{5}$

$\boxed{\text{z413}}$ $\mathbb{Q}_2^{(1,-1;c)}(B_{1g}, c) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(1,-1;a)}(E_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{2} - \frac{\sqrt{2}\mathbb{M}_{1,2}^{(1,-1;a)}(E_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{2}$

$\boxed{\text{z414}}$ $\mathbb{Q}_2^{(1,-1;c)}(B_{1g}, d) = -\frac{\sqrt{2}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g, 1)\mathbb{T}_{2,1}^{(b)}(E_g)}{8} + \frac{\sqrt{30}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g, 2)\mathbb{T}_{2,1}^{(b)}(E_g)}{8} + \frac{\sqrt{2}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g, 1)\mathbb{T}_{2,2}^{(b)}(E_g)}{8} - \frac{\sqrt{30}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g, 2)\mathbb{T}_{2,2}^{(b)}(E_g)}{8}$

$\boxed{\text{z415}}$ $\mathbb{Q}_4^{(1,-1;c)}(B_{1g}, a) = \frac{\sqrt{5}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{5} - \frac{\sqrt{5}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{5} - \frac{\sqrt{15}\mathbb{Q}_2^{(1,-1;a)}(A_{1g})\mathbb{Q}_2^{(b)}(B_{1g})}{5}$

$\boxed{\text{z416}}$ $\mathbb{Q}_4^{(1,-1;c)}(B_{1g}, b) = -\frac{\sqrt{30}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g, 1)\mathbb{T}_{2,1}^{(b)}(E_g)}{8} - \frac{\sqrt{2}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g, 2)\mathbb{T}_{2,1}^{(b)}(E_g)}{8} + \frac{\sqrt{30}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g, 1)\mathbb{T}_{2,2}^{(b)}(E_g)}{8} + \frac{\sqrt{2}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g, 2)\mathbb{T}_{2,2}^{(b)}(E_g)}{8}$

$\boxed{\text{z417}}$ $\mathbb{Q}_2^{(1,0;c)}(B_{1g}, a) = \frac{\sqrt{2}\mathbb{G}_{1,1}^{(1,0;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2} - \frac{\sqrt{2}\mathbb{G}_{1,2}^{(1,0;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$

$\boxed{\text{z418}}$ $\mathbb{Q}_2^{(1,0;c)}(B_{1g}, b) = \mathbb{T}_2^{(1,0;a)}(B_{1g})\mathbb{T}_0^{(b)}(A_{1g})$

$\boxed{\text{z419}}$ $\mathbb{Q}_2^{(1,0;c)}(B_{1g}, c) = -\frac{\sqrt{30}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{10} + \frac{\sqrt{30}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{10} - \frac{\sqrt{10}\mathbb{T}_2^{(1,0;a)}(A_{1g})\mathbb{T}_2^{(b)}(B_{1g})}{5}$

$\boxed{\text{z420}}$ $\mathbb{Q}_4^{(1,0;c)}(B_{1g}) = \frac{\sqrt{5}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{5} - \frac{\sqrt{5}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{5} - \frac{\sqrt{15}\mathbb{T}_2^{(1,0;a)}(A_{1g})\mathbb{T}_2^{(b)}(B_{1g})}{5}$

$\boxed{\text{z421}}$ $\mathbb{Q}_2^{(1,1;c)}(B_{1g}, a) = \mathbb{Q}_0^{(1,1;a)}(A_{1g})\mathbb{Q}_2^{(b)}(B_{1g})$

$\boxed{\text{z422}}$ $\mathbb{Q}_2^{(1,1;c)}(B_{1g}, b) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(1,1;a)}(E_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{2} - \frac{\sqrt{2}\mathbb{M}_{1,2}^{(1,1;a)}(E_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{2}$

$\boxed{\text{z423}}$ $\mathbb{G}_3^{(1,-1;c)}(B_{1g}) = \mathbb{M}_3^{(1,-1;a)}(B_{1g})\mathbb{T}_0^{(b)}(A_{1g})$

$\boxed{\text{z424}}$ $\mathbb{Q}_3^{(c)}(B_{1u}, a) = \frac{\sqrt{3}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(E_u)}{3} + \frac{\sqrt{3}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(E_u)}{3} + \frac{\sqrt{3}\mathbb{Q}_2^{(a)}(B_{2g})\mathbb{Q}_1^{(b)}(A_{2u})}{3}$

$\boxed{\text{z425}}$ $\mathbb{Q}_3^{(c)}(B_{1u},b)=\mathbb{M}_1^{(a)}(A_{2g})\mathbb{M}_2^{(b)}(B_{2u})$

$\boxed{\text{z426}}$ $\mathbb{Q}_3^{(1,-1;c)}(B_{1u},a)=\frac{\sqrt{3}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(E_u)}{3}+\frac{\sqrt{3}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(E_u)}{3}+\frac{\sqrt{3}\mathbb{Q}_2^{(1,-1;a)}(B_{2g})\mathbb{Q}_1^{(b)}(A_{2u})}{3}$

$\boxed{\text{z427}}$ $\mathbb{Q}_3^{(1,-1;c)}(B_{1u},b)=\mathbb{M}_1^{(1,-1;a)}(A_{2g})\mathbb{M}_2^{(b)}(B_{2u})$

$\boxed{\text{z428}}$ $\mathbb{Q}_3^{(1,-1;c)}(B_{1u},c)=-\frac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1,1}^{(b)}(E_u)}{3}-\frac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1,2}^{(b)}(E_u)}{3}-\frac{\sqrt{3}\mathbb{M}_3^{(1,-1;a)}(B_{2g})\mathbb{T}_1^{(b)}(A_{2u})}{3}$

$\boxed{\text{z429}}$ $\mathbb{Q}_3^{(1,-1;c)}(B_{1u},d)=-\mathbb{M}_3^{(1,-1;a)}(A_{2g})\mathbb{M}_2^{(b)}(B_{2u})$

$\boxed{\text{z430}}$ $\mathbb{Q}_3^{(1,0;c)}(B_{1u},a)=\mathbb{G}_1^{(1,0;a)}(A_{2g})\mathbb{Q}_3^{(b)}(B_{2u})$

$\boxed{\text{z431}}$ $\mathbb{Q}_3^{(1,0;c)}(B_{1u},b)=\frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{3}+\frac{\sqrt{3}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{3}+\frac{\sqrt{3}\mathbb{T}_2^{(1,0;a)}(B_{2g})\mathbb{T}_1^{(b)}(A_{2u})}{3}$

$\boxed{\text{z432}}$ $\mathbb{Q}_3^{(1,1;c)}(B_{1u})=\mathbb{M}_1^{(1,1;a)}(A_{2g})\mathbb{M}_2^{(b)}(B_{2u})$

$\boxed{\text{z433}}$ $\mathbb{G}_2^{(c)}(B_{1u},a)=-\frac{\sqrt{6}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(E_u)}{6}-\frac{\sqrt{6}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(E_u)}{6}+\frac{\sqrt{6}\mathbb{Q}_2^{(a)}(B_{2g})\mathbb{Q}_1^{(b)}(A_{2u})}{3}$

$\boxed{\text{z434}}$ $\mathbb{G}_2^{(c)}(B_{1u},b)=\frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{2}+\frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{2}$

$\boxed{\text{z435}}$ $\mathbb{G}_2^{(1,-1;c)}(B_{1u},a)=-\frac{\sqrt{6}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(E_u)}{6}-\frac{\sqrt{6}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(E_u)}{6}+\frac{\sqrt{6}\mathbb{Q}_2^{(1,-1;a)}(B_{2g})\mathbb{Q}_1^{(b)}(A_{2u})}{3}$

$\boxed{\text{z436}}$ $\mathbb{G}_2^{(1,-1;c)}(B_{1u},b)=\frac{\sqrt{2}\mathbb{M}_{1,1}^{(1,-1;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{2}+\frac{\sqrt{2}\mathbb{M}_{1,2}^{(1,-1;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{2}$

$\boxed{\text{z437}}$ $\mathbb{G}_2^{(1,-1;c)}(B_{1u},c)=\frac{3\sqrt{7}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1,1}^{(b)}(E_u)}{14}-\frac{\sqrt{105}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1,1}^{(b)}(E_u)}{42}+\frac{3\sqrt{7}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1,2}^{(b)}(E_u)}{14}$
$-\frac{\sqrt{105}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1,2}^{(b)}(E_u)}{42}+\frac{\sqrt{105}\mathbb{M}_3^{(1,-1;a)}(B_{2g})\mathbb{T}_1^{(b)}(A_{2u})}{21}$

$\boxed{\text{z438}}$ $\mathbb{G}_4^{(1,-1;c)}(B_{1u})=\frac{\sqrt{35}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1,1}^{(b)}(E_u)}{14}+\frac{\sqrt{21}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1,1}^{(b)}(E_u)}{14}+\frac{\sqrt{35}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1,2}^{(b)}(E_u)}{14}+\frac{\sqrt{21}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1,2}^{(b)}(E_u)}{14}-\frac{\sqrt{21}\mathbb{M}_3^{(1,-1;a)}(B_{2g})\mathbb{T}_1^{(b)}(A_{2u})}{7}$

$\boxed{\text{z439}}$ $\mathbb{G}_{2}^{(1,0;c)}(B_{1u},a)=\frac{\sqrt{2}\mathbb{G}_{1,1}^{(1,0;a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(E_u)}{2}+\frac{\sqrt{2}\mathbb{G}_{1,2}^{(1,0;a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(E_u)}{2}$

$\boxed{\text{z440}}$ $\mathbb{G}_{2}^{(1,0;c)}(B_{1u},b)=-\frac{\sqrt{6}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{6}-\frac{\sqrt{6}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{6}+\frac{\sqrt{6}\mathbb{T}_{2}^{(1,0;a)}(B_{2g})\mathbb{T}_{1}^{(b)}(A_{2u})}{3}$

$\boxed{\text{z441}}$ $\mathbb{G}_{2}^{(1,1;c)}(B_{1u})=\frac{\sqrt{2}\mathbb{M}_{1,1}^{(1,1;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{2}+\frac{\sqrt{2}\mathbb{M}_{1,2}^{(1,1;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{2}$

$\boxed{\text{z442}}$ $\mathbb{Q}_{2}^{(c)}(B_{2g},a)=\mathbb{Q}_{2}^{(a)}(B_{2g})\mathbb{Q}_{0}^{(b)}(A_{1g})$

$\boxed{\text{z443}}$ $\mathbb{Q}_{2}^{(c)}(B_{2g},b)=\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}+\frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$

$\boxed{\text{z444}}$ $\mathbb{Q}_{2}^{(c)}(B_{2g},c)=-\frac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(E_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{6}-\frac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(E_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{6}+\frac{\sqrt{6}\mathbb{M}_{1}^{(a)}(A_{2g})\mathbb{T}_{2}^{(b)}(B_{1g})}{3}$

$\boxed{\text{z445}}$ $\mathbb{Q}_{2}^{(1,-1;c)}(B_{2g},a)=\mathbb{Q}_{2}^{(1,-1;a)}(B_{2g})\mathbb{Q}_{0}^{(b)}(A_{1g})$

$\boxed{\text{z446}}$ $\mathbb{Q}_{2}^{(1,-1;c)}(B_{2g},b)=\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}+\frac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$

$\boxed{\text{z447}}$ $\mathbb{Q}_{2}^{(1,-1;c)}(B_{2g},c)=-\frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,-1;a)}(E_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{6}-\frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,-1;a)}(E_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{6}+\frac{\sqrt{6}\mathbb{M}_{1}^{(1,-1;a)}(A_{2g})\mathbb{T}_{2}^{(b)}(B_{1g})}{3}$

$\boxed{\text{z448}}$ $\mathbb{Q}_{2}^{(1,-1;c)}(B_{2g},d)=-\frac{2\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_{2,2}^{(b)}(E_g)}{3}-\frac{2\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_{2,1}^{(b)}(E_g)}{3}-\frac{\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{T}_{2}^{(b)}(B_{1g})}{3}$

$\boxed{\text{z449}}$ $\mathbb{Q}_{4}^{(1,-1;c)}(B_{2g})=-\frac{\sqrt{5}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_{2,2}^{(b)}(E_g)}{12}-\frac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_{2,2}^{(b)}(E_g)}{4}-\frac{\sqrt{5}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_{2,1}^{(b)}(E_g)}{12}-\frac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_{2,1}^{(b)}(E_g)}{4}+\frac{\sqrt{5}\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{T}_{2}^{(b)}(B_{1g})}{3}$

$\boxed{\text{z450}}$ $\mathbb{Q}_{2}^{(1,0;c)}(B_{2g},a)=-\frac{\sqrt{6}\mathbb{G}_{1,1}^{(1,0;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{6}-\frac{\sqrt{6}\mathbb{G}_{1,2}^{(1,0;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{6}+\frac{\sqrt{6}\mathbb{G}_{1}^{(1,0;a)}(A_{2g})\mathbb{Q}_{2}^{(b)}(B_{1g})}{3}$

$\boxed{\text{z451}}$ $\mathbb{Q}_{2}^{(1,0;c)}(B_{2g},b)=\mathbb{T}_{2}^{(1,0;a)}(B_{2g})\mathbb{T}_{0}^{(b)}(A_{1g})$

$\boxed{\text{z452}}$ $\mathbb{Q}_{2}^{(1,0;c)}(B_{2g},c)=\frac{\sqrt{2}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{2}+\frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{2}$

$\boxed{\text{z453}}$ $\mathbb{Q}_{2}^{(1,1;c)}(B_{2g}) = -\frac{\sqrt{6}\mathbb{M}_{1,1}^{(1,1;a)}(E_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{6} - \frac{\sqrt{6}\mathbb{M}_{1,2}^{(1,1;a)}(E_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{6} + \frac{\sqrt{6}\mathbb{M}_{1}^{(1,1;a)}(A_{2g})\mathbb{T}_{2}^{(b)}(B_{1g})}{3}$

$\boxed{\text{z454}}$ $\mathbb{G}_{3}^{(c)}(B_{2g}) = \frac{\sqrt{3}\mathbb{M}_{1,1}^{(a)}(E_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{3} + \frac{\sqrt{3}\mathbb{M}_{1,2}^{(a)}(E_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{3} + \frac{\sqrt{3}\mathbb{M}_{1}^{(a)}(A_{2g})\mathbb{T}_{2}^{(b)}(B_{1g})}{3}$

$\boxed{\text{z455}}$ $\mathbb{G}_{3}^{(1,-1;c)}(B_{2g}, a) = \frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,-1;a)}(E_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{3} + \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,-1;a)}(E_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{3} + \frac{\sqrt{3}\mathbb{M}_{1}^{(1,-1;a)}(A_{2g})\mathbb{T}_{2}^{(b)}(B_{1g})}{3}$

$\boxed{\text{z456}}$ $\mathbb{G}_{3}^{(1,-1;c)}(B_{2g}, b) = \mathbb{M}_{3}^{(1,-1;a)}(B_{2g})\mathbb{T}_{0}^{(b)}(A_{1g})$

$\boxed{\text{z457}}$ $\mathbb{G}_{3}^{(1,-1;c)}(B_{2g}, c) = \frac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g, 1)\mathbb{T}_{2,2}^{(b)}(E_g)}{12} - \frac{\sqrt{5}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g, 2)\mathbb{T}_{2,2}^{(b)}(E_g)}{4} + \frac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g, 1)\mathbb{T}_{2,1}^{(b)}(E_g)}{12} - \frac{\sqrt{5}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g, 2)\mathbb{T}_{2,1}^{(b)}(E_g)}{4} - \frac{\sqrt{3}\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{T}_{2}^{(b)}(B_{1g})}{3}$

$\boxed{\text{z458}}$ $\mathbb{G}_{3}^{(1,0;c)}(B_{2g}) = \frac{\sqrt{3}\mathbb{G}_{1,1}^{(1,0;a)}(E_g)\mathbb{Q}_{2,2}^{(b)}(E_g)}{3} + \frac{\sqrt{3}\mathbb{G}_{1,2}^{(1,0;a)}(E_g)\mathbb{Q}_{2,1}^{(b)}(E_g)}{3} + \frac{\sqrt{3}\mathbb{G}_{1}^{(1,0;a)}(A_{2g})\mathbb{Q}_{2}^{(b)}(B_{1g})}{3}$

$\boxed{\text{z459}}$ $\mathbb{G}_{3}^{(1,1;c)}(B_{2g}) = \frac{\sqrt{3}\mathbb{M}_{1,1}^{(1,1;a)}(E_g)\mathbb{T}_{2,2}^{(b)}(E_g)}{3} + \frac{\sqrt{3}\mathbb{M}_{1,2}^{(1,1;a)}(E_g)\mathbb{T}_{2,1}^{(b)}(E_g)}{3} + \frac{\sqrt{3}\mathbb{M}_{1}^{(1,1;a)}(A_{2g})\mathbb{T}_{2}^{(b)}(B_{1g})}{3}$

$\boxed{\text{z460}}$ $\mathbb{Q}_{3}^{(c)}(B_{2u}, a) = \mathbb{Q}_{0}^{(a)}(A_{1g})\mathbb{Q}_{3}^{(b)}(B_{2u})$

$\boxed{\text{z461}}$ $\mathbb{Q}_{3}^{(c)}(B_{2u}, b) = -\frac{\sqrt{3}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(E_u)}{3} + \frac{\sqrt{3}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(E_u)}{3} + \frac{\sqrt{3}\mathbb{Q}_{2}^{(a)}(B_{1g})\mathbb{Q}_{1}^{(b)}(A_{2u})}{3}$

$\boxed{\text{z462}}$ $\mathbb{Q}_{5}^{(c)}(B_{2u}) = \mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{3}^{(b)}(B_{2u})$

$\boxed{\text{z463}}$ $\mathbb{Q}_{3}^{(1,-1;c)}(B_{2u}, a) = -\frac{\sqrt{3}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(E_u)}{3} + \frac{\sqrt{3}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(E_u)}{3} + \frac{\sqrt{3}\mathbb{Q}_{2}^{(1,-1;a)}(B_{1g})\mathbb{Q}_{1}^{(b)}(A_{2u})}{3}$

$\boxed{\text{z464}}$ $\mathbb{Q}_{3}^{(1,-1;c)}(B_{2u}, b) = \frac{\sqrt{5}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g, 1)\mathbb{T}_{1,2}^{(b)}(E_u)}{4} + \frac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g, 2)\mathbb{T}_{1,2}^{(b)}(E_u)}{12} - \frac{\sqrt{5}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g, 1)\mathbb{T}_{1,1}^{(b)}(E_u)}{4} - \frac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g, 2)\mathbb{T}_{1,1}^{(b)}(E_u)}{12} + \frac{\sqrt{3}\mathbb{M}_{3}^{(1,-1;a)}(B_{1g})\mathbb{T}_{1}^{(b)}(A_{2u})}{3}$

$\boxed{\text{z465}}$ $\mathbb{Q}_{5}^{(1,-1;c)}(B_{2u}) = \mathbb{Q}_{2}^{(1,-1;a)}(A_{1g})\mathbb{Q}_{3}^{(b)}(B_{2u})$

$\boxed{\text{z466}}$ $\mathbb{Q}_{3}^{(1,0;c)}(B_{2u}, a) = -\frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{3} + \frac{\sqrt{3}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{3} + \frac{\sqrt{3}\mathbb{T}_{2}^{(1,0;a)}(B_{1g})\mathbb{T}_{1}^{(b)}(A_{2u})}{3}$

$\boxed{\text{z467}}$ $\mathbb{Q}_{3}^{(1,0;c)}(B_{2u}, b) = -\mathbb{T}_{2}^{(1,0;a)}(A_{1g})\mathbb{M}_{2}^{(b)}(B_{2u})$

$\boxed{\text{z468}}$ $\mathbb{Q}_3^{(1,1;c)}(B_{2u}) = \mathbb{Q}_0^{(1,1;a)}(A_{1g})\mathbb{Q}_3^{(b)}(B_{2u})$

$\boxed{\text{z469}}$ $\mathbb{G}_2^{(c)}(B_{2u},a) = -\frac{\sqrt{6}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(E_u)}{6} + \frac{\sqrt{6}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(E_u)}{6} - \frac{\sqrt{6}\mathbb{Q}_2^{(a)}(B_{1g})\mathbb{Q}_1^{(b)}(A_{2u})}{3}$

$\boxed{\text{z470}}$ $\mathbb{G}_2^{(c)}(B_{2u},b) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{2} - \frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{2}$

$\boxed{\text{z471}}$ $\mathbb{G}_2^{(1,-1;c)}(B_{2u},a) = -\frac{\sqrt{6}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(E_u)}{6} + \frac{\sqrt{6}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(E_u)}{6} - \frac{\sqrt{6}\mathbb{Q}_2^{(1,-1;a)}(B_{1g})\mathbb{Q}_1^{(b)}(A_{2u})}{3}$

$\boxed{\text{z472}}$ $\mathbb{G}_2^{(1,-1;c)}(B_{2u},b) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(1,-1;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{2} - \frac{\sqrt{2}\mathbb{M}_{1,2}^{(1,-1;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{2}$

$\boxed{\text{z473}}$ $\mathbb{G}_2^{(1,-1;c)}(B_{2u},c) = -\frac{\sqrt{7}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1,2}^{(b)}(E_u)}{7} + \frac{\sqrt{105}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1,2}^{(b)}(E_u)}{21} + \frac{\sqrt{7}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1,1}^{(b)}(E_u)}{7} - \frac{\sqrt{105}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1,1}^{(b)}(E_u)}{21} + \frac{\sqrt{105}\mathbb{M}_3^{(1,-1;a)}(B_{1g})\mathbb{T}_1^{(b)}(A_{2u})}{21}$

$\boxed{\text{z474}}$ $\mathbb{G}_4^{(1,-1;c)}(B_{2u}) = -\frac{\sqrt{35}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1,2}^{(b)}(E_u)}{28} - \frac{3\sqrt{21}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1,2}^{(b)}(E_u)}{28} + \frac{\sqrt{35}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1,1}^{(b)}(E_u)}{28} + \frac{3\sqrt{21}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1,1}^{(b)}(E_u)}{28} + \frac{\sqrt{21}\mathbb{M}_3^{(1,-1;a)}(B_{1g})\mathbb{T}_1^{(b)}(A_{2u})}{7}$

$\boxed{\text{z475}}$ $\mathbb{G}_2^{(1,0;c)}(B_{2u},a) = \frac{\sqrt{2}\mathbb{G}_{1,1}^{(1,0;a)}(E_g)\mathbb{Q}_{1,2}^{(b)}(E_u)}{2} - \frac{\sqrt{2}\mathbb{G}_{1,2}^{(1,0;a)}(E_g)\mathbb{Q}_{1,1}^{(b)}(E_u)}{2}$

$\boxed{\text{z476}}$ $\mathbb{G}_2^{(1,0;c)}(B_{2u},b) = -\frac{\sqrt{6}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{6} + \frac{\sqrt{6}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{6} - \frac{\sqrt{6}\mathbb{T}_2^{(1,0;a)}(B_{1g})\mathbb{T}_1^{(b)}(A_{2u})}{3}$

$\boxed{\text{z477}}$ $\mathbb{G}_2^{(1,1;c)}(B_{2u}) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(1,1;a)}(E_g)\mathbb{T}_{1,2}^{(b)}(E_u)}{2} - \frac{\sqrt{2}\mathbb{M}_{1,2}^{(1,1;a)}(E_g)\mathbb{T}_{1,1}^{(b)}(E_u)}{2}$

$\boxed{\text{z518}}$ $\mathbb{Q}_{2,1}^{(c)}(E_g,a) = \frac{\sqrt{2}\mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$

$\boxed{\text{z519}}$ $\mathbb{Q}_{2,2}^{(c)}(E_g,a) = \frac{\sqrt{2}\mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$

$\boxed{\text{z520}}$ $\mathbb{Q}_{2,1}^{(c)}(E_g,b) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_0^{(b)}(A_{1g})}{2}$

$\boxed{\text{z521}}$ $$\mathbb{Q}_{2,2}^{(c)}(E_g,b) = \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$$

$\boxed{\text{z522}}$ $$\mathbb{Q}_{2,1}^{(c)}(E_g,c) = -\frac{\sqrt{15}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2}^{(b)}(B_{1g})}{10} + \frac{\sqrt{5}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{10} - \frac{\sqrt{15}\mathbb{Q}_{2}^{(a)}(B_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{10} + \frac{\sqrt{15}\mathbb{Q}_{2}^{(a)}(B_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{10}$$

$\boxed{\text{z523}}$ $$\mathbb{Q}_{2,2}^{(c)}(E_g,c) = \frac{\sqrt{15}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2}^{(b)}(B_{1g})}{10} + \frac{\sqrt{5}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{10} + \frac{\sqrt{15}\mathbb{Q}_{2}^{(a)}(B_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{10} + \frac{\sqrt{15}\mathbb{Q}_{2}^{(a)}(B_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{10}$$

$\boxed{\text{z524}}$ $$\mathbb{Q}_{2,1}^{(c)}(E_g,d) = -\frac{\mathbb{M}_{1,1}^{(a)}(E_g)\mathbb{T}_{2}^{(b)}(B_{1g})}{2} + \frac{\mathbb{M}_{1}^{(a)}(A_{2g})\mathbb{T}_{2,2}^{(b)}(E_g)}{2}$$

$\boxed{\text{z525}}$ $$\mathbb{Q}_{2,2}^{(c)}(E_g,d) = \frac{\mathbb{M}_{1,2}^{(a)}(E_g)\mathbb{T}_{2}^{(b)}(B_{1g})}{2} - \frac{\mathbb{M}_{1}^{(a)}(A_{2g})\mathbb{T}_{2,1}^{(b)}(E_g)}{2}$$

$\boxed{\text{z526}}$ $$\mathbb{Q}_{4,1}^{(c)}(E_g,1) = -\frac{7\sqrt{235}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2}^{(b)}(B_{1g})}{470} - \frac{11\sqrt{705}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{470} - \frac{7\sqrt{235}\mathbb{Q}_{2}^{(a)}(B_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{470} - \frac{3\sqrt{235}\mathbb{Q}_{2}^{(a)}(B_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{470}$$

$\boxed{\text{z527}}$ $$\mathbb{Q}_{4,2}^{(c)}(E_g,1) = \frac{7\sqrt{235}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2}^{(b)}(B_{1g})}{470} - \frac{11\sqrt{705}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{470} + \frac{7\sqrt{235}\mathbb{Q}_{2}^{(a)}(B_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{470} - \frac{3\sqrt{235}\mathbb{Q}_{2}^{(a)}(B_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{470}$$

$\boxed{\text{z528}}$ $$\mathbb{Q}_{4,1}^{(c)}(E_g,2) = \frac{3\sqrt{47}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2}^{(b)}(B_{1g})}{94} - \frac{\sqrt{141}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{47} + \frac{3\sqrt{47}\mathbb{Q}_{2}^{(a)}(B_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{94} + \frac{4\sqrt{47}\mathbb{Q}_{2}^{(a)}(B_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{47}$$

$\boxed{\text{z529}}$ $$\mathbb{Q}_{4,2}^{(c)}(E_g,2) = -\frac{3\sqrt{47}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2}^{(b)}(B_{1g})}{94} - \frac{\sqrt{141}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{47} - \frac{3\sqrt{47}\mathbb{Q}_{2}^{(a)}(B_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{94} + \frac{4\sqrt{47}\mathbb{Q}_{2}^{(a)}(B_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{47}$$

$\boxed{\text{z530}}$ $$\mathbb{Q}_{2,1}^{(1,-1;c)}(E_g,a) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$$

$\boxed{\text{z531}}$ $$\mathbb{Q}_{2,2}^{(1,-1;c)}(E_g,a) = \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$$

$\boxed{\text{z532}}$ $$\mathbb{Q}_{2,1}^{(1,-1;c)}(E_g,b) = -\frac{\sqrt{15}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2}^{(b)}(B_{1g})}{10} + \frac{\sqrt{5}\mathbb{Q}_{2}^{(1,-1;a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{10} - \frac{\sqrt{15}\mathbb{Q}_{2}^{(1,-1;a)}(B_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{10} + \frac{\sqrt{15}\mathbb{Q}_{2}^{(1,-1;a)}(B_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{10}$$

$\boxed{\text{z533}}$ $$\mathbb{Q}_{2,2}^{(1,-1;c)}(E_g,b) = \frac{\sqrt{15}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2}^{(b)}(B_{1g})}{10} + \frac{\sqrt{5}\mathbb{Q}_{2}^{(1,-1;a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{10} + \frac{\sqrt{15}\mathbb{Q}_{2}^{(1,-1;a)}(B_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{10} + \frac{\sqrt{15}\mathbb{Q}_{2}^{(1,-1;a)}(B_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{10}$$

$\boxed{\text{z534}}$ $$\mathbb{Q}_{2,1}^{(1,-1;c)}(E_g,c) = -\frac{\mathbb{M}_{1,1}^{(1,-1;a)}(E_g)\mathbb{T}_{2}^{(b)}(B_{1g})}{2} + \frac{\mathbb{M}_{1}^{(1,-1;a)}(A_{2g})\mathbb{T}_{2,2}^{(b)}(E_g)}{2}$$

$\boxed{\text{z535}}$ $$\mathbb{Q}_{2,2}^{(1,-1;c)}(E_g,c) = \frac{\mathbb{M}_{1,2}^{(1,-1;a)}(E_g)\mathbb{T}_{2}^{(b)}(B_{1g})}{2} - \frac{\mathbb{M}_{1}^{(1,-1;a)}(A_{2g})\mathbb{T}_{2,1}^{(b)}(E_g)}{2}$$

$\boxed{\text{z582}}$ $$\mathbb{Q}_{2,1}^{(1,-1;c)}(E_g,d) = \frac{\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_{2}^{(b)}(B_{1g})}{8} - \frac{\sqrt{15}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_{2}^{(b)}(B_{1g})}{8} + \frac{\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{T}_{2,2}^{(b)}(E_g)}{2}$$

$\boxed{\text{z583}}$ $$\mathbb{Q}_{2,2}^{(1,-1;c)}(E_g,d) = -\frac{\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_{2}^{(b)}(B_{1g})}{8} + \frac{\sqrt{15}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_{2}^{(b)}(B_{1g})}{8} - \frac{\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{T}_{2,1}^{(b)}(E_g)}{2}$$

$\boxed{\text{z584}}$ $$\mathbb{Q}_{4,1}^{(1,-1;c)}(E_g,1a) = -\frac{7\sqrt{235}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2}^{(b)}(B_{1g})}{470} - \frac{11\sqrt{705}\mathbb{Q}_{2}^{(1,-1;a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{470} - \frac{7\sqrt{235}\mathbb{Q}_{2}^{(1,-1;a)}(B_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{470} - \frac{3\sqrt{235}\mathbb{Q}_{2}^{(1,-1;a)}(B_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{470}$$

$\boxed{\text{z585}}$ $$\mathbb{Q}_{4,2}^{(1,-1;c)}(E_g,1a) = \frac{7\sqrt{235}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2}^{(b)}(B_{1g})}{470} - \frac{11\sqrt{705}\mathbb{Q}_{2}^{(1,-1;a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{470} + \frac{7\sqrt{235}\mathbb{Q}_{2}^{(1,-1;a)}(B_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{470} - \frac{3\sqrt{235}\mathbb{Q}_{2}^{(1,-1;a)}(B_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{470}$$

$\boxed{\text{z586}}$ $$\mathbb{Q}_{4,1}^{(1,-1;c)}(E_g,1b) = \frac{\sqrt{5055}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_{2}^{(b)}(B_{1g})}{2696} - \frac{47\sqrt{337}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_{2}^{(b)}(B_{1g})}{2696} - \frac{3\sqrt{5055}\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{T}_{2,2}^{(b)}(E_g)}{674} - \frac{8\sqrt{337}\mathbb{M}_{3}^{(1,-1;a)}(B_{1g})\mathbb{T}_{2,1}^{(b)}(E_g)}{337} - \frac{6\sqrt{337}\mathbb{M}_{3}^{(1,-1;a)}(B_{2g})\mathbb{T}_{2,2}^{(b)}(E_g)}{337}$$

$\boxed{\text{z587}}$ $$\mathbb{Q}_{4,2}^{(1,-1;c)}(E_g,1b) = -\frac{\sqrt{5055}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_{2}^{(b)}(B_{1g})}{2696} + \frac{47\sqrt{337}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_{2}^{(b)}(B_{1g})}{2696} + \frac{3\sqrt{5055}\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{T}_{2,1}^{(b)}(E_g)}{674} + \frac{8\sqrt{337}\mathbb{M}_{3}^{(1,-1;a)}(B_{1g})\mathbb{T}_{2,2}^{(b)}(E_g)}{337} - \frac{6\sqrt{337}\mathbb{M}_{3}^{(1,-1;a)}(B_{2g})\mathbb{T}_{2,1}^{(b)}(E_g)}{337}$$

$\boxed{\text{z588}}$ $$\mathbb{Q}_{4,1}^{(1,-1;c)}(E_g,2a) = \frac{3\sqrt{47}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2}^{(b)}(B_{1g})}{94} - \frac{\sqrt{141}\mathbb{Q}_{2}^{(1,-1;a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{47} + \frac{3\sqrt{47}\mathbb{Q}_{2}^{(1,-1;a)}(B_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{94} + \frac{4\sqrt{47}\mathbb{Q}_{2}^{(1,-1;a)}(B_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{47}$$

$\boxed{\text{z589}}$ $$\mathbb{Q}_{4,2}^{(1,-1;c)}(E_g,2a) = -\frac{3\sqrt{47}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2}^{(b)}(B_{1g})}{94} - \frac{\sqrt{141}\mathbb{Q}_{2}^{(1,-1;a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{47} - \frac{3\sqrt{47}\mathbb{Q}_{2}^{(1,-1;a)}(B_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{94} + \frac{4\sqrt{47}\mathbb{Q}_{2}^{(1,-1;a)}(B_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{47}$$

$\boxed{\text{z590}}$ $$\mathbb{Q}_{4,1}^{(1,-1;c)}(E_g,2b) = -\frac{55\sqrt{10110}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_{2}^{(b)}(B_{1g})}{10784} - \frac{111\sqrt{674}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_{2}^{(b)}(B_{1g})}{10784} - \frac{7\sqrt{10110}\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{T}_{2,2}^{(b)}(E_g)}{5392} + \frac{75\sqrt{674}\mathbb{M}_{3}^{(1,-1;a)}(B_{1g})\mathbb{T}_{2,1}^{(b)}(E_g)}{5392} - \frac{7\sqrt{674}\mathbb{M}_{3}^{(1,-1;a)}(B_{2g})\mathbb{T}_{2,2}^{(b)}(E_g)}{1348}$$

$\boxed{\text{z591}}$ $$\mathbb{Q}_{4,2}^{(1,-1;c)}(E_g,2b) = \frac{55\sqrt{10110}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_{2}^{(b)}(B_{1g})}{10784} + \frac{111\sqrt{674}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_{2}^{(b)}(B_{1g})}{10784} + \frac{7\sqrt{10110}\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{T}_{2,1}^{(b)}(E_g)}{5392} - \frac{75\sqrt{674}\mathbb{M}_{3}^{(1,-1;a)}(B_{1g})\mathbb{T}_{2,2}^{(b)}(E_g)}{5392} - \frac{7\sqrt{674}\mathbb{M}_{3}^{(1,-1;a)}(B_{2g})\mathbb{T}_{2,1}^{(b)}(E_g)}{1348}$$

$\boxed{\text{z592}}$ $$\mathbb{Q}_{2,1}^{(1,0;c)}(E_g,a) = -\frac{\mathbb{G}_{1,1}^{(1,0;a)}(E_g)\mathbb{Q}_{2}^{(b)}(B_{1g})}{2} + \frac{\mathbb{G}_{1}^{(1,0;a)}(A_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$\boxed{\text{z593}}$ $$\mathbb{Q}_{2,2}^{(1,0;c)}(E_g,a) = \frac{\mathbb{G}_{1,2}^{(1,0;a)}(E_g)\mathbb{Q}_{2}^{(b)}(B_{1g})}{2} - \frac{\mathbb{G}_{1}^{(1,0;a)}(A_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

$\boxed{\text{z594}}$ $$\mathbb{Q}_{2,1}^{(1,0;c)}(E_g,b) = \frac{\sqrt{2}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{0}^{(b)}(A_{1g})}{2}$$

$\boxed{\text{z595}}$ $$\mathbb{Q}_{2,2}^{(1,0;c)}(E_g,b) = \frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{0}^{(b)}(A_{1g})}{2}$$

$\boxed{\text{z596}}$ $$\mathbb{Q}_{2,1}^{(1,0;c)}(E_g,c) = -\frac{\sqrt{15}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{2}^{(b)}(B_{1g})}{10} + \frac{\sqrt{5}\mathbb{T}_{2}^{(1,0;a)}(A_{1g})\mathbb{T}_{2,1}^{(b)}(E_g)}{10} - \frac{\sqrt{15}\mathbb{T}_{2}^{(1,0;a)}(B_{1g})\mathbb{T}_{2,1}^{(b)}(E_g)}{10} + \frac{\sqrt{15}\mathbb{T}_{2}^{(1,0;a)}(B_{2g})\mathbb{T}_{2,2}^{(b)}(E_g)}{10}$$

$\boxed{\text{z597}}$ $$\mathbb{Q}_{2,2}^{(1,0;c)}(E_g,c) = \frac{\sqrt{15}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{2}^{(b)}(B_{1g})}{10} + \frac{\sqrt{5}\mathbb{T}_{2}^{(1,0;a)}(A_{1g})\mathbb{T}_{2,2}^{(b)}(E_g)}{10} + \frac{\sqrt{15}\mathbb{T}_{2}^{(1,0;a)}(B_{1g})\mathbb{T}_{2,2}^{(b)}(E_g)}{10} + \frac{\sqrt{15}\mathbb{T}_{2}^{(1,0;a)}(B_{2g})\mathbb{T}_{2,1}^{(b)}(E_g)}{10}$$

$\boxed{\text{z598}}$ $$\mathbb{Q}_{4,1}^{(1,0;c)}(E_g,1) = -\frac{7\sqrt{235}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{2}^{(b)}(B_{1g})}{470} - \frac{11\sqrt{705}\mathbb{T}_{2}^{(1,0;a)}(A_{1g})\mathbb{T}_{2,1}^{(b)}(E_g)}{470} - \frac{7\sqrt{235}\mathbb{T}_{2}^{(1,0;a)}(B_{1g})\mathbb{T}_{2,1}^{(b)}(E_g)}{470} - \frac{3\sqrt{235}\mathbb{T}_{2}^{(1,0;a)}(B_{2g})\mathbb{T}_{2,2}^{(b)}(E_g)}{470}$$

$\boxed{\text{z599}}$ $$\mathbb{Q}_{4,2}^{(1,0;c)}(E_g,1) = \frac{7\sqrt{235}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{2}^{(b)}(B_{1g})}{470} - \frac{11\sqrt{705}\mathbb{T}_{2}^{(1,0;a)}(A_{1g})\mathbb{T}_{2,2}^{(b)}(E_g)}{470} + \frac{7\sqrt{235}\mathbb{T}_{2}^{(1,0;a)}(B_{1g})\mathbb{T}_{2,2}^{(b)}(E_g)}{470} - \frac{3\sqrt{235}\mathbb{T}_{2}^{(1,0;a)}(B_{2g})\mathbb{T}_{2,1}^{(b)}(E_g)}{470}$$

$\boxed{\text{z641}}$ $$\mathbb{Q}_{4,1}^{(1,0;c)}(E_g,2) = \frac{3\sqrt{47}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{2}^{(b)}(B_{1g})}{94} - \frac{\sqrt{141}\mathbb{T}_{2}^{(1,0;a)}(A_{1g})\mathbb{T}_{2,1}^{(b)}(E_g)}{47} + \frac{3\sqrt{47}\mathbb{T}_{2}^{(1,0;a)}(B_{1g})\mathbb{T}_{2,1}^{(b)}(E_g)}{94} + \frac{4\sqrt{47}\mathbb{T}_{2}^{(1,0;a)}(B_{2g})\mathbb{T}_{2,2}^{(b)}(E_g)}{47}$$

$\boxed{\text{z642}}$ $$\mathbb{Q}_{4,2}^{(1,0;c)}(E_g,2) = -\frac{3\sqrt{47}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{2}^{(b)}(B_{1g})}{94} - \frac{\sqrt{141}\mathbb{T}_{2}^{(1,0;a)}(A_{1g})\mathbb{T}_{2,2}^{(b)}(E_g)}{47} - \frac{3\sqrt{47}\mathbb{T}_{2}^{(1,0;a)}(B_{1g})\mathbb{T}_{2,2}^{(b)}(E_g)}{94} + \frac{4\sqrt{47}\mathbb{T}_{2}^{(1,0;a)}(B_{2g})\mathbb{T}_{2,1}^{(b)}(E_g)}{47}$$

$\boxed{\text{z643}}$ $$\mathbb{Q}_{2,1}^{(1,1;c)}(E_g,a) = \frac{\sqrt{2}\mathbb{Q}_{0}^{(1,1;a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

$\boxed{\text{z644}}$ $$\mathbb{Q}_{2,2}^{(1,1;c)}(E_g,a) = \frac{\sqrt{2}\mathbb{Q}_{0}^{(1,1;a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$\boxed{\text{z645}}$ $$\mathbb{Q}_{2,1}^{(1,1;c)}(E_g,b) = -\frac{\mathbb{M}_{1,1}^{(1,1;a)}(E_g)\mathbb{T}_{2}^{(b)}(B_{1g})}{2} + \frac{\mathbb{M}_{1}^{(1,1;a)}(A_{2g})\mathbb{T}_{2,2}^{(b)}(E_g)}{2}$$

$\boxed{\text{z646}}$ $$\mathbb{Q}_{2,2}^{(1,1;c)}(E_g,b) = \frac{\mathbb{M}_{1,2}^{(1,1;a)}(E_g)\mathbb{T}_{2}^{(b)}(B_{1g})}{2} - \frac{\mathbb{M}_{1}^{(1,1;a)}(A_{2g})\mathbb{T}_{2,1}^{(b)}(E_g)}{2}$$

$\boxed{\text{z647}}$ $$\mathbb{G}_{1,1}^{(c)}(E_g,a)=\frac{\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{2}^{(b)}(B_{1g})}{2}-\frac{\mathbb{Q}_{2}^{(a)}(B_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

$\boxed{\text{z648}}$ $$\mathbb{G}_{1,2}^{(c)}(E_g,a)=-\frac{\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{2}^{(b)}(B_{1g})}{2}+\frac{\mathbb{Q}_{2}^{(a)}(B_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$\boxed{\text{z649}}$ $$\mathbb{G}_{1,1}^{(c)}(E_g,b)=\frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_g)\mathbb{T}_{0}^{(b)}(A_{1g})}{2}$$

$\boxed{\text{z650}}$ $$\mathbb{G}_{1,2}^{(c)}(E_g,b)=\frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_g)\mathbb{T}_{0}^{(b)}(A_{1g})}{2}$$

$\boxed{\text{z651}}$ $$\mathbb{G}_{1,1}^{(c)}(E_g,c)=\frac{\mathbb{M}_{1,1}^{(a)}(E_g)\mathbb{T}_{2}^{(b)}(B_{1g})}{2}+\frac{\mathbb{M}_{1}^{(a)}(A_{2g})\mathbb{T}_{2,2}^{(b)}(E_g)}{2}$$

$\boxed{\text{z652}}$ $$\mathbb{G}_{1,2}^{(c)}(E_g,c)=-\frac{\mathbb{M}_{1,2}^{(a)}(E_g)\mathbb{T}_{2}^{(b)}(B_{1g})}{2}-\frac{\mathbb{M}_{1}^{(a)}(A_{2g})\mathbb{T}_{2,1}^{(b)}(E_g)}{2}$$

$\boxed{\text{z653}}$ $$\mathbb{G}_{1,1}^{(1,-1;c)}(E_g,a)=\frac{\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_{2}^{(b)}(B_{1g})}{2}-\frac{\mathbb{Q}_{2}^{(1,-1;a)}(B_{1g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

$\boxed{\text{z654}}$ $$\mathbb{G}_{1,2}^{(1,-1;c)}(E_g,a)=-\frac{\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_{2}^{(b)}(B_{1g})}{2}+\frac{\mathbb{Q}_{2}^{(1,-1;a)}(B_{1g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$\boxed{\text{z655}}$ $$\mathbb{G}_{1,1}^{(1,-1;c)}(E_g,b)=\frac{\sqrt{2}\mathbb{M}_{1,1}^{(1,-1;a)}(E_g)\mathbb{T}_{0}^{(b)}(A_{1g})}{2}$$

$\boxed{\text{z656}}$ $$\mathbb{G}_{1,2}^{(1,-1;c)}(E_g,b)=\frac{\sqrt{2}\mathbb{M}_{1,2}^{(1,-1;a)}(E_g)\mathbb{T}_{0}^{(b)}(A_{1g})}{2}$$

$\boxed{\text{z657}}$ $$\mathbb{G}_{1,1}^{(1,-1;c)}(E_g,c)=\frac{\mathbb{M}_{1,1}^{(1,-1;a)}(E_g)\mathbb{T}_{2}^{(b)}(B_{1g})}{2}+\frac{\mathbb{M}_{1}^{(1,-1;a)}(A_{2g})\mathbb{T}_{2,2}^{(b)}(E_g)}{2}$$

$\boxed{\text{z658}}$ $$\mathbb{G}_{1,2}^{(1,-1;c)}(E_g,c)=-\frac{\mathbb{M}_{1,2}^{(1,-1;a)}(E_g)\mathbb{T}_{2}^{(b)}(B_{1g})}{2}-\frac{\mathbb{M}_{1}^{(1,-1;a)}(A_{2g})\mathbb{T}_{2,1}^{(b)}(E_g)}{2}$$

$\boxed{\text{z703}}$ $$\mathbb{G}_{1,1}^{(1,-1;c)}(E_g,d)=\frac{43\sqrt{474}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_{2}^{(b)}(B_{1g})}{2528}-\frac{25\sqrt{790}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_{2}^{(b)}(B_{1g})}{2528}-\frac{21\sqrt{474}\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{T}_{2,2}^{(b)}(E_g)}{1264}$$
$$+\frac{13\sqrt{790}\mathbb{M}_{3}^{(1,-1;a)}(B_{1g})\mathbb{T}_{2,1}^{(b)}(E_g)}{1264}+\frac{3\sqrt{790}\mathbb{M}_{3}^{(1,-1;a)}(B_{2g})\mathbb{T}_{2,2}^{(b)}(E_g)}{316}$$

$\boxed{\text{z704}}$ $$\mathbb{G}_{1,2}^{(1,-1;c)}(E_g,d) = -\frac{43\sqrt{474}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_2^{(b)}(B_{1g})}{2528} + \frac{25\sqrt{790}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_2^{(b)}(B_{1g})}{2528} + \frac{21\sqrt{474}\mathbb{M}_3^{(1,-1;a)}(A_{2g})\mathbb{T}_{2,1}^{(b)}(E_g)}{1264} - \frac{13\sqrt{790}\mathbb{M}_3^{(1,-1;a)}(B_{1g})\mathbb{T}_{2,2}^{(b)}(E_g)}{1264} + \frac{3\sqrt{790}\mathbb{M}_3^{(1,-1;a)}(B_{2g})\mathbb{T}_{2,1}^{(b)}(E_g)}{316}$$

$\boxed{\text{z705}}$ $$\mathbb{G}_{3,1}^{(1,-1;c)}(E_g,1a) = \frac{\sqrt{2}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_0^{(b)}(A_{1g})}{2}$$

$\boxed{\text{z706}}$ $$\mathbb{G}_{3,2}^{(1,-1;c)}(E_g,1a) = \frac{\sqrt{2}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_0^{(b)}(A_{1g})}{2}$$

$\boxed{\text{z707}}$ $$\mathbb{G}_{3,1}^{(1,-1;c)}(E_g,1b) = -\frac{13\sqrt{790}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_2^{(b)}(B_{1g})}{1264} - \frac{7\sqrt{474}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_2^{(b)}(B_{1g})}{1264} - \frac{\sqrt{790}\mathbb{M}_3^{(1,-1;a)}(A_{2g})\mathbb{T}_{2,2}^{(b)}(E_g)}{632} - \frac{9\sqrt{474}\mathbb{M}_3^{(1,-1;a)}(B_{1g})\mathbb{T}_{2,1}^{(b)}(E_g)}{632} + \frac{2\sqrt{474}\mathbb{M}_3^{(1,-1;a)}(B_{2g})\mathbb{T}_{2,2}^{(b)}(E_g)}{79}$$

$\boxed{\text{z708}}$ $$\mathbb{G}_{3,2}^{(1,-1;c)}(E_g,1b) = \frac{13\sqrt{790}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_2^{(b)}(B_{1g})}{1264} + \frac{7\sqrt{474}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_2^{(b)}(B_{1g})}{1264} + \frac{\sqrt{790}\mathbb{M}_3^{(1,-1;a)}(A_{2g})\mathbb{T}_{2,1}^{(b)}(E_g)}{632} + \frac{9\sqrt{474}\mathbb{M}_3^{(1,-1;a)}(B_{1g})\mathbb{T}_{2,2}^{(b)}(E_g)}{632} + \frac{2\sqrt{474}\mathbb{M}_3^{(1,-1;a)}(B_{2g})\mathbb{T}_{2,1}^{(b)}(E_g)}{79}$$

$\boxed{\text{z709}}$ $$\mathbb{G}_{3,1}^{(1,-1;c)}(E_g,2) = \frac{\sqrt{2}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_0^{(b)}(A_{1g})}{2}$$

$\boxed{\text{z710}}$ $$\mathbb{G}_{3,2}^{(1,-1;c)}(E_g,2) = \frac{\sqrt{2}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_0^{(b)}(A_{1g})}{2}$$

$\boxed{\text{z711}}$ $$\mathbb{G}_{1,1}^{(1,0;c)}(E_g,a) = \frac{\sqrt{2}\mathbb{G}_{1,1}^{(1,0;a)}(E_g)\mathbb{Q}_0^{(b)}(A_{1g})}{2}$$

$\boxed{\text{z712}}$ $$\mathbb{G}_{1,2}^{(1,0;c)}(E_g,a) = \frac{\sqrt{2}\mathbb{G}_{1,2}^{(1,0;a)}(E_g)\mathbb{Q}_0^{(b)}(A_{1g})}{2}$$

$\boxed{\text{z713}}$ $$\mathbb{G}_{1,1}^{(1,0;c)}(E_g,b) = \frac{\mathbb{G}_{1,1}^{(1,0;a)}(E_g)\mathbb{Q}_2^{(b)}(B_{1g})}{2} + \frac{\mathbb{G}_1^{(1,0;a)}(A_{2g})\mathbb{Q}_{2,2}^{(b)}(E_g)}{2}$$

$\boxed{\text{z714}}$ $$\mathbb{G}_{1,2}^{(1,0;c)}(E_g,b) = -\frac{\mathbb{G}_{1,2}^{(1,0;a)}(E_g)\mathbb{Q}_2^{(b)}(B_{1g})}{2} - \frac{\mathbb{G}_1^{(1,0;a)}(A_{2g})\mathbb{Q}_{2,1}^{(b)}(E_g)}{2}$$

$\boxed{\text{z715}}$ $\mathbb{G}_{1,1}^{(1,0;c)}(E_g, c) = \frac{\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{2}^{(b)}(B_{1g})}{2} - \frac{\mathbb{T}_{2}^{(1,0;a)}(B_{1g})\mathbb{T}_{2,1}^{(b)}(E_g)}{2}$

$\boxed{\text{z716}}$ $\mathbb{G}_{1,2}^{(1,0;c)}(E_g, c) = -\frac{\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{2}^{(b)}(B_{1g})}{2} + \frac{\mathbb{T}_{2}^{(1,0;a)}(B_{1g})\mathbb{T}_{2,2}^{(b)}(E_g)}{2}$

$\boxed{\text{z717}}$ $\mathbb{G}_{1,1}^{(1,1;c)}(E_g, a) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(1,1;a)}(E_g)\mathbb{T}_{0}^{(b)}(A_{1g})}{2}$

$\boxed{\text{z718}}$ $\mathbb{G}_{1,2}^{(1,1;c)}(E_g, a) = \frac{\sqrt{2}\mathbb{M}_{1,2}^{(1,1;a)}(E_g)\mathbb{T}_{0}^{(b)}(A_{1g})}{2}$

$\boxed{\text{z719}}$ $\mathbb{G}_{1,1}^{(1,1;c)}(E_g, b) = \frac{\mathbb{M}_{1,1}^{(1,1;a)}(E_g)\mathbb{T}_{2}^{(b)}(B_{1g})}{2} + \frac{\mathbb{M}_{1}^{(1,1;a)}(A_{2g})\mathbb{T}_{2,2}^{(b)}(E_g)}{2}$

$\boxed{\text{z720}}$ $\mathbb{G}_{1,2}^{(1,1;c)}(E_g, b) = -\frac{\mathbb{M}_{1,2}^{(1,1;a)}(E_g)\mathbb{T}_{2}^{(b)}(B_{1g})}{2} - \frac{\mathbb{M}_{1}^{(1,1;a)}(A_{2g})\mathbb{T}_{2,1}^{(b)}(E_g)}{2}$

$\boxed{\text{z883}}$ $\mathbb{Q}_{1,1}^{(c)}(E_u, a) = \frac{\sqrt{2}\mathbb{Q}_{0}^{(a)}(A_{1g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{2}$

$\boxed{\text{z884}}$ $\mathbb{Q}_{1,2}^{(c)}(E_u, a) = \frac{\sqrt{2}\mathbb{Q}_{0}^{(a)}(A_{1g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{2}$

$\boxed{\text{z885}}$ $\mathbb{Q}_{1,1}^{(c)}(E_u, b) = \frac{\sqrt{15}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{1}^{(b)}(A_{2u})}{10} - \frac{\sqrt{5}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{10} + \frac{\sqrt{15}\mathbb{Q}_{2}^{(a)}(B_{1g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{10} + \frac{\sqrt{15}\mathbb{Q}_{2}^{(a)}(B_{2g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{10}$

$\boxed{\text{z886}}$ $\mathbb{Q}_{1,2}^{(c)}(E_u, b) = \frac{\sqrt{15}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{1}^{(b)}(A_{2u})}{10} - \frac{\sqrt{5}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{10} - \frac{\sqrt{15}\mathbb{Q}_{2}^{(a)}(B_{1g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{10} + \frac{\sqrt{15}\mathbb{Q}_{2}^{(a)}(B_{2g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{10}$

$\boxed{\text{z887}}$ $\mathbb{Q}_{1,1}^{(c)}(E_u, c) = \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_{3}^{(b)}(B_{2u})}{2}$

$\boxed{\text{z888}}$ $\mathbb{Q}_{1,2}^{(c)}(E_u, c) = -\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_{3}^{(b)}(B_{2u})}{2}$

$\boxed{\text{z889}}$ $\mathbb{Q}_{1,1}^{(c)}(E_u, d) = -\frac{\mathbb{M}_{1,2}^{(a)}(E_g)\mathbb{T}_{1}^{(b)}(A_{2u})}{2} - \frac{\mathbb{M}_{1}^{(a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(E_u)}{2}$

$\boxed{\text{z890}}$ $\mathbb{Q}_{1,2}^{(c)}(E_u, d) = -\frac{\mathbb{M}_{1,1}^{(a)}(E_g)\mathbb{T}_{1}^{(b)}(A_{2u})}{2} + \frac{\mathbb{M}_{1}^{(a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(E_u)}{2}$

$\boxed{\text{z891}}$ $\mathbb{Q}_{1,1}^{(c)}(E_u,e) = -\frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_g)\mathbb{M}_2^{(b)}(B_{2u})}{2}$

$\boxed{\text{z892}}$ $\mathbb{Q}_{1,2}^{(c)}(E_u,e) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_g)\mathbb{M}_2^{(b)}(B_{2u})}{2}$

$\boxed{\text{z893}}$ $\mathbb{Q}_{3,1}^{(c)}(E_u,1) = -\frac{\sqrt{10}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_1^{(b)}(A_{2u})}{10} - \frac{\sqrt{30}\mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{20} + \frac{3\sqrt{10}\mathbb{Q}_2^{(a)}(B_{1g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{20} - \frac{\sqrt{10}\mathbb{Q}_2^{(a)}(B_{2g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{10}$

$\boxed{\text{z894}}$ $\mathbb{Q}_{3,2}^{(c)}(E_u,1) = -\frac{\sqrt{10}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_1^{(b)}(A_{2u})}{10} - \frac{\sqrt{30}\mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{20} - \frac{3\sqrt{10}\mathbb{Q}_2^{(a)}(B_{1g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{20} - \frac{\sqrt{10}\mathbb{Q}_2^{(a)}(B_{2g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{10}$

$\boxed{\text{z895}}$ $\mathbb{Q}_{3,1}^{(c)}(E_u,2) = -\frac{\sqrt{6}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_1^{(b)}(A_{2u})}{6} - \frac{\sqrt{2}\mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{4} - \frac{\sqrt{6}\mathbb{Q}_2^{(a)}(B_{1g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{12} + \frac{\sqrt{6}\mathbb{Q}_2^{(a)}(B_{2g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{6}$

$\boxed{\text{z896}}$ $\mathbb{Q}_{3,2}^{(c)}(E_u,2) = -\frac{\sqrt{6}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_1^{(b)}(A_{2u})}{6} - \frac{\sqrt{2}\mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{4} + \frac{\sqrt{6}\mathbb{Q}_2^{(a)}(B_{1g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{12} + \frac{\sqrt{6}\mathbb{Q}_2^{(a)}(B_{2g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{6}$

$\boxed{\text{z897}}$ $\mathbb{Q}_{1,1}^{(1,-1;c)}(E_u,a) = \frac{\sqrt{15}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_1^{(b)}(A_{2u})}{10} - \frac{\sqrt{5}\mathbb{Q}_2^{(1,-1;a)}(A_{1g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{10} + \frac{\sqrt{15}\mathbb{Q}_2^{(1,-1;a)}(B_{1g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{10} + \frac{\sqrt{15}\mathbb{Q}_2^{(1,-1;a)}(B_{2g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{10}$

$\boxed{\text{z898}}$ $\mathbb{Q}_{1,2}^{(1,-1;c)}(E_u,a) = \frac{\sqrt{15}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_1^{(b)}(A_{2u})}{10} - \frac{\sqrt{5}\mathbb{Q}_2^{(1,-1;a)}(A_{1g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{10} - \frac{\sqrt{15}\mathbb{Q}_2^{(1,-1;a)}(B_{1g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{10} + \frac{\sqrt{15}\mathbb{Q}_2^{(1,-1;a)}(B_{2g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{10}$

$\boxed{\text{z899}}$ $\mathbb{Q}_{1,1}^{(1,-1;c)}(E_u,b) = \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_3^{(b)}(B_{2u})}{2}$

$\boxed{\text{z900}}$ $\mathbb{Q}_{1,2}^{(1,-1;c)}(E_u,b) = -\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_3^{(b)}(B_{2u})}{2}$

$\boxed{\text{z901}}$ $\mathbb{Q}_{1,1}^{(1,-1;c)}(E_u,c) = -\frac{\mathbb{M}_{1,2}^{(1,-1;a)}(E_g)\mathbb{T}_1^{(b)}(A_{2u})}{2} - \frac{\mathbb{M}_1^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(E_u)}{2}$

$\boxed{\text{z902}}$ $\mathbb{Q}_{1,2}^{(1,-1;c)}(E_u,c) = -\frac{\mathbb{M}_{1,1}^{(1,-1;a)}(E_g)\mathbb{T}_1^{(b)}(A_{2u})}{2} + \frac{\mathbb{M}_1^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(E_u)}{2}$

$\boxed{\text{z903}}$ $\mathbb{Q}_{1,1}^{(1,-1;c)}(E_u,d) = -\frac{\sqrt{2}\mathbb{M}_{1,2}^{(1,-1;a)}(E_g)\mathbb{M}_2^{(b)}(B_{2u})}{2}$

$\boxed{\text{z904}}$ $\mathbb{Q}_{1,2}^{(1,-1;c)}(E_u,d) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(1,-1;a)}(E_g)\mathbb{M}_2^{(b)}(B_{2u})}{2}$

$\boxed{\text{z905}}$ $$\mathbb{Q}_{1,1}^{(1,-1;c)}(E_u,e)=\frac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{M}_2^{(b)}(B_{2u})}{4}-\frac{\sqrt{5}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{M}_2^{(b)}(B_{2u})}{4}$$

$\boxed{\text{z906}}$ $$\mathbb{Q}_{1,2}^{(1,-1;c)}(E_u,e)=-\frac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{M}_2^{(b)}(B_{2u})}{4}+\frac{\sqrt{5}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{M}_2^{(b)}(B_{2u})}{4}$$

$\boxed{\text{z907}}$ $$\mathbb{Q}_{3,1}^{(1,-1;c)}(E_u,1a)=-\frac{\sqrt{10}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_1^{(b)}(A_{2u})}{10}-\frac{\sqrt{30}\mathbb{Q}_2^{(1,-1;a)}(A_{1g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{20}+\frac{3\sqrt{10}\mathbb{Q}_2^{(1,-1;a)}(B_{1g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{20}-\frac{\sqrt{10}\mathbb{Q}_2^{(1,-1;a)}(B_{2g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{10}$$

$\boxed{\text{z908}}$ $$\mathbb{Q}_{3,2}^{(1,-1;c)}(E_u,1a)=-\frac{\sqrt{10}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_1^{(b)}(A_{2u})}{10}-\frac{\sqrt{30}\mathbb{Q}_2^{(1,-1;a)}(A_{1g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{20}-\frac{3\sqrt{10}\mathbb{Q}_2^{(1,-1;a)}(B_{1g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{20}-\frac{\sqrt{10}\mathbb{Q}_2^{(1,-1;a)}(B_{2g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{10}$$

$\boxed{\text{z909}}$ $$\mathbb{Q}_{3,1}^{(1,-1;c)}(E_u,1b)=\frac{\sqrt{6}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_1^{(b)}(A_{2u})}{8}-\frac{\sqrt{10}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_1^{(b)}(A_{2u})}{8}+\frac{\sqrt{6}\mathbb{M}_3^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(E_u)}{8}-\frac{\sqrt{10}\mathbb{M}_3^{(1,-1;a)}(B_{2g})\mathbb{T}_{1,2}^{(b)}(E_u)}{8}$$

$\boxed{\text{z910}}$ $$\mathbb{Q}_{3,2}^{(1,-1;c)}(E_u,1b)=\frac{\sqrt{6}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_1^{(b)}(A_{2u})}{8}-\frac{\sqrt{10}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_1^{(b)}(A_{2u})}{8}-\frac{\sqrt{6}\mathbb{M}_3^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(E_u)}{8}-\frac{\sqrt{10}\mathbb{M}_3^{(1,-1;a)}(B_{2g})\mathbb{T}_{1,1}^{(b)}(E_u)}{8}$$

$\boxed{\text{z911}}$ $$\mathbb{Q}_{3,1}^{(1,-1;c)}(E_u,2a)=-\frac{\sqrt{6}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_1^{(b)}(A_{2u})}{6}-\frac{\sqrt{2}\mathbb{Q}_2^{(1,-1;a)}(A_{1g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{4}-\frac{\sqrt{6}\mathbb{Q}_2^{(1,-1;a)}(B_{1g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{12}+\frac{\sqrt{6}\mathbb{Q}_2^{(1,-1;a)}(B_{2g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{6}$$

$\boxed{\text{z912}}$ $$\mathbb{Q}_{3,2}^{(1,-1;c)}(E_u,2a)=-\frac{\sqrt{6}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_1^{(b)}(A_{2u})}{6}-\frac{\sqrt{2}\mathbb{Q}_2^{(1,-1;a)}(A_{1g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{4}+\frac{\sqrt{6}\mathbb{Q}_2^{(1,-1;a)}(B_{1g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{12}+\frac{\sqrt{6}\mathbb{Q}_2^{(1,-1;a)}(B_{2g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{6}$$

$\boxed{\text{z913}}$ $$\mathbb{Q}_{3,1}^{(1,-1;c)}(E_u,2b)=-\frac{\sqrt{10}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_1^{(b)}(A_{2u})}{8}+\frac{\sqrt{6}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_1^{(b)}(A_{2u})}{24}+\frac{\sqrt{10}\mathbb{M}_3^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(E_u)}{8}+\frac{\sqrt{6}\mathbb{M}_3^{(1,-1;a)}(B_{1g})\mathbb{T}_{1,1}^{(b)}(E_u)}{6}-\frac{\sqrt{6}\mathbb{M}_3^{(1,-1;a)}(B_{2g})\mathbb{T}_{1,2}^{(b)}(E_u)}{24}$$

$\boxed{\text{z914}}$ $$\mathbb{Q}_{3,2}^{(1,-1;c)}(E_u,2b)=-\frac{\sqrt{10}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_1^{(b)}(A_{2u})}{8}+\frac{\sqrt{6}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_1^{(b)}(A_{2u})}{24}-\frac{\sqrt{10}\mathbb{M}_3^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(E_u)}{8}-\frac{\sqrt{6}\mathbb{M}_3^{(1,-1;a)}(B_{1g})\mathbb{T}_{1,2}^{(b)}(E_u)}{6}-\frac{\sqrt{6}\mathbb{M}_3^{(1,-1;a)}(B_{2g})\mathbb{T}_{1,1}^{(b)}(E_u)}{24}$$

$\boxed{\text{z915}}$ $$\mathbb{Q}_{3,1}^{(1,-1;c)}(E_u,2c)=-\frac{\sqrt{5}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{M}_2^{(b)}(B_{2u})}{4}-\frac{\sqrt{3}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{M}_2^{(b)}(B_{2u})}{4}$$

$\boxed{\text{z916}}$ $$\mathbb{Q}_{3,2}^{(1,-1;c)}(E_u,2c)=\frac{\sqrt{5}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{M}_2^{(b)}(B_{2u})}{4}+\frac{\sqrt{3}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{M}_2^{(b)}(B_{2u})}{4}$$

$\boxed{\text{z917}}$ $$\mathbb{Q}_{1,1}^{(1,0;c)}(E_u,a)=-\frac{\mathbb{G}_{1,2}^{(1,0;a)}(E_g)\mathbb{Q}_1^{(b)}(A_{2u})}{2}-\frac{\mathbb{G}_1^{(1,0;a)}(A_{2g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{2}$$

$\boxed{\text{z918}}$ $$\mathbb{Q}_{1,2}^{(1,0;c)}(E_u,a)=-\frac{\mathbb{G}_{1,1}^{(1,0;a)}(E_g)\mathbb{Q}_1^{(b)}(A_{2u})}{2}+\frac{\mathbb{G}_1^{(1,0;a)}(A_{2g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{2}$$

$\boxed{\text{z919}}$ $$\mathbb{Q}_{1,1}^{(1,0;c)}(E_u,b) = \frac{\sqrt{15}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1}^{(b)}(A_{2u})}{10} - \frac{\sqrt{5}\mathbb{T}_{2}^{(1,0;a)}(A_{1g})\mathbb{T}_{1,1}^{(b)}(E_u)}{10} + \frac{\sqrt{15}\mathbb{T}_{2}^{(1,0;a)}(B_{1g})\mathbb{T}_{1,1}^{(b)}(E_u)}{10} + \frac{\sqrt{15}\mathbb{T}_{2}^{(1,0;a)}(B_{2g})\mathbb{T}_{1,2}^{(b)}(E_u)}{10}$$

$\boxed{\text{z920}}$ $$\mathbb{Q}_{1,2}^{(1,0;c)}(E_u,b) = \frac{\sqrt{15}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1}^{(b)}(A_{2u})}{10} - \frac{\sqrt{5}\mathbb{T}_{2}^{(1,0;a)}(A_{1g})\mathbb{T}_{1,2}^{(b)}(E_u)}{10} - \frac{\sqrt{15}\mathbb{T}_{2}^{(1,0;a)}(B_{1g})\mathbb{T}_{1,2}^{(b)}(E_u)}{10} + \frac{\sqrt{15}\mathbb{T}_{2}^{(1,0;a)}(B_{2g})\mathbb{T}_{1,1}^{(b)}(E_u)}{10}$$

$\boxed{\text{z921}}$ $$\mathbb{Q}_{1,1}^{(1,0;c)}(E_u,c) = -\frac{\sqrt{2}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{M}_{2}^{(b)}(B_{2u})}{2}$$

$\boxed{\text{z922}}$ $$\mathbb{Q}_{1,2}^{(1,0;c)}(E_u,c) = \frac{\sqrt{2}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{M}_{2}^{(b)}(B_{2u})}{2}$$

$\boxed{\text{z923}}$ $$\mathbb{Q}_{3,1}^{(1,0;c)}(E_u,1a) = -\frac{\sqrt{2}\mathbb{G}_{1,2}^{(1,0;a)}(E_g)\mathbb{Q}_{3}^{(b)}(B_{2u})}{2}$$

$\boxed{\text{z924}}$ $$\mathbb{Q}_{3,2}^{(1,0;c)}(E_u,1a) = \frac{\sqrt{2}\mathbb{G}_{1,1}^{(1,0;a)}(E_g)\mathbb{Q}_{3}^{(b)}(B_{2u})}{2}$$

$\boxed{\text{z925}}$ $$\mathbb{Q}_{3,1}^{(1,0;c)}(E_u,1b) = -\frac{\sqrt{10}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1}^{(b)}(A_{2u})}{10} - \frac{\sqrt{30}\mathbb{T}_{2}^{(1,0;a)}(A_{1g})\mathbb{T}_{1,1}^{(b)}(E_u)}{20} + \frac{3\sqrt{10}\mathbb{T}_{2}^{(1,0;a)}(B_{1g})\mathbb{T}_{1,1}^{(b)}(E_u)}{20} - \frac{\sqrt{10}\mathbb{T}_{2}^{(1,0;a)}(B_{2g})\mathbb{T}_{1,2}^{(b)}(E_u)}{10}$$

$\boxed{\text{z926}}$ $$\mathbb{Q}_{3,2}^{(1,0;c)}(E_u,1b) = -\frac{\sqrt{10}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1}^{(b)}(A_{2u})}{10} - \frac{\sqrt{30}\mathbb{T}_{2}^{(1,0;a)}(A_{1g})\mathbb{T}_{1,2}^{(b)}(E_u)}{20} - \frac{3\sqrt{10}\mathbb{T}_{2}^{(1,0;a)}(B_{1g})\mathbb{T}_{1,2}^{(b)}(E_u)}{20} - \frac{\sqrt{10}\mathbb{T}_{2}^{(1,0;a)}(B_{2g})\mathbb{T}_{1,1}^{(b)}(E_u)}{10}$$

$\boxed{\text{z927}}$ $$\mathbb{Q}_{3,1}^{(1,0;c)}(E_u,2) = -\frac{\sqrt{6}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1}^{(b)}(A_{2u})}{6} - \frac{\sqrt{2}\mathbb{T}_{2}^{(1,0;a)}(A_{1g})\mathbb{T}_{1,1}^{(b)}(E_u)}{4} - \frac{\sqrt{6}\mathbb{T}_{2}^{(1,0;a)}(B_{1g})\mathbb{T}_{1,1}^{(b)}(E_u)}{12} + \frac{\sqrt{6}\mathbb{T}_{2}^{(1,0;a)}(B_{2g})\mathbb{T}_{1,2}^{(b)}(E_u)}{6}$$

$\boxed{\text{z928}}$ $$\mathbb{Q}_{3,2}^{(1,0;c)}(E_u,2) = -\frac{\sqrt{6}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1}^{(b)}(A_{2u})}{6} - \frac{\sqrt{2}\mathbb{T}_{2}^{(1,0;a)}(A_{1g})\mathbb{T}_{1,2}^{(b)}(E_u)}{4} + \frac{\sqrt{6}\mathbb{T}_{2}^{(1,0;a)}(B_{1g})\mathbb{T}_{1,2}^{(b)}(E_u)}{12} + \frac{\sqrt{6}\mathbb{T}_{2}^{(1,0;a)}(B_{2g})\mathbb{T}_{1,1}^{(b)}(E_u)}{6}$$

$\boxed{\text{z929}}$ $$\mathbb{Q}_{1,1}^{(1,1;c)}(E_u,a) = \frac{\sqrt{2}\mathbb{Q}_{0}^{(1,1;a)}(A_{1g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{2}$$

$\boxed{\text{z930}}$ $$\mathbb{Q}_{1,2}^{(1,1;c)}(E_u,a) = \frac{\sqrt{2}\mathbb{Q}_{0}^{(1,1;a)}(A_{1g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{2}$$

$\boxed{\text{z931}}$ $$\mathbb{Q}_{1,1}^{(1,1;c)}(E_u,b) = -\frac{\mathbb{M}_{1,2}^{(1,1;a)}(E_g)\mathbb{T}_{1}^{(b)}(A_{2u})}{2} - \frac{\mathbb{M}_{1}^{(1,1;a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(E_u)}{2}$$

$\boxed{\text{z932}}$ $$\mathbb{Q}_{1,2}^{(1,1;c)}(E_u,b) = -\frac{\mathbb{M}_{1,1}^{(1,1;a)}(E_g)\mathbb{T}_{1}^{(b)}(A_{2u})}{2} + \frac{\mathbb{M}_{1}^{(1,1;a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(E_u)}{2}$$

$\boxed{\text{z933}}$ $\mathbb{Q}_{1,1}^{(1,1;c)}(E_u, c) = -\frac{\sqrt{2}\mathbb{M}_{1,2}^{(1,1;a)}(E_g)\mathbb{M}_2^{(b)}(B_{2u})}{2}$

$\boxed{\text{z934}}$ $\mathbb{Q}_{1,2}^{(1,1;c)}(E_u, c) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(1,1;a)}(E_g)\mathbb{M}_2^{(b)}(B_{2u})}{2}$

$\boxed{\text{z935}}$ $\mathbb{G}_{2,1}^{(c)}(E_u, a) = -\frac{\sqrt{3}\mathbb{Q}_{2,2}^{(a)}(E_g)\mathbb{Q}_1^{(b)}(A_{2u})}{6} + \frac{\mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{2} + \frac{\sqrt{3}\mathbb{Q}_2^{(a)}(B_{1g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{6} + \frac{\sqrt{3}\mathbb{Q}_2^{(a)}(B_{2g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{6}$

$\boxed{\text{z936}}$ $\mathbb{G}_{2,2}^{(c)}(E_u, a) = -\frac{\sqrt{3}\mathbb{Q}_{2,1}^{(a)}(E_g)\mathbb{Q}_1^{(b)}(A_{2u})}{6} + \frac{\mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{2} - \frac{\sqrt{3}\mathbb{Q}_2^{(a)}(B_{1g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{6} + \frac{\sqrt{3}\mathbb{Q}_2^{(a)}(B_{2g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{6}$

$\boxed{\text{z937}}$ $\mathbb{G}_{2,1}^{(c)}(E_u, b) = -\frac{\mathbb{M}_{1,2}^{(a)}(E_g)\mathbb{T}_1^{(b)}(A_{2u})}{2} + \frac{\mathbb{M}_1^{(a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(E_u)}{2}$

$\boxed{\text{z938}}$ $\mathbb{G}_{2,2}^{(c)}(E_u, b) = -\frac{\mathbb{M}_{1,1}^{(a)}(E_g)\mathbb{T}_1^{(b)}(A_{2u})}{2} - \frac{\mathbb{M}_1^{(a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(E_u)}{2}$

$\boxed{\text{z939}}$ $\mathbb{G}_{2,1}^{(1,-1;c)}(E_u, a) = -\frac{\sqrt{3}\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g)\mathbb{Q}_1^{(b)}(A_{2u})}{6} + \frac{\mathbb{Q}_2^{(1,-1;a)}(A_{1g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{2} + \frac{\sqrt{3}\mathbb{Q}_2^{(1,-1;a)}(B_{1g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{6} + \frac{\sqrt{3}\mathbb{Q}_2^{(1,-1;a)}(B_{2g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{6}$

$\boxed{\text{z940}}$ $\mathbb{G}_{2,2}^{(1,-1;c)}(E_u, a) = -\frac{\sqrt{3}\mathbb{Q}_{2,1}^{(1,-1;a)}(E_g)\mathbb{Q}_1^{(b)}(A_{2u})}{6} + \frac{\mathbb{Q}_2^{(1,-1;a)}(A_{1g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{2} - \frac{\sqrt{3}\mathbb{Q}_2^{(1,-1;a)}(B_{1g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{6} + \frac{\sqrt{3}\mathbb{Q}_2^{(1,-1;a)}(B_{2g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{6}$

$\boxed{\text{z941}}$ $\mathbb{G}_{2,1}^{(1,-1;c)}(E_u, b) = -\frac{\mathbb{M}_{1,2}^{(1,-1;a)}(E_g)\mathbb{T}_1^{(b)}(A_{2u})}{2} + \frac{\mathbb{M}_1^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(E_u)}{2}$

$\boxed{\text{z942}}$ $\mathbb{G}_{2,2}^{(1,-1;c)}(E_u, b) = -\frac{\mathbb{M}_{1,1}^{(1,-1;a)}(E_g)\mathbb{T}_1^{(b)}(A_{2u})}{2} - \frac{\mathbb{M}_1^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(E_u)}{2}$

$\boxed{\text{z943}}$ $\mathbb{G}_{2,1}^{(1,-1;c)}(E_u, c) = \frac{\sqrt{14}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g, 1)\mathbb{T}_1^{(b)}(A_{2u})}{14} + \frac{\sqrt{210}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g, 2)\mathbb{T}_1^{(b)}(A_{2u})}{42} - \frac{\sqrt{14}\mathbb{M}_3^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(E_u)}{14} + \frac{\sqrt{210}\mathbb{M}_3^{(1,-1;a)}(B_{1g})\mathbb{T}_{1,1}^{(b)}(E_u)}{42} - \frac{\sqrt{210}\mathbb{M}_3^{(1,-1;a)}(B_{2g})\mathbb{T}_{1,2}^{(b)}(E_u)}{42}$

$\boxed{\text{z944}}$ $\mathbb{G}_{2,2}^{(1,-1;c)}(E_u, c) = \frac{\sqrt{14}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g, 1)\mathbb{T}_1^{(b)}(A_{2u})}{14} + \frac{\sqrt{210}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g, 2)\mathbb{T}_1^{(b)}(A_{2u})}{42} + \frac{\sqrt{14}\mathbb{M}_3^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(E_u)}{14} - \frac{\sqrt{210}\mathbb{M}_3^{(1,-1;a)}(B_{1g})\mathbb{T}_{1,2}^{(b)}(E_u)}{42} - \frac{\sqrt{210}\mathbb{M}_3^{(1,-1;a)}(B_{2g})\mathbb{T}_{1,1}^{(b)}(E_u)}{42}$

$\boxed{\text{z945}}$ $\mathbb{G}_{4,1}^{(1,-1;c)}(E_u, 1) = -\frac{\sqrt{10}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g, 1)\mathbb{T}_1^{(b)}(A_{2u})}{8} - \frac{\sqrt{6}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g, 2)\mathbb{T}_1^{(b)}(A_{2u})}{8} - \frac{\sqrt{10}\mathbb{M}_3^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(E_u)}{8} - \frac{\sqrt{6}\mathbb{M}_3^{(1,-1;a)}(B_{2g})\mathbb{T}_{1,2}^{(b)}(E_u)}{8}$

$\boxed{\text{z946}}$ $\mathbb{G}_{4,2}^{(1,-1;c)}(E_u, 1) = -\frac{\sqrt{10}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g, 1)\mathbb{T}_1^{(b)}(A_{2u})}{8} - \frac{\sqrt{6}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g, 2)\mathbb{T}_1^{(b)}(A_{2u})}{8} + \frac{\sqrt{10}\mathbb{M}_3^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(E_u)}{8} - \frac{\sqrt{6}\mathbb{M}_3^{(1,-1;a)}(B_{2g})\mathbb{T}_{1,1}^{(b)}(E_u)}{8}$

$\boxed{\text{z947}}$ $$\mathbb{G}_{4,1}^{(1,-1;c)}(E_u,2) = \frac{\sqrt{70}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1}^{(b)}(A_{2u})}{56} - \frac{3\sqrt{42}\mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1}^{(b)}(A_{2u})}{56} - \frac{\sqrt{70}\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(E_u)}{56} + \frac{\sqrt{42}\mathbb{M}_{3}^{(1,-1;a)}(B_{1g})\mathbb{T}_{1,1}^{(b)}(E_u)}{14} + \frac{3\sqrt{42}\mathbb{M}_{3}^{(1,-1;a)}(B_{2g})\mathbb{T}_{1,2}^{(b)}(E_u)}{56}$$

$\boxed{\text{z948}}$ $$\mathbb{G}_{4,2}^{(1,-1;c)}(E_u,2) = \frac{\sqrt{70}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1)\mathbb{T}_{1}^{(b)}(A_{2u})}{56} - \frac{3\sqrt{42}\mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2)\mathbb{T}_{1}^{(b)}(A_{2u})}{56} + \frac{\sqrt{70}\mathbb{M}_{3}^{(1,-1;a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(E_u)}{56} - \frac{\sqrt{42}\mathbb{M}_{3}^{(1,-1;a)}(B_{1g})\mathbb{T}_{1,2}^{(b)}(E_u)}{14} + \frac{3\sqrt{42}\mathbb{M}_{3}^{(1,-1;a)}(B_{2g})\mathbb{T}_{1,1}^{(b)}(E_u)}{56}$$

$\boxed{\text{z949}}$ $$\mathbb{G}_{2,1}^{(1,0;c)}(E_u,a) = -\frac{\mathbb{G}_{1,2}^{(1,0;a)}(E_g)\mathbb{Q}_{1}^{(b)}(A_{2u})}{2} + \frac{\mathbb{G}_{1}^{(1,0;a)}(A_{2g})\mathbb{Q}_{1,2}^{(b)}(E_u)}{2}$$

$\boxed{\text{z950}}$ $$\mathbb{G}_{2,2}^{(1,0;c)}(E_u,a) = -\frac{\mathbb{G}_{1,1}^{(1,0;a)}(E_g)\mathbb{Q}_{1}^{(b)}(A_{2u})}{2} - \frac{\mathbb{G}_{1}^{(1,0;a)}(A_{2g})\mathbb{Q}_{1,1}^{(b)}(E_u)}{2}$$

$\boxed{\text{z951}}$ $$\mathbb{G}_{2,1}^{(1,0;c)}(E_u,b) = -\frac{\sqrt{3}\mathbb{T}_{2,2}^{(1,0;a)}(E_g)\mathbb{T}_{1}^{(b)}(A_{2u})}{6} + \frac{\mathbb{T}_{2}^{(1,0;a)}(A_{1g})\mathbb{T}_{1,1}^{(b)}(E_u)}{2} + \frac{\sqrt{3}\mathbb{T}_{2}^{(1,0;a)}(B_{1g})\mathbb{T}_{1,1}^{(b)}(E_u)}{6} + \frac{\sqrt{3}\mathbb{T}_{2}^{(1,0;a)}(B_{2g})\mathbb{T}_{1,2}^{(b)}(E_u)}{6}$$

$\boxed{\text{z952}}$ $$\mathbb{G}_{2,2}^{(1,0;c)}(E_u,b) = -\frac{\sqrt{3}\mathbb{T}_{2,1}^{(1,0;a)}(E_g)\mathbb{T}_{1}^{(b)}(A_{2u})}{6} + \frac{\mathbb{T}_{2}^{(1,0;a)}(A_{1g})\mathbb{T}_{1,2}^{(b)}(E_u)}{2} - \frac{\sqrt{3}\mathbb{T}_{2}^{(1,0;a)}(B_{1g})\mathbb{T}_{1,2}^{(b)}(E_u)}{6} + \frac{\sqrt{3}\mathbb{T}_{2}^{(1,0;a)}(B_{2g})\mathbb{T}_{1,1}^{(b)}(E_u)}{6}$$

$\boxed{\text{z953}}$ $$\mathbb{G}_{2,1}^{(1,1;c)}(E_u) = -\frac{\mathbb{M}_{1,2}^{(1,1;a)}(E_g)\mathbb{T}_{1}^{(b)}(A_{2u})}{2} + \frac{\mathbb{M}_{1}^{(1,1;a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(E_u)}{2}$$

$\boxed{\text{z954}}$ $$\mathbb{G}_{2,2}^{(1,1;c)}(E_u) = -\frac{\mathbb{M}_{1,1}^{(1,1;a)}(E_g)\mathbb{T}_{1}^{(b)}(A_{2u})}{2} - \frac{\mathbb{M}_{1}^{(1,1;a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(E_u)}{2}$$

Atomic SAMB

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

$\boxed{\text{x1}}$ $$\mathbb{Q}_{0}^{(a)}(A_{1g}) = \begin{bmatrix} \frac{\sqrt{6}}{6} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{6}}{6} & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{6}}{6} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{6}}{6} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{6} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{6} \end{bmatrix}$$

$\boxed{\text{x2}}$ $$\mathbb{Q}_{2}^{(a)}(A_{1g}) = \begin{bmatrix} -\frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{3}}{6} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{3} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{3} \end{bmatrix}$$

$\boxed{\text{x3}}$ $$\mathbb{Q}_{2}^{(a)}(B_{1g}) = \begin{bmatrix} \frac{1}{2} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{1}{2} & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{1}{2} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{1}{2} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$$

$\boxed{\text{x4}}$ $$\mathbb{Q}_{2}^{(a)}(B_{2g}) = \begin{bmatrix} 0 & 0 & \frac{1}{2} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{1}{2} & 0 & 0 \\ \frac{1}{2} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{1}{2} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$$

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

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

$\boxed{\text{x7}}$ $$\mathbb{Q}_{2}^{(1,-1;a)}(A_{1g}) = \begin{bmatrix} 0 & 0 & -\frac{\sqrt{6}i}{6} & 0 & 0 & -\frac{\sqrt{6}}{12} \\ 0 & 0 & 0 & \frac{\sqrt{6}i}{6} & \frac{\sqrt{6}}{12} & 0 \\ \frac{\sqrt{6}i}{6} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{12} \\ 0 & -\frac{\sqrt{6}i}{6} & 0 & 0 & \frac{\sqrt{6}i}{12} & 0 \\ 0 & \frac{\sqrt{6}}{12} & 0 & -\frac{\sqrt{6}i}{12} & 0 & 0 \\ -\frac{\sqrt{6}}{12} & 0 & -\frac{\sqrt{6}i}{12} & 0 & 0 & 0 \end{bmatrix}$$

$\boxed{\text{x8}}$ $$\mathbb{Q}_2^{(1,-1;a)}(B_{1g}) = \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 \\ 0 & \frac{\sqrt{2}}{4} & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 \\ -\frac{\sqrt{2}}{4} & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 \end{bmatrix}$$

$\boxed{\text{x9}}$ $$\mathbb{Q}_2^{(1,-1;a)}(B_{2g}) = \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 \\ 0 & -\frac{\sqrt{2}i}{4} & 0 & \frac{\sqrt{2}}{4} & 0 & 0 \\ -\frac{\sqrt{2}i}{4} & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 \end{bmatrix}$$

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

$\boxed{\text{x11}}$ $$\mathbb{Q}_{2,2}^{(1,-1;a)}(E_g) = \begin{bmatrix} 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 \\ \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} \\ 0 & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 \end{bmatrix}$$

$\boxed{\text{x12}}$ $$\mathbb{Q}_0^{(1,1;a)}(A_{1g}) = \begin{bmatrix} 0 & 0 & -\frac{\sqrt{3}i}{6} & 0 & 0 & \frac{\sqrt{3}}{6} \\ 0 & 0 & 0 & \frac{\sqrt{3}i}{6} & -\frac{\sqrt{3}}{6} & 0 \\ \frac{\sqrt{3}i}{6} & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{6} \\ 0 & -\frac{\sqrt{3}i}{6} & 0 & 0 & -\frac{\sqrt{3}i}{6} & 0 \\ 0 & -\frac{\sqrt{3}}{6} & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 \\ \frac{\sqrt{3}}{6} & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 & 0 \end{bmatrix}$$

$\boxed{\text{x13}}$ $$\mathbb{G}_1^{(1,0;a)}(A_{2g}) = \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 \\ 0 & -\frac{\sqrt{2}i}{4} & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 \\ -\frac{\sqrt{2}i}{4} & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 \end{bmatrix}$$

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

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

$\boxed{\text{x16}}$ $$\mathbb{M}_1^{(a)}(A_{2g}) = \begin{bmatrix} 0 & 0 & -\frac{i}{2} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{i}{2} & 0 & 0 \\ \frac{i}{2} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{i}{2} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$$

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

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

$\boxed{\text{x19}}$ $$\mathbb{M}_{1}^{(1,-1;a)}(A_{2g}) = \begin{bmatrix} \frac{\sqrt{6}}{6} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{6}}{6} & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{6}}{6} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{6}}{6} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{6} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{6} \end{bmatrix}$$

$\boxed{\text{x20}}$ $$\mathbb{M}_{3}^{(1,-1;a)}(A_{2g}) = \begin{bmatrix} -\frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{10} \\ 0 & \frac{\sqrt{5}}{10} & 0 & 0 & -\frac{\sqrt{5}}{10} & 0 \\ 0 & 0 & -\frac{\sqrt{5}}{10} & 0 & 0 & \frac{\sqrt{5}i}{10} \\ 0 & 0 & 0 & \frac{\sqrt{5}}{10} & -\frac{\sqrt{5}i}{10} & 0 \\ 0 & -\frac{\sqrt{5}}{10} & 0 & \frac{\sqrt{5}i}{10} & \frac{\sqrt{5}}{5} & 0 \\ -\frac{\sqrt{5}}{10} & 0 & -\frac{\sqrt{5}i}{10} & 0 & 0 & -\frac{\sqrt{5}}{5} \end{bmatrix}$$

$\boxed{\text{x21}}$ $$\mathbb{M}_{3}^{(1,-1;a)}(B_{1g}) = \begin{bmatrix} 0 & 0 & \frac{\sqrt{3}}{6} & 0 & 0 & -\frac{\sqrt{3}i}{6} \\ 0 & 0 & 0 & -\frac{\sqrt{3}}{6} & \frac{\sqrt{3}i}{6} & 0 \\ \frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{6} \\ 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & \frac{\sqrt{3}}{6} & 0 \\ 0 & -\frac{\sqrt{3}i}{6} & 0 & \frac{\sqrt{3}}{6} & 0 & 0 \\ \frac{\sqrt{3}i}{6} & 0 & \frac{\sqrt{3}}{6} & 0 & 0 & 0 \end{bmatrix}$$

$\boxed{\text{x22}}$ $$\mathbb{M}_{3}^{(1,-1;a)}(B_{2g}) = \begin{bmatrix} \frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{6} \\ 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & \frac{\sqrt{3}}{6} & 0 \\ 0 & 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & \frac{\sqrt{3}i}{6} \\ 0 & 0 & 0 & \frac{\sqrt{3}}{6} & -\frac{\sqrt{3}i}{6} & 0 \\ 0 & \frac{\sqrt{3}}{6} & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 \\ \frac{\sqrt{3}}{6} & 0 & -\frac{\sqrt{3}i}{6} & 0 & 0 & 0 \end{bmatrix}$$

$\boxed{\text{x23}}$ $$\mathbb{M}_{1,1}^{(1,-1;a)}(E_{g}) = \begin{bmatrix} 0 & \frac{\sqrt{6}}{6} & 0 & 0 & 0 & 0 \\ \frac{\sqrt{6}}{6} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{6}}{6} & 0 & 0 \\ 0 & 0 & \frac{\sqrt{6}}{6} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{6} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{6} & 0 \end{bmatrix}$$

$\boxed{\text{x24}}\quad \mathbb{M}_{1,2}^{(1,-1;a)}(E_g) = \begin{bmatrix} 0 & \frac{\sqrt{6}i}{6} & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{6}i}{6} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{6}i}{6} & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{6}i}{6} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{6} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{6} & 0 \end{bmatrix}$

$\boxed{\text{x25}}\quad \mathbb{M}_{3,1}^{(1,-1;a)}(E_g,1) = \begin{bmatrix} 0 & \frac{\sqrt{5}}{5} & 0 & \frac{\sqrt{5}i}{10} & -\frac{\sqrt{5}}{10} & 0 \\ \frac{\sqrt{5}}{5} & 0 & -\frac{\sqrt{5}i}{10} & 0 & 0 & \frac{\sqrt{5}}{10} \\ 0 & \frac{\sqrt{5}i}{10} & 0 & -\frac{\sqrt{5}}{10} & 0 & 0 \\ -\frac{\sqrt{5}i}{10} & 0 & -\frac{\sqrt{5}}{10} & 0 & 0 & 0 \\ -\frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{10} \\ 0 & \frac{\sqrt{5}}{10} & 0 & 0 & -\frac{\sqrt{5}}{10} & 0 \end{bmatrix}$

$\boxed{\text{x26}}\quad \mathbb{M}_{3,2}^{(1,-1;a)}(E_g,1) = \begin{bmatrix} 0 & -\frac{\sqrt{5}i}{10} & 0 & \frac{\sqrt{5}}{10} & 0 & 0 \\ \frac{\sqrt{5}i}{10} & 0 & \frac{\sqrt{5}}{10} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{5}}{10} & 0 & \frac{\sqrt{5}i}{5} & \frac{\sqrt{5}}{10} & 0 \\ \frac{\sqrt{5}}{10} & 0 & -\frac{\sqrt{5}i}{5} & 0 & 0 & -\frac{\sqrt{5}}{10} \\ 0 & 0 & \frac{\sqrt{5}}{10} & 0 & 0 & -\frac{\sqrt{5}i}{10} \\ 0 & 0 & 0 & -\frac{\sqrt{5}}{10} & \frac{\sqrt{5}i}{10} & 0 \end{bmatrix}$

$\boxed{\text{x27}}\quad \mathbb{M}_{3,1}^{(1,-1;a)}(E_g,2) = \begin{bmatrix} 0 & 0 & 0 & -\frac{\sqrt{3}i}{6} & -\frac{\sqrt{3}}{6} & 0 \\ 0 & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 & \frac{\sqrt{3}}{6} \\ 0 & -\frac{\sqrt{3}i}{6} & 0 & \frac{\sqrt{3}}{6} & 0 & 0 \\ \frac{\sqrt{3}i}{6} & 0 & \frac{\sqrt{3}}{6} & 0 & 0 & 0 \\ -\frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{6} \\ 0 & \frac{\sqrt{3}}{6} & 0 & 0 & -\frac{\sqrt{3}}{6} & 0 \end{bmatrix}$

$\boxed{\text{x28}}\quad \mathbb{M}_{3,2}^{(1,-1;a)}(E_g,2) = \begin{bmatrix} 0 & \frac{\sqrt{3}i}{6} & 0 & -\frac{\sqrt{3}}{6} & 0 & 0 \\ -\frac{\sqrt{3}i}{6} & 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & \frac{\sqrt{3}}{6} & 0 \\ -\frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{6} \\ 0 & 0 & \frac{\sqrt{3}}{6} & 0 & 0 & -\frac{\sqrt{3}i}{6} \\ 0 & 0 & 0 & -\frac{\sqrt{3}}{6} & \frac{\sqrt{3}i}{6} & 0 \end{bmatrix}$

$\boxed{\text{x29}}$ $$\mathbb{M}_{1}^{(1,1;a)}(A_{2g}) = \begin{bmatrix} -\frac{\sqrt{30}}{30} & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{20} \\ 0 & \frac{\sqrt{30}}{30} & 0 & 0 & \frac{\sqrt{30}}{20} & 0 \\ 0 & 0 & -\frac{\sqrt{30}}{30} & 0 & 0 & -\frac{\sqrt{30}i}{20} \\ 0 & 0 & 0 & \frac{\sqrt{30}}{30} & \frac{\sqrt{30}i}{20} & 0 \\ 0 & \frac{\sqrt{30}}{20} & 0 & -\frac{\sqrt{30}i}{20} & \frac{\sqrt{30}}{15} & 0 \\ \frac{\sqrt{30}}{20} & 0 & \frac{\sqrt{30}i}{20} & 0 & 0 & -\frac{\sqrt{30}}{15} \end{bmatrix}$$

$\boxed{\text{x30}}$ $$\mathbb{M}_{1,1}^{(1,1;a)}(E_{g}) = \begin{bmatrix} 0 & \frac{\sqrt{30}}{15} & 0 & -\frac{\sqrt{30}i}{20} & \frac{\sqrt{30}}{20} & 0 \\ \frac{\sqrt{30}}{15} & 0 & \frac{\sqrt{30}i}{20} & 0 & 0 & -\frac{\sqrt{30}}{20} \\ 0 & -\frac{\sqrt{30}i}{20} & 0 & -\frac{\sqrt{30}}{30} & 0 & 0 \\ \frac{\sqrt{30}i}{20} & 0 & -\frac{\sqrt{30}}{30} & 0 & 0 & 0 \\ \frac{\sqrt{30}}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{30} \\ 0 & -\frac{\sqrt{30}}{20} & 0 & 0 & -\frac{\sqrt{30}}{30} & 0 \end{bmatrix}$$

$\boxed{\text{x31}}$ $$\mathbb{M}_{1,2}^{(1,1;a)}(E_{g}) = \begin{bmatrix} 0 & -\frac{\sqrt{30}i}{30} & 0 & -\frac{\sqrt{30}}{20} & 0 & 0 \\ \frac{\sqrt{30}i}{30} & 0 & -\frac{\sqrt{30}}{20} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{30}}{20} & 0 & \frac{\sqrt{30}i}{15} & -\frac{\sqrt{30}}{20} & 0 \\ -\frac{\sqrt{30}}{20} & 0 & -\frac{\sqrt{30}i}{15} & 0 & 0 & \frac{\sqrt{30}}{20} \\ 0 & 0 & -\frac{\sqrt{30}}{20} & 0 & 0 & -\frac{\sqrt{30}i}{30} \\ 0 & 0 & 0 & \frac{\sqrt{30}}{20} & \frac{\sqrt{30}i}{30} & 0 \end{bmatrix}$$

$\boxed{\text{x32}}$ $$\mathbb{T}_{2}^{(1,0;a)}(A_{1g}) = \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 \\ 0 & \frac{\sqrt{2}i}{4} & 0 & \frac{\sqrt{2}}{4} & 0 & 0 \\ -\frac{\sqrt{2}i}{4} & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 \end{bmatrix}$$

$\boxed{\text{x33}}$ $$\mathbb{T}_{2}^{(1,0;a)}(B_{1g}) = \begin{bmatrix} 0 & 0 & -\frac{\sqrt{6}}{6} & 0 & 0 & -\frac{\sqrt{6}i}{12} \\ 0 & 0 & 0 & \frac{\sqrt{6}}{6} & \frac{\sqrt{6}i}{12} & 0 \\ -\frac{\sqrt{6}}{6} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{12} \\ 0 & \frac{\sqrt{6}}{6} & 0 & 0 & \frac{\sqrt{6}}{12} & 0 \\ 0 & -\frac{\sqrt{6}i}{12} & 0 & \frac{\sqrt{6}}{12} & 0 & 0 \\ \frac{\sqrt{6}i}{12} & 0 & \frac{\sqrt{6}}{12} & 0 & 0 & 0 \end{bmatrix}$$

x34 $\mathbb{T}_2^{(1,0;a)}(B_{2g}) = \begin{bmatrix} \frac{\sqrt{6}}{6} & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{12} \\ 0 & -\frac{\sqrt{6}}{6} & 0 & 0 & -\frac{\sqrt{6}}{12} & 0 \\ 0 & 0 & -\frac{\sqrt{6}}{6} & 0 & 0 & -\frac{\sqrt{6}i}{12} \\ 0 & 0 & 0 & \frac{\sqrt{6}}{6} & \frac{\sqrt{6}i}{12} & 0 \\ 0 & -\frac{\sqrt{6}}{12} & 0 & -\frac{\sqrt{6}i}{12} & 0 & 0 \\ -\frac{\sqrt{6}}{12} & 0 & \frac{\sqrt{6}i}{12} & 0 & 0 & 0 \end{bmatrix}$

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

x36 $\mathbb{T}_{2,2}^{(1,0;a)}(E_g) = \begin{bmatrix} 0 & \frac{\sqrt{6}i}{6} & 0 & \frac{\sqrt{6}}{12} & 0 & 0 \\ -\frac{\sqrt{6}i}{6} & 0 & \frac{\sqrt{6}}{12} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{6}}{12} & 0 & 0 & -\frac{\sqrt{6}}{12} & 0 \\ \frac{\sqrt{6}}{12} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{12} \\ 0 & 0 & -\frac{\sqrt{6}}{12} & 0 & 0 & -\frac{\sqrt{6}i}{6} \\ 0 & 0 & 0 & \frac{\sqrt{6}}{12} & \frac{\sqrt{6}i}{6} & 0 \end{bmatrix}$

Cluster SAMB

- Site cluster

** Wyckoff: `2a`

y1 $\mathbb{Q}_0^{(s)}(A_{1g}) = \left[\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2}\right]$

y2 $\mathbb{Q}_3^{(s)}(B_{2u}) = \left[\frac{\sqrt{2}}{2}, -\frac{\sqrt{2}}{2}\right]$

** Wyckoff: `2c`

y3 $\mathbb{Q}_0^{(s)}(A_{1g}) = \left[\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2}\right]$

$\boxed{\text{y4}}$ $\mathbb{Q}_1^{(s)}(A_{2u}) = \left[\frac{\sqrt{2}}{2}, -\frac{\sqrt{2}}{2}\right]$

- Bond cluster

** Wyckoff: `8a@8i`

$\boxed{\text{y5}}$ $\mathbb{Q}_0^{(s)}(A_{1g}) = \left[\frac{\sqrt{2}}{4}, \frac{\sqrt{2}}{4}, \frac{\sqrt{2}}{4}, \frac{\sqrt{2}}{4}, \frac{\sqrt{2}}{4}, \frac{\sqrt{2}}{4}, \frac{\sqrt{2}}{4}, \frac{\sqrt{2}}{4}\right]$

$\boxed{\text{y6}}$ $\mathbb{T}_0^{(s)}(A_{1g}) = \left[\frac{\sqrt{2}i}{4}, \frac{\sqrt{2}i}{4}, \frac{\sqrt{2}i}{4}, \frac{\sqrt{2}i}{4}, \frac{\sqrt{2}i}{4}, \frac{\sqrt{2}i}{4}, \frac{\sqrt{2}i}{4}, \frac{\sqrt{2}i}{4}\right]$

$\boxed{\text{y7}}$ $\mathbb{Q}_1^{(s)}(A_{2u}) = \left[\frac{\sqrt{2}}{4}, \frac{\sqrt{2}}{4}, \frac{\sqrt{2}}{4}, \frac{\sqrt{2}}{4}, -\frac{\sqrt{2}}{4}, -\frac{\sqrt{2}}{4}, -\frac{\sqrt{2}}{4}, -\frac{\sqrt{2}}{4}\right]$

$\boxed{\text{y8}}$ $\mathbb{T}_1^{(s)}(A_{2u}) = \left[\frac{\sqrt{2}i}{4}, \frac{\sqrt{2}i}{4}, \frac{\sqrt{2}i}{4}, \frac{\sqrt{2}i}{4}, -\frac{\sqrt{2}i}{4}, -\frac{\sqrt{2}i}{4}, -\frac{\sqrt{2}i}{4}, -\frac{\sqrt{2}i}{4}\right]$

$\boxed{\text{y9}}$ $\mathbb{Q}_2^{(s)}(B_{1g}) = \left[\frac{\sqrt{2}}{4}, \frac{\sqrt{2}}{4}, -\frac{\sqrt{2}}{4}, -\frac{\sqrt{2}}{4}, \frac{\sqrt{2}}{4}, \frac{\sqrt{2}}{4}, -\frac{\sqrt{2}}{4}, -\frac{\sqrt{2}}{4}\right]$

$\boxed{\text{y10}}$ $\mathbb{T}_2^{(s)}(B_{1g}) = \left[\frac{\sqrt{2}i}{4}, \frac{\sqrt{2}i}{4}, -\frac{\sqrt{2}i}{4}, -\frac{\sqrt{2}i}{4}, \frac{\sqrt{2}i}{4}, \frac{\sqrt{2}i}{4}, -\frac{\sqrt{2}i}{4}, -\frac{\sqrt{2}i}{4}\right]$

$\boxed{\text{y11}}$ $\mathbb{M}_2^{(s)}(B_{2u}) = \left[\frac{\sqrt{2}i}{4}, \frac{\sqrt{2}i}{4}, -\frac{\sqrt{2}i}{4}, -\frac{\sqrt{2}i}{4}, -\frac{\sqrt{2}i}{4}, -\frac{\sqrt{2}i}{4}, \frac{\sqrt{2}i}{4}, \frac{\sqrt{2}i}{4}\right]$

$\boxed{\text{y12}}$ $\mathbb{Q}_3^{(s)}(B_{2u}) = \left[\frac{\sqrt{2}}{4}, \frac{\sqrt{2}}{4}, -\frac{\sqrt{2}}{4}, -\frac{\sqrt{2}}{4}, -\frac{\sqrt{2}}{4}, -\frac{\sqrt{2}}{4}, \frac{\sqrt{2}}{4}, \frac{\sqrt{2}}{4}\right]$

$\boxed{\text{y13}}$ $\mathbb{Q}_{2,1}^{(s)}(E_g) = \left[\frac{1}{2}, -\frac{1}{2}, 0, 0, -\frac{1}{2}, \frac{1}{2}, 0, 0\right]$

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

$\boxed{\text{y15}}$ $\mathbb{T}_{2,1}^{(s)}(E_g) = \left[\frac{i}{2}, -\frac{i}{2}, 0, 0, -\frac{i}{2}, \frac{i}{2}, 0, 0\right]$

$\boxed{\text{y16}}$ $\mathbb{T}_{2,2}^{(s)}(E_g) = \left[0,\ 0,\ -\frac{i}{2},\ \frac{i}{2},\ 0,\ 0,\ -\frac{i}{2},\ \frac{i}{2}\right]$

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

$\boxed{\text{y18}}$ $\mathbb{Q}_{1,2}^{(s)}(E_u) = \left[\frac{1}{2},\ -\frac{1}{2},\ 0,\ 0,\ \frac{1}{2},\ -\frac{1}{2},\ 0,\ 0\right]$

$\boxed{\text{y19}}$ $\mathbb{T}_{1,1}^{(s)}(E_u) = \left[0,\ 0,\ -\frac{i}{2},\ \frac{i}{2},\ 0,\ 0,\ \frac{i}{2},\ -\frac{i}{2}\right]$

$\boxed{\text{y20}}$ $\mathbb{T}_{1,2}^{(s)}(E_u) = \left[\frac{i}{2},\ -\frac{i}{2},\ 0,\ 0,\ \frac{i}{2},\ -\frac{i}{2},\ 0,\ 0\right]$

** Wyckoff: `8a@8j`

$\boxed{\text{y21}}$ $\mathbb{Q}_{0}^{(s)}(A_{1g}) = \left[\frac{\sqrt{2}}{4},\ \frac{\sqrt{2}}{4},\ \frac{\sqrt{2}}{4},\ \frac{\sqrt{2}}{4},\ \frac{\sqrt{2}}{4},\ \frac{\sqrt{2}}{4},\ \frac{\sqrt{2}}{4},\ \frac{\sqrt{2}}{4}\right]$

$\boxed{\text{y22}}$ $\mathbb{T}_{0}^{(s)}(A_{1g}) = \left[\frac{\sqrt{2}i}{4},\ \frac{\sqrt{2}i}{4},\ \frac{\sqrt{2}i}{4},\ \frac{\sqrt{2}i}{4},\ \frac{\sqrt{2}i}{4},\ \frac{\sqrt{2}i}{4},\ \frac{\sqrt{2}i}{4},\ \frac{\sqrt{2}i}{4}\right]$

$\boxed{\text{y23}}$ $\mathbb{Q}_{1}^{(s)}(A_{2u}) = \left[\frac{\sqrt{2}}{4},\ \frac{\sqrt{2}}{4},\ \frac{\sqrt{2}}{4},\ \frac{\sqrt{2}}{4},\ -\frac{\sqrt{2}}{4},\ -\frac{\sqrt{2}}{4},\ -\frac{\sqrt{2}}{4},\ -\frac{\sqrt{2}}{4}\right]$

$\boxed{\text{y24}}$ $\mathbb{T}_{1}^{(s)}(A_{2u}) = \left[\frac{\sqrt{2}i}{4},\ \frac{\sqrt{2}i}{4},\ \frac{\sqrt{2}i}{4},\ \frac{\sqrt{2}i}{4},\ -\frac{\sqrt{2}i}{4},\ -\frac{\sqrt{2}i}{4},\ -\frac{\sqrt{2}i}{4},\ -\frac{\sqrt{2}i}{4}\right]$

$\boxed{\text{y25}}$ $\mathbb{M}_{2}^{(s)}(B_{1u}) = \left[\frac{\sqrt{2}i}{4},\ \frac{\sqrt{2}i}{4},\ -\frac{\sqrt{2}i}{4},\ -\frac{\sqrt{2}i}{4},\ \frac{\sqrt{2}i}{4},\ \frac{\sqrt{2}i}{4},\ -\frac{\sqrt{2}i}{4},\ -\frac{\sqrt{2}i}{4}\right]$

$\boxed{\text{y26}}$ $\mathbb{Q}_{3}^{(s)}(B_{1u}) = \left[\frac{\sqrt{2}}{4},\ \frac{\sqrt{2}}{4},\ -\frac{\sqrt{2}}{4},\ -\frac{\sqrt{2}}{4},\ \frac{\sqrt{2}}{4},\ \frac{\sqrt{2}}{4},\ -\frac{\sqrt{2}}{4},\ -\frac{\sqrt{2}}{4}\right]$

$\boxed{\text{y27}}$ $\mathbb{Q}_{2}^{(s)}(B_{2g}) = \left[\frac{\sqrt{2}}{4},\ \frac{\sqrt{2}}{4},\ -\frac{\sqrt{2}}{4},\ -\frac{\sqrt{2}}{4},\ -\frac{\sqrt{2}}{4},\ -\frac{\sqrt{2}}{4},\ \frac{\sqrt{2}}{4},\ \frac{\sqrt{2}}{4}\right]$

$\boxed{\text{y28}}$ $\mathbb{T}_{2}^{(s)}(B_{2g}) = \left[\frac{\sqrt{2}i}{4},\ \frac{\sqrt{2}i}{4},\ -\frac{\sqrt{2}i}{4},\ -\frac{\sqrt{2}i}{4},\ -\frac{\sqrt{2}i}{4},\ -\frac{\sqrt{2}i}{4},\ \frac{\sqrt{2}i}{4},\ \frac{\sqrt{2}i}{4}\right]$

$\boxed{\text{y29}}$ $\mathbb{M}_{1,1}^{(s)}(E_g) = \left[\frac{\sqrt{2}i}{4}, -\frac{\sqrt{2}i}{4}, \frac{\sqrt{2}i}{4}, -\frac{\sqrt{2}i}{4}, -\frac{\sqrt{2}i}{4}, \frac{\sqrt{2}i}{4}, -\frac{\sqrt{2}i}{4}, \frac{\sqrt{2}i}{4}\right]$

$\boxed{\text{y30}}$ $\mathbb{M}_{1,2}^{(s)}(E_g) = \left[\frac{\sqrt{2}i}{4}, -\frac{\sqrt{2}i}{4}, -\frac{\sqrt{2}i}{4}, \frac{\sqrt{2}i}{4}, \frac{\sqrt{2}i}{4}, -\frac{\sqrt{2}i}{4}, -\frac{\sqrt{2}i}{4}, \frac{\sqrt{2}i}{4}\right]$

$\boxed{\text{y31}}$ $\mathbb{Q}_{2,1}^{(s)}(E_g) = \left[\frac{\sqrt{2}}{4}, -\frac{\sqrt{2}}{4}, \frac{\sqrt{2}}{4}, -\frac{\sqrt{2}}{4}, -\frac{\sqrt{2}}{4}, \frac{\sqrt{2}}{4}, -\frac{\sqrt{2}}{4}, \frac{\sqrt{2}}{4}\right]$

$\boxed{\text{y32}}$ $\mathbb{Q}_{2,2}^{(s)}(E_g) = \left[\frac{\sqrt{2}}{4}, -\frac{\sqrt{2}}{4}, -\frac{\sqrt{2}}{4}, \frac{\sqrt{2}}{4}, \frac{\sqrt{2}}{4}, -\frac{\sqrt{2}}{4}, -\frac{\sqrt{2}}{4}, \frac{\sqrt{2}}{4}\right]$

$\boxed{\text{y33}}$ $\mathbb{Q}_{1,1}^{(s)}(E_u) = \left[\frac{\sqrt{2}}{4}, -\frac{\sqrt{2}}{4}, -\frac{\sqrt{2}}{4}, \frac{\sqrt{2}}{4}, -\frac{\sqrt{2}}{4}, \frac{\sqrt{2}}{4}, \frac{\sqrt{2}}{4}, -\frac{\sqrt{2}}{4}\right]$

$\boxed{\text{y34}}$ $\mathbb{Q}_{1,2}^{(s)}(E_u) = \left[\frac{\sqrt{2}}{4}, -\frac{\sqrt{2}}{4}, \frac{\sqrt{2}}{4}, -\frac{\sqrt{2}}{4}, \frac{\sqrt{2}}{4}, -\frac{\sqrt{2}}{4}, \frac{\sqrt{2}}{4}, -\frac{\sqrt{2}}{4}\right]$

$\boxed{\text{y35}}$ $\mathbb{T}_{1,1}^{(s)}(E_u) = \left[\frac{\sqrt{2}i}{4}, -\frac{\sqrt{2}i}{4}, -\frac{\sqrt{2}i}{4}, \frac{\sqrt{2}i}{4}, -\frac{\sqrt{2}i}{4}, \frac{\sqrt{2}i}{4}, \frac{\sqrt{2}i}{4}, -\frac{\sqrt{2}i}{4}\right]$

$\boxed{\text{y36}}$ $\mathbb{T}_{1,2}^{(s)}(E_u) = \left[\frac{\sqrt{2}i}{4}, -\frac{\sqrt{2}i}{4}, \frac{\sqrt{2}i}{4}, -\frac{\sqrt{2}i}{4}, \frac{\sqrt{2}i}{4}, -\frac{\sqrt{2}i}{4}, \frac{\sqrt{2}i}{4}, -\frac{\sqrt{2}i}{4}\right]$

Site and Bond

Table 5: Orbital of each site

#	site	orbital
1	`Ce`	$\lvert p_x,\uparrow\rangle$, $\lvert p_x,\downarrow\rangle$, $\lvert p_y,\uparrow\rangle$, $\lvert p_y,\downarrow\rangle$, $\lvert p_z,\uparrow\rangle$, $\lvert p_z,\downarrow\rangle$
2	`Co`	$\lvert p_x,\uparrow\rangle$, $\lvert p_x,\downarrow\rangle$, $\lvert p_y,\uparrow\rangle$, $\lvert p_y,\downarrow\rangle$, $\lvert p_z,\uparrow\rangle$, $\lvert p_z,\downarrow\rangle$

continued ...

Table 5

#	site	orbital
3	Si	$\lvert p_x,\uparrow\rangle$, $\lvert p_x,\downarrow\rangle$, $\lvert p_y,\uparrow\rangle$, $\lvert p_y,\downarrow\rangle$, $\lvert p_z,\uparrow\rangle$, $\lvert p_z,\downarrow\rangle$

Table 6: Neighbor and bra-ket of each bond

#	head	tail	neighbor	head (bra)	tail (ket)
1	Ce	Co	[1]	[p]	[p]
2	Ce	Si	[1]	[p]	[p]
3	Co	Si	[1]	[p]	[p]

Site in Unit Cell

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

Table 7: 'Ce' (#1) site cluster (2c), 4mm

SL	position ($\boldsymbol{s}$)	mapping
1	[0.25000, 0.25000, 0.67800]	[1,2,3,4,13,14,15,16]

continued ...

Table 7

SL	position (s)	mapping
2	`[ 0.75000, 0.75000, 0.32200]`	`[5,6,7,8,9,10,11,12]`

Table 8: 'Co' (#2) site cluster (2a), -4m2

SL	position (s)	mapping
1	`[ 0.75000, 0.25000, 0.00000]`	`[1,2,7,8,11,12,13,14]`
2	`[ 0.25000, 0.75000, 0.00000]`	`[3,4,5,6,9,10,15,16]`

Table 9: 'Si' (#3) site cluster (2c), 4mm

SL	position (s)	mapping
1	`[ 0.25000, 0.25000, 0.17800]`	`[1,2,3,4,13,14,15,16]`
2	`[ 0.75000, 0.75000, 0.82200]`	`[5,6,7,8,9,10,11,12]`

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 10: 1-th 'Ce'-'Co' [1] (#1) bond cluster (8a@8i), D, $|\boldsymbol{v}|$= 3.02927 (cartesian)

SL	vector ($\boldsymbol{v}$)	center ($\boldsymbol{c}$)	mapping	head	tail	$\boldsymbol{R}$ (primitive)
1	[0.00000, 0.50000,-0.32200]	[0.25000, 0.00000, 0.83900]	[1,14]	(1,1)	(2,1)	[0,-1,1]
2	[0.00000,-0.50000,-0.32200]	[0.25000, 0.50000, 0.83900]	[2,13]	(1,1)	(2,1)	[0,0,1]
3	[-0.50000, 0.00000,-0.32200]	[0.50000, 0.25000, 0.83900]	[3,15]	(1,1)	(1,1)	[0,0,1]
4	[0.50000, 0.00000,-0.32200]	[0.00000, 0.25000, 0.83900]	[4,16]	(1,1)	(1,1)	[-1,0,1]
5	[0.00000, 0.50000, 0.32200]	[0.75000, 0.50000, 0.16100]	[5,10]	(2,1)	(1,1)	[0,0,0]
6	[0.00000,-0.50000, 0.32200]	[0.75000, 0.00000, 0.16100]	[6,9]	(2,1)	(1,1)	[0,1,0]
7	[0.50000, 0.00000, 0.32200]	[0.50000, 0.75000, 0.16100]	[7,11]	(2,1)	(2,1)	[0,0,0]
8	[-0.50000, 0.00000, 0.32200]	[0.00000, 0.75000, 0.16100]	[8,12]	(2,1)	(2,1)	[1,0,0]

Table 11: 1-th 'Ce'-'Si' [1] (#2) bond cluster (8a@8j), D, $|\boldsymbol{v}|$= 3.04005 (cartesian)

SL	vector ($\boldsymbol{v}$)	center ($\boldsymbol{c}$)	mapping	head	tail	$\boldsymbol{R}$ (primitive)
1	[-0.50000,-0.50000, 0.14400]	[0.00000, 0.00000, 0.25000]	[1,16]	(2,1)	(1,1)	[1,1,0]
2	[0.50000, 0.50000, 0.14400]	[0.50000, 0.50000, 0.25000]	[2,15]	(2,1)	(1,1)	[0,0,0]
3	[0.50000,-0.50000, 0.14400]	[0.50000, 0.00000, 0.25000]	[3,14]	(2,1)	(1,1)	[0,1,0]
4	[-0.50000, 0.50000, 0.14400]	[0.00000, 0.50000, 0.25000]	[4,13]	(2,1)	(1,1)	[1,0,0]
5	[0.50000,-0.50000,-0.14400]	[0.00000, 0.50000, 0.75000]	[5,12]	(1,1)	(2,1)	[-1,0,0]

continued ...

Table 11

SL	vector ($\boldsymbol{v}$)	center ($\boldsymbol{c}$)	mapping	head	tail	$\boldsymbol{R}$ (primitive)
6	[-0.50000, 0.50000,-0.14400]	[0.50000, 0.00000, 0.75000]	[6,11]	(1,1)	(2,1)	[0,-1,0]
7	[-0.50000,-0.50000,-0.14400]	[0.50000, 0.50000, 0.75000]	[7,10]	(1,1)	(2,1)	[0,0,0]
8	[0.50000, 0.50000,-0.14400]	[0.00000, 0.00000, 0.75000]	[8,9]	(1,1)	(2,1)	[-1,-1,0]

Table 12: 1-th 'Co'-'Si' [1] (#3) bond cluster (8a@8i), D, $|\boldsymbol{v}|$= 2.3794 (cartesian)

SL	vector ($\boldsymbol{v}$)	center ($\boldsymbol{c}$)	mapping	head	tail	$\boldsymbol{R}$ (primitive)
1	[0.00000, 0.50000,-0.17800]	[0.25000, 0.50000, 0.08900]	[1,14]	(2,1)	(1,1)	[0,0,0]
2	[0.00000,-0.50000,-0.17800]	[0.25000, 0.00000, 0.08900]	[2,13]	(2,1)	(1,1)	[0,1,0]
3	[-0.50000, 0.00000,-0.17800]	[0.00000, 0.25000, 0.08900]	[3,15]	(1,1)	(1,1)	[1,0,0]
4	[0.50000, 0.00000,-0.17800]	[0.50000, 0.25000, 0.08900]	[4,16]	(1,1)	(1,1)	[0,0,0]
5	[0.00000, 0.50000, 0.17800]	[0.75000, 0.00000, 0.91100]	[5,10]	(1,1)	(2,1)	[0,-1,-1]
6	[0.00000,-0.50000, 0.17800]	[0.75000, 0.50000, 0.91100]	[6,9]	(1,1)	(2,1)	[0,0,-1]
7	[0.50000, 0.00000, 0.17800]	[0.00000, 0.75000, 0.91100]	[7,11]	(2,1)	(2,1)	[-1,0,-1]
8	[-0.50000, 0.00000, 0.17800]	[0.50000, 0.75000, 0.91100]	[8,12]	(2,1)	(2,1)	[0,0,-1]