Model for "`SnTe`"

General Condition

- Basis type: `lgs`
- SAMB selection:
  - Type: `[Q, G]`
  - Rank: `[0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11]`
  - Irrep.: $[A_1, A_2, B_1, B_2]$
  - Spin (s): `[0, 1]`
- Max. neighbor: `10`
- Search cell range: `(-2, 3), (-2, 3), (-2, 3)`
- Toroidal priority: `false`

Group and Unit Cell

- Group: SG No. 31 C_{2v}^7 $Pmn2_1$ [orthorhombic]
- Associated point group: PG No. 31 C_{2v} $mm2$ [orthorhombic]
- Unit cell:
  $a = 4.55900$, $b = 6.00000$, $c = 4.57000$, $\alpha = 90.0$, $\beta = 90.0$, $\gamma = 90.0$
- Lattice vectors (conventional cell):
  $\boldsymbol{a}_1 = [\ 4.55900,\ 0.00000,\ 0.00000]$
  $\boldsymbol{a}_2 = [\ 0.00000,\ 6.00000,\ 0.00000]$
  $\boldsymbol{a}_3 = [\ 0.00000,\ 0.00000,\ 4.57000]$

Symmetry Operation

Table 1: Symmetry operation

#	SO	#	SO	#	SO	#	SO	#	SO
1	$\{1\|0\}$	2	$\{2_{001}\|\frac{1}{2}0\frac{1}{2}\}$	3	$\{m_{010}\|\frac{1}{2}0\frac{1}{2}\}$	4	$\{m_{100}\|0\}$		

Table 2: Harmonics

#	symbol	irrep.	rank	X	multiplicity	component	symmetry
1	$\mathbb{Q}_0(A_1)$	A_1	0	Q, T	-	-	1
2	$\mathbb{Q}_1(A_1)$	A_1	1	Q, T	-	-	z
3	$\mathbb{G}_2(A_1)$	A_1	2	G, M	-	-	$\sqrt{3}xy$
4	$\mathbb{Q}_2(A_1, 1)$	A_1	2	Q, T	1	-	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$
5	$\mathbb{Q}_2(A_1, 2)$	A_1	2	Q, T	2	-	$\frac{\sqrt{3}(x-y)(x+y)}{2}$
6	$\mathbb{G}_3(A_1)$	A_1	3	G, M	-	-	$\sqrt{15}xyz$
7	$\mathbb{Q}_3(A_1, 1)$	A_1	3	Q, T	1	-	$-\frac{z\left(3x^2 + 3y^2 - 2z^2\right)}{2}$
8	$\mathbb{Q}_3(A_1, 2)$	A_1	3	Q, T	2	-	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$
9	$\mathbb{G}_4(A_1, 1)$	A_1	4	G, M	1	-	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$
10	$\mathbb{G}_0(A_2)$	A_2	0	G, M	-	-	1
11	$\mathbb{G}_1(A_2)$	A_2	1	G, M	-	-	z
12	$\mathbb{G}_2(A_2, 1)$	A_2	2	G, M	1	-	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$
13	$\mathbb{G}_2(A_2, 2)$	A_2	2	G, M	2	-	$\frac{\sqrt{3}(x-y)(x+y)}{2}$
14	$\mathbb{Q}_2(A_2)$	A_2	2	Q, T	-	-	$\sqrt{3}xy$
15	$\mathbb{G}_3(A_2, 1)$	A_2	3	G, M	1	-	$-\frac{z\left(3x^2 + 3y^2 - 2z^2\right)}{2}$
16	$\mathbb{G}_3(A_2, 2)$	A_2	3	G, M	2	-	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$

continued …

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Table 2

#	symbol	irrep.	rank	X	multiplicity	component	symmetry
17	$\mathbb{Q}_3(A_2)$	A_2	3	Q, T	-	-	$\sqrt{15}xyz$
18	$\mathbb{G}_4(A_2,1)$	A_2	4	G, M	1	-	$\frac{\sqrt{21}\left(x^4-3x^2y^2-3x^2z^2+y^4-3y^2z^2+z^4\right)}{6}$
19	$\mathbb{Q}_4(A_2,1)$	A_2	4	Q, T	1	-	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$
20	$\mathbb{G}_1(B_1)$	B_1	1	G, M	-	-	y
21	$\mathbb{Q}_1(B_1)$	B_1	1	Q, T	-	-	x
22	$\mathbb{G}_2(B_1)$	B_1	2	G, M	-	-	$\sqrt{3}yz$
23	$\mathbb{Q}_2(B_1)$	B_1	2	Q, T	-	-	$\sqrt{3}xz$
24	$\mathbb{G}_3(B_1,1)$	B_1	3	G, M	1	-	$-\frac{y\left(3x^2-2y^2+3z^2\right)}{2}$
25	$\mathbb{G}_3(B_1,2)$	B_1	3	G, M	2	-	$-\frac{\sqrt{15}y(x-z)(x+z)}{2}$
26	$\mathbb{Q}_3(B_1,1)$	B_1	3	Q, T	1	-	$\frac{x\left(2x^2-3y^2-3z^2\right)}{2}$
27	$\mathbb{Q}_3(B_1,2)$	B_1	3	Q, T	2	-	$\frac{\sqrt{15}x(y-z)(y+z)}{2}$
28	$\mathbb{Q}_4(B_1,1)$	B_1	4	Q, T	1	-	$-\frac{\sqrt{35}xz(x-z)(x+z)}{2}$
29	$\mathbb{G}_1(B_2)$	B_2	1	G, M	-	-	x
30	$\mathbb{Q}_1(B_2)$	B_2	1	Q, T	-	-	y
31	$\mathbb{G}_2(B_2)$	B_2	2	G, M	-	-	$\sqrt{3}xz$
32	$\mathbb{Q}_2(B_2)$	B_2	2	Q, T	-	-	$\sqrt{3}yz$
33	$\mathbb{G}_3(B_2,1)$	B_2	3	G, M	1	-	$\frac{x\left(2x^2-3y^2-3z^2\right)}{2}$
34	$\mathbb{G}_3(B_2,2)$	B_2	3	G, M	2	-	$\frac{\sqrt{15}x(y-z)(y+z)}{2}$
35	$\mathbb{Q}_3(B_2,1)$	B_2	3	Q, T	1	-	$-\frac{y\left(3x^2-2y^2+3z^2\right)}{2}$
36	$\mathbb{Q}_3(B_2,2)$	B_2	3	Q, T	2	-	$-\frac{\sqrt{15}y(x-z)(x+z)}{2}$
37	$\mathbb{Q}_4(B_2,1)$	B_2	4	Q, T	1	-	$\frac{\sqrt{35}yz(y-z)(y+z)}{2}$

Table 3: dimension = 24

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

Table 4: Atomic basis (orbital part only)

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

564 (all 564) SAMBs

- 'Sn' site-cluster
  * bra: $\langle p_x, \uparrow |, \langle p_x, \downarrow |, \langle p_y, \uparrow |, \langle p_y, \downarrow |, \langle p_z, \uparrow |, \langle p_z, \downarrow |$
  * ket: $| p_x, \uparrow \rangle, | p_x, \downarrow \rangle, | p_y, \uparrow \rangle, | p_y, \downarrow \rangle, | p_z, \uparrow \rangle, | p_z, \downarrow \rangle$
  * wyckoff: **2a**

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

$\boxed{\text{z2}}$ $\quad \mathbb{Q}_1^{(c)}(A_1) = \mathbb{Q}_2^{(a)}(B_2)\mathbb{Q}_1^{(s)}(B_2)$

$\boxed{\text{z3}}$ $\quad \mathbb{Q}_2^{(c)}(A_1, 1) = \mathbb{Q}_2^{(a)}(A_1, 1)\mathbb{Q}_0^{(s)}(A_1)$

$\boxed{\text{z4}}$ $\quad \mathbb{Q}_2^{(c)}(A_1, 2) = \mathbb{Q}_2^{(a)}(A_1, 2)\mathbb{Q}_0^{(s)}(A_1)$

$\boxed{\text{z5}}$ $\quad \mathbb{Q}_1^{(1,-1;c)}(A_1) = \mathbb{Q}_2^{(1,-1;a)}(B_2)\mathbb{Q}_1^{(s)}(B_2)$

$\boxed{\text{z6}}$ $\quad \mathbb{Q}_2^{(1,-1;c)}(A_1, 1) = \mathbb{Q}_2^{(1,-1;a)}(A_1, 1)\mathbb{Q}_0^{(s)}(A_1)$

$\boxed{\text{z7}}$ $\quad \mathbb{Q}_2^{(1,-1;c)}(A_1, 2) = \mathbb{Q}_2^{(1,-1;a)}(A_1, 2)\mathbb{Q}_0^{(s)}(A_1)$

$\boxed{\text{z8}}$ $\quad \mathbb{Q}_1^{(1,0;c)}(A_1) = \mathbb{G}_1^{(1,0;a)}(B_2)\mathbb{Q}_1^{(s)}(B_2)$

$\boxed{\text{z9}}$ $\quad \mathbb{Q}_0^{(1,1;c)}(A_1) = \mathbb{Q}_0^{(1,1;a)}(A_1)\mathbb{Q}_0^{(s)}(A_1)$

$\boxed{\text{z145}}$ $\quad \mathbb{Q}_2^{(c)}(A_2) = \mathbb{Q}_2^{(a)}(A_2)\mathbb{Q}_0^{(s)}(A_1)$

$\boxed{\text{z146}}$ $\quad \mathbb{Q}_3^{(c)}(A_2) = \mathbb{Q}_2^{(a)}(B_1)\mathbb{Q}_1^{(s)}(B_2)$

$\boxed{\text{z147}}$ $\quad \mathbb{Q}_2^{(1,-1;c)}(A_2) = \mathbb{Q}_2^{(1,-1;a)}(A_2)\mathbb{Q}_0^{(s)}(A_1)$

$\boxed{\text{z148}}$ $\quad \mathbb{Q}_3^{(1,-1;c)}(A_2) = \mathbb{Q}_2^{(1,-1;a)}(B_1)\mathbb{Q}_1^{(s)}(B_2)$

$\boxed{\text{z149}}$ $\quad \mathbb{G}_0^{(1,0;c)}(A_2) = \mathbb{G}_1^{(1,0;a)}(B_1)\mathbb{Q}_1^{(s)}(B_2)$

$\boxed{\text{z150}}$ $\quad \mathbb{G}_1^{(1,0;c)}(A_2) = \mathbb{G}_1^{(1,0;a)}(A_2)\mathbb{Q}_0^{(s)}(A_1)$

$\boxed{\text{z283}}$ $\quad \mathbb{Q}_1^{(c)}(B_1) = \mathbb{Q}_2^{(a)}(A_2)\mathbb{Q}_1^{(s)}(B_2)$

$\boxed{\text{z284}}$ $\quad \mathbb{Q}_2^{(c)}(B_1) = \mathbb{Q}_2^{(a)}(B_1)\mathbb{Q}_0^{(s)}(A_1)$

$\boxed{\text{z285}}$ $\quad \mathbb{Q}_1^{(1,-1;c)}(B_1) = \mathbb{Q}_2^{(1,-1;a)}(A_2)\mathbb{Q}_1^{(s)}(B_2)$

$\boxed{\text{z286}}$ $\quad \mathbb{Q}_2^{(1,-1;c)}(B_1) = \mathbb{Q}_2^{(1,-1;a)}(B_1)\mathbb{Q}_0^{(s)}(A_1)$

$\boxed{\text{z287}}$ $\quad \mathbb{Q}_1^{(1,0;c)}(B_1) = -\mathbb{G}_1^{(1,0;a)}(A_2)\mathbb{Q}_1^{(s)}(B_2)$

$\boxed{\text{z288}}$ $\quad \mathbb{G}_1^{(1,0;c)}(B_1) = \mathbb{G}_1^{(1,0;a)}(B_1)\mathbb{Q}_0^{(s)}(A_1)$

$\boxed{\text{z421}}$ $\quad \mathbb{Q}_1^{(c)}(B_2,a) = \mathbb{Q}_0^{(a)}(A_1)\mathbb{Q}_1^{(s)}(B_2)$

$\boxed{\text{z422}}$ $\quad \mathbb{Q}_1^{(c)}(B_2,b) = -\dfrac{\mathbb{Q}_2^{(a)}(A_1,1)\mathbb{Q}_1^{(s)}(B_2)}{2} - \dfrac{\sqrt{3}\mathbb{Q}_2^{(a)}(A_1,2)\mathbb{Q}_1^{(s)}(B_2)}{2}$

$\boxed{\text{z423}}$ $\quad \mathbb{Q}_2^{(c)}(B_2) = \mathbb{Q}_2^{(a)}(B_2)\mathbb{Q}_0^{(s)}(A_1)$

$\boxed{\text{z424}}$ $\quad \mathbb{Q}_3^{(c)}(B_2,2) = \dfrac{\sqrt{3}\mathbb{Q}_2^{(a)}(A_1,1)\mathbb{Q}_1^{(s)}(B_2)}{2} - \dfrac{\mathbb{Q}_2^{(a)}(A_1,2)\mathbb{Q}_1^{(s)}(B_2)}{2}$

$\boxed{\text{z425}}$ $\quad \mathbb{Q}_1^{(1,-1;c)}(B_2) = -\dfrac{\mathbb{Q}_2^{(1,-1;a)}(A_1,1)\mathbb{Q}_1^{(s)}(B_2)}{2} - \dfrac{\sqrt{3}\mathbb{Q}_2^{(1,-1;a)}(A_1,2)\mathbb{Q}_1^{(s)}(B_2)}{2}$

$\boxed{\text{z426}}$ $\quad \mathbb{Q}_2^{(1,-1;c)}(B_2) = \mathbb{Q}_2^{(1,-1;a)}(B_2)\mathbb{Q}_0^{(s)}(A_1)$

$\boxed{\text{z427}}$ $\quad \mathbb{Q}_3^{(1,-1;c)}(B_2,2) = \dfrac{\sqrt{3}\mathbb{Q}_2^{(1,-1;a)}(A_1,1)\mathbb{Q}_1^{(s)}(B_2)}{2} - \dfrac{\mathbb{Q}_2^{(1,-1;a)}(A_1,2)\mathbb{Q}_1^{(s)}(B_2)}{2}$

$\boxed{\text{z428}}$ $\quad \mathbb{Q}_1^{(1,1;c)}(B_2) = \mathbb{Q}_0^{(1,1;a)}(A_1)\mathbb{Q}_1^{(s)}(B_2)$

$\boxed{\text{z429}}$ $\quad \mathbb{G}_1^{(1,0;c)}(B_2) = \mathbb{G}_1^{(1,0;a)}(B_2)\mathbb{Q}_0^{(s)}(A_1)$

- 'Te' site-cluster
  * bra: $\langle p_x,\uparrow|$, $\langle p_x,\downarrow|$, $\langle p_y,\uparrow|$, $\langle p_y,\downarrow|$, $\langle p_z,\uparrow|$, $\langle p_z,\downarrow|$
  * ket: $|p_x,\uparrow\rangle$, $|p_x,\downarrow\rangle$, $|p_y,\uparrow\rangle$, $|p_y,\downarrow\rangle$, $|p_z,\uparrow\rangle$, $|p_z,\downarrow\rangle$

* wyckoff: **2a**

$\boxed{\text{z10}}$ $\quad \mathbb{Q}_0^{(c)}(A_1) = \mathbb{Q}_0^{(a)}(A_1)\mathbb{Q}_0^{(s)}(A_1)$

$\boxed{\text{z11}}$ $\quad \mathbb{Q}_1^{(c)}(A_1) = \mathbb{Q}_2^{(a)}(B_2)\mathbb{Q}_1^{(s)}(B_2)$

$\boxed{\text{z12}}$ $\quad \mathbb{Q}_2^{(c)}(A_1, 1) = \mathbb{Q}_2^{(a)}(A_1, 1)\mathbb{Q}_0^{(s)}(A_1)$

$\boxed{\text{z13}}$ $\quad \mathbb{Q}_2^{(c)}(A_1, 2) = \mathbb{Q}_2^{(a)}(A_1, 2)\mathbb{Q}_0^{(s)}(A_1)$

$\boxed{\text{z14}}$ $\quad \mathbb{Q}_1^{(1,-1;c)}(A_1) = \mathbb{Q}_2^{(1,-1;a)}(B_2)\mathbb{Q}_1^{(s)}(B_2)$

$\boxed{\text{z15}}$ $\quad \mathbb{Q}_2^{(1,-1;c)}(A_1, 1) = \mathbb{Q}_2^{(1,-1;a)}(A_1, 1)\mathbb{Q}_0^{(s)}(A_1)$

$\boxed{\text{z16}}$ $\quad \mathbb{Q}_2^{(1,-1;c)}(A_1, 2) = \mathbb{Q}_2^{(1,-1;a)}(A_1, 2)\mathbb{Q}_0^{(s)}(A_1)$

$\boxed{\text{z17}}$ $\quad \mathbb{Q}_1^{(1,0;c)}(A_1) = \mathbb{G}_1^{(1,0;a)}(B_2)\mathbb{Q}_1^{(s)}(B_2)$

$\boxed{\text{z18}}$ $\quad \mathbb{Q}_0^{(1,1;c)}(A_1) = \mathbb{Q}_0^{(1,1;a)}(A_1)\mathbb{Q}_0^{(s)}(A_1)$

$\boxed{\text{z151}}$ $\quad \mathbb{Q}_2^{(c)}(A_2) = \mathbb{Q}_2^{(a)}(A_2)\mathbb{Q}_0^{(s)}(A_1)$

$\boxed{\text{z152}}$ $\quad \mathbb{Q}_3^{(c)}(A_2) = \mathbb{Q}_2^{(a)}(B_1)\mathbb{Q}_1^{(s)}(B_2)$

$\boxed{\text{z153}}$ $\quad \mathbb{Q}_2^{(1,-1;c)}(A_2) = \mathbb{Q}_2^{(1,-1;a)}(A_2)\mathbb{Q}_0^{(s)}(A_1)$

$\boxed{\text{z154}}$ $\quad \mathbb{Q}_3^{(1,-1;c)}(A_2) = \mathbb{Q}_2^{(1,-1;a)}(B_1)\mathbb{Q}_1^{(s)}(B_2)$

$\boxed{\text{z155}}$ $\quad \mathbb{G}_0^{(1,0;c)}(A_2) = \mathbb{G}_1^{(1,0;a)}(B_1)\mathbb{Q}_1^{(s)}(B_2)$

$\boxed{\text{z156}}$ $\quad \mathbb{G}_1^{(1,0;c)}(A_2) = \mathbb{G}_1^{(1,0;a)}(A_2)\mathbb{Q}_0^{(s)}(A_1)$

$\boxed{\text{z289}}$ $\quad \mathbb{Q}_1^{(c)}(B_1) = \mathbb{Q}_2^{(a)}(A_2)\mathbb{Q}_1^{(s)}(B_2)$

$\boxed{\text{z290}}$ $\quad \mathbb{Q}_2^{(c)}(B_1) = \mathbb{Q}_2^{(a)}(B_1)\mathbb{Q}_0^{(s)}(A_1)$

$\boxed{\text{z291}}$ $\quad \mathbb{Q}_1^{(1,-1;c)}(B_1) = \mathbb{Q}_2^{(1,-1;a)}(A_2)\mathbb{Q}_1^{(s)}(B_2)$

$\boxed{\text{z292}}$ $\quad \mathbb{Q}_2^{(1,-1;c)}(B_1) = \mathbb{Q}_2^{(1,-1;a)}(B_1)\mathbb{Q}_0^{(s)}(A_1)$

$\boxed{\text{z293}}$ $\quad \mathbb{Q}_1^{(1,0;c)}(B_1) = -\mathbb{G}_1^{(1,0;a)}(A_2)\mathbb{Q}_1^{(s)}(B_2)$

$\boxed{\text{z294}}$ $\quad \mathbb{G}_1^{(1,0;c)}(B_1) = \mathbb{G}_1^{(1,0;a)}(B_1)\mathbb{Q}_0^{(s)}(A_1)$

$\boxed{\text{z430}}$ $\quad \mathbb{Q}_1^{(c)}(B_2,a) = \mathbb{Q}_0^{(a)}(A_1)\mathbb{Q}_1^{(s)}(B_2)$

$\boxed{\text{z431}}$ $\quad \mathbb{Q}_1^{(c)}(B_2,b) = -\dfrac{\mathbb{Q}_2^{(a)}(A_1,1)\mathbb{Q}_1^{(s)}(B_2)}{2} - \dfrac{\sqrt{3}\mathbb{Q}_2^{(a)}(A_1,2)\mathbb{Q}_1^{(s)}(B_2)}{2}$

$\boxed{\text{z432}}$ $\quad \mathbb{Q}_2^{(c)}(B_2) = \mathbb{Q}_2^{(a)}(B_2)\mathbb{Q}_0^{(s)}(A_1)$

$\boxed{\text{z433}}$ $\quad \mathbb{Q}_3^{(c)}(B_2,2) = \dfrac{\sqrt{3}\mathbb{Q}_2^{(a)}(A_1,1)\mathbb{Q}_1^{(s)}(B_2)}{2} - \dfrac{\mathbb{Q}_2^{(a)}(A_1,2)\mathbb{Q}_1^{(s)}(B_2)}{2}$

$\boxed{\text{z434}}$ $\quad \mathbb{Q}_1^{(1,-1;c)}(B_2) = -\dfrac{\mathbb{Q}_2^{(1,-1;a)}(A_1,1)\mathbb{Q}_1^{(s)}(B_2)}{2} - \dfrac{\sqrt{3}\mathbb{Q}_2^{(1,-1;a)}(A_1,2)\mathbb{Q}_1^{(s)}(B_2)}{2}$

$\boxed{\text{z435}}$ $\quad \mathbb{Q}_2^{(1,-1;c)}(B_2) = \mathbb{Q}_2^{(1,-1;a)}(B_2)\mathbb{Q}_0^{(s)}(A_1)$

$\boxed{\text{z436}}$ $\quad \mathbb{Q}_3^{(1,-1;c)}(B_2,2) = \dfrac{\sqrt{3}\mathbb{Q}_2^{(1,-1;a)}(A_1,1)\mathbb{Q}_1^{(s)}(B_2)}{2} - \dfrac{\mathbb{Q}_2^{(1,-1;a)}(A_1,2)\mathbb{Q}_1^{(s)}(B_2)}{2}$

$\boxed{\text{z437}}$ $\quad \mathbb{Q}_1^{(1,1;c)}(B_2) = \mathbb{Q}_0^{(1,1;a)}(A_1)\mathbb{Q}_1^{(s)}(B_2)$

$\boxed{\text{z438}}$ $\quad \mathbb{G}_1^{(1,0;c)}(B_2) = \mathbb{G}_1^{(1,0;a)}(B_2)\mathbb{Q}_0^{(s)}(A_1)$

- 'Sn'-'Sn' bond-cluster
  * bra: $\langle p_x,\uparrow|$, $\langle p_x,\downarrow|$, $\langle p_y,\uparrow|$, $\langle p_y,\downarrow|$, $\langle p_z,\uparrow|$, $\langle p_z,\downarrow|$
  * ket: $|p_x,\uparrow\rangle$, $|p_x,\downarrow\rangle$, $|p_y,\uparrow\rangle$, $|p_y,\downarrow\rangle$, $|p_z,\uparrow\rangle$, $|p_z,\downarrow\rangle$
  * wyckoff: `4a@4b`

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

$\boxed{\text{z20}}$ $\quad \mathbb{Q}_0^{(c)}(A_1,b) = \mathbb{Q}_2^{(a)}(A_2)\mathbb{Q}_2^{(b)}(A_2)$

$\boxed{\text{z21}}$ $\quad \mathbb{Q}_0^{(c)}(A_1,c) = \mathbb{M}_1^{(a)}(A_2)\mathbb{M}_1^{(b)}(A_2)$

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$\boxed{\text{z22}}$ $\quad \mathbb{Q}_1^{(c)}(A_1, a) = \dfrac{\sqrt{2}\mathbb{Q}_2^{(a)}(B_1)\mathbb{Q}_1^{(b)}(B_1)}{2} + \dfrac{\sqrt{2}\mathbb{Q}_2^{(a)}(B_2)\mathbb{Q}_1^{(b)}(B_2)}{2}$

$\boxed{\text{z23}}$ $\quad \mathbb{Q}_1^{(c)}(A_1, b) = -\dfrac{\sqrt{2}\mathbb{M}_1^{(a)}(B_1)\mathbb{T}_1^{(b)}(B_1)}{2} + \dfrac{\sqrt{2}\mathbb{M}_1^{(a)}(B_2)\mathbb{T}_1^{(b)}(B_2)}{2}$

$\boxed{\text{z24}}$ $\quad \mathbb{Q}_2^{(c)}(A_1, 1) = \mathbb{Q}_2^{(a)}(A_1, 1)\mathbb{Q}_0^{(b)}(A_1)$

$\boxed{\text{z25}}$ $\quad \mathbb{Q}_2^{(c)}(A_1, 2) = \mathbb{Q}_2^{(a)}(A_1, 2)\mathbb{Q}_0^{(b)}(A_1)$

$\boxed{\text{z26}}$ $\quad \mathbb{Q}_3^{(c)}(A_1, 2) = \dfrac{\sqrt{2}\mathbb{Q}_2^{(a)}(B_1)\mathbb{Q}_1^{(b)}(B_1)}{2} - \dfrac{\sqrt{2}\mathbb{Q}_2^{(a)}(B_2)\mathbb{Q}_1^{(b)}(B_2)}{2}$

$\boxed{\text{z27}}$ $\quad \mathbb{Q}_0^{(1,-1;c)}(A_1, a) = \mathbb{Q}_2^{(1,-1;a)}(A_2)\mathbb{Q}_2^{(b)}(A_2)$

$\boxed{\text{z28}}$ $\quad \mathbb{Q}_0^{(1,-1;c)}(A_1, b) = \mathbb{M}_1^{(1,-1;a)}(A_2)\mathbb{M}_1^{(b)}(A_2)$

$\boxed{\text{z29}}$ $\quad \mathbb{Q}_1^{(1,-1;c)}(A_1, a) = \dfrac{\sqrt{2}\mathbb{Q}_2^{(1,-1;a)}(B_1)\mathbb{Q}_1^{(b)}(B_1)}{2} + \dfrac{\sqrt{2}\mathbb{Q}_2^{(1,-1;a)}(B_2)\mathbb{Q}_1^{(b)}(B_2)}{2}$

$\boxed{\text{z30}}$ $\quad \mathbb{Q}_1^{(1,-1;c)}(A_1, b) = -\dfrac{\sqrt{2}\mathbb{M}_1^{(1,-1;a)}(B_1)\mathbb{T}_1^{(b)}(B_1)}{2} + \dfrac{\sqrt{2}\mathbb{M}_1^{(1,-1;a)}(B_2)\mathbb{T}_1^{(b)}(B_2)}{2}$

$\boxed{\text{z31}}$ $\quad \mathbb{Q}_2^{(1,-1;c)}(A_1, 1a) = \mathbb{Q}_2^{(1,-1;a)}(A_1, 1)\mathbb{Q}_0^{(b)}(A_1)$

$\boxed{\text{z32}}$ $\quad \mathbb{Q}_2^{(1,-1;c)}(A_1, 1b) = \mathbb{M}_3^{(1,-1;a)}(A_2, 1)\mathbb{M}_1^{(b)}(A_2)$

$\boxed{\text{z33}}$ $\quad \mathbb{Q}_2^{(1,-1;c)}(A_1, 2a) = \mathbb{Q}_2^{(1,-1;a)}(A_1, 2)\mathbb{Q}_0^{(b)}(A_1)$

$\boxed{\text{z34}}$ $\quad \mathbb{Q}_2^{(1,-1;c)}(A_1, 2b) = \mathbb{M}_3^{(1,-1;a)}(A_2, 2)\mathbb{M}_1^{(b)}(A_2)$

$\boxed{\text{z35}}$ $\quad \mathbb{Q}_3^{(1,-1;c)}(A_1, 1) = \dfrac{\sqrt{3}\mathbb{M}_3^{(1,-1;a)}(B_1, 1)\mathbb{T}_1^{(b)}(B_1)}{4} - \dfrac{\sqrt{5}\mathbb{M}_3^{(1,-1;a)}(B_1, 2)\mathbb{T}_1^{(b)}(B_1)}{4} - \dfrac{\sqrt{3}\mathbb{M}_3^{(1,-1;a)}(B_2, 1)\mathbb{T}_1^{(b)}(B_2)}{4} - \dfrac{\sqrt{5}\mathbb{M}_3^{(1,-1;a)}(B_2, 2)\mathbb{T}_1^{(b)}(B_2)}{4}$

$\boxed{\text{z36}}$ $\quad \mathbb{Q}_3^{(1,-1;c)}(A_1, 2a) = \dfrac{\sqrt{2}\mathbb{Q}_2^{(1,-1;a)}(B_1)\mathbb{Q}_1^{(b)}(B_1)}{2} - \dfrac{\sqrt{2}\mathbb{Q}_2^{(1,-1;a)}(B_2)\mathbb{Q}_1^{(b)}(B_2)}{2}$

$\boxed{\text{z37}}$ $\quad \mathbb{Q}_3^{(1,-1;c)}(A_1, 2b) = \dfrac{\sqrt{30}\mathbb{M}_3^{(1,-1;a)}(B_1, 1)\mathbb{T}_1^{(b)}(B_1)}{8} - \dfrac{\sqrt{2}\mathbb{M}_3^{(1,-1;a)}(B_1, 2)\mathbb{T}_1^{(b)}(B_1)}{8} + \dfrac{\sqrt{30}\mathbb{M}_3^{(1,-1;a)}(B_2, 1)\mathbb{T}_1^{(b)}(B_2)}{8} + \dfrac{\sqrt{2}\mathbb{M}_3^{(1,-1;a)}(B_2, 2)\mathbb{T}_1^{(b)}(B_2)}{8}$

$\boxed{\text{z38}}$ $\quad \mathbb{Q}_1^{(1,0;c)}(A_1, a) = -\dfrac{\sqrt{2}\,\mathbb{G}_1^{(1,0;a)}(B_1)\mathbb{Q}_1^{(b)}(B_1)}{2} + \dfrac{\sqrt{2}\,\mathbb{G}_1^{(1,0;a)}(B_2)\mathbb{Q}_1^{(b)}(B_2)}{2}$

$\boxed{\text{z39}}$ $\quad \mathbb{Q}_1^{(1,0;c)}(A_1, b) = \dfrac{\sqrt{2}\,\mathbb{T}_2^{(1,0;a)}(B_1)\mathbb{T}_1^{(b)}(B_1)}{2} + \dfrac{\sqrt{2}\,\mathbb{T}_2^{(1,0;a)}(B_2)\mathbb{T}_1^{(b)}(B_2)}{2}$

$\boxed{\text{z40}}$ $\quad \mathbb{Q}_2^{(1,0;c)}(A_1, 1) = \mathbb{T}_2^{(1,0;a)}(A_1, 1)\mathbb{T}_0^{(b)}(A_1)$

$\boxed{\text{z41}}$ $\quad \mathbb{Q}_2^{(1,0;c)}(A_1, 2a) = -\mathbb{G}_1^{(1,0;a)}(A_2)\mathbb{Q}_2^{(b)}(A_2)$

$\boxed{\text{z42}}$ $\quad \mathbb{Q}_2^{(1,0;c)}(A_1, 2b) = \mathbb{T}_2^{(1,0;a)}(A_1, 2)\mathbb{T}_0^{(b)}(A_1)$

$\boxed{\text{z43}}$ $\quad \mathbb{Q}_2^{(1,0;c)}(A_1, 2c) = \mathbb{T}_2^{(1,0;a)}(A_2)\mathbb{M}_1^{(b)}(A_2)$

$\boxed{\text{z44}}$ $\quad \mathbb{Q}_3^{(1,0;c)}(A_1, 2) = \dfrac{\sqrt{2}\,\mathbb{T}_2^{(1,0;a)}(B_1)\mathbb{T}_1^{(b)}(B_1)}{2} - \dfrac{\sqrt{2}\,\mathbb{T}_2^{(1,0;a)}(B_2)\mathbb{T}_1^{(b)}(B_2)}{2}$

$\boxed{\text{z45}}$ $\quad \mathbb{Q}_0^{(1,1;c)}(A_1, a) = \mathbb{Q}_0^{(1,1;a)}(A_1)\mathbb{Q}_0^{(b)}(A_1)$

$\boxed{\text{z46}}$ $\quad \mathbb{Q}_0^{(1,1;c)}(A_1, b) = \mathbb{M}_1^{(1,1;a)}(A_2)\mathbb{M}_1^{(b)}(A_2)$

$\boxed{\text{z47}}$ $\quad \mathbb{Q}_1^{(1,1;c)}(A_1) = -\dfrac{\sqrt{2}\,\mathbb{M}_1^{(1,1;a)}(B_1)\mathbb{T}_1^{(b)}(B_1)}{2} + \dfrac{\sqrt{2}\,\mathbb{M}_1^{(1,1;a)}(B_2)\mathbb{T}_1^{(b)}(B_2)}{2}$

$\boxed{\text{z48}}$ $\quad \mathbb{G}_2^{(c)}(A_1) = \dfrac{\sqrt{2}\,\mathbb{M}_1^{(a)}(B_1)\mathbb{T}_1^{(b)}(B_1)}{2} + \dfrac{\sqrt{2}\,\mathbb{M}_1^{(a)}(B_2)\mathbb{T}_1^{(b)}(B_2)}{2}$

$\boxed{\text{z49}}$ $\quad \mathbb{G}_2^{(1,-1;c)}(A_1, a) = -\dfrac{\sqrt{2}\,\mathbb{M}_3^{(1,-1;a)}(B_1,1)\mathbb{T}_1^{(b)}(B_1)}{8} - \dfrac{\sqrt{30}\,\mathbb{M}_3^{(1,-1;a)}(B_1,2)\mathbb{T}_1^{(b)}(B_1)}{8} - \dfrac{\sqrt{2}\,\mathbb{M}_3^{(1,-1;a)}(B_2,1)\mathbb{T}_1^{(b)}(B_2)}{8} + \dfrac{\sqrt{30}\,\mathbb{M}_3^{(1,-1;a)}(B_2,2)\mathbb{T}_1^{(b)}(B_2)}{8}$

$\boxed{\text{z50}}$ $\quad \mathbb{G}_2^{(1,-1;c)}(A_1, b) = \dfrac{\sqrt{2}\,\mathbb{M}_1^{(1,-1;a)}(B_1)\mathbb{T}_1^{(b)}(B_1)}{2} + \dfrac{\sqrt{2}\,\mathbb{M}_1^{(1,-1;a)}(B_2)\mathbb{T}_1^{(b)}(B_2)}{2}$

$\boxed{\text{z51}}$ $\quad \mathbb{G}_3^{(1,-1;c)}(A_1) = \mathbb{M}_3^{(1,-1;a)}(A_1)\mathbb{T}_0^{(b)}(A_1)$

$\boxed{\text{z52}}$ $\quad \mathbb{G}_4^{(1,-1;c)}(A_1, 1) = -\dfrac{\sqrt{5}\,\mathbb{M}_3^{(1,-1;a)}(B_1,1)\mathbb{T}_1^{(b)}(B_1)}{4} - \dfrac{\sqrt{3}\,\mathbb{M}_3^{(1,-1;a)}(B_1,2)\mathbb{T}_1^{(b)}(B_1)}{4} + \dfrac{\sqrt{5}\,\mathbb{M}_3^{(1,-1;a)}(B_2,1)\mathbb{T}_1^{(b)}(B_2)}{4} - \dfrac{\sqrt{3}\,\mathbb{M}_3^{(1,-1;a)}(B_2,2)\mathbb{T}_1^{(b)}(B_2)}{4}$

$\boxed{\text{z53}}$ $\quad \mathbb{G}_2^{(1,0;c)}(A_1) = \dfrac{\sqrt{2}\,\mathbb{G}_1^{(1,0;a)}(B_1)\mathbb{Q}_1^{(b)}(B_1)}{2} + \dfrac{\sqrt{2}\,\mathbb{G}_1^{(1,0;a)}(B_2)\mathbb{Q}_1^{(b)}(B_2)}{2}$

$$\boxed{\text{z54}}\quad \mathbb{G}_2^{(1,1;c)}(A_1) = \frac{\sqrt{2}\mathbb{M}_1^{(1,1;a)}(B_1)\mathbb{T}_1^{(b)}(B_1)}{2} + \frac{\sqrt{2}\mathbb{M}_1^{(1,1;a)}(B_2)\mathbb{T}_1^{(b)}(B_2)}{2}$$

$$\boxed{\text{z157}}\quad \mathbb{Q}_2^{(c)}(A_2,a) = \mathbb{Q}_0^{(a)}(A_1)\mathbb{Q}_2^{(b)}(A_2)$$

$$\boxed{\text{z158}}\quad \mathbb{Q}_2^{(c)}(A_2,b) = \mathbb{Q}_2^{(a)}(A_2)\mathbb{Q}_0^{(b)}(A_1)$$

$$\boxed{\text{z159}}\quad \mathbb{Q}_2^{(c)}(A_2,c) = -\mathbb{Q}_2^{(a)}(A_1,1)\mathbb{Q}_2^{(b)}(A_2)$$

$$\boxed{\text{z160}}\quad \mathbb{Q}_3^{(c)}(A_2) = \frac{\sqrt{2}\mathbb{Q}_2^{(a)}(B_1)\mathbb{Q}_1^{(b)}(B_2)}{2} + \frac{\sqrt{2}\mathbb{Q}_2^{(a)}(B_2)\mathbb{Q}_1^{(b)}(B_1)}{2}$$

$$\boxed{\text{z161}}\quad \mathbb{Q}_4^{(c)}(A_2,1) = \mathbb{Q}_2^{(a)}(A_1,2)\mathbb{Q}_2^{(b)}(A_2)$$

$$\boxed{\text{z162}}\quad \mathbb{Q}_2^{(1,-1;c)}(A_2,a) = \mathbb{Q}_2^{(1,-1;a)}(A_2)\mathbb{Q}_0^{(b)}(A_1)$$

$$\boxed{\text{z163}}\quad \mathbb{Q}_2^{(1,-1;c)}(A_2,b) = -\mathbb{Q}_2^{(1,-1;a)}(A_1,1)\mathbb{Q}_2^{(b)}(A_2)$$

$$\boxed{\text{z164}}\quad \mathbb{Q}_2^{(1,-1;c)}(A_2,c) = \mathbb{M}_3^{(1,-1;a)}(A_1)\mathbb{M}_1^{(b)}(A_2)$$

$$\boxed{\text{z165}}\quad \mathbb{Q}_3^{(1,-1;c)}(A_2,a) = \frac{\sqrt{2}\mathbb{Q}_2^{(1,-1;a)}(B_1)\mathbb{Q}_1^{(b)}(B_2)}{2} + \frac{\sqrt{2}\mathbb{Q}_2^{(1,-1;a)}(B_2)\mathbb{Q}_1^{(b)}(B_1)}{2}$$

$$\boxed{\text{z166}}\quad \mathbb{Q}_3^{(1,-1;c)}(A_2,b) = -\frac{\sqrt{2}\mathbb{M}_3^{(1,-1;a)}(B_1,2)\mathbb{T}_1^{(b)}(B_2)}{2} - \frac{\sqrt{2}\mathbb{M}_3^{(1,-1;a)}(B_2,2)\mathbb{T}_1^{(b)}(B_1)}{2}$$

$$\boxed{\text{z167}}\quad \mathbb{Q}_4^{(1,-1;c)}(A_2,1) = \mathbb{Q}_2^{(1,-1;a)}(A_1,2)\mathbb{Q}_2^{(b)}(A_2)$$

$$\boxed{\text{z168}}\quad \mathbb{Q}_2^{(1,0;c)}(A_2,a) = \mathbb{T}_2^{(1,0;a)}(A_2)\mathbb{T}_0^{(b)}(A_1)$$

$$\boxed{\text{z169}}\quad \mathbb{Q}_2^{(1,0;c)}(A_2,b) = -\mathbb{T}_2^{(1,0;a)}(A_1,2)\mathbb{M}_1^{(b)}(A_2)$$

$$\boxed{\text{z170}}\quad \mathbb{Q}_3^{(1,0;c)}(A_2) = \frac{\sqrt{2}\mathbb{T}_2^{(1,0;a)}(B_1)\mathbb{T}_1^{(b)}(B_2)}{2} + \frac{\sqrt{2}\mathbb{T}_2^{(1,0;a)}(B_2)\mathbb{T}_1^{(b)}(B_1)}{2}$$

$$\boxed{\text{z171}}\quad \mathbb{Q}_2^{(1,1;c)}(A_2) = \mathbb{Q}_0^{(1,1;a)}(A_1)\mathbb{Q}_2^{(b)}(A_2)$$

$$\boxed{\text{z172}}\quad \mathbb{G}_0^{(c)}(A_2) = \frac{\sqrt{2}\mathbb{M}_1^{(a)}(B_1)\mathbb{T}_1^{(b)}(B_2)}{2} + \frac{\sqrt{2}\mathbb{M}_1^{(a)}(B_2)\mathbb{T}_1^{(b)}(B_1)}{2}$$

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z173 $\mathbb{G}_1^{(c)}(A_2) = \mathbb{M}_1^{(a)}(A_2)\mathbb{T}_0^{(b)}(A_1)$

z174 $\mathbb{G}_2^{(c)}(A_2, 1) = \dfrac{\sqrt{2}\mathbb{Q}_2^{(a)}(B_1)\mathbb{Q}_1^{(b)}(B_2)}{2} - \dfrac{\sqrt{2}\mathbb{Q}_2^{(a)}(B_2)\mathbb{Q}_1^{(b)}(B_1)}{2}$

z175 $\mathbb{G}_2^{(c)}(A_2, 2) = -\dfrac{\sqrt{2}\mathbb{M}_1^{(a)}(B_1)\mathbb{T}_1^{(b)}(B_2)}{2} + \dfrac{\sqrt{2}\mathbb{M}_1^{(a)}(B_2)\mathbb{T}_1^{(b)}(B_1)}{2}$

z176 $\mathbb{G}_0^{(1,-1;c)}(A_2) = \dfrac{\sqrt{2}\mathbb{M}_1^{(1,-1;a)}(B_1)\mathbb{T}_1^{(b)}(B_2)}{2} + \dfrac{\sqrt{2}\mathbb{M}_1^{(1,-1;a)}(B_2)\mathbb{T}_1^{(b)}(B_1)}{2}$

z177 $\mathbb{G}_1^{(1,-1;c)}(A_2) = \mathbb{M}_1^{(1,-1;a)}(A_2)\mathbb{T}_0^{(b)}(A_1)$

z178 $\mathbb{G}_2^{(1,-1;c)}(A_2, 1a) = \dfrac{\sqrt{2}\mathbb{Q}_2^{(1,-1;a)}(B_1)\mathbb{Q}_1^{(b)}(B_2)}{2} - \dfrac{\sqrt{2}\mathbb{Q}_2^{(1,-1;a)}(B_2)\mathbb{Q}_1^{(b)}(B_1)}{2}$

z179 $\mathbb{G}_2^{(1,-1;c)}(A_2, 1b) = -\dfrac{\sqrt{3}\mathbb{M}_3^{(1,-1;a)}(B_1, 1)\mathbb{T}_1^{(b)}(B_2)}{4} + \dfrac{\sqrt{5}\mathbb{M}_3^{(1,-1;a)}(B_1, 2)\mathbb{T}_1^{(b)}(B_2)}{4} - \dfrac{\sqrt{3}\mathbb{M}_3^{(1,-1;a)}(B_2, 1)\mathbb{T}_1^{(b)}(B_1)}{4} - \dfrac{\sqrt{5}\mathbb{M}_3^{(1,-1;a)}(B_2, 2)\mathbb{T}_1^{(b)}(B_1)}{4}$

z180 $\mathbb{G}_2^{(1,-1;c)}(A_2, 2a) = -\dfrac{\sqrt{2}\mathbb{M}_3^{(1,-1;a)}(B_1, 1)\mathbb{T}_1^{(b)}(B_2)}{2} + \dfrac{\sqrt{2}\mathbb{M}_3^{(1,-1;a)}(B_2, 1)\mathbb{T}_1^{(b)}(B_1)}{2}$

z181 $\mathbb{G}_2^{(1,-1;c)}(A_2, 2b) = -\dfrac{\sqrt{2}\mathbb{M}_1^{(1,-1;a)}(B_1)\mathbb{T}_1^{(b)}(B_2)}{2} + \dfrac{\sqrt{2}\mathbb{M}_1^{(1,-1;a)}(B_2)\mathbb{T}_1^{(b)}(B_1)}{2}$

z182 $\mathbb{G}_3^{(1,-1;c)}(A_2, 1) = \mathbb{M}_3^{(1,-1;a)}(A_2, 1)\mathbb{T}_0^{(b)}(A_1)$

z183 $\mathbb{G}_3^{(1,-1;c)}(A_2, 2) = \mathbb{M}_3^{(1,-1;a)}(A_2, 2)\mathbb{T}_0^{(b)}(A_1)$

z184 $\mathbb{G}_4^{(1,-1;c)}(A_2, 1) = \dfrac{\sqrt{5}\mathbb{M}_3^{(1,-1;a)}(B_1, 1)\mathbb{T}_1^{(b)}(B_2)}{4} + \dfrac{\sqrt{3}\mathbb{M}_3^{(1,-1;a)}(B_1, 2)\mathbb{T}_1^{(b)}(B_2)}{4} + \dfrac{\sqrt{5}\mathbb{M}_3^{(1,-1;a)}(B_2, 1)\mathbb{T}_1^{(b)}(B_1)}{4} - \dfrac{\sqrt{3}\mathbb{M}_3^{(1,-1;a)}(B_2, 2)\mathbb{T}_1^{(b)}(B_1)}{4}$

z185 $\mathbb{G}_0^{(1,0;c)}(A_2) = \dfrac{\sqrt{2}\mathbb{G}_1^{(1,0;a)}(B_1)\mathbb{Q}_1^{(b)}(B_2)}{2} + \dfrac{\sqrt{2}\mathbb{G}_1^{(1,0;a)}(B_2)\mathbb{Q}_1^{(b)}(B_1)}{2}$

z186 $\mathbb{G}_1^{(1,0;c)}(A_2, a) = \mathbb{G}_1^{(1,0;a)}(A_2)\mathbb{Q}_0^{(b)}(A_1)$

z187 $\mathbb{G}_1^{(1,0;c)}(A_2, b) = \mathbb{T}_2^{(1,0;a)}(A_1, 1)\mathbb{M}_1^{(b)}(A_2)$

$\boxed{\text{z188}}$ $\mathbb{G}_2^{(1,0;c)}(A_2,1) = \dfrac{\sqrt{2}\mathbb{T}_2^{(1,0;a)}(B_1)\mathbb{T}_1^{(b)}(B_2)}{2} - \dfrac{\sqrt{2}\mathbb{T}_2^{(1,0;a)}(B_2)\mathbb{T}_1^{(b)}(B_1)}{2}$

$\boxed{\text{z189}}$ $\mathbb{G}_2^{(1,0;c)}(A_2,2) = -\dfrac{\sqrt{2}\mathbb{G}_1^{(1,0;a)}(B_1)\mathbb{Q}_1^{(b)}(B_2)}{2} + \dfrac{\sqrt{2}\mathbb{G}_1^{(1,0;a)}(B_2)\mathbb{Q}_1^{(b)}(B_1)}{2}$

$\boxed{\text{z190}}$ $\mathbb{G}_0^{(1,1;c)}(A_2) = \dfrac{\sqrt{2}\mathbb{M}_1^{(1,1;a)}(B_1)\mathbb{T}_1^{(b)}(B_2)}{2} + \dfrac{\sqrt{2}\mathbb{M}_1^{(1,1;a)}(B_2)\mathbb{T}_1^{(b)}(B_1)}{2}$

$\boxed{\text{z191}}$ $\mathbb{G}_1^{(1,1;c)}(A_2) = \mathbb{M}_1^{(1,1;a)}(A_2)\mathbb{T}_0^{(b)}(A_1)$

$\boxed{\text{z192}}$ $\mathbb{G}_2^{(1,1;c)}(A_2,2) = -\dfrac{\sqrt{2}\mathbb{M}_1^{(1,1;a)}(B_1)\mathbb{T}_1^{(b)}(B_2)}{2} + \dfrac{\sqrt{2}\mathbb{M}_1^{(1,1;a)}(B_2)\mathbb{T}_1^{(b)}(B_1)}{2}$

$\boxed{\text{z295}}$ $\mathbb{Q}_1^{(c)}(B_1,a) = \mathbb{Q}_0^{(a)}(A_1)\mathbb{Q}_1^{(b)}(B_1)$

$\boxed{\text{z296}}$ $\mathbb{Q}_1^{(c)}(B_1,b) = -\dfrac{\sqrt{7}\mathbb{Q}_2^{(a)}(A_1,1)\mathbb{Q}_1^{(b)}(B_1)}{7} + \dfrac{\sqrt{21}\mathbb{Q}_2^{(a)}(A_1,2)\mathbb{Q}_1^{(b)}(B_1)}{7} + \dfrac{\sqrt{21}\mathbb{Q}_2^{(a)}(A_2)\mathbb{Q}_1^{(b)}(B_2)}{7}$

$\boxed{\text{z297}}$ $\mathbb{Q}_1^{(c)}(B_1,c) = -\mathbb{M}_1^{(a)}(A_2)\mathbb{T}_1^{(b)}(B_2)$

$\boxed{\text{z298}}$ $\mathbb{Q}_2^{(c)}(B_1,a) = \mathbb{Q}_2^{(a)}(B_1)\mathbb{Q}_0^{(b)}(A_1)$

$\boxed{\text{z299}}$ $\mathbb{Q}_2^{(c)}(B_1,b) = \mathbb{Q}_2^{(a)}(B_2)\mathbb{Q}_2^{(b)}(A_2)$

$\boxed{\text{z300}}$ $\mathbb{Q}_2^{(c)}(B_1,c) = \mathbb{M}_1^{(a)}(B_2)\mathbb{M}_1^{(b)}(A_2)$

$\boxed{\text{z301}}$ $\mathbb{Q}_3^{(c)}(B_1,1) = -\dfrac{\sqrt{21}\mathbb{Q}_2^{(a)}(A_1,1)\mathbb{Q}_1^{(b)}(B_1)}{14} + \dfrac{3\sqrt{7}\mathbb{Q}_2^{(a)}(A_1,2)\mathbb{Q}_1^{(b)}(B_1)}{14} - \dfrac{2\sqrt{7}\mathbb{Q}_2^{(a)}(A_2)\mathbb{Q}_1^{(b)}(B_2)}{7}$

$\boxed{\text{z302}}$ $\mathbb{Q}_3^{(c)}(B_1,2) = -\dfrac{\sqrt{3}\mathbb{Q}_2^{(a)}(A_1,1)\mathbb{Q}_1^{(b)}(B_1)}{2} - \dfrac{\mathbb{Q}_2^{(a)}(A_1,2)\mathbb{Q}_1^{(b)}(B_1)}{2}$

$\boxed{\text{z303}}$ $\mathbb{Q}_1^{(1,-1;c)}(B_1,a) = -\dfrac{\sqrt{7}\mathbb{Q}_2^{(1,-1;a)}(A_1,1)\mathbb{Q}_1^{(b)}(B_1)}{7} + \dfrac{\sqrt{21}\mathbb{Q}_2^{(1,-1;a)}(A_1,2)\mathbb{Q}_1^{(b)}(B_1)}{7} + \dfrac{\sqrt{21}\mathbb{Q}_2^{(1,-1;a)}(A_2)\mathbb{Q}_1^{(b)}(B_2)}{7}$

$\boxed{\text{z304}}$ $\mathbb{Q}_1^{(1,-1;c)}(B_1,b) = -\mathbb{M}_1^{(1,-1;a)}(A_2)\mathbb{T}_1^{(b)}(B_2)$

$\boxed{\text{z305}}$ $\mathbb{Q}_2^{(1,-1;c)}(B_1,a) = \mathbb{Q}_2^{(1,-1;a)}(B_1)\mathbb{Q}_0^{(b)}(A_1)$

$\boxed{\text{z306}}$ $\mathbb{Q}_2^{(1,-1;c)}(B_1,b) = \mathbb{Q}_2^{(1,-1;a)}(B_2)\mathbb{Q}_2^{(b)}(A_2)$

$\boxed{\text{z307}}$ $\mathbb{Q}_2^{(1,-1;c)}(B_1,c) = -\dfrac{\sqrt{6}\mathbb{M}_3^{(1,-1;a)}(B_2,1)\mathbb{M}_1^{(b)}(A_2)}{4} - \dfrac{\sqrt{10}\mathbb{M}_3^{(1,-1;a)}(B_2,2)\mathbb{M}_1^{(b)}(A_2)}{4}$

$\boxed{\text{z308}}$ $\mathbb{Q}_2^{(1,-1;c)}(B_1,d) = \mathbb{M}_1^{(1,-1;a)}(B_2)\mathbb{M}_1^{(b)}(A_2)$

$\boxed{\text{z309}}$ $\mathbb{Q}_3^{(1,-1;c)}(B_1,1a) = -\dfrac{\sqrt{21}\mathbb{Q}_2^{(1,-1;a)}(A_1,1)\mathbb{Q}_1^{(b)}(B_1)}{14} + \dfrac{3\sqrt{7}\mathbb{Q}_2^{(1,-1;a)}(A_1,2)\mathbb{Q}_1^{(b)}(B_1)}{14} - \dfrac{2\sqrt{7}\mathbb{Q}_2^{(1,-1;a)}(A_2)\mathbb{Q}_1^{(b)}(B_2)}{7}$

$\boxed{\text{z310}}$ $\mathbb{Q}_3^{(1,-1;c)}(B_1,1b) = \dfrac{\sqrt{6}\mathbb{M}_3^{(1,-1;a)}(A_2,1)\mathbb{T}_1^{(b)}(B_2)}{4} - \dfrac{\sqrt{10}\mathbb{M}_3^{(1,-1;a)}(A_2,2)\mathbb{T}_1^{(b)}(B_2)}{4}$

$\boxed{\text{z311}}$ $\mathbb{Q}_3^{(1,-1;c)}(B_1,2a) = -\dfrac{\sqrt{3}\mathbb{Q}_2^{(1,-1;a)}(A_1,1)\mathbb{Q}_1^{(b)}(B_1)}{2} - \dfrac{\mathbb{Q}_2^{(1,-1;a)}(A_1,2)\mathbb{Q}_1^{(b)}(B_1)}{2}$

$\boxed{\text{z312}}$ $\mathbb{Q}_3^{(1,-1;c)}(B_1,2b) = \dfrac{2\sqrt{22}\mathbb{M}_3^{(1,-1;a)}(A_1)\mathbb{T}_1^{(b)}(B_1)}{11} + \dfrac{\sqrt{330}\mathbb{M}_3^{(1,-1;a)}(A_2,1)\mathbb{T}_1^{(b)}(B_2)}{44} + \dfrac{3\sqrt{22}\mathbb{M}_3^{(1,-1;a)}(A_2,2)\mathbb{T}_1^{(b)}(B_2)}{44}$

$\boxed{\text{z313}}$ $\mathbb{Q}_4^{(1,-1;c)}(B_1,1) = -\dfrac{\sqrt{10}\mathbb{M}_3^{(1,-1;a)}(B_2,1)\mathbb{M}_1^{(b)}(A_2)}{4} + \dfrac{\sqrt{6}\mathbb{M}_3^{(1,-1;a)}(B_2,2)\mathbb{M}_1^{(b)}(A_2)}{4}$

$\boxed{\text{z314}}$ $\mathbb{Q}_1^{(1,0;c)}(B_1,a) = -\mathbb{G}_1^{(1,0;a)}(A_2)\mathbb{Q}_1^{(b)}(B_2)$

$\boxed{\text{z315}}$ $\mathbb{Q}_1^{(1,0;c)}(B_1,b) = -\dfrac{\sqrt{7}\mathbb{T}_2^{(1,0;a)}(A_1,1)\mathbb{T}_1^{(b)}(B_1)}{7} + \dfrac{\sqrt{21}\mathbb{T}_2^{(1,0;a)}(A_1,2)\mathbb{T}_1^{(b)}(B_1)}{7} + \dfrac{\sqrt{21}\mathbb{T}_2^{(1,0;a)}(A_2)\mathbb{T}_1^{(b)}(B_2)}{7}$

$\boxed{\text{z316}}$ $\mathbb{Q}_2^{(1,0;c)}(B_1,a) = \mathbb{G}_1^{(1,0;a)}(B_2)\mathbb{Q}_2^{(b)}(A_2)$

$\boxed{\text{z317}}$ $\mathbb{Q}_2^{(1,0;c)}(B_1,b) = \mathbb{T}_2^{(1,0;a)}(B_1)\mathbb{T}_0^{(b)}(A_1)$

$\boxed{\text{z318}}$ $\mathbb{Q}_2^{(1,0;c)}(B_1,c) = \mathbb{T}_2^{(1,0;a)}(B_2)\mathbb{M}_1^{(b)}(A_2)$

$\boxed{\text{z319}}$ $\mathbb{Q}_3^{(1,0;c)}(B_1,1) = -\dfrac{\sqrt{21}\mathbb{T}_2^{(1,0;a)}(A_1,1)\mathbb{T}_1^{(b)}(B_1)}{14} + \dfrac{3\sqrt{7}\mathbb{T}_2^{(1,0;a)}(A_1,2)\mathbb{T}_1^{(b)}(B_1)}{14} - \dfrac{2\sqrt{7}\mathbb{T}_2^{(1,0;a)}(A_2)\mathbb{T}_1^{(b)}(B_2)}{7}$

$\boxed{\text{z320}}$ $\mathbb{Q}_3^{(1,0;c)}(B_1,2) = -\dfrac{\sqrt{3}\mathbb{T}_2^{(1,0;a)}(A_1,1)\mathbb{T}_1^{(b)}(B_1)}{2} - \dfrac{\mathbb{T}_2^{(1,0;a)}(A_1,2)\mathbb{T}_1^{(b)}(B_1)}{2}$

$\boxed{\text{z321}}$ $\mathbb{Q}_1^{(1,1;c)}(B_1,a) = \mathbb{Q}_0^{(1,1;a)}(A_1)\mathbb{Q}_1^{(b)}(B_1)$

$\boxed{\text{z322}}$ $\mathbb{Q}_1^{(1,1;c)}(B_1,b) = -\mathbb{M}_1^{(1,1;a)}(A_2)\mathbb{T}_1^{(b)}(B_2)$

$\boxed{\text{z323}}$ $\mathbb{Q}_2^{(1,1;c)}(B_1) = \mathbb{M}_1^{(1,1;a)}(B_2)\mathbb{M}_1^{(b)}(A_2)$

$\boxed{\text{z324}}$ $\mathbb{G}_1^{(c)}(B_1) = \mathbb{M}_1^{(a)}(B_1)\mathbb{T}_0^{(b)}(A_1)$

$\boxed{\text{z325}}$ $\mathbb{G}_1^{(1,-1;c)}(B_1) = \mathbb{M}_1^{(1,-1;a)}(B_1)\mathbb{T}_0^{(b)}(A_1)$

$\boxed{\text{z326}}$ $\mathbb{G}_2^{(1,-1;c)}(B_1) = \dfrac{\sqrt{33}\mathbb{M}_3^{(1,-1;a)}(A_1)\mathbb{T}_1^{(b)}(B_1)}{11} - \dfrac{\sqrt{55}\mathbb{M}_3^{(1,-1;a)}(A_2,1)\mathbb{T}_1^{(b)}(B_2)}{11} - \dfrac{\sqrt{33}\mathbb{M}_3^{(1,-1;a)}(A_2,2)\mathbb{T}_1^{(b)}(B_2)}{11}$

$\boxed{\text{z327}}$ $\mathbb{G}_3^{(1,-1;c)}(B_1,1) = \mathbb{M}_3^{(1,-1;a)}(B_1,1)\mathbb{T}_0^{(b)}(A_1)$

$\boxed{\text{z328}}$ $\mathbb{G}_3^{(1,-1;c)}(B_1,2) = \mathbb{M}_3^{(1,-1;a)}(B_1,2)\mathbb{T}_0^{(b)}(A_1)$

$\boxed{\text{z329}}$ $\mathbb{G}_1^{(1,0;c)}(B_1) = \mathbb{G}_1^{(1,0;a)}(B_1)\mathbb{Q}_0^{(b)}(A_1)$

$\boxed{\text{z330}}$ $\mathbb{G}_1^{(1,1;c)}(B_1) = \mathbb{M}_1^{(1,1;a)}(B_1)\mathbb{T}_0^{(b)}(A_1)$

$\boxed{\text{z439}}$ $\mathbb{Q}_1^{(c)}(B_2,a) = \mathbb{Q}_0^{(a)}(A_1)\mathbb{Q}_1^{(b)}(B_2)$

$\boxed{\text{z440}}$ $\mathbb{Q}_1^{(c)}(B_2,b) = -\dfrac{\sqrt{7}\mathbb{Q}_2^{(a)}(A_1,1)\mathbb{Q}_1^{(b)}(B_2)}{7} - \dfrac{\sqrt{21}\mathbb{Q}_2^{(a)}(A_1,2)\mathbb{Q}_1^{(b)}(B_2)}{7} + \dfrac{\sqrt{21}\mathbb{Q}_2^{(a)}(A_2)\mathbb{Q}_1^{(b)}(B_1)}{7}$

$\boxed{\text{z441}}$ $\mathbb{Q}_1^{(c)}(B_2,c) = \mathbb{M}_1^{(a)}(A_2)\mathbb{T}_1^{(b)}(B_1)$

$\boxed{\text{z442}}$ $\mathbb{Q}_2^{(c)}(B_2,a) = \mathbb{Q}_2^{(a)}(B_2)\mathbb{Q}_0^{(b)}(A_1)$

$\boxed{\text{z443}}$ $\mathbb{Q}_2^{(c)}(B_2,b) = \mathbb{Q}_2^{(a)}(B_1)\mathbb{Q}_2^{(b)}(A_2)$

$\boxed{\text{z444}}$ $\mathbb{Q}_2^{(c)}(B_2,c) = \mathbb{M}_1^{(a)}(B_1)\mathbb{M}_1^{(b)}(A_2)$

$\boxed{\text{z445}}$ $\mathbb{Q}_3^{(c)}(B_2,1) = -\dfrac{\sqrt{21}\mathbb{Q}_2^{(a)}(A_1,1)\mathbb{Q}_1^{(b)}(B_2)}{14} - \dfrac{3\sqrt{7}\mathbb{Q}_2^{(a)}(A_1,2)\mathbb{Q}_1^{(b)}(B_2)}{14} - \dfrac{2\sqrt{7}\mathbb{Q}_2^{(a)}(A_2)\mathbb{Q}_1^{(b)}(B_1)}{7}$

$\boxed{\text{z446}}$ $\mathbb{Q}_3^{(c)}(B_2,2) = \dfrac{\sqrt{3}\mathbb{Q}_2^{(a)}(A_1,1)\mathbb{Q}_1^{(b)}(B_2)}{2} - \dfrac{\mathbb{Q}_2^{(a)}(A_1,2)\mathbb{Q}_1^{(b)}(B_2)}{2}$

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$\boxed{\text{z447}}$ $\quad \mathbb{Q}_1^{(1,-1;c)}(B_2,a) = -\dfrac{\sqrt{7}\mathbb{Q}_2^{(1,-1;a)}(A_1,1)\mathbb{Q}_1^{(b)}(B_2)}{7} - \dfrac{\sqrt{21}\mathbb{Q}_2^{(1,-1;a)}(A_1,2)\mathbb{Q}_1^{(b)}(B_2)}{7} + \dfrac{\sqrt{21}\mathbb{Q}_2^{(1,-1;a)}(A_2)\mathbb{Q}_1^{(b)}(B_1)}{7}$

$\boxed{\text{z448}}$ $\quad \mathbb{Q}_1^{(1,-1;c)}(B_2,b) = \mathbb{M}_1^{(1,-1;a)}(A_2)\mathbb{T}_1^{(b)}(B_1)$

$\boxed{\text{z449}}$ $\quad \mathbb{Q}_2^{(1,-1;c)}(B_2,a) = \mathbb{Q}_2^{(1,-1;a)}(B_2)\mathbb{Q}_0^{(b)}(A_1)$

$\boxed{\text{z450}}$ $\quad \mathbb{Q}_2^{(1,-1;c)}(B_2,b) = \mathbb{Q}_2^{(1,-1;a)}(B_1)\mathbb{Q}_2^{(b)}(A_2)$

$\boxed{\text{z451}}$ $\quad \mathbb{Q}_2^{(1,-1;c)}(B_2,c) = -\dfrac{\sqrt{6}\mathbb{M}_3^{(1,-1;a)}(B_1,1)\mathbb{M}_1^{(b)}(A_2)}{4} + \dfrac{\sqrt{10}\mathbb{M}_3^{(1,-1;a)}(B_1,2)\mathbb{M}_1^{(b)}(A_2)}{4}$

$\boxed{\text{z452}}$ $\quad \mathbb{Q}_2^{(1,-1;c)}(B_2,d) = \mathbb{M}_1^{(1,-1;a)}(B_1)\mathbb{M}_1^{(b)}(A_2)$

$\boxed{\text{z453}}$ $\quad \mathbb{Q}_3^{(1,-1;c)}(B_2,1a) = -\dfrac{\sqrt{21}\mathbb{Q}_2^{(1,-1;a)}(A_1,1)\mathbb{Q}_1^{(b)}(B_2)}{14} - \dfrac{3\sqrt{7}\mathbb{Q}_2^{(1,-1;a)}(A_1,2)\mathbb{Q}_1^{(b)}(B_2)}{14} - \dfrac{2\sqrt{7}\mathbb{Q}_2^{(1,-1;a)}(A_2)\mathbb{Q}_1^{(b)}(B_1)}{7}$

$\boxed{\text{z454}}$ $\quad \mathbb{Q}_3^{(1,-1;c)}(B_2,1b) = -\dfrac{\sqrt{6}\mathbb{M}_3^{(1,-1;a)}(A_2,1)\mathbb{T}_1^{(b)}(B_1)}{4} - \dfrac{\sqrt{10}\mathbb{M}_3^{(1,-1;a)}(A_2,2)\mathbb{T}_1^{(b)}(B_1)}{4}$

$\boxed{\text{z455}}$ $\quad \mathbb{Q}_3^{(1,-1;c)}(B_2,2a) = \dfrac{\sqrt{3}\mathbb{Q}_2^{(1,-1;a)}(A_1,1)\mathbb{Q}_1^{(b)}(B_2)}{2} - \dfrac{\mathbb{Q}_2^{(1,-1;a)}(A_1,2)\mathbb{Q}_1^{(b)}(B_2)}{2}$

$\boxed{\text{z456}}$ $\quad \mathbb{Q}_3^{(1,-1;c)}(B_2,2b) = \dfrac{2\sqrt{22}\mathbb{M}_3^{(1,-1;a)}(A_1)\mathbb{T}_1^{(b)}(B_2)}{11} + \dfrac{\sqrt{330}\mathbb{M}_3^{(1,-1;a)}(A_2,1)\mathbb{T}_1^{(b)}(B_1)}{44} - \dfrac{3\sqrt{22}\mathbb{M}_3^{(1,-1;a)}(A_2,2)\mathbb{T}_1^{(b)}(B_1)}{44}$

$\boxed{\text{z457}}$ $\quad \mathbb{Q}_4^{(1,-1;c)}(B_2,1) = \dfrac{\sqrt{10}\mathbb{M}_3^{(1,-1;a)}(B_1,1)\mathbb{M}_1^{(b)}(A_2)}{4} + \dfrac{\sqrt{6}\mathbb{M}_3^{(1,-1;a)}(B_1,2)\mathbb{M}_1^{(b)}(A_2)}{4}$

$\boxed{\text{z458}}$ $\quad \mathbb{Q}_1^{(1,0;c)}(B_2,a) = \mathbb{G}_1^{(1,0;a)}(A_2)\mathbb{Q}_1^{(b)}(B_1)$

$\boxed{\text{z459}}$ $\quad \mathbb{Q}_1^{(1,0;c)}(B_2,b) = -\dfrac{\sqrt{7}\mathbb{T}_2^{(1,0;a)}(A_1,1)\mathbb{T}_1^{(b)}(B_2)}{7} - \dfrac{\sqrt{21}\mathbb{T}_2^{(1,0;a)}(A_1,2)\mathbb{T}_1^{(b)}(B_2)}{7} + \dfrac{\sqrt{21}\mathbb{T}_2^{(1,0;a)}(A_2)\mathbb{T}_1^{(b)}(B_1)}{7}$

$\boxed{\text{z460}}$ $\quad \mathbb{Q}_2^{(1,0;c)}(B_2,a) = -\mathbb{G}_1^{(1,0;a)}(B_1)\mathbb{Q}_2^{(b)}(A_2)$

$\boxed{\text{z461}}$ $\quad \mathbb{Q}_2^{(1,0;c)}(B_2,b) = \mathbb{T}_2^{(1,0;a)}(B_2)\mathbb{T}_0^{(b)}(A_1)$

$\boxed{\text{z462}}$ $\quad \mathbb{Q}_2^{(1,0;c)}(B_2,c) = -\mathbb{T}_2^{(1,0;a)}(B_1)\mathbb{M}_1^{(b)}(A_2)$

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$\boxed{\text{z463}}$ $\quad \mathbb{Q}_3^{(1,0;c)}(B_2,1) = -\dfrac{\sqrt{21}\,\mathbb{T}_2^{(1,0;a)}(A_1,1)\mathbb{T}_1^{(b)}(B_2)}{14} - \dfrac{3\sqrt{7}\,\mathbb{T}_2^{(1,0;a)}(A_1,2)\mathbb{T}_1^{(b)}(B_2)}{14} - \dfrac{2\sqrt{7}\,\mathbb{T}_2^{(1,0;a)}(A_2)\mathbb{T}_1^{(b)}(B_1)}{7}$

$\boxed{\text{z464}}$ $\quad \mathbb{Q}_3^{(1,0;c)}(B_2,2) = \dfrac{\sqrt{3}\,\mathbb{T}_2^{(1,0;a)}(A_1,1)\mathbb{T}_1^{(b)}(B_2)}{2} - \dfrac{\mathbb{T}_2^{(1,0;a)}(A_1,2)\mathbb{T}_1^{(b)}(B_2)}{2}$

$\boxed{\text{z465}}$ $\quad \mathbb{Q}_1^{(1,1;c)}(B_2,a) = \mathbb{Q}_0^{(1,1;a)}(A_1)\mathbb{Q}_1^{(b)}(B_2)$

$\boxed{\text{z466}}$ $\quad \mathbb{Q}_1^{(1,1;c)}(B_2,b) = \mathbb{M}_1^{(1,1;a)}(A_2)\mathbb{T}_1^{(b)}(B_1)$

$\boxed{\text{z467}}$ $\quad \mathbb{Q}_2^{(1,1;c)}(B_2) = \mathbb{M}_1^{(1,1;a)}(B_1)\mathbb{M}_1^{(b)}(A_2)$

$\boxed{\text{z468}}$ $\quad \mathbb{G}_1^{(c)}(B_2) = \mathbb{M}_1^{(a)}(B_2)\mathbb{T}_0^{(b)}(A_1)$

$\boxed{\text{z469}}$ $\quad \mathbb{G}_1^{(1,-1;c)}(B_2) = \mathbb{M}_1^{(1,-1;a)}(B_2)\mathbb{T}_0^{(b)}(A_1)$

$\boxed{\text{z470}}$ $\quad \mathbb{G}_2^{(1,-1;c)}(B_2) = \dfrac{\sqrt{33}\,\mathbb{M}_3^{(1,-1;a)}(A_1)\mathbb{T}_1^{(b)}(B_2)}{11} - \dfrac{\sqrt{55}\,\mathbb{M}_3^{(1,-1;a)}(A_2,1)\mathbb{T}_1^{(b)}(B_1)}{11} + \dfrac{\sqrt{33}\,\mathbb{M}_3^{(1,-1;a)}(A_2,2)\mathbb{T}_1^{(b)}(B_1)}{11}$

$\boxed{\text{z471}}$ $\quad \mathbb{G}_3^{(1,-1;c)}(B_2,1) = \mathbb{M}_3^{(1,-1;a)}(B_2,1)\mathbb{T}_0^{(b)}(A_1)$

$\boxed{\text{z472}}$ $\quad \mathbb{G}_3^{(1,-1;c)}(B_2,2) = \mathbb{M}_3^{(1,-1;a)}(B_2,2)\mathbb{T}_0^{(b)}(A_1)$

$\boxed{\text{z473}}$ $\quad \mathbb{G}_1^{(1,0;c)}(B_2) = \mathbb{G}_1^{(1,0;a)}(B_2)\mathbb{Q}_0^{(b)}(A_1)$

$\boxed{\text{z474}}$ $\quad \mathbb{G}_1^{(1,1;c)}(B_2) = \mathbb{M}_1^{(1,1;a)}(B_2)\mathbb{T}_0^{(b)}(A_1)$

- 'Sn'-'Te' bond-cluster
  * bra: $\langle p_x,\uparrow|,\ \langle p_x,\downarrow|,\ \langle p_y,\uparrow|,\ \langle p_y,\downarrow|,\ \langle p_z,\uparrow|,\ \langle p_z,\downarrow|$
  * ket: $|p_x,\uparrow\rangle,\ |p_x,\downarrow\rangle,\ |p_y,\uparrow\rangle,\ |p_y,\downarrow\rangle,\ |p_z,\uparrow\rangle,\ |p_z,\downarrow\rangle$
  * wyckoff: `2a@2a`

$\boxed{\text{z55}}$ $\quad \mathbb{Q}_0^{(c)}(A_1) = \mathbb{Q}_0^{(a)}(A_1)\mathbb{Q}_0^{(b)}(A_1)$

$\boxed{\text{z56}}$ $\quad \mathbb{Q}_1^{(c)}(A_1,a) = \mathbb{Q}_2^{(a)}(B_2)\mathbb{Q}_1^{(b)}(B_2)$

$\boxed{\text{z57}}$ $\quad \mathbb{Q}_1^{(c)}(A_1,b) = \mathbb{M}_1^{(a)}(B_2)\mathbb{T}_1^{(b)}(B_2)$

$\boxed{\text{z58}}$ $\quad \mathbb{Q}_2^{(c)}(A_1,1) = \mathbb{Q}_2^{(a)}(A_1,1)\mathbb{Q}_0^{(b)}(A_1)$

$\boxed{\text{z59}}$ $\quad \mathbb{Q}_2^{(c)}(A_1,2) = \mathbb{Q}_2^{(a)}(A_1,2)\mathbb{Q}_0^{(b)}(A_1)$

$\boxed{\text{z60}}$ $\quad \mathbb{Q}_1^{(1,-1;c)}(A_1,a) = \mathbb{Q}_2^{(1,-1;a)}(B_2)\mathbb{Q}_1^{(b)}(B_2)$

$\boxed{\text{z61}}$ $\quad \mathbb{Q}_1^{(1,-1;c)}(A_1,b) = \mathbb{M}_1^{(1,-1;a)}(B_2)\mathbb{T}_1^{(b)}(B_2)$

$\boxed{\text{z62}}$ $\quad \mathbb{Q}_2^{(1,-1;c)}(A_1,1) = \mathbb{Q}_2^{(1,-1;a)}(A_1,1)\mathbb{Q}_0^{(b)}(A_1)$

$\boxed{\text{z63}}$ $\quad \mathbb{Q}_2^{(1,-1;c)}(A_1,2) = \mathbb{Q}_2^{(1,-1;a)}(A_1,2)\mathbb{Q}_0^{(b)}(A_1)$

$\boxed{\text{z64}}$ $\quad \mathbb{Q}_3^{(1,-1;c)}(A_1,1) = -\dfrac{\sqrt{6}\mathbb{M}_3^{(1,-1;a)}(B_2,1)\mathbb{T}_1^{(b)}(B_2)}{4} - \dfrac{\sqrt{10}\mathbb{M}_3^{(1,-1;a)}(B_2,2)\mathbb{T}_1^{(b)}(B_2)}{4}$

$\boxed{\text{z65}}$ $\quad \mathbb{Q}_3^{(1,-1;c)}(A_1,2) = \dfrac{\sqrt{10}\mathbb{M}_3^{(1,-1;a)}(B_2,1)\mathbb{T}_1^{(b)}(B_2)}{4} - \dfrac{\sqrt{6}\mathbb{M}_3^{(1,-1;a)}(B_2,2)\mathbb{T}_1^{(b)}(B_2)}{4}$

$\boxed{\text{z66}}$ $\quad \mathbb{Q}_1^{(1,0;c)}(A_1,a) = \mathbb{G}_1^{(1,0;a)}(B_2)\mathbb{Q}_1^{(b)}(B_2)$

$\boxed{\text{z67}}$ $\quad \mathbb{Q}_1^{(1,0;c)}(A_1,b) = \mathbb{T}_2^{(1,0;a)}(B_2)\mathbb{T}_1^{(b)}(B_2)$

$\boxed{\text{z68}}$ $\quad \mathbb{Q}_2^{(1,0;c)}(A_1,1) = \mathbb{T}_2^{(1,0;a)}(A_1,1)\mathbb{T}_0^{(b)}(A_1)$

$\boxed{\text{z69}}$ $\quad \mathbb{Q}_2^{(1,0;c)}(A_1,2) = \mathbb{T}_2^{(1,0;a)}(A_1,2)\mathbb{T}_0^{(b)}(A_1)$

$\boxed{\text{z70}}$ $\quad \mathbb{Q}_0^{(1,1;c)}(A_1) = \mathbb{Q}_0^{(1,1;a)}(A_1)\mathbb{Q}_0^{(b)}(A_1)$

$\boxed{\text{z71}}$ $\quad \mathbb{Q}_1^{(1,1;c)}(A_1) = \mathbb{M}_1^{(1,1;a)}(B_2)\mathbb{T}_1^{(b)}(B_2)$

$\boxed{\text{z72}}$ $\quad \mathbb{G}_3^{(1,-1;c)}(A_1) = \mathbb{M}_3^{(1,-1;a)}(A_1)\mathbb{T}_0^{(b)}(A_1)$

$\boxed{\text{z193}}$ $\quad \mathbb{Q}_2^{(c)}(A_2) = \mathbb{Q}_2^{(a)}(A_2)\mathbb{Q}_0^{(b)}(A_1)$

$\boxed{\text{z194}}$ $\quad \mathbb{Q}_3^{(c)}(A_2) = \mathbb{Q}_2^{(a)}(B_1)\mathbb{Q}_1^{(b)}(B_2)$

$\boxed{\text{z195}}$ $\quad \mathbb{Q}_2^{(1,-1;c)}(A_2) = \mathbb{Q}_2^{(1,-1;a)}(A_2)\mathbb{Q}_0^{(b)}(A_1)$

$\boxed{\text{z196}}$ $\mathbb{Q}_3^{(1,-1;c)}(A_2, a) = \mathbb{Q}_2^{(1,-1;a)}(B_1)\mathbb{Q}_1^{(b)}(B_2)$

$\boxed{\text{z197}}$ $\mathbb{Q}_3^{(1,-1;c)}(A_2, b) = -\mathbb{M}_3^{(1,-1;a)}(B_1, 2)\mathbb{T}_1^{(b)}(B_2)$

$\boxed{\text{z198}}$ $\mathbb{Q}_2^{(1,0;c)}(A_2) = \mathbb{T}_2^{(1,0;a)}(A_2)\mathbb{T}_0^{(b)}(A_1)$

$\boxed{\text{z199}}$ $\mathbb{Q}_3^{(1,0;c)}(A_2) = \mathbb{T}_2^{(1,0;a)}(B_1)\mathbb{T}_1^{(b)}(B_2)$

$\boxed{\text{z200}}$ $\mathbb{G}_0^{(c)}(A_2) = \mathbb{M}_1^{(a)}(B_1)\mathbb{T}_1^{(b)}(B_2)$

$\boxed{\text{z201}}$ $\mathbb{G}_1^{(c)}(A_2) = \mathbb{M}_1^{(a)}(A_2)\mathbb{T}_0^{(b)}(A_1)$

$\boxed{\text{z202}}$ $\mathbb{G}_0^{(1,-1;c)}(A_2) = \mathbb{M}_1^{(1,-1;a)}(B_1)\mathbb{T}_1^{(b)}(B_2)$

$\boxed{\text{z203}}$ $\mathbb{G}_1^{(1,-1;c)}(A_2) = \mathbb{M}_1^{(1,-1;a)}(A_2)\mathbb{T}_0^{(b)}(A_1)$

$\boxed{\text{z204}}$ $\mathbb{G}_2^{(1,-1;c)}(A_2, 1) = -\mathbb{M}_3^{(1,-1;a)}(B_1, 1)\mathbb{T}_1^{(b)}(B_2)$

$\boxed{\text{z205}}$ $\mathbb{G}_3^{(1,-1;c)}(A_2, 1) = \mathbb{M}_3^{(1,-1;a)}(A_2, 1)\mathbb{T}_0^{(b)}(A_1)$

$\boxed{\text{z206}}$ $\mathbb{G}_3^{(1,-1;c)}(A_2, 2) = \mathbb{M}_3^{(1,-1;a)}(A_2, 2)\mathbb{T}_0^{(b)}(A_1)$

$\boxed{\text{z207}}$ $\mathbb{G}_0^{(1,0;c)}(A_2) = \mathbb{G}_1^{(1,0;a)}(B_1)\mathbb{Q}_1^{(b)}(B_2)$

$\boxed{\text{z208}}$ $\mathbb{G}_1^{(1,0;c)}(A_2) = \mathbb{G}_1^{(1,0;a)}(A_2)\mathbb{Q}_0^{(b)}(A_1)$

$\boxed{\text{z209}}$ $\mathbb{G}_0^{(1,1;c)}(A_2) = \mathbb{M}_1^{(1,1;a)}(B_1)\mathbb{T}_1^{(b)}(B_2)$

$\boxed{\text{z210}}$ $\mathbb{G}_1^{(1,1;c)}(A_2) = \mathbb{M}_1^{(1,1;a)}(A_2)\mathbb{T}_0^{(b)}(A_1)$

$\boxed{\text{z331}}$ $\mathbb{Q}_1^{(c)}(B_1, a) = \mathbb{Q}_2^{(a)}(A_2)\mathbb{Q}_1^{(b)}(B_2)$

$\boxed{\text{z332}}$ $\mathbb{Q}_1^{(c)}(B_1, b) = -\mathbb{M}_1^{(a)}(A_2)\mathbb{T}_1^{(b)}(B_2)$

$\boxed{\text{z333}}$ $\mathbb{Q}_2^{(c)}(B_1) = \mathbb{Q}_2^{(a)}(B_1)\mathbb{Q}_0^{(b)}(A_1)$

$\boxed{\text{z334}}$ $\mathbb{Q}_1^{(1,-1;c)}(B_1, a) = \mathbb{Q}_2^{(1,-1;a)}(A_2)\mathbb{Q}_1^{(b)}(B_2)$

$$\boxed{\text{z335}} \quad \mathbb{Q}_1^{(1,-1;c)}(B_1, b) = -\mathbb{M}_1^{(1,-1;a)}(A_2)\mathbb{T}_1^{(b)}(B_2)$$

$$\boxed{\text{z336}} \quad \mathbb{Q}_2^{(1,-1;c)}(B_1) = \mathbb{Q}_2^{(1,-1;a)}(B_1)\mathbb{Q}_0^{(b)}(A_1)$$

$$\boxed{\text{z337}} \quad \mathbb{Q}_3^{(1,-1;c)}(B_1, 1) = \frac{\sqrt{6}\mathbb{M}_3^{(1,-1;a)}(A_2, 1)\mathbb{T}_1^{(b)}(B_2)}{4} - \frac{\sqrt{10}\mathbb{M}_3^{(1,-1;a)}(A_2, 2)\mathbb{T}_1^{(b)}(B_2)}{4}$$

$$\boxed{\text{z338}} \quad \mathbb{Q}_3^{(1,-1;c)}(B_1, 2) = \frac{\sqrt{10}\mathbb{M}_3^{(1,-1;a)}(A_2, 1)\mathbb{T}_1^{(b)}(B_2)}{4} + \frac{\sqrt{6}\mathbb{M}_3^{(1,-1;a)}(A_2, 2)\mathbb{T}_1^{(b)}(B_2)}{4}$$

$$\boxed{\text{z339}} \quad \mathbb{Q}_1^{(1,0;c)}(B_1, a) = -\mathbb{G}_1^{(1,0;a)}(A_2)\mathbb{Q}_1^{(b)}(B_2)$$

$$\boxed{\text{z340}} \quad \mathbb{Q}_1^{(1,0;c)}(B_1, b) = \mathbb{T}_2^{(1,0;a)}(A_2)\mathbb{T}_1^{(b)}(B_2)$$

$$\boxed{\text{z341}} \quad \mathbb{Q}_2^{(1,0;c)}(B_1) = \mathbb{T}_2^{(1,0;a)}(B_1)\mathbb{T}_0^{(b)}(A_1)$$

$$\boxed{\text{z342}} \quad \mathbb{Q}_1^{(1,1;c)}(B_1) = -\mathbb{M}_1^{(1,1;a)}(A_2)\mathbb{T}_1^{(b)}(B_2)$$

$$\boxed{\text{z343}} \quad \mathbb{G}_1^{(c)}(B_1) = \mathbb{M}_1^{(a)}(B_1)\mathbb{T}_0^{(b)}(A_1)$$

$$\boxed{\text{z344}} \quad \mathbb{G}_1^{(1,-1;c)}(B_1) = \mathbb{M}_1^{(1,-1;a)}(B_1)\mathbb{T}_0^{(b)}(A_1)$$

$$\boxed{\text{z345}} \quad \mathbb{G}_3^{(1,-1;c)}(B_1, 1) = \mathbb{M}_3^{(1,-1;a)}(B_1, 1)\mathbb{T}_0^{(b)}(A_1)$$

$$\boxed{\text{z346}} \quad \mathbb{G}_3^{(1,-1;c)}(B_1, 2) = \mathbb{M}_3^{(1,-1;a)}(B_1, 2)\mathbb{T}_0^{(b)}(A_1)$$

$$\boxed{\text{z347}} \quad \mathbb{G}_1^{(1,0;c)}(B_1) = \mathbb{G}_1^{(1,0;a)}(B_1)\mathbb{Q}_0^{(b)}(A_1)$$

$$\boxed{\text{z348}} \quad \mathbb{G}_1^{(1,1;c)}(B_1) = \mathbb{M}_1^{(1,1;a)}(B_1)\mathbb{T}_0^{(b)}(A_1)$$

$$\boxed{\text{z475}} \quad \mathbb{Q}_1^{(c)}(B_2, a) = \mathbb{Q}_0^{(a)}(A_1)\mathbb{Q}_1^{(b)}(B_2)$$

$$\boxed{\text{z476}} \quad \mathbb{Q}_1^{(c)}(B_2, b) = -\frac{\mathbb{Q}_2^{(a)}(A_1, 1)\mathbb{Q}_1^{(b)}(B_2)}{2} - \frac{\sqrt{3}\mathbb{Q}_2^{(a)}(A_1, 2)\mathbb{Q}_1^{(b)}(B_2)}{2}$$

$$\boxed{\text{z477}} \quad \mathbb{Q}_2^{(c)}(B_2) = \mathbb{Q}_2^{(a)}(B_2)\mathbb{Q}_0^{(b)}(A_1)$$

$\boxed{\text{z478}}$ $\mathbb{Q}_3^{(c)}(B_2, 2) = \dfrac{\sqrt{3}\mathbb{Q}_2^{(a)}(A_1, 1)\mathbb{Q}_1^{(b)}(B_2)}{2} - \dfrac{\mathbb{Q}_2^{(a)}(A_1, 2)\mathbb{Q}_1^{(b)}(B_2)}{2}$

$\boxed{\text{z479}}$ $\mathbb{Q}_1^{(1,-1;c)}(B_2) = -\dfrac{\mathbb{Q}_2^{(1,-1;a)}(A_1, 1)\mathbb{Q}_1^{(b)}(B_2)}{2} - \dfrac{\sqrt{3}\mathbb{Q}_2^{(1,-1;a)}(A_1, 2)\mathbb{Q}_1^{(b)}(B_2)}{2}$

$\boxed{\text{z480}}$ $\mathbb{Q}_2^{(1,-1;c)}(B_2) = \mathbb{Q}_2^{(1,-1;a)}(B_2)\mathbb{Q}_0^{(b)}(A_1)$

$\boxed{\text{z481}}$ $\mathbb{Q}_3^{(1,-1;c)}(B_2, 2a) = \dfrac{\sqrt{3}\mathbb{Q}_2^{(1,-1;a)}(A_1, 1)\mathbb{Q}_1^{(b)}(B_2)}{2} - \dfrac{\mathbb{Q}_2^{(1,-1;a)}(A_1, 2)\mathbb{Q}_1^{(b)}(B_2)}{2}$

$\boxed{\text{z482}}$ $\mathbb{Q}_3^{(1,-1;c)}(B_2, 2b) = \mathbb{M}_3^{(1,-1;a)}(A_1)\mathbb{T}_1^{(b)}(B_2)$

$\boxed{\text{z483}}$ $\mathbb{Q}_1^{(1,0;c)}(B_2) = -\dfrac{\mathbb{T}_2^{(1,0;a)}(A_1, 1)\mathbb{T}_1^{(b)}(B_2)}{2} - \dfrac{\sqrt{3}\mathbb{T}_2^{(1,0;a)}(A_1, 2)\mathbb{T}_1^{(b)}(B_2)}{2}$

$\boxed{\text{z484}}$ $\mathbb{Q}_2^{(1,0;c)}(B_2) = \mathbb{T}_2^{(1,0;a)}(B_2)\mathbb{T}_0^{(b)}(A_1)$

$\boxed{\text{z485}}$ $\mathbb{Q}_3^{(1,0;c)}(B_2, 2) = \dfrac{\sqrt{3}\mathbb{T}_2^{(1,0;a)}(A_1, 1)\mathbb{T}_1^{(b)}(B_2)}{2} - \dfrac{\mathbb{T}_2^{(1,0;a)}(A_1, 2)\mathbb{T}_1^{(b)}(B_2)}{2}$

$\boxed{\text{z486}}$ $\mathbb{Q}_1^{(1,1;c)}(B_2) = \mathbb{Q}_0^{(1,1;a)}(A_1)\mathbb{Q}_1^{(b)}(B_2)$

$\boxed{\text{z487}}$ $\mathbb{G}_1^{(c)}(B_2) = \mathbb{M}_1^{(a)}(B_2)\mathbb{T}_0^{(b)}(A_1)$

$\boxed{\text{z488}}$ $\mathbb{G}_1^{(1,-1;c)}(B_2) = \mathbb{M}_1^{(1,-1;a)}(B_2)\mathbb{T}_0^{(b)}(A_1)$

$\boxed{\text{z489}}$ $\mathbb{G}_3^{(1,-1;c)}(B_2, 1) = \mathbb{M}_3^{(1,-1;a)}(B_2, 1)\mathbb{T}_0^{(b)}(A_1)$

$\boxed{\text{z490}}$ $\mathbb{G}_3^{(1,-1;c)}(B_2, 2) = \mathbb{M}_3^{(1,-1;a)}(B_2, 2)\mathbb{T}_0^{(b)}(A_1)$

$\boxed{\text{z491}}$ $\mathbb{G}_1^{(1,0;c)}(B_2) = \mathbb{G}_1^{(1,0;a)}(B_2)\mathbb{Q}_0^{(b)}(A_1)$

$\boxed{\text{z492}}$ $\mathbb{G}_1^{(1,1;c)}(B_2) = \mathbb{M}_1^{(1,1;a)}(B_2)\mathbb{T}_0^{(b)}(A_1)$

- 'Sn'-'Te' bond-cluster
  * bra: $\langle p_x, \uparrow|, \langle p_x, \downarrow|, \langle p_y, \uparrow|, \langle p_y, \downarrow|, \langle p_z, \uparrow|, \langle p_z, \downarrow|$
  * ket: $|p_x, \uparrow\rangle, |p_x, \downarrow\rangle, |p_y, \uparrow\rangle, |p_y, \downarrow\rangle, |p_z, \uparrow\rangle, |p_z, \downarrow\rangle$

* wyckoff: `4a@4b`

z73 $\quad \mathbb{Q}_0^{(c)}(A_1, a) = \mathbb{Q}_0^{(a)}(A_1)\mathbb{Q}_0^{(b)}(A_1)$

z74 $\quad \mathbb{Q}_0^{(c)}(A_1, b) = \mathbb{Q}_2^{(a)}(A_2)\mathbb{Q}_2^{(b)}(A_2)$

z75 $\quad \mathbb{Q}_0^{(c)}(A_1, c) = \mathbb{M}_1^{(a)}(A_2)\mathbb{M}_1^{(b)}(A_2)$

z76 $\quad \mathbb{Q}_1^{(c)}(A_1, a) = \dfrac{\sqrt{2}\mathbb{Q}_2^{(a)}(B_1)\mathbb{Q}_1^{(b)}(B_1)}{2} + \dfrac{\sqrt{2}\mathbb{Q}_2^{(a)}(B_2)\mathbb{Q}_1^{(b)}(B_2)}{2}$

z77 $\quad \mathbb{Q}_1^{(c)}(A_1, b) = -\dfrac{\sqrt{2}\mathbb{M}_1^{(a)}(B_1)\mathbb{T}_1^{(b)}(B_1)}{2} + \dfrac{\sqrt{2}\mathbb{M}_1^{(a)}(B_2)\mathbb{T}_1^{(b)}(B_2)}{2}$

z78 $\quad \mathbb{Q}_2^{(c)}(A_1, 1) = \mathbb{Q}_2^{(a)}(A_1, 1)\mathbb{Q}_0^{(b)}(A_1)$

z79 $\quad \mathbb{Q}_2^{(c)}(A_1, 2) = \mathbb{Q}_2^{(a)}(A_1, 2)\mathbb{Q}_0^{(b)}(A_1)$

z80 $\quad \mathbb{Q}_3^{(c)}(A_1, 2) = \dfrac{\sqrt{2}\mathbb{Q}_2^{(a)}(B_1)\mathbb{Q}_1^{(b)}(B_1)}{2} - \dfrac{\sqrt{2}\mathbb{Q}_2^{(a)}(B_2)\mathbb{Q}_1^{(b)}(B_2)}{2}$

z81 $\quad \mathbb{Q}_0^{(1,-1;c)}(A_1, a) = \mathbb{Q}_2^{(1,-1;a)}(A_2)\mathbb{Q}_2^{(b)}(A_2)$

z82 $\quad \mathbb{Q}_0^{(1,-1;c)}(A_1, b) = \mathbb{M}_1^{(1,-1;a)}(A_2)\mathbb{M}_1^{(b)}(A_2)$

z83 $\quad \mathbb{Q}_1^{(1,-1;c)}(A_1, a) = \dfrac{\sqrt{2}\mathbb{Q}_2^{(1,-1;a)}(B_1)\mathbb{Q}_1^{(b)}(B_1)}{2} + \dfrac{\sqrt{2}\mathbb{Q}_2^{(1,-1;a)}(B_2)\mathbb{Q}_1^{(b)}(B_2)}{2}$

z84 $\quad \mathbb{Q}_1^{(1,-1;c)}(A_1, b) = -\dfrac{\sqrt{2}\mathbb{M}_1^{(1,-1;a)}(B_1)\mathbb{T}_1^{(b)}(B_1)}{2} + \dfrac{\sqrt{2}\mathbb{M}_1^{(1,-1;a)}(B_2)\mathbb{T}_1^{(b)}(B_2)}{2}$

z85 $\quad \mathbb{Q}_2^{(1,-1;c)}(A_1, 1a) = \mathbb{Q}_2^{(1,-1;a)}(A_1, 1)\mathbb{Q}_0^{(b)}(A_1)$

z86 $\quad \mathbb{Q}_2^{(1,-1;c)}(A_1, 1b) = \mathbb{M}_3^{(1,-1;a)}(A_2, 1)\mathbb{M}_1^{(b)}(A_2)$

z87 $\quad \mathbb{Q}_2^{(1,-1;c)}(A_1, 2a) = \mathbb{Q}_2^{(1,-1;a)}(A_1, 2)\mathbb{Q}_0^{(b)}(A_1)$

z88 $\quad \mathbb{Q}_2^{(1,-1;c)}(A_1, 2b) = \mathbb{M}_3^{(1,-1;a)}(A_2, 2)\mathbb{M}_1^{(b)}(A_2)$

$$\boxed{\text{z89}} \quad \mathbb{Q}_3^{(1,-1;c)}(A_1,1) = \frac{\sqrt{3}\mathbb{M}_3^{(1,-1;a)}(B_1,1)\mathbb{T}_1^{(b)}(B_1)}{4} - \frac{\sqrt{5}\mathbb{M}_3^{(1,-1;a)}(B_1,2)\mathbb{T}_1^{(b)}(B_1)}{4} - \frac{\sqrt{3}\mathbb{M}_3^{(1,-1;a)}(B_2,1)\mathbb{T}_1^{(b)}(B_2)}{4} - \frac{\sqrt{5}\mathbb{M}_3^{(1,-1;a)}(B_2,2)\mathbb{T}_1^{(b)}(B_2)}{4}$$

$$\boxed{\text{z90}} \quad \mathbb{Q}_3^{(1,-1;c)}(A_1,2a) = \frac{\sqrt{2}\mathbb{Q}_2^{(1,-1;a)}(B_1)\mathbb{Q}_1^{(b)}(B_1)}{2} - \frac{\sqrt{2}\mathbb{Q}_2^{(1,-1;a)}(B_2)\mathbb{Q}_1^{(b)}(B_2)}{2}$$

$$\boxed{\text{z91}} \quad \mathbb{Q}_3^{(1,-1;c)}(A_1,2b) = \frac{\sqrt{30}\mathbb{M}_3^{(1,-1;a)}(B_1,1)\mathbb{T}_1^{(b)}(B_1)}{8} - \frac{\sqrt{2}\mathbb{M}_3^{(1,-1;a)}(B_1,2)\mathbb{T}_1^{(b)}(B_1)}{8} + \frac{\sqrt{30}\mathbb{M}_3^{(1,-1;a)}(B_2,1)\mathbb{T}_1^{(b)}(B_2)}{8} + \frac{\sqrt{2}\mathbb{M}_3^{(1,-1;a)}(B_2,2)\mathbb{T}_1^{(b)}(B_2)}{8}$$

$$\boxed{\text{z92}} \quad \mathbb{Q}_1^{(1,0;c)}(A_1,a) = -\frac{\sqrt{2}\mathbb{G}_1^{(1,0;a)}(B_1)\mathbb{Q}_1^{(b)}(B_1)}{2} + \frac{\sqrt{2}\mathbb{G}_1^{(1,0;a)}(B_2)\mathbb{Q}_1^{(b)}(B_2)}{2}$$

$$\boxed{\text{z93}} \quad \mathbb{Q}_1^{(1,0;c)}(A_1,b) = \frac{\sqrt{2}\mathbb{T}_2^{(1,0;a)}(B_1)\mathbb{T}_1^{(b)}(B_1)}{2} + \frac{\sqrt{2}\mathbb{T}_2^{(1,0;a)}(B_2)\mathbb{T}_1^{(b)}(B_2)}{2}$$

$$\boxed{\text{z94}} \quad \mathbb{Q}_2^{(1,0;c)}(A_1,1) = \mathbb{T}_2^{(1,0;a)}(A_1,1)\mathbb{T}_0^{(b)}(A_1)$$

$$\boxed{\text{z95}} \quad \mathbb{Q}_2^{(1,0;c)}(A_1,2a) = -\mathbb{G}_1^{(1,0;a)}(A_2)\mathbb{Q}_2^{(b)}(A_2)$$

$$\boxed{\text{z96}} \quad \mathbb{Q}_2^{(1,0;c)}(A_1,2b) = \mathbb{T}_2^{(1,0;a)}(A_1,2)\mathbb{T}_0^{(b)}(A_1)$$

$$\boxed{\text{z97}} \quad \mathbb{Q}_2^{(1,0;c)}(A_1,2c) = \mathbb{T}_2^{(1,0;a)}(A_2)\mathbb{M}_1^{(b)}(A_2)$$

$$\boxed{\text{z98}} \quad \mathbb{Q}_3^{(1,0;c)}(A_1,2) = \frac{\sqrt{2}\mathbb{T}_2^{(1,0;a)}(B_1)\mathbb{T}_1^{(b)}(B_1)}{2} - \frac{\sqrt{2}\mathbb{T}_2^{(1,0;a)}(B_2)\mathbb{T}_1^{(b)}(B_2)}{2}$$

$$\boxed{\text{z99}} \quad \mathbb{Q}_0^{(1,1;c)}(A_1,a) = \mathbb{Q}_0^{(1,1;a)}(A_1)\mathbb{Q}_0^{(b)}(A_1)$$

$$\boxed{\text{z100}} \quad \mathbb{Q}_0^{(1,1;c)}(A_1,b) = \mathbb{M}_1^{(1,1;a)}(A_2)\mathbb{M}_1^{(b)}(A_2)$$

$$\boxed{\text{z101}} \quad \mathbb{Q}_1^{(1,1;c)}(A_1) = -\frac{\sqrt{2}\mathbb{M}_1^{(1,1;a)}(B_1)\mathbb{T}_1^{(b)}(B_1)}{2} + \frac{\sqrt{2}\mathbb{M}_1^{(1,1;a)}(B_2)\mathbb{T}_1^{(b)}(B_2)}{2}$$

$$\boxed{\text{z102}} \quad \mathbb{G}_2^{(c)}(A_1) = \frac{\sqrt{2}\mathbb{M}_1^{(a)}(B_1)\mathbb{T}_1^{(b)}(B_1)}{2} + \frac{\sqrt{2}\mathbb{M}_1^{(a)}(B_2)\mathbb{T}_1^{(b)}(B_2)}{2}$$

$$\boxed{\text{z103}} \quad \mathbb{G}_2^{(1,-1;c)}(A_1,a) = -\frac{\sqrt{2}\mathbb{M}_3^{(1,-1;a)}(B_1,1)\mathbb{T}_1^{(b)}(B_1)}{8} - \frac{\sqrt{30}\mathbb{M}_3^{(1,-1;a)}(B_1,2)\mathbb{T}_1^{(b)}(B_1)}{8} - \frac{\sqrt{2}\mathbb{M}_3^{(1,-1;a)}(B_2,1)\mathbb{T}_1^{(b)}(B_2)}{8} + \frac{\sqrt{30}\mathbb{M}_3^{(1,-1;a)}(B_2,2)\mathbb{T}_1^{(b)}(B_2)}{8}$$

$$\boxed{\text{z104}} \quad \mathbb{G}_2^{(1,-1;c)}(A_1,b) = \frac{\sqrt{2}\mathbb{M}_1^{(1,-1;a)}(B_1)\mathbb{T}_1^{(b)}(B_1)}{2} + \frac{\sqrt{2}\mathbb{M}_1^{(1,-1;a)}(B_2)\mathbb{T}_1^{(b)}(B_2)}{2}$$

$$\boxed{\text{z105}} \quad \mathbb{G}_3^{(1,-1;c)}(A_1) = \mathbb{M}_3^{(1,-1;a)}(A_1)\mathbb{T}_0^{(b)}(A_1)$$

$$\boxed{\text{z106}} \quad \mathbb{G}_4^{(1,-1;c)}(A_1,1) = -\frac{\sqrt{5}\mathbb{M}_3^{(1,-1;a)}(B_1,1)\mathbb{T}_1^{(b)}(B_1)}{4} - \frac{\sqrt{3}\mathbb{M}_3^{(1,-1;a)}(B_1,2)\mathbb{T}_1^{(b)}(B_1)}{4} + \frac{\sqrt{5}\mathbb{M}_3^{(1,-1;a)}(B_2,1)\mathbb{T}_1^{(b)}(B_2)}{4} - \frac{\sqrt{3}\mathbb{M}_3^{(1,-1;a)}(B_2,2)\mathbb{T}_1^{(b)}(B_2)}{4}$$

$$\boxed{\text{z107}} \quad \mathbb{G}_2^{(1,0;c)}(A_1) = \frac{\sqrt{2}\mathbb{G}_1^{(1,0;a)}(B_1)\mathbb{Q}_1^{(b)}(B_1)}{2} + \frac{\sqrt{2}\mathbb{G}_1^{(1,0;a)}(B_2)\mathbb{Q}_1^{(b)}(B_2)}{2}$$

$$\boxed{\text{z108}} \quad \mathbb{G}_2^{(1,1;c)}(A_1) = \frac{\sqrt{2}\mathbb{M}_1^{(1,1;a)}(B_1)\mathbb{T}_1^{(b)}(B_1)}{2} + \frac{\sqrt{2}\mathbb{M}_1^{(1,1;a)}(B_2)\mathbb{T}_1^{(b)}(B_2)}{2}$$

$$\boxed{\text{z211}} \quad \mathbb{Q}_2^{(c)}(A_2,a) = \mathbb{Q}_0^{(a)}(A_1)\mathbb{Q}_2^{(b)}(A_2)$$

$$\boxed{\text{z212}} \quad \mathbb{Q}_2^{(c)}(A_2,b) = \mathbb{Q}_2^{(a)}(A_2)\mathbb{Q}_0^{(b)}(A_1)$$

$$\boxed{\text{z213}} \quad \mathbb{Q}_2^{(c)}(A_2,c) = -\mathbb{Q}_2^{(a)}(A_1,1)\mathbb{Q}_2^{(b)}(A_2)$$

$$\boxed{\text{z214}} \quad \mathbb{Q}_3^{(c)}(A_2) = \frac{\sqrt{2}\mathbb{Q}_2^{(a)}(B_1)\mathbb{Q}_1^{(b)}(B_2)}{2} + \frac{\sqrt{2}\mathbb{Q}_2^{(a)}(B_2)\mathbb{Q}_1^{(b)}(B_1)}{2}$$

$$\boxed{\text{z215}} \quad \mathbb{Q}_4^{(c)}(A_2,1) = \mathbb{Q}_2^{(a)}(A_1,2)\mathbb{Q}_2^{(b)}(A_2)$$

$$\boxed{\text{z216}} \quad \mathbb{Q}_2^{(1,-1;c)}(A_2,a) = \mathbb{Q}_2^{(1,-1;a)}(A_2)\mathbb{Q}_0^{(b)}(A_1)$$

$$\boxed{\text{z217}} \quad \mathbb{Q}_2^{(1,-1;c)}(A_2,b) = -\mathbb{Q}_2^{(1,-1;a)}(A_1,1)\mathbb{Q}_2^{(b)}(A_2)$$

$$\boxed{\text{z218}} \quad \mathbb{Q}_2^{(1,-1;c)}(A_2,c) = \mathbb{M}_3^{(1,-1;a)}(A_1)\mathbb{M}_1^{(b)}(A_2)$$

$$\boxed{\text{z219}} \quad \mathbb{Q}_3^{(1,-1;c)}(A_2,a) = \frac{\sqrt{2}\mathbb{Q}_2^{(1,-1;a)}(B_1)\mathbb{Q}_1^{(b)}(B_2)}{2} + \frac{\sqrt{2}\mathbb{Q}_2^{(1,-1;a)}(B_2)\mathbb{Q}_1^{(b)}(B_1)}{2}$$

$$\boxed{\text{z220}} \quad \mathbb{Q}_3^{(1,-1;c)}(A_2,b) = -\frac{\sqrt{2}\mathbb{M}_3^{(1,-1;a)}(B_1,2)\mathbb{T}_1^{(b)}(B_2)}{2} - \frac{\sqrt{2}\mathbb{M}_3^{(1,-1;a)}(B_2,2)\mathbb{T}_1^{(b)}(B_1)}{2}$$

$$\boxed{\text{z221}} \quad \mathbb{Q}_4^{(1,-1;c)}(A_2,1) = \mathbb{Q}_2^{(1,-1;a)}(A_1,2)\mathbb{Q}_2^{(b)}(A_2)$$

$$\boxed{\text{z222}} \quad \mathbb{Q}_2^{(1,0;c)}(A_2,a) = \mathbb{T}_2^{(1,0;a)}(A_2)\mathbb{T}_0^{(b)}(A_1)$$

$\boxed{\text{z223}}$ $\quad \mathbb{Q}_2^{(1,0;c)}(A_2, b) = -\mathbb{T}_2^{(1,0;a)}(A_1, 2)\mathbb{M}_1^{(b)}(A_2)$

$\boxed{\text{z224}}$ $\quad \mathbb{Q}_3^{(1,0;c)}(A_2) = \dfrac{\sqrt{2}\mathbb{T}_2^{(1,0;a)}(B_1)\mathbb{T}_1^{(b)}(B_2)}{2} + \dfrac{\sqrt{2}\mathbb{T}_2^{(1,0;a)}(B_2)\mathbb{T}_1^{(b)}(B_1)}{2}$

$\boxed{\text{z225}}$ $\quad \mathbb{Q}_2^{(1,1;c)}(A_2) = \mathbb{Q}_0^{(1,1;a)}(A_1)\mathbb{Q}_2^{(b)}(A_2)$

$\boxed{\text{z226}}$ $\quad \mathbb{G}_0^{(c)}(A_2) = \dfrac{\sqrt{2}\mathbb{M}_1^{(a)}(B_1)\mathbb{T}_1^{(b)}(B_2)}{2} + \dfrac{\sqrt{2}\mathbb{M}_1^{(a)}(B_2)\mathbb{T}_1^{(b)}(B_1)}{2}$

$\boxed{\text{z227}}$ $\quad \mathbb{G}_1^{(c)}(A_2) = \mathbb{M}_1^{(a)}(A_2)\mathbb{T}_0^{(b)}(A_1)$

$\boxed{\text{z228}}$ $\quad \mathbb{G}_2^{(c)}(A_2, 1) = \dfrac{\sqrt{2}\mathbb{Q}_2^{(a)}(B_1)\mathbb{Q}_1^{(b)}(B_2)}{2} - \dfrac{\sqrt{2}\mathbb{Q}_2^{(a)}(B_2)\mathbb{Q}_1^{(b)}(B_1)}{2}$

$\boxed{\text{z229}}$ $\quad \mathbb{G}_2^{(c)}(A_2, 2) = -\dfrac{\sqrt{2}\mathbb{M}_1^{(a)}(B_1)\mathbb{T}_1^{(b)}(B_2)}{2} + \dfrac{\sqrt{2}\mathbb{M}_1^{(a)}(B_2)\mathbb{T}_1^{(b)}(B_1)}{2}$

$\boxed{\text{z230}}$ $\quad \mathbb{G}_0^{(1,-1;c)}(A_2) = \dfrac{\sqrt{2}\mathbb{M}_1^{(1,-1;a)}(B_1)\mathbb{T}_1^{(b)}(B_2)}{2} + \dfrac{\sqrt{2}\mathbb{M}_1^{(1,-1;a)}(B_2)\mathbb{T}_1^{(b)}(B_1)}{2}$

$\boxed{\text{z231}}$ $\quad \mathbb{G}_1^{(1,-1;c)}(A_2) = \mathbb{M}_1^{(1,-1;a)}(A_2)\mathbb{T}_0^{(b)}(A_1)$

$\boxed{\text{z232}}$ $\quad \mathbb{G}_2^{(1,-1;c)}(A_2, 1a) = \dfrac{\sqrt{2}\mathbb{Q}_2^{(1,-1;a)}(B_1)\mathbb{Q}_1^{(b)}(B_2)}{2} - \dfrac{\sqrt{2}\mathbb{Q}_2^{(1,-1;a)}(B_2)\mathbb{Q}_1^{(b)}(B_1)}{2}$

$\boxed{\text{z233}}$ $\quad \mathbb{G}_2^{(1,-1;c)}(A_2, 1b) = -\dfrac{\sqrt{3}\mathbb{M}_3^{(1,-1;a)}(B_1, 1)\mathbb{T}_1^{(b)}(B_2)}{4} + \dfrac{\sqrt{5}\mathbb{M}_3^{(1,-1;a)}(B_1, 2)\mathbb{T}_1^{(b)}(B_2)}{4} - \dfrac{\sqrt{3}\mathbb{M}_3^{(1,-1;a)}(B_2, 1)\mathbb{T}_1^{(b)}(B_1)}{4} - \dfrac{\sqrt{5}\mathbb{M}_3^{(1,-1;a)}(B_2, 2)\mathbb{T}_1^{(b)}(B_1)}{4}$

$\boxed{\text{z234}}$ $\quad \mathbb{G}_2^{(1,-1;c)}(A_2, 2a) = -\dfrac{\sqrt{2}\mathbb{M}_3^{(1,-1;a)}(B_1, 1)\mathbb{T}_1^{(b)}(B_2)}{2} + \dfrac{\sqrt{2}\mathbb{M}_3^{(1,-1;a)}(B_2, 1)\mathbb{T}_1^{(b)}(B_1)}{2}$

$\boxed{\text{z235}}$ $\quad \mathbb{G}_2^{(1,-1;c)}(A_2, 2b) = -\dfrac{\sqrt{2}\mathbb{M}_1^{(1,-1;a)}(B_1)\mathbb{T}_1^{(b)}(B_2)}{2} + \dfrac{\sqrt{2}\mathbb{M}_1^{(1,-1;a)}(B_2)\mathbb{T}_1^{(b)}(B_1)}{2}$

$\boxed{\text{z236}}$ $\quad \mathbb{G}_3^{(1,-1;c)}(A_2, 1) = \mathbb{M}_3^{(1,-1;a)}(A_2, 1)\mathbb{T}_0^{(b)}(A_1)$

$\boxed{\text{z237}}$ $\quad \mathbb{G}_3^{(1,-1;c)}(A_2, 2) = \mathbb{M}_3^{(1,-1;a)}(A_2, 2)\mathbb{T}_0^{(b)}(A_1)$

$$\boxed{\text{z238}} \quad \mathbb{G}_4^{(1,-1;c)}(A_2,1) = \frac{\sqrt{5}\mathbb{M}_3^{(1,-1;a)}(B_1,1)\mathbb{T}_1^{(b)}(B_2)}{4} + \frac{\sqrt{3}\mathbb{M}_3^{(1,-1;a)}(B_1,2)\mathbb{T}_1^{(b)}(B_2)}{4} + \frac{\sqrt{5}\mathbb{M}_3^{(1,-1;a)}(B_2,1)\mathbb{T}_1^{(b)}(B_1)}{4} - \frac{\sqrt{3}\mathbb{M}_3^{(1,-1;a)}(B_2,2)\mathbb{T}_1^{(b)}(B_1)}{4}$$

$$\boxed{\text{z239}} \quad \mathbb{G}_0^{(1,0;c)}(A_2) = \frac{\sqrt{2}\mathbb{G}_1^{(1,0;a)}(B_1)\mathbb{Q}_1^{(b)}(B_2)}{2} + \frac{\sqrt{2}\mathbb{G}_1^{(1,0;a)}(B_2)\mathbb{Q}_1^{(b)}(B_1)}{2}$$

$$\boxed{\text{z240}} \quad \mathbb{G}_1^{(1,0;c)}(A_2,a) = \mathbb{G}_1^{(1,0;a)}(A_2)\mathbb{Q}_0^{(b)}(A_1)$$

$$\boxed{\text{z241}} \quad \mathbb{G}_1^{(1,0;c)}(A_2,b) = \mathbb{T}_2^{(1,0;a)}(A_1,1)\mathbb{M}_1^{(b)}(A_2)$$

$$\boxed{\text{z242}} \quad \mathbb{G}_2^{(1,0;c)}(A_2,1) = \frac{\sqrt{2}\mathbb{T}_2^{(1,0;a)}(B_1)\mathbb{T}_1^{(b)}(B_2)}{2} - \frac{\sqrt{2}\mathbb{T}_2^{(1,0;a)}(B_2)\mathbb{T}_1^{(b)}(B_1)}{2}$$

$$\boxed{\text{z243}} \quad \mathbb{G}_2^{(1,0;c)}(A_2,2) = -\frac{\sqrt{2}\mathbb{G}_1^{(1,0;a)}(B_1)\mathbb{Q}_1^{(b)}(B_2)}{2} + \frac{\sqrt{2}\mathbb{G}_1^{(1,0;a)}(B_2)\mathbb{Q}_1^{(b)}(B_1)}{2}$$

$$\boxed{\text{z244}} \quad \mathbb{G}_0^{(1,1;c)}(A_2) = \frac{\sqrt{2}\mathbb{M}_1^{(1,1;a)}(B_1)\mathbb{T}_1^{(b)}(B_2)}{2} + \frac{\sqrt{2}\mathbb{M}_1^{(1,1;a)}(B_2)\mathbb{T}_1^{(b)}(B_1)}{2}$$

$$\boxed{\text{z245}} \quad \mathbb{G}_1^{(1,1;c)}(A_2) = \mathbb{M}_1^{(1,1;a)}(A_2)\mathbb{T}_0^{(b)}(A_1)$$

$$\boxed{\text{z246}} \quad \mathbb{G}_2^{(1,1;c)}(A_2,2) = -\frac{\sqrt{2}\mathbb{M}_1^{(1,1;a)}(B_1)\mathbb{T}_1^{(b)}(B_2)}{2} + \frac{\sqrt{2}\mathbb{M}_1^{(1,1;a)}(B_2)\mathbb{T}_1^{(b)}(B_1)}{2}$$

$$\boxed{\text{z349}} \quad \mathbb{Q}_1^{(c)}(B_1,a) = \mathbb{Q}_0^{(a)}(A_1)\mathbb{Q}_1^{(b)}(B_1)$$

$$\boxed{\text{z350}} \quad \mathbb{Q}_1^{(c)}(B_1,b) = -\frac{\sqrt{7}\mathbb{Q}_2^{(a)}(A_1,1)\mathbb{Q}_1^{(b)}(B_1)}{7} + \frac{\sqrt{21}\mathbb{Q}_2^{(a)}(A_1,2)\mathbb{Q}_1^{(b)}(B_1)}{7} + \frac{\sqrt{21}\mathbb{Q}_2^{(a)}(A_2)\mathbb{Q}_1^{(b)}(B_2)}{7}$$

$$\boxed{\text{z351}} \quad \mathbb{Q}_1^{(c)}(B_1,c) = -\mathbb{M}_1^{(a)}(A_2)\mathbb{T}_1^{(b)}(B_2)$$

$$\boxed{\text{z352}} \quad \mathbb{Q}_2^{(c)}(B_1,a) = \mathbb{Q}_2^{(a)}(B_1)\mathbb{Q}_0^{(b)}(A_1)$$

$$\boxed{\text{z353}} \quad \mathbb{Q}_2^{(c)}(B_1,b) = \mathbb{Q}_2^{(a)}(B_2)\mathbb{Q}_2^{(b)}(A_2)$$

$$\boxed{\text{z354}} \quad \mathbb{Q}_2^{(c)}(B_1,c) = \mathbb{M}_1^{(a)}(B_2)\mathbb{M}_1^{(b)}(A_2)$$

$$\boxed{\text{z355}} \quad \mathbb{Q}_3^{(c)}(B_1,1) = -\frac{\sqrt{21}\mathbb{Q}_2^{(a)}(A_1,1)\mathbb{Q}_1^{(b)}(B_1)}{14} + \frac{3\sqrt{7}\mathbb{Q}_2^{(a)}(A_1,2)\mathbb{Q}_1^{(b)}(B_1)}{14} - \frac{2\sqrt{7}\mathbb{Q}_2^{(a)}(A_2)\mathbb{Q}_1^{(b)}(B_2)}{7}$$

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$\boxed{\text{z356}}$ $\quad \mathbb{Q}_3^{(c)}(B_1, 2) = -\dfrac{\sqrt{3}\mathbb{Q}_2^{(a)}(A_1, 1)\mathbb{Q}_1^{(b)}(B_1)}{2} - \dfrac{\mathbb{Q}_2^{(a)}(A_1, 2)\mathbb{Q}_1^{(b)}(B_1)}{2}$

$\boxed{\text{z357}}$ $\quad \mathbb{Q}_1^{(1,-1;c)}(B_1, a) = -\dfrac{\sqrt{7}\mathbb{Q}_2^{(1,-1;a)}(A_1, 1)\mathbb{Q}_1^{(b)}(B_1)}{7} + \dfrac{\sqrt{21}\mathbb{Q}_2^{(1,-1;a)}(A_1, 2)\mathbb{Q}_1^{(b)}(B_1)}{7} + \dfrac{\sqrt{21}\mathbb{Q}_2^{(1,-1;a)}(A_2)\mathbb{Q}_1^{(b)}(B_2)}{7}$

$\boxed{\text{z358}}$ $\quad \mathbb{Q}_1^{(1,-1;c)}(B_1, b) = -\mathbb{M}_1^{(1,-1;a)}(A_2)\mathbb{T}_1^{(b)}(B_2)$

$\boxed{\text{z359}}$ $\quad \mathbb{Q}_2^{(1,-1;c)}(B_1, a) = \mathbb{Q}_2^{(1,-1;a)}(B_1)\mathbb{Q}_0^{(b)}(A_1)$

$\boxed{\text{z360}}$ $\quad \mathbb{Q}_2^{(1,-1;c)}(B_1, b) = \mathbb{Q}_2^{(1,-1;a)}(B_2)\mathbb{Q}_2^{(b)}(A_2)$

$\boxed{\text{z361}}$ $\quad \mathbb{Q}_2^{(1,-1;c)}(B_1, c) = -\dfrac{\sqrt{6}\mathbb{M}_3^{(1,-1;a)}(B_2, 1)\mathbb{M}_1^{(b)}(A_2)}{4} - \dfrac{\sqrt{10}\mathbb{M}_3^{(1,-1;a)}(B_2, 2)\mathbb{M}_1^{(b)}(A_2)}{4}$

$\boxed{\text{z362}}$ $\quad \mathbb{Q}_2^{(1,-1;c)}(B_1, d) = \mathbb{M}_1^{(1,-1;a)}(B_2)\mathbb{M}_1^{(b)}(A_2)$

$\boxed{\text{z363}}$ $\quad \mathbb{Q}_3^{(1,-1;c)}(B_1, 1a) = -\dfrac{\sqrt{21}\mathbb{Q}_2^{(1,-1;a)}(A_1, 1)\mathbb{Q}_1^{(b)}(B_1)}{14} + \dfrac{3\sqrt{7}\mathbb{Q}_2^{(1,-1;a)}(A_1, 2)\mathbb{Q}_1^{(b)}(B_1)}{14} - \dfrac{2\sqrt{7}\mathbb{Q}_2^{(1,-1;a)}(A_2)\mathbb{Q}_1^{(b)}(B_2)}{7}$

$\boxed{\text{z364}}$ $\quad \mathbb{Q}_3^{(1,-1;c)}(B_1, 1b) = \dfrac{\sqrt{6}\mathbb{M}_3^{(1,-1;a)}(A_2, 1)\mathbb{T}_1^{(b)}(B_2)}{4} - \dfrac{\sqrt{10}\mathbb{M}_3^{(1,-1;a)}(A_2, 2)\mathbb{T}_1^{(b)}(B_2)}{4}$

$\boxed{\text{z365}}$ $\quad \mathbb{Q}_3^{(1,-1;c)}(B_1, 2a) = -\dfrac{\sqrt{3}\mathbb{Q}_2^{(1,-1;a)}(A_1, 1)\mathbb{Q}_1^{(b)}(B_1)}{2} - \dfrac{\mathbb{Q}_2^{(1,-1;a)}(A_1, 2)\mathbb{Q}_1^{(b)}(B_1)}{2}$

$\boxed{\text{z366}}$ $\quad \mathbb{Q}_3^{(1,-1;c)}(B_1, 2b) = \dfrac{2\sqrt{22}\mathbb{M}_3^{(1,-1;a)}(A_1)\mathbb{T}_1^{(b)}(B_1)}{11} + \dfrac{\sqrt{330}\mathbb{M}_3^{(1,-1;a)}(A_2, 1)\mathbb{T}_1^{(b)}(B_2)}{44} + \dfrac{3\sqrt{22}\mathbb{M}_3^{(1,-1;a)}(A_2, 2)\mathbb{T}_1^{(b)}(B_2)}{44}$

$\boxed{\text{z367}}$ $\quad \mathbb{Q}_4^{(1,-1;c)}(B_1, 1) = -\dfrac{\sqrt{10}\mathbb{M}_3^{(1,-1;a)}(B_2, 1)\mathbb{M}_1^{(b)}(A_2)}{4} + \dfrac{\sqrt{6}\mathbb{M}_3^{(1,-1;a)}(B_2, 2)\mathbb{M}_1^{(b)}(A_2)}{4}$

$\boxed{\text{z368}}$ $\quad \mathbb{Q}_1^{(1,0;c)}(B_1, a) = -\mathbb{G}_1^{(1,0;a)}(A_2)\mathbb{Q}_1^{(b)}(B_2)$

$\boxed{\text{z369}}$ $\quad \mathbb{Q}_1^{(1,0;c)}(B_1, b) = -\dfrac{\sqrt{7}\mathbb{T}_2^{(1,0;a)}(A_1, 1)\mathbb{T}_1^{(b)}(B_1)}{7} + \dfrac{\sqrt{21}\mathbb{T}_2^{(1,0;a)}(A_1, 2)\mathbb{T}_1^{(b)}(B_1)}{7} + \dfrac{\sqrt{21}\mathbb{T}_2^{(1,0;a)}(A_2)\mathbb{T}_1^{(b)}(B_2)}{7}$

$\boxed{\text{z370}}$ $\quad \mathbb{Q}_2^{(1,0;c)}(B_1, a) = \mathbb{G}_1^{(1,0;a)}(B_2)\mathbb{Q}_2^{(b)}(A_2)$

$\boxed{\text{z371}}$ $\quad \mathbb{Q}_2^{(1,0;c)}(B_1, b) = \mathbb{T}_2^{(1,0;a)}(B_1)\mathbb{T}_0^{(b)}(A_1)$

$$\boxed{\text{z372}} \quad \mathbb{Q}_2^{(1,0;c)}(B_1,c) = \mathbb{T}_2^{(1,0;a)}(B_2)\mathbb{M}_1^{(b)}(A_2)$$

$$\boxed{\text{z373}} \quad \mathbb{Q}_3^{(1,0;c)}(B_1,1) = -\frac{\sqrt{21}\mathbb{T}_2^{(1,0;a)}(A_1,1)\mathbb{T}_1^{(b)}(B_1)}{14} + \frac{3\sqrt{7}\mathbb{T}_2^{(1,0;a)}(A_1,2)\mathbb{T}_1^{(b)}(B_1)}{14} - \frac{2\sqrt{7}\mathbb{T}_2^{(1,0;a)}(A_2)\mathbb{T}_1^{(b)}(B_2)}{7}$$

$$\boxed{\text{z374}} \quad \mathbb{Q}_3^{(1,0;c)}(B_1,2) = -\frac{\sqrt{3}\mathbb{T}_2^{(1,0;a)}(A_1,1)\mathbb{T}_1^{(b)}(B_1)}{2} - \frac{\mathbb{T}_2^{(1,0;a)}(A_1,2)\mathbb{T}_1^{(b)}(B_1)}{2}$$

$$\boxed{\text{z375}} \quad \mathbb{Q}_1^{(1,1;c)}(B_1,a) = \mathbb{Q}_0^{(1,1;a)}(A_1)\mathbb{Q}_1^{(b)}(B_1)$$

$$\boxed{\text{z376}} \quad \mathbb{Q}_1^{(1,1;c)}(B_1,b) = -\mathbb{M}_1^{(1,1;a)}(A_2)\mathbb{T}_1^{(b)}(B_2)$$

$$\boxed{\text{z377}} \quad \mathbb{Q}_2^{(1,1;c)}(B_1) = \mathbb{M}_1^{(1,1;a)}(B_2)\mathbb{M}_1^{(b)}(A_2)$$

$$\boxed{\text{z378}} \quad \mathbb{G}_1^{(c)}(B_1) = \mathbb{M}_1^{(a)}(B_1)\mathbb{T}_0^{(b)}(A_1)$$

$$\boxed{\text{z379}} \quad \mathbb{G}_1^{(1,-1;c)}(B_1) = \mathbb{M}_1^{(1,-1;a)}(B_1)\mathbb{T}_0^{(b)}(A_1)$$

$$\boxed{\text{z380}} \quad \mathbb{G}_2^{(1,-1;c)}(B_1) = \frac{\sqrt{33}\mathbb{M}_3^{(1,-1;a)}(A_1)\mathbb{T}_1^{(b)}(B_1)}{11} - \frac{\sqrt{55}\mathbb{M}_3^{(1,-1;a)}(A_2,1)\mathbb{T}_1^{(b)}(B_2)}{11} - \frac{\sqrt{33}\mathbb{M}_3^{(1,-1;a)}(A_2,2)\mathbb{T}_1^{(b)}(B_2)}{11}$$

$$\boxed{\text{z381}} \quad \mathbb{G}_3^{(1,-1;c)}(B_1,1) = \mathbb{M}_3^{(1,-1;a)}(B_1,1)\mathbb{T}_0^{(b)}(A_1)$$

$$\boxed{\text{z382}} \quad \mathbb{G}_3^{(1,-1;c)}(B_1,2) = \mathbb{M}_3^{(1,-1;a)}(B_1,2)\mathbb{T}_0^{(b)}(A_1)$$

$$\boxed{\text{z383}} \quad \mathbb{G}_1^{(1,0;c)}(B_1) = \mathbb{G}_1^{(1,0;a)}(B_1)\mathbb{Q}_0^{(b)}(A_1)$$

$$\boxed{\text{z384}} \quad \mathbb{G}_1^{(1,1;c)}(B_1) = \mathbb{M}_1^{(1,1;a)}(B_1)\mathbb{T}_0^{(b)}(A_1)$$

$$\boxed{\text{z493}} \quad \mathbb{Q}_1^{(c)}(B_2,a) = \mathbb{Q}_0^{(a)}(A_1)\mathbb{Q}_1^{(b)}(B_2)$$

$$\boxed{\text{z494}} \quad \mathbb{Q}_1^{(c)}(B_2,b) = -\frac{\sqrt{7}\mathbb{Q}_2^{(a)}(A_1,1)\mathbb{Q}_1^{(b)}(B_2)}{7} - \frac{\sqrt{21}\mathbb{Q}_2^{(a)}(A_1,2)\mathbb{Q}_1^{(b)}(B_2)}{7} + \frac{\sqrt{21}\mathbb{Q}_2^{(a)}(A_2)\mathbb{Q}_1^{(b)}(B_1)}{7}$$

$$\boxed{\text{z495}} \quad \mathbb{Q}_1^{(c)}(B_2,c) = \mathbb{M}_1^{(a)}(A_2)\mathbb{T}_1^{(b)}(B_1)$$

$$\boxed{\text{z496}} \quad \mathbb{Q}_2^{(c)}(B_2,a) = \mathbb{Q}_2^{(a)}(B_2)\mathbb{Q}_0^{(b)}(A_1)$$

$\boxed{\text{z497}}$ $\mathbb{Q}_2^{(c)}(B_2, b) = \mathbb{Q}_2^{(a)}(B_1)\mathbb{Q}_2^{(b)}(A_2)$

$\boxed{\text{z498}}$ $\mathbb{Q}_2^{(c)}(B_2, c) = \mathbb{M}_1^{(a)}(B_1)\mathbb{M}_1^{(b)}(A_2)$

$\boxed{\text{z499}}$ $\mathbb{Q}_3^{(c)}(B_2, 1) = -\dfrac{\sqrt{21}\mathbb{Q}_2^{(a)}(A_1,1)\mathbb{Q}_1^{(b)}(B_2)}{14} - \dfrac{3\sqrt{7}\mathbb{Q}_2^{(a)}(A_1,2)\mathbb{Q}_1^{(b)}(B_2)}{14} - \dfrac{2\sqrt{7}\mathbb{Q}_2^{(a)}(A_2)\mathbb{Q}_1^{(b)}(B_1)}{7}$

$\boxed{\text{z500}}$ $\mathbb{Q}_3^{(c)}(B_2, 2) = \dfrac{\sqrt{3}\mathbb{Q}_2^{(a)}(A_1,1)\mathbb{Q}_1^{(b)}(B_2)}{2} - \dfrac{\mathbb{Q}_2^{(a)}(A_1,2)\mathbb{Q}_1^{(b)}(B_2)}{2}$

$\boxed{\text{z501}}$ $\mathbb{Q}_1^{(1,-1;c)}(B_2, a) = -\dfrac{\sqrt{7}\mathbb{Q}_2^{(1,-1;a)}(A_1,1)\mathbb{Q}_1^{(b)}(B_2)}{7} - \dfrac{\sqrt{21}\mathbb{Q}_2^{(1,-1;a)}(A_1,2)\mathbb{Q}_1^{(b)}(B_2)}{7} + \dfrac{\sqrt{21}\mathbb{Q}_2^{(1,-1;a)}(A_2)\mathbb{Q}_1^{(b)}(B_1)}{7}$

$\boxed{\text{z502}}$ $\mathbb{Q}_1^{(1,-1;c)}(B_2, b) = \mathbb{M}_1^{(1,-1;a)}(A_2)\mathbb{T}_1^{(b)}(B_1)$

$\boxed{\text{z503}}$ $\mathbb{Q}_2^{(1,-1;c)}(B_2, a) = \mathbb{Q}_2^{(1,-1;a)}(B_2)\mathbb{Q}_0^{(b)}(A_1)$

$\boxed{\text{z504}}$ $\mathbb{Q}_2^{(1,-1;c)}(B_2, b) = \mathbb{Q}_2^{(1,-1;a)}(B_1)\mathbb{Q}_2^{(b)}(A_2)$

$\boxed{\text{z505}}$ $\mathbb{Q}_2^{(1,-1;c)}(B_2, c) = -\dfrac{\sqrt{6}\mathbb{M}_3^{(1,-1;a)}(B_1,1)\mathbb{M}_1^{(b)}(A_2)}{4} + \dfrac{\sqrt{10}\mathbb{M}_3^{(1,-1;a)}(B_1,2)\mathbb{M}_1^{(b)}(A_2)}{4}$

$\boxed{\text{z506}}$ $\mathbb{Q}_2^{(1,-1;c)}(B_2, d) = \mathbb{M}_1^{(1,-1;a)}(B_1)\mathbb{M}_1^{(b)}(A_2)$

$\boxed{\text{z507}}$ $\mathbb{Q}_3^{(1,-1;c)}(B_2, 1a) = -\dfrac{\sqrt{21}\mathbb{Q}_2^{(1,-1;a)}(A_1,1)\mathbb{Q}_1^{(b)}(B_2)}{14} - \dfrac{3\sqrt{7}\mathbb{Q}_2^{(1,-1;a)}(A_1,2)\mathbb{Q}_1^{(b)}(B_2)}{14} - \dfrac{2\sqrt{7}\mathbb{Q}_2^{(1,-1;a)}(A_2)\mathbb{Q}_1^{(b)}(B_1)}{7}$

$\boxed{\text{z508}}$ $\mathbb{Q}_3^{(1,-1;c)}(B_2, 1b) = -\dfrac{\sqrt{6}\mathbb{M}_3^{(1,-1;a)}(A_2,1)\mathbb{T}_1^{(b)}(B_1)}{4} - \dfrac{\sqrt{10}\mathbb{M}_3^{(1,-1;a)}(A_2,2)\mathbb{T}_1^{(b)}(B_1)}{4}$

$\boxed{\text{z509}}$ $\mathbb{Q}_3^{(1,-1;c)}(B_2, 2a) = \dfrac{\sqrt{3}\mathbb{Q}_2^{(1,-1;a)}(A_1,1)\mathbb{Q}_1^{(b)}(B_2)}{2} - \dfrac{\mathbb{Q}_2^{(1,-1;a)}(A_1,2)\mathbb{Q}_1^{(b)}(B_2)}{2}$

$\boxed{\text{z510}}$ $\mathbb{Q}_3^{(1,-1;c)}(B_2, 2b) = \dfrac{2\sqrt{22}\mathbb{M}_3^{(1,-1;a)}(A_1)\mathbb{T}_1^{(b)}(B_2)}{11} + \dfrac{\sqrt{330}\mathbb{M}_3^{(1,-1;a)}(A_2,1)\mathbb{T}_1^{(b)}(B_1)}{44} - \dfrac{3\sqrt{22}\mathbb{M}_3^{(1,-1;a)}(A_2,2)\mathbb{T}_1^{(b)}(B_1)}{44}$

$\boxed{\text{z511}}$ $\mathbb{Q}_4^{(1,-1;c)}(B_2, 1) = \dfrac{\sqrt{10}\mathbb{M}_3^{(1,-1;a)}(B_1,1)\mathbb{M}_1^{(b)}(A_2)}{4} + \dfrac{\sqrt{6}\mathbb{M}_3^{(1,-1;a)}(B_1,2)\mathbb{M}_1^{(b)}(A_2)}{4}$

$\boxed{\text{z512}}$ $\quad \mathbb{Q}_1^{(1,0;c)}(B_2,a) = \mathbb{G}_1^{(1,0;a)}(A_2)\mathbb{Q}_1^{(b)}(B_1)$

$\boxed{\text{z513}}$ $\quad \mathbb{Q}_1^{(1,0;c)}(B_2,b) = -\dfrac{\sqrt{7}\mathbb{T}_2^{(1,0;a)}(A_1,1)\mathbb{T}_1^{(b)}(B_2)}{7} - \dfrac{\sqrt{21}\mathbb{T}_2^{(1,0;a)}(A_1,2)\mathbb{T}_1^{(b)}(B_2)}{7} + \dfrac{\sqrt{21}\mathbb{T}_2^{(1,0;a)}(A_2)\mathbb{T}_1^{(b)}(B_1)}{7}$

$\boxed{\text{z514}}$ $\quad \mathbb{Q}_2^{(1,0;c)}(B_2,a) = -\mathbb{G}_1^{(1,0;a)}(B_1)\mathbb{Q}_2^{(b)}(A_2)$

$\boxed{\text{z515}}$ $\quad \mathbb{Q}_2^{(1,0;c)}(B_2,b) = \mathbb{T}_2^{(1,0;a)}(B_2)\mathbb{T}_0^{(b)}(A_1)$

$\boxed{\text{z516}}$ $\quad \mathbb{Q}_2^{(1,0;c)}(B_2,c) = -\mathbb{T}_2^{(1,0;a)}(B_1)\mathbb{M}_1^{(b)}(A_2)$

$\boxed{\text{z517}}$ $\quad \mathbb{Q}_3^{(1,0;c)}(B_2,1) = -\dfrac{\sqrt{21}\mathbb{T}_2^{(1,0;a)}(A_1,1)\mathbb{T}_1^{(b)}(B_2)}{14} - \dfrac{3\sqrt{7}\mathbb{T}_2^{(1,0;a)}(A_1,2)\mathbb{T}_1^{(b)}(B_2)}{14} - \dfrac{2\sqrt{7}\mathbb{T}_2^{(1,0;a)}(A_2)\mathbb{T}_1^{(b)}(B_1)}{7}$

$\boxed{\text{z518}}$ $\quad \mathbb{Q}_3^{(1,0;c)}(B_2,2) = \dfrac{\sqrt{3}\mathbb{T}_2^{(1,0;a)}(A_1,1)\mathbb{T}_1^{(b)}(B_2)}{2} - \dfrac{\mathbb{T}_2^{(1,0;a)}(A_1,2)\mathbb{T}_1^{(b)}(B_2)}{2}$

$\boxed{\text{z519}}$ $\quad \mathbb{Q}_1^{(1,1;c)}(B_2,a) = \mathbb{Q}_0^{(1,1;a)}(A_1)\mathbb{Q}_1^{(b)}(B_2)$

$\boxed{\text{z520}}$ $\quad \mathbb{Q}_1^{(1,1;c)}(B_2,b) = \mathbb{M}_1^{(1,1;a)}(A_2)\mathbb{T}_1^{(b)}(B_1)$

$\boxed{\text{z521}}$ $\quad \mathbb{Q}_2^{(1,1;c)}(B_2) = \mathbb{M}_1^{(1,1;a)}(B_1)\mathbb{M}_1^{(b)}(A_2)$

$\boxed{\text{z522}}$ $\quad \mathbb{G}_1^{(c)}(B_2) = \mathbb{M}_1^{(a)}(B_2)\mathbb{T}_0^{(b)}(A_1)$

$\boxed{\text{z523}}$ $\quad \mathbb{G}_1^{(1,-1;c)}(B_2) = \mathbb{M}_1^{(1,-1;a)}(B_2)\mathbb{T}_0^{(b)}(A_1)$

$\boxed{\text{z524}}$ $\quad \mathbb{G}_2^{(1,-1;c)}(B_2) = \dfrac{\sqrt{33}\mathbb{M}_3^{(1,-1;a)}(A_1)\mathbb{T}_1^{(b)}(B_2)}{11} - \dfrac{\sqrt{55}\mathbb{M}_3^{(1,-1;a)}(A_2,1)\mathbb{T}_1^{(b)}(B_1)}{11} + \dfrac{\sqrt{33}\mathbb{M}_3^{(1,-1;a)}(A_2,2)\mathbb{T}_1^{(b)}(B_1)}{11}$

$\boxed{\text{z525}}$ $\quad \mathbb{G}_3^{(1,-1;c)}(B_2,1) = \mathbb{M}_3^{(1,-1;a)}(B_2,1)\mathbb{T}_0^{(b)}(A_1)$

$\boxed{\text{z526}}$ $\quad \mathbb{G}_3^{(1,-1;c)}(B_2,2) = \mathbb{M}_3^{(1,-1;a)}(B_2,2)\mathbb{T}_0^{(b)}(A_1)$

$\boxed{\text{z527}}$ $\quad \mathbb{G}_1^{(1,0;c)}(B_2) = \mathbb{G}_1^{(1,0;a)}(B_2)\mathbb{Q}_0^{(b)}(A_1)$

$\boxed{\text{z528}}$ $\quad \mathbb{G}_1^{(1,1;c)}(B_2) = \mathbb{M}_1^{(1,1;a)}(B_2)\mathbb{T}_0^{(b)}(A_1)$

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- **'Te'-'Te' bond-cluster**
  * bra: $\langle p_x, \uparrow |, \langle p_x, \downarrow |, \langle p_y, \uparrow |, \langle p_y, \downarrow |, \langle p_z, \uparrow |, \langle p_z, \downarrow |$
  * ket: $| p_x, \uparrow \rangle, | p_x, \downarrow \rangle, | p_y, \uparrow \rangle, | p_y, \downarrow \rangle, | p_z, \uparrow \rangle, | p_z, \downarrow \rangle$
  * wyckoff: `4a@4b`

$\boxed{\text{z109}}$ $\quad \mathbb{Q}_0^{(c)}(A_1, a) = \mathbb{Q}_0^{(a)}(A_1)\mathbb{Q}_0^{(b)}(A_1)$

$\boxed{\text{z110}}$ $\quad \mathbb{Q}_0^{(c)}(A_1, b) = \mathbb{Q}_2^{(a)}(A_2)\mathbb{Q}_2^{(b)}(A_2)$

$\boxed{\text{z111}}$ $\quad \mathbb{Q}_0^{(c)}(A_1, c) = \mathbb{M}_1^{(a)}(A_2)\mathbb{M}_1^{(b)}(A_2)$

$\boxed{\text{z112}}$ $\quad \mathbb{Q}_1^{(c)}(A_1, a) = \dfrac{\sqrt{2}\mathbb{Q}_2^{(a)}(B_1)\mathbb{Q}_1^{(b)}(B_1)}{2} + \dfrac{\sqrt{2}\mathbb{Q}_2^{(a)}(B_2)\mathbb{Q}_1^{(b)}(B_2)}{2}$

$\boxed{\text{z113}}$ $\quad \mathbb{Q}_1^{(c)}(A_1, b) = -\dfrac{\sqrt{2}\mathbb{M}_1^{(a)}(B_1)\mathbb{T}_1^{(b)}(B_1)}{2} + \dfrac{\sqrt{2}\mathbb{M}_1^{(a)}(B_2)\mathbb{T}_1^{(b)}(B_2)}{2}$

$\boxed{\text{z114}}$ $\quad \mathbb{Q}_2^{(c)}(A_1, 1) = \mathbb{Q}_2^{(a)}(A_1, 1)\mathbb{Q}_0^{(b)}(A_1)$

$\boxed{\text{z115}}$ $\quad \mathbb{Q}_2^{(c)}(A_1, 2) = \mathbb{Q}_2^{(a)}(A_1, 2)\mathbb{Q}_0^{(b)}(A_1)$

$\boxed{\text{z116}}$ $\quad \mathbb{Q}_3^{(c)}(A_1, 2) = \dfrac{\sqrt{2}\mathbb{Q}_2^{(a)}(B_1)\mathbb{Q}_1^{(b)}(B_1)}{2} - \dfrac{\sqrt{2}\mathbb{Q}_2^{(a)}(B_2)\mathbb{Q}_1^{(b)}(B_2)}{2}$

$\boxed{\text{z117}}$ $\quad \mathbb{Q}_0^{(1,-1;c)}(A_1, a) = \mathbb{Q}_2^{(1,-1;a)}(A_2)\mathbb{Q}_2^{(b)}(A_2)$

$\boxed{\text{z118}}$ $\quad \mathbb{Q}_0^{(1,-1;c)}(A_1, b) = \mathbb{M}_1^{(1,-1;a)}(A_2)\mathbb{M}_1^{(b)}(A_2)$

$\boxed{\text{z119}}$ $\quad \mathbb{Q}_1^{(1,-1;c)}(A_1, a) = \dfrac{\sqrt{2}\mathbb{Q}_2^{(1,-1;a)}(B_1)\mathbb{Q}_1^{(b)}(B_1)}{2} + \dfrac{\sqrt{2}\mathbb{Q}_2^{(1,-1;a)}(B_2)\mathbb{Q}_1^{(b)}(B_2)}{2}$

$\boxed{\text{z120}}$ $\quad \mathbb{Q}_1^{(1,-1;c)}(A_1, b) = -\dfrac{\sqrt{2}\mathbb{M}_1^{(1,-1;a)}(B_1)\mathbb{T}_1^{(b)}(B_1)}{2} + \dfrac{\sqrt{2}\mathbb{M}_1^{(1,-1;a)}(B_2)\mathbb{T}_1^{(b)}(B_2)}{2}$

$\boxed{\text{z121}}$ $\quad \mathbb{Q}_2^{(1,-1;c)}(A_1, 1a) = \mathbb{Q}_2^{(1,-1;a)}(A_1, 1)\mathbb{Q}_0^{(b)}(A_1)$

$\boxed{\text{z122}}$ $\quad \mathbb{Q}_2^{(1,-1;c)}(A_1, 1b) = \mathbb{M}_3^{(1,-1;a)}(A_2, 1)\mathbb{M}_1^{(b)}(A_2)$

$\boxed{\text{z123}}$ $\quad \mathbb{Q}_2^{(1,-1;c)}(A_1, 2a) = \mathbb{Q}_2^{(1,-1;a)}(A_1, 2)\mathbb{Q}_0^{(b)}(A_1)$

$\boxed{\text{z124}}$ $\quad \mathbb{Q}_2^{(1,-1;c)}(A_1, 2b) = \mathbb{M}_3^{(1,-1;a)}(A_2, 2)\mathbb{M}_1^{(b)}(A_2)$

$\boxed{\text{z125}}$ $\quad \mathbb{Q}_3^{(1,-1;c)}(A_1, 1) = \dfrac{\sqrt{3}\mathbb{M}_3^{(1,-1;a)}(B_1,1)\mathbb{T}_1^{(b)}(B_1)}{4} - \dfrac{\sqrt{5}\mathbb{M}_3^{(1,-1;a)}(B_1,2)\mathbb{T}_1^{(b)}(B_1)}{4} - \dfrac{\sqrt{3}\mathbb{M}_3^{(1,-1;a)}(B_2,1)\mathbb{T}_1^{(b)}(B_2)}{4} - \dfrac{\sqrt{5}\mathbb{M}_3^{(1,-1;a)}(B_2,2)\mathbb{T}_1^{(b)}(B_2)}{4}$

$\boxed{\text{z126}}$ $\quad \mathbb{Q}_3^{(1,-1;c)}(A_1, 2a) = \dfrac{\sqrt{2}\mathbb{Q}_2^{(1,-1;a)}(B_1)\mathbb{Q}_1^{(b)}(B_1)}{2} - \dfrac{\sqrt{2}\mathbb{Q}_2^{(1,-1;a)}(B_2)\mathbb{Q}_1^{(b)}(B_2)}{2}$

$\boxed{\text{z127}}$ $\quad \mathbb{Q}_3^{(1,-1;c)}(A_1, 2b) = \dfrac{\sqrt{30}\mathbb{M}_3^{(1,-1;a)}(B_1,1)\mathbb{T}_1^{(b)}(B_1)}{8} - \dfrac{\sqrt{2}\mathbb{M}_3^{(1,-1;a)}(B_1,2)\mathbb{T}_1^{(b)}(B_1)}{8} + \dfrac{\sqrt{30}\mathbb{M}_3^{(1,-1;a)}(B_2,1)\mathbb{T}_1^{(b)}(B_2)}{8} + \dfrac{\sqrt{2}\mathbb{M}_3^{(1,-1;a)}(B_2,2)\mathbb{T}_1^{(b)}(B_2)}{8}$

$\boxed{\text{z128}}$ $\quad \mathbb{Q}_1^{(1,0;c)}(A_1, a) = -\dfrac{\sqrt{2}\mathbb{G}_1^{(1,0;a)}(B_1)\mathbb{Q}_1^{(b)}(B_1)}{2} + \dfrac{\sqrt{2}\mathbb{G}_1^{(1,0;a)}(B_2)\mathbb{Q}_1^{(b)}(B_2)}{2}$

$\boxed{\text{z129}}$ $\quad \mathbb{Q}_1^{(1,0;c)}(A_1, b) = \dfrac{\sqrt{2}\mathbb{T}_2^{(1,0;a)}(B_1)\mathbb{T}_1^{(b)}(B_1)}{2} + \dfrac{\sqrt{2}\mathbb{T}_2^{(1,0;a)}(B_2)\mathbb{T}_1^{(b)}(B_2)}{2}$

$\boxed{\text{z130}}$ $\quad \mathbb{Q}_2^{(1,0;c)}(A_1, 1) = \mathbb{T}_2^{(1,0;a)}(A_1, 1)\mathbb{T}_0^{(b)}(A_1)$

$\boxed{\text{z131}}$ $\quad \mathbb{Q}_2^{(1,0;c)}(A_1, 2a) = -\mathbb{G}_1^{(1,0;a)}(A_2)\mathbb{Q}_2^{(b)}(A_2)$

$\boxed{\text{z132}}$ $\quad \mathbb{Q}_2^{(1,0;c)}(A_1, 2b) = \mathbb{T}_2^{(1,0;a)}(A_1, 2)\mathbb{T}_0^{(b)}(A_1)$

$\boxed{\text{z133}}$ $\quad \mathbb{Q}_2^{(1,0;c)}(A_1, 2c) = \mathbb{T}_2^{(1,0;a)}(A_2)\mathbb{M}_1^{(b)}(A_2)$

$\boxed{\text{z134}}$ $\quad \mathbb{Q}_3^{(1,0;c)}(A_1, 2) = \dfrac{\sqrt{2}\mathbb{T}_2^{(1,0;a)}(B_1)\mathbb{T}_1^{(b)}(B_1)}{2} - \dfrac{\sqrt{2}\mathbb{T}_2^{(1,0;a)}(B_2)\mathbb{T}_1^{(b)}(B_2)}{2}$

$\boxed{\text{z135}}$ $\quad \mathbb{Q}_0^{(1,1;c)}(A_1, a) = \mathbb{Q}_0^{(1,1;a)}(A_1)\mathbb{Q}_0^{(b)}(A_1)$

$\boxed{\text{z136}}$ $\quad \mathbb{Q}_0^{(1,1;c)}(A_1, b) = \mathbb{M}_1^{(1,1;a)}(A_2)\mathbb{M}_1^{(b)}(A_2)$

$\boxed{\text{z137}}$ $\quad \mathbb{Q}_1^{(1,1;c)}(A_1) = -\dfrac{\sqrt{2}\mathbb{M}_1^{(1,1;a)}(B_1)\mathbb{T}_1^{(b)}(B_1)}{2} + \dfrac{\sqrt{2}\mathbb{M}_1^{(1,1;a)}(B_2)\mathbb{T}_1^{(b)}(B_2)}{2}$

$\boxed{\text{z138}}$ $\quad \mathbb{G}_2^{(c)}(A_1) = \dfrac{\sqrt{2}\mathbb{M}_1^{(a)}(B_1)\mathbb{T}_1^{(b)}(B_1)}{2} + \dfrac{\sqrt{2}\mathbb{M}_1^{(a)}(B_2)\mathbb{T}_1^{(b)}(B_2)}{2}$

$\boxed{\text{z139}}$ $\quad \mathbb{G}_2^{(1,-1;c)}(A_1, a) = -\dfrac{\sqrt{2}\mathbb{M}_3^{(1,-1;a)}(B_1,1)\mathbb{T}_1^{(b)}(B_1)}{8} - \dfrac{\sqrt{30}\mathbb{M}_3^{(1,-1;a)}(B_1,2)\mathbb{T}_1^{(b)}(B_1)}{8} - \dfrac{\sqrt{2}\mathbb{M}_3^{(1,-1;a)}(B_2,1)\mathbb{T}_1^{(b)}(B_2)}{8} + \dfrac{\sqrt{30}\mathbb{M}_3^{(1,-1;a)}(B_2,2)\mathbb{T}_1^{(b)}(B_2)}{8}$

z140 $\quad \mathbb{G}_2^{(1,-1;c)}(A_1, b) = \dfrac{\sqrt{2}\mathbb{M}_1^{(1,-1;a)}(B_1)\mathbb{T}_1^{(b)}(B_1)}{2} + \dfrac{\sqrt{2}\mathbb{M}_1^{(1,-1;a)}(B_2)\mathbb{T}_1^{(b)}(B_2)}{2}$

z141 $\quad \mathbb{G}_3^{(1,-1;c)}(A_1) = \mathbb{M}_3^{(1,-1;a)}(A_1)\mathbb{T}_0^{(b)}(A_1)$

z142 $\quad \mathbb{G}_4^{(1,-1;c)}(A_1, 1) = -\dfrac{\sqrt{5}\mathbb{M}_3^{(1,-1;a)}(B_1,1)\mathbb{T}_1^{(b)}(B_1)}{4} - \dfrac{\sqrt{3}\mathbb{M}_3^{(1,-1;a)}(B_1,2)\mathbb{T}_1^{(b)}(B_1)}{4} + \dfrac{\sqrt{5}\mathbb{M}_3^{(1,-1;a)}(B_2,1)\mathbb{T}_1^{(b)}(B_2)}{4} - \dfrac{\sqrt{3}\mathbb{M}_3^{(1,-1;a)}(B_2,2)\mathbb{T}_1^{(b)}(B_2)}{4}$

z143 $\quad \mathbb{G}_2^{(1,0;c)}(A_1) = \dfrac{\sqrt{2}\mathbb{G}_1^{(1,0;a)}(B_1)\mathbb{Q}_1^{(b)}(B_1)}{2} + \dfrac{\sqrt{2}\mathbb{G}_1^{(1,0;a)}(B_2)\mathbb{Q}_1^{(b)}(B_2)}{2}$

z144 $\quad \mathbb{G}_2^{(1,1;c)}(A_1) = \dfrac{\sqrt{2}\mathbb{M}_1^{(1,1;a)}(B_1)\mathbb{T}_1^{(b)}(B_1)}{2} + \dfrac{\sqrt{2}\mathbb{M}_1^{(1,1;a)}(B_2)\mathbb{T}_1^{(b)}(B_2)}{2}$

z247 $\quad \mathbb{Q}_2^{(c)}(A_2, a) = \mathbb{Q}_0^{(a)}(A_1)\mathbb{Q}_2^{(b)}(A_2)$

z248 $\quad \mathbb{Q}_2^{(c)}(A_2, b) = \mathbb{Q}_2^{(a)}(A_2)\mathbb{Q}_0^{(b)}(A_1)$

z249 $\quad \mathbb{Q}_2^{(c)}(A_2, c) = -\mathbb{Q}_2^{(a)}(A_1, 1)\mathbb{Q}_2^{(b)}(A_2)$

z250 $\quad \mathbb{Q}_3^{(c)}(A_2) = \dfrac{\sqrt{2}\mathbb{Q}_2^{(a)}(B_1)\mathbb{Q}_1^{(b)}(B_2)}{2} + \dfrac{\sqrt{2}\mathbb{Q}_2^{(a)}(B_2)\mathbb{Q}_1^{(b)}(B_1)}{2}$

z251 $\quad \mathbb{Q}_4^{(c)}(A_2, 1) = \mathbb{Q}_2^{(a)}(A_1, 2)\mathbb{Q}_2^{(b)}(A_2)$

z252 $\quad \mathbb{Q}_2^{(1,-1;c)}(A_2, a) = \mathbb{Q}_2^{(1,-1;a)}(A_2)\mathbb{Q}_0^{(b)}(A_1)$

z253 $\quad \mathbb{Q}_2^{(1,-1;c)}(A_2, b) = -\mathbb{Q}_2^{(1,-1;a)}(A_1, 1)\mathbb{Q}_2^{(b)}(A_2)$

z254 $\quad \mathbb{Q}_2^{(1,-1;c)}(A_2, c) = \mathbb{M}_3^{(1,-1;a)}(A_1)\mathbb{M}_1^{(b)}(A_2)$

z255 $\quad \mathbb{Q}_3^{(1,-1;c)}(A_2, a) = \dfrac{\sqrt{2}\mathbb{Q}_2^{(1,-1;a)}(B_1)\mathbb{Q}_1^{(b)}(B_2)}{2} + \dfrac{\sqrt{2}\mathbb{Q}_2^{(1,-1;a)}(B_2)\mathbb{Q}_1^{(b)}(B_1)}{2}$

z256 $\quad \mathbb{Q}_3^{(1,-1;c)}(A_2, b) = -\dfrac{\sqrt{2}\mathbb{M}_3^{(1,-1;a)}(B_1,2)\mathbb{T}_1^{(b)}(B_2)}{2} - \dfrac{\sqrt{2}\mathbb{M}_3^{(1,-1;a)}(B_2,2)\mathbb{T}_1^{(b)}(B_1)}{2}$

z257 $\quad \mathbb{Q}_4^{(1,-1;c)}(A_2, 1) = \mathbb{Q}_2^{(1,-1;a)}(A_1, 2)\mathbb{Q}_2^{(b)}(A_2)$

$\boxed{\text{z258}}$ $\quad \mathbb{Q}_2^{(1,0;c)}(A_2, a) = \mathbb{T}_2^{(1,0;a)}(A_2)\mathbb{T}_0^{(b)}(A_1)$

$\boxed{\text{z259}}$ $\quad \mathbb{Q}_2^{(1,0;c)}(A_2, b) = -\mathbb{T}_2^{(1,0;a)}(A_1, 2)\mathbb{M}_1^{(b)}(A_2)$

$\boxed{\text{z260}}$ $\quad \mathbb{Q}_3^{(1,0;c)}(A_2) = \dfrac{\sqrt{2}\mathbb{T}_2^{(1,0;a)}(B_1)\mathbb{T}_1^{(b)}(B_2)}{2} + \dfrac{\sqrt{2}\mathbb{T}_2^{(1,0;a)}(B_2)\mathbb{T}_1^{(b)}(B_1)}{2}$

$\boxed{\text{z261}}$ $\quad \mathbb{Q}_2^{(1,1;c)}(A_2) = \mathbb{Q}_0^{(1,1;a)}(A_1)\mathbb{Q}_2^{(b)}(A_2)$

$\boxed{\text{z262}}$ $\quad \mathbb{G}_0^{(c)}(A_2) = \dfrac{\sqrt{2}\mathbb{M}_1^{(a)}(B_1)\mathbb{T}_1^{(b)}(B_2)}{2} + \dfrac{\sqrt{2}\mathbb{M}_1^{(a)}(B_2)\mathbb{T}_1^{(b)}(B_1)}{2}$

$\boxed{\text{z263}}$ $\quad \mathbb{G}_1^{(c)}(A_2) = \mathbb{M}_1^{(a)}(A_2)\mathbb{T}_0^{(b)}(A_1)$

$\boxed{\text{z264}}$ $\quad \mathbb{G}_2^{(c)}(A_2, 1) = \dfrac{\sqrt{2}\mathbb{Q}_2^{(a)}(B_1)\mathbb{Q}_1^{(b)}(B_2)}{2} - \dfrac{\sqrt{2}\mathbb{Q}_2^{(a)}(B_2)\mathbb{Q}_1^{(b)}(B_1)}{2}$

$\boxed{\text{z265}}$ $\quad \mathbb{G}_2^{(c)}(A_2, 2) = -\dfrac{\sqrt{2}\mathbb{M}_1^{(a)}(B_1)\mathbb{T}_1^{(b)}(B_2)}{2} + \dfrac{\sqrt{2}\mathbb{M}_1^{(a)}(B_2)\mathbb{T}_1^{(b)}(B_1)}{2}$

$\boxed{\text{z266}}$ $\quad \mathbb{G}_0^{(1,-1;c)}(A_2) = \dfrac{\sqrt{2}\mathbb{M}_1^{(1,-1;a)}(B_1)\mathbb{T}_1^{(b)}(B_2)}{2} + \dfrac{\sqrt{2}\mathbb{M}_1^{(1,-1;a)}(B_2)\mathbb{T}_1^{(b)}(B_1)}{2}$

$\boxed{\text{z267}}$ $\quad \mathbb{G}_1^{(1,-1;c)}(A_2) = \mathbb{M}_1^{(1,-1;a)}(A_2)\mathbb{T}_0^{(b)}(A_1)$

$\boxed{\text{z268}}$ $\quad \mathbb{G}_2^{(1,-1;c)}(A_2, 1a) = \dfrac{\sqrt{2}\mathbb{Q}_2^{(1,-1;a)}(B_1)\mathbb{Q}_1^{(b)}(B_2)}{2} - \dfrac{\sqrt{2}\mathbb{Q}_2^{(1,-1;a)}(B_2)\mathbb{Q}_1^{(b)}(B_1)}{2}$

$\boxed{\text{z269}}$ $\quad \mathbb{G}_2^{(1,-1;c)}(A_2, 1b) = -\dfrac{\sqrt{3}\mathbb{M}_3^{(1,-1;a)}(B_1,1)\mathbb{T}_1^{(b)}(B_2)}{4} + \dfrac{\sqrt{5}\mathbb{M}_3^{(1,-1;a)}(B_1,2)\mathbb{T}_1^{(b)}(B_2)}{4} - \dfrac{\sqrt{3}\mathbb{M}_3^{(1,-1;a)}(B_2,1)\mathbb{T}_1^{(b)}(B_1)}{4} - \dfrac{\sqrt{5}\mathbb{M}_3^{(1,-1;a)}(B_2,2)\mathbb{T}_1^{(b)}(B_1)}{4}$

$\boxed{\text{z270}}$ $\quad \mathbb{G}_2^{(1,-1;c)}(A_2, 2a) = -\dfrac{\sqrt{2}\mathbb{M}_3^{(1,-1;a)}(B_1,1)\mathbb{T}_1^{(b)}(B_2)}{2} + \dfrac{\sqrt{2}\mathbb{M}_3^{(1,-1;a)}(B_2,1)\mathbb{T}_1^{(b)}(B_1)}{2}$

$\boxed{\text{z271}}$ $\quad \mathbb{G}_2^{(1,-1;c)}(A_2, 2b) = -\dfrac{\sqrt{2}\mathbb{M}_1^{(1,-1;a)}(B_1)\mathbb{T}_1^{(b)}(B_2)}{2} + \dfrac{\sqrt{2}\mathbb{M}_1^{(1,-1;a)}(B_2)\mathbb{T}_1^{(b)}(B_1)}{2}$

$\boxed{\text{z272}}$ $\quad \mathbb{G}_3^{(1,-1;c)}(A_2, 1) = \mathbb{M}_3^{(1,-1;a)}(A_2, 1)\mathbb{T}_0^{(b)}(A_1)$

$\boxed{\text{z273}}$ $\quad \mathbb{G}_3^{(1,-1;c)}(A_2,2) = \mathbb{M}_3^{(1,-1;a)}(A_2,2)\mathbb{T}_0^{(b)}(A_1)$

$\boxed{\text{z274}}$ $\quad \mathbb{G}_4^{(1,-1;c)}(A_2,1) = \dfrac{\sqrt{5}\mathbb{M}_3^{(1,-1;a)}(B_1,1)\mathbb{T}_1^{(b)}(B_2)}{4} + \dfrac{\sqrt{3}\mathbb{M}_3^{(1,-1;a)}(B_1,2)\mathbb{T}_1^{(b)}(B_2)}{4} + \dfrac{\sqrt{5}\mathbb{M}_3^{(1,-1;a)}(B_2,1)\mathbb{T}_1^{(b)}(B_1)}{4} - \dfrac{\sqrt{3}\mathbb{M}_3^{(1,-1;a)}(B_2,2)\mathbb{T}_1^{(b)}(B_1)}{4}$

$\boxed{\text{z275}}$ $\quad \mathbb{G}_0^{(1,0;c)}(A_2) = \dfrac{\sqrt{2}\mathbb{G}_1^{(1,0;a)}(B_1)\mathbb{Q}_1^{(b)}(B_2)}{2} + \dfrac{\sqrt{2}\mathbb{G}_1^{(1,0;a)}(B_2)\mathbb{Q}_1^{(b)}(B_1)}{2}$

$\boxed{\text{z276}}$ $\quad \mathbb{G}_1^{(1,0;c)}(A_2,a) = \mathbb{G}_1^{(1,0;a)}(A_2)\mathbb{Q}_0^{(b)}(A_1)$

$\boxed{\text{z277}}$ $\quad \mathbb{G}_1^{(1,0;c)}(A_2,b) = \mathbb{T}_2^{(1,0;a)}(A_1,1)\mathbb{M}_1^{(b)}(A_2)$

$\boxed{\text{z278}}$ $\quad \mathbb{G}_2^{(1,0;c)}(A_2,1) = \dfrac{\sqrt{2}\mathbb{T}_2^{(1,0;a)}(B_1)\mathbb{T}_1^{(b)}(B_2)}{2} - \dfrac{\sqrt{2}\mathbb{T}_2^{(1,0;a)}(B_2)\mathbb{T}_1^{(b)}(B_1)}{2}$

$\boxed{\text{z279}}$ $\quad \mathbb{G}_2^{(1,0;c)}(A_2,2) = -\dfrac{\sqrt{2}\mathbb{G}_1^{(1,0;a)}(B_1)\mathbb{Q}_1^{(b)}(B_2)}{2} + \dfrac{\sqrt{2}\mathbb{G}_1^{(1,0;a)}(B_2)\mathbb{Q}_1^{(b)}(B_1)}{2}$

$\boxed{\text{z280}}$ $\quad \mathbb{G}_0^{(1,1;c)}(A_2) = \dfrac{\sqrt{2}\mathbb{M}_1^{(1,1;a)}(B_1)\mathbb{T}_1^{(b)}(B_2)}{2} + \dfrac{\sqrt{2}\mathbb{M}_1^{(1,1;a)}(B_2)\mathbb{T}_1^{(b)}(B_1)}{2}$

$\boxed{\text{z281}}$ $\quad \mathbb{G}_1^{(1,1;c)}(A_2) = \mathbb{M}_1^{(1,1;a)}(A_2)\mathbb{T}_0^{(b)}(A_1)$

$\boxed{\text{z282}}$ $\quad \mathbb{G}_2^{(1,1;c)}(A_2,2) = -\dfrac{\sqrt{2}\mathbb{M}_1^{(1,1;a)}(B_1)\mathbb{T}_1^{(b)}(B_2)}{2} + \dfrac{\sqrt{2}\mathbb{M}_1^{(1,1;a)}(B_2)\mathbb{T}_1^{(b)}(B_1)}{2}$

$\boxed{\text{z385}}$ $\quad \mathbb{Q}_1^{(c)}(B_1,a) = \mathbb{Q}_0^{(a)}(A_1)\mathbb{Q}_1^{(b)}(B_1)$

$\boxed{\text{z386}}$ $\quad \mathbb{Q}_1^{(c)}(B_1,b) = -\dfrac{\sqrt{7}\mathbb{Q}_2^{(a)}(A_1,1)\mathbb{Q}_1^{(b)}(B_1)}{7} + \dfrac{\sqrt{21}\mathbb{Q}_2^{(a)}(A_1,2)\mathbb{Q}_1^{(b)}(B_1)}{7} + \dfrac{\sqrt{21}\mathbb{Q}_2^{(a)}(A_2)\mathbb{Q}_1^{(b)}(B_2)}{7}$

$\boxed{\text{z387}}$ $\quad \mathbb{Q}_1^{(c)}(B_1,c) = -\mathbb{M}_1^{(a)}(A_2)\mathbb{T}_1^{(b)}(B_2)$

$\boxed{\text{z388}}$ $\quad \mathbb{Q}_2^{(c)}(B_1,a) = \mathbb{Q}_2^{(a)}(B_1)\mathbb{Q}_0^{(b)}(A_1)$

$\boxed{\text{z389}}$ $\quad \mathbb{Q}_2^{(c)}(B_1,b) = \mathbb{Q}_2^{(a)}(B_2)\mathbb{Q}_2^{(b)}(A_2)$

$\boxed{\text{z390}}$ $\quad \mathbb{Q}_2^{(c)}(B_1,c) = \mathbb{M}_1^{(a)}(B_2)\mathbb{M}_1^{(b)}(A_2)$

$\boxed{\text{z391}}$ $\mathbb{Q}_3^{(c)}(B_1,1) = -\dfrac{\sqrt{21}\mathbb{Q}_2^{(a)}(A_1,1)\mathbb{Q}_1^{(b)}(B_1)}{14} + \dfrac{3\sqrt{7}\mathbb{Q}_2^{(a)}(A_1,2)\mathbb{Q}_1^{(b)}(B_1)}{14} - \dfrac{2\sqrt{7}\mathbb{Q}_2^{(a)}(A_2)\mathbb{Q}_1^{(b)}(B_2)}{7}$

$\boxed{\text{z392}}$ $\mathbb{Q}_3^{(c)}(B_1,2) = -\dfrac{\sqrt{3}\mathbb{Q}_2^{(a)}(A_1,1)\mathbb{Q}_1^{(b)}(B_1)}{2} - \dfrac{\mathbb{Q}_2^{(a)}(A_1,2)\mathbb{Q}_1^{(b)}(B_1)}{2}$

$\boxed{\text{z393}}$ $\mathbb{Q}_1^{(1,-1;c)}(B_1,a) = -\dfrac{\sqrt{7}\mathbb{Q}_2^{(1,-1;a)}(A_1,1)\mathbb{Q}_1^{(b)}(B_1)}{7} + \dfrac{\sqrt{21}\mathbb{Q}_2^{(1,-1;a)}(A_1,2)\mathbb{Q}_1^{(b)}(B_1)}{7} + \dfrac{\sqrt{21}\mathbb{Q}_2^{(1,-1;a)}(A_2)\mathbb{Q}_1^{(b)}(B_2)}{7}$

$\boxed{\text{z394}}$ $\mathbb{Q}_1^{(1,-1;c)}(B_1,b) = -\mathbb{M}_1^{(1,-1;a)}(A_2)\mathbb{T}_1^{(b)}(B_2)$

$\boxed{\text{z395}}$ $\mathbb{Q}_2^{(1,-1;c)}(B_1,a) = \mathbb{Q}_2^{(1,-1;a)}(B_1)\mathbb{Q}_0^{(b)}(A_1)$

$\boxed{\text{z396}}$ $\mathbb{Q}_2^{(1,-1;c)}(B_1,b) = \mathbb{Q}_2^{(1,-1;a)}(B_2)\mathbb{Q}_2^{(b)}(A_2)$

$\boxed{\text{z397}}$ $\mathbb{Q}_2^{(1,-1;c)}(B_1,c) = -\dfrac{\sqrt{6}\mathbb{M}_3^{(1,-1;a)}(B_2,1)\mathbb{M}_1^{(b)}(A_2)}{4} - \dfrac{\sqrt{10}\mathbb{M}_3^{(1,-1;a)}(B_2,2)\mathbb{M}_1^{(b)}(A_2)}{4}$

$\boxed{\text{z398}}$ $\mathbb{Q}_2^{(1,-1;c)}(B_1,d) = \mathbb{M}_1^{(1,-1;a)}(B_2)\mathbb{M}_1^{(b)}(A_2)$

$\boxed{\text{z399}}$ $\mathbb{Q}_3^{(1,-1;c)}(B_1,1a) = -\dfrac{\sqrt{21}\mathbb{Q}_2^{(1,-1;a)}(A_1,1)\mathbb{Q}_1^{(b)}(B_1)}{14} + \dfrac{3\sqrt{7}\mathbb{Q}_2^{(1,-1;a)}(A_1,2)\mathbb{Q}_1^{(b)}(B_1)}{14} - \dfrac{2\sqrt{7}\mathbb{Q}_2^{(1,-1;a)}(A_2)\mathbb{Q}_1^{(b)}(B_2)}{7}$

$\boxed{\text{z400}}$ $\mathbb{Q}_3^{(1,-1;c)}(B_1,1b) = \dfrac{\sqrt{6}\mathbb{M}_3^{(1,-1;a)}(A_2,1)\mathbb{T}_1^{(b)}(B_2)}{4} - \dfrac{\sqrt{10}\mathbb{M}_3^{(1,-1;a)}(A_2,2)\mathbb{T}_1^{(b)}(B_2)}{4}$

$\boxed{\text{z401}}$ $\mathbb{Q}_3^{(1,-1;c)}(B_1,2a) = -\dfrac{\sqrt{3}\mathbb{Q}_2^{(1,-1;a)}(A_1,1)\mathbb{Q}_1^{(b)}(B_1)}{2} - \dfrac{\mathbb{Q}_2^{(1,-1;a)}(A_1,2)\mathbb{Q}_1^{(b)}(B_1)}{2}$

$\boxed{\text{z402}}$ $\mathbb{Q}_3^{(1,-1;c)}(B_1,2b) = \dfrac{2\sqrt{22}\mathbb{M}_3^{(1,-1;a)}(A_1)\mathbb{T}_1^{(b)}(B_1)}{11} + \dfrac{\sqrt{330}\mathbb{M}_3^{(1,-1;a)}(A_2,1)\mathbb{T}_1^{(b)}(B_2)}{44} + \dfrac{3\sqrt{22}\mathbb{M}_3^{(1,-1;a)}(A_2,2)\mathbb{T}_1^{(b)}(B_2)}{44}$

$\boxed{\text{z403}}$ $\mathbb{Q}_4^{(1,-1;c)}(B_1,1) = -\dfrac{\sqrt{10}\mathbb{M}_3^{(1,-1;a)}(B_2,1)\mathbb{M}_1^{(b)}(A_2)}{4} + \dfrac{\sqrt{6}\mathbb{M}_3^{(1,-1;a)}(B_2,2)\mathbb{M}_1^{(b)}(A_2)}{4}$

$\boxed{\text{z404}}$ $\mathbb{Q}_1^{(1,0;c)}(B_1,a) = -\mathbb{G}_1^{(1,0;a)}(A_2)\mathbb{Q}_1^{(b)}(B_2)$

$\boxed{\text{z405}}$ $\mathbb{Q}_1^{(1,0;c)}(B_1,b) = -\dfrac{\sqrt{7}\mathbb{T}_2^{(1,0;a)}(A_1,1)\mathbb{T}_1^{(b)}(B_1)}{7} + \dfrac{\sqrt{21}\mathbb{T}_2^{(1,0;a)}(A_1,2)\mathbb{T}_1^{(b)}(B_1)}{7} + \dfrac{\sqrt{21}\mathbb{T}_2^{(1,0;a)}(A_2)\mathbb{T}_1^{(b)}(B_2)}{7}$

z406　$\mathbb{Q}_2^{(1,0;c)}(B_1,a) = \mathbb{G}_1^{(1,0;a)}(B_2)\mathbb{Q}_2^{(b)}(A_2)$

z407　$\mathbb{Q}_2^{(1,0;c)}(B_1,b) = \mathbb{T}_2^{(1,0;a)}(B_1)\mathbb{T}_0^{(b)}(A_1)$

z408　$\mathbb{Q}_2^{(1,0;c)}(B_1,c) = \mathbb{T}_2^{(1,0;a)}(B_2)\mathbb{M}_1^{(b)}(A_2)$

z409　$\mathbb{Q}_3^{(1,0;c)}(B_1,1) = -\dfrac{\sqrt{21}\mathbb{T}_2^{(1,0;a)}(A_1,1)\mathbb{T}_1^{(b)}(B_1)}{14} + \dfrac{3\sqrt{7}\mathbb{T}_2^{(1,0;a)}(A_1,2)\mathbb{T}_1^{(b)}(B_1)}{14} - \dfrac{2\sqrt{7}\mathbb{T}_2^{(1,0;a)}(A_2)\mathbb{T}_1^{(b)}(B_2)}{7}$

z410　$\mathbb{Q}_3^{(1,0;c)}(B_1,2) = -\dfrac{\sqrt{3}\mathbb{T}_2^{(1,0;a)}(A_1,1)\mathbb{T}_1^{(b)}(B_1)}{2} - \dfrac{\mathbb{T}_2^{(1,0;a)}(A_1,2)\mathbb{T}_1^{(b)}(B_1)}{2}$

z411　$\mathbb{Q}_1^{(1,1;c)}(B_1,a) = \mathbb{Q}_0^{(1,1;a)}(A_1)\mathbb{Q}_1^{(b)}(B_1)$

z412　$\mathbb{Q}_1^{(1,1;c)}(B_1,b) = -\mathbb{M}_1^{(1,1;a)}(A_2)\mathbb{T}_1^{(b)}(B_2)$

z413　$\mathbb{Q}_2^{(1,1;c)}(B_1) = \mathbb{M}_1^{(1,1;a)}(B_2)\mathbb{M}_1^{(b)}(A_2)$

z414　$\mathbb{G}_1^{(c)}(B_1) = \mathbb{M}_1^{(a)}(B_1)\mathbb{T}_0^{(b)}(A_1)$

z415　$\mathbb{G}_1^{(1,-1;c)}(B_1) = \mathbb{M}_1^{(1,-1;a)}(B_1)\mathbb{T}_0^{(b)}(A_1)$

z416　$\mathbb{G}_2^{(1,-1;c)}(B_1) = \dfrac{\sqrt{33}\mathbb{M}_3^{(1,-1;a)}(A_1)\mathbb{T}_1^{(b)}(B_1)}{11} - \dfrac{\sqrt{55}\mathbb{M}_3^{(1,-1;a)}(A_2,1)\mathbb{T}_1^{(b)}(B_2)}{11} - \dfrac{\sqrt{33}\mathbb{M}_3^{(1,-1;a)}(A_2,2)\mathbb{T}_1^{(b)}(B_2)}{11}$

z417　$\mathbb{G}_3^{(1,-1;c)}(B_1,1) = \mathbb{M}_3^{(1,-1;a)}(B_1,1)\mathbb{T}_0^{(b)}(A_1)$

z418　$\mathbb{G}_3^{(1,-1;c)}(B_1,2) = \mathbb{M}_3^{(1,-1;a)}(B_1,2)\mathbb{T}_0^{(b)}(A_1)$

z419　$\mathbb{G}_1^{(1,0;c)}(B_1) = \mathbb{G}_1^{(1,0;a)}(B_1)\mathbb{Q}_0^{(b)}(A_1)$

z420　$\mathbb{G}_1^{(1,1;c)}(B_1) = \mathbb{M}_1^{(1,1;a)}(B_1)\mathbb{T}_0^{(b)}(A_1)$

z529　$\mathbb{Q}_1^{(c)}(B_2,a) = \mathbb{Q}_0^{(a)}(A_1)\mathbb{Q}_1^{(b)}(B_2)$

z530　$\mathbb{Q}_1^{(c)}(B_2,b) = -\dfrac{\sqrt{7}\mathbb{Q}_2^{(a)}(A_1,1)\mathbb{Q}_1^{(b)}(B_2)}{7} - \dfrac{\sqrt{21}\mathbb{Q}_2^{(a)}(A_1,2)\mathbb{Q}_1^{(b)}(B_2)}{7} + \dfrac{\sqrt{21}\mathbb{Q}_2^{(a)}(A_2)\mathbb{Q}_1^{(b)}(B_1)}{7}$

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$\boxed{\text{z531}}$ $\quad \mathbb{Q}_1^{(c)}(B_2, c) = \mathbb{M}_1^{(a)}(A_2)\mathbb{T}_1^{(b)}(B_1)$

$\boxed{\text{z532}}$ $\quad \mathbb{Q}_2^{(c)}(B_2, a) = \mathbb{Q}_2^{(a)}(B_2)\mathbb{Q}_0^{(b)}(A_1)$

$\boxed{\text{z533}}$ $\quad \mathbb{Q}_2^{(c)}(B_2, b) = \mathbb{Q}_2^{(a)}(B_1)\mathbb{Q}_2^{(b)}(A_2)$

$\boxed{\text{z534}}$ $\quad \mathbb{Q}_2^{(c)}(B_2, c) = \mathbb{M}_1^{(a)}(B_1)\mathbb{M}_1^{(b)}(A_2)$

$\boxed{\text{z535}}$ $\quad \mathbb{Q}_3^{(c)}(B_2, 1) = -\dfrac{\sqrt{21}\mathbb{Q}_2^{(a)}(A_1, 1)\mathbb{Q}_1^{(b)}(B_2)}{14} - \dfrac{3\sqrt{7}\mathbb{Q}_2^{(a)}(A_1, 2)\mathbb{Q}_1^{(b)}(B_2)}{14} - \dfrac{2\sqrt{7}\mathbb{Q}_2^{(a)}(A_2)\mathbb{Q}_1^{(b)}(B_1)}{7}$

$\boxed{\text{z536}}$ $\quad \mathbb{Q}_3^{(c)}(B_2, 2) = \dfrac{\sqrt{3}\mathbb{Q}_2^{(a)}(A_1, 1)\mathbb{Q}_1^{(b)}(B_2)}{2} - \dfrac{\mathbb{Q}_2^{(a)}(A_1, 2)\mathbb{Q}_1^{(b)}(B_2)}{2}$

$\boxed{\text{z537}}$ $\quad \mathbb{Q}_1^{(1,-1;c)}(B_2, a) = -\dfrac{\sqrt{7}\mathbb{Q}_2^{(1,-1;a)}(A_1, 1)\mathbb{Q}_1^{(b)}(B_2)}{7} - \dfrac{\sqrt{21}\mathbb{Q}_2^{(1,-1;a)}(A_1, 2)\mathbb{Q}_1^{(b)}(B_2)}{7} + \dfrac{\sqrt{21}\mathbb{Q}_2^{(1,-1;a)}(A_2)\mathbb{Q}_1^{(b)}(B_1)}{7}$

$\boxed{\text{z538}}$ $\quad \mathbb{Q}_1^{(1,-1;c)}(B_2, b) = \mathbb{M}_1^{(1,-1;a)}(A_2)\mathbb{T}_1^{(b)}(B_1)$

$\boxed{\text{z539}}$ $\quad \mathbb{Q}_2^{(1,-1;c)}(B_2, a) = \mathbb{Q}_2^{(1,-1;a)}(B_2)\mathbb{Q}_0^{(b)}(A_1)$

$\boxed{\text{z540}}$ $\quad \mathbb{Q}_2^{(1,-1;c)}(B_2, b) = \mathbb{Q}_2^{(1,-1;a)}(B_1)\mathbb{Q}_2^{(b)}(A_2)$

$\boxed{\text{z541}}$ $\quad \mathbb{Q}_2^{(1,-1;c)}(B_2, c) = -\dfrac{\sqrt{6}\mathbb{M}_3^{(1,-1;a)}(B_1, 1)\mathbb{M}_1^{(b)}(A_2)}{4} + \dfrac{\sqrt{10}\mathbb{M}_3^{(1,-1;a)}(B_1, 2)\mathbb{M}_1^{(b)}(A_2)}{4}$

$\boxed{\text{z542}}$ $\quad \mathbb{Q}_2^{(1,-1;c)}(B_2, d) = \mathbb{M}_1^{(1,-1;a)}(B_1)\mathbb{M}_1^{(b)}(A_2)$

$\boxed{\text{z543}}$ $\quad \mathbb{Q}_3^{(1,-1;c)}(B_2, 1a) = -\dfrac{\sqrt{21}\mathbb{Q}_2^{(1,-1;a)}(A_1, 1)\mathbb{Q}_1^{(b)}(B_2)}{14} - \dfrac{3\sqrt{7}\mathbb{Q}_2^{(1,-1;a)}(A_1, 2)\mathbb{Q}_1^{(b)}(B_2)}{14} - \dfrac{2\sqrt{7}\mathbb{Q}_2^{(1,-1;a)}(A_2)\mathbb{Q}_1^{(b)}(B_1)}{7}$

$\boxed{\text{z544}}$ $\quad \mathbb{Q}_3^{(1,-1;c)}(B_2, 1b) = -\dfrac{\sqrt{6}\mathbb{M}_3^{(1,-1;a)}(A_2, 1)\mathbb{T}_1^{(b)}(B_1)}{4} - \dfrac{\sqrt{10}\mathbb{M}_3^{(1,-1;a)}(A_2, 2)\mathbb{T}_1^{(b)}(B_1)}{4}$

$\boxed{\text{z545}}$ $\quad \mathbb{Q}_3^{(1,-1;c)}(B_2, 2a) = \dfrac{\sqrt{3}\mathbb{Q}_2^{(1,-1;a)}(A_1, 1)\mathbb{Q}_1^{(b)}(B_2)}{2} - \dfrac{\mathbb{Q}_2^{(1,-1;a)}(A_1, 2)\mathbb{Q}_1^{(b)}(B_2)}{2}$

$\boxed{\text{z546}}$ $\quad \mathbb{Q}_3^{(1,-1;c)}(B_2, 2b) = \dfrac{2\sqrt{22}\mathbb{M}_3^{(1,-1;a)}(A_1)\mathbb{T}_1^{(b)}(B_2)}{11} + \dfrac{\sqrt{330}\mathbb{M}_3^{(1,-1;a)}(A_2, 1)\mathbb{T}_1^{(b)}(B_1)}{44} - \dfrac{3\sqrt{22}\mathbb{M}_3^{(1,-1;a)}(A_2, 2)\mathbb{T}_1^{(b)}(B_1)}{44}$

$\boxed{\text{z547}}$ $\mathbb{Q}_4^{(1,-1;c)}(B_2,1) = \dfrac{\sqrt{10}\mathbb{M}_3^{(1,-1;a)}(B_1,1)\mathbb{M}_1^{(b)}(A_2)}{4} + \dfrac{\sqrt{6}\mathbb{M}_3^{(1,-1;a)}(B_1,2)\mathbb{M}_1^{(b)}(A_2)}{4}$

$\boxed{\text{z548}}$ $\mathbb{Q}_1^{(1,0;c)}(B_2,a) = \mathbb{G}_1^{(1,0;a)}(A_2)\mathbb{Q}_1^{(b)}(B_1)$

$\boxed{\text{z549}}$ $\mathbb{Q}_1^{(1,0;c)}(B_2,b) = -\dfrac{\sqrt{7}\mathbb{T}_2^{(1,0;a)}(A_1,1)\mathbb{T}_1^{(b)}(B_2)}{7} - \dfrac{\sqrt{21}\mathbb{T}_2^{(1,0;a)}(A_1,2)\mathbb{T}_1^{(b)}(B_2)}{7} + \dfrac{\sqrt{21}\mathbb{T}_2^{(1,0;a)}(A_2)\mathbb{T}_1^{(b)}(B_1)}{7}$

$\boxed{\text{z550}}$ $\mathbb{Q}_2^{(1,0;c)}(B_2,a) = -\mathbb{G}_1^{(1,0;a)}(B_1)\mathbb{Q}_2^{(b)}(A_2)$

$\boxed{\text{z551}}$ $\mathbb{Q}_2^{(1,0;c)}(B_2,b) = \mathbb{T}_2^{(1,0;a)}(B_2)\mathbb{T}_0^{(b)}(A_1)$

$\boxed{\text{z552}}$ $\mathbb{Q}_2^{(1,0;c)}(B_2,c) = -\mathbb{T}_2^{(1,0;a)}(B_1)\mathbb{M}_1^{(b)}(A_2)$

$\boxed{\text{z553}}$ $\mathbb{Q}_3^{(1,0;c)}(B_2,1) = -\dfrac{\sqrt{21}\mathbb{T}_2^{(1,0;a)}(A_1,1)\mathbb{T}_1^{(b)}(B_2)}{14} - \dfrac{3\sqrt{7}\mathbb{T}_2^{(1,0;a)}(A_1,2)\mathbb{T}_1^{(b)}(B_2)}{14} - \dfrac{2\sqrt{7}\mathbb{T}_2^{(1,0;a)}(A_2)\mathbb{T}_1^{(b)}(B_1)}{7}$

$\boxed{\text{z554}}$ $\mathbb{Q}_3^{(1,0;c)}(B_2,2) = \dfrac{\sqrt{3}\mathbb{T}_2^{(1,0;a)}(A_1,1)\mathbb{T}_1^{(b)}(B_2)}{2} - \dfrac{\mathbb{T}_2^{(1,0;a)}(A_1,2)\mathbb{T}_1^{(b)}(B_2)}{2}$

$\boxed{\text{z555}}$ $\mathbb{Q}_1^{(1,1;c)}(B_2,a) = \mathbb{Q}_0^{(1,1;a)}(A_1)\mathbb{Q}_1^{(b)}(B_2)$

$\boxed{\text{z556}}$ $\mathbb{Q}_1^{(1,1;c)}(B_2,b) = \mathbb{M}_1^{(1,1;a)}(A_2)\mathbb{T}_1^{(b)}(B_1)$

$\boxed{\text{z557}}$ $\mathbb{Q}_2^{(1,1;c)}(B_2) = \mathbb{M}_1^{(1,1;a)}(B_1)\mathbb{M}_1^{(b)}(A_2)$

$\boxed{\text{z558}}$ $\mathbb{G}_1^{(c)}(B_2) = \mathbb{M}_1^{(a)}(B_2)\mathbb{T}_0^{(b)}(A_1)$

$\boxed{\text{z559}}$ $\mathbb{G}_1^{(1,-1;c)}(B_2) = \mathbb{M}_1^{(1,-1;a)}(B_2)\mathbb{T}_0^{(b)}(A_1)$

$\boxed{\text{z560}}$ $\mathbb{G}_2^{(1,-1;c)}(B_2) = \dfrac{\sqrt{33}\mathbb{M}_3^{(1,-1;a)}(A_1)\mathbb{T}_1^{(b)}(B_2)}{11} - \dfrac{\sqrt{55}\mathbb{M}_3^{(1,-1;a)}(A_2,1)\mathbb{T}_1^{(b)}(B_1)}{11} + \dfrac{\sqrt{33}\mathbb{M}_3^{(1,-1;a)}(A_2,2)\mathbb{T}_1^{(b)}(B_1)}{11}$

$\boxed{\text{z561}}$ $\mathbb{G}_3^{(1,-1;c)}(B_2,1) = \mathbb{M}_3^{(1,-1;a)}(B_2,1)\mathbb{T}_0^{(b)}(A_1)$

$\boxed{\text{z562}}$ $\mathbb{G}_3^{(1,-1;c)}(B_2,2) = \mathbb{M}_3^{(1,-1;a)}(B_2,2)\mathbb{T}_0^{(b)}(A_1)$

$\boxed{\text{z563}}$ $\mathbb{G}_1^{(1,0;c)}(B_2) = \mathbb{G}_1^{(1,0;a)}(B_2)\mathbb{Q}_0^{(b)}(A_1)$

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$\boxed{\text{z564}}$ $\quad \mathbb{G}_1^{(1,1;c)}(B_2) = \mathbb{M}_1^{(1,1;a)}(B_2)\mathbb{T}_0^{(b)}(A_1)$

■— 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: $|p_x, \uparrow \rangle, |p_x, \downarrow \rangle, |p_y, \uparrow \rangle, |p_y, \downarrow \rangle, |p_z, \uparrow \rangle, |p_z, \downarrow \rangle$

$\boxed{\text{x1}}$ $\quad \mathbb{Q}_0^{(a)}(A_1) = \begin{bmatrix} \frac{\sqrt{6}}{6} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{6}}{6} & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{6}}{6} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{6}}{6} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{6} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{6} \end{bmatrix}$

$\boxed{\text{x2}}$ $\quad \mathbb{Q}_2^{(a)}(A_1, 1) = \begin{bmatrix} -\frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{3}}{6} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{3} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{3} \end{bmatrix}$

$\boxed{\text{x3}}$ $\quad \mathbb{Q}_2^{(a)}(A_1, 2) = \begin{bmatrix} \frac{1}{2} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{1}{2} & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{1}{2} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{1}{2} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$

$\boxed{\text{x4}}$ $\quad \mathbb{Q}_2^{(a)}(A_2) = \begin{bmatrix} 0 & 0 & \frac{1}{2} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{1}{2} & 0 & 0 \\ \frac{1}{2} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{1}{2} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$

$$\boxed{\text{x5}} \quad \mathbb{Q}_2^{(a)}(B_1) = \begin{bmatrix} 0 & 0 & 0 & 0 & \frac{1}{2} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{1}{2} \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{1}{2} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{1}{2} & 0 & 0 & 0 & 0 \end{bmatrix}$$

$$\boxed{\text{x6}} \quad \mathbb{Q}_2^{(a)}(B_2) = \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{1}{2} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{1}{2} \\ 0 & 0 & \frac{1}{2} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{1}{2} & 0 & 0 \end{bmatrix}$$

$$\boxed{\text{x7}} \quad \mathbb{Q}_2^{(1,-1;a)}(A_1,1) = \begin{bmatrix} 0 & 0 & -\frac{\sqrt{6}i}{6} & 0 & 0 & -\frac{\sqrt{6}}{12} \\ 0 & 0 & 0 & \frac{\sqrt{6}i}{6} & \frac{\sqrt{6}}{12} & 0 \\ \frac{\sqrt{6}i}{6} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{12} \\ 0 & -\frac{\sqrt{6}i}{6} & 0 & 0 & \frac{\sqrt{6}i}{12} & 0 \\ 0 & \frac{\sqrt{6}}{12} & 0 & -\frac{\sqrt{6}i}{12} & 0 & 0 \\ -\frac{\sqrt{6}}{12} & 0 & -\frac{\sqrt{6}i}{12} & 0 & 0 & 0 \end{bmatrix}$$

$$\boxed{\text{x8}} \quad \mathbb{Q}_2^{(1,-1;a)}(A_1,2) = \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 \\ 0 & \frac{\sqrt{2}}{4} & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 \\ -\frac{\sqrt{2}}{4} & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 \end{bmatrix}$$

$$\boxed{\text{x9}} \quad \mathbb{Q}_2^{(1,-1;a)}(A_2) = \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 \\ 0 & -\frac{\sqrt{2}i}{4} & 0 & \frac{\sqrt{2}}{4} & 0 & 0 \\ -\frac{\sqrt{2}i}{4} & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 \end{bmatrix}$$

$$\boxed{\text{x10}} \quad \mathbb{Q}_2^{(1,-1;a)}(B_1) = \begin{bmatrix} 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 \\ \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} \\ 0 & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 \end{bmatrix}$$

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$$\boxed{\text{x11}} \quad \mathbb{Q}_2^{(1,-1;a)}(B_2) = \begin{bmatrix} 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & \frac{\sqrt{2}i}{4} & 0 \\ 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & -\frac{\sqrt{2}i}{4} \\ 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 \end{bmatrix}$$

$$\boxed{\text{x12}} \quad \mathbb{Q}_0^{(1,1;a)}(A_1) = \begin{bmatrix} 0 & 0 & -\frac{\sqrt{3}i}{6} & 0 & 0 & \frac{\sqrt{3}}{6} \\ 0 & 0 & 0 & \frac{\sqrt{3}i}{6} & -\frac{\sqrt{3}}{6} & 0 \\ \frac{\sqrt{3}i}{6} & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{6} \\ 0 & -\frac{\sqrt{3}i}{6} & 0 & 0 & -\frac{\sqrt{3}i}{6} & 0 \\ 0 & -\frac{\sqrt{3}}{6} & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 \\ \frac{\sqrt{3}}{6} & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 & 0 \end{bmatrix}$$

$$\boxed{\text{x13}} \quad \mathbb{G}_1^{(1,0;a)}(A_2) = \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 \\ 0 & -\frac{\sqrt{2}i}{4} & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 \\ -\frac{\sqrt{2}i}{4} & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 \end{bmatrix}$$

$$\boxed{\text{x14}} \quad \mathbb{G}_1^{(1,0;a)}(B_1) = \begin{bmatrix} 0 & 0 & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 \\ 0 & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 \\ -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} \\ 0 & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 \end{bmatrix}$$

$$\boxed{\text{x15}} \quad \mathbb{G}_1^{(1,0;a)}(B_2) = \begin{bmatrix} 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & -\frac{\sqrt{2}i}{4} & 0 \\ 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & \frac{\sqrt{2}i}{4} \\ 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 \end{bmatrix}$$

$$\boxed{\text{x16}} \quad \mathbb{M}_1^{(a)}(A_2) = \begin{bmatrix} 0 & 0 & -\frac{i}{2} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{i}{2} & 0 & 0 \\ \frac{i}{2} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{i}{2} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$$

$$\boxed{\text{x17}} \quad \mathbb{M}_1^{(a)}(B_1) = \begin{bmatrix} 0 & 0 & 0 & 0 & \frac{i}{2} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{i}{2} \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{i}{2} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{i}{2} & 0 & 0 & 0 & 0 \end{bmatrix}$$

$$\boxed{\text{x18}} \quad \mathbb{M}_1^{(a)}(B_2) = \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{i}{2} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{i}{2} \\ 0 & 0 & \frac{i}{2} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{i}{2} & 0 & 0 \end{bmatrix}$$

$$\boxed{\text{x19}} \quad \mathbb{M}_3^{(1,-1;a)}(A_1) = \begin{bmatrix} 0 & 0 & \frac{\sqrt{3}}{6} & 0 & 0 & -\frac{\sqrt{3}i}{6} \\ 0 & 0 & 0 & -\frac{\sqrt{3}}{6} & \frac{\sqrt{3}i}{6} & 0 \\ \frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{6} \\ 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & \frac{\sqrt{3}}{6} & 0 \\ 0 & -\frac{\sqrt{3}i}{6} & 0 & \frac{\sqrt{3}}{6} & 0 & 0 \\ \frac{\sqrt{3}i}{6} & 0 & \frac{\sqrt{3}}{6} & 0 & 0 & 0 \end{bmatrix}$$

$$\boxed{\text{x20}} \quad \mathbb{M}_1^{(1,-1;a)}(A_2) = \begin{bmatrix} \frac{\sqrt{6}}{6} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{6}}{6} & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{6}}{6} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{6}}{6} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{6} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{6} \end{bmatrix}$$

$$\boxed{\text{x21}} \quad \mathbb{M}_3^{(1,-1;a)}(A_2,1) = \begin{bmatrix} -\frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{10} \\ 0 & \frac{\sqrt{5}}{10} & 0 & 0 & -\frac{\sqrt{5}}{10} & 0 \\ 0 & 0 & -\frac{\sqrt{5}}{10} & 0 & 0 & \frac{\sqrt{5}i}{10} \\ 0 & 0 & 0 & \frac{\sqrt{5}}{10} & -\frac{\sqrt{5}i}{10} & 0 \\ 0 & -\frac{\sqrt{5}}{10} & 0 & \frac{\sqrt{5}i}{10} & \frac{\sqrt{5}}{5} & 0 \\ -\frac{\sqrt{5}}{10} & 0 & -\frac{\sqrt{5}i}{10} & 0 & 0 & -\frac{\sqrt{5}}{5} \end{bmatrix}$$

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$$\boxed{\text{x22}} \quad \mathbb{M}_3^{(1,-1;a)}(A_2,2) = \begin{bmatrix} \frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{6} \\ 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & \frac{\sqrt{3}}{6} & 0 \\ 0 & 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & \frac{\sqrt{3}i}{6} \\ 0 & 0 & 0 & \frac{\sqrt{3}}{6} & -\frac{\sqrt{3}i}{6} & 0 \\ 0 & \frac{\sqrt{3}}{6} & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 \\ \frac{\sqrt{3}}{6} & 0 & -\frac{\sqrt{3}i}{6} & 0 & 0 & 0 \end{bmatrix}$$

$$\boxed{\text{x23}} \quad \mathbb{M}_1^{(1,-1;a)}(B_1) = \begin{bmatrix} 0 & -\frac{\sqrt{6}i}{6} & 0 & 0 & 0 & 0 \\ \frac{\sqrt{6}i}{6} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{6}i}{6} & 0 & 0 \\ 0 & 0 & \frac{\sqrt{6}i}{6} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{6} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{6} & 0 \end{bmatrix}$$

$$\boxed{\text{x24}} \quad \mathbb{M}_3^{(1,-1;a)}(B_1,1) = \begin{bmatrix} 0 & \frac{\sqrt{5}i}{10} & 0 & -\frac{\sqrt{5}}{10} & 0 & 0 \\ -\frac{\sqrt{5}i}{10} & 0 & -\frac{\sqrt{5}}{10} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{5}}{10} & 0 & -\frac{\sqrt{5}i}{5} & -\frac{\sqrt{5}}{10} & 0 \\ -\frac{\sqrt{5}}{10} & 0 & \frac{\sqrt{5}i}{5} & 0 & 0 & \frac{\sqrt{5}}{10} \\ 0 & 0 & -\frac{\sqrt{5}}{10} & 0 & 0 & \frac{\sqrt{5}i}{10} \\ 0 & 0 & 0 & \frac{\sqrt{5}}{10} & -\frac{\sqrt{5}i}{10} & 0 \end{bmatrix}$$

$$\boxed{\text{x25}} \quad \mathbb{M}_3^{(1,-1;a)}(B_1,2) = \begin{bmatrix} 0 & \frac{\sqrt{3}i}{6} & 0 & -\frac{\sqrt{3}}{6} & 0 & 0 \\ -\frac{\sqrt{3}i}{6} & 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & \frac{\sqrt{3}}{6} & 0 \\ -\frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{6} \\ 0 & 0 & \frac{\sqrt{3}}{6} & 0 & 0 & -\frac{\sqrt{3}i}{6} \\ 0 & 0 & 0 & -\frac{\sqrt{3}}{6} & \frac{\sqrt{3}i}{6} & 0 \end{bmatrix}$$

$$\boxed{\text{x26}} \quad \mathbb{M}_1^{(1,-1;a)}(B_2) = \begin{bmatrix} 0 & \frac{\sqrt{6}}{6} & 0 & 0 & 0 & 0 \\ \frac{\sqrt{6}}{6} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{6}}{6} & 0 & 0 \\ 0 & 0 & \frac{\sqrt{6}}{6} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{6} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{6} & 0 \end{bmatrix}$$

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$\mathbb{M}_3^{(1,-1;a)}(B_2,1) = \begin{bmatrix} 0 & \frac{\sqrt5}{5} & 0 & \frac{\sqrt5 i}{10} & -\frac{\sqrt5}{10} & 0 \\ \frac{\sqrt5}{5} & 0 & -\frac{\sqrt5 i}{10} & 0 & 0 & \frac{\sqrt5}{10} \\ 0 & \frac{\sqrt5 i}{10} & 0 & -\frac{\sqrt5}{10} & 0 & 0 \\ -\frac{\sqrt5 i}{10} & 0 & -\frac{\sqrt5}{10} & 0 & 0 & 0 \\ -\frac{\sqrt5}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt5}{10} \\ 0 & \frac{\sqrt5}{10} & 0 & 0 & -\frac{\sqrt5}{10} & 0 \end{bmatrix}$

x28 $\mathbb{M}_3^{(1,-1;a)}(B_2,2) = \begin{bmatrix} 0 & 0 & 0 & -\frac{\sqrt3 i}{6} & -\frac{\sqrt3}{6} & 0 \\ 0 & 0 & \frac{\sqrt3 i}{6} & 0 & 0 & \frac{\sqrt3}{6} \\ 0 & -\frac{\sqrt3 i}{6} & 0 & \frac{\sqrt3}{6} & 0 & 0 \\ \frac{\sqrt3 i}{6} & 0 & \frac{\sqrt3}{6} & 0 & 0 & 0 \\ -\frac{\sqrt3}{6} & 0 & 0 & 0 & 0 & -\frac{\sqrt3}{6} \\ 0 & \frac{\sqrt3}{6} & 0 & 0 & -\frac{\sqrt3}{6} & 0 \end{bmatrix}$

x29 $\mathbb{M}_1^{(1,1;a)}(A_2) = \begin{bmatrix} -\frac{\sqrt{30}}{30} & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{20} \\ 0 & \frac{\sqrt{30}}{30} & 0 & 0 & \frac{\sqrt{30}}{20} & 0 \\ 0 & 0 & -\frac{\sqrt{30}}{30} & 0 & 0 & -\frac{\sqrt{30}i}{20} \\ 0 & 0 & 0 & \frac{\sqrt{30}}{30} & \frac{\sqrt{30}i}{20} & 0 \\ 0 & \frac{\sqrt{30}}{20} & 0 & -\frac{\sqrt{30}i}{20} & \frac{\sqrt{30}}{15} & 0 \\ \frac{\sqrt{30}}{20} & 0 & \frac{\sqrt{30}i}{20} & 0 & 0 & -\frac{\sqrt{30}}{15} \end{bmatrix}$

x30 $\mathbb{M}_1^{(1,1;a)}(B_1) = \begin{bmatrix} 0 & \frac{\sqrt{30}i}{30} & 0 & \frac{\sqrt{30}}{20} & 0 & 0 \\ -\frac{\sqrt{30}i}{30} & 0 & \frac{\sqrt{30}}{20} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{30}}{20} & 0 & -\frac{\sqrt{30}i}{15} & \frac{\sqrt{30}}{20} & 0 \\ \frac{\sqrt{30}}{20} & 0 & \frac{\sqrt{30}i}{15} & 0 & 0 & -\frac{\sqrt{30}}{20} \\ 0 & 0 & \frac{\sqrt{30}}{20} & 0 & 0 & \frac{\sqrt{30}i}{30} \\ 0 & 0 & 0 & -\frac{\sqrt{30}}{20} & -\frac{\sqrt{30}i}{30} & 0 \end{bmatrix}$

x31 $\mathbb{M}_1^{(1,1;a)}(B_2) = \begin{bmatrix} 0 & \frac{\sqrt{30}}{15} & 0 & -\frac{\sqrt{30}i}{20} & \frac{\sqrt{30}}{20} & 0 \\ \frac{\sqrt{30}}{15} & 0 & \frac{\sqrt{30}i}{20} & 0 & 0 & -\frac{\sqrt{30}}{20} \\ 0 & -\frac{\sqrt{30}i}{20} & 0 & -\frac{\sqrt{30}}{30} & 0 & 0 \\ \frac{\sqrt{30}i}{20} & 0 & -\frac{\sqrt{30}}{30} & 0 & 0 & 0 \\ \frac{\sqrt{30}}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{30} \\ 0 & -\frac{\sqrt{30}}{20} & 0 & 0 & -\frac{\sqrt{30}}{30} & 0 \end{bmatrix}$

$\boxed{\text{x32}}$ $\mathbb{T}_2^{(1,0;a)}(A_1,1) = \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 \\ 0 & \frac{\sqrt{2}i}{4} & 0 & \frac{\sqrt{2}}{4} & 0 & 0 \\ -\frac{\sqrt{2}i}{4} & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 \end{bmatrix}$

$\boxed{\text{x33}}$ $\mathbb{T}_2^{(1,0;a)}(A_1,2) = \begin{bmatrix} 0 & 0 & -\frac{\sqrt{6}}{6} & 0 & 0 & -\frac{\sqrt{6}i}{12} \\ 0 & 0 & 0 & \frac{\sqrt{6}}{6} & \frac{\sqrt{6}i}{12} & 0 \\ -\frac{\sqrt{6}}{6} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{12} \\ 0 & \frac{\sqrt{6}}{6} & 0 & 0 & \frac{\sqrt{6}}{12} & 0 \\ 0 & -\frac{\sqrt{6}i}{12} & 0 & \frac{\sqrt{6}}{12} & 0 & 0 \\ \frac{\sqrt{6}i}{12} & 0 & \frac{\sqrt{6}}{12} & 0 & 0 & 0 \end{bmatrix}$

$\boxed{\text{x34}}$ $\mathbb{T}_2^{(1,0;a)}(A_2) = \begin{bmatrix} \frac{\sqrt{6}}{6} & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{12} \\ 0 & -\frac{\sqrt{6}}{6} & 0 & 0 & -\frac{\sqrt{6}}{12} & 0 \\ 0 & 0 & -\frac{\sqrt{6}}{6} & 0 & 0 & -\frac{\sqrt{6}i}{12} \\ 0 & 0 & 0 & \frac{\sqrt{6}}{6} & \frac{\sqrt{6}i}{12} & 0 \\ 0 & -\frac{\sqrt{6}}{12} & 0 & -\frac{\sqrt{6}i}{12} & 0 & 0 \\ -\frac{\sqrt{6}}{12} & 0 & \frac{\sqrt{6}i}{12} & 0 & 0 & 0 \end{bmatrix}$

$\boxed{\text{x35}}$ $\mathbb{T}_2^{(1,0;a)}(B_1) = \begin{bmatrix} 0 & \frac{\sqrt{6}i}{6} & 0 & \frac{\sqrt{6}}{12} & 0 & 0 \\ -\frac{\sqrt{6}i}{6} & 0 & \frac{\sqrt{6}}{12} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{6}}{12} & 0 & 0 & -\frac{\sqrt{6}}{12} & 0 \\ \frac{\sqrt{6}}{12} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{12} \\ 0 & 0 & -\frac{\sqrt{6}}{12} & 0 & 0 & -\frac{\sqrt{6}i}{6} \\ 0 & 0 & 0 & \frac{\sqrt{6}}{12} & \frac{\sqrt{6}i}{6} & 0 \end{bmatrix}$

$\boxed{\text{x36}}$ $\mathbb{T}_2^{(1,0;a)}(B_2) = \begin{bmatrix} 0 & 0 & 0 & \frac{\sqrt{6}i}{12} & \frac{\sqrt{6}}{12} & 0 \\ 0 & 0 & -\frac{\sqrt{6}i}{12} & 0 & 0 & -\frac{\sqrt{6}}{12} \\ 0 & \frac{\sqrt{6}i}{12} & 0 & \frac{\sqrt{6}}{6} & 0 & 0 \\ -\frac{\sqrt{6}i}{12} & 0 & \frac{\sqrt{6}}{6} & 0 & 0 & 0 \\ \frac{\sqrt{6}}{12} & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{6} \\ 0 & -\frac{\sqrt{6}}{12} & 0 & 0 & -\frac{\sqrt{6}}{6} & 0 \end{bmatrix}$

- Site cluster

** Wyckoff: 2a

y1 $\mathbb{Q}_0^{(s)}(A_1) = \left[\dfrac{\sqrt{2}}{2}, \dfrac{\sqrt{2}}{2} \right]$

y2 $\mathbb{Q}_1^{(s)}(B_2) = \left[\dfrac{\sqrt{2}}{2}, -\dfrac{\sqrt{2}}{2} \right]$

- Bond cluster

** Wyckoff: 2a@2a

y3 $\mathbb{Q}_0^{(s)}(A_1) = \left[\dfrac{\sqrt{2}}{2}, \dfrac{\sqrt{2}}{2} \right]$

y4 $\mathbb{T}_0^{(s)}(A_1) = \left[\dfrac{\sqrt{2}i}{2}, \dfrac{\sqrt{2}i}{2} \right]$

y5 $\mathbb{Q}_1^{(s)}(B_2) = \left[\dfrac{\sqrt{2}}{2}, -\dfrac{\sqrt{2}}{2} \right]$

y6 $\mathbb{T}_1^{(s)}(B_2) = \left[\dfrac{\sqrt{2}i}{2}, -\dfrac{\sqrt{2}i}{2} \right]$

** Wyckoff: 4a@4b

y7 $\mathbb{Q}_0^{(s)}(A_1) = \left[\dfrac{1}{2}, \dfrac{1}{2}, \dfrac{1}{2}, \dfrac{1}{2} \right]$

y8 $\mathbb{T}_0^{(s)}(A_1) = \left[\dfrac{i}{2}, \dfrac{i}{2}, \dfrac{i}{2}, \dfrac{i}{2} \right]$

y9 $\mathbb{M}_1^{(s)}(A_2) = \left[\dfrac{i}{2}, \dfrac{i}{2}, -\dfrac{i}{2}, -\dfrac{i}{2} \right]$

y10 $\mathbb{Q}_2^{(s)}(A_2) = \left[\dfrac{1}{2}, \dfrac{1}{2}, -\dfrac{1}{2}, -\dfrac{1}{2} \right]$

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y11 $\mathbb{Q}_1^{(s)}(B_1) = \left[\dfrac{1}{2}, -\dfrac{1}{2}, \dfrac{1}{2}, -\dfrac{1}{2} \right]$

y12 $\mathbb{T}_1^{(s)}(B_1) = \left[\dfrac{i}{2}, -\dfrac{i}{2}, \dfrac{i}{2}, -\dfrac{i}{2} \right]$

y13 $\mathbb{Q}_1^{(s)}(B_2) = \left[\dfrac{1}{2}, -\dfrac{1}{2}, -\dfrac{1}{2}, \dfrac{1}{2} \right]$

y14 $\mathbb{T}_1^{(s)}(B_2) = \left[\dfrac{i}{2}, -\dfrac{i}{2}, -\dfrac{i}{2}, \dfrac{i}{2} \right]$

— **Site and Bond** —————————————————————————————

Table 5: Orbital of each site

#	site	orbital
1	Sn	$\lvert p_x, \uparrow \rangle,\ \lvert p_x, \downarrow \rangle,\ \lvert p_y, \uparrow \rangle,\ \lvert p_y, \downarrow \rangle,\ \lvert p_z, \uparrow \rangle,\ \lvert p_z, \downarrow \rangle$
2	Te	$\lvert p_x, \uparrow \rangle,\ \lvert p_x, \downarrow \rangle,\ \lvert p_y, \uparrow \rangle,\ \lvert p_y, \downarrow \rangle,\ \lvert p_z, \uparrow \rangle,\ \lvert p_z, \downarrow \rangle$

Table 6: Neighbor and bra-ket of each bond

#	head	tail	neighbor	head (bra)	tail (ket)
1	Sn	Sn	[1]	[p]	[p]
2	Sn	Te	[1,2]	[p]	[p]
3	Te	Te	[1]	[p]	[p]

Site in Unit Cell

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

Table 7: 'Sn' (#1) site cluster (2a), m..

SL	position (s)	mapping
1	[0.00000, 0.40000, 0.10000]	[1,4]
2	[0.50000, 0.60000, 0.60000]	[2,3]

Table 8: 'Te' (#2) site cluster (2a), m..

SL	position (s)	mapping
1	[0.00000, 0.65000, 0.90000]	[1,4]
2	[0.50000, 0.35000, 0.40000]	[2,3]

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 9: 1-th 'Sn'-'Sn' [1] (#1) bond cluster (4a@4b), D, $|v|=$ 3.44345 (cartesian)

SL	vector (v)	center (c)	mapping	head	tail	R (primitive)
1	[-0.50000, 0.20000,-0.50000]	[0.75000, 0.50000, 0.85000]	[1]	(2,1)	(1,1)	[1,0,1]
2	[0.50000,-0.20000,-0.50000]	[0.75000, 0.50000, 0.35000]	[2]	(1,1)	(2,1)	[-1,0,0]
3	[-0.50000,-0.20000,-0.50000]	[0.25000, 0.50000, 0.35000]	[3]	(1,1)	(2,1)	[0,0,0]
4	[0.50000, 0.20000,-0.50000]	[0.25000, 0.50000, 0.85000]	[4]	(2,1)	(1,1)	[0,0,1]

Table 10: 1-th 'Sn'-'Te' [1] (#2) bond cluster (2a@2a), D, $|v|=$ 1.75653 (cartesian)

SL	vector (v)	center (c)	mapping	head	tail	R (primitive)
1	[0.00000,-0.25000, 0.20000]	[0.00000, 0.52500, 0.00000]	[1,4]	(1,1)	(1,1)	[0,0,-1]
2	[0.00000, 0.25000, 0.20000]	[0.50000, 0.47500, 0.50000]	[2,3]	(2,1)	(2,1)	[0,0,0]

Table 11: 2-th 'Sn'-'Te' [1] (#3) bond cluster (4a@4b), D, $|v|$= 2.67689 (cartesian)

SL	vector (v)	center (c)	mapping	head	tail	R (primitive)
1	[-0.50000,-0.05000,-0.30000]	[0.75000, 0.62500, 0.75000]	[1]	(2,1)	(1,1)	[1,0,0]
2	[0.50000, 0.05000,-0.30000]	[0.75000, 0.37500, 0.25000]	[2]	(1,1)	(2,1)	[-1,0,0]
3	[-0.50000, 0.05000,-0.30000]	[0.25000, 0.37500, 0.25000]	[3]	(1,1)	(2,1)	[0,0,0]
4	[0.50000,-0.05000,-0.30000]	[0.25000, 0.62500, 0.75000]	[4]	(2,1)	(1,1)	[0,0,0]

Table 12: 1-th 'Te'-'Te' [1] (#4) bond cluster (4a@4b), D, $|v|$= 3.69558 (cartesian)

SL	vector (v)	center (c)	mapping	head	tail	R (primitive)
1	[-0.50000,-0.30000,-0.50000]	[0.75000, 0.50000, 0.65000]	[1]	(2,1)	(1,1)	[1,0,0]
2	[0.50000, 0.30000,-0.50000]	[0.75000, 0.50000, 0.15000]	[2]	(1,1)	(2,1)	[-1,0,1]
3	[-0.50000, 0.30000,-0.50000]	[0.25000, 0.50000, 0.15000]	[3]	(1,1)	(2,1)	[0,0,1]
4	[0.50000,-0.30000,-0.50000]	[0.25000, 0.50000, 0.65000]	[4]	(2,1)	(1,1)	[0,0,0]