Model for "Mn3Sn"

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General Condition

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

Group and Unit Cell

- Group: SG No. 194 $D^4_{6\mathrm{h}}$ $P6_3/mmc$ [hexagonal]
- Associated point group: PG No. 194 $D_{6\mathrm{h}}$ $6/mmm$ [hexagonal]
- Unit cell:
  $a =$ `1.00000`, $b =$ `1.00000`, $c =$ `1.00000`, $\alpha =$ `90.0`, $\beta =$ `90.0`, $\gamma =$ `120.0`
- Lattice vectors (conventional cell):
  $\boldsymbol{a}_1 =$ `[ 1.00000, 0.00000, 0.00000]`
  $\boldsymbol{a}_2 =$ `[-0.50000, 0.86603, 0.00000]`
  $\boldsymbol{a}_3 =$ `[ 0.00000, 0.00000, 1.00000]`

Symmetry Operation

Table 1: Symmetry operation

#	SO	#	SO	#	SO	#	SO	#	SO
1	$\{1\|0\}$	2	$\{3^{+}_{001}\|0\}$	3	$\{3^{-}_{001}\|0\}$	4	$\{2_{001}\|00\frac{1}{2}\}$	5	$\{6^{-}_{001}\|00\frac{1}{2}\}$
6	$\{6^{+}_{001}\|00\frac{1}{2}\}$	7	$\{2_{110}\|0\}$	8	$\{2_{100}\|0\}$	9	$\{2_{010}\|0\}$	10	$\{2_{1-10}\|00\frac{1}{2}\}$
11	$\{2_{120}\|00\frac{1}{2}\}$	12	$\{2_{210}\|00\frac{1}{2}\}$	13	$\{-1\|0\}$	14	$\{-3^{+}_{001}\|0\}$	15	$\{-3^{-}_{001}\|0\}$
16	$\{\mathrm{m}_{001}\|00\frac{1}{2}\}$	17	$\{-6^{-}_{001}\|00\frac{1}{2}\}$	18	$\{-6^{+}_{001}\|00\frac{1}{2}\}$	19	$\{\mathrm{m}_{110}\|0\}$	20	$\{\mathrm{m}_{100}\|0\}$
21	$\{\mathrm{m}_{010}\|0\}$	22	$\{\mathrm{m}_{1-10}\|00\frac{1}{2}\}$	23	$\{\mathrm{m}_{120}\|00\frac{1}{2}\}$	24	$\{\mathrm{m}_{210}\|00\frac{1}{2}\}$		

Harmonics

Table 2: Harmonics

#	symbol	irrep.	rank	X	multiplicity	component	symmetry
1	$\mathbb{Q}_0(A_{1g})$	A_{1g}	0	Q, T	-	-	1
2	$\mathbb{Q}_2(A_{1g})$	A_{1g}	2	Q, T	-	-	$-\frac{x^2}{2}-\frac{y^2}{2}+z^2$
3	$\mathbb{Q}_4(A_{1g})$	A_{1g}	4	Q, T	-	-	$\frac{3x^4}{8}+\frac{3x^2y^2}{4}-3x^2z^2+\frac{3y^4}{8}-3y^2z^2+z^4$
4	$\mathbb{Q}_6(A_{1g},2)$	A_{1g}	6	Q, T	2	-	$\frac{\sqrt{462}(x-y)(x+y)\left(x^2-4xy+y^2\right)\left(x^2+4xy+y^2\right)}{32}$
5	$\mathbb{G}_0(A_{1u})$	A_{1u}	0	G, M	-	-	1

continued ...

Table 2

#	symbol	irrep.	rank	X	multiplicity	component	symmetry
6	$\mathbb{G}_2(A_{1u})$	A_{1u}	2	G, M	-	-	$-\frac{x^2}{2}-\frac{y^2}{2}+z^2$
7	$\mathbb{G}_4(A_{1u})$	A_{1u}	4	G, M	-	-	$\frac{3x^4}{8}+\frac{3x^2y^2}{4}-3x^2z^2+\frac{3y^4}{8}-3y^2z^2+z^4$
8	$\mathbb{G}_6(A_{1u},2)$	A_{1u}	6	G, M	2	-	$\frac{\sqrt{462}(x-y)(x+y)\left(x^2-4xy+y^2\right)\left(x^2+4xy+y^2\right)}{32}$
9	$\mathbb{Q}_7(A_{1u})$	A_{1u}	7	Q, T	-	-	$\frac{\sqrt{6006}xyz\left(x^2-3y^2\right)\left(3x^2-y^2\right)}{16}$
10	$\mathbb{G}_1(A_{2g})$	A_{2g}	1	G, M	-	-	z
11	$\mathbb{G}_3(A_{2g})$	A_{2g}	3	G, M	-	-	$-\frac{z\left(3x^2+3y^2-2z^2\right)}{2}$
12	$\mathbb{G}_5(A_{2g})$	A_{2g}	5	G, M	-	-	$\frac{z\left(15x^4+30x^2y^2-40x^2z^2+15y^4-40y^2z^2+8z^4\right)}{8}$
13	$\mathbb{Q}_6(A_{2g})$	A_{2g}	6	Q, T	-	-	$\frac{\sqrt{462}xy\left(x^2-3y^2\right)\left(3x^2-y^2\right)}{16}$
14	$\mathbb{Q}_1(A_{2u})$	A_{2u}	1	Q, T	-	-	z
15	$\mathbb{Q}_3(A_{2u})$	A_{2u}	3	Q, T	-	-	$-\frac{z\left(3x^2+3y^2-2z^2\right)}{2}$
16	$\mathbb{G}_6(A_{2u})$	A_{2u}	6	G, M	-	-	$\frac{\sqrt{462}xy\left(x^2-3y^2\right)\left(3x^2-y^2\right)}{16}$
17	$\mathbb{Q}_7(A_{2u},2)$	A_{2u}	7	Q, T	2	-	$\frac{\sqrt{6006}z(x-y)(x+y)\left(x^2-4xy+y^2\right)\left(x^2+4xy+y^2\right)}{32}$
18	$\mathbb{G}_3(B_{1g})$	B_{1g}	3	G, M	-	-	$\frac{\sqrt{10}y\left(3x^2-y^2\right)}{4}$
19	$\mathbb{Q}_4(B_{1g})$	B_{1g}	4	Q, T	-	-	$\frac{\sqrt{70}xz\left(x^2-3y^2\right)}{4}$
20	$\mathbb{Q}_6(B_{1g})$	B_{1g}	6	Q, T	-	-	$-\frac{\sqrt{210}xz\left(x^2-3y^2\right)\left(3x^2+3y^2-8z^2\right)}{16}$
21	$\mathbb{Q}_3(B_{1u})$	B_{1u}	3	Q, T	-	-	$\frac{\sqrt{10}y\left(3x^2-y^2\right)}{4}$
22	$\mathbb{G}_4(B_{1u})$	B_{1u}	4	G, M	-	-	$\frac{\sqrt{70}xz\left(x^2-3y^2\right)}{4}$
23	$\mathbb{Q}_5(B_{1u})$	B_{1u}	5	Q, T	-	-	$-\frac{\sqrt{70}y\left(3x^2-y^2\right)\left(x^2+y^2-8z^2\right)}{16}$
24	$\mathbb{Q}_9(B_{1u},1)$	B_{1u}	9	Q, T	1	-	$\frac{\sqrt{24310}y\left(3x^2-y^2\right)\left(3x^6-27x^4y^2+33x^2y^4-y^6\right)}{256}$
25	$\mathbb{G}_3(B_{2g})$	B_{2g}	3	G, M	-	-	$\frac{\sqrt{10}x\left(x^2-3y^2\right)}{4}$
26	$\mathbb{Q}_4(B_{2g})$	B_{2g}	4	Q, T	-	-	$\frac{\sqrt{70}yz\left(3x^2-y^2\right)}{4}$

continued …

Table 2

#	symbol	irrep.	rank	X	multiplicity	component	symmetry
27	$\mathbb{Q}_6(B_{2g})$	B_{2g}	6	Q, T	-	-	$-\frac{\sqrt{210}yz\left(3x^2-y^2\right)\left(3x^2+3y^2-8z^2\right)}{16}$
28	$\mathbb{Q}_3(B_{2u})$	B_{2u}	3	Q, T	-	-	$\frac{\sqrt{10}x\left(x^2-3y^2\right)}{4}$
29	$\mathbb{G}_4(B_{2u})$	B_{2u}	4	G, M	-	-	$\frac{\sqrt{70}yz\left(3x^2-y^2\right)}{4}$
30	$\mathbb{Q}_5(B_{2u})$	B_{2u}	5	Q, T	-	-	$-\frac{\sqrt{70}x\left(x^2-3y^2\right)\left(x^2+y^2-8z^2\right)}{16}$
31	$\mathbb{Q}_9(B_{2u},1)$	B_{2u}	9	Q, T	1	-	$\frac{\sqrt{24310}x\left(x^2-3y^2\right)\left(x^6-33x^4y^2+27x^2y^4-3y^6\right)}{256}$
32	$\mathbb{G}_{1,1}(E_{1g})$	E_{1g}	1	G, M	-	1	x
33	$\mathbb{G}_{1,2}(E_{1g})$					2	y
34	$\mathbb{Q}_{2,1}(E_{1g})$	E_{1g}	2	Q, T	-	1	$\sqrt{3}yz$
35	$\mathbb{Q}_{2,2}(E_{1g})$					2	$-\sqrt{3}xz$
36	$\mathbb{G}_{3,1}(E_{1g})$	E_{1g}	3	G, M	-	1	$-\frac{\sqrt{6}x\left(x^2+y^2-4z^2\right)}{4}$
37	$\mathbb{G}_{3,2}(E_{1g})$					2	$-\frac{\sqrt{6}y\left(x^2+y^2-4z^2\right)}{4}$
38	$\mathbb{Q}_{4,1}(E_{1g})$	E_{1g}	4	Q, T	-	1	$-\frac{\sqrt{10}yz\left(3x^2+3y^2-4z^2\right)}{4}$
39	$\mathbb{Q}_{4,2}(E_{1g})$					2	$\frac{\sqrt{10}xz\left(3x^2+3y^2-4z^2\right)}{4}$
40	$\mathbb{G}_{5,1}(E_{1g},1)$	E_{1g}	5	G, M	1	1	$\frac{3\sqrt{14}x\left(x^4-10x^2y^2+5y^4\right)}{16}$
41	$\mathbb{G}_{5,2}(E_{1g},1)$					2	$-\frac{3\sqrt{14}y\left(5x^4-10x^2y^2+y^4\right)}{16}$
42	$\mathbb{Q}_{6,1}(E_{1g},1)$	E_{1g}	6	Q, T	1	1	$\frac{3\sqrt{154}yz\left(5x^4-10x^2y^2+y^4\right)}{16}$
43	$\mathbb{Q}_{6,2}(E_{1g},1)$					2	$\frac{3\sqrt{154}xz\left(x^4-10x^2y^2+5y^4\right)}{16}$
44	$\mathbb{Q}_{6,1}(E_{1g},2)$	E_{1g}	6	Q, T	2	1	$\frac{\sqrt{21}yz\left(5x^4+10x^2y^2-20x^2z^2+5y^4-20y^2z^2+8z^4\right)}{8}$
45	$\mathbb{Q}_{6,2}(E_{1g},2)$					2	$-\frac{\sqrt{21}xz\left(5x^4+10x^2y^2-20x^2z^2+5y^4-20y^2z^2+8z^4\right)}{8}$
46	$\mathbb{Q}_{8,1}(E_{1g},1)$	E_{1g}	8	Q, T	1	1	$\frac{3\sqrt{715}yz\left(7x^6-35x^4y^2+21x^2y^4-y^6\right)}{32}$
47	$\mathbb{Q}_{8,2}(E_{1g},1)$					2	$-\frac{3\sqrt{715}xz\left(x^6-21x^4y^2+35x^2y^4-7y^6\right)}{32}$

continued ...

Table 2

#	symbol	irrep.	rank	X	multiplicity	component	symmetry
48	$\mathbb{Q}_{1,1}(E_{1u})$	E_{1u}	1	Q, T	-	1	x
49	$\mathbb{Q}_{1,2}(E_{1u})$					2	y
50	$\mathbb{G}_{2,1}(E_{1u})$	E_{1u}	2	G, M	-	1	$\sqrt{3}yz$
51	$\mathbb{G}_{2,2}(E_{1u})$					2	$-\sqrt{3}xz$
52	$\mathbb{Q}_{3,1}(E_{1u})$	E_{1u}	3	Q, T	-	1	$-\frac{\sqrt{6}x\left(x^2+y^2-4z^2\right)}{4}$
53	$\mathbb{Q}_{3,2}(E_{1u})$					2	$-\frac{\sqrt{6}y\left(x^2+y^2-4z^2\right)}{4}$
54	$\mathbb{G}_{4,1}(E_{1u})$	E_{1u}	4	G, M	-	1	$-\frac{\sqrt{10}yz\left(3x^2+3y^2-4z^2\right)}{4}$
55	$\mathbb{G}_{4,2}(E_{1u})$					2	$\frac{\sqrt{10}xz\left(3x^2+3y^2-4z^2\right)}{4}$
56	$\mathbb{Q}_{5,1}(E_{1u},1)$	E_{1u}	5	Q, T	1	1	$\frac{3\sqrt{14}x\left(x^4-10x^2y^2+5y^4\right)}{16}$
57	$\mathbb{Q}_{5,2}(E_{1u},1)$					2	$-\frac{3\sqrt{14}y\left(5x^4-10x^2y^2+y^4\right)}{16}$
58	$\mathbb{Q}_{5,1}(E_{1u},2)$	E_{1u}	5	Q, T	2	1	$\frac{\sqrt{15}x\left(x^4+2x^2y^2-12x^2z^2+y^4-12y^2z^2+8z^4\right)}{8}$
59	$\mathbb{Q}_{5,2}(E_{1u},2)$					2	$\frac{\sqrt{15}y\left(x^4+2x^2y^2-12x^2z^2+y^4-12y^2z^2+8z^4\right)}{8}$
60	$\mathbb{Q}_{7,1}(E_{1u},1)$	E_{1u}	7	Q, T	1	1	$\frac{\sqrt{429}x\left(x^6-21x^4y^2+35x^2y^4-7y^6\right)}{32}$
61	$\mathbb{Q}_{7,2}(E_{1u},1)$					2	$\frac{\sqrt{429}y\left(7x^6-35x^4y^2+21x^2y^4-y^6\right)}{32}$
62	$\mathbb{Q}_{2,1}(E_{2g})$	E_{2g}	2	Q, T	-	1	$\frac{\sqrt{3}(x-y)(x+y)}{2}$
63	$\mathbb{Q}_{2,2}(E_{2g})$					2	$-\sqrt{3}xy$
64	$\mathbb{G}_{3,1}(E_{2g})$	E_{2g}	3	G, M	-	1	$\sqrt{15}xyz$
65	$\mathbb{G}_{3,2}(E_{2g})$					2	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$
66	$\mathbb{Q}_{4,1}(E_{2g},1)$	E_{2g}	4	Q, T	1	1	$\frac{\sqrt{35}\left(x^2-2xy-y^2\right)\left(x^2+2xy-y^2\right)}{8}$
67	$\mathbb{Q}_{4,2}(E_{2g},1)$					2	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$
68	$\mathbb{Q}_{4,1}(E_{2g},2)$	E_{2g}	4	Q, T	2	1	$-\frac{\sqrt{5}(x-y)(x+y)\left(x^2+y^2-6z^2\right)}{4}$

continued ...

Table 2

#	symbol	irrep.	rank	X	multiplicity	component	symmetry
69	$\mathbb{Q}_{4,2}(E_{2g},2)$					2	$\frac{\sqrt{5}xy\left(x^2+y^2-6z^2\right)}{2}$
70	$\mathbb{Q}_{6,1}(E_{2g},1)$	E_{2g}	6	Q, T	1	1	$-\frac{3\sqrt{7}\left(x^2+y^2-10z^2\right)\left(x^2-2xy-y^2\right)\left(x^2+2xy-y^2\right)}{16}$
71	$\mathbb{Q}_{6,2}(E_{2g},1)$					2	$-\frac{3\sqrt{7}xy(x-y)(x+y)\left(x^2+y^2-10z^2\right)}{4}$
72	$\mathbb{Q}_{6,1}(E_{2g},2)$	E_{2g}	6	Q, T	2	1	$\frac{\sqrt{210}(x-y)(x+y)\left(x^4+2x^2y^2-16x^2z^2+y^4-16y^2z^2+16z^4\right)}{32}$
73	$\mathbb{Q}_{6,2}(E_{2g},2)$					2	$-\frac{\sqrt{210}xy\left(x^4+2x^2y^2-16x^2z^2+y^4-16y^2z^2+16z^4\right)}{16}$
74	$\mathbb{Q}_{8,1}(E_{2g},1)$	E_{2g}	8	Q, T	1	1	$\frac{3\sqrt{715}\left(x^4-4x^3y-6x^2y^2+4xy^3+y^4\right)\left(x^4+4x^3y-6x^2y^2-4xy^3+y^4\right)}{128}$
75	$\mathbb{Q}_{8,2}(E_{2g},1)$					2	$-\frac{3\sqrt{715}xy(x-y)(x+y)\left(x^2-2xy-y^2\right)\left(x^2+2xy-y^2\right)}{16}$
76	$\mathbb{G}_{2,1}(E_{2u})$	E_{2u}	2	G, M	-	1	$\frac{\sqrt{3}(x-y)(x+y)}{2}$
77	$\mathbb{G}_{2,2}(E_{2u})$					2	$-\sqrt{3}xy$
78	$\mathbb{Q}_{3,1}(E_{2u})$	E_{2u}	3	Q, T	-	1	$\sqrt{15}xyz$
79	$\mathbb{Q}_{3,2}(E_{2u})$					2	$\frac{\sqrt{15}z(x-y)(x+y)}{2}$
80	$\mathbb{G}_{4,1}(E_{2u},1)$	E_{2u}	4	G, M	1	1	$\frac{\sqrt{35}\left(x^2-2xy-y^2\right)\left(x^2+2xy-y^2\right)}{8}$
81	$\mathbb{G}_{4,2}(E_{2u},1)$					2	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$
82	$\mathbb{G}_{4,1}(E_{2u},2)$	E_{2u}	4	G, M	2	1	$-\frac{\sqrt{5}(x-y)(x+y)\left(x^2+y^2-6z^2\right)}{4}$
83	$\mathbb{G}_{4,2}(E_{2u},2)$					2	$\frac{\sqrt{5}xy\left(x^2+y^2-6z^2\right)}{2}$
84	$\mathbb{Q}_{5,1}(E_{2u},1)$	E_{2u}	5	Q, T	1	1	$-\frac{3\sqrt{35}xyz(x-y)(x+y)}{2}$
85	$\mathbb{Q}_{5,2}(E_{2u},1)$					2	$\frac{3\sqrt{35}z\left(x^2-2xy-y^2\right)\left(x^2+2xy-y^2\right)}{8}$
86	$\mathbb{Q}_{5,1}(E_{2u},2)$	E_{2u}	5	Q, T	2	1	$-\frac{\sqrt{105}xyz\left(x^2+y^2-2z^2\right)}{2}$
87	$\mathbb{Q}_{5,2}(E_{2u},2)$					2	$-\frac{\sqrt{105}z(x-y)(x+y)\left(x^2+y^2-2z^2\right)}{4}$
88	$\mathbb{Q}_{9,1}(E_{2u},1)$	E_{2u}	9	Q, T	1	1	$\frac{3\sqrt{12155}xyz(x-y)(x+y)\left(x^2-2xy-y^2\right)\left(x^2+2xy-y^2\right)}{16}$
89	$\mathbb{Q}_{9,2}(E_{2u},1)$					2	$\frac{3\sqrt{12155}z\left(x^4-4x^3y-6x^2y^2+4xy^3+y^4\right)\left(x^4+4x^3y-6x^2y^2-4xy^3+y^4\right)}{128}$

Table 3: dimension = 40

#	orbital@atom(SL)	#	orbital@atom(SL)	#	orbital@atom(SL)	#	orbital@atom(SL)	#	orbital@atom(SL)
0	$\|d_u\rangle$ @Mn(1)	1	$\|d_{xz}\rangle$ @Mn(1)	2	$\|d_{yz}\rangle$ @Mn(1)	3	$\|d_{xy}\rangle$ @Mn(1)	4	$\|d_v\rangle$ @Mn(1)
5	$\|d_u\rangle$ @Mn(2)	6	$\|d_{xz}\rangle$ @Mn(2)	7	$\|d_{yz}\rangle$ @Mn(2)	8	$\|d_{xy}\rangle$ @Mn(2)	9	$\|d_v\rangle$ @Mn(2)
10	$\|d_u\rangle$ @Mn(3)	11	$\|d_{xz}\rangle$ @Mn(3)	12	$\|d_{yz}\rangle$ @Mn(3)	13	$\|d_{xy}\rangle$ @Mn(3)	14	$\|d_v\rangle$ @Mn(3)
15	$\|d_u\rangle$ @Mn(4)	16	$\|d_{xz}\rangle$ @Mn(4)	17	$\|d_{yz}\rangle$ @Mn(4)	18	$\|d_{xy}\rangle$ @Mn(4)	19	$\|d_v\rangle$ @Mn(4)
20	$\|d_u\rangle$ @Mn(5)	21	$\|d_{xz}\rangle$ @Mn(5)	22	$\|d_{yz}\rangle$ @Mn(5)	23	$\|d_{xy}\rangle$ @Mn(5)	24	$\|d_v\rangle$ @Mn(5)
25	$\|d_u\rangle$ @Mn(6)	26	$\|d_{xz}\rangle$ @Mn(6)	27	$\|d_{yz}\rangle$ @Mn(6)	28	$\|d_{xy}\rangle$ @Mn(6)	29	$\|d_v\rangle$ @Mn(6)
30	$\|d_u\rangle$ @Sn(1)	31	$\|d_{xz}\rangle$ @Sn(1)	32	$\|d_{yz}\rangle$ @Sn(1)	33	$\|d_{xy}\rangle$ @Sn(1)	34	$\|d_v\rangle$ @Sn(1)
35	$\|d_u\rangle$ @Sn(2)	36	$\|d_{xz}\rangle$ @Sn(2)	37	$\|d_{yz}\rangle$ @Sn(2)	38	$\|d_{xy}\rangle$ @Sn(2)	39	$\|d_v\rangle$ @Sn(2)

Table 4: Atomic basis (orbital part only)

orbital	definition
$\|d_u\rangle$	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$
$\|d_{xz}\rangle$	$\sqrt{3}xz$

continued ...

Table 4

orbital	definition
$\|d_{yz}\rangle$	$\sqrt{3}yz$
$\|d_{xy}\rangle$	$\sqrt{3}xy$
$\|d_v\rangle$	$\frac{\sqrt{3}(x^2-y^2)}{2}$

SAMB

720 (all 720) SAMBs

- 'Mn' site-cluster : Mn
  * bra: $\langle d_u|$, $\langle d_{xz}|$, $\langle d_{yz}|$, $\langle d_{xy}|$, $\langle d_v|$
  * ket: $|d_u\rangle$, $|d_{xz}\rangle$, $|d_{yz}\rangle$, $|d_{xy}\rangle$, $|d_v\rangle$
  * wyckoff: 6h

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

z2 $\mathbb{Q}_0^{(c)}(A_{1g},b) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{2} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{2}$

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

z4 $\mathbb{Q}_2^{(c)}(A_{1g},b) = \frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{2} + \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{2}$

z5 $\mathbb{Q}_4^{(c)}(A_{1g}) = \mathbb{Q}_4^{(a)}(A_{1g})\mathbb{Q}_0^{(s)}(A_{1g})$

z6 $\mathbb{Q}_6^{(c)}(A_{1g},2) = \frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{2} + \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{2}$

z41 $\mathbb{Q}_7^{(c)}(A_{1u}) = \mathbb{Q}_4^{(a)}(B_{1g})\mathbb{Q}_3^{(s)}(B_{1u})$

z42 $\mathbb{G}_2^{(c)}(A_{1u}) = -\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{2} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{2}$

z43 $\mathbb{G}_4^{(c)}(A_{1u}) = -\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{2} - \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{2}$

z67 $\mathbb{Q}_6^{(c)}(A_{2g}) = -\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{2} + \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{2}$

z68 $\mathbb{G}_1^{(c)}(A_{2g}) = -\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{2} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{2}$

z69 $\mathbb{G}_3^{(c)}(A_{2g}) = -\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{2} + \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{2}$

z95 $\mathbb{Q}_1^{(c)}(A_{2u},a) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{2} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{2}$

z96 $\mathbb{Q}_1^{(c)}(A_{2u},b) = \mathbb{Q}_4^{(a)}(B_{2g})\mathbb{Q}_3^{(s)}(B_{1u})$

z97 $\mathbb{Q}_3^{(c)}(A_{2u}) = \frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{2} - \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{2}$

z126 $\mathbb{Q}_4^{(c)}(B_{1g},a) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{2} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{2}$

z127 $\mathbb{Q}_4^{(c)}(B_{1g},b) = \mathbb{Q}_4^{(a)}(B_{1g})\mathbb{Q}_0^{(s)}(A_{1g})$

z128 $\mathbb{Q}_4^{(c)}(B_{1g},c) = -\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{2} + \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{2}$

z129 $\mathbb{Q}_3^{(c)}(B_{1u},a) = \mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_3^{(s)}(B_{1u})$

z130 $\mathbb{Q}_3^{(c)}(B_{1u},b) = -\mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_3^{(s)}(B_{1u})$

z131 $\mathbb{Q}_3^{(c)}(B_{1u},c) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{2} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{2}$

z132 $\mathbb{Q}_3^{(c)}(B_{1u},d) = \mathbb{Q}_4^{(a)}(A_{1g})\mathbb{Q}_3^{(s)}(B_{1u})$

z133 $\mathbb{Q}_3^{(c)}(B_{1u},e) = -\frac{\sqrt{406}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{29} - \frac{\sqrt{58}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{58} + \frac{\sqrt{406}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{29} + \frac{\sqrt{58}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{58}$

z134 $\mathbb{Q}_5^{(c)}(B_{1u}) = -\frac{\sqrt{58}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{58} + \frac{\sqrt{406}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{29} + \frac{\sqrt{58}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{58} - \frac{\sqrt{406}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{29}$

z135 $\mathbb{Q}_4^{(c)}(B_{2g},a) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{2} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{2}$

z136 $\mathbb{Q}_4^{(c)}(B_{2g},b) = \mathbb{Q}_4^{(a)}(B_{2g})\mathbb{Q}_0^{(s)}(A_{1g})$

z137 $\mathbb{Q}_4^{(c)}(B_{2g},c) = -\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{2} - \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{2}$

z244 $\mathbb{Q}_3^{(c)}(B_{2u},a) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{2} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{2}$

z245 $\mathbb{Q}_3^{(c)}(B_{2u},b) = \frac{\sqrt{406}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{29} - \frac{\sqrt{58}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{58} + \frac{\sqrt{406}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{29} - \frac{\sqrt{58}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{58}$

z246 $\mathbb{Q}_5^{(c)}(B_{2u}) = \frac{\sqrt{58}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{58} + \frac{\sqrt{406}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{29} + \frac{\sqrt{58}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{58} + \frac{\sqrt{406}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{29}$

z247 $\mathbb{Q}_{2,1}^{(c)}(E_{1g},a) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_0^{(s)}(A_{1g})}{2}$

z248 $\mathbb{Q}_{2,2}^{(c)}(E_{1g},a) = \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_0^{(s)}(A_{1g})}{2}$

z249 $\mathbb{Q}_{2,1}^{(c)}(E_{1g},b) = -\frac{\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{2} + \frac{\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{2}$

z250 $\mathbb{Q}_{2,2}^{(c)}(E_{1g},b) = \frac{\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{2} + \frac{\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{2}$

z251 $\mathbb{Q}_{2,1}^{(c)}(E_{1g},c) = \frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{8} - \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{8} + \frac{\sqrt{14}\mathbb{Q}_4^{(a)}(B_{1g})\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{8} + \frac{\sqrt{14}\mathbb{Q}_4^{(a)}(B_{2g})\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{8}$

z252 $\mathbb{Q}_{2,2}^{(c)}(E_{1g},c) = -\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{8} - \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{8} - \frac{\sqrt{14}\mathbb{Q}_4^{(a)}(B_{1g})\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{8} + \frac{\sqrt{14}\mathbb{Q}_4^{(a)}(B_{2g})\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{8}$

z253 $$\mathbb{Q}_{4,1}^{(c)}(E_{1g},a)=\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{0}^{(s)}(A_{1g})}{2}$$

z254 $$\mathbb{Q}_{4,2}^{(c)}(E_{1g},a)=\frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{0}^{(s)}(A_{1g})}{2}$$

z255 $$\mathbb{Q}_{4,1}^{(c)}(E_{1g},b)=-\frac{\sqrt{14}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{8}+\frac{\sqrt{14}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{8}+\frac{\sqrt{2}\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{8}+\frac{\sqrt{2}\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{8}$$

z256 $$\mathbb{Q}_{4,2}^{(c)}(E_{1g},b)=\frac{\sqrt{14}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{8}+\frac{\sqrt{14}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{8}-\frac{\sqrt{2}\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{8}+\frac{\sqrt{2}\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{8}$$

z257 $$\mathbb{Q}_{6,1}^{(c)}(E_{1g},1)=-\frac{\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{2}+\frac{\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{2}$$

z258 $$\mathbb{Q}_{6,2}^{(c)}(E_{1g},1)=\frac{\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{2}+\frac{\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{2}$$

z259 $$\mathbb{Q}_{1,1}^{(c)}(E_{1u},a)=\frac{\sqrt{2}\mathbb{Q}_{0}^{(a)}(A_{1g})\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{2}$$

z260 $$\mathbb{Q}_{1,2}^{(c)}(E_{1u},a)=\frac{\sqrt{2}\mathbb{Q}_{0}^{(a)}(A_{1g})\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{2}$$

z261 $$\mathbb{Q}_{1,1}^{(c)}(E_{1u},b)=-\frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{3}^{(s)}(B_{1u})}{2}$$

z376 $$\mathbb{Q}_{1,2}^{(c)}(E_{1u},b)=\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{3}^{(s)}(B_{1u})}{2}$$

z377 $$\mathbb{Q}_{1,1}^{(c)}(E_{1u},c)=\frac{\sqrt{42}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{14}-\frac{\sqrt{42}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{14}-\frac{\sqrt{14}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{14}$$

z378 $$\mathbb{Q}_{1,2}^{(c)}(E_{1u},c)=-\frac{\sqrt{42}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{14}-\frac{\sqrt{42}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{1,1}^{(s)}(E_{1u})}{14}-\frac{\sqrt{14}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{1,2}^{(s)}(E_{1u})}{14}$$

z404 $$\mathbb{Q}_{1,1}^{(c)}(E_{1u},d)=\frac{\sqrt{406}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{3}^{(s)}(B_{1u})}{29}+\frac{\sqrt{58}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{3}^{(s)}(B_{1u})}{58}$$

z405 $$\mathbb{Q}_{1,2}^{(c)}(E_{1u},d)=-\frac{\sqrt{406}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{3}^{(s)}(B_{1u})}{29}-\frac{\sqrt{58}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{3}^{(s)}(B_{1u})}{58}$$

z406 $$\mathbb{Q}^{(c)}_{3,1}(E_{1u},a) = \frac{\sqrt{7}\mathbb{Q}^{(a)}_{2,1}(E_{2g})\mathbb{Q}^{(s)}_{1,1}(E_{1u})}{14} - \frac{\sqrt{7}\mathbb{Q}^{(a)}_{2,2}(E_{2g})\mathbb{Q}^{(s)}_{1,2}(E_{1u})}{14} + \frac{\sqrt{21}\mathbb{Q}^{(a)}_{2}(A_{1g})\mathbb{Q}^{(s)}_{1,1}(E_{1u})}{7}$$

z430 $$\mathbb{Q}^{(c)}_{3,2}(E_{1u},a) = -\frac{\sqrt{7}\mathbb{Q}^{(a)}_{2,1}(E_{2g})\mathbb{Q}^{(s)}_{1,2}(E_{1u})}{14} - \frac{\sqrt{7}\mathbb{Q}^{(a)}_{2,2}(E_{2g})\mathbb{Q}^{(s)}_{1,1}(E_{1u})}{14} + \frac{\sqrt{21}\mathbb{Q}^{(a)}_{2}(A_{1g})\mathbb{Q}^{(s)}_{1,2}(E_{1u})}{7}$$

z431 $$\mathbb{Q}^{(c)}_{3,1}(E_{1u},b) = \frac{\sqrt{58}\mathbb{Q}^{(a)}_{4,2}(E_{2g},1)\mathbb{Q}^{(s)}_{3}(B_{1u})}{58} - \frac{\sqrt{406}\mathbb{Q}^{(a)}_{4,2}(E_{2g},2)\mathbb{Q}^{(s)}_{3}(B_{1u})}{29}$$

z432 $$\mathbb{Q}^{(c)}_{3,2}(E_{1u},b) = -\frac{\sqrt{58}\mathbb{Q}^{(a)}_{4,1}(E_{2g},1)\mathbb{Q}^{(s)}_{3}(B_{1u})}{58} + \frac{\sqrt{406}\mathbb{Q}^{(a)}_{4,1}(E_{2g},2)\mathbb{Q}^{(s)}_{3}(B_{1u})}{29}$$

z433 $$\mathbb{Q}^{(c)}_{3,1}(E_{1u},c) = \frac{\sqrt{35}\mathbb{Q}^{(a)}_{4,1}(E_{2g},2)\mathbb{Q}^{(s)}_{1,1}(E_{1u})}{14} - \frac{\sqrt{35}\mathbb{Q}^{(a)}_{4,2}(E_{2g},2)\mathbb{Q}^{(s)}_{1,2}(E_{1u})}{14} - \frac{\sqrt{7}\mathbb{Q}^{(a)}_{4}(A_{1g})\mathbb{Q}^{(s)}_{1,1}(E_{1u})}{7}$$

z434 $$\mathbb{Q}^{(c)}_{3,2}(E_{1u},c) = -\frac{\sqrt{35}\mathbb{Q}^{(a)}_{4,1}(E_{2g},2)\mathbb{Q}^{(s)}_{1,2}(E_{1u})}{14} - \frac{\sqrt{35}\mathbb{Q}^{(a)}_{4,2}(E_{2g},2)\mathbb{Q}^{(s)}_{1,1}(E_{1u})}{14} - \frac{\sqrt{7}\mathbb{Q}^{(a)}_{4}(A_{1g})\mathbb{Q}^{(s)}_{1,2}(E_{1u})}{7}$$

z435 $$\mathbb{Q}^{(c)}_{5,1}(E_{1u},1) = \frac{\mathbb{Q}^{(a)}_{4,1}(E_{2g},1)\mathbb{Q}^{(s)}_{1,1}(E_{1u})}{2} - \frac{\mathbb{Q}^{(a)}_{4,2}(E_{2g},1)\mathbb{Q}^{(s)}_{1,2}(E_{1u})}{2}$$

z465 $$\mathbb{Q}^{(c)}_{5,2}(E_{1u},1) = -\frac{\mathbb{Q}^{(a)}_{4,1}(E_{2g},1)\mathbb{Q}^{(s)}_{1,2}(E_{1u})}{2} - \frac{\mathbb{Q}^{(a)}_{4,2}(E_{2g},1)\mathbb{Q}^{(s)}_{1,1}(E_{1u})}{2}$$

z466 $$\mathbb{Q}^{(c)}_{5,1}(E_{1u},2) = \frac{\sqrt{14}\mathbb{Q}^{(a)}_{4,1}(E_{2g},2)\mathbb{Q}^{(s)}_{1,1}(E_{1u})}{14} - \frac{\sqrt{14}\mathbb{Q}^{(a)}_{4,2}(E_{2g},2)\mathbb{Q}^{(s)}_{1,2}(E_{1u})}{14} + \frac{\sqrt{70}\mathbb{Q}^{(a)}_{4}(A_{1g})\mathbb{Q}^{(s)}_{1,1}(E_{1u})}{14}$$

z467 $$\mathbb{Q}^{(c)}_{5,2}(E_{1u},2) = -\frac{\sqrt{14}\mathbb{Q}^{(a)}_{4,1}(E_{2g},2)\mathbb{Q}^{(s)}_{1,2}(E_{1u})}{14} - \frac{\sqrt{14}\mathbb{Q}^{(a)}_{4,2}(E_{2g},2)\mathbb{Q}^{(s)}_{1,1}(E_{1u})}{14} + \frac{\sqrt{70}\mathbb{Q}^{(a)}_{4}(A_{1g})\mathbb{Q}^{(s)}_{1,2}(E_{1u})}{14}$$

z491 $$\mathbb{Q}^{(c)}_{2,1}(E_{2g},a) = \frac{\sqrt{2}\mathbb{Q}^{(a)}_{0}(A_{1g})\mathbb{Q}^{(s)}_{2,1}(E_{2g})}{2}$$

z492 $$\mathbb{Q}^{(c)}_{2,2}(E_{2g},a) = \frac{\sqrt{2}\mathbb{Q}^{(a)}_{0}(A_{1g})\mathbb{Q}^{(s)}_{2,2}(E_{2g})}{2}$$

z493 $$\mathbb{Q}^{(c)}_{2,1}(E_{2g},b) = \frac{\sqrt{2}\mathbb{Q}^{(a)}_{2,1}(E_{2g})\mathbb{Q}^{(s)}_{0}(A_{1g})}{2}$$

z494 $$\mathbb{Q}^{(c)}_{2,2}(E_{2g},b) = \frac{\sqrt{2}\mathbb{Q}^{(a)}_{2,2}(E_{2g})\mathbb{Q}^{(s)}_{0}(A_{1g})}{2}$$

z495 $\mathbb{Q}_{2,1}^{(c)}(E_{2g},c) = -\dfrac{\sqrt{2}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{2}$

z496 $\mathbb{Q}_{2,2}^{(c)}(E_{2g},c) = -\dfrac{\sqrt{2}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{2}$

z497 $\mathbb{Q}_{2,1}^{(c)}(E_{2g},d) = \dfrac{\sqrt{4970}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{142} - \dfrac{\sqrt{4970}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{142} + \dfrac{\sqrt{142}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{142}$

z498 $\mathbb{Q}_{2,2}^{(c)}(E_{2g},d) = -\dfrac{\sqrt{4970}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{142} - \dfrac{\sqrt{4970}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{142} + \dfrac{\sqrt{142}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{142}$

z499 $\mathbb{Q}_{4,1}^{(c)}(E_{2g},1a) = \dfrac{\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{2} - \dfrac{\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{2}$

z500 $\mathbb{Q}_{4,2}^{(c)}(E_{2g},1a) = -\dfrac{\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{2} - \dfrac{\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{2}$

z501 $\mathbb{Q}_{4,1}^{(c)}(E_{2g},1b) = \dfrac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{0}^{(s)}(A_{1g})}{2}$

z502 $\mathbb{Q}_{4,2}^{(c)}(E_{2g},1b) = \dfrac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{0}^{(s)}(A_{1g})}{2}$

z503 $\mathbb{Q}_{4,1}^{(c)}(E_{2g},1c) = -\dfrac{\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{2} + \dfrac{\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{2}$

z504 $\mathbb{Q}_{4,2}^{(c)}(E_{2g},1c) = \dfrac{\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{2} + \dfrac{\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{2}$

z505 $\mathbb{Q}_{4,1}^{(c)}(E_{2g},2a) = \dfrac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{0}^{(s)}(A_{1g})}{2}$

z506 $\mathbb{Q}_{4,2}^{(c)}(E_{2g},2a) = \dfrac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{0}^{(s)}(A_{1g})}{2}$

z507 $\mathbb{Q}_{4,1}^{(c)}(E_{2g},2b) = \dfrac{\sqrt{71}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{142} - \dfrac{\sqrt{71}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{142} - \dfrac{\sqrt{2485}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{71}$

z508 $\mathbb{Q}_{4,2}^{(c)}(E_{2g},2b) = -\dfrac{\sqrt{71}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{142} - \dfrac{\sqrt{71}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(s)}(E_{2g})}{142} - \dfrac{\sqrt{2485}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(s)}(E_{2g})}{71}$

z613 $\mathbb{Q}^{(c)}_{3,1}(E_{2u},a) = -\dfrac{\sqrt{2}\mathbb{Q}^{(a)}_{2,2}(E_{1g})\mathbb{Q}^{(s)}_{3}(B_{1u})}{2}$

z614 $\mathbb{Q}^{(c)}_{3,2}(E_{2u},a) = \dfrac{\sqrt{2}\mathbb{Q}^{(a)}_{2,1}(E_{1g})\mathbb{Q}^{(s)}_{3}(B_{1u})}{2}$

z615 $\mathbb{Q}^{(c)}_{3,1}(E_{2u},b) = \dfrac{\mathbb{Q}^{(a)}_{2,1}(E_{1g})\mathbb{Q}^{(s)}_{1,1}(E_{1u})}{2} - \dfrac{\mathbb{Q}^{(a)}_{2,2}(E_{1g})\mathbb{Q}^{(s)}_{1,2}(E_{1u})}{2}$

z616 $\mathbb{Q}^{(c)}_{3,2}(E_{2u},b) = -\dfrac{\mathbb{Q}^{(a)}_{2,1}(E_{1g})\mathbb{Q}^{(s)}_{1,2}(E_{1u})}{2} - \dfrac{\mathbb{Q}^{(a)}_{2,2}(E_{1g})\mathbb{Q}^{(s)}_{1,1}(E_{1u})}{2}$

z617 $\mathbb{Q}^{(c)}_{3,1}(E_{2u},c) = \dfrac{\sqrt{2}\mathbb{Q}^{(a)}_{4,2}(E_{1g})\mathbb{Q}^{(s)}_{3}(B_{1u})}{2}$

z618 $\mathbb{Q}^{(c)}_{3,2}(E_{2u},c) = -\dfrac{\sqrt{2}\mathbb{Q}^{(a)}_{4,1}(E_{1g})\mathbb{Q}^{(s)}_{3}(B_{1u})}{2}$

z619 $\mathbb{Q}^{(c)}_{3,1}(E_{2u},d) = -\dfrac{\sqrt{2}\mathbb{Q}^{(a)}_{4,1}(E_{1g})\mathbb{Q}^{(s)}_{1,1}(E_{1u})}{8} + \dfrac{\sqrt{2}\mathbb{Q}^{(a)}_{4,2}(E_{1g})\mathbb{Q}^{(s)}_{1,2}(E_{1u})}{8} - \dfrac{\sqrt{14}\mathbb{Q}^{(a)}_{4}(B_{1g})\mathbb{Q}^{(s)}_{1,2}(E_{1u})}{8} + \dfrac{\sqrt{14}\mathbb{Q}^{(a)}_{4}(B_{2g})\mathbb{Q}^{(s)}_{1,1}(E_{1u})}{8}$

z620 $\mathbb{Q}^{(c)}_{3,2}(E_{2u},d) = \dfrac{\sqrt{2}\mathbb{Q}^{(a)}_{4,1}(E_{1g})\mathbb{Q}^{(s)}_{1,2}(E_{1u})}{8} + \dfrac{\sqrt{2}\mathbb{Q}^{(a)}_{4,2}(E_{1g})\mathbb{Q}^{(s)}_{1,1}(E_{1u})}{8} + \dfrac{\sqrt{14}\mathbb{Q}^{(a)}_{4}(B_{1g})\mathbb{Q}^{(s)}_{1,1}(E_{1u})}{8} + \dfrac{\sqrt{14}\mathbb{Q}^{(a)}_{4}(B_{2g})\mathbb{Q}^{(s)}_{1,2}(E_{1u})}{8}$

z621 $\mathbb{Q}^{(c)}_{5,1}(E_{2u},1) = -\dfrac{\mathbb{Q}^{(a)}_{4}(B_{1g})\mathbb{Q}^{(s)}_{1,2}(E_{1u})}{2} - \dfrac{\mathbb{Q}^{(a)}_{4}(B_{2g})\mathbb{Q}^{(s)}_{1,1}(E_{1u})}{2}$

z622 $\mathbb{Q}^{(c)}_{5,2}(E_{2u},1) = \dfrac{\mathbb{Q}^{(a)}_{4}(B_{1g})\mathbb{Q}^{(s)}_{1,1}(E_{1u})}{2} - \dfrac{\mathbb{Q}^{(a)}_{4}(B_{2g})\mathbb{Q}^{(s)}_{1,2}(E_{1u})}{2}$

z623 $\mathbb{Q}^{(c)}_{5,1}(E_{2u},2) = \dfrac{\sqrt{14}\mathbb{Q}^{(a)}_{4,1}(E_{1g})\mathbb{Q}^{(s)}_{1,1}(E_{1u})}{8} - \dfrac{\sqrt{14}\mathbb{Q}^{(a)}_{4,2}(E_{1g})\mathbb{Q}^{(s)}_{1,2}(E_{1u})}{8} - \dfrac{\sqrt{2}\mathbb{Q}^{(a)}_{4}(B_{1g})\mathbb{Q}^{(s)}_{1,2}(E_{1u})}{8} + \dfrac{\sqrt{2}\mathbb{Q}^{(a)}_{4}(B_{2g})\mathbb{Q}^{(s)}_{1,1}(E_{1u})}{8}$

z624 $\mathbb{Q}^{(c)}_{5,2}(E_{2u},2) = -\dfrac{\sqrt{14}\mathbb{Q}^{(a)}_{4,1}(E_{1g})\mathbb{Q}^{(s)}_{1,2}(E_{1u})}{8} - \dfrac{\sqrt{14}\mathbb{Q}^{(a)}_{4,2}(E_{1g})\mathbb{Q}^{(s)}_{1,1}(E_{1u})}{8} + \dfrac{\sqrt{2}\mathbb{Q}^{(a)}_{4}(B_{1g})\mathbb{Q}^{(s)}_{1,1}(E_{1u})}{8} + \dfrac{\sqrt{2}\mathbb{Q}^{(a)}_{4}(B_{2g})\mathbb{Q}^{(s)}_{1,2}(E_{1u})}{8}$

- 'Sn' site-cluster : Sn
  * bra: $\langle d_u|$, $\langle d_{xz}|$, $\langle d_{yz}|$, $\langle d_{xy}|$, $\langle d_v|$
  * ket: $|d_u\rangle$, $|d_{xz}\rangle$, $|d_{yz}\rangle$, $|d_{xy}\rangle$, $|d_v\rangle$

* wyckoff: 2c

z7 $\mathbb{Q}_0^{(c)}(A_{1g}) = \mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_0^{(s)}(A_{1g})$

z8 $\mathbb{Q}_2^{(c)}(A_{1g}) = \mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_0^{(s)}(A_{1g})$

z9 $\mathbb{Q}_4^{(c)}(A_{1g}) = \mathbb{Q}_4^{(a)}(A_{1g})\mathbb{Q}_0^{(s)}(A_{1g})$

z70 $\mathbb{Q}_7^{(c)}(A_{1u}) = \mathbb{Q}_4^{(a)}(B_{1g})\mathbb{Q}_3^{(s)}(B_{1u})$

z98 $\mathbb{Q}_1^{(c)}(A_{2u}) = \mathbb{Q}_4^{(a)}(B_{2g})\mathbb{Q}_3^{(s)}(B_{1u})$

z138 $\mathbb{Q}_4^{(c)}(B_{1g}) = \mathbb{Q}_4^{(a)}(B_{1g})\mathbb{Q}_0^{(s)}(A_{1g})$

z139 $\mathbb{Q}_3^{(c)}(B_{1u}, a) = \mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_3^{(s)}(B_{1u})$

z140 $\mathbb{Q}_3^{(c)}(B_{1u}, b) = -\mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_3^{(s)}(B_{1u})$

z141 $\mathbb{Q}_3^{(c)}(B_{1u}, c) = \mathbb{Q}_4^{(a)}(A_{1g})\mathbb{Q}_3^{(s)}(B_{1u})$

z262 $\mathbb{Q}_4^{(c)}(B_{2g}) = \mathbb{Q}_4^{(a)}(B_{2g})\mathbb{Q}_0^{(s)}(A_{1g})$

z263 $\mathbb{Q}_{2,1}^{(c)}(E_{1g}) = \dfrac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_0^{(s)}(A_{1g})}{2}$

z264 $\mathbb{Q}_{2,2}^{(c)}(E_{1g}) = \dfrac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_0^{(s)}(A_{1g})}{2}$

z265 $\mathbb{Q}_{4,1}^{(c)}(E_{1g}) = \dfrac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_0^{(s)}(A_{1g})}{2}$

z266 $\mathbb{Q}_{4,2}^{(c)}(E_{1g}) = \dfrac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_0^{(s)}(A_{1g})}{2}$

z267 $\mathbb{Q}_{1,1}^{(c)}(E_{1u}, a) = -\dfrac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_3^{(s)}(B_{1u})}{2}$

z379 $\mathbb{Q}_{1,2}^{(c)}(E_{1u}, a) = \dfrac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_3^{(s)}(B_{1u})}{2}$

z407 $\mathbb{Q}^{(c)}_{1,1}(E_{1u},b) = \frac{\sqrt{406}\mathbb{Q}^{(a)}_{4,2}(E_{2g},1)\mathbb{Q}^{(s)}_{3}(B_{1u})}{29} + \frac{\sqrt{58}\mathbb{Q}^{(a)}_{4,2}(E_{2g},2)\mathbb{Q}^{(s)}_{3}(B_{1u})}{58}$

z436 $\mathbb{Q}^{(c)}_{1,2}(E_{1u},b) = -\frac{\sqrt{406}\mathbb{Q}^{(a)}_{4,1}(E_{2g},1)\mathbb{Q}^{(s)}_{3}(B_{1u})}{29} - \frac{\sqrt{58}\mathbb{Q}^{(a)}_{4,1}(E_{2g},2)\mathbb{Q}^{(s)}_{3}(B_{1u})}{58}$

z437 $\mathbb{Q}^{(c)}_{3,1}(E_{1u}) = \frac{\sqrt{58}\mathbb{Q}^{(a)}_{4,2}(E_{2g},1)\mathbb{Q}^{(s)}_{3}(B_{1u})}{58} - \frac{\sqrt{406}\mathbb{Q}^{(a)}_{4,2}(E_{2g},2)\mathbb{Q}^{(s)}_{3}(B_{1u})}{29}$

z438 $\mathbb{Q}^{(c)}_{3,2}(E_{1u}) = -\frac{\sqrt{58}\mathbb{Q}^{(a)}_{4,1}(E_{2g},1)\mathbb{Q}^{(s)}_{3}(B_{1u})}{58} + \frac{\sqrt{406}\mathbb{Q}^{(a)}_{4,1}(E_{2g},2)\mathbb{Q}^{(s)}_{3}(B_{1u})}{29}$

z509 $\mathbb{Q}^{(c)}_{2,1}(E_{2g}) = \frac{\sqrt{2}\mathbb{Q}^{(a)}_{2,1}(E_{2g})\mathbb{Q}^{(s)}_{0}(A_{1g})}{2}$

z510 $\mathbb{Q}^{(c)}_{2,2}(E_{2g}) = \frac{\sqrt{2}\mathbb{Q}^{(a)}_{2,2}(E_{2g})\mathbb{Q}^{(s)}_{0}(A_{1g})}{2}$

z511 $\mathbb{Q}^{(c)}_{4,1}(E_{2g},1) = \frac{\sqrt{2}\mathbb{Q}^{(a)}_{4,1}(E_{2g},1)\mathbb{Q}^{(s)}_{0}(A_{1g})}{2}$

z512 $\mathbb{Q}^{(c)}_{4,2}(E_{2g},1) = \frac{\sqrt{2}\mathbb{Q}^{(a)}_{4,2}(E_{2g},1)\mathbb{Q}^{(s)}_{0}(A_{1g})}{2}$

z513 $\mathbb{Q}^{(c)}_{4,1}(E_{2g},2) = \frac{\sqrt{2}\mathbb{Q}^{(a)}_{4,1}(E_{2g},2)\mathbb{Q}^{(s)}_{0}(A_{1g})}{2}$

z514 $\mathbb{Q}^{(c)}_{4,2}(E_{2g},2) = \frac{\sqrt{2}\mathbb{Q}^{(a)}_{4,2}(E_{2g},2)\mathbb{Q}^{(s)}_{0}(A_{1g})}{2}$

z625 $\mathbb{Q}^{(c)}_{3,1}(E_{2u},a) = -\frac{\sqrt{2}\mathbb{Q}^{(a)}_{2,2}(E_{1g})\mathbb{Q}^{(s)}_{3}(B_{1u})}{2}$

z626 $\mathbb{Q}^{(c)}_{3,2}(E_{2u},a) = \frac{\sqrt{2}\mathbb{Q}^{(a)}_{2,1}(E_{1g})\mathbb{Q}^{(s)}_{3}(B_{1u})}{2}$

z627 $\mathbb{Q}^{(c)}_{3,1}(E_{2u},b) = \frac{\sqrt{2}\mathbb{Q}^{(a)}_{4,2}(E_{1g})\mathbb{Q}^{(s)}_{3}(B_{1u})}{2}$

z628 $\mathbb{Q}^{(c)}_{3,2}(E_{2u},b) = -\frac{\sqrt{2}\mathbb{Q}^{(a)}_{4,1}(E_{1g})\mathbb{Q}^{(s)}_{3}(B_{1u})}{2}$

- 'Mn'-'Mn' bond-cluster : `Mn;Mn_001_1`
  * bra: $\langle d_u|$, $\langle d_{xz}|$, $\langle d_{yz}|$, $\langle d_{xy}|$, $\langle d_v|$
  * ket: $|d_u\rangle$, $|d_{xz}\rangle$, $|d_{yz}\rangle$, $|d_{xy}\rangle$, $|d_v\rangle$
  * wyckoff: `6b@6h`

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

z11 $\mathbb{Q}_{0}^{(c)}(A_{1g},b) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2}$

z12 $\mathbb{Q}_{0}^{(c)}(A_{1g},c) = \mathbb{M}_{1}^{(a)}(A_{2g})\mathbb{M}_{1}^{(b)}(A_{2g})$

z13 $\mathbb{Q}_{2}^{(c)}(A_{1g},a) = \mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{0}^{(b)}(A_{1g})$

z14 $\mathbb{Q}_{2}^{(c)}(A_{1g},b) = \frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2} + \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2}$

z15 $\mathbb{Q}_{2}^{(c)}(A_{1g},c) = \mathbb{M}_{3}^{(a)}(A_{2g})\mathbb{M}_{1}^{(b)}(A_{2g})$

z16 $\mathbb{Q}_{2}^{(c)}(A_{1g},d) = -\frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{2,1}^{(b)}(E_{2g})}{2} - \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{2,2}^{(b)}(E_{2g})}{2}$

z17 $\mathbb{Q}_{4}^{(c)}(A_{1g}) = \mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{0}^{(b)}(A_{1g})$

z18 $\mathbb{Q}_{6}^{(c)}(A_{1g},2) = \frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2} + \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2}$

z44 $\mathbb{Q}_{7}^{(c)}(A_{1u}) = \mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{3}^{(b)}(B_{1u})$

z45 $\mathbb{G}_{0}^{(c)}(A_{1u},a) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{2} + \frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{2}$

z46 $\mathbb{G}_{0}^{(c)}(A_{1u},b) = \mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{3}^{(b)}(B_{2u})$

z47 $\mathbb{G}_{2}^{(c)}(A_{1u},a) = -\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{2} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{2}$

z71 $\mathbb{G}_{2}^{(c)}(A_{1u},b) = \frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{2} + \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{2}$

z72 $\mathbb{G}_4^{(c)}(A_{1u}) = -\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{2} - \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{2}$

z73 $\mathbb{Q}_6^{(c)}(A_{2g}) = -\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2} + \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2}$

z74 $\mathbb{G}_1^{(c)}(A_{2g},a) = -\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2}$

z75 $\mathbb{G}_1^{(c)}(A_{2g},b) = -\frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{2,2}^{(b)}(E_{2g})}{2} + \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{2,1}^{(b)}(E_{2g})}{2}$

z76 $\mathbb{G}_3^{(c)}(A_{2g}) = -\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2} + \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2}$

z99 $\mathbb{Q}_1^{(c)}(A_{2u},a) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{2} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{2}$

z100 $\mathbb{Q}_1^{(c)}(A_{2u},b) = \mathbb{Q}_4^{(a)}(B_{2g})\mathbb{Q}_3^{(b)}(B_{1u})$

z101 $\mathbb{Q}_1^{(c)}(A_{2u},c) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{2} - \frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{2}$

z102 $\mathbb{Q}_1^{(c)}(A_{2u},d) = -\mathbb{M}_3^{(a)}(B_{1g})\mathbb{T}_3^{(b)}(B_{2u})$

z103 $\mathbb{Q}_3^{(c)}(A_{2u},a) = \frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{2} - \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{2}$

z104 $\mathbb{Q}_3^{(c)}(A_{2u},b) = \frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{2} - \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{2}$

z142 $\mathbb{Q}_4^{(c)}(B_{1g},a) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2}$

z143 $\mathbb{Q}_4^{(c)}(B_{1g},b) = \mathbb{Q}_4^{(a)}(B_{1g})\mathbb{Q}_0^{(b)}(A_{1g})$

z144 $\mathbb{Q}_4^{(c)}(B_{1g},c) = -\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2} + \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2}$

z145 $\mathbb{Q}_4^{(c)}(B_{1g}, d) = \mathbb{M}_3^{(a)}(B_{2g})\mathbb{M}_1^{(b)}(A_{2g})$

z146 $\mathbb{Q}_4^{(c)}(B_{1g}, e) = \frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g})}{2} - \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g})}{2}$

z147 $\mathbb{G}_3^{(c)}(B_{1g}) = -\frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g})}{2} + \frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g})}{2}$

z148 $\mathbb{Q}_3^{(c)}(B_{1u}, a) = \mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_3^{(b)}(B_{1u})$

z149 $\mathbb{Q}_3^{(c)}(B_{1u}, b) = -\mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_3^{(b)}(B_{1u})$

z150 $\mathbb{Q}_3^{(c)}(B_{1u}, c) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{2} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{2}$

z151 $\mathbb{Q}_3^{(c)}(B_{1u}, d) = \mathbb{Q}_4^{(a)}(A_{1g})\mathbb{Q}_3^{(b)}(B_{1u})$

z152 $\mathbb{Q}_3^{(c)}(B_{1u}, e) = -\frac{\sqrt{406}\mathbb{Q}_{4,1}^{(a)}(E_{2g}, 1)\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{29} - \frac{\sqrt{58}\mathbb{Q}_{4,1}^{(a)}(E_{2g}, 2)\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{58} + \frac{\sqrt{406}\mathbb{Q}_{4,2}^{(a)}(E_{2g}, 1)\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{29} + \frac{\sqrt{58}\mathbb{Q}_{4,2}^{(a)}(E_{2g}, 2)\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{58}$

z153 $\mathbb{Q}_3^{(c)}(B_{1u}, f) = \mathbb{M}_1^{(a)}(A_{2g})\mathbb{T}_3^{(b)}(B_{2u})$

z154 $\mathbb{Q}_3^{(c)}(B_{1u}, g) = -\mathbb{M}_3^{(a)}(A_{2g})\mathbb{T}_3^{(b)}(B_{2u})$

z155 $\mathbb{Q}_3^{(c)}(B_{1u}, h) = -\frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{2} + \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{2}$

z156 $\mathbb{Q}_5^{(c)}(B_{1u}) = -\frac{\sqrt{58}\mathbb{Q}_{4,1}^{(a)}(E_{2g}, 1)\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{58} + \frac{\sqrt{406}\mathbb{Q}_{4,1}^{(a)}(E_{2g}, 2)\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{29} + \frac{\sqrt{58}\mathbb{Q}_{4,2}^{(a)}(E_{2g}, 1)\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{58} - \frac{\sqrt{406}\mathbb{Q}_{4,2}^{(a)}(E_{2g}, 2)\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{29}$

z157 $\mathbb{Q}_4^{(c)}(B_{2g}, a) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2}$

z158 $\mathbb{Q}_4^{(c)}(B_{2g}, b) = \mathbb{Q}_4^{(a)}(B_{2g})\mathbb{Q}_0^{(b)}(A_{1g})$

z159 $\mathbb{Q}_4^{(c)}(B_{2g}, c) = -\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2} - \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2}$

z160 $\mathbb{Q}_4^{(c)}(B_{2g},d) = \mathbb{M}_3^{(a)}(B_{1g})\mathbb{M}_1^{(b)}(A_{2g})$

z161 $\mathbb{Q}_4^{(c)}(B_{2g},e) = \frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g})}{2} + \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g})}{2}$

z162 $\mathbb{G}_3^{(c)}(B_{2g}) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g})}{2} + \frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g})}{2}$

z163 $\mathbb{Q}_3^{(c)}(B_{2u},a) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{2} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{2}$

z164 $\mathbb{Q}_3^{(c)}(B_{2u},b) = \frac{\sqrt{406}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{29} - \frac{\sqrt{58}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{58} + \frac{\sqrt{406}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{29} - \frac{\sqrt{58}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{58}$

z165 $\mathbb{Q}_3^{(c)}(B_{2u},c) = -\frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{2} - \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{2}$

z268 $\mathbb{Q}_5^{(c)}(B_{2u}) = \frac{\sqrt{58}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{58} + \frac{\sqrt{406}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{29} + \frac{\sqrt{58}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{58} + \frac{\sqrt{406}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{29}$

z269 $\mathbb{Q}_{2,1}^{(c)}(E_{1g},a) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_0^{(b)}(A_{1g})}{2}$

z270 $\mathbb{Q}_{2,2}^{(c)}(E_{1g},a) = \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_0^{(b)}(A_{1g})}{2}$

z271 $\mathbb{Q}_{2,1}^{(c)}(E_{1g},b) = -\frac{\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2} + \frac{\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2}$

z272 $\mathbb{Q}_{2,2}^{(c)}(E_{1g},b) = \frac{\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2} + \frac{\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2}$

z273 $\mathbb{Q}_{2,1}^{(c)}(E_{1g},c) = \frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{8} - \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{8} + \frac{\sqrt{14}\mathbb{Q}_4^{(a)}(B_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{8} + \frac{\sqrt{14}\mathbb{Q}_4^{(a)}(B_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{8}$

z274 $\mathbb{Q}_{2,2}^{(c)}(E_{1g},c) = -\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{8} - \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{8} - \frac{\sqrt{14}\mathbb{Q}_4^{(a)}(B_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{8} + \frac{\sqrt{14}\mathbb{Q}_4^{(a)}(B_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{8}$

z275 $\mathbb{Q}_{2,1}^{(c)}(E_{1g},d) = \frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{M}_1^{(b)}(A_{2g})}{2}$

z276 $\mathbb{Q}_{2,2}^{(c)}(E_{1g},d) = -\frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{M}_{1}^{(b)}(A_{2g})}{2}$

z277 $\mathbb{Q}_{2,1}^{(c)}(E_{1g},e) = -\frac{\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g})}{2} + \frac{\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g})}{2}$

z278 $\mathbb{Q}_{2,2}^{(c)}(E_{1g},e) = \frac{\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g})}{2} + \frac{\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g})}{2}$

z279 $\mathbb{Q}_{2,1}^{(c)}(E_{1g},f) = \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{M}_{1}^{(b)}(A_{2g})}{2}$

z280 $\mathbb{Q}_{2,2}^{(c)}(E_{1g},f) = -\frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{M}_{1}^{(b)}(A_{2g})}{2}$

z281 $\mathbb{Q}_{2,1}^{(c)}(E_{1g},g) = \frac{\sqrt{6}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g})}{8} - \frac{\sqrt{6}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g})}{8} - \frac{\sqrt{10}\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g})}{8} + \frac{\sqrt{10}\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{2,1}^{(b)}(E_{2g})}{8}$

z282 $\mathbb{Q}_{2,2}^{(c)}(E_{1g},g) = -\frac{\sqrt{6}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g})}{8} - \frac{\sqrt{6}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g})}{8} + \frac{\sqrt{10}\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g})}{8} + \frac{\sqrt{10}\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{2,2}^{(b)}(E_{2g})}{8}$

z283 $\mathbb{Q}_{4,1}^{(c)}(E_{1g},a) = \frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$

z284 $\mathbb{Q}_{4,2}^{(c)}(E_{1g},a) = \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$

z285 $\mathbb{Q}_{4,1}^{(c)}(E_{1g},b) = -\frac{\sqrt{14}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{8} + \frac{\sqrt{14}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{8} + \frac{\sqrt{2}\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{8} + \frac{\sqrt{2}\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{8}$

z286 $\mathbb{Q}_{4,2}^{(c)}(E_{1g},b) = \frac{\sqrt{14}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{8} + \frac{\sqrt{14}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{8} - \frac{\sqrt{2}\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{8} + \frac{\sqrt{2}\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{8}$

z287 $\mathbb{Q}_{4,1}^{(c)}(E_{1g},c) = -\frac{\sqrt{10}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g})}{8} + \frac{\sqrt{10}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g})}{8} - \frac{\sqrt{6}\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g})}{8} + \frac{\sqrt{6}\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{2,1}^{(b)}(E_{2g})}{8}$

z288 $\mathbb{Q}_{4,2}^{(c)}(E_{1g},c) = \frac{\sqrt{10}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g})}{8} + \frac{\sqrt{10}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g})}{8} + \frac{\sqrt{6}\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g})}{8} + \frac{\sqrt{6}\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{2,2}^{(b)}(E_{2g})}{8}$

z289 $\mathbb{Q}_{6,1}^{(c)}(E_{1g},1) = -\frac{\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2} + \frac{\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2}$

z290 $$\mathbb{Q}_{6,2}^{(c)}(E_{1g},1)=\frac{\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2}+\frac{\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2}$$

z291 $$\mathbb{G}_{5,1}^{(c)}(E_{1g},1)=\frac{\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g})}{2}+\frac{\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{2,1}^{(b)}(E_{2g})}{2}$$

z292 $$\mathbb{G}_{5,2}^{(c)}(E_{1g},1)=-\frac{\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g})}{2}+\frac{\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{2,2}^{(b)}(E_{2g})}{2}$$

z293 $$\mathbb{Q}_{1,1}^{(c)}(E_{1u},a)=\frac{\sqrt{2}\mathbb{Q}_{0}^{(a)}(A_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{2}$$

z380 $$\mathbb{Q}_{1,2}^{(c)}(E_{1u},a)=\frac{\sqrt{2}\mathbb{Q}_{0}^{(a)}(A_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{2}$$

z381 $$\mathbb{Q}_{1,1}^{(c)}(E_{1u},b)=-\frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{3}^{(b)}(B_{1u})}{2}$$

z382 $$\mathbb{Q}_{1,2}^{(c)}(E_{1u},b)=\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{3}^{(b)}(B_{1u})}{2}$$

z383 $$\mathbb{Q}_{1,1}^{(c)}(E_{1u},c)=\frac{\sqrt{42}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{14}-\frac{\sqrt{42}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{14}-\frac{\sqrt{14}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{14}$$

z384 $$\mathbb{Q}_{1,2}^{(c)}(E_{1u},c)=-\frac{\sqrt{42}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{14}-\frac{\sqrt{42}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{14}-\frac{\sqrt{14}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{14}$$

z385 $$\mathbb{Q}_{1,1}^{(c)}(E_{1u},d)=\frac{\sqrt{406}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{3}^{(b)}(B_{1u})}{29}+\frac{\sqrt{58}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{3}^{(b)}(B_{1u})}{58}$$

z408 $$\mathbb{Q}_{1,2}^{(c)}(E_{1u},d)=-\frac{\sqrt{406}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{3}^{(b)}(B_{1u})}{29}-\frac{\sqrt{58}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{3}^{(b)}(B_{1u})}{58}$$

z409 $$\mathbb{Q}_{1,1}^{(c)}(E_{1u},e)=-\frac{\sqrt{2}\mathbb{M}_{1}^{(a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{2}$$

z410 $$\mathbb{Q}_{1,2}^{(c)}(E_{1u},e)=\frac{\sqrt{2}\mathbb{M}_{1}^{(a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{2}$$

z411 $$\mathbb{Q}_{1,1}^{(c)}(E_{1u},f)=\frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{3}^{(b)}(B_{2u})}{2}$$

z412 $$\mathbb{Q}_{1,2}^{(c)}(E_{1u},f) = \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{3}^{(b)}(B_{2u})}{2}$$

z413 $$\mathbb{Q}_{3,1}^{(c)}(E_{1u},a) = \frac{\sqrt{7}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{14} - \frac{\sqrt{7}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{14} + \frac{\sqrt{21}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{7}$$

z439 $$\mathbb{Q}_{3,2}^{(c)}(E_{1u},a) = -\frac{\sqrt{7}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{14} - \frac{\sqrt{7}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{14} + \frac{\sqrt{21}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{7}$$

z440 $$\mathbb{Q}_{3,1}^{(c)}(E_{1u},b) = \frac{\sqrt{58}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{3}^{(b)}(B_{1u})}{58} - \frac{\sqrt{406}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{3}^{(b)}(B_{1u})}{29}$$

z441 $$\mathbb{Q}_{3,2}^{(c)}(E_{1u},b) = -\frac{\sqrt{58}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{3}^{(b)}(B_{1u})}{58} + \frac{\sqrt{406}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{3}^{(b)}(B_{1u})}{29}$$

z442 $$\mathbb{Q}_{3,1}^{(c)}(E_{1u},c) = \frac{\sqrt{35}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{14} - \frac{\sqrt{35}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{14} - \frac{\sqrt{7}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{7}$$

z443 $$\mathbb{Q}_{3,2}^{(c)}(E_{1u},c) = -\frac{\sqrt{35}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{14} - \frac{\sqrt{35}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{14} - \frac{\sqrt{7}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{7}$$

z444 $$\mathbb{Q}_{3,1}^{(c)}(E_{1u},d) = -\frac{\sqrt{55}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{22} + \frac{\sqrt{55}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{22} - \frac{\sqrt{33}\mathbb{M}_{3}^{(a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{11}$$

z445 $$\mathbb{Q}_{3,2}^{(c)}(E_{1u},d) = \frac{\sqrt{55}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{22} + \frac{\sqrt{55}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{22} + \frac{\sqrt{33}\mathbb{M}_{3}^{(a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{11}$$

z446 $$\mathbb{Q}_{5,1}^{(c)}(E_{1u},1) = \frac{\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{2} - \frac{\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{2}$$

z447 $$\mathbb{Q}_{5,2}^{(c)}(E_{1u},1) = -\frac{\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{2} - \frac{\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{2}$$

z468 $$\mathbb{Q}_{5,1}^{(c)}(E_{1u},2) = \frac{\sqrt{14}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{14} - \frac{\sqrt{14}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{14} + \frac{\sqrt{70}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{14}$$

z469 $$\mathbb{Q}_{5,2}^{(c)}(E_{1u},2) = -\frac{\sqrt{14}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{14} - \frac{\sqrt{14}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{14} + \frac{\sqrt{70}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{14}$$

z470 $$\mathbb{G}_{2,1}^{(c)}(E_{1u}) = \frac{\sqrt{66}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{22} - \frac{\sqrt{66}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{22} - \frac{\sqrt{110}\mathbb{M}_{3}^{(a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{22}$$

z471 $$\mathbb{G}_{2,2}^{(c)}(E_{1u}) = -\frac{\sqrt{66}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{22} - \frac{\sqrt{66}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{22} + \frac{\sqrt{110}\mathbb{M}_{3}^{(a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{22}$$

z515 $$\mathbb{Q}_{2,1}^{(c)}(E_{2g}, a) = \frac{\sqrt{2}\mathbb{Q}_{0}^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2}$$

z516 $$\mathbb{Q}_{2,2}^{(c)}(E_{2g}, a) = \frac{\sqrt{2}\mathbb{Q}_{0}^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2}$$

z517 $$\mathbb{Q}_{2,1}^{(c)}(E_{2g}, b) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$$

z518 $$\mathbb{Q}_{2,2}^{(c)}(E_{2g}, b) = \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$$

z519 $$\mathbb{Q}_{2,1}^{(c)}(E_{2g}, c) = -\frac{\sqrt{2}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2}$$

z520 $$\mathbb{Q}_{2,2}^{(c)}(E_{2g}, c) = -\frac{\sqrt{2}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2}$$

z521 $$\mathbb{Q}_{2,1}^{(c)}(E_{2g}, d) = \frac{\sqrt{4970}\mathbb{Q}_{4,1}^{(a)}(E_{2g}, 1)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{142} - \frac{\sqrt{4970}\mathbb{Q}_{4,2}^{(a)}(E_{2g}, 1)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{142} + \frac{\sqrt{142}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{142}$$

z522 $$\mathbb{Q}_{2,2}^{(c)}(E_{2g}, d) = -\frac{\sqrt{4970}\mathbb{Q}_{4,1}^{(a)}(E_{2g}, 1)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{142} - \frac{\sqrt{4970}\mathbb{Q}_{4,2}^{(a)}(E_{2g}, 1)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{142} + \frac{\sqrt{142}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{142}$$

z523 $$\mathbb{Q}_{2,1}^{(c)}(E_{2g}, e) = \frac{\sqrt{2}\mathbb{M}_{1}^{(a)}(A_{2g})\mathbb{T}_{2,2}^{(b)}(E_{2g})}{2}$$

z524 $$\mathbb{Q}_{2,2}^{(c)}(E_{2g}, e) = -\frac{\sqrt{2}\mathbb{M}_{1}^{(a)}(A_{2g})\mathbb{T}_{2,1}^{(b)}(E_{2g})}{2}$$

z525 $$\mathbb{Q}_{2,1}^{(c)}(E_{2g}, f) = \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{M}_{1}^{(b)}(A_{2g})}{2}$$

z526 $$\mathbb{Q}_{2,2}^{(c)}(E_{2g}, f) = -\frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{M}_{1}^{(b)}(A_{2g})}{2}$$

z527 $$\mathbb{Q}_{2,1}^{(c)}(E_{2g}, g) = -\frac{\sqrt{2}\mathbb{M}_{3}^{(a)}(A_{2g})\mathbb{T}_{2,2}^{(b)}(E_{2g})}{2}$$

z528 $$\mathbb{Q}_{2,2}^{(c)}(E_{2g},g)=\frac{\sqrt{2}\mathbb{M}_{3}^{(a)}(A_{2g})\mathbb{T}_{2,1}^{(b)}(E_{2g})}{2}$$

z529 $$\mathbb{Q}_{4,1}^{(c)}(E_{2g},1a)=\frac{\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2}-\frac{\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2}$$

z530 $$\mathbb{Q}_{4,2}^{(c)}(E_{2g},1a)=-\frac{\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2}-\frac{\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2}$$

z531 $$\mathbb{Q}_{4,1}^{(c)}(E_{2g},1b)=\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$$

z532 $$\mathbb{Q}_{4,2}^{(c)}(E_{2g},1b)=\frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$$

z533 $$\mathbb{Q}_{4,1}^{(c)}(E_{2g},1c)=-\frac{\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2}+\frac{\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2}$$

z534 $$\mathbb{Q}_{4,2}^{(c)}(E_{2g},1c)=\frac{\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2}+\frac{\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2}$$

z535 $$\mathbb{Q}_{4,1}^{(c)}(E_{2g},1d)=-\frac{\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{2,1}^{(b)}(E_{2g})}{2}+\frac{\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{2,2}^{(b)}(E_{2g})}{2}$$

z536 $$\mathbb{Q}_{4,2}^{(c)}(E_{2g},1d)=\frac{\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{2,2}^{(b)}(E_{2g})}{2}+\frac{\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{2,1}^{(b)}(E_{2g})}{2}$$

z537 $$\mathbb{Q}_{4,1}^{(c)}(E_{2g},2a)=\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$$

z538 $$\mathbb{Q}_{4,2}^{(c)}(E_{2g},2a)=\frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$$

z539 $$\mathbb{Q}_{4,1}^{(c)}(E_{2g},2b)=\frac{\sqrt{71}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{142}-\frac{\sqrt{71}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{142}-\frac{\sqrt{2485}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{71}$$

z540 $$\mathbb{Q}_{4,2}^{(c)}(E_{2g},2b)=-\frac{\sqrt{71}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{142}-\frac{\sqrt{71}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{142}-\frac{\sqrt{2485}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{71}$$

z629 $$\mathbb{Q}_{3,1}^{(c)}(E_{2u},a)=-\frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{3}^{(b)}(B_{1u})}{2}$$

z630 $\mathbb{Q}_{3,2}^{(c)}(E_{2u},a) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{3}^{(b)}(B_{1u})}{2}$

z631 $\mathbb{Q}_{3,1}^{(c)}(E_{2u},b) = \frac{\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{2} - \frac{\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{2}$

z632 $\mathbb{Q}_{3,2}^{(c)}(E_{2u},b) = -\frac{\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{2} - \frac{\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{2}$

z633 $\mathbb{Q}_{3,1}^{(c)}(E_{2u},c) = \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{3}^{(b)}(B_{1u})}{2}$

z634 $\mathbb{Q}_{3,2}^{(c)}(E_{2u},c) = -\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{3}^{(b)}(B_{1u})}{2}$

z635 $\mathbb{Q}_{3,1}^{(c)}(E_{2u},d) = -\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{8} + \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{8} - \frac{\sqrt{14}\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{8} + \frac{\sqrt{14}\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{8}$

z636 $\mathbb{Q}_{3,2}^{(c)}(E_{2u},d) = \frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{8} + \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{8} + \frac{\sqrt{14}\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{8} + \frac{\sqrt{14}\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{8}$

z637 $\mathbb{Q}_{3,1}^{(c)}(E_{2u},e) = -\frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{T}_{3}^{(b)}(B_{2u})}{2}$

z638 $\mathbb{Q}_{3,2}^{(c)}(E_{2u},e) = -\frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{T}_{3}^{(b)}(B_{2u})}{2}$

z639 $\mathbb{Q}_{3,1}^{(c)}(E_{2u},f) = \frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{3}^{(b)}(B_{2u})}{2}$

z640 $\mathbb{Q}_{3,2}^{(c)}(E_{2u},f) = \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{3}^{(b)}(B_{2u})}{2}$

z641 $\mathbb{Q}_{3,1}^{(c)}(E_{2u},g) = \frac{\sqrt{10}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{8} - \frac{\sqrt{10}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{8} + \frac{\sqrt{6}\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{8} + \frac{\sqrt{6}\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{8}$

z642 $\mathbb{Q}_{3,2}^{(c)}(E_{2u},g) = -\frac{\sqrt{10}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{8} - \frac{\sqrt{10}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{8} - \frac{\sqrt{6}\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{8} + \frac{\sqrt{6}\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{8}$

z643 $\mathbb{Q}_{5,1}^{(c)}(E_{2u},1) = -\frac{\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{2} - \frac{\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{2}$

z644 $\mathbb{Q}^{(c)}_{5,2}(E_{2u},1) = \frac{\mathbb{Q}^{(a)}_{4}(B_{1g})\mathbb{Q}^{(b)}_{1,1}(E_{1u})}{2} - \frac{\mathbb{Q}^{(a)}_{4}(B_{2g})\mathbb{Q}^{(b)}_{1,2}(E_{1u})}{2}$

z645 $\mathbb{Q}^{(c)}_{5,1}(E_{2u},2) = \frac{\sqrt{14}\mathbb{Q}^{(a)}_{4,1}(E_{1g})\mathbb{Q}^{(b)}_{1,1}(E_{1u})}{8} - \frac{\sqrt{14}\mathbb{Q}^{(a)}_{4,2}(E_{1g})\mathbb{Q}^{(b)}_{1,2}(E_{1u})}{8} - \frac{\sqrt{2}\mathbb{Q}^{(a)}_{4}(B_{1g})\mathbb{Q}^{(b)}_{1,2}(E_{1u})}{8} + \frac{\sqrt{2}\mathbb{Q}^{(a)}_{4}(B_{2g})\mathbb{Q}^{(b)}_{1,1}(E_{1u})}{8}$

z646 $\mathbb{Q}^{(c)}_{5,2}(E_{2u},2) = -\frac{\sqrt{14}\mathbb{Q}^{(a)}_{4,1}(E_{1g})\mathbb{Q}^{(b)}_{1,2}(E_{1u})}{8} - \frac{\sqrt{14}\mathbb{Q}^{(a)}_{4,2}(E_{1g})\mathbb{Q}^{(b)}_{1,1}(E_{1u})}{8} + \frac{\sqrt{2}\mathbb{Q}^{(a)}_{4}(B_{1g})\mathbb{Q}^{(b)}_{1,1}(E_{1u})}{8} + \frac{\sqrt{2}\mathbb{Q}^{(a)}_{4}(B_{2g})\mathbb{Q}^{(b)}_{1,2}(E_{1u})}{8}$

z647 $\mathbb{G}^{(c)}_{2,1}(E_{2u},a) = \frac{\mathbb{M}^{(a)}_{1,1}(E_{1g})\mathbb{T}^{(b)}_{1,1}(E_{1u})}{2} - \frac{\mathbb{M}^{(a)}_{1,2}(E_{1g})\mathbb{T}^{(b)}_{1,2}(E_{1u})}{2}$

z648 $\mathbb{G}^{(c)}_{2,2}(E_{2u},a) = -\frac{\mathbb{M}^{(a)}_{1,1}(E_{1g})\mathbb{T}^{(b)}_{1,2}(E_{1u})}{2} - \frac{\mathbb{M}^{(a)}_{1,2}(E_{1g})\mathbb{T}^{(b)}_{1,1}(E_{1u})}{2}$

z649 $\mathbb{G}^{(c)}_{2,1}(E_{2u},b) = -\frac{\sqrt{6}\mathbb{M}^{(a)}_{3,1}(E_{1g})\mathbb{T}^{(b)}_{1,1}(E_{1u})}{8} + \frac{\sqrt{6}\mathbb{M}^{(a)}_{3,2}(E_{1g})\mathbb{T}^{(b)}_{1,2}(E_{1u})}{8} + \frac{\sqrt{10}\mathbb{M}^{(a)}_{3}(B_{1g})\mathbb{T}^{(b)}_{1,2}(E_{1u})}{8} + \frac{\sqrt{10}\mathbb{M}^{(a)}_{3}(B_{2g})\mathbb{T}^{(b)}_{1,1}(E_{1u})}{8}$

z650 $\mathbb{G}^{(c)}_{2,2}(E_{2u},b) = \frac{\sqrt{6}\mathbb{M}^{(a)}_{3,1}(E_{1g})\mathbb{T}^{(b)}_{1,2}(E_{1u})}{8} + \frac{\sqrt{6}\mathbb{M}^{(a)}_{3,2}(E_{1g})\mathbb{T}^{(b)}_{1,1}(E_{1u})}{8} - \frac{\sqrt{10}\mathbb{M}^{(a)}_{3}(B_{1g})\mathbb{T}^{(b)}_{1,1}(E_{1u})}{8} + \frac{\sqrt{10}\mathbb{M}^{(a)}_{3}(B_{2g})\mathbb{T}^{(b)}_{1,2}(E_{1u})}{8}$

z651 $\mathbb{G}^{(c)}_{4,1}(E_{2u},1) = -\frac{\mathbb{M}^{(a)}_{3}(B_{1g})\mathbb{T}^{(b)}_{1,2}(E_{1u})}{2} + \frac{\mathbb{M}^{(a)}_{3}(B_{2g})\mathbb{T}^{(b)}_{1,1}(E_{1u})}{2}$

z652 $\mathbb{G}^{(c)}_{4,2}(E_{2u},1) = \frac{\mathbb{M}^{(a)}_{3}(B_{1g})\mathbb{T}^{(b)}_{1,1}(E_{1u})}{2} + \frac{\mathbb{M}^{(a)}_{3}(B_{2g})\mathbb{T}^{(b)}_{1,2}(E_{1u})}{2}$

- 'Mn'-'Sn' bond-cluster : `Sn;Mn_001_1`
  * bra: $\langle d_u|$, $\langle d_{xz}|$, $\langle d_{yz}|$, $\langle d_{xy}|$, $\langle d_v|$
  * ket: $|d_u\rangle$, $|d_{xz}\rangle$, $|d_{yz}\rangle$, $|d_{xy}\rangle$, $|d_v\rangle$
  * wyckoff: `12a@12j`

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

z20 $\mathbb{Q}^{(c)}_{0}(A_{1g},b) = \frac{\sqrt{2}\mathbb{Q}^{(a)}_{2,1}(E_{2g})\mathbb{Q}^{(b)}_{2,1}(E_{2g})}{2} + \frac{\sqrt{2}\mathbb{Q}^{(a)}_{2,2}(E_{2g})\mathbb{Q}^{(b)}_{2,2}(E_{2g})}{2}$

z21 $\mathbb{Q}^{(c)}_{0}(A_{1g},c) = \frac{\sqrt{2}\mathbb{Q}^{(a)}_{4,1}(E_{2g},1)\mathbb{Q}^{(b)}_{4,1}(E_{2g},1)}{2} + \frac{\sqrt{2}\mathbb{Q}^{(a)}_{4,2}(E_{2g},1)\mathbb{Q}^{(b)}_{4,2}(E_{2g},1)}{2}$

z22 $\mathbb{Q}_0^{(c)}(A_{1g},d)=\mathbb{M}_1^{(a)}(A_{2g})\mathbb{M}_1^{(b)}(A_{2g})$

z23 $\mathbb{Q}_2^{(c)}(A_{1g},a)=\mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_0^{(b)}(A_{1g})$

z24 $\mathbb{Q}_2^{(c)}(A_{1g},b)=\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2}+\frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2}$

z25 $\mathbb{Q}_2^{(c)}(A_{1g},c)=\mathbb{M}_3^{(a)}(A_{2g})\mathbb{M}_1^{(b)}(A_{2g})$

z26 $\mathbb{Q}_2^{(c)}(A_{1g},d)=-\frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{2,1}^{(b)}(E_{2g},a)}{2}-\frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{2,2}^{(b)}(E_{2g},a)}{2}$

z27 $\mathbb{Q}_2^{(c)}(A_{1g},e)=-\frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{2,1}^{(b)}(E_{2g},b)}{2}-\frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{2,2}^{(b)}(E_{2g},b)}{2}$

z28 $\mathbb{Q}_4^{(c)}(A_{1g})=\mathbb{Q}_4^{(a)}(A_{1g})\mathbb{Q}_0^{(b)}(A_{1g})$

z29 $\mathbb{Q}_6^{(c)}(A_{1g},2a)=\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{4,1}^{(b)}(E_{2g},1)}{2}+\frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{4,2}^{(b)}(E_{2g},1)}{2}$

z30 $\mathbb{Q}_6^{(c)}(A_{1g},2b)=\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2}+\frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2}$

z31 $\mathbb{Q}_6^{(c)}(A_{1g},2c)=-\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{4,1}^{(b)}(E_{2g},1)}{2}-\frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{4,2}^{(b)}(E_{2g},1)}{2}$

z48 $\mathbb{Q}_7^{(c)}(A_{1u},a)=\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{5,1}^{(b)}(E_{1u},1)}{2}+\frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{5,2}^{(b)}(E_{1u},1)}{2}$

z49 $\mathbb{Q}_7^{(c)}(A_{1u},b)=\frac{\sqrt{2}\mathbb{Q}_4^{(a)}(B_{1g})\mathbb{Q}_3^{(b)}(B_{1u})}{2}+\frac{\sqrt{2}\mathbb{Q}_4^{(a)}(B_{2g})\mathbb{Q}_3^{(b)}(B_{2u})}{2}$

z50 $\mathbb{Q}_7^{(c)}(A_{1u},c)=-\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{5,1}^{(b)}(E_{1u},1)}{2}-\frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{5,2}^{(b)}(E_{1u},1)}{2}$

z51 $\mathbb{G}_0^{(c)}(A_{1u},a)=\frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u},a)}{2}+\frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u},a)}{2}$

z52 $\mathbb{G}_0^{(c)}(A_{1u},b)=\frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u},b)}{2}+\frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u},b)}{2}$

z53 $$\mathbb{G}_0^{(c)}(A_{1u},c)=\frac{\sqrt{2}\mathbb{M}_3^{(a)}(B_{1g})\mathbb{T}_3^{(b)}(B_{1u})}{2}+\frac{\sqrt{2}\mathbb{M}_3^{(a)}(B_{2g})\mathbb{T}_3^{(b)}(B_{2u})}{2}$$

z54 $$\mathbb{G}_2^{(c)}(A_{1u},a)=-\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{2}-\frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{2}$$

z55 $$\mathbb{G}_2^{(c)}(A_{1u},b)=\frac{\sqrt{2}\mathbb{Q}_4^{(a)}(B_{1g})\mathbb{Q}_3^{(b)}(B_{1u})}{2}-\frac{\sqrt{2}\mathbb{Q}_4^{(a)}(B_{2g})\mathbb{Q}_3^{(b)}(B_{2u})}{2}$$

z56 $$\mathbb{G}_2^{(c)}(A_{1u},c)=\frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u},a)}{2}+\frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u},a)}{2}$$

z57 $$\mathbb{G}_2^{(c)}(A_{1u},d)=\frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u},b)}{2}+\frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u},b)}{2}$$

z58 $$\mathbb{G}_4^{(c)}(A_{1u})=-\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{2}-\frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{2}$$

z59 $$\mathbb{G}_6^{(c)}(A_{1u},2)=-\frac{\sqrt{2}\mathbb{M}_3^{(a)}(B_{1g})\mathbb{T}_3^{(b)}(B_{1u})}{2}+\frac{\sqrt{2}\mathbb{M}_3^{(a)}(B_{2g})\mathbb{T}_3^{(b)}(B_{2u})}{2}$$

z60 $$\mathbb{Q}_6^{(c)}(A_{2g},a)=\mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_6^{(b)}(A_{2g})$$

z77 $$\mathbb{Q}_6^{(c)}(A_{2g},b)=-\mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_6^{(b)}(A_{2g})$$

z78 $$\mathbb{Q}_6^{(c)}(A_{2g},c)=\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{4,2}^{(b)}(E_{2g},1)}{2}-\frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{4,1}^{(b)}(E_{2g},1)}{2}$$

z79 $$\mathbb{Q}_6^{(c)}(A_{2g},d)=\mathbb{Q}_4^{(a)}(A_{1g})\mathbb{Q}_6^{(b)}(A_{2g})$$

z80 $$\mathbb{Q}_6^{(c)}(A_{2g},e)=-\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2}+\frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2}$$

z81 $$\mathbb{Q}_6^{(c)}(A_{2g},f)=-\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{4,2}^{(b)}(E_{2g},1)}{2}+\frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{4,1}^{(b)}(E_{2g},1)}{2}$$

z82 $$\mathbb{G}_1^{(c)}(A_{2g},a)=-\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2}+\frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2}$$

z83 $\mathbb{G}_1^{(c)}(A_{2g},b) = \frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{4,2}^{(b)}(E_{2g},1)}{2} - \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{4,1}^{(b)}(E_{2g},1)}{2}$

z84 $\mathbb{G}_1^{(c)}(A_{2g},c) = \mathbb{M}_1^{(a)}(A_{2g})\mathbb{T}_0^{(b)}(A_{1g})$

z85 $\mathbb{G}_1^{(c)}(A_{2g},d) = -\frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{2,2}^{(b)}(E_{2g},a)}{2} + \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{2,1}^{(b)}(E_{2g},a)}{2}$

z86 $\mathbb{G}_1^{(c)}(A_{2g},e) = -\frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{2,2}^{(b)}(E_{2g},b)}{2} + \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{2,1}^{(b)}(E_{2g},b)}{2}$

z87 $\mathbb{G}_3^{(c)}(A_{2g},a) = -\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2} + \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2}$

z88 $\mathbb{G}_3^{(c)}(A_{2g},b) = \mathbb{M}_3^{(a)}(A_{2g})\mathbb{T}_0^{(b)}(A_{1g})$

z105 $\mathbb{Q}_1^{(c)}(A_{2u},a) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{2} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{2}$

z106 $\mathbb{Q}_1^{(c)}(A_{2u},b) = \frac{\sqrt{2}\mathbb{Q}_4^{(a)}(B_{1g})\mathbb{Q}_3^{(b)}(B_{2u})}{2} + \frac{\sqrt{2}\mathbb{Q}_4^{(a)}(B_{2g})\mathbb{Q}_3^{(b)}(B_{1u})}{2}$

z107 $\mathbb{Q}_1^{(c)}(A_{2u},c) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u},a)}{2} - \frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u},a)}{2}$

z108 $\mathbb{Q}_1^{(c)}(A_{2u},d) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u},b)}{2} - \frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u},b)}{2}$

z109 $\mathbb{Q}_1^{(c)}(A_{2u},e) = -\frac{\sqrt{2}\mathbb{M}_3^{(a)}(B_{1g})\mathbb{T}_3^{(b)}(B_{2u})}{2} + \frac{\sqrt{2}\mathbb{M}_3^{(a)}(B_{2g})\mathbb{T}_3^{(b)}(B_{1u})}{2}$

z110 $\mathbb{Q}_3^{(c)}(A_{2u},a) = \frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{2} - \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{2}$

z111 $\mathbb{Q}_3^{(c)}(A_{2u},b) = \frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u},a)}{2} - \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u},a)}{2}$

z112 $\mathbb{Q}_3^{(c)}(A_{2u},c) = \frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u},b)}{2} - \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u},b)}{2}$

z113 $\mathbb{Q}_7^{(c)}(A_{2u},2a) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{5,2}^{(b)}(E_{1u},1)}{2} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{5,1}^{(b)}(E_{1u},1)}{2}$

z114 $\mathbb{Q}_7^{(c)}(A_{2u},2b) = \frac{\sqrt{2}\mathbb{Q}_4^{(a)}(B_{1g})\mathbb{Q}_3^{(b)}(B_{2u})}{2} - \frac{\sqrt{2}\mathbb{Q}_4^{(a)}(B_{2g})\mathbb{Q}_3^{(b)}(B_{1u})}{2}$

z115 $\mathbb{Q}_7^{(c)}(A_{2u},2c) = -\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{5,2}^{(b)}(E_{1u},1)}{2} + \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{5,1}^{(b)}(E_{1u},1)}{2}$

z116 $\mathbb{G}_6^{(c)}(A_{2u}) = \frac{\sqrt{2}\mathbb{M}_3^{(a)}(B_{1g})\mathbb{T}_3^{(b)}(B_{2u})}{2} + \frac{\sqrt{2}\mathbb{M}_3^{(a)}(B_{2g})\mathbb{T}_3^{(b)}(B_{1u})}{2}$

z166 $\mathbb{Q}_4^{(c)}(B_{1g},a) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2}$

z167 $\mathbb{Q}_4^{(c)}(B_{1g},b) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{4,2}^{(b)}(E_{2g},1)}{2} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{4,1}^{(b)}(E_{2g},1)}{2}$

z168 $\mathbb{Q}_4^{(c)}(B_{1g},c) = \mathbb{Q}_4^{(a)}(B_{1g})\mathbb{Q}_0^{(b)}(A_{1g})$

z169 $\mathbb{Q}_4^{(c)}(B_{1g},d) = \mathbb{Q}_4^{(a)}(B_{2g})\mathbb{Q}_6^{(b)}(A_{2g})$

z170 $\mathbb{Q}_4^{(c)}(B_{1g},e) = -\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2} + \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2}$

z171 $\mathbb{Q}_4^{(c)}(B_{1g},f) = -\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{4,2}^{(b)}(E_{2g},1)}{2} + \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{4,1}^{(b)}(E_{2g},1)}{2}$

z172 $\mathbb{Q}_4^{(c)}(B_{1g},g) = \mathbb{M}_3^{(a)}(B_{2g})\mathbb{M}_1^{(b)}(A_{2g})$

z173 $\mathbb{Q}_4^{(c)}(B_{1g},h) = \frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g},a)}{2} - \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g},a)}{2}$

z174 $\mathbb{Q}_4^{(c)}(B_{1g},i) = \frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g},b)}{2} - \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g},b)}{2}$

z175 $\mathbb{G}_3^{(c)}(B_{1g},a) = -\frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g},a)}{2} + \frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g},a)}{2}$

z176 $\mathbb{G}_{3}^{(c)}(B_{1g},b) = -\frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g},b)}{2} + \frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g},b)}{2}$

z177 $\mathbb{G}_{3}^{(c)}(B_{1g},c) = \mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{0}^{(b)}(A_{1g})$

z178 $\mathbb{Q}_{3}^{(c)}(B_{1u},a) = \mathbb{Q}_{0}^{(a)}(A_{1g})\mathbb{Q}_{3}^{(b)}(B_{1u})$

z179 $\mathbb{Q}_{3}^{(c)}(B_{1u},b) = -\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{3}^{(b)}(B_{1u})$

z180 $\mathbb{Q}_{3}^{(c)}(B_{1u},c) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{2} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{2}$

z181 $\mathbb{Q}_{3}^{(c)}(B_{1u},d) = -\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{5,2}^{(b)}(E_{1u},1)}{2} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{5,1}^{(b)}(E_{1u},1)}{2}$

z182 $\mathbb{Q}_{3}^{(c)}(B_{1u},e) = \mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{3}^{(b)}(B_{1u})$

z183 $\mathbb{Q}_{3}^{(c)}(B_{1u},f) = -\frac{\sqrt{406}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{29} - \frac{\sqrt{58}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{58} + \frac{\sqrt{406}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{29} + \frac{\sqrt{58}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{58}$

z184 $\mathbb{Q}_{3}^{(c)}(B_{1u},g) = \frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{5,2}^{(b)}(E_{1u},1)}{2} - \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{5,1}^{(b)}(E_{1u},1)}{2}$

z185 $\mathbb{Q}_{3}^{(c)}(B_{1u},h) = \mathbb{M}_{1}^{(a)}(A_{2g})\mathbb{T}_{3}^{(b)}(B_{2u})$

z186 $\mathbb{Q}_{3}^{(c)}(B_{1u},i) = -\mathbb{M}_{3}^{(a)}(A_{2g})\mathbb{T}_{3}^{(b)}(B_{2u})$

z187 $\mathbb{Q}_{3}^{(c)}(B_{1u},j) = -\frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u},a)}{2} + \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u},a)}{2}$

z188 $\mathbb{Q}_{3}^{(c)}(B_{1u},k) = -\frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u},b)}{2} + \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u},b)}{2}$

z189 $\mathbb{Q}_{5}^{(c)}(B_{1u}) = -\frac{\sqrt{58}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{58} + \frac{\sqrt{406}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{29} + \frac{\sqrt{58}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{58} - \frac{\sqrt{406}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{29}$

z190 $\mathbb{Q}_{9}^{(c)}(B_{1u},1) = -\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{5,2}^{(b)}(E_{1u},1)}{2} + \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{5,1}^{(b)}(E_{1u},1)}{2}$

z191 $\mathbb{Q}_4^{(c)}(B_{2g},a) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2}$

z192 $\mathbb{Q}_4^{(c)}(B_{2g},b) = -\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{4,1}^{(b)}(E_{2g},1)}{2} - \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{4,2}^{(b)}(E_{2g},1)}{2}$

z193 $\mathbb{Q}_4^{(c)}(B_{2g},c) = \mathbb{Q}_4^{(a)}(B_{2g})\mathbb{Q}_0^{(b)}(A_{1g})$

z194 $\mathbb{Q}_4^{(c)}(B_{2g},d) = \mathbb{Q}_4^{(a)}(B_{1g})\mathbb{Q}_6^{(b)}(A_{2g})$

z195 $\mathbb{Q}_4^{(c)}(B_{2g},e) = -\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2} - \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2}$

z196 $\mathbb{Q}_4^{(c)}(B_{2g},f) = \frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{4,1}^{(b)}(E_{2g},1)}{2} + \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{4,2}^{(b)}(E_{2g},1)}{2}$

z197 $\mathbb{Q}_4^{(c)}(B_{2g},g) = \mathbb{M}_3^{(a)}(B_{1g})\mathbb{M}_1^{(b)}(A_{2g})$

z198 $\mathbb{Q}_4^{(c)}(B_{2g},h) = \frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g},a)}{2} + \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g},a)}{2}$

z199 $\mathbb{Q}_4^{(c)}(B_{2g},i) = \frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g},b)}{2} + \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g},b)}{2}$

z200 $\mathbb{G}_3^{(c)}(B_{2g},a) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g},a)}{2} + \frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g},a)}{2}$

z201 $\mathbb{G}_3^{(c)}(B_{2g},b) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g},b)}{2} + \frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g},b)}{2}$

z202 $\mathbb{G}_3^{(c)}(B_{2g},c) = \mathbb{M}_3^{(a)}(B_{2g})\mathbb{T}_0^{(b)}(A_{1g})$

z203 $\mathbb{Q}_3^{(c)}(B_{2u},a) = \mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_3^{(b)}(B_{2u})$

z204 $\mathbb{Q}_3^{(c)}(B_{2u},b) = -\mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_3^{(b)}(B_{2u})$

z205 $\mathbb{Q}_3^{(c)}(B_{2u},c) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{2} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{2}$

z206 $\mathbb{Q}_{3}^{(c)}(B_{2u},d) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{5,1}^{(b)}(E_{1u},1)}{2} + \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{5,2}^{(b)}(E_{1u},1)}{2}$

z207 $\mathbb{Q}_{3}^{(c)}(B_{2u},e) = \mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{3}^{(b)}(B_{2u})$

z208 $\mathbb{Q}_{3}^{(c)}(B_{2u},f) = \frac{\sqrt{406}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{29} - \frac{\sqrt{58}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{58} + \frac{\sqrt{406}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{29} - \frac{\sqrt{58}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{58}$

z209 $\mathbb{Q}_{3}^{(c)}(B_{2u},g) = -\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{5,1}^{(b)}(E_{1u},1)}{2} - \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{5,2}^{(b)}(E_{1u},1)}{2}$

z210 $\mathbb{Q}_{3}^{(c)}(B_{2u},h) = -\mathbb{M}_{1}^{(a)}(A_{2g})\mathbb{T}_{3}^{(b)}(B_{1u})$

z211 $\mathbb{Q}_{3}^{(c)}(B_{2u},i) = \mathbb{M}_{3}^{(a)}(A_{2g})\mathbb{T}_{3}^{(b)}(B_{1u})$

z212 $\mathbb{Q}_{3}^{(c)}(B_{2u},j) = -\frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u},a)}{2} - \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u},a)}{2}$

z213 $\mathbb{Q}_{3}^{(c)}(B_{2u},k) = -\frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u},b)}{2} - \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u},b)}{2}$

z294 $\mathbb{Q}_{5}^{(c)}(B_{2u}) = \frac{\sqrt{58}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{58} + \frac{\sqrt{406}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{29} + \frac{\sqrt{58}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{58} + \frac{\sqrt{406}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{29}$

z295 $\mathbb{Q}_{9}^{(c)}(B_{2u},1) = \frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{5,1}^{(b)}(E_{1u},1)}{2} + \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{5,2}^{(b)}(E_{1u},1)}{2}$

z296 $\mathbb{Q}_{2,1}^{(c)}(E_{1g},a) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$

z297 $\mathbb{Q}_{2,2}^{(c)}(E_{1g},a) = \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$

z298 $\mathbb{Q}_{2,1}^{(c)}(E_{1g},b) = -\frac{\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2} + \frac{\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2}$

z299 $\mathbb{Q}_{2,2}^{(c)}(E_{1g},b) = \frac{\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2} + \frac{\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2}$

z300 $\mathbb{Q}_{2,1}^{(c)}(E_{1g},c) = \frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{8} - \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{8} + \frac{\sqrt{14}\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{8} + \frac{\sqrt{14}\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{8}$

z301 $\mathbb{Q}_{2,2}^{(c)}(E_{1g},c) = -\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{8} - \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{8} - \frac{\sqrt{14}\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{8} + \frac{\sqrt{14}\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{8}$

z302 $\mathbb{Q}_{2,1}^{(c)}(E_{1g},d) = \frac{\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{4,2}^{(b)}(E_{2g},1)}{2} - \frac{\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{4,1}^{(b)}(E_{2g},1)}{2}$

z303 $\mathbb{Q}_{2,2}^{(c)}(E_{1g},d) = -\frac{\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{4,1}^{(b)}(E_{2g},1)}{2} - \frac{\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{4,2}^{(b)}(E_{2g},1)}{2}$

z304 $\mathbb{Q}_{2,1}^{(c)}(E_{1g},e) = \frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{M}_{1}^{(b)}(A_{2g})}{2}$

z305 $\mathbb{Q}_{2,2}^{(c)}(E_{1g},e) = -\frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{M}_{1}^{(b)}(A_{2g})}{2}$

z306 $\mathbb{Q}_{2,1}^{(c)}(E_{1g},f) = -\frac{\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g},a)}{2} + \frac{\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g},a)}{2}$

z307 $\mathbb{Q}_{2,2}^{(c)}(E_{1g},f) = \frac{\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g},a)}{2} + \frac{\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g},a)}{2}$

z308 $\mathbb{Q}_{2,1}^{(c)}(E_{1g},g) = -\frac{\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g},b)}{2} + \frac{\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g},b)}{2}$

z309 $\mathbb{Q}_{2,2}^{(c)}(E_{1g},g) = \frac{\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g},b)}{2} + \frac{\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g},b)}{2}$

z310 $\mathbb{Q}_{2,1}^{(c)}(E_{1g},h) = \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{M}_{1}^{(b)}(A_{2g})}{2}$

z311 $\mathbb{Q}_{2,2}^{(c)}(E_{1g},h) = -\frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{M}_{1}^{(b)}(A_{2g})}{2}$

z312 $\mathbb{Q}_{2,1}^{(c)}(E_{1g},i) = \frac{\sqrt{6}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g},a)}{8} - \frac{\sqrt{6}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g},a)}{8} - \frac{\sqrt{10}\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g},a)}{8} + \frac{\sqrt{10}\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{2,1}^{(b)}(E_{2g},a)}{8}$

z313 $\mathbb{Q}_{2,2}^{(c)}(E_{1g},i) = -\frac{\sqrt{6}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g},a)}{8} - \frac{\sqrt{6}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g},a)}{8} + \frac{\sqrt{10}\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g},a)}{8} + \frac{\sqrt{10}\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{2,2}^{(b)}(E_{2g},a)}{8}$

z314 $$\mathbb{Q}_{2,1}^{(c)}(E_{1g},j)=\frac{\sqrt{6}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g},b)}{8}-\frac{\sqrt{6}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g},b)}{8}-\frac{\sqrt{10}\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g},b)}{8}+\frac{\sqrt{10}\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{2,1}^{(b)}(E_{2g},b)}{8}$$

z315 $$\mathbb{Q}_{2,2}^{(c)}(E_{1g},j)=-\frac{\sqrt{6}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g},b)}{8}-\frac{\sqrt{6}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g},b)}{8}+\frac{\sqrt{10}\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g},b)}{8}+\frac{\sqrt{10}\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{2,2}^{(b)}(E_{2g},b)}{8}$$

z316 $$\mathbb{Q}_{4,1}^{(c)}(E_{1g},a)=\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$$

z317 $$\mathbb{Q}_{4,2}^{(c)}(E_{1g},a)=\frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$$

z318 $$\mathbb{Q}_{4,1}^{(c)}(E_{1g},b)=-\frac{\sqrt{14}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{8}+\frac{\sqrt{14}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{8}+\frac{\sqrt{2}\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{8}+\frac{\sqrt{2}\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{8}$$

z319 $$\mathbb{Q}_{4,2}^{(c)}(E_{1g},b)=\frac{\sqrt{14}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{8}+\frac{\sqrt{14}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{8}-\frac{\sqrt{2}\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{8}+\frac{\sqrt{2}\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{8}$$

z320 $$\mathbb{Q}_{4,1}^{(c)}(E_{1g},c)=-\frac{\sqrt{10}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g},a)}{8}+\frac{\sqrt{10}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g},a)}{8}-\frac{\sqrt{6}\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g},a)}{8}+\frac{\sqrt{6}\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{2,1}^{(b)}(E_{2g},a)}{8}$$

z321 $$\mathbb{Q}_{4,2}^{(c)}(E_{1g},c)=\frac{\sqrt{10}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g},a)}{8}+\frac{\sqrt{10}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g},a)}{8}+\frac{\sqrt{6}\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g},a)}{8}+\frac{\sqrt{6}\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{2,2}^{(b)}(E_{2g},a)}{8}$$

z322 $$\mathbb{Q}_{4,1}^{(c)}(E_{1g},d)=-\frac{\sqrt{10}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g},b)}{8}+\frac{\sqrt{10}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g},b)}{8}-\frac{\sqrt{6}\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g},b)}{8}+\frac{\sqrt{6}\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{2,1}^{(b)}(E_{2g},b)}{8}$$

z323 $$\mathbb{Q}_{4,2}^{(c)}(E_{1g},d)=\frac{\sqrt{10}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g},b)}{8}+\frac{\sqrt{10}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g},b)}{8}+\frac{\sqrt{6}\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g},b)}{8}+\frac{\sqrt{6}\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{2,2}^{(b)}(E_{2g},b)}{8}$$

z324 $$\mathbb{Q}_{6,1}^{(c)}(E_{1g},1a)=-\frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{6}^{(b)}(A_{2g})}{2}$$

z325 $$\mathbb{Q}_{6,2}^{(c)}(E_{1g},1a)=\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{6}^{(b)}(A_{2g})}{2}$$

z326 $$\mathbb{Q}_{6,1}^{(c)}(E_{1g},1b)=\frac{\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{4,1}^{(b)}(E_{2g},1)}{2}-\frac{\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{4,2}^{(b)}(E_{2g},1)}{2}$$

z327 $$\mathbb{Q}_{6,2}^{(c)}(E_{1g},1b)=-\frac{\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{4,2}^{(b)}(E_{2g},1)}{2}-\frac{\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{4,1}^{(b)}(E_{2g},1)}{2}$$

z328 $$\mathbb{Q}_{6,1}^{(c)}(E_{1g},1c)=\frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{6}^{(b)}(A_{2g})}{2}$$

z329 $$\mathbb{Q}_{6,2}^{(c)}(E_{1g},1c)=-\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{6}^{(b)}(A_{2g})}{2}$$

z330 $$\mathbb{Q}_{6,1}^{(c)}(E_{1g},1d)=-\frac{\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2}+\frac{\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2}$$

z331 $$\mathbb{Q}_{6,2}^{(c)}(E_{1g},1d)=\frac{\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2}+\frac{\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2}$$

z332 $$\mathbb{Q}_{6,1}^{(c)}(E_{1g},1e)=-\frac{\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{4,1}^{(b)}(E_{2g},1)}{2}+\frac{\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{4,2}^{(b)}(E_{2g},1)}{2}$$

z333 $$\mathbb{Q}_{6,2}^{(c)}(E_{1g},1e)=\frac{\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{4,2}^{(b)}(E_{2g},1)}{2}+\frac{\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{4,1}^{(b)}(E_{2g},1)}{2}$$

z334 $$\mathbb{Q}_{8,1}^{(c)}(E_{1g},1)=\frac{\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{4,2}^{(b)}(E_{2g},1)}{2}+\frac{\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{4,1}^{(b)}(E_{2g},1)}{2}$$

z335 $$\mathbb{Q}_{8,2}^{(c)}(E_{1g},1)=-\frac{\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{4,1}^{(b)}(E_{2g},1)}{2}+\frac{\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{4,2}^{(b)}(E_{2g},1)}{2}$$

z336 $$\mathbb{G}_{1,1}^{(c)}(E_{1g})=\frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{T}_{0}^{(b)}(A_{1g})}{2}$$

z337 $$\mathbb{G}_{1,2}^{(c)}(E_{1g})=\frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{T}_{0}^{(b)}(A_{1g})}{2}$$

z338 $$\mathbb{G}_{3,1}^{(c)}(E_{1g})=\frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{0}^{(b)}(A_{1g})}{2}$$

z339 $$\mathbb{G}_{3,2}^{(c)}(E_{1g})=\frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{0}^{(b)}(A_{1g})}{2}$$

z340 $$\mathbb{G}_{5,1}^{(c)}(E_{1g},1a)=\frac{\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{2,2}^{(b)}(E_{2g},a)}{2}+\frac{\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{2,1}^{(b)}(E_{2g},a)}{2}$$

z341 $$\mathbb{G}_{5,2}^{(c)}(E_{1g},1a)=-\frac{\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{2,1}^{(b)}(E_{2g},a)}{2}+\frac{\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{2,2}^{(b)}(E_{2g},a)}{2}$$

z342 $$\mathbb{G}^{(c)}_{5,1}(E_{1g},1b) = \frac{\mathbb{M}^{(a)}_{3}(B_{1g})\mathbb{T}^{(b)}_{2,2}(E_{2g},b)}{2} + \frac{\mathbb{M}^{(a)}_{3}(B_{2g})\mathbb{T}^{(b)}_{2,1}(E_{2g},b)}{2}$$

z343 $$\mathbb{G}^{(c)}_{5,2}(E_{1g},1b) = -\frac{\mathbb{M}^{(a)}_{3}(B_{1g})\mathbb{T}^{(b)}_{2,1}(E_{2g},b)}{2} + \frac{\mathbb{M}^{(a)}_{3}(B_{2g})\mathbb{T}^{(b)}_{2,2}(E_{2g},b)}{2}$$

z344 $$\mathbb{Q}^{(c)}_{1,1}(E_{1u},a) = \frac{\sqrt{2}\mathbb{Q}^{(a)}_{0}(A_{1g})\mathbb{Q}^{(b)}_{1,1}(E_{1u})}{2}$$

z345 $$\mathbb{Q}^{(c)}_{1,2}(E_{1u},a) = \frac{\sqrt{2}\mathbb{Q}^{(a)}_{0}(A_{1g})\mathbb{Q}^{(b)}_{1,2}(E_{1u})}{2}$$

z386 $$\mathbb{Q}^{(c)}_{1,1}(E_{1u},b) = \frac{\mathbb{Q}^{(a)}_{2,1}(E_{2g})\mathbb{Q}^{(b)}_{3}(B_{2u})}{2} - \frac{\mathbb{Q}^{(a)}_{2,2}(E_{2g})\mathbb{Q}^{(b)}_{3}(B_{1u})}{2}$$

z387 $$\mathbb{Q}^{(c)}_{1,2}(E_{1u},b) = \frac{\mathbb{Q}^{(a)}_{2,1}(E_{2g})\mathbb{Q}^{(b)}_{3}(B_{1u})}{2} + \frac{\mathbb{Q}^{(a)}_{2,2}(E_{2g})\mathbb{Q}^{(b)}_{3}(B_{2u})}{2}$$

z388 $$\mathbb{Q}^{(c)}_{1,1}(E_{1u},c) = \frac{\sqrt{42}\mathbb{Q}^{(a)}_{2,1}(E_{2g})\mathbb{Q}^{(b)}_{1,1}(E_{1u})}{14} - \frac{\sqrt{42}\mathbb{Q}^{(a)}_{2,2}(E_{2g})\mathbb{Q}^{(b)}_{1,2}(E_{1u})}{14} - \frac{\sqrt{14}\mathbb{Q}^{(a)}_{2}(A_{1g})\mathbb{Q}^{(b)}_{1,1}(E_{1u})}{14}$$

z389 $$\mathbb{Q}^{(c)}_{1,2}(E_{1u},c) = -\frac{\sqrt{42}\mathbb{Q}^{(a)}_{2,1}(E_{2g})\mathbb{Q}^{(b)}_{1,2}(E_{1u})}{14} - \frac{\sqrt{42}\mathbb{Q}^{(a)}_{2,2}(E_{2g})\mathbb{Q}^{(b)}_{1,1}(E_{1u})}{14} - \frac{\sqrt{14}\mathbb{Q}^{(a)}_{2}(A_{1g})\mathbb{Q}^{(b)}_{1,2}(E_{1u})}{14}$$

z390 $$\mathbb{Q}^{(c)}_{1,1}(E_{1u},d) = \frac{\sqrt{203}\mathbb{Q}^{(a)}_{4,1}(E_{2g},1)\mathbb{Q}^{(b)}_{3}(B_{2u})}{29} - \frac{\sqrt{29}\mathbb{Q}^{(a)}_{4,1}(E_{2g},2)\mathbb{Q}^{(b)}_{3}(B_{2u})}{58} + \frac{\sqrt{203}\mathbb{Q}^{(a)}_{4,2}(E_{2g},1)\mathbb{Q}^{(b)}_{3}(B_{1u})}{29} + \frac{\sqrt{29}\mathbb{Q}^{(a)}_{4,2}(E_{2g},2)\mathbb{Q}^{(b)}_{3}(B_{1u})}{58}$$

z391 $$\mathbb{Q}^{(c)}_{1,2}(E_{1u},d) = -\frac{\sqrt{203}\mathbb{Q}^{(a)}_{4,1}(E_{2g},1)\mathbb{Q}^{(b)}_{3}(B_{1u})}{29} - \frac{\sqrt{29}\mathbb{Q}^{(a)}_{4,1}(E_{2g},2)\mathbb{Q}^{(b)}_{3}(B_{1u})}{58} + \frac{\sqrt{203}\mathbb{Q}^{(a)}_{4,2}(E_{2g},1)\mathbb{Q}^{(b)}_{3}(B_{2u})}{29} - \frac{\sqrt{29}\mathbb{Q}^{(a)}_{4,2}(E_{2g},2)\mathbb{Q}^{(b)}_{3}(B_{2u})}{58}$$

z392 $$\mathbb{Q}^{(c)}_{1,1}(E_{1u},e) = \frac{\mathbb{Q}^{(a)}_{4,1}(E_{2g},1)\mathbb{Q}^{(b)}_{5,1}(E_{1u},1)}{2} - \frac{\mathbb{Q}^{(a)}_{4,2}(E_{2g},1)\mathbb{Q}^{(b)}_{5,2}(E_{1u},1)}{2}$$

z393 $$\mathbb{Q}^{(c)}_{1,2}(E_{1u},e) = -\frac{\mathbb{Q}^{(a)}_{4,1}(E_{2g},1)\mathbb{Q}^{(b)}_{5,2}(E_{1u},1)}{2} - \frac{\mathbb{Q}^{(a)}_{4,2}(E_{2g},1)\mathbb{Q}^{(b)}_{5,1}(E_{1u},1)}{2}$$

z394 $$\mathbb{Q}^{(c)}_{1,1}(E_{1u},f) = -\frac{\sqrt{2}\mathbb{M}^{(a)}_{1}(A_{2g})\mathbb{T}^{(b)}_{1,2}(E_{1u},a)}{2}$$

z395 $$\mathbb{Q}^{(c)}_{1,2}(E_{1u},f) = \frac{\sqrt{2}\mathbb{M}^{(a)}_{1}(A_{2g})\mathbb{T}^{(b)}_{1,1}(E_{1u},a)}{2}$$

z396 $$\mathbb{Q}_{1,1}^{(c)}(E_{1u},g) = -\frac{\sqrt{2}\mathbb{M}_{1}^{(a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u},b)}{2}$$

z397 $$\mathbb{Q}_{1,2}^{(c)}(E_{1u},g) = \frac{\sqrt{2}\mathbb{M}_{1}^{(a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u},b)}{2}$$

z414 $$\mathbb{Q}_{1,1}^{(c)}(E_{1u},h) = \frac{\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{3}^{(b)}(B_{2u})}{2} - \frac{\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{3}^{(b)}(B_{1u})}{2}$$

z415 $$\mathbb{Q}_{1,2}^{(c)}(E_{1u},h) = \frac{\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{3}^{(b)}(B_{1u})}{2} + \frac{\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{3}^{(b)}(B_{2u})}{2}$$

z416 $$\mathbb{Q}_{3,1}^{(c)}(E_{1u},a) = \frac{\sqrt{7}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{14} - \frac{\sqrt{7}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{14} + \frac{\sqrt{21}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{7}$$

z417 $$\mathbb{Q}_{3,2}^{(c)}(E_{1u},a) = -\frac{\sqrt{7}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{14} - \frac{\sqrt{7}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{14} + \frac{\sqrt{21}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{7}$$

z418 $$\mathbb{Q}_{3,1}^{(c)}(E_{1u},b) = \frac{\sqrt{29}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{3}^{(b)}(B_{2u})}{58} + \frac{\sqrt{203}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{3}^{(b)}(B_{2u})}{29} + \frac{\sqrt{29}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{3}^{(b)}(B_{1u})}{58} - \frac{\sqrt{203}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{3}^{(b)}(B_{1u})}{29}$$

z419 $$\mathbb{Q}_{3,2}^{(c)}(E_{1u},b) = -\frac{\sqrt{29}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{3}^{(b)}(B_{1u})}{58} + \frac{\sqrt{203}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{3}^{(b)}(B_{1u})}{29} + \frac{\sqrt{29}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{3}^{(b)}(B_{2u})}{58} + \frac{\sqrt{203}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{3}^{(b)}(B_{2u})}{29}$$

z420 $$\mathbb{Q}_{3,1}^{(c)}(E_{1u},c) = \frac{\sqrt{35}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{14} - \frac{\sqrt{35}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{14} - \frac{\sqrt{7}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{7}$$

z421 $$\mathbb{Q}_{3,2}^{(c)}(E_{1u},c) = -\frac{\sqrt{35}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{14} - \frac{\sqrt{35}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{14} - \frac{\sqrt{7}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{7}$$

z422 $$\mathbb{Q}_{3,1}^{(c)}(E_{1u},d) = -\frac{\sqrt{55}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u},a)}{22} + \frac{\sqrt{55}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u},a)}{22} - \frac{\sqrt{33}\mathbb{M}_{3}^{(a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u},a)}{11}$$

z423 $$\mathbb{Q}_{3,2}^{(c)}(E_{1u},d) = \frac{\sqrt{55}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u},a)}{22} + \frac{\sqrt{55}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u},a)}{22} + \frac{\sqrt{33}\mathbb{M}_{3}^{(a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u},a)}{11}$$

z424 $$\mathbb{Q}_{3,1}^{(c)}(E_{1u},e) = -\frac{\sqrt{55}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u},b)}{22} + \frac{\sqrt{55}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u},b)}{22} - \frac{\sqrt{33}\mathbb{M}_{3}^{(a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u},b)}{11}$$

z425 $$\mathbb{Q}_{3,2}^{(c)}(E_{1u},e) = \frac{\sqrt{55}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u},b)}{22} + \frac{\sqrt{55}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u},b)}{22} + \frac{\sqrt{33}\mathbb{M}_{3}^{(a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u},b)}{11}$$

z448 $$\mathbb{Q}_{5,1}^{(c)}(E_{1u},1a)=\frac{\sqrt{2}\mathbb{Q}_{0}^{(a)}(A_{1g})\mathbb{Q}_{5,1}^{(b)}(E_{1u},1)}{2}$$

z449 $$\mathbb{Q}_{5,2}^{(c)}(E_{1u},1a)=\frac{\sqrt{2}\mathbb{Q}_{0}^{(a)}(A_{1g})\mathbb{Q}_{5,2}^{(b)}(E_{1u},1)}{2}$$

z450 $$\mathbb{Q}_{5,1}^{(c)}(E_{1u},1b)=\frac{\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{3}^{(b)}(B_{2u})}{2}+\frac{\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{3}^{(b)}(B_{1u})}{2}$$

z451 $$\mathbb{Q}_{5,2}^{(c)}(E_{1u},1b)=-\frac{\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{3}^{(b)}(B_{1u})}{2}+\frac{\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{3}^{(b)}(B_{2u})}{2}$$

z452 $$\mathbb{Q}_{5,1}^{(c)}(E_{1u},1c)=-\frac{\sqrt{2}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{5,1}^{(b)}(E_{1u},1)}{2}$$

z453 $$\mathbb{Q}_{5,2}^{(c)}(E_{1u},1c)=-\frac{\sqrt{2}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{5,2}^{(b)}(E_{1u},1)}{2}$$

z454 $$\mathbb{Q}_{5,1}^{(c)}(E_{1u},1d)=-\frac{\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{3}^{(b)}(B_{2u})}{2}-\frac{\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{3}^{(b)}(B_{1u})}{2}$$

z455 $$\mathbb{Q}_{5,2}^{(c)}(E_{1u},1d)=\frac{\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{3}^{(b)}(B_{1u})}{2}-\frac{\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{3}^{(b)}(B_{2u})}{2}$$

z456 $$\mathbb{Q}_{5,1}^{(c)}(E_{1u},1e)=\frac{\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{2}-\frac{\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{2}$$

z457 $$\mathbb{Q}_{5,2}^{(c)}(E_{1u},1e)=-\frac{\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{2}-\frac{\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{2}$$

z458 $$\mathbb{Q}_{5,1}^{(c)}(E_{1u},1f)=\frac{\sqrt{2}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{5,1}^{(b)}(E_{1u},1)}{2}$$

z459 $$\mathbb{Q}_{5,2}^{(c)}(E_{1u},1f)=\frac{\sqrt{2}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{5,2}^{(b)}(E_{1u},1)}{2}$$

z460 $$\mathbb{Q}_{5,1}^{(c)}(E_{1u},1g)=-\frac{\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{3}^{(b)}(B_{2u})}{2}-\frac{\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{3}^{(b)}(B_{1u})}{2}$$

z472 $$\mathbb{Q}_{5,2}^{(c)}(E_{1u},1g)=\frac{\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{3}^{(b)}(B_{1u})}{2}-\frac{\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{3}^{(b)}(B_{2u})}{2}$$

z473 $$\mathbb{Q}^{(c)}_{5,1}(E_{1u},2) = \frac{\sqrt{14}\mathbb{Q}^{(a)}_{4,1}(E_{2g},2)\mathbb{Q}^{(b)}_{1,1}(E_{1u})}{14} - \frac{\sqrt{14}\mathbb{Q}^{(a)}_{4,2}(E_{2g},2)\mathbb{Q}^{(b)}_{1,2}(E_{1u})}{14} + \frac{\sqrt{70}\mathbb{Q}^{(a)}_{4}(A_{1g})\mathbb{Q}^{(b)}_{1,1}(E_{1u})}{14}$$

z474 $$\mathbb{Q}^{(c)}_{5,2}(E_{1u},2) = -\frac{\sqrt{14}\mathbb{Q}^{(a)}_{4,1}(E_{2g},2)\mathbb{Q}^{(b)}_{1,2}(E_{1u})}{14} - \frac{\sqrt{14}\mathbb{Q}^{(a)}_{4,2}(E_{2g},2)\mathbb{Q}^{(b)}_{1,1}(E_{1u})}{14} + \frac{\sqrt{70}\mathbb{Q}^{(a)}_{4}(A_{1g})\mathbb{Q}^{(b)}_{1,2}(E_{1u})}{14}$$

z475 $$\mathbb{Q}^{(c)}_{7,1}(E_{1u},1a) = \frac{\mathbb{Q}^{(a)}_{2,1}(E_{2g})\mathbb{Q}^{(b)}_{5,1}(E_{1u},1)}{2} - \frac{\mathbb{Q}^{(a)}_{2,2}(E_{2g})\mathbb{Q}^{(b)}_{5,2}(E_{1u},1)}{2}$$

z476 $$\mathbb{Q}^{(c)}_{7,2}(E_{1u},1a) = -\frac{\mathbb{Q}^{(a)}_{2,1}(E_{2g})\mathbb{Q}^{(b)}_{5,2}(E_{1u},1)}{2} - \frac{\mathbb{Q}^{(a)}_{2,2}(E_{2g})\mathbb{Q}^{(b)}_{5,1}(E_{1u},1)}{2}$$

z477 $$\mathbb{Q}^{(c)}_{7,1}(E_{1u},1b) = \frac{\mathbb{Q}^{(a)}_{4,1}(E_{2g},1)\mathbb{Q}^{(b)}_{3}(B_{2u})}{2} - \frac{\mathbb{Q}^{(a)}_{4,2}(E_{2g},1)\mathbb{Q}^{(b)}_{3}(B_{1u})}{2}$$

z478 $$\mathbb{Q}^{(c)}_{7,2}(E_{1u},1b) = \frac{\mathbb{Q}^{(a)}_{4,1}(E_{2g},1)\mathbb{Q}^{(b)}_{3}(B_{1u})}{2} + \frac{\mathbb{Q}^{(a)}_{4,2}(E_{2g},1)\mathbb{Q}^{(b)}_{3}(B_{2u})}{2}$$

z479 $$\mathbb{Q}^{(c)}_{7,1}(E_{1u},1c) = -\frac{\mathbb{Q}^{(a)}_{4,1}(E_{2g},2)\mathbb{Q}^{(b)}_{5,1}(E_{1u},1)}{2} + \frac{\mathbb{Q}^{(a)}_{4,2}(E_{2g},2)\mathbb{Q}^{(b)}_{5,2}(E_{1u},1)}{2}$$

z480 $$\mathbb{Q}^{(c)}_{7,2}(E_{1u},1c) = \frac{\mathbb{Q}^{(a)}_{4,1}(E_{2g},2)\mathbb{Q}^{(b)}_{5,2}(E_{1u},1)}{2} + \frac{\mathbb{Q}^{(a)}_{4,2}(E_{2g},2)\mathbb{Q}^{(b)}_{5,1}(E_{1u},1)}{2}$$

z481 $$\mathbb{G}^{(c)}_{2,1}(E_{1u},a) = \frac{\sqrt{66}\mathbb{M}^{(a)}_{3,1}(E_{2g})\mathbb{T}^{(b)}_{1,1}(E_{1u},a)}{22} - \frac{\sqrt{66}\mathbb{M}^{(a)}_{3,2}(E_{2g})\mathbb{T}^{(b)}_{1,2}(E_{1u},a)}{22} - \frac{\sqrt{110}\mathbb{M}^{(a)}_{3}(A_{2g})\mathbb{T}^{(b)}_{1,2}(E_{1u},a)}{22}$$

z482 $$\mathbb{G}^{(c)}_{2,2}(E_{1u},a) = -\frac{\sqrt{66}\mathbb{M}^{(a)}_{3,1}(E_{2g})\mathbb{T}^{(b)}_{1,2}(E_{1u},a)}{22} - \frac{\sqrt{66}\mathbb{M}^{(a)}_{3,2}(E_{2g})\mathbb{T}^{(b)}_{1,1}(E_{1u},a)}{22} + \frac{\sqrt{110}\mathbb{M}^{(a)}_{3}(A_{2g})\mathbb{T}^{(b)}_{1,1}(E_{1u},a)}{22}$$

z483 $$\mathbb{G}^{(c)}_{2,1}(E_{1u},b) = \frac{\sqrt{66}\mathbb{M}^{(a)}_{3,1}(E_{2g})\mathbb{T}^{(b)}_{1,1}(E_{1u},b)}{22} - \frac{\sqrt{66}\mathbb{M}^{(a)}_{3,2}(E_{2g})\mathbb{T}^{(b)}_{1,2}(E_{1u},b)}{22} - \frac{\sqrt{110}\mathbb{M}^{(a)}_{3}(A_{2g})\mathbb{T}^{(b)}_{1,2}(E_{1u},b)}{22}$$

z484 $$\mathbb{G}^{(c)}_{2,2}(E_{1u},b) = -\frac{\sqrt{66}\mathbb{M}^{(a)}_{3,1}(E_{2g})\mathbb{T}^{(b)}_{1,2}(E_{1u},b)}{22} - \frac{\sqrt{66}\mathbb{M}^{(a)}_{3,2}(E_{2g})\mathbb{T}^{(b)}_{1,1}(E_{1u},b)}{22} + \frac{\sqrt{110}\mathbb{M}^{(a)}_{3}(A_{2g})\mathbb{T}^{(b)}_{1,1}(E_{1u},b)}{22}$$

z541 $$\mathbb{Q}^{(c)}_{2,1}(E_{2g},a) = \frac{\sqrt{2}\mathbb{Q}^{(a)}_{0}(A_{1g})\mathbb{Q}^{(b)}_{2,1}(E_{2g})}{2}$$

z542 $$\mathbb{Q}^{(c)}_{2,2}(E_{2g},a) = \frac{\sqrt{2}\mathbb{Q}^{(a)}_{0}(A_{1g})\mathbb{Q}^{(b)}_{2,2}(E_{2g})}{2}$$

z543 $$\mathbb{Q}_{2,1}^{(c)}(E_{2g},b) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$$

z544 $$\mathbb{Q}_{2,2}^{(c)}(E_{2g},b) = \frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$$

z545 $$\mathbb{Q}_{2,1}^{(c)}(E_{2g},c) = -\frac{\sqrt{2}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2}$$

z546 $$\mathbb{Q}_{2,2}^{(c)}(E_{2g},c) = -\frac{\sqrt{2}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2}$$

z547 $$\mathbb{Q}_{2,1}^{(c)}(E_{2g},d) = \frac{\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{4,1}^{(b)}(E_{2g},1)}{2} - \frac{\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{4,2}^{(b)}(E_{2g},1)}{2}$$

z548 $$\mathbb{Q}_{2,2}^{(c)}(E_{2g},d) = -\frac{\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{4,2}^{(b)}(E_{2g},1)}{2} - \frac{\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{4,1}^{(b)}(E_{2g},1)}{2}$$

z549 $$\mathbb{Q}_{2,1}^{(c)}(E_{2g},e) = \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{6}^{(b)}(A_{2g})}{2}$$

z550 $$\mathbb{Q}_{2,2}^{(c)}(E_{2g},e) = -\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{6}^{(b)}(A_{2g})}{2}$$

z551 $$\mathbb{Q}_{2,1}^{(c)}(E_{2g},f) = \frac{\sqrt{4970}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{142} - \frac{\sqrt{4970}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{142} + \frac{\sqrt{142}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{142}$$

z552 $$\mathbb{Q}_{2,2}^{(c)}(E_{2g},f) = -\frac{\sqrt{4970}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{142} - \frac{\sqrt{4970}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{142} + \frac{\sqrt{142}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{142}$$

z553 $$\mathbb{Q}_{2,1}^{(c)}(E_{2g},g) = -\frac{\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{4,1}^{(b)}(E_{2g},1)}{2} + \frac{\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{4,2}^{(b)}(E_{2g},1)}{2}$$

z554 $$\mathbb{Q}_{2,2}^{(c)}(E_{2g},g) = \frac{\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{4,2}^{(b)}(E_{2g},1)}{2} + \frac{\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{4,1}^{(b)}(E_{2g},1)}{2}$$

z555 $$\mathbb{Q}_{2,1}^{(c)}(E_{2g},h) = \frac{\sqrt{2}\mathbb{M}_{1}^{(a)}(A_{2g})\mathbb{T}_{2,2}^{(b)}(E_{2g},a)}{2}$$

z556 $$\mathbb{Q}_{2,2}^{(c)}(E_{2g},h) = -\frac{\sqrt{2}\mathbb{M}_{1}^{(a)}(A_{2g})\mathbb{T}_{2,1}^{(b)}(E_{2g},a)}{2}$$

z557 $\mathbb{Q}^{(c)}_{2,1}(E_{2g},i) = \dfrac{\sqrt{2}\mathbb{M}^{(a)}_{1}(A_{2g})\mathbb{T}^{(b)}_{2,2}(E_{2g},b)}{2}$

z558 $\mathbb{Q}^{(c)}_{2,2}(E_{2g},i) = -\dfrac{\sqrt{2}\mathbb{M}^{(a)}_{1}(A_{2g})\mathbb{T}^{(b)}_{2,1}(E_{2g},b)}{2}$

z559 $\mathbb{Q}^{(c)}_{2,1}(E_{2g},j) = \dfrac{\sqrt{2}\mathbb{M}^{(a)}_{3,2}(E_{2g})\mathbb{M}^{(b)}_{1}(A_{2g})}{2}$

z560 $\mathbb{Q}^{(c)}_{2,2}(E_{2g},j) = -\dfrac{\sqrt{2}\mathbb{M}^{(a)}_{3,1}(E_{2g})\mathbb{M}^{(b)}_{1}(A_{2g})}{2}$

z561 $\mathbb{Q}^{(c)}_{2,1}(E_{2g},k) = -\dfrac{\sqrt{2}\mathbb{M}^{(a)}_{3}(A_{2g})\mathbb{T}^{(b)}_{2,2}(E_{2g},a)}{2}$

z562 $\mathbb{Q}^{(c)}_{2,2}(E_{2g},k) = \dfrac{\sqrt{2}\mathbb{M}^{(a)}_{3}(A_{2g})\mathbb{T}^{(b)}_{2,1}(E_{2g},a)}{2}$

z563 $\mathbb{Q}^{(c)}_{2,1}(E_{2g},l) = -\dfrac{\sqrt{2}\mathbb{M}^{(a)}_{3}(A_{2g})\mathbb{T}^{(b)}_{2,2}(E_{2g},b)}{2}$

z564 $\mathbb{Q}^{(c)}_{2,2}(E_{2g},l) = \dfrac{\sqrt{2}\mathbb{M}^{(a)}_{3}(A_{2g})\mathbb{T}^{(b)}_{2,1}(E_{2g},b)}{2}$

z565 $\mathbb{Q}^{(c)}_{4,1}(E_{2g},1a) = \dfrac{\sqrt{2}\mathbb{Q}^{(a)}_{0}(A_{1g})\mathbb{Q}^{(b)}_{4,1}(E_{2g},1)}{2}$

z566 $\mathbb{Q}^{(c)}_{4,2}(E_{2g},1a) = \dfrac{\sqrt{2}\mathbb{Q}^{(a)}_{0}(A_{1g})\mathbb{Q}^{(b)}_{4,2}(E_{2g},1)}{2}$

z567 $\mathbb{Q}^{(c)}_{4,1}(E_{2g},1b) = -\dfrac{\sqrt{2}\mathbb{Q}^{(a)}_{2,2}(E_{2g})\mathbb{Q}^{(b)}_{6}(A_{2g})}{2}$

z568 $\mathbb{Q}^{(c)}_{4,2}(E_{2g},1b) = \dfrac{\sqrt{2}\mathbb{Q}^{(a)}_{2,1}(E_{2g})\mathbb{Q}^{(b)}_{6}(A_{2g})}{2}$

z569 $\mathbb{Q}^{(c)}_{4,1}(E_{2g},1c) = \dfrac{\mathbb{Q}^{(a)}_{2,1}(E_{2g})\mathbb{Q}^{(b)}_{2,1}(E_{2g})}{2} - \dfrac{\mathbb{Q}^{(a)}_{2,2}(E_{2g})\mathbb{Q}^{(b)}_{2,2}(E_{2g})}{2}$

z570 $\mathbb{Q}^{(c)}_{4,2}(E_{2g},1c) = -\dfrac{\mathbb{Q}^{(a)}_{2,1}(E_{2g})\mathbb{Q}^{(b)}_{2,2}(E_{2g})}{2} - \dfrac{\mathbb{Q}^{(a)}_{2,2}(E_{2g})\mathbb{Q}^{(b)}_{2,1}(E_{2g})}{2}$

z571 $$\mathbb{Q}_{4,1}^{(c)}(E_{2g},1d) = -\frac{\sqrt{2}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{4,1}^{(b)}(E_{2g},1)}{2}$$

z572 $$\mathbb{Q}_{4,2}^{(c)}(E_{2g},1d) = -\frac{\sqrt{2}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{4,2}^{(b)}(E_{2g},1)}{2}$$

z573 $$\mathbb{Q}_{4,1}^{(c)}(E_{2g},1e) = \frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$$

z574 $$\mathbb{Q}_{4,2}^{(c)}(E_{2g},1e) = \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$$

z575 $$\mathbb{Q}_{4,1}^{(c)}(E_{2g},1f) = \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{6}^{(b)}(A_{2g})}{2}$$

z576 $$\mathbb{Q}_{4,2}^{(c)}(E_{2g},1f) = -\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{6}^{(b)}(A_{2g})}{2}$$

z577 $$\mathbb{Q}_{4,1}^{(c)}(E_{2g},1g) = -\frac{\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2} + \frac{\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2}$$

z578 $$\mathbb{Q}_{4,2}^{(c)}(E_{2g},1g) = \frac{\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2} + \frac{\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2}$$

z579 $$\mathbb{Q}_{4,1}^{(c)}(E_{2g},1h) = \frac{\sqrt{2}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{4,1}^{(b)}(E_{2g},1)}{2}$$

z580 $$\mathbb{Q}_{4,2}^{(c)}(E_{2g},1h) = \frac{\sqrt{2}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{4,2}^{(b)}(E_{2g},1)}{2}$$

z581 $$\mathbb{Q}_{4,1}^{(c)}(E_{2g},1i) = -\frac{\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{2,1}^{(b)}(E_{2g},a)}{2} + \frac{\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{2,2}^{(b)}(E_{2g},a)}{2}$$

z582 $$\mathbb{Q}_{4,2}^{(c)}(E_{2g},1i) = \frac{\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{2,2}^{(b)}(E_{2g},a)}{2} + \frac{\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{2,1}^{(b)}(E_{2g},a)}{2}$$

z583 $$\mathbb{Q}_{4,1}^{(c)}(E_{2g},1j) = -\frac{\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{2,1}^{(b)}(E_{2g},b)}{2} + \frac{\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{2,2}^{(b)}(E_{2g},b)}{2}$$

z584 $$\mathbb{Q}_{4,2}^{(c)}(E_{2g},1j) = \frac{\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{2,2}^{(b)}(E_{2g},b)}{2} + \frac{\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{2,1}^{(b)}(E_{2g},b)}{2}$$

z585 $$\mathbb{Q}_{4,1}^{(c)}(E_{2g},2a)=\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$$

z586 $$\mathbb{Q}_{4,2}^{(c)}(E_{2g},2a)=\frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$$

z587 $$\mathbb{Q}_{4,1}^{(c)}(E_{2g},2b)=\frac{\sqrt{71}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{142}-\frac{\sqrt{71}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{142}-\frac{\sqrt{2485}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{71}$$

z588 $$\mathbb{Q}_{4,2}^{(c)}(E_{2g},2b)=-\frac{\sqrt{71}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{142}-\frac{\sqrt{71}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{142}-\frac{\sqrt{2485}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{71}$$

z589 $$\mathbb{Q}_{8,1}^{(c)}(E_{2g},1)=\frac{\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{4,1}^{(b)}(E_{2g},1)}{2}-\frac{\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{4,2}^{(b)}(E_{2g},1)}{2}$$

z590 $$\mathbb{Q}_{8,2}^{(c)}(E_{2g},1)=-\frac{\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{4,2}^{(b)}(E_{2g},1)}{2}-\frac{\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{4,1}^{(b)}(E_{2g},1)}{2}$$

z591 $$\mathbb{G}_{3,1}^{(c)}(E_{2g})=\frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{0}^{(b)}(A_{1g})}{2}$$

z592 $$\mathbb{G}_{3,2}^{(c)}(E_{2g})=\frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{0}^{(b)}(A_{1g})}{2}$$

z653 $$\mathbb{Q}_{3,1}^{(c)}(E_{2u},a)=-\frac{\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{3}^{(b)}(B_{2u})}{2}-\frac{\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{3}^{(b)}(B_{1u})}{2}$$

z654 $$\mathbb{Q}_{3,2}^{(c)}(E_{2u},a)=\frac{\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{3}^{(b)}(B_{1u})}{2}-\frac{\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{3}^{(b)}(B_{2u})}{2}$$

z655 $$\mathbb{Q}_{3,1}^{(c)}(E_{2u},b)=\frac{\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{2}-\frac{\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{2}$$

z656 $$\mathbb{Q}_{3,2}^{(c)}(E_{2u},b)=-\frac{\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{1,2}^{(b)}(E_{1u})}{2}-\frac{\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{1,1}^{(b)}(E_{1u})}{2}$$

z657 $$\mathbb{Q}_{3,1}^{(c)}(E_{2u},c)=\frac{\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{3}^{(b)}(B_{2u})}{2}+\frac{\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{3}^{(b)}(B_{1u})}{2}$$

z658 $$\mathbb{Q}_{3,2}^{(c)}(E_{2u},c)=-\frac{\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{3}^{(b)}(B_{1u})}{2}+\frac{\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{3}^{(b)}(B_{2u})}{2}$$

z659 $$\mathbb{Q}^{(c)}_{3,1}(E_{2u},d) = -\frac{\sqrt{2}\mathbb{Q}^{(a)}_{4,1}(E_{1g})\mathbb{Q}^{(b)}_{1,1}(E_{1u})}{8} + \frac{\sqrt{2}\mathbb{Q}^{(a)}_{4,2}(E_{1g})\mathbb{Q}^{(b)}_{1,2}(E_{1u})}{8} - \frac{\sqrt{14}\mathbb{Q}^{(a)}_{4}(B_{1g})\mathbb{Q}^{(b)}_{1,2}(E_{1u})}{8} + \frac{\sqrt{14}\mathbb{Q}^{(a)}_{4}(B_{2g})\mathbb{Q}^{(b)}_{1,1}(E_{1u})}{8}$$

z660 $$\mathbb{Q}^{(c)}_{3,2}(E_{2u},d) = \frac{\sqrt{2}\mathbb{Q}^{(a)}_{4,1}(E_{1g})\mathbb{Q}^{(b)}_{1,2}(E_{1u})}{8} + \frac{\sqrt{2}\mathbb{Q}^{(a)}_{4,2}(E_{1g})\mathbb{Q}^{(b)}_{1,1}(E_{1u})}{8} + \frac{\sqrt{14}\mathbb{Q}^{(a)}_{4}(B_{1g})\mathbb{Q}^{(b)}_{1,1}(E_{1u})}{8} + \frac{\sqrt{14}\mathbb{Q}^{(a)}_{4}(B_{2g})\mathbb{Q}^{(b)}_{1,2}(E_{1u})}{8}$$

z661 $$\mathbb{Q}^{(c)}_{3,1}(E_{2u},e) = -\frac{\mathbb{Q}^{(a)}_{4}(B_{1g})\mathbb{Q}^{(b)}_{5,2}(E_{1u},1)}{2} - \frac{\mathbb{Q}^{(a)}_{4}(B_{2g})\mathbb{Q}^{(b)}_{5,1}(E_{1u},1)}{2}$$

z662 $$\mathbb{Q}^{(c)}_{3,2}(E_{2u},e) = \frac{\mathbb{Q}^{(a)}_{4}(B_{1g})\mathbb{Q}^{(b)}_{5,1}(E_{1u},1)}{2} - \frac{\mathbb{Q}^{(a)}_{4}(B_{2g})\mathbb{Q}^{(b)}_{5,2}(E_{1u},1)}{2}$$

z663 $$\mathbb{Q}^{(c)}_{3,1}(E_{2u},f) = -\frac{\mathbb{M}^{(a)}_{1,1}(E_{1g})\mathbb{T}^{(b)}_{3}(B_{2u})}{2} - \frac{\mathbb{M}^{(a)}_{1,2}(E_{1g})\mathbb{T}^{(b)}_{3}(B_{1u})}{2}$$

z664 $$\mathbb{Q}^{(c)}_{3,2}(E_{2u},f) = \frac{\mathbb{M}^{(a)}_{1,1}(E_{1g})\mathbb{T}^{(b)}_{3}(B_{1u})}{2} - \frac{\mathbb{M}^{(a)}_{1,2}(E_{1g})\mathbb{T}^{(b)}_{3}(B_{2u})}{2}$$

z665 $$\mathbb{Q}^{(c)}_{3,1}(E_{2u},g) = \frac{\mathbb{M}^{(a)}_{3,1}(E_{1g})\mathbb{T}^{(b)}_{3}(B_{2u})}{2} + \frac{\mathbb{M}^{(a)}_{3,2}(E_{1g})\mathbb{T}^{(b)}_{3}(B_{1u})}{2}$$

z666 $$\mathbb{Q}^{(c)}_{3,2}(E_{2u},g) = -\frac{\mathbb{M}^{(a)}_{3,1}(E_{1g})\mathbb{T}^{(b)}_{3}(B_{1u})}{2} + \frac{\mathbb{M}^{(a)}_{3,2}(E_{1g})\mathbb{T}^{(b)}_{3}(B_{2u})}{2}$$

z667 $$\mathbb{Q}^{(c)}_{3,1}(E_{2u},h) = \frac{\sqrt{10}\mathbb{M}^{(a)}_{3,1}(E_{1g})\mathbb{T}^{(b)}_{1,1}(E_{1u},a)}{8} - \frac{\sqrt{10}\mathbb{M}^{(a)}_{3,2}(E_{1g})\mathbb{T}^{(b)}_{1,2}(E_{1u},a)}{8} + \frac{\sqrt{6}\mathbb{M}^{(a)}_{3}(B_{1g})\mathbb{T}^{(b)}_{1,2}(E_{1u},a)}{8} + \frac{\sqrt{6}\mathbb{M}^{(a)}_{3}(B_{2g})\mathbb{T}^{(b)}_{1,1}(E_{1u},a)}{8}$$

z668 $$\mathbb{Q}^{(c)}_{3,2}(E_{2u},h) = -\frac{\sqrt{10}\mathbb{M}^{(a)}_{3,1}(E_{1g})\mathbb{T}^{(b)}_{1,2}(E_{1u},a)}{8} - \frac{\sqrt{10}\mathbb{M}^{(a)}_{3,2}(E_{1g})\mathbb{T}^{(b)}_{1,1}(E_{1u},a)}{8} - \frac{\sqrt{6}\mathbb{M}^{(a)}_{3}(B_{1g})\mathbb{T}^{(b)}_{1,1}(E_{1u},a)}{8} + \frac{\sqrt{6}\mathbb{M}^{(a)}_{3}(B_{2g})\mathbb{T}^{(b)}_{1,2}(E_{1u},a)}{8}$$

z669 $$\mathbb{Q}^{(c)}_{3,1}(E_{2u},i) = \frac{\sqrt{10}\mathbb{M}^{(a)}_{3,1}(E_{1g})\mathbb{T}^{(b)}_{1,1}(E_{1u},b)}{8} - \frac{\sqrt{10}\mathbb{M}^{(a)}_{3,2}(E_{1g})\mathbb{T}^{(b)}_{1,2}(E_{1u},b)}{8} + \frac{\sqrt{6}\mathbb{M}^{(a)}_{3}(B_{1g})\mathbb{T}^{(b)}_{1,2}(E_{1u},b)}{8} + \frac{\sqrt{6}\mathbb{M}^{(a)}_{3}(B_{2g})\mathbb{T}^{(b)}_{1,1}(E_{1u},b)}{8}$$

z670 $$\mathbb{Q}^{(c)}_{3,2}(E_{2u},i) = -\frac{\sqrt{10}\mathbb{M}^{(a)}_{3,1}(E_{1g})\mathbb{T}^{(b)}_{1,2}(E_{1u},b)}{8} - \frac{\sqrt{10}\mathbb{M}^{(a)}_{3,2}(E_{1g})\mathbb{T}^{(b)}_{1,1}(E_{1u},b)}{8} - \frac{\sqrt{6}\mathbb{M}^{(a)}_{3}(B_{1g})\mathbb{T}^{(b)}_{1,1}(E_{1u},b)}{8} + \frac{\sqrt{6}\mathbb{M}^{(a)}_{3}(B_{2g})\mathbb{T}^{(b)}_{1,2}(E_{1u},b)}{8}$$

z671 $$\mathbb{Q}^{(c)}_{5,1}(E_{2u},1a) = -\frac{\mathbb{Q}^{(a)}_{2,1}(E_{1g})\mathbb{Q}^{(b)}_{3}(B_{2u})}{2} + \frac{\mathbb{Q}^{(a)}_{2,2}(E_{1g})\mathbb{Q}^{(b)}_{3}(B_{1u})}{2}$$

z672 $$\mathbb{Q}^{(c)}_{5,2}(E_{2u},1a) = -\frac{\mathbb{Q}^{(a)}_{2,1}(E_{1g})\mathbb{Q}^{(b)}_{3}(B_{1u})}{2} - \frac{\mathbb{Q}^{(a)}_{2,2}(E_{1g})\mathbb{Q}^{(b)}_{3}(B_{2u})}{2}$$

z673 $$\mathbb{Q}^{(c)}_{5,1}(E_{2u},1b) = \frac{\mathbb{Q}^{(a)}_{2,1}(E_{1g})\mathbb{Q}^{(b)}_{5,1}(E_{1u},1)}{2} - \frac{\mathbb{Q}^{(a)}_{2,2}(E_{1g})\mathbb{Q}^{(b)}_{5,2}(E_{1u},1)}{2}$$

z674 $$\mathbb{Q}^{(c)}_{5,2}(E_{2u},1b) = -\frac{\mathbb{Q}^{(a)}_{2,1}(E_{1g})\mathbb{Q}^{(b)}_{5,2}(E_{1u},1)}{2} - \frac{\mathbb{Q}^{(a)}_{2,2}(E_{1g})\mathbb{Q}^{(b)}_{5,1}(E_{1u},1)}{2}$$

z675 $$\mathbb{Q}^{(c)}_{5,1}(E_{2u},1c) = \frac{\mathbb{Q}^{(a)}_{4,1}(E_{1g})\mathbb{Q}^{(b)}_{3}(B_{2u})}{2} - \frac{\mathbb{Q}^{(a)}_{4,2}(E_{1g})\mathbb{Q}^{(b)}_{3}(B_{1u})}{2}$$

z676 $$\mathbb{Q}^{(c)}_{5,2}(E_{2u},1c) = \frac{\mathbb{Q}^{(a)}_{4,1}(E_{1g})\mathbb{Q}^{(b)}_{3}(B_{1u})}{2} + \frac{\mathbb{Q}^{(a)}_{4,2}(E_{1g})\mathbb{Q}^{(b)}_{3}(B_{2u})}{2}$$

z677 $$\mathbb{Q}^{(c)}_{5,1}(E_{2u},1d) = -\frac{\mathbb{Q}^{(a)}_{4}(B_{1g})\mathbb{Q}^{(b)}_{1,2}(E_{1u})}{2} - \frac{\mathbb{Q}^{(a)}_{4}(B_{2g})\mathbb{Q}^{(b)}_{1,1}(E_{1u})}{2}$$

z678 $$\mathbb{Q}^{(c)}_{5,2}(E_{2u},1d) = \frac{\mathbb{Q}^{(a)}_{4}(B_{1g})\mathbb{Q}^{(b)}_{1,1}(E_{1u})}{2} - \frac{\mathbb{Q}^{(a)}_{4}(B_{2g})\mathbb{Q}^{(b)}_{1,2}(E_{1u})}{2}$$

z679 $$\mathbb{Q}^{(c)}_{5,1}(E_{2u},1e) = -\frac{\mathbb{Q}^{(a)}_{4,1}(E_{1g})\mathbb{Q}^{(b)}_{5,1}(E_{1u},1)}{2} + \frac{\mathbb{Q}^{(a)}_{4,2}(E_{1g})\mathbb{Q}^{(b)}_{5,2}(E_{1u},1)}{2}$$

z680 $$\mathbb{Q}^{(c)}_{5,2}(E_{2u},1e) = \frac{\mathbb{Q}^{(a)}_{4,1}(E_{1g})\mathbb{Q}^{(b)}_{5,2}(E_{1u},1)}{2} + \frac{\mathbb{Q}^{(a)}_{4,2}(E_{1g})\mathbb{Q}^{(b)}_{5,1}(E_{1u},1)}{2}$$

z681 $$\mathbb{Q}^{(c)}_{5,1}(E_{2u},1f) = -\frac{\mathbb{M}^{(a)}_{3,1}(E_{1g})\mathbb{T}^{(b)}_{3}(B_{2u})}{2} + \frac{\mathbb{M}^{(a)}_{3,2}(E_{1g})\mathbb{T}^{(b)}_{3}(B_{1u})}{2}$$

z682 $$\mathbb{Q}^{(c)}_{5,2}(E_{2u},1f) = -\frac{\mathbb{M}^{(a)}_{3,1}(E_{1g})\mathbb{T}^{(b)}_{3}(B_{1u})}{2} - \frac{\mathbb{M}^{(a)}_{3,2}(E_{1g})\mathbb{T}^{(b)}_{3}(B_{2u})}{2}$$

z683 $$\mathbb{Q}^{(c)}_{5,1}(E_{2u},2) = \frac{\sqrt{14}\mathbb{Q}^{(a)}_{4,1}(E_{1g})\mathbb{Q}^{(b)}_{1,1}(E_{1u})}{8} - \frac{\sqrt{14}\mathbb{Q}^{(a)}_{4,2}(E_{1g})\mathbb{Q}^{(b)}_{1,2}(E_{1u})}{8} - \frac{\sqrt{2}\mathbb{Q}^{(a)}_{4}(B_{1g})\mathbb{Q}^{(b)}_{1,2}(E_{1u})}{8} + \frac{\sqrt{2}\mathbb{Q}^{(a)}_{4}(B_{2g})\mathbb{Q}^{(b)}_{1,1}(E_{1u})}{8}$$

z684 $$\mathbb{Q}^{(c)}_{5,2}(E_{2u},2) = -\frac{\sqrt{14}\mathbb{Q}^{(a)}_{4,1}(E_{1g})\mathbb{Q}^{(b)}_{1,2}(E_{1u})}{8} - \frac{\sqrt{14}\mathbb{Q}^{(a)}_{4,2}(E_{1g})\mathbb{Q}^{(b)}_{1,1}(E_{1u})}{8} + \frac{\sqrt{2}\mathbb{Q}^{(a)}_{4}(B_{1g})\mathbb{Q}^{(b)}_{1,1}(E_{1u})}{8} + \frac{\sqrt{2}\mathbb{Q}^{(a)}_{4}(B_{2g})\mathbb{Q}^{(b)}_{1,2}(E_{1u})}{8}$$

z685 $$\mathbb{Q}^{(c)}_{9,1}(E_{2u},1) = -\frac{\mathbb{Q}^{(a)}_{4}(B_{1g})\mathbb{Q}^{(b)}_{5,2}(E_{1u},1)}{2} + \frac{\mathbb{Q}^{(a)}_{4}(B_{2g})\mathbb{Q}^{(b)}_{5,1}(E_{1u},1)}{2}$$

z686 $$\mathbb{Q}^{(c)}_{9,2}(E_{2u},1) = \frac{\mathbb{Q}^{(a)}_{4}(B_{1g})\mathbb{Q}^{(b)}_{5,1}(E_{1u},1)}{2} + \frac{\mathbb{Q}^{(a)}_{4}(B_{2g})\mathbb{Q}^{(b)}_{5,2}(E_{1u},1)}{2}$$

z687 $$\mathbb{G}^{(c)}_{2,1}(E_{2u},a) = \frac{\mathbb{M}^{(a)}_{1,1}(E_{1g})\mathbb{T}^{(b)}_{1,1}(E_{1u},a)}{2} - \frac{\mathbb{M}^{(a)}_{1,2}(E_{1g})\mathbb{T}^{(b)}_{1,2}(E_{1u},a)}{2}$$

z688 $$\mathbb{G}^{(c)}_{2,2}(E_{2u},a) = -\frac{\mathbb{M}^{(a)}_{1,1}(E_{1g})\mathbb{T}^{(b)}_{1,2}(E_{1u},a)}{2} - \frac{\mathbb{M}^{(a)}_{1,2}(E_{1g})\mathbb{T}^{(b)}_{1,1}(E_{1u},a)}{2}$$

z689 $$\mathbb{G}^{(c)}_{2,1}(E_{2u},b) = \frac{\mathbb{M}^{(a)}_{1,1}(E_{1g})\mathbb{T}^{(b)}_{1,1}(E_{1u},b)}{2} - \frac{\mathbb{M}^{(a)}_{1,2}(E_{1g})\mathbb{T}^{(b)}_{1,2}(E_{1u},b)}{2}$$

z690 $$\mathbb{G}^{(c)}_{2,2}(E_{2u},b) = -\frac{\mathbb{M}^{(a)}_{1,1}(E_{1g})\mathbb{T}^{(b)}_{1,2}(E_{1u},b)}{2} - \frac{\mathbb{M}^{(a)}_{1,2}(E_{1g})\mathbb{T}^{(b)}_{1,1}(E_{1u},b)}{2}$$

z691 $$\mathbb{G}^{(c)}_{2,1}(E_{2u},c) = -\frac{\sqrt{6}\mathbb{M}^{(a)}_{3,1}(E_{1g})\mathbb{T}^{(b)}_{1,1}(E_{1u},a)}{8} + \frac{\sqrt{6}\mathbb{M}^{(a)}_{3,2}(E_{1g})\mathbb{T}^{(b)}_{1,2}(E_{1u},a)}{8} + \frac{\sqrt{10}\mathbb{M}^{(a)}_{3}(B_{1g})\mathbb{T}^{(b)}_{1,2}(E_{1u},a)}{8} + \frac{\sqrt{10}\mathbb{M}^{(a)}_{3}(B_{2g})\mathbb{T}^{(b)}_{1,1}(E_{1u},a)}{8}$$

z692 $$\mathbb{G}^{(c)}_{2,2}(E_{2u},c) = \frac{\sqrt{6}\mathbb{M}^{(a)}_{3,1}(E_{1g})\mathbb{T}^{(b)}_{1,2}(E_{1u},a)}{8} + \frac{\sqrt{6}\mathbb{M}^{(a)}_{3,2}(E_{1g})\mathbb{T}^{(b)}_{1,1}(E_{1u},a)}{8} - \frac{\sqrt{10}\mathbb{M}^{(a)}_{3}(B_{1g})\mathbb{T}^{(b)}_{1,1}(E_{1u},a)}{8} + \frac{\sqrt{10}\mathbb{M}^{(a)}_{3}(B_{2g})\mathbb{T}^{(b)}_{1,2}(E_{1u},a)}{8}$$

z693 $$\mathbb{G}^{(c)}_{2,1}(E_{2u},d) = -\frac{\sqrt{6}\mathbb{M}^{(a)}_{3,1}(E_{1g})\mathbb{T}^{(b)}_{1,1}(E_{1u},b)}{8} + \frac{\sqrt{6}\mathbb{M}^{(a)}_{3,2}(E_{1g})\mathbb{T}^{(b)}_{1,2}(E_{1u},b)}{8} + \frac{\sqrt{10}\mathbb{M}^{(a)}_{3}(B_{1g})\mathbb{T}^{(b)}_{1,2}(E_{1u},b)}{8} + \frac{\sqrt{10}\mathbb{M}^{(a)}_{3}(B_{2g})\mathbb{T}^{(b)}_{1,1}(E_{1u},b)}{8}$$

z694 $$\mathbb{G}^{(c)}_{2,2}(E_{2u},d) = \frac{\sqrt{6}\mathbb{M}^{(a)}_{3,1}(E_{1g})\mathbb{T}^{(b)}_{1,2}(E_{1u},b)}{8} + \frac{\sqrt{6}\mathbb{M}^{(a)}_{3,2}(E_{1g})\mathbb{T}^{(b)}_{1,1}(E_{1u},b)}{8} - \frac{\sqrt{10}\mathbb{M}^{(a)}_{3}(B_{1g})\mathbb{T}^{(b)}_{1,1}(E_{1u},b)}{8} + \frac{\sqrt{10}\mathbb{M}^{(a)}_{3}(B_{2g})\mathbb{T}^{(b)}_{1,2}(E_{1u},b)}{8}$$

z695 $$\mathbb{G}^{(c)}_{4,1}(E_{2u},1a) = \frac{\mathbb{M}^{(a)}_{1,1}(E_{1g})\mathbb{T}^{(b)}_{3}(B_{2u})}{2} - \frac{\mathbb{M}^{(a)}_{1,2}(E_{1g})\mathbb{T}^{(b)}_{3}(B_{1u})}{2}$$

z696 $$\mathbb{G}^{(c)}_{4,2}(E_{2u},1a) = \frac{\mathbb{M}^{(a)}_{1,1}(E_{1g})\mathbb{T}^{(b)}_{3}(B_{1u})}{2} + \frac{\mathbb{M}^{(a)}_{1,2}(E_{1g})\mathbb{T}^{(b)}_{3}(B_{2u})}{2}$$

z697 $$\mathbb{G}^{(c)}_{4,1}(E_{2u},1b) = -\frac{\mathbb{M}^{(a)}_{3}(B_{1g})\mathbb{T}^{(b)}_{1,2}(E_{1u},a)}{2} + \frac{\mathbb{M}^{(a)}_{3}(B_{2g})\mathbb{T}^{(b)}_{1,1}(E_{1u},a)}{2}$$

z698 $$\mathbb{G}^{(c)}_{4,2}(E_{2u},1b) = \frac{\mathbb{M}^{(a)}_{3}(B_{1g})\mathbb{T}^{(b)}_{1,1}(E_{1u},a)}{2} + \frac{\mathbb{M}^{(a)}_{3}(B_{2g})\mathbb{T}^{(b)}_{1,2}(E_{1u},a)}{2}$$

z699 $$\mathbb{G}^{(c)}_{4,1}(E_{2u},1c) = -\frac{\mathbb{M}^{(a)}_{3}(B_{1g})\mathbb{T}^{(b)}_{1,2}(E_{1u},b)}{2} + \frac{\mathbb{M}^{(a)}_{3}(B_{2g})\mathbb{T}^{(b)}_{1,1}(E_{1u},b)}{2}$$

z700 $$\mathbb{G}^{(c)}_{4,2}(E_{2u},1c) = \frac{\mathbb{M}^{(a)}_{3}(B_{1g})\mathbb{T}^{(b)}_{1,1}(E_{1u},b)}{2} + \frac{\mathbb{M}^{(a)}_{3}(B_{2g})\mathbb{T}^{(b)}_{1,2}(E_{1u},b)}{2}$$

- 'Sn'-'Sn' bond-cluster : `Sn;Sn_001_1`
  * bra: $\langle d_u|$, $\langle d_{xz}|$, $\langle d_{yz}|$, $\langle d_{xy}|$, $\langle d_v|$
  * ket: $|d_u\rangle$, $|d_{xz}\rangle$, $|d_{yz}\rangle$, $|d_{xy}\rangle$, $|d_v\rangle$
  * wyckoff: `6a@6g`

z32 $\mathbb{Q}_{0}^{(c)}(A_{1g},a) = \mathbb{Q}_{0}^{(a)}(A_{1g})\mathbb{Q}_{0}^{(b)}(A_{1g})$

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

z34 $\mathbb{Q}_{0}^{(c)}(A_{1g},c) = \mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{4}^{(b)}(B_{2g})$

z35 $\mathbb{Q}_{2}^{(c)}(A_{1g},a) = \mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{0}^{(b)}(A_{1g})$

z36 $\mathbb{Q}_{2}^{(c)}(A_{1g},b) = \frac{\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{2} - \frac{\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2} + \frac{\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{2} - \frac{\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2}$

z37 $\mathbb{Q}_{2}^{(c)}(A_{1g},c) = \frac{\sqrt{3}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{3} + \frac{\sqrt{6}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{6} + \frac{\sqrt{3}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{3} + \frac{\sqrt{6}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{6}$

z38 $\mathbb{Q}_{4}^{(c)}(A_{1g},a) = \mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{0}^{(b)}(A_{1g})$

z39 $\mathbb{Q}_{4}^{(c)}(A_{1g},b) = \frac{\sqrt{6}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{6} - \frac{\sqrt{3}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{3} + \frac{\sqrt{6}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{6} - \frac{\sqrt{3}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{3}$

z40 $\mathbb{Q}_{6}^{(c)}(A_{1g},2) = \frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2} + \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2}$

z61 $\mathbb{G}_{0}^{(c)}(A_{1u},a) = \frac{\sqrt{3}\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{3} + \frac{\sqrt{3}\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{3} + \frac{\sqrt{3}\mathbb{M}_{1}^{(a)}(A_{2g})\mathbb{T}_{1}^{(b)}(A_{2u})}{3}$

z62 $\mathbb{G}_{0}^{(c)}(A_{1u},b) = \mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{3}^{(b)}(B_{1u})$

z63 $\mathbb{G}_{2}^{(c)}(A_{1u},a) = -\frac{\sqrt{6}\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{6} - \frac{\sqrt{6}\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{6} + \frac{\sqrt{6}\mathbb{M}_{1}^{(a)}(A_{2g})\mathbb{T}_{1}^{(b)}(A_{2u})}{3}$

z64 $\mathbb{G}_{2}^{(c)}(A_{1u},b) = \frac{\sqrt{14}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{7} + \frac{\sqrt{14}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{7} + \frac{\sqrt{21}\mathbb{M}_{3}^{(a)}(A_{2g})\mathbb{T}_{1}^{(b)}(A_{2u})}{7}$

z65 $\mathbb{G}_{2}^{(c)}(A_{1u},c) = -\frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{M}_{2,1}^{(b)}(E_{2u})}{2} - \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{M}_{2,2}^{(b)}(E_{2u})}{2}$

z66 $\mathbb{G}_{4}^{(c)}(A_{1u}) = -\frac{\sqrt{42}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{14} - \frac{\sqrt{42}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{14} + \frac{2\sqrt{7}\mathbb{M}_{3}^{(a)}(A_{2g})\mathbb{T}_{1}^{(b)}(A_{2u})}{7}$

z89 $\mathbb{Q}_{6}^{(c)}(A_{2g},a) = \mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{4}^{(b)}(B_{2g})$

z90 $\mathbb{Q}_{6}^{(c)}(A_{2g},b) = -\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2} + \frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2}$

z91 $\mathbb{G}_{1}^{(c)}(A_{2g}) = \frac{\sqrt{10}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{10} - \frac{\sqrt{10}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{5} - \frac{\sqrt{10}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{10} + \frac{\sqrt{10}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{5}$

z92 $\mathbb{G}_{3}^{(c)}(A_{2g},a) = \frac{\sqrt{10}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{5} + \frac{\sqrt{10}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{10} - \frac{\sqrt{10}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{5} - \frac{\sqrt{10}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{10}$

z93 $\mathbb{G}_{3}^{(c)}(A_{2g},b) = \frac{\sqrt{6}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{6} - \frac{\sqrt{3}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{3} - \frac{\sqrt{6}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{6} + \frac{\sqrt{3}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{3}$

z94 $\mathbb{G}_{5}^{(c)}(A_{2g}) = \frac{\sqrt{3}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{3} + \frac{\sqrt{6}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{6} - \frac{\sqrt{3}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{3} - \frac{\sqrt{6}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{6}$

z117 $\mathbb{Q}_{1}^{(c)}(A_{2u},a) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{2} - \frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{2}$

z118 $\mathbb{Q}_{1}^{(c)}(A_{2u},b) = \mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{3}^{(b)}(B_{1u})$

z119 $\mathbb{Q}_{1}^{(c)}(A_{2u},c) = -\frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{M}_{2,2}^{(b)}(E_{2u})}{2} + \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{M}_{2,1}^{(b)}(E_{2u})}{2}$

z120 $\mathbb{Q}_{3}^{(c)}(A_{2u}) = \frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{2} - \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{2}$

z121 $\mathbb{Q}_{4}^{(c)}(B_{1g},a) = \frac{\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2} - \frac{\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{2} - \frac{\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2} + \frac{\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{2}$

z122 $\mathbb{Q}_{4}^{(c)}(B_{1g},b) = \mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{0}^{(b)}(A_{1g})$

z123 $$\mathbb{Q}_4^{(c)}(B_{1g},c) = -\frac{3\sqrt{71}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{71} - \frac{\sqrt{994}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{71} - \frac{5\sqrt{142}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{142} + \frac{3\sqrt{71}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{71} + \frac{\sqrt{994}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{71} + \frac{5\sqrt{142}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{142}$$

z124 $$\mathbb{Q}_6^{(c)}(B_{1g}) = \frac{7\sqrt{497}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{355} + \frac{9\sqrt{142}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{710} - \frac{6\sqrt{994}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{355} - \frac{7\sqrt{497}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{355} - \frac{9\sqrt{142}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{710} + \frac{6\sqrt{994}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{355}$$

z125 $$\mathbb{G}_3^{(c)}(B_{1g},a) = \frac{\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2} + \frac{\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{2} - \frac{\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2} - \frac{\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{2}$$

z214 $$\mathbb{G}_3^{(c)}(B_{1g},b) = -\frac{3\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{10} + \frac{\sqrt{7}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{5} - \frac{\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{5} + \frac{3\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{10} - \frac{\sqrt{7}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{5} + \frac{\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{5}$$

z215 $$\mathbb{Q}_3^{(c)}(B_{1u},a) = -\frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{M}_{2,2}^{(b)}(E_{2u})}{2} + \frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{M}_{2,1}^{(b)}(E_{2u})}{2}$$

z216 $$\mathbb{Q}_3^{(c)}(B_{1u},b) = -\frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{4} + \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{4} - \frac{\sqrt{3}\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{1}^{(b)}(A_{2u})}{2}$$

z217 $$\mathbb{Q}_3^{(c)}(B_{1u},c) = \frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{M}_{2,2}^{(b)}(E_{2u})}{2} - \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{M}_{2,1}^{(b)}(E_{2u})}{2}$$

z218 $$\mathbb{G}_4^{(c)}(B_{1u}) = -\frac{\sqrt{6}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{4} + \frac{\sqrt{6}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{4} + \frac{\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{1}^{(b)}(A_{2u})}{2}$$

z219 $$\mathbb{Q}_4^{(c)}(B_{2g},a) = \mathbb{Q}_0^{(a)}(A_{1g})\mathbb{Q}_4^{(b)}(B_{2g})$$

z220 $$\mathbb{Q}_4^{(c)}(B_{2g},b) = -\mathbb{Q}_2^{(a)}(A_{1g})\mathbb{Q}_4^{(b)}(B_{2g})$$

z221 $$\mathbb{Q}_4^{(c)}(B_{2g},c) = \frac{\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2} + \frac{\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{2} + \frac{\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2} + \frac{\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{2}$$

z222 $$\mathbb{Q}_4^{(c)}(B_{2g},d) = \mathbb{Q}_4^{(a)}(B_{2g})\mathbb{Q}_0^{(b)}(A_{1g})$$

z223 $$\mathbb{Q}_4^{(c)}(B_{2g},e) = -\mathbb{Q}_4^{(a)}(A_{1g})\mathbb{Q}_4^{(b)}(B_{2g})$$

z224 $$\mathbb{Q}_{4}^{(c)}(B_{2g},f) = -\frac{3\sqrt{71}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{71} - \frac{\sqrt{994}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{71} + \frac{5\sqrt{142}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{142}$$
$$- \frac{3\sqrt{71}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{71} - \frac{\sqrt{994}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{71} + \frac{5\sqrt{142}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{142}$$

z225 $$\mathbb{Q}_{6}^{(c)}(B_{2g}) = \frac{7\sqrt{497}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{355} + \frac{9\sqrt{142}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{710} + \frac{6\sqrt{994}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{355}$$
$$+ \frac{7\sqrt{497}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{355} + \frac{9\sqrt{142}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{710} + \frac{6\sqrt{994}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{355}$$

z226 $$\mathbb{G}_{3}^{(c)}(B_{2g},a) = -\frac{\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2} + \frac{\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{2} - \frac{\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2} + \frac{\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{2}$$

z227 $$\mathbb{G}_{3}^{(c)}(B_{2g},b) = \frac{3\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{10} - \frac{\sqrt{7}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{5} - \frac{\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{5} + \frac{3\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{10} - \frac{\sqrt{7}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{5} - \frac{\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{5}$$

z228 $$\mathbb{Q}_{3}^{(c)}(B_{2u},a) = -\mathbb{M}_{1}^{(a)}(A_{2g})\mathbb{T}_{3}^{(b)}(B_{1u})$$

z229 $$\mathbb{Q}_{3}^{(c)}(B_{2u},b) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{M}_{2,1}^{(b)}(E_{2u})}{2} + \frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{M}_{2,2}^{(b)}(E_{2u})}{2}$$

z230 $$\mathbb{Q}_{3}^{(c)}(B_{2u},c) = -\frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{4} - \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{4} + \frac{\sqrt{3}\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{1}^{(b)}(A_{2u})}{2}$$

z231 $$\mathbb{Q}_{3}^{(c)}(B_{2u},d) = \mathbb{M}_{3}^{(a)}(A_{2g})\mathbb{T}_{3}^{(b)}(B_{1u})$$

z232 $$\mathbb{Q}_{3}^{(c)}(B_{2u},e) = -\frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{M}_{2,1}^{(b)}(E_{2u})}{2} - \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{M}_{2,2}^{(b)}(E_{2u})}{2}$$

z233 $$\mathbb{G}_{4}^{(c)}(B_{2u}) = \frac{\sqrt{6}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{4} + \frac{\sqrt{6}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{4} + \frac{\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{1}^{(b)}(A_{2u})}{2}$$

z234 $$\mathbb{Q}_{2,1}^{(c)}(E_{1g},a) = \frac{\sqrt{2}\mathbb{Q}_{0}^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{2}$$

z235 $$\mathbb{Q}_{2,2}^{(c)}(E_{1g},a) = \frac{\sqrt{2}\mathbb{Q}_{0}^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{2}$$

z236 $$\mathbb{Q}_{2,1}^{(c)}(E_{1g},b) = \frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$$

z237 $$\mathbb{Q}_{2,2}^{(c)}(E_{1g},b)=\frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$$

z238 $$\mathbb{Q}_{2,1}^{(c)}(E_{1g},c)=\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{4}^{(b)}(B_{2g})}{2}$$

z239 $$\mathbb{Q}_{2,2}^{(c)}(E_{1g},c)=\frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{4}^{(b)}(B_{2g})}{2}$$

z240 $$\mathbb{Q}_{2,1}^{(c)}(E_{1g},d)=-\frac{\sqrt{78}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{26}-\frac{\sqrt{78}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{26}+\frac{\sqrt{78}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{26}+\frac{\sqrt{78}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{26}+\frac{\sqrt{26}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{26}$$

z241 $$\mathbb{Q}_{2,2}^{(c)}(E_{1g},d)=\frac{\sqrt{78}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{26}+\frac{\sqrt{78}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{26}+\frac{\sqrt{78}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{26}+\frac{\sqrt{78}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{26}+\frac{\sqrt{26}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{26}$$

z242 $$\mathbb{Q}_{2,1}^{(c)}(E_{1g},e)=-\frac{\sqrt{742}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{4}^{(b)}(B_{2g})}{53}+\frac{5\sqrt{106}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{4}^{(b)}(B_{2g})}{106}$$

z243 $$\mathbb{Q}_{2,2}^{(c)}(E_{1g},e)=-\frac{\sqrt{742}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{4}^{(b)}(B_{2g})}{53}+\frac{5\sqrt{106}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{4}^{(b)}(B_{2g})}{106}$$

z346 $$\begin{aligned}\mathbb{Q}_{2,1}^{(c)}(E_{1g},f)=&\frac{\sqrt{30}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{48}-\frac{\sqrt{15}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{12}-\frac{\sqrt{30}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{48}+\frac{\sqrt{15}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{12}\\&-\frac{\sqrt{3}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{6}+\frac{\sqrt{210}\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{48}+\frac{\sqrt{210}\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{48}\end{aligned}$$

z347 $$\begin{aligned}\mathbb{Q}_{2,2}^{(c)}(E_{1g},f)=&-\frac{\sqrt{30}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{48}+\frac{\sqrt{15}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{12}-\frac{\sqrt{30}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{48}\\&+\frac{\sqrt{15}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{12}-\frac{\sqrt{3}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{6}-\frac{\sqrt{210}\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{48}+\frac{\sqrt{210}\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{48}\end{aligned}$$

z348 $$\mathbb{Q}_{4,1}^{(c)}(E_{1g},a)=\frac{\sqrt{26}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{52}+\frac{\sqrt{26}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{52}-\frac{\sqrt{26}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{52}-\frac{\sqrt{26}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{52}+\frac{\sqrt{78}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{13}$$

z349 $$\mathbb{Q}_{4,2}^{(c)}(E_{1g},a)=-\frac{\sqrt{26}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{52}-\frac{\sqrt{26}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{52}-\frac{\sqrt{26}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{52}-\frac{\sqrt{26}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{52}+\frac{\sqrt{78}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{13}$$

z350 $$\mathbb{Q}_{4,1}^{(c)}(E_{1g},b)=\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$$

z351 $$\mathbb{Q}_{4,2}^{(c)}(E_{1g},b)=\frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$$

z352 $$\mathbb{Q}_{4,1}^{(c)}(E_{1g},c)=\frac{5\sqrt{106}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{4}^{(b)}(B_{2g})}{106}+\frac{\sqrt{742}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{4}^{(b)}(B_{2g})}{53}$$

z353 $$\mathbb{Q}_{4,2}^{(c)}(E_{1g},c)=\frac{5\sqrt{106}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{4}^{(b)}(B_{2g})}{106}+\frac{\sqrt{742}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{4}^{(b)}(B_{2g})}{53}$$

z354 $$\mathbb{Q}_{4,1}^{(c)}(E_{1g},d)=-\frac{125\sqrt{2274}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{18192}-\frac{43\sqrt{1137}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{4548}+\frac{125\sqrt{2274}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{18192}$$
$$+\frac{43\sqrt{1137}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{4548}+\frac{\sqrt{5685}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{2274}-\frac{29\sqrt{15918}\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{18192}-\frac{29\sqrt{15918}\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{18192}$$

z355 $$\mathbb{Q}_{4,2}^{(c)}(E_{1g},d)=\frac{125\sqrt{2274}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{18192}+\frac{43\sqrt{1137}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{4548}+\frac{125\sqrt{2274}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{18192}$$
$$+\frac{43\sqrt{1137}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{4548}+\frac{\sqrt{5685}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{2274}+\frac{29\sqrt{15918}\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{18192}-\frac{29\sqrt{15918}\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{18192}$$

z356 $$\mathbb{Q}_{6,1}^{(c)}(E_{1g},1)=\frac{\sqrt{3}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{6}-\frac{\sqrt{3}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{6}-\frac{\sqrt{6}\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{6}+\frac{\sqrt{6}\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{6}$$

z357 $$\mathbb{Q}_{6,2}^{(c)}(E_{1g},1)=-\frac{\sqrt{3}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{6}-\frac{\sqrt{3}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{6}+\frac{\sqrt{6}\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{6}+\frac{\sqrt{6}\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{6}$$

z358 $$\mathbb{Q}_{6,1}^{(c)}(E_{1g},2)=\frac{\sqrt{2653}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{758}-\frac{2\sqrt{5306}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{1137}-\frac{\sqrt{2653}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{758}+\frac{2\sqrt{5306}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{1137}$$
$$+\frac{3\sqrt{26530}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{758}+\frac{17\sqrt{379}\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2274}+\frac{17\sqrt{379}\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2274}$$

z359 $$\mathbb{Q}_{6,2}^{(c)}(E_{1g},2)=-\frac{\sqrt{2653}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{758}+\frac{2\sqrt{5306}\mathbb{Q}_{4,1}^{(a)}(E_{2g},2)\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{1137}-\frac{\sqrt{2653}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{758}+\frac{2\sqrt{5306}\mathbb{Q}_{4,2}^{(a)}(E_{2g},2)\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{1137}$$
$$+\frac{3\sqrt{26530}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{758}-\frac{17\sqrt{379}\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2274}+\frac{17\sqrt{379}\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2274}$$

z360 $$\mathbb{G}_{1,1}^{(c)}(E_{1g})=\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{4}-\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{4}-\frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{4}+\frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{4}$$

z361 $$\mathbb{G}_{1,2}^{(c)}(E_{1g})=-\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{4}+\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{4}-\frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{4}+\frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{4}$$

z362 $$\mathbb{G}^{(c)}_{3,1}(E_{1g}) = \frac{\sqrt{2}\mathbb{Q}^{(a)}_{4,1}(E_{1g})\mathbb{Q}^{(b)}_{2,1}(E_{2g})}{4} - \frac{\mathbb{Q}^{(a)}_{4,1}(E_{2g},2)\mathbb{Q}^{(b)}_{2,1}(E_{1g})}{6} - \frac{\sqrt{2}\mathbb{Q}^{(a)}_{4,2}(E_{1g})\mathbb{Q}^{(b)}_{2,2}(E_{2g})}{4} + \frac{\mathbb{Q}^{(a)}_{4,2}(E_{2g},2)\mathbb{Q}^{(b)}_{2,2}(E_{1g})}{6} - \frac{\sqrt{14}\mathbb{Q}^{(a)}_{4}(B_{1g})\mathbb{Q}^{(b)}_{2,2}(E_{2g})}{12} - \frac{\sqrt{14}\mathbb{Q}^{(a)}_{4}(B_{2g})\mathbb{Q}^{(b)}_{2,1}(E_{2g})}{12}$$

z363 $$\mathbb{G}^{(c)}_{3,2}(E_{1g}) = -\frac{\sqrt{2}\mathbb{Q}^{(a)}_{4,1}(E_{1g})\mathbb{Q}^{(b)}_{2,2}(E_{2g})}{4} + \frac{\mathbb{Q}^{(a)}_{4,1}(E_{2g},2)\mathbb{Q}^{(b)}_{2,2}(E_{1g})}{6} - \frac{\sqrt{2}\mathbb{Q}^{(a)}_{4,2}(E_{1g})\mathbb{Q}^{(b)}_{2,1}(E_{2g})}{4} + \frac{\mathbb{Q}^{(a)}_{4,2}(E_{2g},2)\mathbb{Q}^{(b)}_{2,1}(E_{1g})}{6} + \frac{\sqrt{14}\mathbb{Q}^{(a)}_{4}(B_{1g})\mathbb{Q}^{(b)}_{2,1}(E_{2g})}{12} - \frac{\sqrt{14}\mathbb{Q}^{(a)}_{4}(B_{2g})\mathbb{Q}^{(b)}_{2,2}(E_{2g})}{12}$$

z364 $$\mathbb{G}^{(c)}_{5,1}(E_{1g},1) = \frac{\sqrt{6}\mathbb{Q}^{(a)}_{4,1}(E_{2g},1)\mathbb{Q}^{(b)}_{2,1}(E_{1g})}{6} - \frac{\sqrt{6}\mathbb{Q}^{(a)}_{4,2}(E_{2g},1)\mathbb{Q}^{(b)}_{2,2}(E_{1g})}{6} + \frac{\sqrt{3}\mathbb{Q}^{(a)}_{4}(B_{1g})\mathbb{Q}^{(b)}_{2,2}(E_{2g})}{6} - \frac{\sqrt{3}\mathbb{Q}^{(a)}_{4}(B_{2g})\mathbb{Q}^{(b)}_{2,1}(E_{2g})}{6}$$

z365 $$\mathbb{G}^{(c)}_{5,2}(E_{1g},1) = -\frac{\sqrt{6}\mathbb{Q}^{(a)}_{4,1}(E_{2g},1)\mathbb{Q}^{(b)}_{2,2}(E_{1g})}{6} - \frac{\sqrt{6}\mathbb{Q}^{(a)}_{4,2}(E_{2g},1)\mathbb{Q}^{(b)}_{2,1}(E_{1g})}{6} - \frac{\sqrt{3}\mathbb{Q}^{(a)}_{4}(B_{1g})\mathbb{Q}^{(b)}_{2,1}(E_{2g})}{6} - \frac{\sqrt{3}\mathbb{Q}^{(a)}_{4}(B_{2g})\mathbb{Q}^{(b)}_{2,2}(E_{2g})}{6}$$

z366 $$\mathbb{Q}^{(c)}_{1,1}(E_{1u},a) = \frac{\mathbb{M}^{(a)}_{1,2}(E_{1g})\mathbb{T}^{(b)}_{1}(A_{2u})}{2} - \frac{\mathbb{M}^{(a)}_{1}(A_{2g})\mathbb{T}^{(b)}_{1,2}(E_{1u})}{2}$$

z367 $$\mathbb{Q}^{(c)}_{1,2}(E_{1u},a) = -\frac{\mathbb{M}^{(a)}_{1,1}(E_{1g})\mathbb{T}^{(b)}_{1}(A_{2u})}{2} + \frac{\mathbb{M}^{(a)}_{1}(A_{2g})\mathbb{T}^{(b)}_{1,1}(E_{1u})}{2}$$

z368 $$\mathbb{Q}^{(c)}_{1,1}(E_{1u},b) = \frac{\mathbb{M}^{(a)}_{1,1}(E_{1g})\mathbb{M}^{(b)}_{2,1}(E_{2u})}{2} - \frac{\mathbb{M}^{(a)}_{1,2}(E_{1g})\mathbb{M}^{(b)}_{2,2}(E_{2u})}{2}$$

z369 $$\mathbb{Q}^{(c)}_{1,2}(E_{1u},b) = -\frac{\mathbb{M}^{(a)}_{1,1}(E_{1g})\mathbb{M}^{(b)}_{2,2}(E_{2u})}{2} - \frac{\mathbb{M}^{(a)}_{1,2}(E_{1g})\mathbb{M}^{(b)}_{2,1}(E_{2u})}{2}$$

z370 $$\mathbb{Q}^{(c)}_{1,1}(E_{1u},c) = -\frac{\sqrt{2}\mathbb{M}^{(a)}_{3,2}(E_{2g})\mathbb{T}^{(b)}_{3}(B_{1u})}{2}$$

z371 $$\mathbb{Q}^{(c)}_{1,2}(E_{1u},c) = \frac{\sqrt{2}\mathbb{M}^{(a)}_{3,1}(E_{2g})\mathbb{T}^{(b)}_{3}(B_{1u})}{2}$$

z372 $$\mathbb{Q}^{(c)}_{1,1}(E_{1u},d) = -\frac{\mathbb{M}^{(a)}_{3,1}(E_{1g})\mathbb{M}^{(b)}_{2,1}(E_{2u})}{8} + \frac{\mathbb{M}^{(a)}_{3,2}(E_{1g})\mathbb{M}^{(b)}_{2,2}(E_{2u})}{8} - \frac{\sqrt{15}\mathbb{M}^{(a)}_{3}(B_{1g})\mathbb{M}^{(b)}_{2,2}(E_{2u})}{8} + \frac{\sqrt{15}\mathbb{M}^{(a)}_{3}(B_{2g})\mathbb{M}^{(b)}_{2,1}(E_{2u})}{8}$$

z373 $$\mathbb{Q}^{(c)}_{1,2}(E_{1u},d) = \frac{\mathbb{M}^{(a)}_{3,1}(E_{1g})\mathbb{M}^{(b)}_{2,2}(E_{2u})}{8} + \frac{\mathbb{M}^{(a)}_{3,2}(E_{1g})\mathbb{M}^{(b)}_{2,1}(E_{2u})}{8} + \frac{\sqrt{15}\mathbb{M}^{(a)}_{3}(B_{1g})\mathbb{M}^{(b)}_{2,1}(E_{2u})}{8} + \frac{\sqrt{15}\mathbb{M}^{(a)}_{3}(B_{2g})\mathbb{M}^{(b)}_{2,2}(E_{2u})}{8}$$

z374 $$\mathbb{Q}^{(c)}_{3,1}(E_{1u},a) = -\frac{\sqrt{15}\mathbb{M}^{(a)}_{3,1}(E_{2g})\mathbb{T}^{(b)}_{1,1}(E_{1u})}{12} + \frac{\sqrt{6}\mathbb{M}^{(a)}_{3,2}(E_{1g})\mathbb{T}^{(b)}_{1}(A_{2u})}{12} + \frac{\sqrt{15}\mathbb{M}^{(a)}_{3,2}(E_{2g})\mathbb{T}^{(b)}_{1,2}(E_{1u})}{12} - \frac{\mathbb{M}^{(a)}_{3}(A_{2g})\mathbb{T}^{(b)}_{1,2}(E_{1u})}{2}$$

z375 $$\mathbb{Q}^{(c)}_{3,2}(E_{1u},a) = -\frac{\sqrt{6}\mathbb{M}^{(a)}_{3,1}(E_{1g})\mathbb{T}^{(b)}_{1}(A_{2u})}{12} + \frac{\sqrt{15}\mathbb{M}^{(a)}_{3,1}(E_{2g})\mathbb{T}^{(b)}_{1,2}(E_{1u})}{12} + \frac{\sqrt{15}\mathbb{M}^{(a)}_{3,2}(E_{2g})\mathbb{T}^{(b)}_{1,1}(E_{1u})}{12} + \frac{\mathbb{M}^{(a)}_{3}(A_{2g})\mathbb{T}^{(b)}_{1,1}(E_{1u})}{2}$$

z398 $$\mathbb{Q}_{3,1}^{(c)}(E_{1u},b)=\frac{\sqrt{15}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{M}_{2,1}^{(b)}(E_{2u})}{8}-\frac{\sqrt{15}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{M}_{2,2}^{(b)}(E_{2u})}{8}-\frac{\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{M}_{2,2}^{(b)}(E_{2u})}{8}+\frac{\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{M}_{2,1}^{(b)}(E_{2u})}{8}$$

z399 $$\mathbb{Q}_{3,2}^{(c)}(E_{1u},b)=-\frac{\sqrt{15}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{M}_{2,2}^{(b)}(E_{2u})}{8}-\frac{\sqrt{15}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{M}_{2,1}^{(b)}(E_{2u})}{8}+\frac{\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{M}_{2,1}^{(b)}(E_{2u})}{8}+\frac{\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{M}_{2,2}^{(b)}(E_{2u})}{8}$$

z400 $$\mathbb{Q}_{5,1}^{(c)}(E_{1u},1)=\frac{\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{M}_{2,2}^{(b)}(E_{2u})}{2}+\frac{\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{M}_{2,1}^{(b)}(E_{2u})}{2}$$

z401 $$\mathbb{Q}_{5,2}^{(c)}(E_{1u},1)=-\frac{\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{M}_{2,1}^{(b)}(E_{2u})}{2}+\frac{\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{M}_{2,2}^{(b)}(E_{2u})}{2}$$

z402 $$\mathbb{G}_{2,1}^{(c)}(E_{1u},a)=\frac{\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{T}_{1}^{(b)}(A_{2u})}{2}+\frac{\mathbb{M}_{1}^{(a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{2}$$

z403 $$\mathbb{G}_{2,2}^{(c)}(E_{1u},a)=-\frac{\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{T}_{1}^{(b)}(A_{2u})}{2}-\frac{\mathbb{M}_{1}^{(a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{2}$$

z426 $$\mathbb{G}_{2,1}^{(c)}(E_{1u},b)=\frac{\sqrt{210}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{42}+\frac{2\sqrt{21}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{1}^{(b)}(A_{2u})}{21}-\frac{\sqrt{210}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{42}-\frac{\sqrt{14}\mathbb{M}_{3}^{(a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{14}$$

z427 $$\mathbb{G}_{2,2}^{(c)}(E_{1u},b)=-\frac{2\sqrt{21}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{1}^{(b)}(A_{2u})}{21}-\frac{\sqrt{210}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{42}-\frac{\sqrt{210}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{42}+\frac{\sqrt{14}\mathbb{M}_{3}^{(a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{14}$$

z428 $$\mathbb{G}_{4,1}^{(c)}(E_{1u})=-\frac{\sqrt{21}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{28}+\frac{\sqrt{210}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{1}^{(b)}(A_{2u})}{28}+\frac{\sqrt{21}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{28}+\frac{\sqrt{35}\mathbb{M}_{3}^{(a)}(A_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{14}$$

z429 $$\mathbb{G}_{4,2}^{(c)}(E_{1u})=-\frac{\sqrt{210}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{1}^{(b)}(A_{2u})}{28}+\frac{\sqrt{21}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{28}+\frac{\sqrt{21}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{28}-\frac{\sqrt{35}\mathbb{M}_{3}^{(a)}(A_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{14}$$

z461 $$\mathbb{Q}_{2,1}^{(c)}(E_{2g},a)=\frac{\sqrt{2}\mathbb{Q}_{0}^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2}$$

z462 $$\mathbb{Q}_{2,2}^{(c)}(E_{2g},a)=\frac{\sqrt{2}\mathbb{Q}_{0}^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2}$$

z463 $$\mathbb{Q}_{2,1}^{(c)}(E_{2g},b)=\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$$

z464 $$\mathbb{Q}_{2,2}^{(c)}(E_{2g},b)=\frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$$

z485 $$\mathbb{Q}_{2,1}^{(c)}(E_{2g},c)=\frac{\sqrt{2}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{4}^{(b)}(B_{2g})}{2}$$

z486 $$\mathbb{Q}_{2,2}^{(c)}(E_{2g},c)=\frac{\sqrt{2}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{4}^{(b)}(B_{2g})}{2}$$

z487 $$\mathbb{Q}_{2,1}^{(c)}(E_{2g},d)=-\frac{\sqrt{15}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{10}+\frac{\sqrt{15}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{10}-\frac{\sqrt{5}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{5}$$

z488 $$\mathbb{Q}_{2,2}^{(c)}(E_{2g},d)=\frac{\sqrt{15}\mathbb{Q}_{2,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{10}+\frac{\sqrt{15}\mathbb{Q}_{2,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{10}-\frac{\sqrt{5}\mathbb{Q}_{2}^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{5}$$

z489 $$\mathbb{Q}_{2,1}^{(c)}(E_{2g},e)=-\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{4}^{(b)}(B_{2g})}{2}$$

z490 $$\mathbb{Q}_{2,2}^{(c)}(E_{2g},e)=-\frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{4}^{(b)}(B_{2g})}{2}$$

z593 $$\mathbb{Q}_{2,1}^{(c)}(E_{2g},f)=\frac{\sqrt{555}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{222}+\frac{\sqrt{7770}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{222}-\frac{\sqrt{555}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{222}-\frac{\sqrt{7770}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{222}+\frac{\sqrt{222}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{222}-\frac{\sqrt{3885}\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{222}+\frac{\sqrt{3885}\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{222}$$

z594 $$\mathbb{Q}_{2,2}^{(c)}(E_{2g},f)=-\frac{\sqrt{555}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{222}-\frac{\sqrt{7770}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{222}-\frac{\sqrt{555}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{222}-\frac{\sqrt{7770}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{222}+\frac{\sqrt{222}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{222}+\frac{\sqrt{3885}\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{222}+\frac{\sqrt{3885}\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{222}$$

z595 $$\mathbb{Q}_{4,1}^{(c)}(E_{2g},1a)=\frac{\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2}-\frac{\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2}$$

z596 $$\mathbb{Q}_{4,2}^{(c)}(E_{2g},1a)=-\frac{\mathbb{Q}_{2,1}^{(a)}(E_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2}-\frac{\mathbb{Q}_{2,2}^{(a)}(E_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2}$$

z597 $$\mathbb{Q}_{4,1}^{(c)}(E_{2g},1b)=\frac{\sqrt{2}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$$

z598 $$\mathbb{Q}_{4,2}^{(c)}(E_{2g},1b)=\frac{\sqrt{2}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{0}^{(b)}(A_{1g})}{2}$$

z599 $$\mathbb{Q}^{(c)}_{4,1}(E_{2g},1c) = -\frac{\sqrt{2}\mathbb{Q}^{(a)}_{4,1}(E_{2g},2)\mathbb{Q}^{(b)}_{2,1}(E_{2g})}{6} + \frac{\sqrt{2}\mathbb{Q}^{(a)}_{4,2}(E_{2g},2)\mathbb{Q}^{(b)}_{2,2}(E_{2g})}{6} - \frac{\sqrt{7}\mathbb{Q}^{(a)}_{4}(B_{1g})\mathbb{Q}^{(b)}_{2,2}(E_{1g})}{6} - \frac{\sqrt{7}\mathbb{Q}^{(a)}_{4}(B_{2g})\mathbb{Q}^{(b)}_{2,1}(E_{1g})}{6}$$

z600 $$\mathbb{Q}^{(c)}_{4,2}(E_{2g},1c) = \frac{\sqrt{2}\mathbb{Q}^{(a)}_{4,1}(E_{2g},2)\mathbb{Q}^{(b)}_{2,2}(E_{2g})}{6} + \frac{\sqrt{2}\mathbb{Q}^{(a)}_{4,2}(E_{2g},2)\mathbb{Q}^{(b)}_{2,1}(E_{2g})}{6} + \frac{\sqrt{7}\mathbb{Q}^{(a)}_{4}(B_{1g})\mathbb{Q}^{(b)}_{2,1}(E_{1g})}{6} - \frac{\sqrt{7}\mathbb{Q}^{(a)}_{4}(B_{2g})\mathbb{Q}^{(b)}_{2,2}(E_{1g})}{6}$$

z601 $$\mathbb{Q}^{(c)}_{4,1}(E_{2g},2a) = -\frac{\sqrt{10}\mathbb{Q}^{(a)}_{2,1}(E_{1g})\mathbb{Q}^{(b)}_{2,1}(E_{1g})}{10} + \frac{\sqrt{10}\mathbb{Q}^{(a)}_{2,2}(E_{1g})\mathbb{Q}^{(b)}_{2,2}(E_{1g})}{10} + \frac{\sqrt{30}\mathbb{Q}^{(a)}_{2}(A_{1g})\mathbb{Q}^{(b)}_{2,1}(E_{2g})}{10}$$

z602 $$\mathbb{Q}^{(c)}_{4,2}(E_{2g},2a) = \frac{\sqrt{10}\mathbb{Q}^{(a)}_{2,1}(E_{1g})\mathbb{Q}^{(b)}_{2,2}(E_{1g})}{10} + \frac{\sqrt{10}\mathbb{Q}^{(a)}_{2,2}(E_{1g})\mathbb{Q}^{(b)}_{2,1}(E_{1g})}{10} + \frac{\sqrt{30}\mathbb{Q}^{(a)}_{2}(A_{1g})\mathbb{Q}^{(b)}_{2,2}(E_{2g})}{10}$$

z603 $$\mathbb{Q}^{(c)}_{4,1}(E_{2g},2b) = \frac{\sqrt{2}\mathbb{Q}^{(a)}_{4,1}(E_{2g},2)\mathbb{Q}^{(b)}_{0}(A_{1g})}{2}$$

z604 $$\mathbb{Q}^{(c)}_{4,2}(E_{2g},2b) = \frac{\sqrt{2}\mathbb{Q}^{(a)}_{4,2}(E_{2g},2)\mathbb{Q}^{(b)}_{0}(A_{1g})}{2}$$

z605 $$\begin{aligned}\mathbb{Q}^{(c)}_{4,1}(E_{2g},2c) = &-\frac{137\sqrt{30747}\mathbb{Q}^{(a)}_{4,1}(E_{1g})\mathbb{Q}^{(b)}_{2,1}(E_{1g})}{122988} - \frac{13\sqrt{430458}\mathbb{Q}^{(a)}_{4,1}(E_{2g},1)\mathbb{Q}^{(b)}_{2,1}(E_{2g})}{61494} + \frac{137\sqrt{30747}\mathbb{Q}^{(a)}_{4,2}(E_{1g})\mathbb{Q}^{(b)}_{2,2}(E_{1g})}{122988}\\ &+ \frac{13\sqrt{430458}\mathbb{Q}^{(a)}_{4,2}(E_{2g},1)\mathbb{Q}^{(b)}_{2,2}(E_{2g})}{61494} - \frac{47\sqrt{307470}\mathbb{Q}^{(a)}_{4}(A_{1g})\mathbb{Q}^{(b)}_{2,1}(E_{2g})}{61494} - \frac{85\sqrt{215229}\mathbb{Q}^{(a)}_{4}(B_{1g})\mathbb{Q}^{(b)}_{2,2}(E_{1g})}{122988} + \frac{85\sqrt{215229}\mathbb{Q}^{(a)}_{4}(B_{2g})\mathbb{Q}^{(b)}_{2,1}(E_{1g})}{122988}\end{aligned}$$

z606 $$\begin{aligned}\mathbb{Q}^{(c)}_{4,2}(E_{2g},2c) = &\frac{137\sqrt{30747}\mathbb{Q}^{(a)}_{4,1}(E_{1g})\mathbb{Q}^{(b)}_{2,2}(E_{1g})}{122988} + \frac{13\sqrt{430458}\mathbb{Q}^{(a)}_{4,1}(E_{2g},1)\mathbb{Q}^{(b)}_{2,2}(E_{2g})}{61494} + \frac{137\sqrt{30747}\mathbb{Q}^{(a)}_{4,2}(E_{1g})\mathbb{Q}^{(b)}_{2,1}(E_{1g})}{122988} + \frac{13\sqrt{430458}\mathbb{Q}^{(a)}_{4,2}(E_{2g},1)\mathbb{Q}^{(b)}_{2,1}(E_{2g})}{61494}\\ &- \frac{47\sqrt{307470}\mathbb{Q}^{(a)}_{4}(A_{1g})\mathbb{Q}^{(b)}_{2,2}(E_{2g})}{61494} + \frac{85\sqrt{215229}\mathbb{Q}^{(a)}_{4}(B_{1g})\mathbb{Q}^{(b)}_{2,1}(E_{1g})}{122988} + \frac{85\sqrt{215229}\mathbb{Q}^{(a)}_{4}(B_{2g})\mathbb{Q}^{(b)}_{2,2}(E_{1g})}{122988}\end{aligned}$$

z607 $$\mathbb{Q}^{(c)}_{6,1}(E_{2g},1) = \frac{\sqrt{7}\mathbb{Q}^{(a)}_{4,1}(E_{2g},2)\mathbb{Q}^{(b)}_{2,1}(E_{2g})}{6} - \frac{\sqrt{7}\mathbb{Q}^{(a)}_{4,2}(E_{2g},2)\mathbb{Q}^{(b)}_{2,2}(E_{2g})}{6} - \frac{\sqrt{2}\mathbb{Q}^{(a)}_{4}(B_{1g})\mathbb{Q}^{(b)}_{2,2}(E_{1g})}{6} - \frac{\sqrt{2}\mathbb{Q}^{(a)}_{4}(B_{2g})\mathbb{Q}^{(b)}_{2,1}(E_{1g})}{6}$$

z608 $$\mathbb{Q}^{(c)}_{6,2}(E_{2g},1) = -\frac{\sqrt{7}\mathbb{Q}^{(a)}_{4,1}(E_{2g},2)\mathbb{Q}^{(b)}_{2,2}(E_{2g})}{6} - \frac{\sqrt{7}\mathbb{Q}^{(a)}_{4,2}(E_{2g},2)\mathbb{Q}^{(b)}_{2,1}(E_{2g})}{6} + \frac{\sqrt{2}\mathbb{Q}^{(a)}_{4}(B_{1g})\mathbb{Q}^{(b)}_{2,1}(E_{1g})}{6} - \frac{\sqrt{2}\mathbb{Q}^{(a)}_{4}(B_{2g})\mathbb{Q}^{(b)}_{2,2}(E_{1g})}{6}$$

z609 $$\begin{aligned}\mathbb{Q}^{(c)}_{6,1}(E_{2g},2) = &-\frac{17\sqrt{11634}\mathbb{Q}^{(a)}_{4,1}(E_{1g})\mathbb{Q}^{(b)}_{2,1}(E_{1g})}{4155} + \frac{11\sqrt{831}\mathbb{Q}^{(a)}_{4,1}(E_{2g},1)\mathbb{Q}^{(b)}_{2,1}(E_{2g})}{2770} + \frac{17\sqrt{11634}\mathbb{Q}^{(a)}_{4,2}(E_{1g})\mathbb{Q}^{(b)}_{2,2}(E_{1g})}{4155}\\ &- \frac{11\sqrt{831}\mathbb{Q}^{(a)}_{4,2}(E_{2g},1)\mathbb{Q}^{(b)}_{2,2}(E_{2g})}{2770} + \frac{7\sqrt{29085}\mathbb{Q}^{(a)}_{4}(A_{1g})\mathbb{Q}^{(b)}_{2,1}(E_{2g})}{4155} + \frac{\sqrt{1662}\mathbb{Q}^{(a)}_{4}(B_{1g})\mathbb{Q}^{(b)}_{2,2}(E_{1g})}{1385} - \frac{\sqrt{1662}\mathbb{Q}^{(a)}_{4}(B_{2g})\mathbb{Q}^{(b)}_{2,1}(E_{1g})}{1385}\end{aligned}$$

z610 $$\mathbb{Q}_{6,2}^{(c)}(E_{2g},2) = \frac{17\sqrt{11634}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{4155} - \frac{11\sqrt{831}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{2770} + \frac{17\sqrt{11634}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{4155} - \frac{11\sqrt{831}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{2770} + \frac{7\sqrt{29085}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{4155} - \frac{\sqrt{1662}\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{1385} - \frac{\sqrt{1662}\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{1385}$$

z611 $$\mathbb{G}_{3,1}^{(c)}(E_{2g}) = -\frac{\sqrt{21}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{60} + \frac{\sqrt{6}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{10} + \frac{\sqrt{21}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{60} - \frac{\sqrt{6}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{10} - \frac{\sqrt{210}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{30} + \frac{3\sqrt{3}\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{20} - \frac{3\sqrt{3}\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{20}$$

z612 $$\mathbb{G}_{3,2}^{(c)}(E_{2g}) = \frac{\sqrt{21}\mathbb{Q}_{4,1}^{(a)}(E_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{60} - \frac{\sqrt{6}\mathbb{Q}_{4,1}^{(a)}(E_{2g},1)\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{10} + \frac{\sqrt{21}\mathbb{Q}_{4,2}^{(a)}(E_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{60} - \frac{\sqrt{6}\mathbb{Q}_{4,2}^{(a)}(E_{2g},1)\mathbb{Q}_{2,1}^{(b)}(E_{2g})}{10} - \frac{\sqrt{210}\mathbb{Q}_{4}^{(a)}(A_{1g})\mathbb{Q}_{2,2}^{(b)}(E_{2g})}{30} - \frac{3\sqrt{3}\mathbb{Q}_{4}^{(a)}(B_{1g})\mathbb{Q}_{2,1}^{(b)}(E_{1g})}{20} - \frac{3\sqrt{3}\mathbb{Q}_{4}^{(a)}(B_{2g})\mathbb{Q}_{2,2}^{(b)}(E_{1g})}{20}$$

z701 $$\mathbb{Q}_{3,1}^{(c)}(E_{2u},a) = -\frac{\sqrt{2}\mathbb{M}_{1,2}^{(a)}(E_{1g})\mathbb{T}_{3}^{(b)}(B_{1u})}{2}$$

z702 $$\mathbb{Q}_{3,2}^{(c)}(E_{2u},a) = \frac{\sqrt{2}\mathbb{M}_{1,1}^{(a)}(E_{1g})\mathbb{T}_{3}^{(b)}(B_{1u})}{2}$$

z703 $$\mathbb{Q}_{3,1}^{(c)}(E_{2u},b) = -\frac{\sqrt{2}\mathbb{M}_{1}^{(a)}(A_{2g})\mathbb{M}_{2,2}^{(b)}(E_{2u})}{2}$$

z704 $$\mathbb{Q}_{3,2}^{(c)}(E_{2u},b) = \frac{\sqrt{2}\mathbb{M}_{1}^{(a)}(A_{2g})\mathbb{M}_{2,1}^{(b)}(E_{2u})}{2}$$

z705 $$\mathbb{Q}_{3,1}^{(c)}(E_{2u},c) = \frac{\sqrt{15}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{12} - \frac{\sqrt{15}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{12} - \frac{\sqrt{6}\mathbb{M}_{3,2}^{(a)}(E_{2g})\mathbb{T}_{1}^{(b)}(A_{2u})}{6} + \frac{\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{4} + \frac{\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{4}$$

z706 $$\mathbb{Q}_{3,2}^{(c)}(E_{2u},c) = -\frac{\sqrt{15}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{12} + \frac{\sqrt{6}\mathbb{M}_{3,1}^{(a)}(E_{2g})\mathbb{T}_{1}^{(b)}(A_{2u})}{6} - \frac{\sqrt{15}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{12} - \frac{\mathbb{M}_{3}^{(a)}(B_{1g})\mathbb{T}_{1,1}^{(b)}(E_{1u})}{4} + \frac{\mathbb{M}_{3}^{(a)}(B_{2g})\mathbb{T}_{1,2}^{(b)}(E_{1u})}{4}$$

z707 $$\mathbb{Q}_{3,1}^{(c)}(E_{2u},d) = \frac{\sqrt{2}\mathbb{M}_{3,2}^{(a)}(E_{1g})\mathbb{T}_{3}^{(b)}(B_{1u})}{2}$$

z708 $$\mathbb{Q}_{3,2}^{(c)}(E_{2u},d) = -\frac{\sqrt{2}\mathbb{M}_{3,1}^{(a)}(E_{1g})\mathbb{T}_{3}^{(b)}(B_{1u})}{2}$$

z709 $\mathbb{Q}^{(c)}_{3,1}(E_{2u},e) = \frac{\sqrt{2}\mathbb{M}^{(a)}_{3}(A_{2g})\mathbb{M}^{(b)}_{2,2}(E_{2u})}{2}$

z710 $\mathbb{Q}^{(c)}_{3,2}(E_{2u},e) = -\frac{\sqrt{2}\mathbb{M}^{(a)}_{3}(A_{2g})\mathbb{M}^{(b)}_{2,1}(E_{2u})}{2}$

z711 $\mathbb{Q}^{(c)}_{5,1}(E_{2u},1) = -\frac{\mathbb{M}^{(a)}_{3,1}(E_{2g})\mathbb{M}^{(b)}_{2,1}(E_{2u})}{2} + \frac{\mathbb{M}^{(a)}_{3,2}(E_{2g})\mathbb{M}^{(b)}_{2,2}(E_{2u})}{2}$

z712 $\mathbb{Q}^{(c)}_{5,2}(E_{2u},1) = \frac{\mathbb{M}^{(a)}_{3,1}(E_{2g})\mathbb{M}^{(b)}_{2,2}(E_{2u})}{2} + \frac{\mathbb{M}^{(a)}_{3,2}(E_{2g})\mathbb{M}^{(b)}_{2,1}(E_{2u})}{2}$

z713 $\mathbb{G}^{(c)}_{2,1}(E_{2u},a) = \frac{\mathbb{M}^{(a)}_{1,1}(E_{1g})\mathbb{T}^{(b)}_{1,1}(E_{1u})}{2} - \frac{\mathbb{M}^{(a)}_{1,2}(E_{1g})\mathbb{T}^{(b)}_{1,2}(E_{1u})}{2}$

z714 $\mathbb{G}^{(c)}_{2,2}(E_{2u},a) = -\frac{\mathbb{M}^{(a)}_{1,1}(E_{1g})\mathbb{T}^{(b)}_{1,2}(E_{1u})}{2} - \frac{\mathbb{M}^{(a)}_{1,2}(E_{1g})\mathbb{T}^{(b)}_{1,1}(E_{1u})}{2}$

z715 $\mathbb{G}^{(c)}_{2,1}(E_{2u},b) = -\frac{\sqrt{21}\mathbb{M}^{(a)}_{3,1}(E_{1g})\mathbb{T}^{(b)}_{1,1}(E_{1u})}{42} + \frac{\sqrt{21}\mathbb{M}^{(a)}_{3,2}(E_{1g})\mathbb{T}^{(b)}_{1,2}(E_{1u})}{42} + \frac{\sqrt{210}\mathbb{M}^{(a)}_{3,2}(E_{2g})\mathbb{T}^{(b)}_{1}(A_{2u})}{42} + \frac{\sqrt{35}\mathbb{M}^{(a)}_{3}(B_{1g})\mathbb{T}^{(b)}_{1,2}(E_{1u})}{14} + \frac{\sqrt{35}\mathbb{M}^{(a)}_{3}(B_{2g})\mathbb{T}^{(b)}_{1,1}(E_{1u})}{14}$

z716 $\mathbb{G}^{(c)}_{2,2}(E_{2u},b) = \frac{\sqrt{21}\mathbb{M}^{(a)}_{3,1}(E_{1g})\mathbb{T}^{(b)}_{1,2}(E_{1u})}{42} - \frac{\sqrt{210}\mathbb{M}^{(a)}_{3,1}(E_{2g})\mathbb{T}^{(b)}_{1}(A_{2u})}{42} + \frac{\sqrt{21}\mathbb{M}^{(a)}_{3,2}(E_{1g})\mathbb{T}^{(b)}_{1,1}(E_{1u})}{42} - \frac{\sqrt{35}\mathbb{M}^{(a)}_{3}(B_{1g})\mathbb{T}^{(b)}_{1,1}(E_{1u})}{14} + \frac{\sqrt{35}\mathbb{M}^{(a)}_{3}(B_{2g})\mathbb{T}^{(b)}_{1,2}(E_{1u})}{14}$

z717 $\mathbb{G}^{(c)}_{4,1}(E_{2u},1) = -\frac{\mathbb{M}^{(a)}_{3}(B_{1g})\mathbb{T}^{(b)}_{1,2}(E_{1u})}{2} + \frac{\mathbb{M}^{(a)}_{3}(B_{2g})\mathbb{T}^{(b)}_{1,1}(E_{1u})}{2}$

z718 $\mathbb{G}^{(c)}_{4,2}(E_{2u},1) = \frac{\mathbb{M}^{(a)}_{3}(B_{1g})\mathbb{T}^{(b)}_{1,1}(E_{1u})}{2} + \frac{\mathbb{M}^{(a)}_{3}(B_{2g})\mathbb{T}^{(b)}_{1,2}(E_{1u})}{2}$

z719 $\mathbb{G}^{(c)}_{4,1}(E_{2u},2) = \frac{\sqrt{105}\mathbb{M}^{(a)}_{3,1}(E_{1g})\mathbb{T}^{(b)}_{1,1}(E_{1u})}{28} - \frac{\sqrt{105}\mathbb{M}^{(a)}_{3,2}(E_{1g})\mathbb{T}^{(b)}_{1,2}(E_{1u})}{28} + \frac{\sqrt{42}\mathbb{M}^{(a)}_{3,2}(E_{2g})\mathbb{T}^{(b)}_{1}(A_{2u})}{14} - \frac{\sqrt{7}\mathbb{M}^{(a)}_{3}(B_{1g})\mathbb{T}^{(b)}_{1,2}(E_{1u})}{28} - \frac{\sqrt{7}\mathbb{M}^{(a)}_{3}(B_{2g})\mathbb{T}^{(b)}_{1,1}(E_{1u})}{28}$

z720 $\mathbb{G}^{(c)}_{4,2}(E_{2u},2) = -\frac{\sqrt{105}\mathbb{M}^{(a)}_{3,1}(E_{1g})\mathbb{T}^{(b)}_{1,2}(E_{1u})}{28} - \frac{\sqrt{42}\mathbb{M}^{(a)}_{3,1}(E_{2g})\mathbb{T}^{(b)}_{1}(A_{2u})}{14} - \frac{\sqrt{105}\mathbb{M}^{(a)}_{3,2}(E_{1g})\mathbb{T}^{(b)}_{1,1}(E_{1u})}{28} + \frac{\sqrt{7}\mathbb{M}^{(a)}_{3}(B_{1g})\mathbb{T}^{(b)}_{1,1}(E_{1u})}{28} - \frac{\sqrt{7}\mathbb{M}^{(a)}_{3}(B_{2g})\mathbb{T}^{(b)}_{1,2}(E_{1u})}{28}$

- bra: $\langle d_u|$, $\langle d_{xz}|$, $\langle d_{yz}|$, $\langle d_{xy}|$, $\langle d_v|$
- ket: $|d_u\rangle$, $|d_{xz}\rangle$, $|d_{yz}\rangle$, $|d_{xy}\rangle$, $|d_v\rangle$

x1 $\mathbb{Q}_0^{(a)}(A_{1g}) = \begin{bmatrix} \frac{\sqrt{5}}{5} & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{5}}{5} & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{5}}{5} & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{5}}{5} & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{5}}{5} \end{bmatrix}$

x2 $\mathbb{Q}_2^{(a)}(A_{1g}) = \begin{bmatrix} \frac{\sqrt{14}}{7} & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{14}}{7} & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{14}}{14} & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{14}}{14} & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{14}}{7} \end{bmatrix}$

x3 $\mathbb{Q}_4^{(a)}(A_{1g}) = \begin{bmatrix} \frac{3\sqrt{70}}{35} & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{70}}{70} & 0 & 0 & 0 \\ 0 & 0 & -\frac{2\sqrt{70}}{35} & 0 & 0 \\ 0 & 0 & 0 & -\frac{2\sqrt{70}}{35} & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{70}}{70} \end{bmatrix}$

x4 $\mathbb{Q}_4^{(a)}(B_{1g}) = \begin{bmatrix} 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{1}{2} & 0 \\ 0 & 0 & 0 & 0 & -\frac{1}{2} \\ 0 & \frac{1}{2} & 0 & 0 & 0 \\ 0 & 0 & -\frac{1}{2} & 0 & 0 \end{bmatrix}$

x5 $\mathbb{Q}_4^{(a)}(B_{2g}) = \begin{bmatrix} 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{1}{2} & 0 & 0 \\ 0 & \frac{1}{2} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{1}{2} \\ 0 & 0 & 0 & \frac{1}{2} & 0 \end{bmatrix}$

x6 $\mathbb{Q}_{2,1}^{(a)}(E_{1g}) = \begin{bmatrix} 0 & 0 & \frac{\sqrt{14}}{14} & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{42}}{14} & 0 & 0 \\ \frac{\sqrt{14}}{14} & -\frac{\sqrt{42}}{14} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{42}}{14} \\ 0 & 0 & 0 & \frac{\sqrt{42}}{14} & 0 \end{bmatrix}$

x7 $\mathbb{Q}^{(a)}_{2,2}(E_{1g}) = \begin{bmatrix} 0 & 0 & 0 & -\frac{\sqrt{14}}{14} & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{42}}{14} & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{42}}{14} \\ -\frac{\sqrt{14}}{14} & -\frac{\sqrt{42}}{14} & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{42}}{14} & 0 & 0 \end{bmatrix}$

x8 $\mathbb{Q}^{(a)}_{4,1}(E_{1g}) = \begin{bmatrix} 0 & 0 & \frac{\sqrt{21}}{7} & 0 & 0 \\ 0 & 0 & \frac{\sqrt{7}}{14} & 0 & 0 \\ \frac{\sqrt{21}}{7} & \frac{\sqrt{7}}{14} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{7}}{14} \\ 0 & 0 & 0 & -\frac{\sqrt{7}}{14} & 0 \end{bmatrix}$

x9 $\mathbb{Q}^{(a)}_{4,2}(E_{1g}) = \begin{bmatrix} 0 & 0 & 0 & -\frac{\sqrt{21}}{7} & 0 \\ 0 & 0 & 0 & \frac{\sqrt{7}}{14} & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{7}}{14} \\ -\frac{\sqrt{21}}{7} & \frac{\sqrt{7}}{14} & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{7}}{14} & 0 & 0 \end{bmatrix}$

x10 $\mathbb{Q}^{(a)}_{2,1}(E_{2g}) = \begin{bmatrix} 0 & -\frac{\sqrt{14}}{7} & 0 & 0 & 0 \\ -\frac{\sqrt{14}}{7} & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{42}}{14} & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{42}}{14} & 0 \\ 0 & 0 & 0 & 0 & 0 \end{bmatrix}$

x11 $\mathbb{Q}^{(a)}_{2,2}(E_{2g}) = \begin{bmatrix} 0 & 0 & 0 & 0 & \frac{\sqrt{14}}{7} \\ 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{42}}{14} & 0 \\ 0 & 0 & -\frac{\sqrt{42}}{14} & 0 & 0 \\ \frac{\sqrt{14}}{7} & 0 & 0 & 0 & 0 \end{bmatrix}$

x12 $\mathbb{Q}^{(a)}_{4,1}(E_{2g},1) = \begin{bmatrix} 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{2}}{2} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{2} \end{bmatrix}$

x13 $\mathbb{Q}^{(a)}_{4,2}(E_{2g},1) = \begin{bmatrix} 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{2} \\ 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{2}}{2} & 0 & 0 & 0 \end{bmatrix}$

x14 $\mathbb{Q}^{(a)}_{4,1}(E_{2g},2) = \begin{bmatrix} 0 & \frac{\sqrt{42}}{14} & 0 & 0 & 0 \\ \frac{\sqrt{42}}{14} & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{14}}{7} & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{14}}{7} & 0 \\ 0 & 0 & 0 & 0 & 0 \end{bmatrix}$

x15 $\mathbb{Q}^{(a)}_{4,2}(E_{2g},2) = \begin{bmatrix} 0 & 0 & 0 & 0 & -\frac{\sqrt{42}}{14} \\ 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{14}}{7} & 0 \\ 0 & 0 & -\frac{\sqrt{14}}{7} & 0 & 0 \\ -\frac{\sqrt{42}}{14} & 0 & 0 & 0 & 0 \end{bmatrix}$

x16 $\mathbb{M}^{(a)}_{1}(A_{2g}) = \begin{bmatrix} 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{10}i}{5} \\ 0 & 0 & 0 & \frac{\sqrt{10}i}{10} & 0 \\ 0 & 0 & -\frac{\sqrt{10}i}{10} & 0 & 0 \\ 0 & \frac{\sqrt{10}i}{5} & 0 & 0 & 0 \end{bmatrix}$

x17 $\mathbb{M}^{(a)}_{3}(A_{2g}) = \begin{bmatrix} 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{10} \\ 0 & 0 & 0 & \frac{\sqrt{10}i}{5} & 0 \\ 0 & 0 & -\frac{\sqrt{10}i}{5} & 0 & 0 \\ 0 & -\frac{\sqrt{10}i}{10} & 0 & 0 & 0 \end{bmatrix}$

x18 $\mathbb{M}^{(a)}_{3}(B_{1g}) = \begin{bmatrix} 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{i}{2} & 0 \\ 0 & 0 & 0 & 0 & \frac{i}{2} \\ 0 & -\frac{i}{2} & 0 & 0 & 0 \\ 0 & 0 & -\frac{i}{2} & 0 & 0 \end{bmatrix}$

x19 $\mathbb{M}^{(a)}_{3}(B_{2g}) = \begin{bmatrix} 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{i}{2} & 0 & 0 \\ 0 & \frac{i}{2} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{i}{2} \\ 0 & 0 & 0 & -\frac{i}{2} & 0 \end{bmatrix}$

x20 $\mathbb{M}^{(a)}_{1,1}(E_{1g}) = \begin{bmatrix} 0 & 0 & \frac{\sqrt{30}i}{10} & 0 & 0 \\ 0 & 0 & \frac{\sqrt{10}i}{10} & 0 & 0 \\ -\frac{\sqrt{30}i}{10} & -\frac{\sqrt{10}i}{10} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{10}i}{10} \\ 0 & 0 & 0 & -\frac{\sqrt{10}i}{10} & 0 \end{bmatrix}$

x21 $\mathbb{M}^{(a)}_{1,2}(E_{1g}) = \begin{bmatrix} 0 & 0 & 0 & -\frac{\sqrt{30}i}{10} & 0 \\ 0 & 0 & 0 & \frac{\sqrt{10}i}{10} & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{10}i}{10} \\ \frac{\sqrt{30}i}{10} & -\frac{\sqrt{10}i}{10} & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{10}i}{10} & 0 & 0 \end{bmatrix}$

x22 $\mathbb{M}^{(a)}_{3,1}(E_{1g}) = \begin{bmatrix} 0 & 0 & \frac{\sqrt{5}i}{5} & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{15}i}{10} & 0 & 0 \\ -\frac{\sqrt{5}i}{5} & \frac{\sqrt{15}i}{10} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{15}i}{10} \\ 0 & 0 & 0 & \frac{\sqrt{15}i}{10} & 0 \end{bmatrix}$

x23 $\mathbb{M}^{(a)}_{3,2}(E_{1g}) = \begin{bmatrix} 0 & 0 & 0 & -\frac{\sqrt{5}i}{5} & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{15}i}{10} & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{15}i}{10} \\ \frac{\sqrt{5}i}{5} & \frac{\sqrt{15}i}{10} & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{15}i}{10} & 0 & 0 \end{bmatrix}$

x24 $\mathbb{M}^{(a)}_{3,1}(E_{2g}) = \begin{bmatrix} 0 & -\frac{\sqrt{2}i}{2} & 0 & 0 & 0 \\ \frac{\sqrt{2}i}{2} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \end{bmatrix}$

x25 $\mathbb{M}^{(a)}_{3,2}(E_{2g}) = \begin{bmatrix} 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{2} \\ 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{2}i}{2} & 0 & 0 & 0 & 0 \end{bmatrix}$

Cluster SAMB

- Site cluster

** Wyckoff: 2c

y1 $\mathbb{Q}^{(s)}_{0}(A_{1g}) = \left[\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2}\right]$

y2 $\mathbb{Q}_{3}^{(s)}(B_{1u}) = \left[\frac{\sqrt{2}}{2}, -\frac{\sqrt{2}}{2}\right]$

** Wyckoff: `6h`

y3 $\mathbb{Q}_{0}^{(s)}(A_{1g}) = \left[\frac{\sqrt{6}}{6}, \frac{\sqrt{6}}{6}, \frac{\sqrt{6}}{6}, \frac{\sqrt{6}}{6}, \frac{\sqrt{6}}{6}, \frac{\sqrt{6}}{6}\right]$

y4 $\mathbb{Q}_{3}^{(s)}(B_{1u}) = \left[\frac{\sqrt{6}}{6}, \frac{\sqrt{6}}{6}, \frac{\sqrt{6}}{6}, -\frac{\sqrt{6}}{6}, -\frac{\sqrt{6}}{6}, -\frac{\sqrt{6}}{6}\right]$

y5 $\mathbb{Q}_{1,1}^{(s)}(E_{1u}) = \left[0, -\frac{1}{2}, \frac{1}{2}, 0, \frac{1}{2}, -\frac{1}{2}\right]$

y6 $\mathbb{Q}_{1,2}^{(s)}(E_{1u}) = \left[\frac{\sqrt{3}}{3}, -\frac{\sqrt{3}}{6}, -\frac{\sqrt{3}}{6}, -\frac{\sqrt{3}}{3}, \frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}\right]$

y7 $\mathbb{Q}_{2,1}^{(s)}(E_{2g}) = \left[\frac{\sqrt{3}}{3}, -\frac{\sqrt{3}}{6}, -\frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{3}, -\frac{\sqrt{3}}{6}, -\frac{\sqrt{3}}{6}\right]$

y8 $\mathbb{Q}_{2,2}^{(s)}(E_{2g}) = \left[0, \frac{1}{2}, -\frac{1}{2}, 0, \frac{1}{2}, -\frac{1}{2}\right]$

- Bond cluster

** Wyckoff: `6a@6g`

y9 $\mathbb{Q}_{0}^{(s)}(A_{1g}) = \left[\frac{\sqrt{6}}{6}, \frac{\sqrt{6}}{6}, \frac{\sqrt{6}}{6}, \frac{\sqrt{6}}{6}, \frac{\sqrt{6}}{6}, \frac{\sqrt{6}}{6}\right]$

y10 $\mathbb{T}_{1}^{(s)}(A_{2u}) = \left[\frac{\sqrt{6}i}{6}, \frac{\sqrt{6}i}{6}, \frac{\sqrt{6}i}{6}, \frac{\sqrt{6}i}{6}, \frac{\sqrt{6}i}{6}, \frac{\sqrt{6}i}{6}\right]$

y11 $\mathbb{T}_{3}^{(s)}(B_{1u}) = \left[\frac{\sqrt{6}i}{6}, \frac{\sqrt{6}i}{6}, \frac{\sqrt{6}i}{6}, -\frac{\sqrt{6}i}{6}, -\frac{\sqrt{6}i}{6}, -\frac{\sqrt{6}i}{6}\right]$

y12 $\mathbb{Q}_{4}^{(s)}(B_{2g}) = \left[\frac{\sqrt{6}}{6}, \frac{\sqrt{6}}{6}, \frac{\sqrt{6}}{6}, -\frac{\sqrt{6}}{6}, -\frac{\sqrt{6}}{6}, -\frac{\sqrt{6}}{6}\right]$

y13 $\mathbb{Q}^{(s)}_{2,1}(E_{1g}) = \left[\frac{\sqrt{3}}{3}, -\frac{\sqrt{3}}{6}, -\frac{\sqrt{3}}{6}, -\frac{\sqrt{3}}{3}, \frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}\right]$

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

y15 $\mathbb{T}^{(s)}_{1,1}(E_{1u}) = \left[0, -\frac{i}{2}, \frac{i}{2}, 0, \frac{i}{2}, -\frac{i}{2}\right]$

y16 $\mathbb{T}^{(s)}_{1,2}(E_{1u}) = \left[\frac{\sqrt{3}i}{3}, -\frac{\sqrt{3}i}{6}, -\frac{\sqrt{3}i}{6}, -\frac{\sqrt{3}i}{3}, \frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}\right]$

y17 $\mathbb{Q}^{(s)}_{2,1}(E_{2g}) = \left[\frac{\sqrt{3}}{3}, -\frac{\sqrt{3}}{6}, -\frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{3}, -\frac{\sqrt{3}}{6}, -\frac{\sqrt{3}}{6}\right]$

y18 $\mathbb{Q}^{(s)}_{2,2}(E_{2g}) = \left[0, \frac{1}{2}, -\frac{1}{2}, 0, \frac{1}{2}, -\frac{1}{2}\right]$

y19 $\mathbb{M}^{(s)}_{2,1}(E_{2u}) = \left[0, -\frac{i}{2}, \frac{i}{2}, 0, -\frac{i}{2}, \frac{i}{2}\right]$

y20 $\mathbb{M}^{(s)}_{2,2}(E_{2u}) = \left[\frac{\sqrt{3}i}{3}, -\frac{\sqrt{3}i}{6}, -\frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{3}, -\frac{\sqrt{3}i}{6}, -\frac{\sqrt{3}i}{6}\right]$

** Wyckoff: `6b@6h`

y21 $\mathbb{Q}^{(s)}_{0}(A_{1g}) = \left[\frac{\sqrt{6}}{6}, \frac{\sqrt{6}}{6}, \frac{\sqrt{6}}{6}, \frac{\sqrt{6}}{6}, \frac{\sqrt{6}}{6}, \frac{\sqrt{6}}{6}\right]$

y22 $\mathbb{M}^{(s)}_{1}(A_{2g}) = \left[\frac{\sqrt{6}i}{6}, \frac{\sqrt{6}i}{6}, \frac{\sqrt{6}i}{6}, \frac{\sqrt{6}i}{6}, \frac{\sqrt{6}i}{6}, \frac{\sqrt{6}i}{6}\right]$

y23 $\mathbb{Q}^{(s)}_{3}(B_{1u}) = \left[\frac{\sqrt{6}}{6}, \frac{\sqrt{6}}{6}, \frac{\sqrt{6}}{6}, -\frac{\sqrt{6}}{6}, -\frac{\sqrt{6}}{6}, -\frac{\sqrt{6}}{6}\right]$

y24 $\mathbb{T}^{(s)}_{3}(B_{2u}) = \left[\frac{\sqrt{6}i}{6}, \frac{\sqrt{6}i}{6}, \frac{\sqrt{6}i}{6}, -\frac{\sqrt{6}i}{6}, -\frac{\sqrt{6}i}{6}, -\frac{\sqrt{6}i}{6}\right]$

y25 $\mathbb{Q}^{(s)}_{1,1}(E_{1u}) = \left[0, -\frac{1}{2}, \frac{1}{2}, 0, \frac{1}{2}, -\frac{1}{2}\right]$

y26 $\mathbb{Q}^{(s)}_{1,2}(E_{1u}) = \left[\frac{\sqrt{3}}{3}, -\frac{\sqrt{3}}{6}, -\frac{\sqrt{3}}{6}, -\frac{\sqrt{3}}{3}, \frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}\right]$

y27 $\mathbb{T}^{(s)}_{1,1}(E_{1u}) = \left[\frac{\sqrt{3}i}{3}, -\frac{\sqrt{3}i}{6}, -\frac{\sqrt{3}i}{6}, -\frac{\sqrt{3}i}{3}, \frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}\right]$

y28 $\mathbb{T}^{(s)}_{1,2}(E_{1u}) = \left[0, \frac{i}{2}, -\frac{i}{2}, 0, -\frac{i}{2}, \frac{i}{2}\right]$

y29 $\mathbb{Q}^{(s)}_{2,1}(E_{2g}) = \left[\frac{\sqrt{3}}{3}, -\frac{\sqrt{3}}{6}, -\frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{3}, -\frac{\sqrt{3}}{6}, -\frac{\sqrt{3}}{6}\right]$

y30 $\mathbb{Q}^{(s)}_{2,2}(E_{2g}) = \left[0, \frac{1}{2}, -\frac{1}{2}, 0, \frac{1}{2}, -\frac{1}{2}\right]$

y31 $\mathbb{T}^{(s)}_{2,1}(E_{2g}) = \left[0, \frac{i}{2}, -\frac{i}{2}, 0, \frac{i}{2}, -\frac{i}{2}\right]$

y32 $\mathbb{T}^{(s)}_{2,2}(E_{2g}) = \left[-\frac{\sqrt{3}i}{3}, \frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}, -\frac{\sqrt{3}i}{3}, \frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}\right]$

** Wyckoff: `12a@12j`

y33 $\mathbb{Q}^{(s)}_{0}(A_{1g}) = \left[\frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}\right]$

y34 $\mathbb{T}^{(s)}_{0}(A_{1g}) = \left[\frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}\right]$

y35 $\mathbb{M}^{(s)}_{1}(A_{2g}) = \left[\frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}, -\frac{\sqrt{3}i}{6}, -\frac{\sqrt{3}i}{6}, -\frac{\sqrt{3}i}{6}, -\frac{\sqrt{3}i}{6}, -\frac{\sqrt{3}i}{6}, -\frac{\sqrt{3}i}{6}\right]$

y36 $\mathbb{Q}^{(s)}_{6}(A_{2g}) = \left[\frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}, -\frac{\sqrt{3}}{6}, -\frac{\sqrt{3}}{6}, -\frac{\sqrt{3}}{6}, -\frac{\sqrt{3}}{6}, -\frac{\sqrt{3}}{6}, -\frac{\sqrt{3}}{6}\right]$

y37 $\mathbb{Q}^{(s)}_{3}(B_{1u}) = \left[\frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}, -\frac{\sqrt{3}}{6}, -\frac{\sqrt{3}}{6}, -\frac{\sqrt{3}}{6}, -\frac{\sqrt{3}}{6}, -\frac{\sqrt{3}}{6}, -\frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}\right]$

y38 $\mathbb{T}_3^{(s)}(B_{1u}) = \left[\frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}, -\frac{\sqrt{3}i}{6}, -\frac{\sqrt{3}i}{6}, -\frac{\sqrt{3}i}{6}, -\frac{\sqrt{3}i}{6}, -\frac{\sqrt{3}i}{6}, -\frac{\sqrt{3}i}{6}, -\frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}\right]$

y39 $\mathbb{Q}_3^{(s)}(B_{2u}) = \left[\frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}, -\frac{\sqrt{3}}{6}, -\frac{\sqrt{3}}{6}, -\frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}, \frac{\sqrt{3}}{6}, -\frac{\sqrt{3}}{6}, -\frac{\sqrt{3}}{6}, -\frac{\sqrt{3}}{6}\right]$

y40 $\mathbb{T}_3^{(s)}(B_{2u}) = \left[\frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}, -\frac{\sqrt{3}i}{6}, -\frac{\sqrt{3}i}{6}, -\frac{\sqrt{3}i}{6}, -\frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}, \frac{\sqrt{3}i}{6}, -\frac{\sqrt{3}i}{6}, -\frac{\sqrt{3}i}{6}, -\frac{\sqrt{3}i}{6}\right]$

y41 $\mathbb{Q}_{1,1}^{(s)}(E_{1u}) = \left[\frac{5\sqrt{42}}{84}, -\frac{\sqrt{42}}{21}, -\frac{\sqrt{42}}{84}, -\frac{5\sqrt{42}}{84}, \frac{\sqrt{42}}{21}, \frac{\sqrt{42}}{84}, -\frac{\sqrt{42}}{84}, \frac{5\sqrt{42}}{84}, -\frac{\sqrt{42}}{21}, \frac{\sqrt{42}}{84}, -\frac{5\sqrt{42}}{84}, \frac{\sqrt{42}}{21}\right]$

y42 $\mathbb{Q}_{1,2}^{(s)}(E_{1u}) = \left[\frac{\sqrt{14}}{28}, \frac{\sqrt{14}}{14}, -\frac{3\sqrt{14}}{28}, -\frac{\sqrt{14}}{28}, -\frac{\sqrt{14}}{14}, \frac{3\sqrt{14}}{28}, \frac{3\sqrt{14}}{28}, -\frac{\sqrt{14}}{28}, -\frac{\sqrt{14}}{14}, -\frac{3\sqrt{14}}{28}, \frac{\sqrt{14}}{28}, \frac{\sqrt{14}}{14}\right]$

y43 $\mathbb{T}_{1,1}^{(s)}(E_{1u}, a) = \left[\frac{5\sqrt{42}i}{84}, -\frac{\sqrt{42}i}{21}, -\frac{\sqrt{42}i}{84}, -\frac{5\sqrt{42}i}{84}, \frac{\sqrt{42}i}{21}, \frac{\sqrt{42}i}{84}, -\frac{\sqrt{42}i}{84}, \frac{5\sqrt{42}i}{84}, -\frac{\sqrt{42}i}{21}, \frac{\sqrt{42}i}{84}, -\frac{5\sqrt{42}i}{84}, \frac{\sqrt{42}i}{21}\right]$

y44 $\mathbb{T}_{1,2}^{(s)}(E_{1u}, a) = \left[\frac{\sqrt{14}i}{28}, \frac{\sqrt{14}i}{14}, -\frac{3\sqrt{14}i}{28}, -\frac{\sqrt{14}i}{28}, -\frac{\sqrt{14}i}{14}, \frac{3\sqrt{14}i}{28}, \frac{3\sqrt{14}i}{28}, -\frac{\sqrt{14}i}{28}, -\frac{\sqrt{14}i}{14}, -\frac{3\sqrt{14}i}{28}, \frac{\sqrt{14}i}{28}, \frac{\sqrt{14}i}{14}\right]$

y45 $\mathbb{T}_{1,1}^{(s)}(E_{1u}, b) = \left[\frac{\sqrt{14}i}{28}, \frac{\sqrt{14}i}{14}, -\frac{3\sqrt{14}i}{28}, -\frac{\sqrt{14}i}{28}, -\frac{\sqrt{14}i}{14}, \frac{3\sqrt{14}i}{28}, -\frac{3\sqrt{14}i}{28}, \frac{\sqrt{14}i}{28}, \frac{\sqrt{14}i}{14}, \frac{3\sqrt{14}i}{28}, -\frac{\sqrt{14}i}{28}, -\frac{\sqrt{14}i}{14}\right]$

y46 $\mathbb{T}_{1,2}^{(s)}(E_{1u}, b) = \left[-\frac{5\sqrt{42}i}{84}, \frac{\sqrt{42}i}{21}, \frac{\sqrt{42}i}{84}, \frac{5\sqrt{42}i}{84}, -\frac{\sqrt{42}i}{21}, -\frac{\sqrt{42}i}{84}, -\frac{\sqrt{42}i}{84}, \frac{5\sqrt{42}i}{84}, -\frac{\sqrt{42}i}{21}, \frac{\sqrt{42}i}{84}, -\frac{5\sqrt{42}i}{84}, \frac{\sqrt{42}i}{21}\right]$

y47 $\mathbb{Q}_{5,1}^{(s)}(E_{1u}, 1) = \left[\frac{\sqrt{14}}{28}, \frac{\sqrt{14}}{14}, -\frac{3\sqrt{14}}{28}, -\frac{\sqrt{14}}{28}, -\frac{\sqrt{14}}{14}, \frac{3\sqrt{14}}{28}, -\frac{3\sqrt{14}}{28}, \frac{\sqrt{14}}{28}, \frac{\sqrt{14}}{14}, \frac{3\sqrt{14}}{28}, -\frac{\sqrt{14}}{28}, -\frac{\sqrt{14}}{14}\right]$

y48 $\mathbb{Q}_{5,2}^{(s)}(E_{1u}, 1) = \left[-\frac{5\sqrt{42}}{84}, \frac{\sqrt{42}}{21}, \frac{\sqrt{42}}{84}, \frac{5\sqrt{42}}{84}, -\frac{\sqrt{42}}{21}, -\frac{\sqrt{42}}{84}, -\frac{\sqrt{42}}{84}, \frac{5\sqrt{42}}{84}, -\frac{\sqrt{42}}{21}, \frac{\sqrt{42}}{84}, -\frac{5\sqrt{42}}{84}, \frac{\sqrt{42}}{21}\right]$

y49 $\mathbb{Q}_{2,1}^{(s)}(E_{2g}) = \left[\frac{11\sqrt{6}}{84}, \frac{\sqrt{6}}{42}, -\frac{13\sqrt{6}}{84}, \frac{11\sqrt{6}}{84}, \frac{\sqrt{6}}{42}, -\frac{13\sqrt{6}}{84}, -\frac{13\sqrt{6}}{84}, \frac{11\sqrt{6}}{84}, \frac{\sqrt{6}}{42}, -\frac{13\sqrt{6}}{84}, \frac{11\sqrt{6}}{84}, \frac{\sqrt{6}}{42}\right]$

y50 $\mathbb{Q}_{2,2}^{(s)}(E_{2g}) = \left[-\frac{5\sqrt{2}}{28}, \frac{2\sqrt{2}}{7}, -\frac{3\sqrt{2}}{28}, -\frac{5\sqrt{2}}{28}, \frac{2\sqrt{2}}{7}, -\frac{3\sqrt{2}}{28}, \frac{3\sqrt{2}}{28}, \frac{5\sqrt{2}}{28}, -\frac{2\sqrt{2}}{7}, \frac{3\sqrt{2}}{28}, \frac{5\sqrt{2}}{28}, -\frac{2\sqrt{2}}{7}\right]$

y51 $\mathbb{T}^{(s)}_{2,1}(E_{2g}, a) = \left[\frac{11\sqrt{6}i}{84}, \frac{\sqrt{6}i}{42}, -\frac{13\sqrt{6}i}{84}, \frac{11\sqrt{6}i}{84}, \frac{\sqrt{6}i}{42}, -\frac{13\sqrt{6}i}{84}, -\frac{13\sqrt{6}i}{84}, \frac{11\sqrt{6}i}{84}, \frac{\sqrt{6}i}{42}, -\frac{13\sqrt{6}i}{84}, \frac{11\sqrt{6}i}{84}, \frac{\sqrt{6}i}{42}\right]$

y52 $\mathbb{T}^{(s)}_{2,2}(E_{2g}, a) = \left[-\frac{5\sqrt{2}i}{28}, \frac{2\sqrt{2}i}{7}, -\frac{3\sqrt{2}i}{28}, -\frac{5\sqrt{2}i}{28}, \frac{2\sqrt{2}i}{7}, -\frac{3\sqrt{2}i}{28}, \frac{3\sqrt{2}i}{28}, \frac{5\sqrt{2}i}{28}, -\frac{2\sqrt{2}i}{7}, \frac{3\sqrt{2}i}{28}, \frac{5\sqrt{2}i}{28}, -\frac{2\sqrt{2}i}{7}\right]$

y53 $\mathbb{T}^{(s)}_{2,1}(E_{2g}, b) = \left[\frac{5\sqrt{2}i}{28}, -\frac{2\sqrt{2}i}{7}, \frac{3\sqrt{2}i}{28}, \frac{5\sqrt{2}i}{28}, -\frac{2\sqrt{2}i}{7}, \frac{3\sqrt{2}i}{28}, \frac{3\sqrt{2}i}{28}, \frac{5\sqrt{2}i}{28}, -\frac{2\sqrt{2}i}{7}, \frac{3\sqrt{2}i}{28}, \frac{5\sqrt{2}i}{28}, -\frac{2\sqrt{2}i}{7}\right]$

y54 $\mathbb{T}^{(s)}_{2,2}(E_{2g}, b) = \left[\frac{11\sqrt{6}i}{84}, \frac{\sqrt{6}i}{42}, -\frac{13\sqrt{6}i}{84}, \frac{11\sqrt{6}i}{84}, \frac{\sqrt{6}i}{42}, -\frac{13\sqrt{6}i}{84}, \frac{13\sqrt{6}i}{84}, -\frac{11\sqrt{6}i}{84}, -\frac{\sqrt{6}i}{42}, \frac{13\sqrt{6}i}{84}, -\frac{11\sqrt{6}i}{84}, -\frac{\sqrt{6}i}{42}\right]$

y55 $\mathbb{Q}^{(s)}_{4,1}(E_{2g}, 1) = \left[\frac{5\sqrt{2}}{28}, -\frac{2\sqrt{2}}{7}, \frac{3\sqrt{2}}{28}, \frac{5\sqrt{2}}{28}, -\frac{2\sqrt{2}}{7}, \frac{3\sqrt{2}}{28}, \frac{3\sqrt{2}}{28}, \frac{5\sqrt{2}}{28}, -\frac{2\sqrt{2}}{7}, \frac{3\sqrt{2}}{28}, \frac{5\sqrt{2}}{28}, -\frac{2\sqrt{2}}{7}\right]$

y56 $\mathbb{Q}^{(s)}_{4,2}(E_{2g}, 1) = \left[\frac{11\sqrt{6}}{84}, \frac{\sqrt{6}}{42}, -\frac{13\sqrt{6}}{84}, \frac{11\sqrt{6}}{84}, \frac{\sqrt{6}}{42}, -\frac{13\sqrt{6}}{84}, \frac{13\sqrt{6}}{84}, -\frac{11\sqrt{6}}{84}, -\frac{\sqrt{6}}{42}, \frac{13\sqrt{6}}{84}, -\frac{11\sqrt{6}}{84}, -\frac{\sqrt{6}}{42}\right]$

Site and Bond

Table 5: Orbital of each site

#	site	orbital
1	Mn	$\|d_u\rangle$, $\|d_{xz}\rangle$, $\|d_{yz}\rangle$, $\|d_{xy}\rangle$, $\|d_v\rangle$
2	Sn	$\|d_u\rangle$, $\|d_{xz}\rangle$, $\|d_{yz}\rangle$, $\|d_{xy}\rangle$, $\|d_v\rangle$

Table 6: Neighbor and bra-ket of each bond

#	head	tail	neighbor	head (bra)	tail (ket)
1	Mn	Mn	[1]	[d]	[d]
2	Mn	Sn	[1]	[d]	[d]
3	Sn	Sn	[1]	[d]	[d]

Site in Unit Cell

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

Table 7: 'Mn' (#1) site cluster (6h), mm2

SL	position ($\boldsymbol{s}$)	mapping
1	[0.83880, 0.67760, 0.25000]	[1,11,16,20]
2	[0.32240, 0.16120, 0.25000]	[2,10,17,19]
3	[0.83880, 0.16120, 0.25000]	[3,12,18,21]
4	[0.16120, 0.32240, 0.75000]	[4,8,13,23]
5	[0.67760, 0.83880, 0.75000]	[5,7,14,22]
6	[0.16120, 0.83880, 0.75000]	[6,9,15,24]

Table 8: 'Sn' (#2) site cluster (2c), -6m2

SL	position ($\boldsymbol{s}$)	mapping
1	[0.33333, 0.66667, 0.25000]	[1,2,3,10,11,12,16,17,18,19,20,21]
2	[0.66667, 0.33333, 0.75000]	[4,5,6,7,8,9,13,14,15,22,23,24]

Bond in Unit Cell

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

Table 9: 1-th 'Mn'-'Mn' [1] (#1) bond cluster (6b@6h), ND, $|\boldsymbol{v}|$= 0.4836 (cartesian)

SL	vector ($\boldsymbol{v}$)	center ($\boldsymbol{c}$)	mapping	head	tail	$\boldsymbol{R}$ (primitive)
1	[-0.48360, 0.00000, 0.00000]	[0.08060, 0.16120, 0.25000]	[1,-11,16,-20]	(3,1)	(2,1)	[1,0,0]
2	[0.00000,-0.48360, 0.00000]	[0.83880, 0.91940, 0.25000]	[2,-10,17,-19]	(1,1)	(3,1)	[0,1,0]
3	[0.48360, 0.48360, 0.00000]	[0.08060, 0.91940, 0.25000]	[3,-12,18,-21]	(2,1)	(1,1)	[-1,-1,0]
4	[0.48360, 0.00000, 0.00000]	[0.91940, 0.83880, 0.75000]	[4,-8,13,-23]	(6,1)	(5,1)	[-1,0,0]
5	[0.00000, 0.48360, 0.00000]	[0.16120, 0.08060, 0.75000]	[5,-7,14,-22]	(4,1)	(6,1)	[0,-1,0]
6	[-0.48360,-0.48360, 0.00000]	[0.91940, 0.08060, 0.75000]	[6,-9,15,-24]	(5,1)	(4,1)	[1,1,0]

Table 10: 1-th 'Mn'-'Sn' [1] (#2) bond cluster (12a@12j), D, $|\boldsymbol{v}|$= 0.50009 (cartesian)

SL	vector ($\boldsymbol{v}$)	center ($\boldsymbol{c}$)	mapping	head	tail	$\boldsymbol{R}$ (primitive)
1	[-0.49453, 0.01093, 0.00000]	[0.08607, 0.67213, 0.25000]	[1,16]	(1,1)	(1,1)	[1,0,0]
2	[-0.01093,-0.50547, 0.00000]	[0.32787, 0.41393, 0.25000]	[2,17]	(2,1)	(1,1)	[0,0,0]
3	[0.50547, 0.49453, 0.00000]	[0.58607, 0.91393, 0.25000]	[3,18]	(3,1)	(1,1)	[0,-1,0]
4	[0.49453,-0.01093, 0.00000]	[0.91393, 0.32787, 0.75000]	[4,13]	(4,1)	(2,1)	[-1,0,0]
5	[0.01093, 0.50547, 0.00000]	[0.67213, 0.58607, 0.75000]	[5,14]	(5,1)	(2,1)	[0,0,0]
6	[-0.50547,-0.49453, 0.00000]	[0.41393, 0.08607, 0.75000]	[6,15]	(6,1)	(2,1)	[0,1,0]
7	[0.01093,-0.49453, 0.00000]	[0.67213, 0.08607, 0.75000]	[7,22]	(5,1)	(2,1)	[0,1,0]
8	[-0.50547,-0.01093, 0.00000]	[0.41393, 0.32787, 0.75000]	[8,23]	(4,1)	(2,1)	[0,0,0]
9	[0.49453, 0.50547, 0.00000]	[0.91393, 0.58607, 0.75000]	[9,24]	(6,1)	(2,1)	[-1,0,0]
10	[-0.01093, 0.49453, 0.00000]	[0.32787, 0.91393, 0.25000]	[10,19]	(2,1)	(1,1)	[0,-1,0]
11	[0.50547, 0.01093, 0.00000]	[0.58607, 0.67213, 0.25000]	[11,20]	(1,1)	(1,1)	[0,0,0]
12	[-0.49453,-0.50547, 0.00000]	[0.08607, 0.41393, 0.25000]	[12,21]	(3,1)	(1,1)	[1,0,0]

Table 11: 1-th 'Sn'-'Sn' [1] (#3) bond cluster (6a@6g), ND, $|\boldsymbol{v}|$= 0.76376 (cartesian)

SL	vector ($\boldsymbol{v}$)	center ($\boldsymbol{c}$)	mapping	head	tail	$\boldsymbol{R}$ (primitive)
1	[0.33333, 0.66667,-0.50000]	[0.50000, 0.00000, 0.00000]	[1,-8,-13,20]	(2,1)	(1,1)	[0,-1,1]

continued ...

Table 11

SL	vector ($\boldsymbol{v}$)	center ($\boldsymbol{c}$)	mapping	head	tail	$\boldsymbol{R}$ (primitive)
2	[-0.66667,-0.33333,-0.50000]	[0.00000, 0.50000, 0.00000]	[2,-7,-14,19]	(2,1)	(1,1)	[1,0,1]
3	[0.33333,-0.33333,-0.50000]	[0.50000, 0.50000, 0.00000]	[3,-9,-15,21]	(2,1)	(1,1)	[0,0,1]
4	[-0.33333,-0.66667,-0.50000]	[0.50000, 0.00000, 0.50000]	[4,-11,-16,23]	(1,1)	(2,1)	[0,1,0]
5	[0.66667, 0.33333,-0.50000]	[0.00000, 0.50000, 0.50000]	[5,-10,-17,22]	(1,1)	(2,1)	[-1,0,0]
6	[-0.33333, 0.33333,-0.50000]	[0.50000, 0.50000, 0.50000]	[6,-12,-18,24]	(1,1)	(2,1)	[0,0,0]