SAMB for "Th"

Generated on 2023-06-18 16:56 by MultiPie 1.1.10

• Generation condition

model type: tight_bindingtime-reversal type: electric

irrep: [Ag]spinful

• Kets: dimension = 64

Table 1: Hilbert space for full matrix.

No.	ket								
1	(s,\uparrow) @A ₁	2	(s,\downarrow) @A ₁	3	(p_x,\uparrow) @A ₁	4	(p_x,\downarrow) @A ₁	5	(p_y,\uparrow) @A ₁
6	(p_y,\downarrow) @A ₁	7	(p_z,\uparrow) @A ₁	8	(p_z,\downarrow) @A ₁	9	(s,\uparrow) @A ₂	10	(s,\downarrow) @A ₂
11	(p_x,\uparrow) @A ₂	12	(p_x,\downarrow) @A ₂	13	(p_y,\uparrow) @A ₂	14	(p_y,\downarrow) @A ₂	15	(p_z,\uparrow) @ A_2
16	(p_z,\downarrow) @A ₂	17	(s,\uparrow) @A ₃	18	(s,\downarrow) @A ₃	19	(p_x,\uparrow) @A ₃	20	(p_x,\downarrow) @A ₃
21	(p_y,\uparrow) @A ₃	22	(p_y,\downarrow) @A ₃	23	(p_z,\uparrow) @A ₃	24	(p_z,\downarrow) @A ₃	25	(s,\uparrow) @A ₄
26	(s,\downarrow) @A ₄	27	(p_x,\uparrow) @A ₄	28	(p_x,\downarrow) @A ₄	29	(p_y,\uparrow) @A ₄	30	(p_y,\downarrow) @A ₄
31	(p_z,\uparrow) @ A_4	32	(p_z,\downarrow) @A ₄	33	(s,\uparrow) @A ₅	34	(s,\downarrow) @A ₅	35	(p_x,\uparrow) @A ₅
36	(p_x,\downarrow) @A ₅	37	(p_y,\uparrow) @A ₅	38	(p_y,\downarrow) @A ₅	39	(p_z,\uparrow) @A ₅	40	(p_z,\downarrow) @A ₅
41	(s,\uparrow) @A ₆	42	(s,\downarrow) @A ₆	43	(p_x,\uparrow) @A ₆	44	(p_x,\downarrow) @A ₆	45	(p_y,\uparrow) @A ₆
46	(p_y,\downarrow) @A ₆	47	(p_z,\uparrow) @A ₆	48	(p_z,\downarrow) @A ₆	49	(s,\uparrow) @A ₇	50	(s,\downarrow) @A ₇
51	(p_x,\uparrow) @A ₇	52	(p_x,\downarrow) @A ₇	53	(p_y,\uparrow) @A ₇	54	(p_y,\downarrow) @A ₇	55	(p_z,\uparrow) @A ₇
56	(p_z,\downarrow) @A ₇	57	(s,\uparrow) @A ₈	58	(s,\downarrow) @A ₈	59	(p_x,\uparrow) @A ₈	60	(p_x,\downarrow) @A ₈
61	(p_y,\uparrow) @A ₈	62	(p_y,\downarrow) @A ₈	63	(p_z,\uparrow) @A ₈	64	(p_z,\downarrow) @A ₈		

• Sites in (primitive) unit cell:

Table 2: Site-clusters.

oing
,,,,,
]
.1]
2]
.0]
7,21]
8,23]
9,24]
0,22]

• Bonds in (primitive) unit cell:

Table 3: Bond-clusters.

	bond	tail	head	n	#	b@c	mapping
B ₁ [12c: m]	b_1	A_6	A_1	1	1	$\begin{pmatrix} 0 & 0 & -2 \end{pmatrix} @ \begin{pmatrix} 1 & 1 & 0 \end{pmatrix}$	[1,-14]
	b_2	A_5	A_2	1	1	$ \left(\begin{array}{cccccccccccccccccccccccccccccccccccc$	[2,-13]
	b_3	A_8	A_3	1	1	$\begin{pmatrix} 0 & 0 & 2 \end{pmatrix} @ \begin{pmatrix} 1 & -1 & 0 \end{pmatrix}$	[3,-16]
	b_4	A_7	A_4	1	1	$\begin{pmatrix} 0 & 0 & 2 \end{pmatrix} @ \begin{pmatrix} -1 & 1 & 0 \end{pmatrix}$	[4,-15]
	b_5	A ₇	A_1	1	1	$\begin{pmatrix} -2 & 0 & 0 \end{pmatrix} $ $ \begin{pmatrix} 0 & 1 & 1 \end{pmatrix} $	[5,-19]
	b_6	A_8	A_2	1	1	$\begin{pmatrix} 2 & 0 & 0 \end{pmatrix} @ \begin{pmatrix} 0 & -1 & 1 \end{pmatrix}$	[6,-20]
	b_7	A_5	A_3	1	1	$\begin{pmatrix} -2 & 0 & 0 \end{pmatrix} @ \begin{pmatrix} 0 & -1 & -1 \end{pmatrix}$	[7,-17]
	b_8	A_6	A_4	1	1	$\begin{pmatrix} 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 $	[8,-18]
	b_9	A ₈	A_1	1	1	$\begin{pmatrix} 0 & -2 & 0 \end{pmatrix} $ $ \begin{pmatrix} 1 & 0 & 1 \end{pmatrix} $	[9,-22]
	b_{10}	A_5	A_4	1	1	$\begin{pmatrix} 0 & -2 & 0 \end{pmatrix} @ \begin{pmatrix} -1 & 0 & -1 \end{pmatrix}$	[10,-21]
	b_{11}	A_7	A_2	1	1	$\begin{pmatrix} 0 & 2 & 0 \end{pmatrix} @ \begin{pmatrix} -1 & 0 & 1 \end{pmatrix}$	[11,-24]

Table 3

bond	tail	head	n	#	b@c	mapping
b ₁₂	A_6	A_3	1	1	$ \begin{pmatrix} 0 & 2 & 0 \end{pmatrix} @ \begin{pmatrix} 1 & 0 & -1 \end{pmatrix} $	[12,-23]

• SAMB:

No. 1
$$\hat{\mathbb{Q}}_0^{(A_g)}$$
 [M₁, S₁]

$$\hat{\mathbb{Z}}_1 = \mathbb{X}_1[\mathbb{Q}_0^{(a,A_g)}] \otimes \mathbb{U}_1[\mathbb{Q}_0^{(s,A_g)}]$$

No. 2
$$\hat{\mathbb{Q}}_0^{(A_g)}$$
 [M₂, S₁]

$$\hat{\mathbb{Z}}_2 = \frac{\sqrt{3}\mathbb{X}_5[\mathbb{Q}_{1,0}^{(a,T_u)}] \otimes \mathbb{U}_2[\mathbb{Q}_{1,0}^{(s,T_u)}]}{3} + \frac{\sqrt{3}\mathbb{X}_6[\mathbb{Q}_{1,1}^{(a,T_u)}] \otimes \mathbb{U}_3[\mathbb{Q}_{1,1}^{(s,T_u)}]}{3} + \frac{\sqrt{3}\mathbb{X}_7[\mathbb{Q}_{1,2}^{(a,T_u)}] \otimes \mathbb{U}_4[\mathbb{Q}_{1,2}^{(s,T_u)}]}{3}$$

No. 3
$$\hat{\mathbb{Q}}_0^{(A_g)}(1,0)$$
 [M₂, S₁]

$$\hat{\mathbb{Z}}_{3} = \frac{\sqrt{3}\mathbb{X}_{10}[\mathbb{Q}_{1,2}^{(a,T_{u})}(1,0)] \otimes \mathbb{U}_{4}[\mathbb{Q}_{1,2}^{(s,T_{u})}]}{3} + \frac{\sqrt{3}\mathbb{X}_{8}[\mathbb{Q}_{1,0}^{(a,T_{u})}(1,0)] \otimes \mathbb{U}_{2}[\mathbb{Q}_{1,0}^{(s,T_{u})}]}{3} + \frac{\sqrt{3}\mathbb{X}_{9}[\mathbb{Q}_{1,1}^{(a,T_{u})}(1,0)] \otimes \mathbb{U}_{3}[\mathbb{Q}_{1,1}^{(s,T_{u})}]}{3} + \frac{\sqrt{3}\mathbb{Q}_{1,1}^{(a,T_{u})}(1,0)}{3} + \frac{\sqrt{3}\mathbb{Q}_{1,$$

No. 4
$$\hat{\mathbb{G}}_{3}^{(A_g)}(1,-1)$$
 [M₂, S₁]

$$\hat{\mathbb{Z}}_{4} = \frac{\sqrt{3}\mathbb{X}_{11}[\mathbb{G}_{2,0}^{(a,T_{u})}(1,-1)] \otimes \mathbb{U}_{2}[\mathbb{Q}_{1,0}^{(s,T_{u})}]}{3} + \frac{\sqrt{3}\mathbb{X}_{12}[\mathbb{G}_{2,1}^{(a,T_{u})}(1,-1)] \otimes \mathbb{U}_{3}[\mathbb{Q}_{1,1}^{(s,T_{u})}]}{3} + \frac{\sqrt{3}\mathbb{X}_{13}[\mathbb{G}_{2,2}^{(a,T_{u})}(1,-1)] \otimes \mathbb{U}_{4}[\mathbb{Q}_{1,2}^{(s,T_{u})}]}{3} + \frac{\sqrt{3}\mathbb{X}_{13}[\mathbb{Q}_{2,2}^{(a,T_{u})}(1,-1)] \otimes \mathbb{U}_{4}[\mathbb{Q}_{1,2}^{(s,T_{u})}]}{3} + \frac{\sqrt{3}\mathbb{X}_{13}[\mathbb{Q}_{2,2}^{(a,T_{u})}(1,-1)] \otimes \mathbb{Q}_{4}[\mathbb{Q}_{1,2}^{(s,T_{u})}]}{3} + \frac{\sqrt{3}\mathbb{X}_{13}[\mathbb{Q}_{2,2}^{(a,T_{u})}(1,-1)] \otimes \mathbb{Q}_{4}[\mathbb{Q}_{2,2}^{(s,T_{u})}]}{3} + \frac{\sqrt{3}\mathbb{X}_{13}[\mathbb{Q}_{2,2}^{(a,T_{u})}(1,-1)] \otimes \mathbb{Q}_{4}[\mathbb{Q}_{2,2}^{(s,T_{u})}]}{3} + \frac{\sqrt{3}\mathbb{X}_{13}[\mathbb{Q}_{2,2}^{(a,T_{u})}(1,-1)] \otimes \mathbb{Q}_{4}[\mathbb{Q}_{2,2}^{(s,T_{u})}]}{3} + \frac{\sqrt{3}\mathbb{X}_{13}[\mathbb{Q}_{2,2}^{(s,T_{u})}(1,-1)] \otimes \mathbb{Q}_{4}[\mathbb{Q}_{2,2}^{(s,T_{u})}(1,-1)]}{3} + \frac{\sqrt{3}\mathbb{X}_{13}[\mathbb{Q}_{2,2}^{(s,T_{u})}(1,-1)]}{3} + \frac{\sqrt{3}\mathbb{X}_{13}[\mathbb{Q}_{2,2}^{(s,T_{$$

No. 5
$$\hat{\mathbb{G}}_{3}^{(A_g)}(1,1)$$
 [M₂, S₁]

$$\hat{\mathbb{Z}}_5 = \mathbb{X}_{14}[\mathbb{G}_0^{(a,A_u)}(1,1)] \otimes \mathbb{U}_8[\mathbb{Q}_3^{(s,A_u)}]$$

No. 6
$$\hat{\mathbb{Q}}_0^{(A_g)}$$
 [M₃, S₁]

$$\hat{\mathbb{Z}}_6 = \mathbb{X}_{15}[\mathbb{Q}_0^{(a,A_g)}] \otimes \mathbb{U}_1[\mathbb{Q}_0^{(s,A_g)}]$$

No. 7
$$\hat{\mathbb{Q}}_0^{(A_g)}(1,1)$$
 [M₃, S₁]

$$\hat{\mathbb{Z}}_7 = \mathbb{X}_{16}[\mathbb{Q}_0^{(a,A_g)}(1,1)] \otimes \mathbb{U}_1[\mathbb{Q}_0^{(s,A_g)}]$$

No. 8
$$\hat{\mathbb{Q}}_0^{(A_g)}$$
 [M₃, S₁]

$$\hat{\mathbb{Z}}_8 = \frac{\sqrt{3}\mathbb{X}_{19}[\mathbb{Q}_{2,0}^{(a,T_g)}] \otimes \mathbb{U}_{5}[\mathbb{Q}_{2,0}^{(s,T_g)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{20}[\mathbb{Q}_{2,1}^{(a,T_g)}] \otimes \mathbb{U}_{6}[\mathbb{Q}_{2,1}^{(s,T_g)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{21}[\mathbb{Q}_{2,2}^{(a,T_g)}] \otimes \mathbb{U}_{7}[\mathbb{Q}_{2,2}^{(s,T_g)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{21}[\mathbb{Q}_{2,2}^{(s,T_g)}] \otimes \mathbb{U}_{7}[\mathbb{Q}_{2,2}^{(s,T_g)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{21}[\mathbb{Q}_{2,2}^{(s$$

No. 9
$$\hat{\mathbb{Q}}_0^{(A_g)}(1,-1)$$
 [M₃, S₁]

$$\hat{\mathbb{Z}}_9 = \frac{\sqrt{3}\mathbb{X}_{24}[\mathbb{Q}_{2,0}^{(a,T_g)}(1,-1)] \otimes \mathbb{U}_5[\mathbb{Q}_{2,0}^{(s,T_g)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{25}[\mathbb{Q}_{2,1}^{(a,T_g)}(1,-1)] \otimes \mathbb{U}_6[\mathbb{Q}_{2,1}^{(s,T_g)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{26}[\mathbb{Q}_{2,2}^{(a,T_g)}(1,-1)] \otimes \mathbb{U}_7[\mathbb{Q}_{2,2}^{(s,T_g)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{26}[\mathbb{Q}_{2,2}^{(a,T_g)}(1,-1)] \otimes \mathbb{U}_7[\mathbb{Q}_{2,2}^{(a,T_g)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{26}[\mathbb{Q}_{2,2}^{(a,T_g)}(1,-1)] \otimes \mathbb{U}_7[\mathbb{Q}_2]}{3} + \frac{\sqrt{3}\mathbb{X}_{26}[\mathbb{Q}_2]}{3} + \frac{\sqrt{3}$$

No. 10
$$\hat{\mathbb{G}}_{3}^{(A_g)}(1,0)$$
 [M₃, S₁]

$$\hat{\mathbb{Z}}_{10} = \frac{\sqrt{3}\mathbb{X}_{27}[\mathbb{G}_{1,0}^{(a,T_g)}(1,0)] \otimes \mathbb{U}_{5}[\mathbb{Q}_{2,0}^{(s,T_g)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{28}[\mathbb{G}_{1,1}^{(a,T_g)}(1,0)] \otimes \mathbb{U}_{6}[\mathbb{Q}_{2,1}^{(s,T_g)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{29}[\mathbb{G}_{1,2}^{(a,T_g)}(1,0)] \otimes \mathbb{U}_{7}[\mathbb{Q}_{2,2}^{(s,T_g)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{29}[\mathbb{Q}_{1,2}^{(a,T_g)}(1,0)] \otimes \mathbb{U}_{7}[\mathbb{Q}_{2,2}^{(s,T_g)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{29}[\mathbb{Q}_{1,2}^{(s,T_g)}(1,0)] \otimes \mathbb{U}_{7}[\mathbb{Q}_{2,2}^{(s,T_g)}(1,0)]}{3} + \frac{\sqrt{3}\mathbb{X}_{29}[\mathbb{Q}_{1,2}^{(s,T_g)}(1,0)] \otimes \mathbb{U}_{7}[\mathbb{Q}_{1,2}^{(s,T_g)}(1,0)]}{3} + \frac{\sqrt{3}\mathbb{X}_{29}[\mathbb{Q}_{1,2}^{(s,T_g)}(1,0)] \otimes \mathbb{U}_{7}[\mathbb{Q}_{1,2}^{(s,T_g)}(1,0)]}{3} + \frac{\sqrt{3}\mathbb{X}_{29}[\mathbb{Q}_{1,2}^{(s,T_g)}(1,0)] \otimes \mathbb{Q}_{7}[\mathbb{Q}_{1,2}^{(s,T_g)}(1,0)]}{3} + \frac{\sqrt{3}\mathbb{X}_{29}[\mathbb{Q}_{1,2}^{(s,T_g)}(1,0)] \otimes \mathbb{Q}_{7}[\mathbb{Q}_{1,2}^{(s,T_g)}(1,0)]}{3} + \frac{\sqrt{3}\mathbb{X}_{29}[\mathbb{Q}_{1,2}^{(s,T_g)}(1,0)] \otimes \mathbb{Q}_{7}[\mathbb{Q}_{1,2}^{(s,T_g)}(1,0)]}{3} + \frac{\sqrt{3}\mathbb{X}_{29}[\mathbb{Q}_{1,2}^{(s,T_g)}(1,0)] \otimes \mathbb{Q}_{7}[\mathbb{Q}_{1,2}^{(s,T_g)}(1,0)]}{3} + \frac{\sqrt{3}\mathbb{X}_{29}[\mathbb{Q}_{1,2}$$

No. 11
$$\hat{\mathbb{Q}}_0^{(A_g)}$$
 [M₁, B₁]

$$\hat{\mathbb{Z}}_{11} = \mathbb{X}_1[\mathbb{Q}_0^{(a,A_g)}] \otimes \mathbb{U}_9[\mathbb{Q}_0^{(u,A_g)}]$$

No. 12
$$\hat{\mathbb{G}}_{3}^{(A_g)}(1,-1)$$
 [M₁, B₁]

$$\hat{\mathbb{Z}}_{12} = \frac{\sqrt{3}\mathbb{X}_2[\mathbb{M}_{1,0}^{(a,T_g)}(1,-1)]\otimes\mathbb{U}_{21}[\mathbb{T}_{2,0}^{(u,T_g)}]}{3} + \frac{\sqrt{3}\mathbb{X}_3[\mathbb{M}_{1,1}^{(a,T_g)}(1,-1)]\otimes\mathbb{U}_{22}[\mathbb{T}_{2,1}^{(u,T_g)}]}{3} + \frac{\sqrt{3}\mathbb{X}_4[\mathbb{M}_{1,2}^{(a,T_g)}(1,-1)]\otimes\mathbb{U}_{23}[\mathbb{T}_{2,2}^{(u,T_g)}]}{3} + \frac{\sqrt{3}\mathbb{X}_4[\mathbb{M}_{1,2}^{(a,T_g)}(1,-1)]\otimes\mathbb{U}_{23}[\mathbb{T}_{2,2}^{(u,T_g)}]}{3} + \frac{\sqrt{3}\mathbb{X}_4[\mathbb{M}_{1,2}^{(a,T_g)}(1,-1)]\otimes\mathbb{U}_{23}[\mathbb{T}_{2,2}^{(u,T_g)}]}{3} + \frac{\sqrt{3}\mathbb{X}_4[\mathbb{M}_{1,2}^{(a,T_g)}(1,-1)]\otimes\mathbb{U}_{23}[\mathbb{T}_{2,2}^{(u,T_g)}]}{3} + \frac{\sqrt{3}\mathbb{X}_4[\mathbb{M}_{1,2}^{(u,T_g)}(1,-1)]\otimes\mathbb{U}_{23}[\mathbb{T}_{2,2}^{(u,T_g)}]}{3} + \frac{\sqrt{3}\mathbb{X}_4[\mathbb{M}_{1,2}^{(u,T_g)}(1,-1)]\otimes\mathbb{U}_{23}[\mathbb{M}_{1,2}^{(u,T_g)}]}{3} + \frac{\sqrt{3}\mathbb{X}_4[\mathbb{M}_{1,2}^{(u,T_g)}(1,-1)]\otimes\mathbb{U}_{23}[\mathbb{M$$

No. 13
$$\hat{\mathbb{Q}}_{4}^{(A_g)}(1,-1)$$
 [M₁, B₁]

$$\hat{\mathbb{Z}}_{13} = -\frac{\sqrt{3}\mathbb{X}_{2}[\mathbb{M}_{1,0}^{(a,T_{g})}(1,-1)] \otimes \mathbb{U}_{24}[\mathbb{T}_{4,0}^{(u,T_{g},1)}]}{3} - \frac{\sqrt{3}\mathbb{X}_{3}[\mathbb{M}_{1,1}^{(a,T_{g})}(1,-1)] \otimes \mathbb{U}_{25}[\mathbb{T}_{4,1}^{(u,T_{g},1)}]}{3} - \frac{\sqrt{3}\mathbb{X}_{4}[\mathbb{M}_{1,2}^{(a,T_{g})}(1,-1)] \otimes \mathbb{U}_{26}[\mathbb{T}_{4,2}^{(u,T_{g},1)}]}{3} - \frac{\sqrt{3}\mathbb{X}_{4}[\mathbb{M}_{1,2}^{(a,T_{g})}(1,-1)] \otimes \mathbb{U}_{26}[\mathbb{T}_{4,2}^{(u,T_{g},1)}]}{3} - \frac{\sqrt{3}\mathbb{X}_{4}[\mathbb{M}_{1,2}^{(a,T_{g})}(1,-1)] \otimes \mathbb{U}_{26}[\mathbb{T}_{4,2}^{(u,T_{g},1)}]}{3} - \frac{\sqrt{3}\mathbb{X}_{4}[\mathbb{M}_{1,2}^{(u,T_{g},1)}(1,-1)] \otimes \mathbb{U}_{26}[\mathbb{T}_{4,2}^{(u,T_{g},1)}]}{3} - \frac{\mathbb{X}_{4}[\mathbb{M}_{1,2}^{(u,T_{g},1)}(1,-1)] \otimes \mathbb{U}_{26}[\mathbb{T}_{4,2}^{(u,T_{g},1)}]}{3} - \frac{\mathbb{X}_{4}[\mathbb{M}_{1,2}^{(u,T_{g},1)}(1,-1)] \otimes \mathbb{U}_{26}[\mathbb{T}_{4,2}^{(u,T_{g},1)}]}{3} - \frac{\mathbb{X}_{4}[\mathbb{M}_{1,2}^{(u,T_{g},1)}(1,-1)] \otimes \mathbb{U}_{26}[\mathbb{T}_{4,2}^{(u,T_{g},1)}]}{3} - \frac{\mathbb{X}_{4}[\mathbb{M}_{1,2}^{(u,T_{g},1)}(1,-1)] \otimes \mathbb{U}_{26}[\mathbb{M}_{1,2}^{(u,T_{g},1)}(1,-1)]}{3} - \frac{\mathbb{X}_{4}[\mathbb{M}_{1,2}^{(u,T_{g},1)}(1,-1)] \otimes \mathbb{U}_{26}[\mathbb{M}_{1,2}^{(u,T_{g},1)}(1,-1)]}{3} - \frac{\mathbb{X}_{4}[\mathbb{M}_{1,2}^{(u,T_{g},1)}(1,-1)] \otimes \mathbb{U}_{26}[\mathbb{M}_{1,2}^{(u,T_{g},1)}(1,-1)]}{3} - \frac{\mathbb{X}_{4}[\mathbb{M}_{1,2}^{(u,T_{g},1)}(1,-1)] \otimes \mathbb{X}_{4}[\mathbb{M}_{1,2}^{(u,T_{g},1)}(1,-1)]}{3} - \frac{\mathbb{X}_{4}[\mathbb{M}_{1,2}^{(u,T_{g},1)}(1,-1)] \otimes \mathbb{X}_{4}[\mathbb{M}_{1,2}^{(u,T_{g},1)}(1,-1)]}{3} - \frac{\mathbb{X}_{4}[\mathbb{M}_{1,2}^{(u,T_{g},1)}(1,-1)] \otimes \mathbb{X}_{4}[\mathbb{M}_{1,2}^{(u,T_{g},1)}(1,-1)]}{3} - \frac{\mathbb{X}_{4}[\mathbb{M}_{1,2}^{(u,T_{g},1)}(1,-$$

No. 14
$$\hat{\mathbb{Q}}_0^{(A_g)}$$
 [M₂, B₁]

$$\hat{\mathbb{Z}}_{14} = \frac{\sqrt{3}\mathbb{X}_{5}[\mathbb{Q}_{1,0}^{(a,T_{u})}] \otimes \mathbb{U}_{10}[\mathbb{Q}_{1,0}^{(u,T_{u})}]}{3} + \frac{\sqrt{3}\mathbb{X}_{6}[\mathbb{Q}_{1,1}^{(a,T_{u})}] \otimes \mathbb{U}_{11}[\mathbb{Q}_{1,1}^{(u,T_{u})}]}{3} + \frac{\sqrt{3}\mathbb{X}_{7}[\mathbb{Q}_{1,2}^{(a,T_{u})}] \otimes \mathbb{U}_{12}[\mathbb{Q}_{1,2}^{(u,T_{u})}]}{3} + \frac{\sqrt{3}\mathbb{Q}_{12}[\mathbb{Q}_{1,2}^{(u,T_{u})}] \otimes \mathbb{Q}_{12}[\mathbb{Q}_{1,2}^{(u,T_{u})}]}{3} + \frac{\mathbb{Q}_{12}[\mathbb{Q}_{1,2}^{(u,T_{u})}] \otimes \mathbb{Q}_{12}[\mathbb{Q}_{1,2}^{(u,T_{u})}]}{3} + \frac{\mathbb{Q}_{12}[\mathbb{Q}_{1,2}^{(u,T_{u})}] \otimes \mathbb{Q}_{12}[\mathbb{Q}_{1,2}^{(u,T_{u}$$

No. 15
$$\hat{\mathbb{Q}}_4^{(A_g)}$$
 [M₂, B₁]

$$\hat{\mathbb{Z}}_{15} = \frac{\sqrt{3}\mathbb{X}_{5}[\mathbb{Q}_{1,0}^{(a,T_{u})}] \otimes \mathbb{U}_{18}[\mathbb{Q}_{3,0}^{(u,T_{u},1)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{6}[\mathbb{Q}_{1,1}^{(a,T_{u})}] \otimes \mathbb{U}_{19}[\mathbb{Q}_{3,1}^{(u,T_{u},1)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{7}[\mathbb{Q}_{1,2}^{(a,T_{u})}] \otimes \mathbb{U}_{20}[\mathbb{Q}_{3,2}^{(u,T_{u},1)}]}{3}$$

No. 16
$$\hat{\mathbb{Q}}_0^{(A_g)}(1,0)$$
 [M₂, B₁]

$$\hat{\mathbb{Z}}_{16} = \frac{\sqrt{3}\mathbb{X}_{10}[\mathbb{Q}_{1,2}^{(a,T_u)}(1,0)] \otimes \mathbb{U}_{12}[\mathbb{Q}_{1,2}^{(u,T_u)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{8}[\mathbb{Q}_{1,0}^{(a,T_u)}(1,0)] \otimes \mathbb{U}_{10}[\mathbb{Q}_{1,0}^{(u,T_u)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{9}[\mathbb{Q}_{1,1}^{(a,T_u)}(1,0)] \otimes \mathbb{U}_{11}[\mathbb{Q}_{1,1}^{(u,T_u)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{9}[\mathbb{Q}_{1,1}^{(a,T_u)}(1,0)] \otimes \mathbb{U}_{11}[\mathbb{Q}_{1,1}^{(u,T_u)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{9}[\mathbb{Q}_{1,1}^{(a,T_u)}(1,0)] \otimes \mathbb{U}_{11}[\mathbb{Q}_{1,1}^{(u,T_u)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{9}[\mathbb{Q}_{1,1}^{(u,T_u)}(1,0)] \otimes \mathbb{Q}_{11}[\mathbb{Q}_{1,1}^{(u,T_u)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{9}[\mathbb{Q}_{1,1}^{(u,T_u)}(1,0)] \otimes \mathbb{Q}_{11}[\mathbb{Q}_{1,1}^{(u,T_u)}(1,0)]}{3} + \frac{\sqrt{3}\mathbb{Q}_{1,1}^{(u,T_u)}(1,0)}{3} + \frac{\sqrt{3}\mathbb{Q}_{1,1}^$$

No. 17
$$\hat{\mathbb{Q}}_{4}^{(A_g)}(1,0)$$
 [M₂, B₁]

$$\hat{\mathbb{Z}}_{17} = \frac{\sqrt{3}\mathbb{X}_{10}[\mathbb{Q}_{1,2}^{(a,T_u)}(1,0)] \otimes \mathbb{U}_{20}[\mathbb{Q}_{3,2}^{(u,T_u,1)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{8}[\mathbb{Q}_{1,0}^{(a,T_u)}(1,0)] \otimes \mathbb{U}_{18}[\mathbb{Q}_{3,0}^{(u,T_u,1)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{9}[\mathbb{Q}_{1,1}^{(a,T_u)}(1,0)] \otimes \mathbb{U}_{19}[\mathbb{Q}_{3,1}^{(u,T_u,1)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{9}[\mathbb{Q}_{1,1}^{(a,T_u)}(1,0)] \otimes \mathbb{U}_{19}[\mathbb{Q}_{3,1}^{(u,T_u,1)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{9}[\mathbb{Q}_{1,1}^{(u,T_u,1)}(1,0)] \otimes \mathbb{U}_{19}[\mathbb{Q}_{1,1}^{(u,T_u,1)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{9}[\mathbb{Q}_{1,1}^{(u,T_u,1)}(1,0)] \otimes \mathbb{U}_{19}[\mathbb{Q}_{1,1}^{(u,T_u,1)}(1,0)]}{3} + \frac{\sqrt{3}\mathbb{X}_{9}[\mathbb{Q}_{1,1}^{(u,T_u,1)}(1,0)] \otimes \mathbb{U}_{9$$

No. 18
$$\hat{\mathbb{G}}_3^{(A_g)}(1,-1)$$
 [M₂, B₁]

$$\hat{\mathbb{Z}}_{18} = \frac{\sqrt{3}\mathbb{X}_{11}[\mathbb{G}_{2,0}^{(a,T_u)}(1,-1)] \otimes \mathbb{U}_{10}[\mathbb{Q}_{1,0}^{(u,T_u)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{12}[\mathbb{G}_{2,1}^{(a,T_u)}(1,-1)] \otimes \mathbb{U}_{11}[\mathbb{Q}_{1,1}^{(u,T_u)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{13}[\mathbb{G}_{2,2}^{(a,T_u)}(1,-1)] \otimes \mathbb{U}_{12}[\mathbb{Q}_{1,2}^{(u,T_u)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{13}[\mathbb{Q}_{2,2}^{(a,T_u)}(1,-1)] \otimes \mathbb{U}_{12}[\mathbb{Q}_{1,2}^{(u,T_u)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{13}[\mathbb{Q}_{2,2}^{(a,T_u)}(1,-1)] \otimes \mathbb{U}_{12}[\mathbb{Q}_{1,2}^{(u,T_u)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{13}[\mathbb{Q}_{2,2}^{(u,T_u)}(1,-1)] \otimes \mathbb{U}_{12}[\mathbb{Q}_{2,2}^{(u,T_u)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{13}[\mathbb{Q}_{2,2}^{(u,T_u)}(1,-1)] \otimes \mathbb{Q}_{2,2}}{3} + \frac{\sqrt{3}\mathbb{Z}_{2,2}[\mathbb{Q}_{2,2}^{(u,T_u)}(1,-1)]}{3} + \frac{\sqrt{3}\mathbb{Z}_{2,2}[\mathbb{Q}_{2,2}^{(u,T_u)}(1,-1)]}{3} + \frac{\sqrt{3}\mathbb{Z}_{2,2}$$

No. 19
$$\hat{\mathbb{G}}_3^{(A_g)}(1,-1)$$
 [M₂, B₁]

$$\hat{\mathbb{Z}}_{19} = -\frac{\sqrt{3}\mathbb{X}_{11}[\mathbb{G}_{2,0}^{(a,T_u)}(1,-1)] \otimes \mathbb{U}_{18}[\mathbb{Q}_{3,0}^{(u,T_u,1)}]}{3} - \frac{\sqrt{3}\mathbb{X}_{12}[\mathbb{G}_{2,1}^{(a,T_u)}(1,-1)] \otimes \mathbb{U}_{19}[\mathbb{Q}_{3,1}^{(u,T_u,1)}]}{3} - \frac{\sqrt{3}\mathbb{X}_{13}[\mathbb{G}_{2,2}^{(a,T_u)}(1,-1)] \otimes \mathbb{U}_{20}[\mathbb{Q}_{3,2}^{(u,T_u,1)}]}{3} - \frac{\sqrt{3}\mathbb{X}_{13}[\mathbb{Q}_{2,2}^{(a,T_u)}(1,-1)] \otimes \mathbb{U}_{20}[\mathbb{Q}_{3,2}^{(u,T_u,1)}]}{3} - \frac{\sqrt{3}\mathbb{X}_{13}[\mathbb{Q}_{2,2}^{(u,T_u,1)}(1,-1)] \otimes \mathbb{Q}_{20}[\mathbb{Q}_{3,2}^{(u,T_u,1)}]}{3} - \frac{\mathbb{Q}_{20}[\mathbb{Q}_{3,2}^{(u,T_u,1)}(1,-1)] \otimes \mathbb{Q}_{20}[\mathbb{Q}_{3,2}^{(u,T_u,1)}(1,-1)]}{3} - \frac{\mathbb{Q}_{20}[\mathbb{Q}$$

No. 20
$$\hat{\mathbb{Q}}_0^{(A_g)}$$
 [M₄, B₁]

$$\hat{\mathbb{Z}}_{20} = \frac{\sqrt{3}\mathbb{X}_{48}[\mathbb{Q}_{1,0}^{(a,T_u)}] \otimes \mathbb{U}_{10}[\mathbb{Q}_{1,0}^{(u,T_u)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{49}[\mathbb{Q}_{1,1}^{(a,T_u)}] \otimes \mathbb{U}_{11}[\mathbb{Q}_{1,1}^{(u,T_u)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{50}[\mathbb{Q}_{1,2}^{(a,T_u)}] \otimes \mathbb{U}_{12}[\mathbb{Q}_{1,2}^{(u,T_u)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{50}[\mathbb{Q}_{1,2}^{(a,T_u)}] \otimes \mathbb{U}_{12}[\mathbb{Q}_{1,2}^{(u,T_u)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{50}[\mathbb{Q}_{1,2}^{(a,T_u)}] \otimes \mathbb{U}_{12}[\mathbb{Q}_{1,2}^{(u,T_u)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{50}[\mathbb{Q}_{1,2}^{(u,T_u)}] \otimes \mathbb{U}_{12}[\mathbb{Q}_{1,2}^{(u,T_u)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{50}[\mathbb{Q}_{1,2}^{(u,T_u)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{50}[\mathbb{Q}_{1,2}^{(u,T_$$

No. 21
$$\hat{\mathbb{Q}}_{4}^{(A_g)}$$
 [M₄, B₁]

$$\hat{\mathbb{Z}}_{21} = \frac{\sqrt{3}\mathbb{X}_{48}[\mathbb{Q}_{1,0}^{(a,T_u)}] \otimes \mathbb{U}_{18}[\mathbb{Q}_{3,0}^{(u,T_u,1)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{49}[\mathbb{Q}_{1,1}^{(a,T_u)}] \otimes \mathbb{U}_{19}[\mathbb{Q}_{3,1}^{(u,T_u,1)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{50}[\mathbb{Q}_{1,2}^{(a,T_u)}] \otimes \mathbb{U}_{20}[\mathbb{Q}_{3,2}^{(u,T_u,1)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{50}[\mathbb{Q}_{1,2}^{(a,T_u)}] \otimes \mathbb{U}_{20}[\mathbb{Q}_{3,2}^{(u,T_u,1)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{50}[\mathbb{Q}_{1,2}^{(a,T_u)}] \otimes \mathbb{U}_{20}[\mathbb{Q}_{3,2}^{(u,T_u,1)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{50}[\mathbb{Q}_{1,2}^{(u,T_u,1)}] \otimes \mathbb{U}_{20}[\mathbb{Q}_{3,2}^{(u,T_u,1)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{50}[\mathbb{Q}_{1,2}^{(u,T_u,1)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{50}[\mathbb{Q}_{1$$

No. 22
$$\hat{\mathbb{Q}}_0^{(A_g)}(1,0)$$
 [M₄, B₁]

$$\hat{\mathbb{Z}}_{22} = \frac{\sqrt{3}\mathbb{X}_{51}[\mathbb{Q}_{1,0}^{(a,T_u)}(1,0)] \otimes \mathbb{U}_{10}[\mathbb{Q}_{1,0}^{(u,T_u)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{52}[\mathbb{Q}_{1,1}^{(a,T_u)}(1,0)] \otimes \mathbb{U}_{11}[\mathbb{Q}_{1,1}^{(u,T_u)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{53}[\mathbb{Q}_{1,2}^{(a,T_u)}(1,0)] \otimes \mathbb{U}_{12}[\mathbb{Q}_{1,2}^{(u,T_u)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{53}[\mathbb{Q}_{1,2}^{(a,T_u)}(1,0)] \otimes \mathbb{U}_{12}[\mathbb{Q}_{1,2}^{(u,T_u)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{53}[\mathbb{Q}_{1,2}^{(a,T_u)}(1,0)] \otimes \mathbb{U}_{12}[\mathbb{Q}_{1,2}^{(u,T_u)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{53}[\mathbb{Q}_{1,2}^{(u,T_u)}(1,0)] \otimes \mathbb{Q}_{12}[\mathbb{Q}_{1,2}^{(u,T_u)}(1,0)]}{3} + \frac{\sqrt{3}\mathbb{X}_{53}[\mathbb{Q}_{1,2}^{(u,T$$

No. 23
$$\hat{\mathbb{Q}}_4^{(A_g)}(1,0)$$
 [M₄, B₁]

$$\hat{\mathbb{Z}}_{23} = \frac{\sqrt{3}\mathbb{X}_{51}[\mathbb{Q}_{1,0}^{(a,T_u)}(1,0)] \otimes \mathbb{U}_{18}[\mathbb{Q}_{3,0}^{(a,T_u,1)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{52}[\mathbb{Q}_{1,1}^{(a,T_u)}(1,0)] \otimes \mathbb{U}_{19}[\mathbb{Q}_{3,1}^{(u,T_u,1)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{53}[\mathbb{Q}_{1,2}^{(a,T_u)}(1,0)] \otimes \mathbb{U}_{20}[\mathbb{Q}_{3,2}^{(u,T_u,1)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{53}[\mathbb{Q}_{1,2}^{(a,T_u)}(1,0)] \otimes \mathbb{U}_{20}[\mathbb{Q}_{3,2}^{(u,T_u,1)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{53}[\mathbb{Q}_{1,2}^{(a,T_u)}(1,0)] \otimes \mathbb{U}_{20}[\mathbb{Q}_{3,2}^{(u,T_u,1)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{53}[\mathbb{Q}_{1,2}^{(a,T_u)}(1,0)] \otimes \mathbb{U}_{20}[\mathbb{Q}_{3,2}^{(u,T_u,1)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{53}[\mathbb{Q}_{1,2}^{(u,T_u)}(1,0)] \otimes \mathbb{U}_{20}[\mathbb{Q}_{3,2}^{(u,T_u,1)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{53}[\mathbb{Q}_{1,2}^{(u,T_u,1)}(1,0)] \otimes \mathbb{Q}_{20}[\mathbb{Q}_{3,2}^{(u,T_u,1)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{53}[\mathbb{Q}_{1,2}^{(u,T_u,1)}(1,0)] \otimes \mathbb{Q}_{20}[\mathbb{Q}_{3,2}^{(u,T_u,1)}(1,0)]}{3} + \frac{\sqrt{3}\mathbb{X}_{53}[\mathbb{Q}_{3,2}^{(u,T_u,1)}(1,0)] \otimes \mathbb{Q}_{20}[\mathbb{Q}_{3,2}^{(u,T_u,1)}(1,0)]}{3} + \frac{\sqrt{3}\mathbb{Z}_{20}[\mathbb{Q}_{3,2}^{(u,T_u,1)}(1,0$$

No. 24
$$\hat{\mathbb{G}}_3^{(A_g)}(1,-1)$$
 [M₄, B₁]

$$\hat{\mathbb{Z}}_{24} = \frac{\sqrt{3}\mathbb{X}_{54}[\mathbb{G}_{2,0}^{(a,T_u)}(1,-1)] \otimes \mathbb{U}_{10}[\mathbb{Q}_{1,0}^{(u,T_u)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{55}[\mathbb{G}_{2,1}^{(a,T_u)}(1,-1)] \otimes \mathbb{U}_{11}[\mathbb{Q}_{1,1}^{(u,T_u)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{56}[\mathbb{G}_{2,2}^{(a,T_u)}(1,-1)] \otimes \mathbb{U}_{12}[\mathbb{Q}_{1,2}^{(u,T_u)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{56}[\mathbb{Q}_{2,2}^{(a,T_u)}(1,-1)] \otimes \mathbb{U}_{12}[\mathbb{Q}_{1,2}^{(u,T_u)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{56}[\mathbb{Q}_{2,2}^{(a,T_u)}(1,-1)] \otimes \mathbb{U}_{12}[\mathbb{Q}_{1,2}^{(u,T_u)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{56}[\mathbb{Q}_{2,2}^{(a,T_u)}(1,-1)] \otimes \mathbb{U}_{12}[\mathbb{Q}_{1,2}^{(u,T_u)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{56}[\mathbb{Q}_{2,2}^{(u,T_u)}(1,-1)] \otimes \mathbb{U}_{12}[\mathbb{Q}_{1,2}^{(u,T_u)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{5$$

No. 25
$$\hat{\mathbb{G}}_3^{(A_g)}(1,-1)$$
 [M₄, B₁]

$$\hat{\mathbb{Z}}_{25} = -\frac{\sqrt{3}\mathbb{X}_{54}[\mathbb{G}_{2,0}^{(a,T_u)}(1,-1)]\otimes\mathbb{U}_{18}[\mathbb{Q}_{3,0}^{(u,T_u,1)}]}{3} - \frac{\sqrt{3}\mathbb{X}_{55}[\mathbb{G}_{2,1}^{(a,T_u)}(1,-1)]\otimes\mathbb{U}_{19}[\mathbb{Q}_{3,1}^{(u,T_u,1)}]}{3} - \frac{\sqrt{3}\mathbb{X}_{56}[\mathbb{G}_{2,2}^{(a,T_u)}(1,-1)]\otimes\mathbb{U}_{20}[\mathbb{Q}_{3,2}^{(u,T_u,1)}]}{3} - \frac{\sqrt{3}\mathbb{X}_{56}[\mathbb{Q}_{2,2}^{(a,T_u)}(1,-1)]\otimes\mathbb{U}_{20}[\mathbb{Q}_{3,2}^{(u,T_u,1)}]}{3} - \frac{\sqrt{3}\mathbb{X}_{56}[\mathbb{Q}_{2,2}^{(u,T_u,1)}(1,-1)]\otimes\mathbb{U}_{20}[\mathbb{Q}_{3,2}^{(u,T_u,1)}]}{3} - \frac{\mathbb{Q}_{20}[\mathbb{Q}_{3,2}^{(u,T_u,1)}(1,-1)]\otimes\mathbb{Q}_{20}[\mathbb{Q}_{3,2}^{(u,T_u,1)}]}{3} - \frac{\mathbb{Q}_{20}[\mathbb{Q}_{3,$$

No. 26
$$\hat{\mathbb{Q}}_0^{(A_g)}$$
 [M₃, B₁]

$$\hat{\mathbb{Z}}_{26} = \mathbb{X}_{15}[\mathbb{Q}_0^{(a,A_g)}] \otimes \mathbb{U}_9[\mathbb{Q}_0^{(u,A_g)}]$$

No. 27
$$\hat{\mathbb{Q}}_0^{(A_g)}(1,1)$$
 [M₃, B₁]

$$\hat{\mathbb{Z}}_{27} = \mathbb{X}_{16}[\mathbb{Q}_0^{(a,A_g)}(1,1)] \otimes \mathbb{U}_9[\mathbb{Q}_0^{(u,A_g)}]$$

No. 28
$$\hat{\mathbb{Q}}_0^{(A_g)}$$
 [M₃, B₁]

$$\begin{split} \hat{\mathbb{Z}}_{28} &= \frac{\sqrt{5}\mathbb{X}_{17}[\mathbb{Q}_{2,0}^{(a,E_g)}] \otimes \mathbb{U}_{13}[\mathbb{Q}_{2,0}^{(u,E_g)}]}{5} + \frac{\sqrt{5}\mathbb{X}_{18}[\mathbb{Q}_{2,1}^{(a,E_g)}] \otimes \mathbb{U}_{14}[\mathbb{Q}_{2,1}^{(u,E_g)}]}{5} + \frac{\sqrt{5}\mathbb{X}_{19}[\mathbb{Q}_{2,0}^{(a,T_g)}] \otimes \mathbb{U}_{15}[\mathbb{Q}_{2,0}^{(u,T_g)}]}{5} \\ &+ \frac{\sqrt{5}\mathbb{X}_{20}[\mathbb{Q}_{2,1}^{(a,T_g)}] \otimes \mathbb{U}_{16}[\mathbb{Q}_{2,1}^{(u,T_g)}]}{5} + \frac{\sqrt{5}\mathbb{X}_{21}[\mathbb{Q}_{2,2}^{(a,T_g)}] \otimes \mathbb{U}_{17}[\mathbb{Q}_{2,2}^{(u,T_g)}]}{5} \end{split}$$

No. 29
$$\hat{\mathbb{G}}_{3}^{(A_g)}$$
 [M₃, B₁]

$$\hat{\mathbb{Z}}_{29} = \frac{\sqrt{2}\mathbb{X}_{17}[\mathbb{Q}_{2,0}^{(a,E_g)}] \otimes \mathbb{U}_{14}[\mathbb{Q}_{2,1}^{(u,E_g)}]}{2} - \frac{\sqrt{2}\mathbb{X}_{18}[\mathbb{Q}_{2,1}^{(a,E_g)}] \otimes \mathbb{U}_{13}[\mathbb{Q}_{2,0}^{(u,E_g)}]}{2}$$

No. 30
$$\hat{\mathbb{Q}}_{4}^{(A_g)}$$
 [M₃, B₁]

$$\hat{\mathbb{Z}}_{30} = \frac{\sqrt{30}\mathbb{X}_{17}[\mathbb{Q}_{2,0}^{(a,E_g)}] \otimes \mathbb{U}_{13}[\mathbb{Q}_{2,0}^{(u,E_g)}]}{10} + \frac{\sqrt{30}\mathbb{X}_{18}[\mathbb{Q}_{2,1}^{(a,E_g)}] \otimes \mathbb{U}_{14}[\mathbb{Q}_{2,1}^{(u,E_g)}]}{10} - \frac{\sqrt{30}\mathbb{X}_{19}[\mathbb{Q}_{2,0}^{(a,T_g)}] \otimes \mathbb{U}_{15}[\mathbb{Q}_{2,0}^{(u,T_g)}]}{15} - \frac{\sqrt{30}\mathbb{X}_{21}[\mathbb{Q}_{2,2}^{(a,T_g)}] \otimes \mathbb{U}_{17}[\mathbb{Q}_{2,2}^{(u,T_g)}]}{15}$$

No. 31
$$\hat{\mathbb{Q}}_0^{(A_g)}(1,-1)$$
 [M₃, B₁]

$$\begin{split} \hat{\mathbb{Z}}_{31} &= \frac{\sqrt{5}\mathbb{X}_{22}[\mathbb{Q}_{2,0}^{(a,E_g)}(1,-1)] \otimes \mathbb{U}_{13}[\mathbb{Q}_{2,0}^{(u,E_g)}]}{5} + \frac{\sqrt{5}\mathbb{X}_{23}[\mathbb{Q}_{2,1}^{(a,E_g)}(1,-1)] \otimes \mathbb{U}_{14}[\mathbb{Q}_{2,1}^{(u,E_g)}]}{5} + \frac{\sqrt{5}\mathbb{X}_{24}[\mathbb{Q}_{2,0}^{(a,T_g)}(1,-1)] \otimes \mathbb{U}_{15}[\mathbb{Q}_{2,0}^{(u,T_g)}]}{5} \\ &+ \frac{\sqrt{5}\mathbb{X}_{25}[\mathbb{Q}_{2,1}^{(a,T_g)}(1,-1)] \otimes \mathbb{U}_{16}[\mathbb{Q}_{2,1}^{(u,T_g)}]}{5} + \frac{\sqrt{5}\mathbb{X}_{26}[\mathbb{Q}_{2,2}^{(a,T_g)}(1,-1)] \otimes \mathbb{U}_{17}[\mathbb{Q}_{2,2}^{(u,T_g)}]}{5} \end{split}$$

No. 32
$$\hat{\mathbb{G}}_3^{(A_g)}(1,-1)$$
 [M₃, B₁]

$$\hat{\mathbb{Z}}_{32} = \frac{\sqrt{2}\mathbb{X}_{22}[\mathbb{Q}_{2,0}^{(a,E_g)}(1,-1)] \otimes \mathbb{U}_{14}[\mathbb{Q}_{2,1}^{(u,E_g)}]}{2} - \frac{\sqrt{2}\mathbb{X}_{23}[\mathbb{Q}_{2,1}^{(a,E_g)}(1,-1)] \otimes \mathbb{U}_{13}[\mathbb{Q}_{2,0}^{(u,E_g)}]}{2}$$

No. 33
$$\hat{\mathbb{Q}}_4^{(A_g)}(1,-1)$$
 [M₃, B₁]

$$\hat{\mathbb{Z}}_{33} = \frac{\sqrt{30}\mathbb{X}_{22}[\mathbb{Q}_{2,0}^{(a,E_g)}(1,-1)] \otimes \mathbb{U}_{13}[\mathbb{Q}_{2,0}^{(u,E_g)}]}{10} + \frac{\sqrt{30}\mathbb{X}_{23}[\mathbb{Q}_{2,1}^{(a,E_g)}(1,-1)] \otimes \mathbb{U}_{14}[\mathbb{Q}_{2,1}^{(u,E_g)}]}{10} - \frac{\sqrt{30}\mathbb{X}_{24}[\mathbb{Q}_{2,0}^{(a,T_g)}(1,-1)] \otimes \mathbb{U}_{15}[\mathbb{Q}_{2,0}^{(u,T_g)}]}{15} - \frac{\sqrt{30}\mathbb{X}_{26}[\mathbb{Q}_{2,2}^{(a,T_g)}(1,-1)] \otimes \mathbb{U}_{17}[\mathbb{Q}_{2,2}^{(u,T_g)}]}{15} - \frac{\sqrt{30}\mathbb{X}_{24}[\mathbb{Q}_{2,0}^{(a,T_g)}(1,-1)] \otimes \mathbb{U}_{15}[\mathbb{Q}_{2,0}^{(u,T_g)}]}{15} - \frac{\sqrt{30}\mathbb{X}_{26}[\mathbb{Q}_{2,2}^{(a,T_g)}(1,-1)] \otimes \mathbb{U}_{17}[\mathbb{Q}_{2,2}^{(u,T_g)}]}{15} - \frac{\sqrt{30}\mathbb{X}_{24}[\mathbb{Q}_{2,0}^{(a,T_g)}(1,-1)] \otimes \mathbb{U}_{15}[\mathbb{Q}_{2,0}^{(u,T_g)}]}{15} - \frac{\sqrt{30}\mathbb{X}_{26}[\mathbb{Q}_{2,2}^{(u,T_g)}(1,-1)] \otimes \mathbb{U}_{17}[\mathbb{Q}_{2,2}^{(u,T_g)}]}{15} - \frac{\sqrt{30}\mathbb{X}_{24}[\mathbb{Q}_{2,0}^{(a,T_g)}(1,-1)] \otimes \mathbb{U}_{15}[\mathbb{Q}_{2,0}^{(u,T_g)}]}{15} - \frac{\sqrt{30}\mathbb{X}_{26}[\mathbb{Q}_{2,0}^{(u,T_g)}(1,-1)] \otimes \mathbb{U}_{17}[\mathbb{Q}_{2,0}^{(u,T_g)}]}{15} - \frac{\sqrt{30}\mathbb{X}_{26}[\mathbb{Q}_{2,0}^{(u,T_g)}]}{15} - \frac{\sqrt{30}\mathbb{X}_{26}[\mathbb{Q}_{2,0}^{(u,T_g)}(1,-1)] \otimes \mathbb{Q}_{26}[\mathbb{Q}_{2,0}^{(u,T_g)}]}{15} - \frac{\sqrt{30}\mathbb{X}_{26}[\mathbb{Q}_{2,0}^{(u,T_g)}(1,-1)]}{15} - \frac{\sqrt{30}\mathbb{X}_{26}[\mathbb{Q}_{2,0}^{(u,T_g)}]$$

No. 34
$$\hat{\mathbb{G}}_3^{(A_g)}(1,0)$$
 [M₃, B₁]

$$\hat{\mathbb{Z}}_{34} = \frac{\sqrt{3}\mathbb{X}_{27}[\mathbb{G}_{1,0}^{(a,T_g)}(1,0)] \otimes \mathbb{U}_{15}[\mathbb{Q}_{2,0}^{(u,T_g)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{28}[\mathbb{G}_{1,1}^{(a,T_g)}(1,0)] \otimes \mathbb{U}_{16}[\mathbb{Q}_{2,1}^{(u,T_g)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{29}[\mathbb{G}_{1,2}^{(a,T_g)}(1,0)] \otimes \mathbb{U}_{17}[\mathbb{Q}_{2,2}^{(u,T_g)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{29}[\mathbb{Q}_{1,2}^{(a,T_g)}(1,0)] \otimes \mathbb{U}_{17}[\mathbb{Q}_{2,2}^{(u,T_g)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{29}[\mathbb{Q}_{1,2}^{(u,T_g)}(1,0)] \otimes \mathbb{U}_{17}[\mathbb{Q}_{2,2}^{(u,T_g)}(1,0)]}{3} + \frac{\sqrt{3}\mathbb{X}_{29}[\mathbb{Q}_{1,2}^{(u,T_g)}(1,0)] \otimes \mathbb{U}_{17}[\mathbb{Q}_{1,2}^{(u,T_g)}(1,0)]}{3} + \frac{\sqrt{3}\mathbb{X}_{29}[\mathbb{Q}_{1,2}^{(u,T_g)}(1,0)] \otimes \mathbb{Q}_{17}[\mathbb{Q}_{1,2}^{(u,T_g)}(1,0)]}{3} + \frac{\sqrt{3}\mathbb{X}_{29}[\mathbb{Q}_{1,2}^{(u,T_g)}(1,0)] \otimes \mathbb{Q}_{17}[\mathbb{Q}_{1,2}^{(u,T_g)}(1,0)]}{3} + \frac{\sqrt{3}\mathbb{X}_{29}[\mathbb{Q}_{1,2$$

No. 35
$$\hat{\mathbb{G}}_{3}^{(A_g)}$$
 [M₃, B₁]

$$\hat{\mathbb{Z}}_{35} = \frac{\sqrt{3}\mathbb{X}_{30}[\mathbb{M}_{1,0}^{(a,T_g)}] \otimes \mathbb{U}_{21}[\mathbb{T}_{2,0}^{(u,T_g)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{31}[\mathbb{M}_{1,1}^{(a,T_g)}] \otimes \mathbb{U}_{22}[\mathbb{T}_{2,1}^{(u,T_g)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{32}[\mathbb{M}_{1,2}^{(a,T_g)}] \otimes \mathbb{U}_{23}[\mathbb{T}_{2,2}^{(u,T_g)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{32}[\mathbb{M}_{1,2}^{(a,T_g)}] \otimes \mathbb{U}_{23}[\mathbb{T}_{2,2}^{(u,T_g)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{32}[\mathbb{M}_{1,2}^{(a,T_g)}] \otimes \mathbb{U}_{23}[\mathbb{T}_{2,2}^{(u,T_g)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{32}[\mathbb{M}_{1,2}^{(a,T_g)}] \otimes \mathbb{U}_{23}[\mathbb{T}_{2,2}^{(u,T_g)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{32}[\mathbb{M}_{1,2}^{(u,T_g)}] \otimes \mathbb{U}_{23}[\mathbb{T}_{2,2}^{(u,T_g)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{32}[\mathbb{M}_{1,2}^{(u,T_g)}]}{3} + \frac{\sqrt$$

No. 36
$$\hat{\mathbb{Q}}_{4}^{(A_g)}$$
 [M₃, B₁]

$$\hat{\mathbb{Z}}_{36} = -\frac{\sqrt{3}\mathbb{X}_{30}[\mathbb{M}_{1,0}^{(a,T_g)}] \otimes \mathbb{U}_{24}[\mathbb{T}_{4,0}^{(u,T_g,1)}]}{3} - \frac{\sqrt{3}\mathbb{X}_{31}[\mathbb{M}_{1,1}^{(a,T_g)}] \otimes \mathbb{U}_{25}[\mathbb{T}_{4,1}^{(u,T_g,1)}]}{3} - \frac{\sqrt{3}\mathbb{X}_{32}[\mathbb{M}_{1,2}^{(a,T_g)}] \otimes \mathbb{U}_{26}[\mathbb{T}_{4,2}^{(u,T_g,1)}]}{3}$$

No. 37
$$\hat{\mathbb{G}}_{3}^{(A_g)}(1,1)$$
 [M₃, B₁]

$$\hat{\mathbb{Z}}_{37} = \frac{\sqrt{3}\mathbb{X}_{33}[\mathbb{M}_{1,0}^{(a,T_g)}(1,1)] \otimes \mathbb{U}_{21}[\mathbb{T}_{2,0}^{(u,T_g)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{34}[\mathbb{M}_{1,1}^{(a,T_g)}(1,1)] \otimes \mathbb{U}_{22}[\mathbb{T}_{2,1}^{(u,T_g)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{35}[\mathbb{M}_{1,2}^{(a,T_g)}(1,1)] \otimes \mathbb{U}_{23}[\mathbb{T}_{2,2}^{(u,T_g)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{35}[\mathbb{M}_{1,2}^{(a,T_g)}(1,1)] \otimes \mathbb{U}_{23}[\mathbb{T}_{2,2}^{(u,T_g)}(1,1)]}{3} + \frac{\sqrt{3}\mathbb{X}_{35}[\mathbb{M}_{1,2}^{(u,T_g)}(1,1)] \otimes \mathbb{U}_{23}[\mathbb{M}_{1,2}^{(u,T_g)}(1,1)]}{3} + \frac{\sqrt{3}\mathbb{X}_{35}[\mathbb{M}$$

No. 38
$$\hat{\mathbb{Q}}_{4}^{(A_g)}(1,1)$$
 [M₃, B₁]

$$\hat{\mathbb{Z}}_{38} = -\frac{\sqrt{3}\mathbb{X}_{33}[\mathbb{M}_{1,0}^{(a,T_g)}(1,1)]\otimes\mathbb{U}_{24}[\mathbb{T}_{4,0}^{(u,T_g,1)}]}{3} - \frac{\sqrt{3}\mathbb{X}_{34}[\mathbb{M}_{1,1}^{(a,T_g)}(1,1)]\otimes\mathbb{U}_{25}[\mathbb{T}_{4,1}^{(u,T_g,1)}]}{3} - \frac{\sqrt{3}\mathbb{X}_{35}[\mathbb{M}_{1,2}^{(a,T_g)}(1,1)]\otimes\mathbb{U}_{26}[\mathbb{T}_{4,2}^{(u,T_g,1)}]}{3} - \frac{\sqrt{3}\mathbb{X}_{45}[\mathbb{M}_{1,2}^{(a,T_g)}(1,1)]\otimes\mathbb{U}_{26}[\mathbb{T}_{4,2}^{(u,T_g,1)}]}{3} - \frac{\sqrt{3}\mathbb{X}_{45}[\mathbb{M}_{1,2}^{(a,T_g)}(1,1)]\otimes\mathbb{U}_{26}[\mathbb{T}_{4,2}^{(u,T_g,1)}]}{3} - \frac{\sqrt{3}\mathbb{X}_{45}[\mathbb{M}_{1,2}^{(u,T_g,1)}]}{3} - \frac{2$$

No. 39
$$\hat{\mathbb{G}}_{3}^{(A_g)}(1,-1)$$
 [M₃, B₁]

$$\hat{\mathbb{Z}}_{39} = \frac{\sqrt{3}\mathbb{X}_{36}[\mathbb{M}_{1,0}^{(a,T_g)}(1,-1)] \otimes \mathbb{U}_{21}[\mathbb{T}_{2,0}^{(u,T_g)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{37}[\mathbb{M}_{1,1}^{(a,T_g)}(1,-1)] \otimes \mathbb{U}_{22}[\mathbb{T}_{2,1}^{(u,T_g)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{38}[\mathbb{M}_{1,2}^{(a,T_g)}(1,-1)] \otimes \mathbb{U}_{23}[\mathbb{T}_{2,2}^{(u,T_g)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{38}[\mathbb{M}_{1,2}^{(u,T_g)}(1,-1)] \otimes \mathbb{U}_{23}[\mathbb{M}_{1,2}^{(u,T_g)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{38}[\mathbb{M}_{1,2}^{(u,T_g)}(1,-1)] \otimes \mathbb{U}_{23}[\mathbb{M}_{1,2}^{(u,T_g)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{3$$

No. 40
$$\hat{\mathbb{Q}}_4^{(A_g)}(1,-1)$$
 [M₃, B₁]

$$\hat{\mathbb{Z}}_{40} = -\frac{\sqrt{3}\mathbb{X}_{36}[\mathbb{M}_{1,0}^{(a,T_g)}(1,-1)] \otimes \mathbb{U}_{24}[\mathbb{T}_{4,0}^{(u,T_g,1)}]}{3} - \frac{\sqrt{3}\mathbb{X}_{37}[\mathbb{M}_{1,1}^{(a,T_g)}(1,-1)] \otimes \mathbb{U}_{25}[\mathbb{T}_{4,1}^{(u,T_g,1)}]}{3} - \frac{\sqrt{3}\mathbb{X}_{38}[\mathbb{M}_{1,2}^{(a,T_g)}(1,-1)] \otimes \mathbb{U}_{26}[\mathbb{T}_{4,2}^{(u,T_g,1)}]}{3} - \frac{\sqrt{3}\mathbb{X}_{38}[\mathbb{M}_{1,2}^{(a,T_g)}(1,-1)] \otimes \mathbb{U}_{26}[\mathbb{T}_{4,2}^{(u,T_g,1)}]}{3} - \frac{\sqrt{3}\mathbb{X}_{38}[\mathbb{M}_{1,2}^{(a,T_g)}(1,-1)] \otimes \mathbb{U}_{26}[\mathbb{T}_{4,2}^{(u,T_g,1)}]}{3} - \frac{\sqrt{3}\mathbb{X}_{38}[\mathbb{M}_{1,2}^{(a,T_g)}(1,-1)] \otimes \mathbb{U}_{26}[\mathbb{T}_{4,2}^{(u,T_g,1)}]}{3} - \frac{\sqrt{3}\mathbb{X}_{38}[\mathbb{M}_{1,2}^{(u,T_g,1)}(1,-1)] \otimes \mathbb{U}_{26}[\mathbb{T}_{4,2}^{(u,T_g,1)}]}{3} - \frac{\mathbb{X}_{38}[\mathbb{M}_{1,2}^{(u,T_g,1)}(1,-1)] \otimes \mathbb{U}_{26}[\mathbb{T}_{4,2}^{(u,T_g,1)}(1,-1)]}{3} - \frac{\mathbb{X}_{38}[\mathbb{M}_{1,2}^{(u,T_g,1)}(1,-1)] \otimes \mathbb{U}_{26}[\mathbb{T}_{4,2}^{(u,T_g,1)}(1,-1)]}{3} - \frac{\mathbb{X}_{38}[\mathbb{M}_{1,2}^{(u,T_g,1)}(1,-1)] \otimes \mathbb{U}_{26}[\mathbb{T}_{4,2}^{(u,T_g,1)}(1,-1)]}{3} - \frac{\mathbb{X}_{38}[\mathbb{M}_{1,2}^{(u,T_g,1)}(1,-1)] \otimes \mathbb{U}_{26}[\mathbb{M}_{1,2}^{(u,T_g,1)}(1,-1)]}{3} - \frac{\mathbb{X}_{38}[\mathbb{M}_{1,2}^{(u,T_g,1)}(1,-1)] \otimes \mathbb{U}_{26}[\mathbb{M}_{1,2}^{(u,T_g,1)}(1,-1)]}{3} - \frac{\mathbb{X}_{38}[\mathbb{M}_{1,2}^{(u,T_g,1)}(1,-1)] \otimes \mathbb{X}_{38}[\mathbb{M}_{1,2}^{(u,T_g,1)}(1,-1)]}{3} - \frac{\mathbb{X}_{38}[\mathbb{M}_{1,2}^{(u,T_g,1)}(1,-1)] \otimes \mathbb{X}_{38}[\mathbb{M}_{1,2}^{(u,T_g,1)}(1,-1)]}{3} - \frac{\mathbb{X}_{38}[\mathbb{M}_{1,2}^{(u,T_g,1)}(1,-1)] \otimes \mathbb{X}_{38}[\mathbb{M}_{1,2}^{(u,T_g,1)}(1,-1)]}{3} - \frac{\mathbb{X}_{38}[\mathbb{M}_{1,2}^{(u,T_g,1)}(1,-1)] \otimes \mathbb{X}_{38}[\mathbb{M}_{1,2}^{(u,T_g,1)}(1,-1)]}{3}$$

No. 41
$$\hat{\mathbb{G}}_{3}^{(A_g)}(1,-1)$$
 [M₃, B₁]

$$\hat{\mathbb{Z}}_{41} = -\frac{\sqrt{3}\mathbb{X}_{39}[\mathbb{M}_{3,0}^{(a,T_g,1)}(1,-1)] \otimes \mathbb{U}_{21}[\mathbb{T}_{2,0}^{(u,T_g)}]}{3} - \frac{\sqrt{3}\mathbb{X}_{40}[\mathbb{M}_{3,1}^{(a,T_g,1)}(1,-1)] \otimes \mathbb{U}_{22}[\mathbb{T}_{2,1}^{(u,T_g)}]}{3} - \frac{\sqrt{3}\mathbb{X}_{41}[\mathbb{M}_{3,2}^{(a,T_g,1)}(1,-1)] \otimes \mathbb{U}_{23}[\mathbb{T}_{2,2}^{(u,T_g)}]}{3} - \frac{\sqrt{3}\mathbb{X}_{41}[\mathbb{M}_{3,2}^{(a,T_g,1)}(1,-1)] \otimes \mathbb{U}_{23}[\mathbb{T}_{2,2}^{(u,T_g)}]}{3} - \frac{\mathbb{U}_{31}[\mathbb{M}_{3,2}^{(u,T_g)}(1,-1)] \otimes \mathbb{U}_{31}[\mathbb{M}_{3,2}^{(u,T_g)}(1,-1)] \otimes \mathbb{U}_{31}[\mathbb{M}_{3,2}^{(u,T_g)}(1,-1)]}{3} - \frac{\mathbb{U}_{31}[\mathbb{M}_{3,2}^{(u,T_g)}(1,-1)] \otimes \mathbb{U}_{31}[\mathbb{M}_{3,2}^{(u,T_g)}(1,-1)]}{3} - \frac{\mathbb{U}_{31}[\mathbb{M}_{3,2}^{(u,T_g)}(1,-1)]}{3} - \frac{\mathbb{U}_{31}[\mathbb{M}_{31}[\mathbb{M}$$

No. 42
$$\hat{\mathbb{Q}}_{4}^{(A_g)}(1,-1)$$
 [M₃, B₁]

$$\hat{\mathbb{Z}}_{42} = -\frac{\sqrt{3}\mathbb{X}_{42}[\mathbb{M}_{3,0}^{(a,T_g,2)}(1,-1)]\otimes\mathbb{U}_{21}[\mathbb{T}_{2,0}^{(u,T_g)}]}{3} - \frac{\sqrt{3}\mathbb{X}_{43}[\mathbb{M}_{3,1}^{(a,T_g,2)}(1,-1)]\otimes\mathbb{U}_{22}[\mathbb{T}_{2,1}^{(u,T_g)}]}{3} - \frac{\sqrt{3}\mathbb{X}_{44}[\mathbb{M}_{3,2}^{(a,T_g,2)}(1,-1)]\otimes\mathbb{U}_{23}[\mathbb{T}_{2,2}^{(u,T_g)}]}{3} - \frac{\sqrt{3}\mathbb{X}_{44}[\mathbb{M}_{3,2}^{(a,T_g,2)}(1,-1)]\otimes\mathbb{U}_{23}[\mathbb{T}_{2,2}^{(u,T_g)}]}{3} - \frac{\sqrt{3}\mathbb{X}_{44}[\mathbb{M}_{3,2}^{(a,T_g,2)}(1,-1)]\otimes\mathbb{U}_{23}[\mathbb{T}_{2,2}^{(u,T_g)}]}{3} - \frac{\sqrt{3}\mathbb{X}_{44}[\mathbb{M}_{3,2}^{(a,T_g,2)}(1,-1)]\otimes\mathbb{U}_{23}[\mathbb{T}_{2,2}^{(u,T_g)}]}{3} - \frac{\sqrt{3}\mathbb{X}_{44}[\mathbb{M}_{3,2}^{(u,T_g,2)}(1,-1)]\otimes\mathbb{U}_{23}[\mathbb{T}_{2,2}^{(u,T_g)}]}{3} - \frac{\sqrt{3}\mathbb{X}_{44}[\mathbb{M}_{3,2}^{(u,T_g,2)}(1,-1)]\otimes\mathbb{U}_{23}[\mathbb{T}_{2,2}^{(u,T_g)}]}{3} - \frac{\sqrt{3}\mathbb{X}_{44}[\mathbb{M}_{3,2}^{(u,T_g,2)}(1,-1)]\otimes\mathbb{U}_{23}[\mathbb{T}_{2,2}^{(u,T_g)}]}{3} - \frac{\sqrt{3}\mathbb{X}_{44}[\mathbb{M}_{3,2}^{(u,T_g,2)}(1,-1)]\otimes\mathbb{U}_{23}[\mathbb{T}_{2,2}^{(u,T_g)}]}{3} - \frac{\mathbb{X}_{44}[\mathbb{M}_{3,2}^{(u,T_g,2)}(1,-1)]\otimes\mathbb{U}_{23}[\mathbb{T}_{2,2}^{(u,T_g)}]}{3} - \frac{\mathbb{X}_{44}[\mathbb{M}_{3,2}^{(u,T_g,2)}(1,-1)]\otimes\mathbb{U}_{23}[\mathbb{T}_{2,2}^{(u,T_g)}]}}{3} - \frac{\mathbb{X}_{44}[\mathbb{M}_{3,2}^{(u,T_g,2)}(1,-1)]\otimes\mathbb{U}_{23}[\mathbb{T}_{2,2}^{(u,T_g,2)}]}}{3} - \frac{\mathbb{X}_{44}[\mathbb{M}_{3,2}^{(u,T_g,2)}(1,-1)]\otimes\mathbb{U}_{23}[\mathbb{T}_{2,2}^{(u,T_g,2)}]}}{3} - \frac{\mathbb{X}_{44}[\mathbb{M}_{3,2}^{(u,T_g,2)}(1,-1)]\otimes\mathbb{U}_{23}[\mathbb{T}_{2,2}^{(u,T_g,2)}]}}{3} - \frac{\mathbb{X}_{44}[\mathbb{M}_{3,2}^{(u,T_g,2)}(1,-1)]\otimes\mathbb{U}_{23}[\mathbb{T}_{2,2}^{(u,T_g,2)}]}}{3} - \frac{\mathbb{X}_{44}[\mathbb{M}_{3,2}^{(u,T_g,2)}(1,-1)]\otimes\mathbb{U}_{23}[\mathbb{T}_{2,2}^{(u,T_g,2)}]}}{3} - \frac{\mathbb{X}_{44}[\mathbb{M}_{3,2}^{(u,T_g,2)}(1,-1)]\otimes\mathbb{U}_{23}[\mathbb{T}_{2,2}^{(u,T_g,2)}]}}{3} - \frac{\mathbb{X}_{44}[\mathbb{M}_{3,2}^{(u,T_g,2)}(1,-1)]\otimes\mathbb{U}_{23}[\mathbb{M}_{3,2}^{(u,T_g,2)}(1,-1)]}}{3} - \frac{\mathbb{X}_{44}[\mathbb{M}_{3,2}^{(u,T_g,2)}(1,-1)]\otimes\mathbb{U}_{23}[\mathbb{M}_{3,2}^{(u,T_g,2)}(1,-1)]}}{3} - \frac{\mathbb{X}_{44}[\mathbb{M}_{3,2}^{(u,T_g,2)}(1,-1)]\otimes\mathbb{U}_{23}[\mathbb{M}_{3,2}^{(u,T_g,2)}(1,-1)]}}{3} - \mathbb{X}_{44}[\mathbb{M}_{3,2}^{(u,T_g,2)}(1,-1)]\otimes\mathbb{U}_{23}[\mathbb{M}_{3,2}^{(u,T_g,2)}(1,-1)]}$$

No. 43
$$\hat{\mathbb{G}}_3^{(A_g)}(1,-1)$$
 [M₃, B₁]

$$\hat{\mathbb{Z}}_{43} = \frac{\sqrt{3}\mathbb{X}_{42}[\mathbb{M}_{3,0}^{(a,T_g,2)}(1,-1)] \otimes \mathbb{U}_{24}[\mathbb{T}_{4,0}^{(u,T_g,1)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{43}[\mathbb{M}_{3,1}^{(a,T_g,2)}(1,-1)] \otimes \mathbb{U}_{25}[\mathbb{T}_{4,1}^{(u,T_g,1)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{44}[\mathbb{M}_{3,2}^{(a,T_g,2)}(1,-1)] \otimes \mathbb{U}_{26}[\mathbb{T}_{4,2}^{(u,T_g,1)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{44}[\mathbb{M}_{3,2}^{(u,T_g,2)}(1,-1)] \otimes \mathbb{U}_{26}[\mathbb{T}_{4,2}^{(u,T_g,2)}(1,-1)]}{3} + \frac{\sqrt{3}\mathbb{X}_{44}[\mathbb{M}_{3,2}^{(u,T_g,2)}(1,-1)] \otimes \mathbb{U}_{26}[\mathbb{T}_{4,2}^{(u,T_g,2)}(1,-1)]}{3} + \frac{\sqrt{3}\mathbb{X}_{44}[\mathbb{M}_{3,2}^{(u,T_g,2)}(1,-1)] \otimes \mathbb{U}_{26}[\mathbb{M}_{3,2}^{(u,T_g,2)}(1,-1)]}{3} + \frac{\sqrt{3}\mathbb{X}_{44}[\mathbb{M}_{3,2}^{(u,T_g,2)}(1,-1)]}{3} + \frac{\sqrt{3}\mathbb{X}_{44}[\mathbb{M}_{3,2}^{(u,T_g,2)}(1,-1)]}{$$

$$\begin{split} & \underbrace{ \begin{bmatrix} \text{No. } 44 \end{bmatrix} \ \hat{\mathbb{Q}}_{4}^{(A_g)}(1,-1) \ [\text{M}_3,\text{B}_1] } }_{3} \\ & \underbrace{ \frac{\sqrt{3}\mathbb{X}_{39} [\mathbb{M}_{3,0}^{(a,T_g,1)}(1,-1)] \otimes \mathbb{U}_{24} [\mathbb{T}_{4,0}^{(u,T_g,1)}]}{3} }_{3} + \underbrace{ \frac{\sqrt{3}\mathbb{X}_{40} [\mathbb{M}_{3,1}^{(a,T_g,1)}(1,-1)] \otimes \mathbb{U}_{25} [\mathbb{T}_{4,1}^{(u,T_g,1)}] }{3} }_{3} + \underbrace{ \frac{\sqrt{3}\mathbb{X}_{41} [\mathbb{M}_{3,2}^{(a,T_g,1)}(1,-1)] \otimes \mathbb{U}_{26} [\mathbb{T}_{4,2}^{(u,T_g,1)}] }{3} }_{3} \end{split}$$

$$\hat{\mathbb{Z}}_{45} = \frac{\sqrt{3}\mathbb{X}_{45}[\mathbb{T}_{2,0}^{(a,T_g)}(1,0)] \otimes \mathbb{U}_{21}[\mathbb{T}_{2,0}^{(u,T_g)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{46}[\mathbb{T}_{2,1}^{(a,T_g)}(1,0)] \otimes \mathbb{U}_{22}[\mathbb{T}_{2,1}^{(u,T_g)}]}{3} + \frac{\sqrt{3}\mathbb{X}_{47}[\mathbb{T}_{2,2}^{(a,T_g)}(1,0)] \otimes \mathbb{U}_{23}[\mathbb{T}_{2,2}^{(u,T_g)}]}{3}$$

$$\begin{array}{c} \boxed{\text{No. } 46} \quad \hat{\mathbb{G}}_{3}^{(A_g)}(1,0) \; [M_3,B_1] \\ \\ \hat{\mathbb{Z}}_{46} = -\frac{\sqrt{3}\mathbb{X}_{45}[\mathbb{T}_{2,0}^{(a,T_g)}(1,0)] \otimes \mathbb{U}_{24}[\mathbb{T}_{4,0}^{(u,T_g,1)}]}{3} - \frac{\sqrt{3}\mathbb{X}_{46}[\mathbb{T}_{2,1}^{(a,T_g)}(1,0)] \otimes \mathbb{U}_{25}[\mathbb{T}_{4,1}^{(u,T_g,1)}]}{3} - \frac{\sqrt{3}\mathbb{X}_{47}[\mathbb{T}_{2,2}^{(a,T_g)}(1,0)] \otimes \mathbb{U}_{26}[\mathbb{T}_{4,2}^{(u,T_g,1)}]}{3} \\ \end{array}$$

Table 4: Atomic SAMB group.

group	bra	ket
M_1	$(s,\uparrow),(s,\downarrow)$	$(s,\uparrow),(s,\downarrow)$
M_2	$(s,\uparrow),(s,\downarrow)$	$(p_x,\uparrow),(p_x,\downarrow),(p_y,\uparrow),(p_y,\downarrow),(p_z,\uparrow),(p_z,\downarrow)$
M_3	$(p_x,\uparrow),(p_x,\downarrow),(p_y,\uparrow),(p_y,\downarrow),(p_z,\uparrow),(p_z,\downarrow)$	$(p_x,\uparrow),(p_x,\downarrow),(p_y,\uparrow),(p_y,\downarrow),(p_z,\uparrow),(p_z,\downarrow)$
M_4	$(p_x,\uparrow),(p_x,\downarrow),(p_y,\uparrow),(p_y,\downarrow),(p_z,\uparrow),(p_z,\downarrow)$	$(s,\uparrow),(s,\downarrow)$

Table 5: Atomic SAMB.

symbol	type	group	form
\mathbb{X}_1	$\mathbb{Q}_0^{(a,A_g)}$	M_1	$\begin{pmatrix} \frac{\sqrt{2}}{2} & 0 \\ 0 & \frac{\sqrt{2}}{2} \end{pmatrix}$
\mathbb{X}_2	$\mathbb{M}_{1,0}^{(a,T_g)}(1,-1)$	M_1	$\begin{pmatrix} 2 & \frac{\sqrt{2}}{2} \\ 0 & \frac{\sqrt{2}}{2} \\ \begin{pmatrix} 0 & \frac{\sqrt{2}}{2} \\ \frac{\sqrt{2}}{2} & 0 \end{pmatrix}$
\mathbb{X}_3	$\mathbb{M}_{1,1}^{(a,T_g)}(1,-1)$	M_1	$\begin{pmatrix} 0 & -\frac{\sqrt{2}i}{2} \\ \frac{\sqrt{2}i}{2} & 0 \end{pmatrix}$

Table 5

symbol	type	group	form
\mathbb{X}_4	$\mathbb{M}_{1,2}^{(a,T_g)}(1,-1)$	M_1	$\begin{pmatrix} \frac{\sqrt{2}}{2} & 0 \\ 0 & -\frac{\sqrt{2}}{2} \end{pmatrix}$
\mathbb{X}_5	$\mathbb{Q}_{1,0}^{(a,T_u)}$	M_2	$\begin{pmatrix} \frac{\sqrt{2}}{2} & 0 & 0 & 0 & 0 & 0\\ 0 & \frac{\sqrt{2}}{2} & 0 & 0 & 0 & 0 \end{pmatrix} \begin{pmatrix} 0 & 0 & \frac{\sqrt{2}}{2} & 0 & 0 & 0\\ 0 & 0 & 0 & \frac{\sqrt{2}}{2} & 0 & 0 & 0 \end{pmatrix}$
\mathbb{X}_6	$\mathbb{Q}_{1,1}^{(a,T_u)}$	M_2	$\begin{pmatrix} 0 & 0 & \frac{\sqrt{2}}{2} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{2}}{2} & 0 & 0 \end{pmatrix}$
\mathbb{X}_7	$\mathbb{Q}_{1,2}^{(a,T_u)}$	M_2	$\begin{pmatrix} 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{2} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{2} \end{pmatrix}$
\mathbb{X}_8	$\mathbb{Q}_{1,0}^{(a,T_u)}(1,0)$	M_2	$ \begin{pmatrix} 0 & 0 & -\frac{i}{2} & 0 & 0 & \frac{1}{2} \\ 0 & 0 & 0 & \frac{i}{2} & -\frac{1}{2} & 0 \end{pmatrix} $
\mathbb{X}_9	$\mathbb{Q}_{1,1}^{(a,T_u)}(1,0)$	M_2	$\begin{pmatrix} \frac{i}{2} & 0 & 0 & 0 & 0 & -\frac{i}{2} \\ 0 & -\frac{i}{2} & 0 & 0 & -\frac{i}{2} & 0 \end{pmatrix}$
\mathbb{X}_{10}	$\mathbb{Q}_{1,2}^{(a,T_u)}(1,0)$	M_2	$ \begin{pmatrix} 0 & -\frac{1}{2} & 0 & \frac{i}{2} & 0 & 0 \\ \frac{1}{2} & 0 & \frac{i}{2} & 0 & 0 & 0 \end{pmatrix} $
\mathbb{X}_{11}	$\mathbb{G}_{2,0}^{(a,T_u)}(1,-1)$	M_2	$\begin{pmatrix} 0 & 0 & \frac{i}{2} & 0 & 0 & \frac{1}{2} \\ 0 & 0 & 0 & -\frac{i}{2} & -\frac{1}{2} & 0 \end{pmatrix}$
\mathbb{X}_{12}	$\mathbb{G}_{2,1}^{(a,T_u)}(1,-1)$	M_2	$egin{pmatrix} rac{i}{2} & 0 & 0 & 0 & 0 & rac{i}{2} \ 0 & -rac{i}{2} & 0 & 0 & rac{i}{2} & 0 \end{pmatrix}$
\mathbb{X}_{13}	$\mathbb{G}_{2,2}^{(a,T_u)}(1,-1)$	M_2	$\begin{pmatrix} 0 & \frac{1}{2} & 0 & \frac{i}{2} & 0 & 0 \\ -\frac{1}{2} & 0 & \frac{i}{2} & 0 & 0 & 0 \end{pmatrix}$
\mathbb{X}_{14}	$\mathbb{G}_0^{(a,A_u)}(1,1)$	M_2	$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$
\mathbb{X}_{15}	$\mathbb{Q}_0^{(a,A_g)}$	$ m M_3$	$\begin{pmatrix} \frac{\sqrt{6}}{6} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{6}}{6} & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{6}}{6} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{6}}{6} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{6} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{6} \end{pmatrix}$

Table 5

Table 5			
symbol	type	group	form
\mathbb{X}_{16}	$\mathbb{Q}_0^{(a,A_g)}(1,1)$	$ m M_3$	$\begin{pmatrix} 0 & 0 & -\frac{\sqrt{3}i}{6} & 0 & 0 & \frac{\sqrt{3}}{6} \\ 0 & 0 & 0 & \frac{\sqrt{3}i}{6} & -\frac{\sqrt{3}}{6} & 0 \\ \frac{\sqrt{3}i}{6} & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{6} \\ 0 & -\frac{\sqrt{3}i}{6} & 0 & 0 & -\frac{\sqrt{3}i}{6} & 0 \\ 0 & -\frac{\sqrt{3}}{6} & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 \\ \frac{\sqrt{3}}{6} & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 & 0 \end{pmatrix}$
\mathbb{X}_{17}	$\mathbb{Q}_{2,0}^{(a,E_g)}$	$ m M_3$	$\begin{pmatrix} -\frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{3}}{6} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{3} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{3} \end{pmatrix}$
\mathbb{X}_{18}	$\mathbb{Q}_{2,1}^{(a,E_g)}$	$ m M_3$	$\begin{pmatrix} \frac{1}{2} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{1}{2} & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{1}{2} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{1}{2} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 &$
\mathbb{X}_{19}	$\mathbb{Q}_{2,0}^{(a,T_g)}$	$ m M_3$	$\begin{pmatrix} 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 &$
\mathbb{X}_{20}	$\mathbb{Q}_{2,1}^{(a,T_g)}$	$ m M_3$	$\begin{pmatrix} 0 & 0 & 0 & 0 & \frac{1}{2} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{1}{2} \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0$

Table 5

Table 5			
symbol	type	group	form
\mathbb{X}_{21}	$\mathbb{Q}_{2,2}^{(a,T_g)}$	$ m M_3$	$\begin{pmatrix} 0 & 0 & \frac{1}{2} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{1}{2} & 0 & 0 \\ \frac{1}{2} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{1}{2} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0$
\mathbb{X}_{22}	$\mathbb{Q}_{2,0}^{(a,E_g)}(1,-1)$	M_3	$\begin{pmatrix} 0 & 0 & -\frac{\sqrt{6}i}{6} & 0 & 0 & -\frac{\sqrt{6}}{12} \\ 0 & 0 & 0 & \frac{\sqrt{6}i}{6} & \frac{\sqrt{6}}{12} & 0 \\ \frac{\sqrt{6}i}{6} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{12} \\ 0 & -\frac{\sqrt{6}i}{6} & 0 & 0 & \frac{\sqrt{6}i}{12} & 0 \\ 0 & \frac{\sqrt{6}}{12} & 0 & -\frac{\sqrt{6}i}{12} & 0 & 0 \\ -\frac{\sqrt{6}}{12} & 0 & -\frac{\sqrt{6}i}{12} & 0 & 0 & 0 \end{pmatrix}$
\mathbb{X}_{23}	$\mathbb{Q}_{2,1}^{(a,E_g)}(1,-1)$	$ m M_3$	$ \begin{pmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 \\ 0 & 0 & 0 & \sqrt{2}i & 0 & 0 \end{pmatrix} $
\mathbb{X}_{24}	$\mathbb{Q}_{2,0}^{(a,T_g)}(1,-1)$	M_3	$ \begin{pmatrix} 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & \frac{\sqrt{2}i}{4} & 0 \\ 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & -\frac{\sqrt{2}i}{4} \\ 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 \end{pmatrix} $
\mathbb{X}_{25}	$\mathbb{Q}_{2,1}^{(a,T_g)}(1,-1)$	$ m M_3$	$\begin{pmatrix} 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0\\ 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & 0\\ 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0\\ \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & \frac{\sqrt{2}i}{4}\\ 0 & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0\\ 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 \end{pmatrix}$

Table 5

Table 5			
symbol	type	group	form
\mathbb{X}_{26}	$\mathbb{Q}_{2,2}^{(a,T_g)}(1,-1)$	$ m M_3$	$\begin{pmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 \\ 0 & -\frac{\sqrt{2}i}{4} & 0 & \frac{\sqrt{2}}{4} & 0 & 0 \\ -\frac{\sqrt{2}i}{4} & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 \end{pmatrix}$ $\begin{pmatrix} 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & -\frac{\sqrt{2}i}{4} & 0 \\ 0 & 0 & \frac{\sqrt{2}}{2} & 0 & 0 & 0 \end{pmatrix}$
\mathbb{X}_{27}	$\mathbb{G}_{1,0}^{(a,T_g)}(1,0)$	M_3	$\begin{bmatrix} 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$
\mathbb{X}_{28}	$\mathbb{G}_{1,1}^{(a,T_g)}(1,0)$	$ m M_3$	$ \begin{pmatrix} 0 & 0 & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 \\ 0 & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 \\ -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} \\ 0 & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 \end{pmatrix} $
\mathbb{X}_{29}	$\mathbb{G}_{1,2}^{(a,T_g)}(1,0)$	$ m M_3$	$\begin{pmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 \\ 0 & -\frac{\sqrt{2}i}{4} & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 \\ -\frac{\sqrt{2}i}{4} & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 \end{pmatrix}$
ℤ ₃₀	$\mathbb{M}_{1,0}^{(a,T_g)}$	$ m M_3$	$\begin{pmatrix} 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 &$

Table 5

Table 5			
symbol	type	group	form
\mathbb{X}_{31}	$\mathbb{M}_{1,1}^{(a,T_g)}$	M_3	$\begin{pmatrix} 0 & 0 & 0 & 0 & \frac{i}{2} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{i}{2} \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0$
\mathbb{X}_{32}	$\mathbb{M}_{1,2}^{(a,T_g)}$	$ m M_3$	$\begin{pmatrix} 0 & 0 & -\frac{i}{2} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{i}{2} & 0 & 0 \\ \frac{i}{2} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{i}{2} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0$
\mathbb{X}_{33}	$\mathbb{M}_{1,0}^{(a,T_g)}(1,1)$	$ m M_3$	$ \begin{pmatrix} 0 & \frac{\sqrt{30}}{15} & 0 & -\frac{\sqrt{30}i}{20} & \frac{\sqrt{30}}{20} & 0\\ \frac{\sqrt{30}}{15} & 0 & \frac{\sqrt{30}i}{20} & 0 & 0 & -\frac{\sqrt{30}}{20}\\ 0 & -\frac{\sqrt{30}i}{20} & 0 & -\frac{\sqrt{30}}{30} & 0 & 0\\ \frac{\sqrt{30}i}{20} & 0 & -\frac{\sqrt{30}}{30} & 0 & 0 & 0\\ \frac{\sqrt{30}i}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{30}\\ 0 & -\frac{\sqrt{30}}{20} & 0 & 0 & -\frac{\sqrt{30}}{30} & 0 \end{pmatrix} $
\mathbb{X}_{34}	$\mathbb{M}_{1,1}^{(a,T_g)}(1,1)$	M_3	$\begin{bmatrix} \begin{pmatrix} 0 & \frac{\sqrt{30}i}{30} & 0 & \frac{\sqrt{30}}{20} & 0 & 0 \\ -\frac{\sqrt{30}i}{30} & 0 & \frac{\sqrt{30}}{20} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{30}}{20} & 0 & -\frac{\sqrt{30}i}{15} & \frac{\sqrt{30}}{20} & 0 \\ \frac{\sqrt{30}}{20} & 0 & \frac{\sqrt{30}i}{15} & 0 & 0 & -\frac{\sqrt{30}}{20} \\ 0 & 0 & \frac{\sqrt{30}}{20} & 0 & 0 & \frac{\sqrt{30}i}{30} \\ 0 & 0 & 0 & -\frac{\sqrt{30}}{20} & -\frac{\sqrt{30}i}{30} & 0 \end{pmatrix}$
X35	$\mathbb{M}_{1,2}^{(a,T_g)}(1,1)$	M_3	$ \begin{pmatrix} -\frac{\sqrt{30}}{30} & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{20} \\ 0 & \frac{\sqrt{30}}{30} & 0 & 0 & \frac{\sqrt{30}}{20} & 0 \\ 0 & 0 & -\frac{\sqrt{30}}{30} & 0 & 0 & -\frac{\sqrt{30}i}{20} \\ 0 & 0 & 0 & \frac{\sqrt{30}}{30} & \frac{\sqrt{30}i}{20} & 0 \\ 0 & \frac{\sqrt{30}}{20} & 0 & -\frac{\sqrt{30}i}{20} & \frac{\sqrt{30}i}{15} & 0 \\ \frac{\sqrt{30}}{20} & 0 & \frac{\sqrt{30}i}{20} & 0 & 0 & -\frac{\sqrt{30}}{15} \end{pmatrix} $

Table 5

Table 5			
symbol	type	group	form
\mathbb{X}_{36}	$\mathbb{M}_{1,0}^{(a,T_g)}(1,-1)$	$ m M_3$	$\begin{pmatrix} 0 & \frac{\sqrt{6}}{6} & 0 & 0 & 0 & 0 \\ \frac{\sqrt{6}}{6} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{6}}{6} & 0 & 0 \\ 0 & 0 & \frac{\sqrt{6}}{6} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{6} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{6} & 0 \end{pmatrix}$
\mathbb{X}_{37}	$\mathbb{M}_{1,1}^{(a,T_g)}(1,-1)$	$ m M_3$	$\begin{pmatrix} 0 & -\frac{\sqrt{6i}}{6} & 0 & 0 & 0 & 0\\ \frac{\sqrt{6i}}{6} & 0 & 0 & 0 & 0 & 0\\ 0 & 0 & 0 & -\frac{\sqrt{6i}}{6} & 0 & 0\\ 0 & 0 & \frac{\sqrt{6i}}{6} & 0 & 0 & 0\\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6i}}{6} \end{pmatrix}$
\mathbb{X}_{38}	$\mathbb{M}_{1,2}^{(a,T_g)}(1,-1)$	$ m M_3$	$\begin{pmatrix} 0 & 0 & 0 & 0 & \frac{\sqrt{6z}}{6} & 0 \end{pmatrix}$ $\begin{pmatrix} \frac{\sqrt{6}}{6} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{6}}{6} & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{6}}{6} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{6}}{6} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{6} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{6} \end{pmatrix}$
\mathbb{X}_{39}	$\mathbb{M}_{3,0}^{(a,T_g,1)}(1,-1)$	$ m M_3$	$ \begin{pmatrix} 0 & \frac{\sqrt{5}}{5} & 0 & \frac{1}{10} & -\frac{\sqrt{5}}{10} & 0\\ \frac{\sqrt{5}}{5} & 0 & -\frac{\sqrt{5}i}{10} & 0 & 0 & \frac{\sqrt{5}}{10}\\ 0 & \frac{\sqrt{5}i}{10} & 0 & -\frac{\sqrt{5}}{10} & 0 & 0\\ -\frac{\sqrt{5}i}{10} & 0 & -\frac{\sqrt{5}}{10} & 0 & 0 & 0\\ -\frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{10} \\ \end{pmatrix} $
\mathbb{X}_{40}	$\mathbb{M}_{3,1}^{(a,T_g,1)}(1,-1)$	$ m M_3$	$\begin{pmatrix} 0 & \frac{\sqrt{5}i}{10} & 0 & 0 & -\frac{\sqrt{5}i}{10} & 0 \\ 0 & \frac{\sqrt{5}i}{10} & 0 & -\frac{\sqrt{5}}{10} & 0 & 0 \\ -\frac{\sqrt{5}i}{10} & 0 & -\frac{\sqrt{5}}{10} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{5}}{10} & 0 & -\frac{\sqrt{5}i}{5} & -\frac{\sqrt{5}}{10} & 0 \\ -\frac{\sqrt{5}}{10} & 0 & \frac{\sqrt{5}i}{5} & 0 & 0 & \frac{\sqrt{5}}{10} \\ 0 & 0 & -\frac{\sqrt{5}}{10} & 0 & 0 & \frac{\sqrt{5}i}{10} \\ 0 & 0 & 0 & \frac{\sqrt{5}}{10} & -\frac{\sqrt{5}i}{10} & 0 \end{pmatrix}$

Table 5

Table 5			
symbol	type	group	form
\mathbb{X}_{41}	$\mathbb{M}_{3,2}^{(a,T_g,1)}(1,-1)$	$ m M_3$	$\begin{pmatrix} -\frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{10} \\ 0 & \frac{\sqrt{5}}{10} & 0 & 0 & -\frac{\sqrt{5}}{10} & 0 \\ 0 & 0 & -\frac{\sqrt{5}}{10} & 0 & 0 & \frac{\sqrt{5}i}{10} \\ 0 & 0 & 0 & \frac{\sqrt{5}}{10} & -\frac{\sqrt{5}i}{10} & 0 \\ 0 & -\frac{\sqrt{5}}{10} & 0 & \frac{\sqrt{5}i}{10} & \frac{\sqrt{5}}{5} & 0 \\ -\frac{\sqrt{5}}{10} & 0 & -\frac{\sqrt{5}i}{10} & 0 & 0 & -\frac{\sqrt{5}}{5} \end{pmatrix}$
\mathbb{X}_{42}	$\mathbb{M}_{3,0}^{(a,T_g,2)}(1,-1)$	M_3	$ \begin{bmatrix} 0 & 0 & 0 & -\frac{\sqrt{3}i}{6} & -\frac{\sqrt{3}}{6} & 0 \\ 0 & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 & \frac{\sqrt{3}}{6} \\ 0 & -\frac{\sqrt{3}i}{6} & 0 & \frac{\sqrt{3}}{6} & 0 & 0 \\ \frac{\sqrt{3}i}{6} & 0 & \frac{\sqrt{3}}{6} & 0 & 0 & 0 \\ -\frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{6} \\ 0 & \frac{\sqrt{3}}{3} & 0 & 0 & -\frac{\sqrt{3}}{3} & 0 \end{bmatrix} $
\mathbb{X}_{43}	$\mathbb{M}_{3,1}^{(a,T_g,2)}(1,-1)$	$ m M_3$	$\begin{bmatrix} 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & \frac{\sqrt{3}}{6} & 0 \\ -\frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{6} \\ 0 & 0 & \frac{\sqrt{3}}{6} & 0 & 0 & -\frac{\sqrt{3}i}{6} \\ 0 & 0 & 0 & -\frac{\sqrt{3}}{6} & \frac{\sqrt{3}i}{6} & 0 \end{bmatrix}$
\mathbb{X}_{44}	$\mathbb{M}_{3,2}^{(a,T_g,2)}(1,-1)$	$ m M_3$	$\begin{pmatrix} \frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{6} \\ 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & \frac{\sqrt{3}}{6} & 0 \\ 0 & 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & \frac{\sqrt{3}i}{6} \\ 0 & 0 & 0 & \frac{\sqrt{3}}{6} & -\frac{\sqrt{3}i}{6} & 0 \\ 0 & \frac{\sqrt{3}}{6} & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 \\ \frac{\sqrt{3}}{6} & 0 & -\frac{\sqrt{3}i}{6} & 0 & 0 & 0 \end{pmatrix}$
\mathbb{X}_{45}	$\mathbb{T}_{2,0}^{(a,T_g)}(1,0)$	$ m M_3$	$\begin{pmatrix} 0 & 0 & 0 & \frac{\sqrt{6}i}{12} & \frac{\sqrt{6}}{12} & 0\\ 0 & 0 & -\frac{\sqrt{6}i}{12} & 0 & 0 & -\frac{\sqrt{6}}{12}\\ 0 & \frac{\sqrt{6}i}{12} & 0 & \frac{\sqrt{6}}{6} & 0 & 0\\ -\frac{\sqrt{6}i}{12} & 0 & \frac{\sqrt{6}}{6} & 0 & 0 & 0\\ \frac{\sqrt{6}}{12} & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{6}\\ 0 & -\frac{\sqrt{6}}{12} & 0 & 0 & -\frac{\sqrt{6}}{6} & 0 \end{pmatrix}$

Table 5

symbol	type	group	form
\mathbb{X}_{46}	$\mathbb{T}_{2,1}^{(a,T_g)}(1,0)$	M_3	$\begin{pmatrix} 0 & \frac{\sqrt{6}i}{6} & 0 & \frac{\sqrt{6}}{12} & 0 & 0 \\ -\frac{\sqrt{6}i}{6} & 0 & \frac{\sqrt{6}}{12} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{6}}{12} & 0 & 0 & -\frac{\sqrt{6}}{12} & 0 \\ \frac{\sqrt{6}}{12} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{12} \\ 0 & 0 & -\frac{\sqrt{6}}{12} & 0 & 0 & -\frac{\sqrt{6}i}{6} \\ 0 & 0 & 0 & \frac{\sqrt{6}}{12} & \frac{\sqrt{6}i}{6} & 0 \end{pmatrix}$
\mathbb{X}_{47}	$\mathbb{T}_{2,2}^{(a,T_g)}(1,0)$	$ m M_3$	$\begin{pmatrix} \frac{\sqrt{6}}{6} & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{12} \\ 0 & -\frac{\sqrt{6}}{6} & 0 & 0 & -\frac{\sqrt{6}}{12} & 0 \\ 0 & 0 & -\frac{\sqrt{6}}{6} & 0 & 0 & -\frac{\sqrt{6}i}{12} \\ 0 & 0 & 0 & \frac{\sqrt{6}}{6} & \frac{\sqrt{6}i}{12} & 0 \\ 0 & -\frac{\sqrt{6}}{12} & 0 & -\frac{\sqrt{6}i}{12} & 0 & 0 \\ -\frac{\sqrt{6}}{12} & 0 & \frac{\sqrt{6}i}{12} & 0 & 0 & 0 \end{pmatrix}$
\mathbb{X}_{48}	$\mathbb{Q}_{1,0}^{(a,T_{u})}$	$ m M_4$	$\begin{pmatrix} \frac{\sqrt{2}}{2} & 0\\ 0 & \frac{\sqrt{2}}{2}\\ 0 & 0\\ 0 & 0\\ 0 & 0\\ 0 & 0 \end{pmatrix}$
\mathbb{X}_{49}	$\mathbb{Q}_{1,1}^{(a,T_u)}$	$ m M_4$	$\begin{pmatrix} 0 & 0 \\ 0 & 0 \\ \frac{\sqrt{2}}{2} & 0 \\ 0 & \frac{\sqrt{2}}{2} \\ 0 & 0 \\ 0 & 0 \end{pmatrix}$
\mathbb{X}_{50}	$\mathbb{Q}_{1,2}^{(a,T_u)}$	$ m M_4$	$\begin{pmatrix} 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ \frac{\sqrt{2}}{2} & 0 \\ 0 & \frac{\sqrt{2}}{2} \end{pmatrix}$

Table 5

symbol	type	group	form
X ₅₁	$\mathbb{Q}_{1,0}^{(a,T_{u})}(1,0)$	$ m M_4$	$\begin{pmatrix} 0 & 0 \\ 0 & 0 \\ \frac{i}{2} & 0 \\ 0 & -\frac{i}{2} \\ 0 & -\frac{1}{2} \\ \frac{1}{2} & 0 \end{pmatrix}$
\mathbb{X}_{52}	$\mathbb{Q}_{1,1}^{(a,T_u)}(1,0)$	$ m M_4$	$egin{pmatrix} -rac{i}{2} & 0 \ 0 & rac{i}{2} \ 0 & 0 \ 0 & 0 \ 0 & rac{i}{2} \ i & o \ \end{pmatrix}$
\mathbb{X}_{53}	$\mathbb{Q}_{1,2}^{(a,T_u)}(1,0)$	$ m M_4$	$egin{pmatrix} 0 & rac{1}{2} \ -rac{1}{2} & 0 \ 0 & -rac{i}{2} \ -rac{i}{2} & 0 \ 0 & 0 \ 0 & 0 \end{pmatrix}$
\mathbb{X}_{54}	$\mathbb{G}_{2,0}^{(a,T_u)}(1,-1)$	$ m M_4$	$\begin{pmatrix} 0 & 0 \\ 0 & 0 \\ -\frac{i}{2} & 0 \\ 0 & \frac{i}{2} \\ 0 & -\frac{1}{2} \\ \frac{1}{2} & 0 \end{pmatrix}$
\mathbb{X}_{55}	$\mathbb{G}_{2,1}^{(a,T_u)}(1,-1)$	$ m M_4$	$\begin{pmatrix} 0 & 0 \\ 0 & 0 \\ -\frac{i}{2} & 0 \\ 0 & \frac{i}{2} \\ 0 & -\frac{1}{2} \\ \frac{1}{2} & 0 \end{pmatrix}$ $\begin{pmatrix} -\frac{i}{2} & 0 \\ 0 & \frac{i}{2} \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & -\frac{i}{2} \\ -\frac{i}{2} & 0 \end{pmatrix}$

continued ...

Table 5

symbol	type	group	form
\mathbb{X}_{56}	$\mathbb{G}_{2,2}^{(a,T_u)}(1,-1)$	$ m M_4$	$\begin{pmatrix} 0 & -\frac{1}{2} \\ \frac{1}{2} & 0 \\ 0 & -\frac{i}{2} \\ -\frac{i}{2} & 0 \\ 0 & 0 \\ 0 & 0 \end{pmatrix}$

Table 6: Uniform SAMB.

symbol	type	cluster	form
\mathbb{U}_1	$\mathbb{Q}_0^{(s,A_g)}$	S ₁	$\begin{pmatrix} \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} \end{pmatrix}$
\mathbb{U}_2	$\mathbb{Q}_{1,0}^{(s,T_u)}$	S_1	$\begin{pmatrix} \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} \end{pmatrix}$

Table 6

Table 6			
symbol	type	cluster	form
\mathbb{U}_3	$\mathbb{Q}_{1,1}^{(s,T_u)}$	S_1	$\begin{pmatrix} \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 \\ \end{pmatrix}$
\mathbb{U}_4	$\mathbb{Q}_{1,2}^{(s,T_u)}$	S_1	$\begin{pmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} \end{pmatrix}$ $\begin{pmatrix} \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0$
\mathbb{U}_5	$\mathbb{Q}_{2,0}^{(s,T_g)}$	S_1	$\begin{pmatrix} \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0$
\mathbb{U}_6	$\mathbb{Q}_{2,1}^{(s,T_g)}$	S_1	$\begin{pmatrix} \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0$

Table 6

Table 6			
symbol	type	cluster	form
\mathbb{U}_7	$\mathbb{Q}_{2,2}^{(s,T_g)}$	S_1	$\begin{pmatrix} \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} \end{pmatrix}$
\mathbb{U}_8	$\mathbb{Q}_3^{(s,A_u)}$	S_1	$\begin{pmatrix} \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} \end{pmatrix}$
\mathbb{U}_9	$\mathbb{Q}_0^{(u,A_g)}$	В1	$\begin{pmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{12} & \frac{\sqrt{6}}{12} & \frac{\sqrt{6}}{12} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{12} & 0 & \frac{\sqrt{6}}{12} & \frac{\sqrt{6}}{12} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{12} & \frac{\sqrt{6}}{12} & 0 & \frac{\sqrt{6}}{12} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{12} & \frac{\sqrt{6}}{12} & 0 & \frac{\sqrt{6}}{12} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{12} & \frac{\sqrt{6}}{12} & 0 & 0 \\ 0 & \frac{\sqrt{6}}{12} & \frac{\sqrt{6}}{12} & \frac{\sqrt{6}}{12} & 0 & 0 & 0 & 0 \\ \frac{\sqrt{6}}{12} & 0 & \frac{\sqrt{6}}{12} & \frac{\sqrt{6}}{12} & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{6}}{12} & \frac{\sqrt{6}}{12} & 0 & \frac{\sqrt{6}}{12} & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{6}}{12} & \frac{\sqrt{6}}{12} & 0 & \frac{\sqrt{6}}{12} & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{6}}{12} & \frac{\sqrt{6}}{12} & 0 & \frac{\sqrt{6}}{12} & 0 & 0 & 0 & 0 & 0 \end{pmatrix}$
U ₁₀	$\mathbb{Q}_{1,0}^{(u,T_u)}$	В1	$\begin{pmatrix} 0 & 0 & 0 & 0 & 0 & \frac{3\sqrt{26}}{52} & 0 & \frac{\sqrt{26}}{26} \\ 0 & 0 & 0 & 0 & -\frac{3\sqrt{26}}{52} & 0 & -\frac{\sqrt{26}}{26} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{26}}{52} & 0 & \frac{3\sqrt{26}}{52} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{26}}{26} & 0 & \frac{3\sqrt{26}}{52} & 0 \\ 0 & -\frac{3\sqrt{26}}{52} & 0 & -\frac{\sqrt{26}}{26} & 0 & 0 & 0 & 0 \\ \frac{3\sqrt{26}}{52} & 0 & \frac{\sqrt{26}}{26} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{26}}{26} & 0 & -\frac{3\sqrt{26}}{52} & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{26}}{26} & 0 & \frac{3\sqrt{26}}{52} & 0 & 0 & 0 & 0 & 0 \end{pmatrix}$

Table 6

Table 6			
symbol	type	cluster	form
\mathbb{U}_{11}	$\mathbb{Q}_{1,1}^{(u,T_u)}$	B ₁	$\begin{pmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{26}}{26} & \frac{3\sqrt{26}}{52} & 0 \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{26}}{26} & 0 & 0 & -\frac{3\sqrt{26}}{52} \\ 0 & 0 & 0 & 0 & -\frac{3\sqrt{26}}{52} & 0 & 0 & -\frac{\sqrt{26}}{26} \\ 0 & 0 & 0 & 0 & 0 & \frac{3\sqrt{26}}{52} & \frac{\sqrt{26}}{26} & 0 \\ 0 & -\frac{\sqrt{26}}{26} & -\frac{3\sqrt{26}}{52} & 0 & 0 & 0 & 0 \\ \frac{\sqrt{26}}{26} & 0 & 0 & \frac{3\sqrt{26}}{52} & 0 & 0 & 0 & 0 \\ \frac{\sqrt{26}}{26} & 0 & 0 & \frac{3\sqrt{26}}{26} & 0 & 0 & 0 & 0 \\ 0 & -\frac{3\sqrt{26}}{52} & -\frac{\sqrt{26}}{26} & 0 & 0 & 0 & 0 & 0 \end{pmatrix}$
\mathbb{U}_{12}	$\mathbb{Q}_{1,2}^{(u,T_u)}$	В1	$ \begin{pmatrix} 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{26}}{26} & \frac{3\sqrt{26}}{52} \\ 0 & 0 & 0 & 0 & 0 & 0 & \frac{3\sqrt{26}}{26} & \frac{3\sqrt{26}}{52} & \frac{\sqrt{26}}{26} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{26}}{26} & -\frac{3\sqrt{26}}{52} & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{3\sqrt{26}}{26} & -\frac{\sqrt{26}}{26} & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{26}}{26} & -\frac{3\sqrt{26}}{52} & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{26}}{26} & -\frac{3\sqrt{26}}{52} & 0 & 0 & 0 & 0 \\ \frac{\sqrt{26}}{26} & \frac{3\sqrt{26}}{52} & -\frac{\sqrt{26}}{26} & 0 & 0 & 0 & 0 \\ \frac{\sqrt{26}}{26} & \frac{3\sqrt{26}}{52} & 0 & 0 & 0 & 0 & 0 \end{pmatrix} $
\mathbb{U}_{13}	$\mathbb{Q}_{2,0}^{(u,E_g)}$	В1	$ \begin{bmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{11\sqrt{3}}{84} & -\frac{3\sqrt{3}}{42} & \frac{13\sqrt{3}}{84} \\ 0 & 0 & 0 & 0 & -\frac{11\sqrt{3}}{84} & 0 & \frac{13\sqrt{3}}{84} & -\frac{\sqrt{3}}{42} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{42} & \frac{13\sqrt{3}}{84} & 0 & -\frac{11\sqrt{3}}{84} \\ 0 & 0 & 0 & 0 & \frac{13\sqrt{3}}{84} & -\frac{\sqrt{3}}{42} & -\frac{11\sqrt{3}}{84} & 0 \\ 0 & -\frac{11\sqrt{3}}{84} & -\frac{\sqrt{3}}{42} & \frac{13\sqrt{3}}{84} & 0 & 0 & 0 & 0 \\ -\frac{11\sqrt{3}}{84} & 0 & \frac{13\sqrt{3}}{84} & -\frac{\sqrt{3}}{42} & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{3}}{84} & \frac{13\sqrt{3}}{84} & 0 & -\frac{11\sqrt{3}}{84} & 0 & 0 & 0 & 0 \\ \frac{13\sqrt{3}}{84} & -\frac{\sqrt{3}}{42} & -\frac{11\sqrt{3}}{84} & 0 & 0 & 0 & 0 & 0 \end{bmatrix} $
U ₁₄	$\mathbb{Q}_{2,1}^{(u,E_g)}$	В1	$\begin{pmatrix} 0 & 0 & 0 & 0 & 0 & \frac{5}{28} & -\frac{2}{7} & \frac{3}{28} \\ 0 & 0 & 0 & 0 & \frac{5}{28} & 0 & \frac{3}{28} & -\frac{2}{7} \\ 0 & 0 & 0 & 0 & -\frac{2}{7} & \frac{3}{28} & 0 & \frac{5}{28} \\ 0 & 0 & 0 & 0 & \frac{3}{28} & -\frac{2}{7} & \frac{5}{28} & 0 \\ 0 & \frac{5}{28} & -\frac{2}{7} & \frac{3}{28} & 0 & 0 & 0 & 0 \\ \frac{5}{28} & 0 & \frac{3}{28} & -\frac{2}{7} & 0 & 0 & 0 & 0 \\ -\frac{2}{7} & \frac{3}{28} & 0 & \frac{5}{28} & 0 & 0 & 0 & 0 \\ \frac{3}{28} & -\frac{2}{7} & \frac{5}{28} & 0 & 0 & 0 & 0 \end{pmatrix}$

Table 6

Table 6			
symbol	type	cluster	form
\mathbb{U}_{15}	$\mathbb{Q}_{2,0}^{(u,T_g)}$	В1	$\begin{pmatrix} 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 \\ 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 \\ \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 \end{pmatrix}$
\mathbb{U}_{16}	$\mathbb{Q}_{2,1}^{(u,T_g)}$	В1	$\begin{pmatrix} 0 & 0 & 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} \\ 0 & 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 & 0 \end{pmatrix}$
\mathbb{U}_{17}	$\mathbb{Q}_{2,2}^{(u,T_g)}$	B ₁	$\begin{pmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0$
\mathbb{U}_{18}	$\mathbb{Q}_{3,0}^{(u,T_u,1)}$	B ₁	$ \begin{pmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{26}}{26} & 0 & -\frac{3\sqrt{26}}{52} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{26}}{26} & 0 & \frac{3\sqrt{26}}{52} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{3\sqrt{26}}{52} & 0 & \frac{\sqrt{26}}{26} \\ 0 & 0 & 0 & 0 & \frac{3\sqrt{26}}{52} & 0 & -\frac{\sqrt{26}}{26} & 0 \\ 0 & -\frac{\sqrt{26}}{26} & 0 & \frac{3\sqrt{26}}{52} & 0 & 0 & 0 & 0 \\ \frac{\sqrt{26}}{26} & 0 & -\frac{3\sqrt{26}}{52} & 0 & 0 & 0 & 0 \\ 0 & \frac{3\sqrt{26}}{52} & 0 & -\frac{\sqrt{26}}{26} & 0 & 0 & 0 & 0 \\ -\frac{3\sqrt{26}}{52} & 0 & \frac{\sqrt{26}}{26} & 0 & 0 & 0 & 0 \end{pmatrix} $

Table 6

Table 6			
symbol	type	cluster	form
\mathbb{U}_{19}	$\mathbb{Q}_{3,1}^{(u,T_u,1)}$	В1	$\begin{pmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{3\sqrt{26}}{52} & \frac{\sqrt{26}}{26} & 0\\ 0 & 0 & 0 & 0 & \frac{3\sqrt{26}}{52} & 0 & 0 & -\frac{\sqrt{26}}{26}\\ 0 & 0 & 0 & 0 & -\frac{\sqrt{26}}{26} & 0 & 0 & \frac{3\sqrt{26}}{52}\\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{26}}{26} & -\frac{3\sqrt{26}}{52} & 0\\ 0 & \frac{3\sqrt{26}}{52} & -\frac{\sqrt{26}}{26} & 0 & 0 & 0 & 0\\ -\frac{3\sqrt{26}}{52} & 0 & 0 & \frac{\sqrt{26}}{26} & 0 & 0 & 0 & 0\\ -\frac{3\sqrt{26}}{52} & 0 & 0 & -\frac{3\sqrt{26}}{26} & 0 & 0 & 0 & 0\\ -\frac{3\sqrt{26}}{26} & 0 & 0 & -\frac{3\sqrt{26}}{26} & 0 & 0 & 0 & 0 \end{pmatrix}$
\mathbb{U}_{20}	$\mathbb{Q}_{3,2}^{(u,T_u,1)}$	В1	$ \begin{pmatrix} 0 & -\frac{\sqrt{26}}{26} & \frac{3\sqrt{26}}{52} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0$
\mathbb{U}_{21}	$\mathbb{T}_{2,0}^{(u,T_g)}$	В1	$ \left(\begin{array}{cccccccccccccccccccccccccccccccccccc$
\mathbb{U}_{22}	$\mathbb{T}_{2,1}^{(u,T_g)}$	В1	$ \begin{pmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{3\sqrt{26}i}{52} & -\frac{\sqrt{26}i}{26} & 0 \\ 0 & 0 & 0 & 0 & \frac{3\sqrt{26}i}{52} & 0 & 0 & \frac{\sqrt{26}i}{26} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{26}i}{26} & 0 & 0 & \frac{3\sqrt{26}i}{26} \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{26}i}{26} & -\frac{3\sqrt{26}i}{52} & 0 \\ 0 & -\frac{3\sqrt{26}i}{52} & -\frac{\sqrt{26}i}{26} & 0 & 0 & 0 & 0 & 0 \\ \frac{3\sqrt{26}i}{52} & 0 & 0 & \frac{\sqrt{26}i}{26} & 0 & 0 & 0 & 0 & 0 \\ \frac{3\sqrt{26}i}{26} & 0 & 0 & \frac{3\sqrt{26}i}{52} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{26}i}{26} & -\frac{3\sqrt{26}i}{52} & 0 & 0 & 0 & 0 & 0 \end{pmatrix} $

symbol	$_{\mathrm{type}}$	cluster				fo	rm			
			(0	0	0	0	0	0 -	$-\frac{3\sqrt{26}i}{52}$	$-\frac{\sqrt{26}i}{26}$
			0	0	0	0	0	0	$-\frac{\sqrt{26}i}{26}$	$-\frac{\frac{1}{26}}{\frac{3\sqrt{26}i}{52}}$
			0	0	0	0	$\frac{3\sqrt{26}i}{52}$	$\frac{\sqrt{26}i}{26}$	0	0
\mathbb{U}_{23}	$\mathbb{T}_{0,2}^{(u,T_g)}$	B_1	0	0	0	0	$\frac{\sqrt{26}i}{26}$	$\frac{\overline{26}}{3\sqrt{26}i}$ 52	0	0
€23	$\mathbb{T}_{2,2}$	DI	0	0	$-\frac{3\sqrt{26}i}{52}$	$-\frac{\sqrt{26}i}{26}$ $-\frac{3\sqrt{26}i}{26}$	0	0	0	0
			0	0	$-\frac{\sqrt{26}i}{26}$	$-\frac{3\sqrt{26}i}{52}$	0	0	0	0
			$\begin{array}{c} \frac{3\sqrt{26}i}{52}\\ \frac{\sqrt{26}i}{} \end{array}$	$\frac{\sqrt{26}i}{26}$	0	0	0	0	0	0
			$\sqrt{\frac{\sqrt{26}i}{26}}$	$\frac{\overline{26}}{3\sqrt{26}i}$ 52	0	0	0	0	0	0_/
			(0	0	0	0	0	$-\frac{3\sqrt{26}i}{52}$	0	$\frac{\sqrt{26}i}{26}$
			0	0	0	0	$\frac{3\sqrt{26}i}{52}$	0_	$-\frac{\sqrt{26}i}{26}$	0_
			0	0	0	0	0_	$\frac{\sqrt{26}i}{26}$	0	$-\frac{3\sqrt{26}i}{52}$
\mathbb{U}_{24}	$\mathbb{T}_{4,0}^{(u,T_g,1)}$	B ₁	0	0_	0	0_	$-\frac{\sqrt{26}i}{26}$	0	$\frac{3\sqrt{26}i}{52}$	0
024			0	$-\frac{3\sqrt{26}i}{52}$	0_	$\frac{\sqrt{26}i}{26}$	0	0	0	0
			$\frac{3\sqrt{26}i}{52}$	0	$-\frac{\sqrt{26}i}{26}$	0_	0	0	0	0
			0	$\frac{\sqrt{26i}}{26}$	0	$-\frac{3\sqrt{26}i}{52}$	0	0	0	0
			$-\frac{\sqrt{26}i}{26}$	0	$\frac{3\sqrt{26}i}{52}$	0	0	0	0	0
			\int_{0}^{∞}	0	0	0	0	$\frac{\sqrt{26}i}{26}$	$-\frac{3\sqrt{26}i}{52}$	0
			0	0	0	0	$-\frac{\sqrt{26}i}{26}$	0	0	$\frac{3\sqrt{26}i}{52}$
			0	0	0	0	$\frac{3\sqrt{26}i}{52}$	0	0	$-\frac{\sqrt{26}i}{26}$
\mathbb{U}_{25}	$\mathbb{T}_{4,1}^{(u,T_g,1)}$	В1	0	0	0	0	0	$-\frac{3\sqrt{26}i}{52}$	$\frac{\sqrt{26}i}{26}$	0
20	±4,1		0	$\frac{\sqrt{26}i}{26}$	$-\tfrac{3\sqrt{26}i}{52}$	$0 \\ 3\sqrt{26}i$	0	0	0	0
			$-\frac{\sqrt{26}i}{\frac{26}{23}}$	0	0	$\frac{3\sqrt{26i}}{52}$ $\sqrt{26i}$	0	0	0	0
			$\frac{3\sqrt{26}i}{52}$	$0 \\ 3\sqrt{26}i$	$\frac{0}{\sqrt{26}i}$		0	0	0	0
			(0	52	26	0	0	0	0	$0 \\ 3\sqrt{26}i$
			\int_{0}^{0}	0	0	0	0	0	$\frac{\sqrt{26}i}{26}$ $3\sqrt{26}i$	$-\frac{3\sqrt{26i}}{\sqrt{26i}}$
			0	0	0	0	$0 \\ \sqrt{26}i$	$0 \\ 3\sqrt{26}i$	52	26
\mathbb{U}_{26}			0	0	0	0	$-\frac{\sqrt{26i}}{26}$ $3\sqrt{26i}$	$ \begin{array}{r} 3\sqrt{26i} \\ 52 \\ -\sqrt{26i} \end{array} $	0	0
	$\mathbb{T}_{4,2}^{(u,T_g,1)}$	B_1	0	0	$\frac{0}{\sqrt{26}i}$	$0 \\ 3\sqrt{26}i$	52	26	0	0
	-,-		0	0	$\frac{\sqrt{26i}}{26}$ $3\sqrt{26}i$	$-\frac{5\sqrt{26}i}{\sqrt{26}i}$	0	0	0	0
			$\begin{bmatrix} 0 \\ -\sqrt{26}i \end{bmatrix}$	$0 \\ 3\sqrt{26}i$	52	26	0	0	0	0
		1	$ \begin{pmatrix} -\frac{\sqrt{26}i}{26} \\ 3\sqrt{26}i \end{pmatrix} $	3 \ 201	0	0	0	0	0	0

Table 7: Polar harmonics.

No.	symbol	rank	irrep.	mul.	comp.	form
1	$\mathbb{Q}_0^{(A_g)}$	0	A_g	_	_	1
2	$\mathbb{Q}_{1,0}^{(T_u)}$	1	T_u	_	0	x
3	$\mathbb{Q}_{1,1}^{(T_u)}$	1	T_u	_	1	y
4	$\mathbb{Q}_{1,2}^{(1u)}$	1	T_u	_	2	z
5	$\mathbb{Q}_{2,0}^{(E_g)}$	2	E_g	_	0	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$
6	$\mathbb{Q}_{2,1}^{(E_g)}$	2	E_g	_	1	$\frac{\sqrt[2]{3}(x^2-y^2)}{2}$
7	$\mathbb{Q}_{2,0}^{(T_g)}$	2	T_g	_	0	$\sqrt{3}yz$
8	$\mathbb{Q}_{2,1}^{(T_g)}$	2	T_g	_	1	$\sqrt{3}xz$
9	$\mathbb{Q}_{2,2}^{(T_g)}$	2	T_g	_	2	$\sqrt{3}xy$
10	$\mathbb{Q}_3^{(A_u)}$	3	A_u	_	_	$\sqrt{15}xyz$
11	$\mathbb{Q}_{3,0}^{(T_u,1)}$	3	T_u	1	0	$\frac{x(2x^2-3y^2-3z^2)}{2}$
12	$\mathbb{Q}_{3,1}^{(T_u,1)}$	3	T_u	1	1	$-\frac{x(2x^2-3y^2-3z^2)}{2(3x^2-2y^2+3z^2)}$
13	$\mathbb{Q}_{3,2}^{(T_u,1)}$	3	T_u	1	2	$-\frac{z(3x^2+3y^2-2z^2)}{2}$
14	$\mathbb{Q}_{4,0}^{(T_g,1)}$	4	T_g	1	0	$\frac{\sqrt{35}yz(y-z)(y+z)}{2}$
15	$\mathbb{Q}_{4,1}^{(T_g,1)}$	4	T_g	1	1	$-\frac{\sqrt{35}xz(x-z)(x+z)}{2}$
16	$\mathbb{Q}_{4,2}^{(T_g,1)}$	4	T_g	1	2	$\frac{\sqrt{35}xy(x-y)(x+y)}{2}$

Table 8: Axial harmonics.

No.	symbol	rank	irrep.	mul.	comp.	form
1	$\mathbb{G}_0^{(A_u)}$	0	A_u	_	_	1
2	$\mathbb{G}_{1,0}^{(T_g)}$	1	T_g	_	0	X
3	$\mathbb{G}_{1,1}^{(T_g)}$	1	T_g	_	1	Y
4	$\mathbb{G}_{1,2}^{(T_g)}$	1	T_g	_	2	Z

Table 8

No.	symbol	rank	irrep.	mul.	comp.	form
5	$\mathbb{G}_{2,0}^{(T_u)}$	2	T_u	_	0	$\sqrt{3}YZ$
6	$\mathbb{G}_{2,1}^{(T_u)}$	2	T_u	_	1	$\sqrt{3}XZ$
7	$\mathbb{G}_{2,2}^{(T_u)}$	2	T_u	_	2	$\sqrt{3}XY$
- 8	$\mathbb{G}_{3,0}^{(T_g,1)}$	3	T_g	1	0	$\frac{X(2X^2-3Y^2-3Z^2)}{2}$
9	$\mathbb{G}_{3,1}^{(T_g,1)}$	3	T_g	1	1	$-\frac{Y(3X^2-2Y^2+3Z^2)}{2}$
10	$\mathbb{C}^{(T_g,1)}$	3	T_g	1	2	$-\frac{Z(3X^2+3Y^2-2Z^2)}{2}$
11	$\mathbb{C}^{(T_g,2)}$	3	T_g	2	0	$\frac{\sqrt{15}X(Y-Z)(Y+Z)}{2}$
12	$\mathbb{G}^{(T_g,2)}$	3	T_g	2	1	$-\frac{\sqrt{15}Y(X-Z)(X+Z)}{2}$
13	$\mathbb{G}_{3,2}^{3,1}$	3	T_g	2	2	$\frac{\sqrt{15}Z(X-Y)(X+Y)}{2}$

 \bullet Group info.: Generator = 2001, 2010, $3^+_{\ 111},\ -1$

Table 9: Conjugacy class.

rep. SO	symmetry operations
1	1
2001	$2_{001}, 2_{100}, 2_{010}$
3 ⁺ ₁₁₁	$3^{+}_{111}, \ 3^{+}_{1-1-1}, \ 3^{+}_{-11-1}, \ 3^{+}_{-1-11}$
3-111	$\begin{bmatrix} 3_{111}^-, \ 3_{1-1-1}^-, \ 3_{-11-1}^-, \ 3_{-1-11}^- \end{bmatrix}$
-1	-1
m ₀₀₁	$m_{001}, m_{100}, m_{010}$
-3^{+}_{111}	$\begin{bmatrix} -3^{+}_{111}, & -3^{+}_{1-1-1}, & -3^{+}_{-11-1}, & -3^{+}_{-1-11} \end{bmatrix}$
-3^{-}_{111}	$\begin{bmatrix} -3^{-}_{111}, & -3^{-}_{1-1-1}, & -3^{-}_{-11-1}, & -3^{-}_{-1-11} \end{bmatrix}$

Table 10: Symmetry operations.

No.	SO	No.	SO	No.	SO	No.	SO	No.	SO
1	1	2	2_{001}	3	2_{100}	4	2_{010}	5	3 ⁺ ₁₁₁
6	3^{+}_{1-1-1}	7	3^{+}_{-11-1}	8	3^{+}_{-1-11}	9	$3^{-}_{\ 111}$	10	3^{-}_{1-1-1}
11	3^{-}_{-11-1}	12	3^{-}_{-1-11}	13	-1	14	m_{001}	15	m_{100}
16	m_{010}	17	-3^{+}_{111}	18	-3^{+}_{1-1-1}	19	-3^{+}_{-11-1}	20	-3^{+}_{-1-11}
21	-3^{-}_{111}	22	-3^{-}_{1-1-1}	23	-3^{-}_{-11-1}	24	-3^{-}_{-1-11}		

Table 11: Character table.

	1	2001	3 ⁺ ₁₁₁	3-111	-1	m ₀₀₁	-3^{+}_{111}	-3-111
A_g	1	1	1	1	1	1	1	1
$E_g^{(a)}$	1	1	ω^*	ω	1	1	ω^*	ω
$E_g^{(b)}$	1	1	ω	ω^*	1	1	ω	ω^*
T_g	3	-1	0	0	3	-1	0	0
A_u	1	1	1	1	-1	-1	-1	-1
$E_u^{(a)}$	1	1	ω^*	ω	-1	-1	$-\omega^*$	$-\omega$
$E_u^{(b)}$	1	1	ω	ω^*	-1	-1	$-\omega$	$-\omega^*$
T_u	3	-1	0	0	-3	1	0	0

Table 12: Parity conversion.

\leftrightarrow	\leftrightarrow	\leftrightarrow	\leftrightarrow	\leftrightarrow
$A_g (A_u)$	$E_g^{(a)} (E_u^{(a)})$	$E_g^{(b)} (E_u^{(b)})$	T_g (T_u)	$A_u (A_g)$
$E_u^{(a)} (E_g^{(a)})$	$E_u^{(b)} (E_g^{(b)})$	$T_u (T_g)$		

Table 13: Symmetric product, $[\Gamma \otimes \Gamma']_+$.

	A_g	$E_g^{(a)}$	$E_g^{(b)}$	T_g	A_u	$E_u^{(a)}$	$E_u^{(b)}$	T_u
A_g	A_g	$E_g^{(a)}$ $E_g^{(b)}$	$E_g^{(b)}$	T_g	A_u	$E_u^{(a)}$	$E_u^{(b)}$	T_u
$E_g^{(a)}$		$E_g^{(b)}$	A_g	T_g	$E_u^{(a)} \\ E_u^{(b)}$	$E_u^{(b)}$	A_u	T_u
$E_g^{(b)}$			$E_g^{(a)}$	T_g	$E_u^{(b)}$	A_u	$E_u^{(a)}$	T_u
$E_g^{(a)}$ $E_g^{(b)}$ T_g				$A_g + E_g^{(a)} + E_g^{(b)} + T_g$	T_u	T_u	T_u	$A_u + E_u^{(a)} + E_u^{(b)} + 2T_u$
A_u					A_g	$E_g^{(a)}$ $E_g^{(b)}$	$E_g^{(b)}$	T_g
$ \begin{array}{c} A_u \\ E_u^{(a)} \\ E_u^{(b)} \end{array} $						$E_g^{(b)}$	A_g	T_g
$E_u^{(b)}$							$E_g^{(a)}$	T_g
T_u								$A_g + E_g^{(a)} + E_g^{(b)} + T_g$

Table 14: Anti-symmetric product, $[\Gamma \otimes \Gamma]_-$.

A_g	$E_g^{(a)}$	$E_g^{(b)}$	T_g	A_u	$E_u^{(a)}$	$E_u^{(b)}$	T_u
_	_	_	T_g	_	_	_	T_g

Table 15: Virtual-cluster sites.

No.	position	No.	position	No.	position	No.	position
1	(3 2 1)	2	$\begin{pmatrix} -3 & -2 & 1 \end{pmatrix}$	3	$\begin{pmatrix} 3 & -2 & -1 \end{pmatrix}$	4	$\begin{pmatrix} -3 & 2 & -1 \end{pmatrix}$
5	$\begin{pmatrix} 1 & 3 & 2 \end{pmatrix}$	6	$\begin{pmatrix} -1 & -3 & 2 \end{pmatrix}$	7	$\begin{pmatrix} 1 & -3 & -2 \end{pmatrix}$	8	$\begin{pmatrix} -1 & 3 & -2 \end{pmatrix}$
9	$\begin{pmatrix} 2 & 1 & 3 \end{pmatrix}$	10	$\begin{pmatrix} -2 & 1 & -3 \end{pmatrix}$	11	$\begin{pmatrix} -2 & -1 & 3 \end{pmatrix}$	12	$\begin{pmatrix} 2 & -1 & -3 \end{pmatrix}$
13	$\begin{pmatrix} -3 & -2 & -1 \end{pmatrix}$	14	$\begin{pmatrix} 3 & 2 & -1 \end{pmatrix}$	15	$\begin{pmatrix} -3 & 2 & 1 \end{pmatrix}$	16	$\begin{pmatrix} 3 & -2 & 1 \end{pmatrix}$
17	$\begin{pmatrix} -1 & -3 & -2 \end{pmatrix}$	18	$\begin{pmatrix} 1 & 3 & -2 \end{pmatrix}$	19	$\begin{pmatrix} -1 & 3 & 2 \end{pmatrix}$	20	$\begin{pmatrix} 1 & -3 & 2 \end{pmatrix}$
21	$\begin{pmatrix} -2 & -1 & -3 \end{pmatrix}$	22	$\begin{pmatrix} 2 & -1 & 3 \end{pmatrix}$	23	$\begin{pmatrix} 2 & 1 & -3 \end{pmatrix}$	24	$\begin{pmatrix} -2 & 1 & 3 \end{pmatrix}$

Table 16: Virtual-cluster basis.

symbol	1	2	3	4	5	6	7	8	9	10
$\mathbb{Q}_0^{(A_g)}$	$\frac{\sqrt{6}}{12}$	$\frac{\sqrt{6}}{12}$	$\frac{\sqrt{6}}{12}$	$\frac{\sqrt{6}}{12}$	$\frac{\sqrt{6}}{12}$	$\frac{\sqrt{6}}{12}$	$\frac{\sqrt{6}}{12}$	$\frac{\sqrt{6}}{12}$	$\frac{\sqrt{6}}{12}$	$\frac{\sqrt{6}}{12}$
	$\frac{\sqrt{6}}{12}$	$\frac{\sqrt{6}}{12}$	$\frac{\sqrt{6}}{12}$	$\frac{\sqrt{6}}{12}$	$\frac{\sqrt{6}}{12}$	$\frac{\sqrt{6}}{12}$	$\frac{\sqrt{6}}{12}$	$\frac{\sqrt{6}}{12}$	$\frac{\sqrt{6}}{12}$	$\frac{\sqrt{6}}{12}$
	$\frac{\sqrt{6}}{12}$	$\frac{\sqrt{6}}{12}$	$\frac{\sqrt{6}}{12}$	$\frac{\sqrt{6}}{12}$						
$\mathbb{Q}_{1,0}^{(T_u)}$	$\frac{3\sqrt{7}}{28}$	$-\frac{3\sqrt{7}}{28}$	$\frac{3\sqrt{7}}{28}$	$-\frac{3\sqrt{7}}{28}$	$\frac{\sqrt{7}}{28}$	$-\frac{\sqrt{7}}{28}$	$\frac{\sqrt{7}}{28}$	$-\frac{\sqrt{7}}{28}$	$\frac{\sqrt{7}}{14}$	$-\frac{\sqrt{7}}{14}$
	$-\frac{\sqrt{7}}{14}$	$\frac{\sqrt{7}}{14}$	$-\frac{3\sqrt{7}}{28}$	$\frac{3\sqrt{7}}{28}$	$-\frac{3\sqrt{7}}{28}$	$\frac{3\sqrt{7}}{28}$	$-\frac{\sqrt{7}}{28}$	$\frac{\sqrt{7}}{28}$	$-\frac{\sqrt{7}}{28}$	$\frac{\sqrt{7}}{28}$
	$-\frac{\sqrt{7}}{14}$	$\frac{\sqrt{7}}{14}$	$\frac{\sqrt{7}}{14}$	$-\frac{\sqrt{7}}{14}$						
$\mathbb{Q}_{1,1}^{(T_u)}$	$\frac{\sqrt{7}}{14}$	$-\frac{\sqrt{7}}{14}$	$-\frac{\sqrt{7}}{14}$	$\frac{\sqrt{7}}{14}$	$\frac{3\sqrt{7}}{28}$	$-\frac{3\sqrt{7}}{28}$	$-\frac{3\sqrt{7}}{28}$	$\frac{3\sqrt{7}}{28}$	$\frac{\sqrt{7}}{28}$	$\frac{\sqrt{7}}{28}$
	$-\frac{\sqrt{7}}{28}$	$-\frac{\sqrt{7}}{28}$	$-\frac{\sqrt{7}}{14}$	$\frac{\sqrt{7}}{14}$	$\frac{\sqrt{7}}{14}$	$-\frac{\sqrt{7}}{14}$	$-\frac{3\sqrt{7}}{28}$	$\frac{3\sqrt{7}}{28}$	$\frac{3\sqrt{7}}{28}$	$-\frac{3\sqrt{7}}{28}$
(m.)	$-\frac{\sqrt{7}}{28}$ $\frac{\sqrt{7}}{28}$	$-\frac{\sqrt{7}}{28}$ $\frac{\sqrt{7}}{28}$	$\frac{\sqrt{7}}{28}$	$\frac{\sqrt{7}}{28}$						
$\mathbb{Q}_{1,2}^{(T_u)}$	$\frac{\sqrt{7}}{28}$	$\frac{\sqrt{7}}{28}$	$-\frac{\sqrt{7}}{28}$	$-\frac{\sqrt{7}}{28}$	$\frac{\sqrt{7}}{14}$	$\frac{\sqrt{7}}{14}$	$-\frac{\sqrt{7}}{14}$	$-\frac{\sqrt{7}}{14}$	$\frac{3\sqrt{7}}{28}$	$-\frac{3\sqrt{7}}{28}$
	$\frac{3\sqrt{7}}{28}$	$-\frac{3\sqrt{7}}{28}$	$-\frac{\sqrt{7}}{28}$	$-\frac{\sqrt{7}}{28}$	$\frac{\sqrt{7}}{28}$	$\frac{\sqrt{7}}{28}$	$-\frac{\sqrt{7}}{14}$	$-\frac{\sqrt{7}}{14}$	$\frac{\sqrt{7}}{14}$	$\frac{\sqrt{7}}{14}$
(E _a)	$-\frac{3\sqrt{7}}{28}$	$\frac{3\sqrt{7}}{28}$	$-\frac{3\sqrt{7}}{28}$	$\frac{3\sqrt{7}}{28}$	/0	<u> </u>	<u> </u>	<u></u>	10. (5	10 /0
$\mathbb{Q}_{2,0}^{(Eg)}$	$-\frac{11\sqrt{3}}{84}$	$-\frac{11\sqrt{3}}{84}$	$-\frac{11\sqrt{3}}{84}$	$-\frac{11\sqrt{3}}{84}$	$-\frac{\sqrt{3}}{42}$	$-\frac{\sqrt{3}}{42}$	$-\frac{\sqrt{3}}{42}$	$-\frac{\sqrt{3}}{42}$	$\frac{13\sqrt{3}}{84}$	$\frac{13\sqrt{3}}{84}$
	$\frac{13\sqrt{3}}{84}$	$\frac{13\sqrt{3}}{84}$	$-\frac{11\sqrt{3}}{84}$	$-\frac{11\sqrt{3}}{84}$	$-\frac{11\sqrt{3}}{84}$	$-\frac{11\sqrt{3}}{84}$	$-\frac{\sqrt{3}}{42}$	$-\frac{\sqrt{3}}{42}$	$-\frac{\sqrt{3}}{42}$	$-\frac{\sqrt{3}}{42}$
(E_a)	$\frac{13\sqrt{3}}{84}$	13√3 84	$\frac{13\sqrt{3}}{84}$	$\frac{13\sqrt{3}}{84}$		2				
$\mathbb{Q}_{2,1}^{(E_g)}$	$\frac{5}{28}$	$\frac{5}{28}$	$\frac{5}{28}$	$\frac{5}{28}$	$-\frac{2}{7}$	$-\frac{2}{7}$	$-\frac{2}{7}$	$-\frac{2}{7}$	$\frac{3}{28}$	$\frac{3}{28}$
	$\frac{3}{28}$	$\frac{3}{28}$	$\frac{5}{28}$	$\frac{5}{28}$	$\frac{5}{28}$	$\frac{5}{28}$	$-\frac{2}{7}$	$-\frac{2}{7}$	$-\frac{2}{7}$	$-\frac{2}{7}$
$\mathbb{Q}_{2,0}^{(T_g)}$	$\frac{\frac{3}{28}}{\frac{\sqrt{2}}{14}}$	$\frac{3}{28}$	$\frac{\frac{3}{28}}{\frac{\sqrt{2}}{14}}$	$\frac{\frac{3}{28}}{-\frac{\sqrt{2}}{14}}$	$3\sqrt{2}$	$3\sqrt{2}$	$3\sqrt{2}$	$3\sqrt{2}$	$3\sqrt{2}$	$-\frac{3\sqrt{2}}{28}$
$\mathbb{Q}_{2,0}$	$-\frac{3\sqrt{2}}{28}$	$-\frac{\sqrt{2}}{14}$ $\frac{3\sqrt{2}}{28}$	$\frac{\sqrt{2}}{14}$ $\frac{\sqrt{2}}{14}$	$-\frac{\sqrt{2}}{14}$ $-\frac{\sqrt{2}}{14}$	$\frac{3\sqrt{2}}{14}$ $\frac{\sqrt{2}}{14}$	$-\frac{3\sqrt{2}}{14} \\ -\frac{\sqrt{2}}{14}$	$\frac{3\sqrt{2}}{14}$ $\frac{3\sqrt{2}}{14}$	$-\frac{3\sqrt{2}}{14}$ $-\frac{3\sqrt{2}}{14}$	$\frac{3\sqrt{2}}{28}$ $\frac{3\sqrt{2}}{14}$	$-\frac{3\sqrt{2}}{28}$ $-\frac{3\sqrt{2}}{14}$
	$\frac{3\sqrt{2}}{28}$	$-\frac{3\sqrt{2}}{28}$	$-\frac{3\sqrt{2}}{28}$	$\frac{3\sqrt{2}}{28}$	14	14	14	14	14	14
$\mathbb{Q}_{2,1}^{(T_g)}$	$\frac{3\sqrt{2}}{28}$	$-\frac{3\sqrt{2}}{28}$	$-\frac{3\sqrt{2}}{28}$	$\frac{3\sqrt{2}}{28}$	$\frac{\sqrt{2}}{14}$	$-\frac{\sqrt{2}}{14}$	$-\frac{\sqrt{2}}{14}$	$\frac{\sqrt{2}}{14}$	$\frac{3\sqrt{2}}{14}$	$\frac{3\sqrt{2}}{14}$
~2,1	$-\frac{3\sqrt{2}}{14}$	$-\frac{3\sqrt{2}}{14}$	$\frac{3\sqrt{2}}{28}$	$-\frac{3\sqrt{2}}{28}$	$-\frac{3\sqrt{2}}{28}$	$\frac{3\sqrt{2}}{28}$	$\frac{\sqrt{2}}{14}$	$-\frac{\sqrt{2}}{14}$	$-\frac{\sqrt{2}}{14}$	$\frac{\sqrt{2}}{14}$
	$\frac{3\sqrt{2}}{14}$	$\frac{3\sqrt{2}}{14}$	$-\frac{3\sqrt{2}}{14}$	$-\frac{3\sqrt{2}}{14}$	20	20	14	14	14	14
$\mathbb{Q}_{2,2}^{(T_g)}$	$\frac{3\sqrt{2}}{14}$	$\frac{3\sqrt{2}}{14}$	$-\frac{3\sqrt{2}}{14}$	$-\frac{3\sqrt{2}}{14}$	$\frac{3\sqrt{2}}{28}$	$\frac{3\sqrt{2}}{28}$	$-\frac{3\sqrt{2}}{28}$	$-\frac{3\sqrt{2}}{28}$	$\frac{\sqrt{2}}{14}$	$-\frac{\sqrt{2}}{14}$
-,-	$\frac{\sqrt{2}}{14}$	$-\frac{\sqrt{2}}{14}$	$\frac{3\sqrt{2}}{14}$	$\frac{3\sqrt{2}}{14}$	$-\frac{3\sqrt{2}}{14}$	$-\frac{3\sqrt{2}}{14}$	$\frac{3\sqrt{2}}{28}$	$\frac{3\sqrt{2}}{28}$	$-\frac{3\sqrt{2}}{28}$	$-\frac{3\sqrt{2}}{28}$
	$\frac{\sqrt{2}}{14}$	$-\frac{\sqrt{2}}{14}$	$\frac{\sqrt{2}}{14}$	$-\frac{\sqrt{2}}{14}$						
$\mathbb{Q}_3^{(A_u)}$	$\frac{\sqrt{6}}{12}$	$\frac{\sqrt{6}}{12}$	$\frac{\sqrt{6}}{12}$	$\frac{\sqrt{6}}{12}$	$\frac{\sqrt{6}}{12}$	$\frac{\sqrt{6}}{12}$	$\frac{\sqrt{6}}{12}$	$\frac{\sqrt{6}}{12}$	$\frac{\sqrt{6}}{12}$	$\frac{\sqrt{6}}{12}$
	$\frac{\sqrt{6}}{12}$	$\frac{\sqrt{6}}{12}$	$-\frac{\sqrt{6}}{12}$	$-\frac{\sqrt{6}}{12}$	$-\frac{\sqrt{6}}{12}$	$-\frac{\sqrt{6}}{12}$	$-\frac{\sqrt{6}}{12}$	$-\frac{\sqrt{6}}{12}$	$-\frac{\sqrt{6}}{12}$	$-\frac{\sqrt{6}}{12}$

Table 16

symbol	1	2	3	4	5	6	7	8	9	10
	$-\frac{\sqrt{6}}{12}$	$-\frac{\sqrt{6}}{12}$	$-\frac{\sqrt{6}}{12}$	$-\frac{\sqrt{6}}{12}$						
$\mathbb{Q}_{3,0}^{(T_u,1)}$	$\frac{\sqrt{6}}{12}$	$-\frac{\sqrt{6}}{12}$	$\frac{\sqrt{6}}{12}$	$-\frac{\sqrt{6}}{12}$	$-\frac{\sqrt{6}}{12}$	$\frac{\sqrt{6}}{12}$	$-\frac{\sqrt{6}}{12}$	$\frac{\sqrt{6}}{12}$	$-\frac{\sqrt{6}}{12}$	$\frac{\sqrt{6}}{12}$
	$\frac{\sqrt{6}}{12}$	$-\frac{\sqrt{6}}{12}$	$-\frac{\sqrt{6}}{12}$	$\frac{\sqrt{6}}{12}$	$-\frac{\sqrt{6}}{12}$	$\frac{\sqrt{6}}{12}$	$\frac{\sqrt{6}}{12}$	$-\frac{\sqrt{6}}{12}$	$\frac{\sqrt{6}}{12}$	$-\frac{\sqrt{6}}{12}$
	$\frac{\sqrt{6}}{12}$	$-\frac{\sqrt{6}}{12}$	$-\frac{\sqrt{6}}{12}$	$\frac{\sqrt{6}}{12}$						
$\mathbb{Q}_{3,1}^{(T_u,1)}$	$-\frac{\sqrt{6}}{12}$	$\frac{\sqrt{6}}{12}$	$\frac{\sqrt{6}}{12}$	$-\frac{\sqrt{6}}{12}$	$\frac{\sqrt{6}}{12}$	$-\frac{\sqrt{6}}{12}$	$-\frac{\sqrt{6}}{12}$	$\frac{\sqrt{6}}{12}$	$-\frac{\sqrt{6}}{12}$	$-\frac{\sqrt{6}}{12}$
	$\frac{\sqrt{6}}{12}$	$\frac{\sqrt{6}}{12}$	$\frac{\sqrt{6}}{12}$	$-\frac{\sqrt{6}}{12}$	$-\frac{\sqrt{6}}{12}$	$\frac{\sqrt{6}}{12}$	$-\frac{\sqrt{6}}{12}$	$\frac{\sqrt{6}}{12}$	$\frac{\sqrt{6}}{12}$	$-\frac{\sqrt{6}}{12}$
	$\frac{\sqrt{6}}{12}$	$\frac{\sqrt{6}}{12}$	$-\frac{\sqrt{6}}{12}$	$-\frac{\sqrt{6}}{12}$						
$\mathbb{Q}_{3,2}^{(T_u,1)}$	$-\frac{\sqrt{6}}{12}$	$-\frac{\sqrt{6}}{12}$	$\frac{\sqrt{6}}{12}$	$\frac{\sqrt{6}}{12}$	$-\frac{\sqrt{6}}{12}$	$-\frac{\sqrt{6}}{12}$	$\frac{\sqrt{6}}{12}$	$\frac{\sqrt{6}}{12}$	$\frac{\sqrt{6}}{12}$	$-\frac{\sqrt{6}}{12}$
	$\frac{\sqrt{6}}{12}$	$-\frac{\sqrt{6}}{12}$	$\frac{\sqrt{6}}{12}$	$\frac{\sqrt{6}}{12}$	$-\frac{\sqrt{6}}{12}$	$-\frac{\sqrt{6}}{12}$	$\frac{\sqrt{6}}{12}$	$\frac{\sqrt{6}}{12}$	$-\frac{\sqrt{6}}{12}$	$-\frac{\sqrt{6}}{12}$
	$-\frac{\sqrt{6}}{12}$	$\frac{\sqrt{6}}{12}$	$-\frac{\sqrt{6}}{12}$	$\frac{\sqrt{6}}{12}$						
$\mathbb{Q}_{3,0}^{(T_u,2)}$	$\frac{\sqrt{21}}{84}$	$-\frac{\sqrt{21}}{84}$	$\frac{\sqrt{21}}{84}$	$-\frac{\sqrt{21}}{84}$	$\frac{5\sqrt{21}}{84}$	$-\frac{5\sqrt{21}}{84}$	$\frac{5\sqrt{21}}{84}$	$-\frac{5\sqrt{21}}{84}$	$-\frac{\sqrt{21}}{21}$	$\frac{\sqrt{21}}{21}$
,	$\frac{\sqrt{21}}{21}$	$-\frac{\sqrt{21}}{21}$	$-\frac{\sqrt{21}}{84}$	$\frac{\sqrt{21}}{84}$	$-\frac{\sqrt{21}}{84}$	$\frac{\sqrt{21}}{84}$	$-\frac{5\sqrt{21}}{84}$	$\frac{5\sqrt{21}}{84}$	$-\frac{5\sqrt{21}}{84}$	$\frac{5\sqrt{21}}{84}$
	$\frac{\sqrt{21}}{21}$	$-\frac{\sqrt{21}}{21}$	$-\frac{\sqrt{21}}{21}$	$\frac{\sqrt{21}}{21}$						
$\mathbb{Q}_{3,1}^{(T_u,2)}$	$-\frac{\sqrt{21}}{21}$	$\frac{\sqrt{21}}{21}$	$\frac{\sqrt{21}}{21}$	$-\frac{\sqrt{21}}{21}$	$\frac{\sqrt{21}}{84}$	$-\frac{\sqrt{21}}{84}$	$-\frac{\sqrt{21}}{84}$	$\frac{\sqrt{21}}{84}$	$\frac{5\sqrt{21}}{84}$	$\frac{5\sqrt{21}}{84}$
-,	$-\frac{5\sqrt{21}}{84}$	$-\frac{5\sqrt{21}}{84}$	$\frac{\sqrt{21}}{21}$	$-\frac{\sqrt{21}}{21}$	$-\frac{\sqrt{21}}{21}$	$\frac{\sqrt{21}}{21}$	$-\frac{\sqrt{21}}{84}$	$\frac{\sqrt{21}}{84}$	$\frac{\sqrt{21}}{84}$	$-\frac{\sqrt{21}}{84}$
	$-\frac{5\sqrt{21}}{84}$	$-\frac{5\sqrt{21}}{84}$	$\frac{5\sqrt{21}}{84}$	$\frac{5\sqrt{21}}{84}$						
$\mathbb{Q}_{3,2}^{(T_u,2)}$	$\frac{5\sqrt{21}}{84}$	$\frac{5\sqrt{21}}{84}$	$-\frac{5\sqrt{21}}{84}$	$-\frac{5\sqrt{21}}{84}$	$-\frac{\sqrt{21}}{21}$	$-\frac{\sqrt{21}}{21}$	$\frac{\sqrt{21}}{21}$	$\frac{\sqrt{21}}{21}$	$\frac{\sqrt{21}}{84}$	$-\frac{\sqrt{21}}{84}$
	$\frac{\sqrt{21}}{84}$	$-\frac{\sqrt{21}}{84}$	$-\frac{5\sqrt{21}}{84}$	$-\frac{5\sqrt{21}}{84}$	$\frac{5\sqrt{21}}{84}$	$\frac{5\sqrt{21}}{84}$	$\frac{\sqrt{21}}{21}$	$\frac{\sqrt{21}}{21}$	$-\frac{\sqrt{21}}{21}$	$-\frac{\sqrt{21}}{21}$
	$-\frac{\sqrt{21}}{84}$	$\frac{\sqrt{21}}{84}$	$-\frac{\sqrt{21}}{84}$	$\frac{\sqrt{21}}{84}$						
$\mathbb{Q}_{4,0}^{(T_g,1)}$	$\frac{9\sqrt{829}}{23212}$	$-\frac{9\sqrt{829}}{23212}$	$\frac{9\sqrt{829}}{23212}$	$-\frac{9\sqrt{829}}{23212}$	$\frac{125\sqrt{829}}{23212}$	$-\frac{125\sqrt{829}}{23212}$	$\frac{125\sqrt{829}}{23212}$	$-\frac{125\sqrt{829}}{23212}$	$-\frac{64\sqrt{829}}{5803}$	$\frac{64\sqrt{829}}{5803}$
,-	$\frac{64\sqrt{829}}{5803}$	$-\frac{64\sqrt{829}}{5803}$	$\frac{9\sqrt{829}}{23212}$	$-\frac{9\sqrt{829}}{23212}$	$\frac{9\sqrt{829}}{23212}$	$-\frac{9\sqrt{829}}{23212}$	$\frac{125\sqrt{829}}{23212}$	$-\frac{125\sqrt{829}}{23212}$	$\frac{125\sqrt{829}}{23212}$	$-\frac{125\sqrt{829}}{23212}$
	$-\frac{64\sqrt{829}}{5803}$	$\frac{64\sqrt{829}}{5803}$	$\frac{64\sqrt{829}}{5803}$	$-\frac{64\sqrt{829}}{5803}$						
$\mathbb{Q}_{4,1}^{(T_g,1)}$	$-\frac{64\sqrt{829}}{5803}$	$\frac{64\sqrt{829}}{5803}$	$\frac{64\sqrt{829}}{5803}$	$-\frac{64\sqrt{829}}{5803}$	$\frac{9\sqrt{829}}{23212}$	$-\frac{9\sqrt{829}}{23212}$	$-\frac{9\sqrt{829}}{23212}$	$\frac{9\sqrt{829}}{23212}$	$\frac{125\sqrt{829}}{23212}$	$\frac{125\sqrt{829}}{23212}$
-,+	$-\frac{125\sqrt{829}}{23212}$	$-\frac{125\sqrt{829}}{23212}$	$-\frac{64\sqrt{829}}{5803}$	$\frac{64\sqrt{829}}{5803}$	$\frac{64\sqrt{829}}{5803}$	$-\frac{64\sqrt{829}}{5803}$	$\frac{9\sqrt{829}}{23212}$	$-\frac{9\sqrt{829}}{23212}$	$-\frac{9\sqrt{829}}{23212}$	$\frac{9\sqrt{829}}{23212}$
	$\frac{125\sqrt{829}}{23212}$	$\frac{125\sqrt{829}}{23212}$	$-\frac{125\sqrt{829}}{23212}$	$-\frac{125\sqrt{829}}{23212}$	3300	2000	20212	23212	20212	20212
$\mathbb{Q}_{4,2}^{(T_g,1)}$	$\frac{125\sqrt{829}}{23212}$	$\frac{125\sqrt{829}}{23212}$	$-\frac{125\sqrt{829}}{23212}$	$-\frac{125\sqrt{829}}{23212}$	$-\frac{64\sqrt{829}}{5803}$	$-\frac{64\sqrt{829}}{5803}$	$\frac{64\sqrt{829}}{5803}$	$\frac{64\sqrt{829}}{5803}$	$\frac{9\sqrt{829}}{23212}$	$-\frac{9\sqrt{829}}{23212}$
-,-	$\frac{9\sqrt{829}}{23212}$	$-\frac{9\sqrt{829}}{23212}$	$\frac{125\sqrt{829}}{23212}$	$\frac{125\sqrt{829}}{23212}$	$-\frac{125\sqrt{829}}{23212}$	$-\frac{125\sqrt{829}}{23212}$	$-\frac{64\sqrt{829}}{5803}$	$-\frac{64\sqrt{829}}{5803}$	$\frac{64\sqrt{829}}{5803}$	$\frac{64\sqrt{829}}{5803}$
	$\frac{9\sqrt{829}}{23212}$	$-\frac{9\sqrt{829}}{23212}$	$\frac{9\sqrt{829}}{23212}$	$-\frac{9\sqrt{829}}{23212}$					****	****
$\mathbb{Q}_{4,0}^{(T_g,2)}$	$\frac{39\sqrt{829}}{3316}$	$-\frac{39\sqrt{829}}{3316}$	$\frac{39\sqrt{829}}{3316}$	$-\frac{39\sqrt{829}}{3316}$	$-\frac{11\sqrt{829}}{3316}$	$\frac{11\sqrt{829}}{3316}$	$-\frac{11\sqrt{829}}{3316}$	$\frac{11\sqrt{829}}{3316}$	$-\frac{\sqrt{829}}{829}$	$\frac{\sqrt{829}}{829}$
- 4,0	3310	3310	3310	3310	3310	3310	3310	3310	049	049

Table 16

symbol	1	2	3	4	5	6	7	8	9	10
	$\frac{\sqrt{829}}{829}$	$-\frac{\sqrt{829}}{829}$	$\frac{39\sqrt{829}}{3316}$	$-\frac{39\sqrt{829}}{3316}$	$\frac{39\sqrt{829}}{3316}$	$-\frac{39\sqrt{829}}{3316}$	$-\frac{11\sqrt{829}}{3316}$	$\frac{11\sqrt{829}}{3316}$	$-\frac{11\sqrt{829}}{3316}$	$\frac{11\sqrt{829}}{3316}$
	$-\frac{\sqrt{829}}{829}$	$\frac{\sqrt{829}}{829}$	$\frac{\sqrt{829}}{829}$	$-\frac{\sqrt{829}}{829}$						
$\mathbb{Q}_{4,1}^{(T_g,2)}$	$-\frac{\sqrt{829}}{829}$	$\frac{\sqrt{829}}{829}$	$\frac{\sqrt{829}}{829}$	$-\frac{\sqrt{829}}{829}$	$\frac{39\sqrt{829}}{3316}$	$-\frac{39\sqrt{829}}{3316}$	$-\frac{39\sqrt{829}}{3316}$	$\frac{39\sqrt{829}}{3316}$	$-\frac{11\sqrt{829}}{3316}$	$-\frac{11\sqrt{829}}{3316}$
	$\frac{11\sqrt{829}}{3316}$	$\frac{11\sqrt{829}}{3316}$	$-\frac{\sqrt{829}}{829}$	$\frac{\sqrt{829}}{829}$	$\frac{\sqrt{829}}{829}$	$-\frac{\sqrt{829}}{829}$	$\frac{39\sqrt{829}}{3316}$	$-\frac{39\sqrt{829}}{3316}$	$-\frac{39\sqrt{829}}{3316}$	$\frac{39\sqrt{829}}{3316}$
	$-\frac{11\sqrt{829}}{3316}$	$-\frac{11\sqrt{829}}{3316}$	$\frac{11\sqrt{829}}{3316}$	$\frac{11\sqrt{829}}{3316}$						
$\mathbb{Q}_{4,2}^{(T_g,2)}$	$-\frac{11\sqrt{829}}{3316}$	$-\frac{11\sqrt{829}}{3316}$	$\frac{11\sqrt{829}}{3316}$	$\frac{11\sqrt{829}}{3316}$	$-\frac{\sqrt{829}}{829}$	$-\frac{\sqrt{829}}{829}$	$\frac{\sqrt{829}}{829}$	$\frac{\sqrt{829}}{829}$	$\frac{39\sqrt{829}}{3316}$	$-\frac{39\sqrt{829}}{3316}$
	$\frac{39\sqrt{829}}{3316}$	$-\frac{39\sqrt{829}}{3316}$	$-\frac{11\sqrt{829}}{3316}$	$-\frac{11\sqrt{829}}{3316}$	$\frac{11\sqrt{829}}{3316}$	$\frac{11\sqrt{829}}{3316}$	$-\frac{\sqrt{829}}{829}$	$-\frac{\sqrt{829}}{829}$	$\frac{\sqrt{829}}{829}$	$\frac{\sqrt{829}}{829}$
	$\frac{39\sqrt{829}}{3316}$	$-\frac{39\sqrt{829}}{3316}$	$\frac{39\sqrt{829}}{3316}$	$-\frac{39\sqrt{829}}{3316}$						
$\mathbb{Q}_{5,0}^{(E_{u})}$	$\frac{5}{28}$	$\frac{5}{28}$	$\frac{5}{28}$	$\frac{5}{28}$	$-\frac{2}{7}$	$-\frac{2}{7}$	$-\frac{2}{7}$	$-\frac{2}{7}$	$\frac{3}{28}$	$\frac{3}{28}$
	$\frac{3}{28}$	$\frac{3}{28}$	$-\frac{5}{28}$	$-\frac{5}{28}$	$-\frac{5}{28}$	$-\frac{5}{28}$	$\frac{2}{7}$	$\frac{2}{7}$	$\frac{2}{7}$	$\frac{2}{7}$
	$-\frac{3}{28}$	$-\frac{3}{28}$	$-\frac{3}{28}$	$-\frac{3}{28}$						
$\mathbb{Q}_{5,1}^{(E_u)}$	$\frac{11\sqrt{3}}{84}$	$\frac{11\sqrt{3}}{84}$	$\frac{11\sqrt{3}}{84}$	$\frac{11\sqrt{3}}{84}$	$\frac{\sqrt{3}}{42}$	$\frac{\sqrt{3}}{42}$	$\frac{\sqrt{3}}{42}$	$\frac{\sqrt{3}}{42}$	$-\frac{13\sqrt{3}}{84}$	$-\frac{13\sqrt{3}}{84}$
	$-\frac{13\sqrt{3}}{84}$	$-\frac{13\sqrt{3}}{84}$	$-\frac{11\sqrt{3}}{84}$	$-\frac{11\sqrt{3}}{84}$	$-\frac{11\sqrt{3}}{84}$	$-\frac{11\sqrt{3}}{84}$	$-\frac{\sqrt{3}}{42}$	$-\frac{\sqrt{3}}{42}$	$-\frac{\sqrt{3}}{42}$	$-\frac{\sqrt{3}}{42}$
	$\frac{13\sqrt{3}}{84}$	$\frac{13\sqrt{3}}{84}$	$\frac{13\sqrt{3}}{84}$	$\frac{13\sqrt{3}}{84}$						