

SAMB for “SnTe”

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- Group: No. 31 C_{2v}^7 $Pmn2_1$ [orthorhombic]
 - Associated point group: No. 7 C_{2v} $mm2$ [orthorhombic]
 - Generation condition
 - model type: **tight_binding**
 - time-reversal type: **electric**
 - irrep: [A1]
 - **spinful**
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- Unit cell:
 $a = 4.559$, $b = 6.0$, $c = 4.57$, $\alpha = 90.0$, $\beta = 90.0$, $\gamma = 90.0$
- Lattice vectors:
 $\mathbf{a}_1 = (4.559 \ 0 \ 0)$
 $\mathbf{a}_2 = (0 \ 6.0 \ 0)$
 $\mathbf{a}_3 = (0 \ 0 \ 4.57)$

Table 1: High-symmetry line: Γ -X.

symbol	position	symbol	position
Γ	$\begin{pmatrix} 0 & 0 & 0 \end{pmatrix}$	X	$\begin{pmatrix} \frac{1}{2} & 0 & 0 \end{pmatrix}$

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- Kets: dimension = 24

Table 2: Hilbert space for full matrix.

No.	ket	No.	ket	No.	ket	No.	ket	No.	ket
1	$(p_x, \uparrow)@Sn_1$	2	$(p_x, \downarrow)@Sn_1$	3	$(p_y, \uparrow)@Sn_1$	4	$(p_y, \downarrow)@Sn_1$	5	$(p_z, \uparrow)@Sn_1$
6	$(p_z, \downarrow)@Sn_1$	7	$(p_x, \uparrow)@Sn_2$	8	$(p_x, \downarrow)@Sn_2$	9	$(p_y, \uparrow)@Sn_2$	10	$(p_y, \downarrow)@Sn_2$
11	$(p_z, \uparrow)@Sn_2$	12	$(p_z, \downarrow)@Sn_2$	13	$(p_x, \uparrow)@Te_1$	14	$(p_x, \downarrow)@Te_1$	15	$(p_y, \uparrow)@Te_1$
16	$(p_y, \downarrow)@Te_1$	17	$(p_z, \uparrow)@Te_1$	18	$(p_z, \downarrow)@Te_1$	19	$(p_x, \uparrow)@Te_2$	20	$(p_x, \downarrow)@Te_2$
21	$(p_y, \uparrow)@Te_2$	22	$(p_y, \downarrow)@Te_2$	23	$(p_z, \uparrow)@Te_2$	24	$(p_z, \downarrow)@Te_2$		

- Sites in (primitive) unit cell:

Table 3: Site-clusters.

	site	position	mapping
S ₁ [2a: m..]	Sn ₁	$\begin{pmatrix} \frac{1}{2} & \frac{3}{5} & \frac{3}{5} \end{pmatrix}$	[1,4]
	Sn ₂	$\begin{pmatrix} 0 & \frac{2}{5} & \frac{1}{10} \end{pmatrix}$	[2,3]
S ₂ [2a: m..]	Te ₁	$\begin{pmatrix} \frac{1}{2} & \frac{7}{20} & \frac{2}{5} \end{pmatrix}$	[1,4]
	Te ₂	$\begin{pmatrix} 0 & \frac{13}{20} & \frac{9}{10} \end{pmatrix}$	[2,3]

- Bonds in (primitive) unit cell:

Table 4: Bond-clusters.

	bond	tail	head	n	#	$\mathbf{b@c}$	mapping
B ₁ [2a: m..]	b ₁	Te ₁	Sn ₁	1	1	$\begin{pmatrix} 0 & -\frac{1}{4} & -\frac{1}{5} \end{pmatrix} @ \begin{pmatrix} \frac{1}{2} & \frac{19}{40} & \frac{1}{2} \end{pmatrix}$	[1,4]
	b ₂	Te ₂	Sn ₂	1	1	$\begin{pmatrix} 0 & \frac{1}{4} & -\frac{1}{5} \end{pmatrix} @ \begin{pmatrix} 0 & \frac{21}{40} & 0 \end{pmatrix}$	[2,3]
B ₂ [4b: 1]	b ₃	Te ₂	Sn ₁	2	1	$\begin{pmatrix} -\frac{1}{2} & \frac{1}{20} & \frac{3}{10} \end{pmatrix} @ \begin{pmatrix} \frac{1}{4} & \frac{5}{8} & \frac{3}{4} \end{pmatrix}$	[1]
	b ₄	Te ₁	Sn ₂	2	1	$\begin{pmatrix} \frac{1}{2} & -\frac{1}{20} & \frac{3}{10} \end{pmatrix} @ \begin{pmatrix} \frac{1}{4} & \frac{3}{8} & \frac{1}{4} \end{pmatrix}$	[2]
	b ₅	Te ₁	Sn ₂	2	1	$\begin{pmatrix} -\frac{1}{2} & -\frac{1}{20} & \frac{3}{10} \end{pmatrix} @ \begin{pmatrix} \frac{3}{4} & \frac{3}{8} & \frac{1}{4} \end{pmatrix}$	[3]

continued ...

Table 4

	bond	tail	head	n	#	$\mathbf{b@c}$	mapping
	b ₆	Te ₂	Sn ₁	2	1	$\begin{pmatrix} \frac{1}{2} & \frac{1}{20} & \frac{3}{10} \end{pmatrix} @ \begin{pmatrix} \frac{3}{4} & \frac{5}{8} & \frac{3}{4} \end{pmatrix}$	[4]
B ₃ [4b: 1]	b ₇	Sn ₂	Sn ₁	1	1	$\begin{pmatrix} -\frac{1}{2} & -\frac{1}{5} & -\frac{1}{2} \end{pmatrix} @ \begin{pmatrix} \frac{1}{4} & \frac{1}{2} & \frac{7}{20} \end{pmatrix}$	[1]
	b ₈	Sn ₂	Sn ₁	1	1	$\begin{pmatrix} -\frac{1}{2} & -\frac{1}{5} & \frac{1}{2} \end{pmatrix} @ \begin{pmatrix} \frac{1}{4} & \frac{1}{2} & \frac{17}{20} \end{pmatrix}$	[-2]
	b ₉	Sn ₂	Sn ₁	1	1	$\begin{pmatrix} \frac{1}{2} & -\frac{1}{5} & \frac{1}{2} \end{pmatrix} @ \begin{pmatrix} \frac{3}{4} & \frac{1}{2} & \frac{17}{20} \end{pmatrix}$	[-3]
	b ₁₀	Sn ₂	Sn ₁	1	1	$\begin{pmatrix} \frac{1}{2} & -\frac{1}{5} & -\frac{1}{2} \end{pmatrix} @ \begin{pmatrix} \frac{3}{4} & \frac{1}{2} & \frac{7}{20} \end{pmatrix}$	[4]
B ₄ [4b: 1]	b ₁₁	Te ₂	Te ₁	1	1	$\begin{pmatrix} -\frac{1}{2} & \frac{3}{10} & -\frac{1}{2} \end{pmatrix} @ \begin{pmatrix} \frac{1}{4} & \frac{1}{2} & \frac{3}{20} \end{pmatrix}$	[1]
	b ₁₂	Te ₂	Te ₁	1	1	$\begin{pmatrix} -\frac{1}{2} & \frac{3}{10} & \frac{1}{2} \end{pmatrix} @ \begin{pmatrix} \frac{1}{4} & \frac{1}{2} & \frac{13}{20} \end{pmatrix}$	[-2]
	b ₁₃	Te ₂	Te ₁	1	1	$\begin{pmatrix} \frac{1}{2} & \frac{3}{10} & \frac{1}{2} \end{pmatrix} @ \begin{pmatrix} \frac{3}{4} & \frac{1}{2} & \frac{13}{20} \end{pmatrix}$	[-3]
	b ₁₄	Te ₂	Te ₁	1	1	$\begin{pmatrix} \frac{1}{2} & \frac{3}{10} & -\frac{1}{2} \end{pmatrix} @ \begin{pmatrix} \frac{3}{4} & \frac{1}{2} & \frac{3}{20} \end{pmatrix}$	[4]

- SAMB:

$$\boxed{\text{No. 1}} \quad \hat{Q}_0^{(A_1)} [M_1, S_1]$$

$$\hat{Z}_1 = \mathbb{X}_1[Q_0^{(a, A_1)}] \otimes \mathbb{Y}_1[Q_0^{(s, A_1)}]$$

$$\hat{Z}_1(\mathbf{k}) = \mathbb{X}_1[Q_0^{(a, A_1)}] \otimes \mathbb{U}_1[Q_0^{(s, A_1)}]$$

$$\boxed{\text{No. 2}} \quad \hat{Q}_2^{(A_1, 1)} [M_1, S_1]$$

$$\hat{Z}_2 = \mathbb{X}_2[Q_2^{(a, A_1, 1)}] \otimes \mathbb{Y}_1[Q_0^{(s, A_1)}]$$

$$\hat{Z}_2(\mathbf{k}) = \mathbb{X}_2[Q_2^{(a, A_1, 1)}] \otimes \mathbb{U}_1[Q_0^{(s, A_1)}]$$

$$\boxed{\text{No. 3}} \quad \hat{Q}_2^{(A_1, 2)} [M_1, S_1]$$

$$\hat{Z}_3 = \mathbb{X}_3[Q_2^{(a, A_1, 2)}] \otimes \mathbb{Y}_1[Q_0^{(s, A_1)}]$$

$$\hat{Z}_3(\mathbf{k}) = \mathbb{X}_3[Q_2^{(a, A_1, 2)}] \otimes \mathbb{U}_1[Q_0^{(s, A_1)}]$$

$$\boxed{\text{No. 4}} \quad \hat{Q}_1^{(A_1)} [M_1, S_1]$$

$$\hat{Z}_4 = \mathbb{X}_9[\mathbb{Q}_2^{(a, B_2)}] \otimes \mathbb{Y}_2[\mathbb{Q}_1^{(s, B_2)}]$$

$$\hat{Z}_4(\mathbf{k}) = \mathbb{X}_9[\mathbb{Q}_2^{(a, B_2)}] \otimes \mathbb{U}_2[\mathbb{Q}_1^{(s, B_2)}]$$

$$\boxed{\text{No. 5}} \quad \hat{Q}_0^{(A_1)}(1, 1) [M_1, S_1]$$

$$\hat{Z}_5 = \mathbb{X}_4[\mathbb{Q}_0^{(a, A_1)}(1, 1)] \otimes \mathbb{Y}_1[\mathbb{Q}_0^{(s, A_1)}]$$

$$\hat{Z}_5(\mathbf{k}) = \mathbb{X}_4[\mathbb{Q}_0^{(a, A_1)}(1, 1)] \otimes \mathbb{U}_1[\mathbb{Q}_0^{(s, A_1)}]$$

$$\boxed{\text{No. 6}} \quad \hat{Q}_2^{(A_1, 1)}(1, -1) [M_1, S_1]$$

$$\hat{Z}_6 = \mathbb{X}_5[\mathbb{Q}_2^{(a, A_1, 1)}(1, -1)] \otimes \mathbb{Y}_1[\mathbb{Q}_0^{(s, A_1)}]$$

$$\hat{Z}_6(\mathbf{k}) = \mathbb{X}_5[\mathbb{Q}_2^{(a, A_1, 1)}(1, -1)] \otimes \mathbb{U}_1[\mathbb{Q}_0^{(s, A_1)}]$$

$$\boxed{\text{No. 7}} \quad \hat{Q}_2^{(A_1, 2)}(1, -1) [M_1, S_1]$$

$$\hat{Z}_7 = \mathbb{X}_6[\mathbb{Q}_2^{(a, A_1, 2)}(1, -1)] \otimes \mathbb{Y}_1[\mathbb{Q}_0^{(s, A_1)}]$$

$$\hat{Z}_7(\mathbf{k}) = \mathbb{X}_6[\mathbb{Q}_2^{(a, A_1, 2)}(1, -1)] \otimes \mathbb{U}_1[\mathbb{Q}_0^{(s, A_1)}]$$

$$\boxed{\text{No. 8}} \quad \hat{Q}_1^{(A_1)}(1, -1) [M_1, S_1]$$

$$\hat{Z}_8 = \mathbb{X}_{14}[\mathbb{Q}_2^{(a, B_2)}(1, -1)] \otimes \mathbb{Y}_2[\mathbb{Q}_1^{(s, B_2)}]$$

$$\hat{Z}_8(\mathbf{k}) = \mathbb{X}_{14}[\mathbb{Q}_2^{(a, B_2)}(1, -1)] \otimes \mathbb{U}_2[\mathbb{Q}_1^{(s, B_2)}]$$

$$\boxed{\text{No. 9}} \quad \hat{Q}_1^{(A_1)}(1, 0) [M_1, S_1]$$

$$\hat{Z}_9 = \mathbb{X}_{15}[\mathbb{G}_1^{(a, B_2)}(1, 0)] \otimes \mathbb{Y}_2[\mathbb{Q}_1^{(s, B_2)}]$$

$$\hat{Z}_9(\mathbf{k}) = \mathbb{X}_{15}[\mathbb{G}_1^{(a, B_2)}(1, 0)] \otimes \mathbb{U}_2[\mathbb{Q}_1^{(s, B_2)}]$$

$$\boxed{\text{No. 10}} \quad \hat{\mathbb{Q}}_0^{(A_1)} [\mathbf{M}_1, \mathbf{S}_2]$$

$$\hat{\mathbb{Z}}_{10} = \mathbb{X}_1[\mathbb{Q}_0^{(a, A_1)}] \otimes \mathbb{Y}_3[\mathbb{Q}_0^{(s, A_1)}]$$

$$\hat{\mathbb{Z}}_{10}(\mathbf{k}) = \mathbb{X}_1[\mathbb{Q}_0^{(a, A_1)}] \otimes \mathbb{U}_3[\mathbb{Q}_0^{(s, A_1)}]$$

$$\boxed{\text{No. 11}} \quad \hat{\mathbb{Q}}_2^{(A_1, 1)} [\mathbf{M}_1, \mathbf{S}_2]$$

$$\hat{\mathbb{Z}}_{11} = \mathbb{X}_2[\mathbb{Q}_2^{(a, A_1, 1)}] \otimes \mathbb{Y}_3[\mathbb{Q}_0^{(s, A_1)}]$$

$$\hat{\mathbb{Z}}_{11}(\mathbf{k}) = \mathbb{X}_2[\mathbb{Q}_2^{(a, A_1, 1)}] \otimes \mathbb{U}_3[\mathbb{Q}_0^{(s, A_1)}]$$

$$\boxed{\text{No. 12}} \quad \hat{\mathbb{Q}}_2^{(A_1, 2)} [\mathbf{M}_1, \mathbf{S}_2]$$

$$\hat{\mathbb{Z}}_{12} = \mathbb{X}_3[\mathbb{Q}_2^{(a, A_1, 2)}] \otimes \mathbb{Y}_3[\mathbb{Q}_0^{(s, A_1)}]$$

$$\hat{\mathbb{Z}}_{12}(\mathbf{k}) = \mathbb{X}_3[\mathbb{Q}_2^{(a, A_1, 2)}] \otimes \mathbb{U}_3[\mathbb{Q}_0^{(s, A_1)}]$$

$$\boxed{\text{No. 13}} \quad \hat{\mathbb{Q}}_1^{(A_1)} [\mathbf{M}_1, \mathbf{S}_2]$$

$$\hat{\mathbb{Z}}_{13} = \mathbb{X}_9[\mathbb{Q}_2^{(a, B_2)}] \otimes \mathbb{Y}_4[\mathbb{Q}_1^{(s, B_2)}]$$

$$\hat{\mathbb{Z}}_{13}(\mathbf{k}) = \mathbb{X}_9[\mathbb{Q}_2^{(a, B_2)}] \otimes \mathbb{U}_4[\mathbb{Q}_1^{(s, B_2)}]$$

$$\boxed{\text{No. 14}} \quad \hat{\mathbb{Q}}_0^{(A_1)}(1, 1) [\mathbf{M}_1, \mathbf{S}_2]$$

$$\hat{\mathbb{Z}}_{14} = \mathbb{X}_4[\mathbb{Q}_0^{(a, A_1)}(1, 1)] \otimes \mathbb{Y}_3[\mathbb{Q}_0^{(s, A_1)}]$$

$$\hat{\mathbb{Z}}_{14}(\mathbf{k}) = \mathbb{X}_4[\mathbb{Q}_0^{(a, A_1)}(1, 1)] \otimes \mathbb{U}_3[\mathbb{Q}_0^{(s, A_1)}]$$

$$\boxed{\text{No. 15}} \quad \hat{\mathbb{Q}}_2^{(A_1, 1)}(1, -1) [\mathbf{M}_1, \mathbf{S}_2]$$

$$\hat{\mathbb{Z}}_{15} = \mathbb{X}_5[\mathbb{Q}_2^{(a, A_1, 1)}(1, -1)] \otimes \mathbb{Y}_3[\mathbb{Q}_0^{(s, A_1)}]$$

$$\hat{\mathbb{Z}}_{15}(\mathbf{k}) = \mathbb{X}_5[\mathbb{Q}_2^{(a, A_1, 1)}(1, -1)] \otimes \mathbb{U}_3[\mathbb{Q}_0^{(s, A_1)}]$$

$$\boxed{\text{No. 16}} \quad \hat{\mathbb{Q}}_2^{(A_1,2)}(1, -1) \text{ } [M_1, S_2]$$

$$\hat{\mathbb{Z}}_{16} = \mathbb{X}_6[\mathbb{Q}_2^{(a,A_1,2)}(1, -1)] \otimes \mathbb{Y}_3[\mathbb{Q}_0^{(s,A_1)}]$$

$$\hat{\mathbb{Z}}_{16}(\mathbf{k}) = \mathbb{X}_6[\mathbb{Q}_2^{(a,A_1,2)}(1, -1)] \otimes \mathbb{U}_3[\mathbb{Q}_0^{(s,A_1)}]$$

$$\boxed{\text{No. 17}} \quad \hat{\mathbb{Q}}_1^{(A_1)}(1, -1) \text{ } [M_1, S_2]$$

$$\hat{\mathbb{Z}}_{17} = \mathbb{X}_{14}[\mathbb{Q}_2^{(a,B_2)}(1, -1)] \otimes \mathbb{Y}_4[\mathbb{Q}_1^{(s,B_2)}]$$

$$\hat{\mathbb{Z}}_{17}(\mathbf{k}) = \mathbb{X}_{14}[\mathbb{Q}_2^{(a,B_2)}(1, -1)] \otimes \mathbb{U}_4[\mathbb{Q}_1^{(s,B_2)}]$$

$$\boxed{\text{No. 18}} \quad \hat{\mathbb{Q}}_1^{(A_1)}(1, 0) \text{ } [M_1, S_2]$$

$$\hat{\mathbb{Z}}_{18} = \mathbb{X}_{15}[\mathbb{G}_1^{(a,B_2)}(1, 0)] \otimes \mathbb{Y}_4[\mathbb{Q}_1^{(s,B_2)}]$$

$$\hat{\mathbb{Z}}_{18}(\mathbf{k}) = \mathbb{X}_{15}[\mathbb{G}_1^{(a,B_2)}(1, 0)] \otimes \mathbb{U}_4[\mathbb{Q}_1^{(s,B_2)}]$$

$$\boxed{\text{No. 19}} \quad \hat{\mathbb{Q}}_0^{(A_1)} \text{ } [M_1, B_1]$$

$$\hat{\mathbb{Z}}_{19} = \mathbb{X}_1[\mathbb{Q}_0^{(a,A_1)}] \otimes \mathbb{Y}_5[\mathbb{Q}_0^{(b,A_1)}]$$

$$\begin{aligned} \hat{\mathbb{Z}}_{19}(\mathbf{k}) = & \frac{\mathbb{X}_1[\mathbb{Q}_0^{(a,A_1)}] \otimes \mathbb{U}_5[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_1[\mathbb{Q}_0^{(k,A_1)}]}{2} + \frac{\mathbb{X}_1[\mathbb{Q}_0^{(a,A_1)}] \otimes \mathbb{U}_6[\mathbb{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_2[\mathbb{Q}_1^{(k,B_2)}]}{2} \\ & - \frac{\mathbb{X}_1[\mathbb{Q}_0^{(a,A_1)}] \otimes \mathbb{U}_7[\mathbb{T}_0^{(u,A_1)}] \otimes \mathbb{F}_3[\mathbb{T}_0^{(k,A_1)}]}{2} - \frac{\mathbb{X}_1[\mathbb{Q}_0^{(a,A_1)}] \otimes \mathbb{U}_8[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_4[\mathbb{T}_1^{(k,B_2)}]}{2} \end{aligned}$$

$$\boxed{\text{No. 20}} \quad \hat{\mathbb{Q}}_2^{(A_1,1)} \text{ } [M_1, B_1]$$

$$\hat{\mathbb{Z}}_{20} = \mathbb{X}_2[\mathbb{Q}_2^{(a,A_1,1)}] \otimes \mathbb{Y}_5[\mathbb{Q}_0^{(b,A_1)}]$$

$$\begin{aligned} \hat{\mathbb{Z}}_{20}(\mathbf{k}) = & \frac{\mathbb{X}_2[\mathbb{Q}_2^{(a,A_1,1)}] \otimes \mathbb{U}_5[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_1[\mathbb{Q}_0^{(k,A_1)}]}{2} + \frac{\mathbb{X}_2[\mathbb{Q}_2^{(a,A_1,1)}] \otimes \mathbb{U}_6[\mathbb{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_2[\mathbb{Q}_1^{(k,B_2)}]}{2} \\ & - \frac{\mathbb{X}_2[\mathbb{Q}_2^{(a,A_1,1)}] \otimes \mathbb{U}_7[\mathbb{T}_0^{(u,A_1)}] \otimes \mathbb{F}_3[\mathbb{T}_0^{(k,A_1)}]}{2} - \frac{\mathbb{X}_2[\mathbb{Q}_2^{(a,A_1,1)}] \otimes \mathbb{U}_8[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_4[\mathbb{T}_1^{(k,B_2)}]}{2} \end{aligned}$$

$$\boxed{\text{No. 21}} \quad \hat{\mathbb{Q}}_2^{(A_1, 2)} [M_1, B_1]$$

$$\hat{\mathbb{Z}}_{21} = \mathbb{X}_3[\mathbb{Q}_2^{(a, A_1, 2)}] \otimes \mathbb{Y}_5[\mathbb{Q}_0^{(b, A_1)}]$$

$$\begin{aligned} \hat{\mathbb{Z}}_{21}(\mathbf{k}) = & \frac{\mathbb{X}_3[\mathbb{Q}_2^{(a, A_1, 2)}] \otimes \mathbb{U}_5[\mathbb{Q}_0^{(u, A_1)}] \otimes \mathbb{F}_1[\mathbb{Q}_0^{(k, A_1)}]}{2} + \frac{\mathbb{X}_3[\mathbb{Q}_2^{(a, A_1, 2)}] \otimes \mathbb{U}_6[\mathbb{Q}_1^{(u, B_2)}] \otimes \mathbb{F}_2[\mathbb{Q}_1^{(k, B_2)}]}{2} \\ & - \frac{\mathbb{X}_3[\mathbb{Q}_2^{(a, A_1, 2)}] \otimes \mathbb{U}_7[\mathbb{T}_0^{(u, A_1)}] \otimes \mathbb{F}_3[\mathbb{T}_0^{(k, A_1)}]}{2} - \frac{\mathbb{X}_3[\mathbb{Q}_2^{(a, A_1, 2)}] \otimes \mathbb{U}_8[\mathbb{T}_1^{(u, B_2)}] \otimes \mathbb{F}_4[\mathbb{T}_1^{(k, B_2)}]}{2} \end{aligned}$$

$$\boxed{\text{No. 22}} \quad \hat{\mathbb{Q}}_1^{(A_1)} [M_1, B_1]$$

$$\hat{\mathbb{Z}}_{22} = \mathbb{X}_9[\mathbb{Q}_2^{(a, B_2)}] \otimes \mathbb{Y}_6[\mathbb{Q}_1^{(b, B_2)}]$$

$$\begin{aligned} \hat{\mathbb{Z}}_{22}(\mathbf{k}) = & \frac{\mathbb{X}_9[\mathbb{Q}_2^{(a, B_2)}] \otimes \mathbb{U}_5[\mathbb{Q}_0^{(u, A_1)}] \otimes \mathbb{F}_2[\mathbb{Q}_1^{(k, B_2)}]}{2} + \frac{\mathbb{X}_9[\mathbb{Q}_2^{(a, B_2)}] \otimes \mathbb{U}_6[\mathbb{Q}_1^{(u, B_2)}] \otimes \mathbb{F}_1[\mathbb{Q}_0^{(k, A_1)}]}{2} \\ & - \frac{\mathbb{X}_9[\mathbb{Q}_2^{(a, B_2)}] \otimes \mathbb{U}_7[\mathbb{T}_0^{(u, A_1)}] \otimes \mathbb{F}_4[\mathbb{T}_1^{(k, B_2)}]}{2} - \frac{\mathbb{X}_9[\mathbb{Q}_2^{(a, B_2)}] \otimes \mathbb{U}_8[\mathbb{T}_1^{(u, B_2)}] \otimes \mathbb{F}_3[\mathbb{T}_0^{(k, A_1)}]}{2} \end{aligned}$$

$$\boxed{\text{No. 23}} \quad \hat{\mathbb{Q}}_0^{(A_1)}(1, 1) [M_1, B_1]$$

$$\hat{\mathbb{Z}}_{23} = \mathbb{X}_4[\mathbb{Q}_0^{(a, A_1)}(1, 1)] \otimes \mathbb{Y}_5[\mathbb{Q}_0^{(b, A_1)}]$$

$$\begin{aligned} \hat{\mathbb{Z}}_{23}(\mathbf{k}) = & \frac{\mathbb{X}_4[\mathbb{Q}_0^{(a, A_1)}(1, 1)] \otimes \mathbb{U}_5[\mathbb{Q}_0^{(u, A_1)}] \otimes \mathbb{F}_1[\mathbb{Q}_0^{(k, A_1)}]}{2} + \frac{\mathbb{X}_4[\mathbb{Q}_0^{(a, A_1)}(1, 1)] \otimes \mathbb{U}_6[\mathbb{Q}_1^{(u, B_2)}] \otimes \mathbb{F}_2[\mathbb{Q}_1^{(k, B_2)}]}{2} \\ & - \frac{\mathbb{X}_4[\mathbb{Q}_0^{(a, A_1)}(1, 1)] \otimes \mathbb{U}_7[\mathbb{T}_0^{(u, A_1)}] \otimes \mathbb{F}_3[\mathbb{T}_0^{(k, A_1)}]}{2} - \frac{\mathbb{X}_4[\mathbb{Q}_0^{(a, A_1)}(1, 1)] \otimes \mathbb{U}_8[\mathbb{T}_1^{(u, B_2)}] \otimes \mathbb{F}_4[\mathbb{T}_1^{(k, B_2)}]}{2} \end{aligned}$$

$$\boxed{\text{No. 24}} \quad \hat{\mathbb{Q}}_2^{(A_1, 1)}(1, -1) [M_1, B_1]$$

$$\hat{\mathbb{Z}}_{24} = \mathbb{X}_5[\mathbb{Q}_2^{(a, A_1, 1)}(1, -1)] \otimes \mathbb{Y}_5[\mathbb{Q}_0^{(b, A_1)}]$$

$$\begin{aligned} \hat{\mathbb{Z}}_{24}(\mathbf{k}) = & \frac{\mathbb{X}_5[\mathbb{Q}_2^{(a, A_1, 1)}(1, -1)] \otimes \mathbb{U}_5[\mathbb{Q}_0^{(u, A_1)}] \otimes \mathbb{F}_1[\mathbb{Q}_0^{(k, A_1)}]}{2} + \frac{\mathbb{X}_5[\mathbb{Q}_2^{(a, A_1, 1)}(1, -1)] \otimes \mathbb{U}_6[\mathbb{Q}_1^{(u, B_2)}] \otimes \mathbb{F}_2[\mathbb{Q}_1^{(k, B_2)}]}{2} \\ & - \frac{\mathbb{X}_5[\mathbb{Q}_2^{(a, A_1, 1)}(1, -1)] \otimes \mathbb{U}_7[\mathbb{T}_0^{(u, A_1)}] \otimes \mathbb{F}_3[\mathbb{T}_0^{(k, A_1)}]}{2} - \frac{\mathbb{X}_5[\mathbb{Q}_2^{(a, A_1, 1)}(1, -1)] \otimes \mathbb{U}_8[\mathbb{T}_1^{(u, B_2)}] \otimes \mathbb{F}_4[\mathbb{T}_1^{(k, B_2)}]}{2} \end{aligned}$$

$$\boxed{\text{No. 25}} \quad \hat{\mathbb{Q}}_2^{(A_1, 2)}(1, -1) [M_1, B_1]$$

$$\hat{\mathbb{Z}}_{25} = \mathbb{X}_6[\mathbb{Q}_2^{(a, A_1, 2)}(1, -1)] \otimes \mathbb{Y}_5[\mathbb{Q}_0^{(b, A_1)}]$$

$$\hat{\mathbb{Z}}_{25}(\mathbf{k}) = \frac{\mathbb{X}_6[\mathbb{Q}_2^{(a,A_1,2)}(1,-1)] \otimes \mathbb{U}_5[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_1[\mathbb{Q}_0^{(k,A_1)}]}{2} + \frac{\mathbb{X}_6[\mathbb{Q}_2^{(a,A_1,2)}(1,-1)] \otimes \mathbb{U}_6[\mathbb{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_2[\mathbb{Q}_1^{(k,B_2)}]}{2} \\ - \frac{\mathbb{X}_6[\mathbb{Q}_2^{(a,A_1,2)}(1,-1)] \otimes \mathbb{U}_7[\mathbb{T}_0^{(u,A_1)}] \otimes \mathbb{F}_3[\mathbb{T}_0^{(k,A_1)}]}{2} - \frac{\mathbb{X}_6[\mathbb{Q}_2^{(a,A_1,2)}(1,-1)] \otimes \mathbb{U}_8[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_4[\mathbb{T}_1^{(k,B_2)}]}{2}$$

$$\boxed{\text{No. 26}} \quad \hat{\mathbb{Q}}_1^{(A_1)}(1,-1) [\mathbb{M}_1, \mathbb{B}_1]$$

$$\hat{\mathbb{Z}}_{26} = \mathbb{X}_{14}[\mathbb{Q}_2^{(a,B_2)}(1,-1)] \otimes \mathbb{Y}_6[\mathbb{Q}_1^{(b,B_2)}]$$

$$\hat{\mathbb{Z}}_{26}(\mathbf{k}) = \frac{\mathbb{X}_{14}[\mathbb{Q}_2^{(a,B_2)}(1,-1)] \otimes \mathbb{U}_5[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_2[\mathbb{Q}_1^{(k,B_2)}]}{2} + \frac{\mathbb{X}_{14}[\mathbb{Q}_2^{(a,B_2)}(1,-1)] \otimes \mathbb{U}_6[\mathbb{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_1[\mathbb{Q}_0^{(k,A_1)}]}{2} \\ - \frac{\mathbb{X}_{14}[\mathbb{Q}_2^{(a,B_2)}(1,-1)] \otimes \mathbb{U}_7[\mathbb{T}_0^{(u,A_1)}] \otimes \mathbb{F}_4[\mathbb{T}_1^{(k,B_2)}]}{2} - \frac{\mathbb{X}_{14}[\mathbb{Q}_2^{(a,B_2)}(1,-1)] \otimes \mathbb{U}_8[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_3[\mathbb{T}_0^{(k,A_1)}]}{2}$$

$$\boxed{\text{No. 27}} \quad \hat{\mathbb{Q}}_1^{(A_1)}(1,0) [\mathbb{M}_1, \mathbb{B}_1]$$

$$\hat{\mathbb{Z}}_{27} = \mathbb{X}_{15}[\mathbb{G}_1^{(a,B_2)}(1,0)] \otimes \mathbb{Y}_6[\mathbb{Q}_1^{(b,B_2)}]$$

$$\hat{\mathbb{Z}}_{27}(\mathbf{k}) = \frac{\mathbb{X}_{15}[\mathbb{G}_1^{(a,B_2)}(1,0)] \otimes \mathbb{U}_5[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_2[\mathbb{Q}_1^{(k,B_2)}]}{2} + \frac{\mathbb{X}_{15}[\mathbb{G}_1^{(a,B_2)}(1,0)] \otimes \mathbb{U}_6[\mathbb{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_1[\mathbb{Q}_0^{(k,A_1)}]}{2} \\ - \frac{\mathbb{X}_{15}[\mathbb{G}_1^{(a,B_2)}(1,0)] \otimes \mathbb{U}_7[\mathbb{T}_0^{(u,A_1)}] \otimes \mathbb{F}_4[\mathbb{T}_1^{(k,B_2)}]}{2} - \frac{\mathbb{X}_{15}[\mathbb{G}_1^{(a,B_2)}(1,0)] \otimes \mathbb{U}_8[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_3[\mathbb{T}_0^{(k,A_1)}]}{2}$$

$$\boxed{\text{No. 28}} \quad \hat{\mathbb{Q}}_1^{(A_1)} [\mathbb{M}_1, \mathbb{B}_1]$$

$$\hat{\mathbb{Z}}_{28} = \mathbb{X}_{18}[\mathbb{M}_1^{(a,B_2)}] \otimes \mathbb{Y}_8[\mathbb{T}_1^{(b,B_2)}]$$

$$\hat{\mathbb{Z}}_{28}(\mathbf{k}) = \frac{\mathbb{X}_{18}[\mathbb{M}_1^{(a,B_2)}] \otimes \mathbb{U}_5[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_4[\mathbb{T}_1^{(k,B_2)}]}{2} + \frac{\mathbb{X}_{18}[\mathbb{M}_1^{(a,B_2)}] \otimes \mathbb{U}_6[\mathbb{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_3[\mathbb{T}_0^{(k,A_1)}]}{2} \\ + \frac{\mathbb{X}_{18}[\mathbb{M}_1^{(a,B_2)}] \otimes \mathbb{U}_7[\mathbb{T}_0^{(u,A_1)}] \otimes \mathbb{F}_2[\mathbb{Q}_1^{(k,B_2)}]}{2} + \frac{\mathbb{X}_{18}[\mathbb{M}_1^{(a,B_2)}] \otimes \mathbb{U}_8[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_1[\mathbb{Q}_0^{(k,A_1)}]}{2}$$

$$\boxed{\text{No. 29}} \quad \hat{\mathbb{Q}}_1^{(A_1)}(1,1) [\mathbb{M}_1, \mathbb{B}_1]$$

$$\hat{\mathbb{Z}}_{29} = \mathbb{X}_{29}[\mathbb{M}_1^{(a,B_2)}(1,1)] \otimes \mathbb{Y}_8[\mathbb{T}_1^{(b,B_2)}]$$

$$\hat{Z}_{29}(\mathbf{k}) = \frac{\mathbb{X}_{29}[\mathbb{M}_1^{(a,B_2)}(1,1)] \otimes \mathbb{U}_5[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_4[\mathbb{T}_1^{(k,B_2)}]}{2} + \frac{\mathbb{X}_{29}[\mathbb{M}_1^{(a,B_2)}(1,1)] \otimes \mathbb{U}_6[\mathbb{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_3[\mathbb{T}_0^{(k,A_1)}]}{2} \\ + \frac{\mathbb{X}_{29}[\mathbb{M}_1^{(a,B_2)}(1,1)] \otimes \mathbb{U}_7[\mathbb{T}_0^{(u,A_1)}] \otimes \mathbb{F}_2[\mathbb{Q}_1^{(k,B_2)}]}{2} + \frac{\mathbb{X}_{29}[\mathbb{M}_1^{(a,B_2)}(1,1)] \otimes \mathbb{U}_8[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_1[\mathbb{Q}_0^{(k,A_1)}]}{2}$$

$$\boxed{\text{No. 30}} \quad \hat{\mathbb{Q}}_1^{(A_1)}(1, -1) [\mathbb{M}_1, \mathbb{B}_1]$$

$$\hat{Z}_{30} = \mathbb{X}_{30}[\mathbb{M}_1^{(a,B_2)}(1, -1)] \otimes \mathbb{Y}_8[\mathbb{T}_1^{(b,B_2)}]$$

$$\hat{Z}_{30}(\mathbf{k}) = \frac{\mathbb{X}_{30}[\mathbb{M}_1^{(a,B_2)}(1, -1)] \otimes \mathbb{U}_5[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_4[\mathbb{T}_1^{(k,B_2)}]}{2} + \frac{\mathbb{X}_{30}[\mathbb{M}_1^{(a,B_2)}(1, -1)] \otimes \mathbb{U}_6[\mathbb{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_3[\mathbb{T}_0^{(k,A_1)}]}{2} \\ + \frac{\mathbb{X}_{30}[\mathbb{M}_1^{(a,B_2)}(1, -1)] \otimes \mathbb{U}_7[\mathbb{T}_0^{(u,A_1)}] \otimes \mathbb{F}_2[\mathbb{Q}_1^{(k,B_2)}]}{2} + \frac{\mathbb{X}_{30}[\mathbb{M}_1^{(a,B_2)}(1, -1)] \otimes \mathbb{U}_8[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_1[\mathbb{Q}_0^{(k,A_1)}]}{2}$$

$$\boxed{\text{No. 31}} \quad \hat{\mathbb{G}}_3^{(A_1)}(1, -1) [\mathbb{M}_1, \mathbb{B}_1]$$

$$\hat{Z}_{31} = \mathbb{X}_{34}[\mathbb{M}_3^{(a,A_1)}(1, -1)] \otimes \mathbb{Y}_7[\mathbb{T}_0^{(b,A_1)}]$$

$$\hat{Z}_{31}(\mathbf{k}) = \frac{\mathbb{X}_{34}[\mathbb{M}_3^{(a,A_1)}(1, -1)] \otimes \mathbb{U}_5[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_3[\mathbb{T}_0^{(k,A_1)}]}{2} + \frac{\mathbb{X}_{34}[\mathbb{M}_3^{(a,A_1)}(1, -1)] \otimes \mathbb{U}_6[\mathbb{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_4[\mathbb{T}_1^{(k,B_2)}]}{2} \\ + \frac{\mathbb{X}_{34}[\mathbb{M}_3^{(a,A_1)}(1, -1)] \otimes \mathbb{U}_7[\mathbb{T}_0^{(u,A_1)}] \otimes \mathbb{F}_1[\mathbb{Q}_0^{(k,A_1)}]}{2} + \frac{\mathbb{X}_{34}[\mathbb{M}_3^{(a,A_1)}(1, -1)] \otimes \mathbb{U}_8[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_2[\mathbb{Q}_1^{(k,B_2)}]}{2}$$

$$\boxed{\text{No. 32}} \quad \hat{\mathbb{G}}_2^{(A_1)}(1, -1) [\mathbb{M}_1, \mathbb{B}_1]$$

$$\hat{Z}_{32} = -\frac{\sqrt{6}\mathbb{X}_{31}[\mathbb{M}_3^{(a,B_2,1)}(1, -1)] \otimes \mathbb{Y}_8[\mathbb{T}_1^{(b,B_2)}]}{4} + \frac{\sqrt{10}\mathbb{X}_{32}[\mathbb{M}_3^{(a,B_2,2)}(1, -1)] \otimes \mathbb{Y}_8[\mathbb{T}_1^{(b,B_2)}]}{4}$$

$$\hat{Z}_{32}(\mathbf{k}) = -\frac{\sqrt{6}\mathbb{X}_{31}[\mathbb{M}_3^{(a,B_2,1)}(1, -1)] \otimes \mathbb{U}_5[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_4[\mathbb{T}_1^{(k,B_2)}]}{8} - \frac{\sqrt{6}\mathbb{X}_{31}[\mathbb{M}_3^{(a,B_2,1)}(1, -1)] \otimes \mathbb{U}_6[\mathbb{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_3[\mathbb{T}_0^{(k,A_1)}]}{8} \\ - \frac{\sqrt{6}\mathbb{X}_{31}[\mathbb{M}_3^{(a,B_2,1)}(1, -1)] \otimes \mathbb{U}_7[\mathbb{T}_0^{(u,A_1)}] \otimes \mathbb{F}_2[\mathbb{Q}_1^{(k,B_2)}]}{8} - \frac{\sqrt{6}\mathbb{X}_{31}[\mathbb{M}_3^{(a,B_2,1)}(1, -1)] \otimes \mathbb{U}_8[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_1[\mathbb{Q}_0^{(k,A_1)}]}{8} \\ + \frac{\sqrt{10}\mathbb{X}_{32}[\mathbb{M}_3^{(a,B_2,2)}(1, -1)] \otimes \mathbb{U}_5[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_4[\mathbb{T}_1^{(k,B_2)}]}{8} + \frac{\sqrt{10}\mathbb{X}_{32}[\mathbb{M}_3^{(a,B_2,2)}(1, -1)] \otimes \mathbb{U}_6[\mathbb{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_3[\mathbb{T}_0^{(k,A_1)}]}{8} \\ + \frac{\sqrt{10}\mathbb{X}_{32}[\mathbb{M}_3^{(a,B_2,2)}(1, -1)] \otimes \mathbb{U}_7[\mathbb{T}_0^{(u,A_1)}] \otimes \mathbb{F}_2[\mathbb{Q}_1^{(k,B_2)}]}{8} + \frac{\sqrt{10}\mathbb{X}_{32}[\mathbb{M}_3^{(a,B_2,2)}(1, -1)] \otimes \mathbb{U}_8[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_1[\mathbb{Q}_0^{(k,A_1)}]}{8}$$

$$\boxed{\text{No. 33}} \quad \hat{\mathbb{Q}}_3^{(A_1,1)}(1, -1) [\mathbb{M}_1, \mathbb{B}_1]$$

$$\hat{\mathbb{Z}}_{33} = -\frac{\sqrt{10}\mathbb{X}_{31}[\mathbb{M}_3^{(a,B_2,1)}(1, -1)] \otimes \mathbb{Y}_8[\mathbb{T}_1^{(b,B_2)}]}{4} - \frac{\sqrt{6}\mathbb{X}_{32}[\mathbb{M}_3^{(a,B_2,2)}(1, -1)] \otimes \mathbb{Y}_8[\mathbb{T}_1^{(b,B_2)}]}{4}$$

$$\begin{aligned} \hat{\mathbb{Z}}_{33}(\mathbf{k}) = & -\frac{\sqrt{10}\mathbb{X}_{31}[\mathbb{M}_3^{(a,B_2,1)}(1, -1)] \otimes \mathbb{U}_5[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_4[\mathbb{T}_1^{(k,B_2)}]}{8} - \frac{\sqrt{10}\mathbb{X}_{31}[\mathbb{M}_3^{(a,B_2,1)}(1, -1)] \otimes \mathbb{U}_6[\mathbb{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_3[\mathbb{T}_0^{(k,A_1)}]}{8} \\ & - \frac{\sqrt{10}\mathbb{X}_{31}[\mathbb{M}_3^{(a,B_2,1)}(1, -1)] \otimes \mathbb{U}_7[\mathbb{T}_0^{(u,A_1)}] \otimes \mathbb{F}_2[\mathbb{Q}_1^{(k,B_2)}]}{8} - \frac{\sqrt{10}\mathbb{X}_{31}[\mathbb{M}_3^{(a,B_2,1)}(1, -1)] \otimes \mathbb{U}_8[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_1[\mathbb{Q}_0^{(k,A_1)}]}{8} \\ & - \frac{\sqrt{6}\mathbb{X}_{32}[\mathbb{M}_3^{(a,B_2,2)}(1, -1)] \otimes \mathbb{U}_5[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_4[\mathbb{T}_1^{(k,B_2)}]}{8} - \frac{\sqrt{6}\mathbb{X}_{32}[\mathbb{M}_3^{(a,B_2,2)}(1, -1)] \otimes \mathbb{U}_6[\mathbb{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_3[\mathbb{T}_0^{(k,A_1)}]}{8} \\ & - \frac{\sqrt{6}\mathbb{X}_{32}[\mathbb{M}_3^{(a,B_2,2)}(1, -1)] \otimes \mathbb{U}_7[\mathbb{T}_0^{(u,A_1)}] \otimes \mathbb{F}_2[\mathbb{Q}_1^{(k,B_2)}]}{8} - \frac{\sqrt{6}\mathbb{X}_{32}[\mathbb{M}_3^{(a,B_2,2)}(1, -1)] \otimes \mathbb{U}_8[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_1[\mathbb{Q}_0^{(k,A_1)}]}{8} \end{aligned}$$

$$\boxed{\text{No. 34}} \quad \hat{\mathbb{Q}}_2^{(A_1,1)}(1, 0) [\mathbb{M}_1, \mathbb{B}_1]$$

$$\hat{\mathbb{Z}}_{34} = \mathbb{X}_{35}[\mathbb{T}_2^{(a,A_1,1)}(1, 0)] \otimes \mathbb{Y}_7[\mathbb{T}_0^{(b,A_1)}]$$

$$\begin{aligned} \hat{\mathbb{Z}}_{34}(\mathbf{k}) = & \frac{\mathbb{X}_{35}[\mathbb{T}_2^{(a,A_1,1)}(1, 0)] \otimes \mathbb{U}_5[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_3[\mathbb{T}_0^{(k,A_1)}]}{2} + \frac{\mathbb{X}_{35}[\mathbb{T}_2^{(a,A_1,1)}(1, 0)] \otimes \mathbb{U}_6[\mathbb{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_4[\mathbb{T}_1^{(k,B_2)}]}{2} \\ & + \frac{\mathbb{X}_{35}[\mathbb{T}_2^{(a,A_1,1)}(1, 0)] \otimes \mathbb{U}_7[\mathbb{T}_0^{(u,A_1)}] \otimes \mathbb{F}_1[\mathbb{Q}_0^{(k,A_1)}]}{2} + \frac{\mathbb{X}_{35}[\mathbb{T}_2^{(a,A_1,1)}(1, 0)] \otimes \mathbb{U}_8[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_2[\mathbb{Q}_1^{(k,B_2)}]}{2} \end{aligned}$$

$$\boxed{\text{No. 35}} \quad \hat{\mathbb{Q}}_2^{(A_1,2)}(1, 0) [\mathbb{M}_1, \mathbb{B}_1]$$

$$\hat{\mathbb{Z}}_{35} = \mathbb{X}_{36}[\mathbb{T}_2^{(a,A_1,2)}(1, 0)] \otimes \mathbb{Y}_7[\mathbb{T}_0^{(b,A_1)}]$$

$$\begin{aligned} \hat{\mathbb{Z}}_{35}(\mathbf{k}) = & \frac{\mathbb{X}_{36}[\mathbb{T}_2^{(a,A_1,2)}(1, 0)] \otimes \mathbb{U}_5[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_3[\mathbb{T}_0^{(k,A_1)}]}{2} + \frac{\mathbb{X}_{36}[\mathbb{T}_2^{(a,A_1,2)}(1, 0)] \otimes \mathbb{U}_6[\mathbb{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_4[\mathbb{T}_1^{(k,B_2)}]}{2} \\ & + \frac{\mathbb{X}_{36}[\mathbb{T}_2^{(a,A_1,2)}(1, 0)] \otimes \mathbb{U}_7[\mathbb{T}_0^{(u,A_1)}] \otimes \mathbb{F}_1[\mathbb{Q}_0^{(k,A_1)}]}{2} + \frac{\mathbb{X}_{36}[\mathbb{T}_2^{(a,A_1,2)}(1, 0)] \otimes \mathbb{U}_8[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_2[\mathbb{Q}_1^{(k,B_2)}]}{2} \end{aligned}$$

$$\boxed{\text{No. 36}} \quad \hat{\mathbb{Q}}_1^{(A_1)}(1, 0) [\mathbb{M}_1, \mathbb{B}_1]$$

$$\hat{\mathbb{Z}}_{36} = \mathbb{X}_{33}[\mathbb{T}_2^{(a,B_2)}(1, 0)] \otimes \mathbb{Y}_8[\mathbb{T}_1^{(b,B_2)}]$$

$$\begin{aligned} \hat{\mathbb{Z}}_{36}(\mathbf{k}) = & \frac{\mathbb{X}_{33}[\mathbb{T}_2^{(a,B_2)}(1, 0)] \otimes \mathbb{U}_5[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_4[\mathbb{T}_1^{(k,B_2)}]}{2} + \frac{\mathbb{X}_{33}[\mathbb{T}_2^{(a,B_2)}(1, 0)] \otimes \mathbb{U}_6[\mathbb{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_3[\mathbb{T}_0^{(k,A_1)}]}{2} \\ & + \frac{\mathbb{X}_{33}[\mathbb{T}_2^{(a,B_2)}(1, 0)] \otimes \mathbb{U}_7[\mathbb{T}_0^{(u,A_1)}] \otimes \mathbb{F}_2[\mathbb{Q}_1^{(k,B_2)}]}{2} + \frac{\mathbb{X}_{33}[\mathbb{T}_2^{(a,B_2)}(1, 0)] \otimes \mathbb{U}_8[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_1[\mathbb{Q}_0^{(k,A_1)}]}{2} \end{aligned}$$

$$\boxed{\text{No. 37}} \quad \hat{\mathbb{Q}}_0^{(A_1)} [\mathbf{M}_1, \mathbf{B}_2]$$

$$\hat{\mathbb{Z}}_{37} = \mathbb{X}_1[\mathbb{Q}_0^{(a,A_1)}] \otimes \mathbb{Y}_9[\mathbb{Q}_0^{(b,A_1)}]$$

$$\begin{aligned} \hat{\mathbb{Z}}_{37}(\mathbf{k}) = & \frac{\mathbb{X}_1[\mathbb{Q}_0^{(a,A_1)}] \otimes \mathbb{U}_{10}[\mathbb{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_7[\mathbb{Q}_1^{(k,B_2)}]}{2} - \frac{\mathbb{X}_1[\mathbb{Q}_0^{(a,A_1)}] \otimes \mathbb{U}_{11}[\mathbb{T}_0^{(u,A_1)}] \otimes \mathbb{F}_9[\mathbb{T}_0^{(k,A_1)}]}{2} \\ & - \frac{\mathbb{X}_1[\mathbb{Q}_0^{(a,A_1)}] \otimes \mathbb{U}_{12}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{11}[\mathbb{T}_1^{(k,B_2)}]}{2} + \frac{\mathbb{X}_1[\mathbb{Q}_0^{(a,A_1)}] \otimes \mathbb{U}_9[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_5[\mathbb{Q}_0^{(k,A_1)}]}{2} \end{aligned}$$

$$\boxed{\text{No. 38}} \quad \hat{\mathbb{Q}}_2^{(A_1,1)} [\mathbf{M}_1, \mathbf{B}_2]$$

$$\hat{\mathbb{Z}}_{38} = \mathbb{X}_2[\mathbb{Q}_2^{(a,A_1,1)}] \otimes \mathbb{Y}_9[\mathbb{Q}_0^{(b,A_1)}]$$

$$\begin{aligned} \hat{\mathbb{Z}}_{38}(\mathbf{k}) = & \frac{\mathbb{X}_2[\mathbb{Q}_2^{(a,A_1,1)}] \otimes \mathbb{U}_{10}[\mathbb{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_7[\mathbb{Q}_1^{(k,B_2)}]}{2} - \frac{\mathbb{X}_2[\mathbb{Q}_2^{(a,A_1,1)}] \otimes \mathbb{U}_{11}[\mathbb{T}_0^{(u,A_1)}] \otimes \mathbb{F}_9[\mathbb{T}_0^{(k,A_1)}]}{2} \\ & - \frac{\mathbb{X}_2[\mathbb{Q}_2^{(a,A_1,1)}] \otimes \mathbb{U}_{12}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{11}[\mathbb{T}_1^{(k,B_2)}]}{2} + \frac{\mathbb{X}_2[\mathbb{Q}_2^{(a,A_1,1)}] \otimes \mathbb{U}_9[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_5[\mathbb{Q}_0^{(k,A_1)}]}{2} \end{aligned}$$

$$\boxed{\text{No. 39}} \quad \hat{\mathbb{Q}}_2^{(A_1,2)} [\mathbf{M}_1, \mathbf{B}_2]$$

$$\hat{\mathbb{Z}}_{39} = \mathbb{X}_3[\mathbb{Q}_2^{(a,A_1,2)}] \otimes \mathbb{Y}_9[\mathbb{Q}_0^{(b,A_1)}]$$

$$\begin{aligned} \hat{\mathbb{Z}}_{39}(\mathbf{k}) = & \frac{\mathbb{X}_3[\mathbb{Q}_2^{(a,A_1,2)}] \otimes \mathbb{U}_{10}[\mathbb{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_7[\mathbb{Q}_1^{(k,B_2)}]}{2} - \frac{\mathbb{X}_3[\mathbb{Q}_2^{(a,A_1,2)}] \otimes \mathbb{U}_{11}[\mathbb{T}_0^{(u,A_1)}] \otimes \mathbb{F}_9[\mathbb{T}_0^{(k,A_1)}]}{2} \\ & - \frac{\mathbb{X}_3[\mathbb{Q}_2^{(a,A_1,2)}] \otimes \mathbb{U}_{12}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{11}[\mathbb{T}_1^{(k,B_2)}]}{2} + \frac{\mathbb{X}_3[\mathbb{Q}_2^{(a,A_1,2)}] \otimes \mathbb{U}_9[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_5[\mathbb{Q}_0^{(k,A_1)}]}{2} \end{aligned}$$

$$\boxed{\text{No. 40}} \quad \hat{\mathbb{Q}}_1^{(A_1)} [\mathbf{M}_1, \mathbf{B}_2]$$

$$\hat{\mathbb{Z}}_{40} = \frac{\sqrt{2}\mathbb{X}_8[\mathbb{Q}_2^{(a,B_1)}] \otimes \mathbb{Y}_{10}[\mathbb{Q}_1^{(b,B_1)}]}{2} + \frac{\sqrt{2}\mathbb{X}_9[\mathbb{Q}_2^{(a,B_2)}] \otimes \mathbb{Y}_{11}[\mathbb{Q}_1^{(b,B_2)}]}{2}$$

$$\begin{aligned} \hat{\mathbb{Z}}_{40}(\mathbf{k}) = & \frac{\sqrt{2}\mathbb{X}_8[\mathbb{Q}_2^{(a,B_1)}] \otimes \mathbb{U}_{10}[\mathbb{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_8[\mathbb{Q}_2^{(k,A_2)}]}{4} - \frac{\sqrt{2}\mathbb{X}_8[\mathbb{Q}_2^{(a,B_1)}] \otimes \mathbb{U}_{11}[\mathbb{T}_0^{(u,A_1)}] \otimes \mathbb{F}_{10}[\mathbb{T}_1^{(k,B_1)}]}{4} - \frac{\sqrt{2}\mathbb{X}_8[\mathbb{Q}_2^{(a,B_1)}] \otimes \mathbb{U}_{12}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{12}[\mathbb{T}_2^{(k,A_2)}]}{4} \\ & + \frac{\sqrt{2}\mathbb{X}_8[\mathbb{Q}_2^{(a,B_1)}] \otimes \mathbb{U}_9[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_6[\mathbb{Q}_1^{(k,B_1)}]}{4} + \frac{\sqrt{2}\mathbb{X}_9[\mathbb{Q}_2^{(a,B_2)}] \otimes \mathbb{U}_{10}[\mathbb{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_5[\mathbb{Q}_0^{(k,A_1)}]}{4} \\ & - \frac{\sqrt{2}\mathbb{X}_9[\mathbb{Q}_2^{(a,B_2)}] \otimes \mathbb{U}_{11}[\mathbb{T}_0^{(u,A_1)}] \otimes \mathbb{F}_{11}[\mathbb{T}_1^{(k,B_2)}]}{4} - \frac{\sqrt{2}\mathbb{X}_9[\mathbb{Q}_2^{(a,B_2)}] \otimes \mathbb{U}_{12}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_9[\mathbb{T}_0^{(k,A_1)}]}{4} + \frac{\sqrt{2}\mathbb{X}_9[\mathbb{Q}_2^{(a,B_2)}] \otimes \mathbb{U}_9[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_7[\mathbb{Q}_1^{(k,B_2)}]}{4} \end{aligned}$$

$$\boxed{\text{No. 41}} \quad \hat{\mathbb{G}}_2^{(A_1)} [M_1, B_2]$$

$$\hat{Z}_{41} = \frac{\sqrt{2}\mathbb{X}_8[\mathbb{Q}_2^{(a,B_1)}] \otimes \mathbb{Y}_{10}[\mathbb{Q}_1^{(b,B_1)}]}{2} - \frac{\sqrt{2}\mathbb{X}_9[\mathbb{Q}_2^{(a,B_2)}] \otimes \mathbb{Y}_{11}[\mathbb{Q}_1^{(b,B_2)}]}{2}$$

$$\begin{aligned} \hat{Z}_{41}(\mathbf{k}) = & \frac{\sqrt{2}\mathbb{X}_8[\mathbb{Q}_2^{(a,B_1)}] \otimes \mathbb{U}_{10}[\mathbb{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_8[\mathbb{Q}_2^{(k,A_2)}]}{4} - \frac{\sqrt{2}\mathbb{X}_8[\mathbb{Q}_2^{(a,B_1)}] \otimes \mathbb{U}_{11}[\mathbb{T}_0^{(u,A_1)}] \otimes \mathbb{F}_{10}[\mathbb{T}_1^{(k,B_1)}]}{4} - \frac{\sqrt{2}\mathbb{X}_8[\mathbb{Q}_2^{(a,B_1)}] \otimes \mathbb{U}_{12}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{12}[\mathbb{T}_2^{(k,A_2)}]}{4} \\ & + \frac{\sqrt{2}\mathbb{X}_8[\mathbb{Q}_2^{(a,B_1)}] \otimes \mathbb{U}_9[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_6[\mathbb{Q}_1^{(k,B_1)}]}{4} - \frac{\sqrt{2}\mathbb{X}_9[\mathbb{Q}_2^{(a,B_2)}] \otimes \mathbb{U}_{10}[\mathbb{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_5[\mathbb{Q}_0^{(k,A_1)}]}{4} \\ & + \frac{\sqrt{2}\mathbb{X}_9[\mathbb{Q}_2^{(a,B_2)}] \otimes \mathbb{U}_{11}[\mathbb{T}_0^{(u,A_1)}] \otimes \mathbb{F}_{11}[\mathbb{T}_1^{(k,B_2)}]}{4} + \frac{\sqrt{2}\mathbb{X}_9[\mathbb{Q}_2^{(a,B_2)}] \otimes \mathbb{U}_{12}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_9[\mathbb{T}_0^{(k,A_1)}]}{4} - \frac{\sqrt{2}\mathbb{X}_9[\mathbb{Q}_2^{(a,B_2)}] \otimes \mathbb{U}_9[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_7[\mathbb{Q}_1^{(k,B_2)}]}{4} \end{aligned}$$

$$\boxed{\text{No. 42}} \quad \hat{\mathbb{Q}}_0^{(A_1)} [M_1, B_2]$$

$$\hat{Z}_{42} = \mathbb{X}_7[\mathbb{Q}_2^{(a,A_2)}] \otimes \mathbb{Y}_{12}[\mathbb{Q}_2^{(b,A_2)}]$$

$$\begin{aligned} \hat{Z}_{42}(\mathbf{k}) = & \frac{\mathbb{X}_7[\mathbb{Q}_2^{(a,A_2)}] \otimes \mathbb{U}_{10}[\mathbb{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_6[\mathbb{Q}_1^{(k,B_1)}]}{2} - \frac{\mathbb{X}_7[\mathbb{Q}_2^{(a,A_2)}] \otimes \mathbb{U}_{11}[\mathbb{T}_0^{(u,A_1)}] \otimes \mathbb{F}_{12}[\mathbb{T}_2^{(k,A_2)}]}{2} \\ & - \frac{\mathbb{X}_7[\mathbb{Q}_2^{(a,A_2)}] \otimes \mathbb{U}_{12}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{10}[\mathbb{T}_1^{(k,B_1)}]}{2} + \frac{\mathbb{X}_7[\mathbb{Q}_2^{(a,A_2)}] \otimes \mathbb{U}_9[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_8[\mathbb{Q}_2^{(k,A_2)}]}{2} \end{aligned}$$

$$\boxed{\text{No. 43}} \quad \hat{\mathbb{Q}}_0^{(A_1)}(1, 1) [M_1, B_2]$$

$$\hat{Z}_{43} = \mathbb{X}_4[\mathbb{Q}_0^{(a,A_1)}(1, 1)] \otimes \mathbb{Y}_9[\mathbb{Q}_0^{(b,A_1)}]$$

$$\begin{aligned} \hat{Z}_{43}(\mathbf{k}) = & \frac{\mathbb{X}_4[\mathbb{Q}_0^{(a,A_1)}(1, 1)] \otimes \mathbb{U}_{10}[\mathbb{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_7[\mathbb{Q}_1^{(k,B_2)}]}{2} - \frac{\mathbb{X}_4[\mathbb{Q}_0^{(a,A_1)}(1, 1)] \otimes \mathbb{U}_{11}[\mathbb{T}_0^{(u,A_1)}] \otimes \mathbb{F}_9[\mathbb{T}_0^{(k,A_1)}]}{2} \\ & - \frac{\mathbb{X}_4[\mathbb{Q}_0^{(a,A_1)}(1, 1)] \otimes \mathbb{U}_{12}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{11}[\mathbb{T}_1^{(k,B_2)}]}{2} + \frac{\mathbb{X}_4[\mathbb{Q}_0^{(a,A_1)}(1, 1)] \otimes \mathbb{U}_9[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_5[\mathbb{Q}_0^{(k,A_1)}]}{2} \end{aligned}$$

$$\boxed{\text{No. 44}} \quad \hat{\mathbb{Q}}_2^{(A_1,1)}(1, -1) [M_1, B_2]$$

$$\hat{Z}_{44} = \mathbb{X}_5[\mathbb{Q}_2^{(a,A_1,1)}(1, -1)] \otimes \mathbb{Y}_9[\mathbb{Q}_0^{(b,A_1)}]$$

$$\begin{aligned} \hat{Z}_{44}(\mathbf{k}) = & \frac{\mathbb{X}_5[\mathbb{Q}_2^{(a,A_1,1)}(1, -1)] \otimes \mathbb{U}_{10}[\mathbb{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_7[\mathbb{Q}_1^{(k,B_2)}]}{2} - \frac{\mathbb{X}_5[\mathbb{Q}_2^{(a,A_1,1)}(1, -1)] \otimes \mathbb{U}_{11}[\mathbb{T}_0^{(u,A_1)}] \otimes \mathbb{F}_9[\mathbb{T}_0^{(k,A_1)}]}{2} \\ & - \frac{\mathbb{X}_5[\mathbb{Q}_2^{(a,A_1,1)}(1, -1)] \otimes \mathbb{U}_{12}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{11}[\mathbb{T}_1^{(k,B_2)}]}{2} + \frac{\mathbb{X}_5[\mathbb{Q}_2^{(a,A_1,1)}(1, -1)] \otimes \mathbb{U}_9[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_5[\mathbb{Q}_0^{(k,A_1)}]}{2} \end{aligned}$$

$$\boxed{\text{No. 45}} \quad \hat{\mathbb{Q}}_2^{(A_1,2)}(1, -1) [\mathbf{M}_1, \mathbf{B}_2]$$

$$\hat{\mathbb{Z}}_{45} = \mathbb{X}_6[\mathbb{Q}_2^{(a,A_1,2)}(1, -1)] \otimes \mathbb{Y}_9[\mathbb{Q}_0^{(b,A_1)}]$$

$$\begin{aligned} \hat{\mathbb{Z}}_{45}(\mathbf{k}) = & \frac{\mathbb{X}_6[\mathbb{Q}_2^{(a,A_1,2)}(1, -1)] \otimes \mathbb{U}_{10}[\mathbb{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_7[\mathbb{Q}_1^{(k,B_2)}]}{2} - \frac{\mathbb{X}_6[\mathbb{Q}_2^{(a,A_1,2)}(1, -1)] \otimes \mathbb{U}_{11}[\mathbb{T}_0^{(u,A_1)}] \otimes \mathbb{F}_9[\mathbb{T}_0^{(k,A_1)}]}{2} \\ & - \frac{\mathbb{X}_6[\mathbb{Q}_2^{(a,A_1,2)}(1, -1)] \otimes \mathbb{U}_{12}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{11}[\mathbb{T}_1^{(k,B_2)}]}{2} + \frac{\mathbb{X}_6[\mathbb{Q}_2^{(a,A_1,2)}(1, -1)] \otimes \mathbb{U}_9[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_5[\mathbb{Q}_0^{(k,A_1)}]}{2} \end{aligned}$$

$$\boxed{\text{No. 46}} \quad \hat{\mathbb{Q}}_1^{(A_1)}(1, -1) [\mathbf{M}_1, \mathbf{B}_2]$$

$$\hat{\mathbb{Z}}_{46} = \frac{\sqrt{2}\mathbb{X}_{12}[\mathbb{Q}_2^{(a,B_1)}(1, -1)] \otimes \mathbb{Y}_{10}[\mathbb{Q}_1^{(b,B_1)}]}{2} + \frac{\sqrt{2}\mathbb{X}_{14}[\mathbb{Q}_2^{(a,B_2)}(1, -1)] \otimes \mathbb{Y}_{11}[\mathbb{Q}_1^{(b,B_2)}]}{2}$$

$$\begin{aligned} \hat{\mathbb{Z}}_{46}(\mathbf{k}) = & \frac{\sqrt{2}\mathbb{X}_{12}[\mathbb{Q}_2^{(a,B_1)}(1, -1)] \otimes \mathbb{U}_{10}[\mathbb{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_8[\mathbb{Q}_2^{(k,A_2)}]}{4} - \frac{\sqrt{2}\mathbb{X}_{12}[\mathbb{Q}_2^{(a,B_1)}(1, -1)] \otimes \mathbb{U}_{11}[\mathbb{T}_0^{(u,A_1)}] \otimes \mathbb{F}_{10}[\mathbb{T}_1^{(k,B_1)}]}{4} \\ & - \frac{\sqrt{2}\mathbb{X}_{12}[\mathbb{Q}_2^{(a,B_1)}(1, -1)] \otimes \mathbb{U}_{12}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{12}[\mathbb{T}_2^{(k,A_2)}]}{4} + \frac{\sqrt{2}\mathbb{X}_{12}[\mathbb{Q}_2^{(a,B_1)}(1, -1)] \otimes \mathbb{U}_9[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_6[\mathbb{Q}_1^{(k,B_1)}]}{4} \\ & + \frac{\sqrt{2}\mathbb{X}_{14}[\mathbb{Q}_2^{(a,B_2)}(1, -1)] \otimes \mathbb{U}_{10}[\mathbb{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_5[\mathbb{Q}_0^{(k,A_1)}]}{4} - \frac{\sqrt{2}\mathbb{X}_{14}[\mathbb{Q}_2^{(a,B_2)}(1, -1)] \otimes \mathbb{U}_{11}[\mathbb{T}_0^{(u,A_1)}] \otimes \mathbb{F}_{11}[\mathbb{T}_1^{(k,B_2)}]}{4} \\ & - \frac{\sqrt{2}\mathbb{X}_{14}[\mathbb{Q}_2^{(a,B_2)}(1, -1)] \otimes \mathbb{U}_{12}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_9[\mathbb{T}_0^{(k,A_1)}]}{4} + \frac{\sqrt{2}\mathbb{X}_{14}[\mathbb{Q}_2^{(a,B_2)}(1, -1)] \otimes \mathbb{U}_9[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_7[\mathbb{Q}_1^{(k,B_2)}]}{4} \end{aligned}$$

$$\boxed{\text{No. 47}} \quad \hat{\mathbb{G}}_2^{(A_1)}(1, -1) [\mathbf{M}_1, \mathbf{B}_2]$$

$$\hat{\mathbb{Z}}_{47} = \frac{\sqrt{2}\mathbb{X}_{12}[\mathbb{Q}_2^{(a,B_1)}(1, -1)] \otimes \mathbb{Y}_{10}[\mathbb{Q}_1^{(b,B_1)}]}{2} - \frac{\sqrt{2}\mathbb{X}_{14}[\mathbb{Q}_2^{(a,B_2)}(1, -1)] \otimes \mathbb{Y}_{11}[\mathbb{Q}_1^{(b,B_2)}]}{2}$$

$$\begin{aligned} \hat{\mathbb{Z}}_{47}(\mathbf{k}) = & \frac{\sqrt{2}\mathbb{X}_{12}[\mathbb{Q}_2^{(a,B_1)}(1, -1)] \otimes \mathbb{U}_{10}[\mathbb{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_8[\mathbb{Q}_2^{(k,A_2)}]}{4} - \frac{\sqrt{2}\mathbb{X}_{12}[\mathbb{Q}_2^{(a,B_1)}(1, -1)] \otimes \mathbb{U}_{11}[\mathbb{T}_0^{(u,A_1)}] \otimes \mathbb{F}_{10}[\mathbb{T}_1^{(k,B_1)}]}{4} \\ & - \frac{\sqrt{2}\mathbb{X}_{12}[\mathbb{Q}_2^{(a,B_1)}(1, -1)] \otimes \mathbb{U}_{12}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{12}[\mathbb{T}_2^{(k,A_2)}]}{4} + \frac{\sqrt{2}\mathbb{X}_{12}[\mathbb{Q}_2^{(a,B_1)}(1, -1)] \otimes \mathbb{U}_9[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_6[\mathbb{Q}_1^{(k,B_1)}]}{4} \\ & - \frac{\sqrt{2}\mathbb{X}_{14}[\mathbb{Q}_2^{(a,B_2)}(1, -1)] \otimes \mathbb{U}_{10}[\mathbb{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_5[\mathbb{Q}_0^{(k,A_1)}]}{4} + \frac{\sqrt{2}\mathbb{X}_{14}[\mathbb{Q}_2^{(a,B_2)}(1, -1)] \otimes \mathbb{U}_{11}[\mathbb{T}_0^{(u,A_1)}] \otimes \mathbb{F}_{11}[\mathbb{T}_1^{(k,B_2)}]}{4} \\ & + \frac{\sqrt{2}\mathbb{X}_{14}[\mathbb{Q}_2^{(a,B_2)}(1, -1)] \otimes \mathbb{U}_{12}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_9[\mathbb{T}_0^{(k,A_1)}]}{4} - \frac{\sqrt{2}\mathbb{X}_{14}[\mathbb{Q}_2^{(a,B_2)}(1, -1)] \otimes \mathbb{U}_9[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_7[\mathbb{Q}_1^{(k,B_2)}]}{4} \end{aligned}$$

$$\boxed{\text{No. 48}} \quad \hat{\mathbb{Q}}_0^{(A_1)}(1, -1) [\mathbf{M}_1, \mathbf{B}_2]$$

$$\hat{\mathbb{Z}}_{48} = \mathbb{X}_{10}[\mathbb{Q}_2^{(a,A_2)}(1, -1)] \otimes \mathbb{Y}_{12}[\mathbb{Q}_2^{(b,A_2)}]$$

$$\hat{Z}_{48}(\mathbf{k}) = \frac{\mathbb{X}_{10}[\mathbb{Q}_2^{(a,A_2)}(1,-1)] \otimes \mathbb{U}_{10}[\mathbb{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_6[\mathbb{Q}_1^{(k,B_1)}]}{2} - \frac{\mathbb{X}_{10}[\mathbb{Q}_2^{(a,A_2)}(1,-1)] \otimes \mathbb{U}_{11}[\mathbb{T}_0^{(u,A_1)}] \otimes \mathbb{F}_{12}[\mathbb{T}_2^{(k,A_2)}]}{2} \\ - \frac{\mathbb{X}_{10}[\mathbb{Q}_2^{(a,A_2)}(1,-1)] \otimes \mathbb{U}_{12}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{10}[\mathbb{T}_1^{(k,B_1)}]}{2} + \frac{\mathbb{X}_{10}[\mathbb{Q}_2^{(a,A_2)}(1,-1)] \otimes \mathbb{U}_9[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_8[\mathbb{Q}_2^{(k,A_2)}]}{2}$$

$$\boxed{\text{No. 49}} \quad \hat{\mathbb{Q}}_1^{(A_1)}(1,0) \text{ } [M_1, B_2]$$

$$\hat{Z}_{49} = -\frac{\sqrt{2}\mathbb{X}_{13}[\mathbb{G}_1^{(a,B_1)}(1,0)] \otimes \mathbb{Y}_{10}[\mathbb{Q}_1^{(b,B_1)}]}{2} + \frac{\sqrt{2}\mathbb{X}_{15}[\mathbb{G}_1^{(a,B_2)}(1,0)] \otimes \mathbb{Y}_{11}[\mathbb{Q}_1^{(b,B_2)}]}{2}$$

$$\hat{Z}_{49}(\mathbf{k}) = -\frac{\sqrt{2}\mathbb{X}_{13}[\mathbb{G}_1^{(a,B_1)}(1,0)] \otimes \mathbb{U}_{10}[\mathbb{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_8[\mathbb{Q}_2^{(k,A_2)}]}{4} + \frac{\sqrt{2}\mathbb{X}_{13}[\mathbb{G}_1^{(a,B_1)}(1,0)] \otimes \mathbb{U}_{11}[\mathbb{T}_0^{(u,A_1)}] \otimes \mathbb{F}_{10}[\mathbb{T}_1^{(k,B_1)}]}{4} \\ + \frac{\sqrt{2}\mathbb{X}_{13}[\mathbb{G}_1^{(a,B_1)}(1,0)] \otimes \mathbb{U}_{12}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{12}[\mathbb{T}_2^{(k,A_2)}]}{4} - \frac{\sqrt{2}\mathbb{X}_{13}[\mathbb{G}_1^{(a,B_1)}(1,0)] \otimes \mathbb{U}_9[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_6[\mathbb{Q}_1^{(k,B_1)}]}{4} + \frac{\sqrt{2}\mathbb{X}_{15}[\mathbb{G}_1^{(a,B_2)}(1,0)] \otimes \mathbb{U}_{10}[\mathbb{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_5[\mathbb{Q}_0^{(k,A_1)}]}{4} \\ - \frac{\sqrt{2}\mathbb{X}_{15}[\mathbb{G}_1^{(a,B_2)}(1,0)] \otimes \mathbb{U}_{11}[\mathbb{T}_0^{(u,A_1)}] \otimes \mathbb{F}_{11}[\mathbb{T}_1^{(k,B_2)}]}{4} - \frac{\sqrt{2}\mathbb{X}_{15}[\mathbb{G}_1^{(a,B_2)}(1,0)] \otimes \mathbb{U}_{12}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_9[\mathbb{T}_0^{(k,A_1)}]}{4} + \frac{\sqrt{2}\mathbb{X}_{15}[\mathbb{G}_1^{(a,B_2)}(1,0)] \otimes \mathbb{U}_9[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_7[\mathbb{Q}_1^{(k,B_2)}]}{4}$$

$$\boxed{\text{No. 50}} \quad \hat{\mathbb{G}}_2^{(A_1)}(1,0) \text{ } [M_1, B_2]$$

$$\hat{Z}_{50} = \frac{\sqrt{2}\mathbb{X}_{13}[\mathbb{G}_1^{(a,B_1)}(1,0)] \otimes \mathbb{Y}_{10}[\mathbb{Q}_1^{(b,B_1)}]}{2} + \frac{\sqrt{2}\mathbb{X}_{15}[\mathbb{G}_1^{(a,B_2)}(1,0)] \otimes \mathbb{Y}_{11}[\mathbb{Q}_1^{(b,B_2)}]}{2}$$

$$\hat{Z}_{50}(\mathbf{k}) = \frac{\sqrt{2}\mathbb{X}_{13}[\mathbb{G}_1^{(a,B_1)}(1,0)] \otimes \mathbb{U}_{10}[\mathbb{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_8[\mathbb{Q}_2^{(k,A_2)}]}{4} - \frac{\sqrt{2}\mathbb{X}_{13}[\mathbb{G}_1^{(a,B_1)}(1,0)] \otimes \mathbb{U}_{11}[\mathbb{T}_0^{(u,A_1)}] \otimes \mathbb{F}_{10}[\mathbb{T}_1^{(k,B_1)}]}{4} - \frac{\sqrt{2}\mathbb{X}_{13}[\mathbb{G}_1^{(a,B_1)}(1,0)] \otimes \mathbb{U}_{12}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{12}[\mathbb{T}_2^{(k,A_2)}]}{4} \\ + \frac{\sqrt{2}\mathbb{X}_{13}[\mathbb{G}_1^{(a,B_1)}(1,0)] \otimes \mathbb{U}_9[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_6[\mathbb{Q}_1^{(k,B_1)}]}{4} + \frac{\sqrt{2}\mathbb{X}_{15}[\mathbb{G}_1^{(a,B_2)}(1,0)] \otimes \mathbb{U}_{10}[\mathbb{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_5[\mathbb{Q}_0^{(k,A_1)}]}{4} - \frac{\sqrt{2}\mathbb{X}_{15}[\mathbb{G}_1^{(a,B_2)}(1,0)] \otimes \mathbb{U}_{11}[\mathbb{T}_0^{(u,A_1)}] \otimes \mathbb{F}_{11}[\mathbb{T}_1^{(k,B_2)}]}{4} \\ - \frac{\sqrt{2}\mathbb{X}_{15}[\mathbb{G}_1^{(a,B_2)}(1,0)] \otimes \mathbb{U}_{12}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_9[\mathbb{T}_0^{(k,A_1)}]}{4} + \frac{\sqrt{2}\mathbb{X}_{15}[\mathbb{G}_1^{(a,B_2)}(1,0)] \otimes \mathbb{U}_9[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_7[\mathbb{Q}_1^{(k,B_2)}]}{4}$$

$$\boxed{\text{No. 51}} \quad \hat{\mathbb{Q}}_2^{(A_1,2)}(1,0) \text{ } [M_1, B_2]$$

$$\hat{Z}_{51} = -\mathbb{X}_{11}[\mathbb{G}_1^{(a,A_2)}(1,0)] \otimes \mathbb{Y}_{12}[\mathbb{Q}_2^{(b,A_2)}]$$

$$\hat{Z}_{51}(\mathbf{k}) = -\frac{\mathbb{X}_{11}[\mathbb{G}_1^{(a,A_2)}(1,0)] \otimes \mathbb{U}_{10}[\mathbb{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_6[\mathbb{Q}_1^{(k,B_1)}]}{2} + \frac{\mathbb{X}_{11}[\mathbb{G}_1^{(a,A_2)}(1,0)] \otimes \mathbb{U}_{11}[\mathbb{T}_0^{(u,A_1)}] \otimes \mathbb{F}_{12}[\mathbb{T}_2^{(k,A_2)}]}{2} \\ + \frac{\mathbb{X}_{11}[\mathbb{G}_1^{(a,A_2)}(1,0)] \otimes \mathbb{U}_{12}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{10}[\mathbb{T}_1^{(k,B_1)}]}{2} - \frac{\mathbb{X}_{11}[\mathbb{G}_1^{(a,A_2)}(1,0)] \otimes \mathbb{U}_9[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_8[\mathbb{Q}_2^{(k,A_2)}]}{2}$$

$$\boxed{\text{No. 52}} \quad \hat{\mathbb{Q}}_1^{(A_1)} [\mathbf{M}_1, \mathbf{B}_2]$$

$$\hat{\mathbb{Z}}_{52} = -\frac{\sqrt{2}\mathbb{X}_{17}[\mathbf{M}_1^{(a,B_1)}] \otimes \mathbb{Y}_{14}[\mathbf{T}_1^{(b,B_1)}]}{2} + \frac{\sqrt{2}\mathbb{X}_{18}[\mathbf{M}_1^{(a,B_2)}] \otimes \mathbb{Y}_{15}[\mathbf{T}_1^{(b,B_2)}]}{2}$$

$$\begin{aligned} \hat{\mathbb{Z}}_{52}(\mathbf{k}) = & -\frac{\sqrt{2}\mathbb{X}_{17}[\mathbf{M}_1^{(a,B_1)}] \otimes \mathbb{U}_{10}[\mathbf{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_{12}[\mathbf{T}_2^{(k,A_2)}]}{4} - \frac{\sqrt{2}\mathbb{X}_{17}[\mathbf{M}_1^{(a,B_1)}] \otimes \mathbb{U}_{11}[\mathbf{T}_0^{(u,A_1)}] \otimes \mathbb{F}_6[\mathbf{Q}_1^{(k,B_1)}]}{4} \\ & - \frac{\sqrt{2}\mathbb{X}_{17}[\mathbf{M}_1^{(a,B_1)}] \otimes \mathbb{U}_{12}[\mathbf{T}_1^{(u,B_2)}] \otimes \mathbb{F}_8[\mathbf{Q}_2^{(k,A_2)}]}{4} - \frac{\sqrt{2}\mathbb{X}_{17}[\mathbf{M}_1^{(a,B_1)}] \otimes \mathbb{U}_9[\mathbf{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{10}[\mathbf{T}_1^{(k,B_1)}]}{4} + \frac{\sqrt{2}\mathbb{X}_{18}[\mathbf{M}_1^{(a,B_2)}] \otimes \mathbb{U}_{10}[\mathbf{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_9[\mathbf{T}_0^{(k,A_1)}]}{4} \\ & + \frac{\sqrt{2}\mathbb{X}_{18}[\mathbf{M}_1^{(a,B_2)}] \otimes \mathbb{U}_{11}[\mathbf{T}_0^{(u,A_1)}] \otimes \mathbb{F}_7[\mathbf{Q}_1^{(k,B_2)}]}{4} + \frac{\sqrt{2}\mathbb{X}_{18}[\mathbf{M}_1^{(a,B_2)}] \otimes \mathbb{U}_{12}[\mathbf{T}_1^{(u,B_2)}] \otimes \mathbb{F}_5[\mathbf{Q}_0^{(k,A_1)}]}{4} + \frac{\sqrt{2}\mathbb{X}_{18}[\mathbf{M}_1^{(a,B_2)}] \otimes \mathbb{U}_9[\mathbf{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{11}[\mathbf{T}_1^{(k,B_2)}]}{4} \end{aligned}$$

$$\boxed{\text{No. 53}} \quad \hat{\mathbb{G}}_2^{(A_1)} [\mathbf{M}_1, \mathbf{B}_2]$$

$$\hat{\mathbb{Z}}_{53} = \frac{\sqrt{2}\mathbb{X}_{17}[\mathbf{M}_1^{(a,B_1)}] \otimes \mathbb{Y}_{14}[\mathbf{T}_1^{(b,B_1)}]}{2} + \frac{\sqrt{2}\mathbb{X}_{18}[\mathbf{M}_1^{(a,B_2)}] \otimes \mathbb{Y}_{15}[\mathbf{T}_1^{(b,B_2)}]}{2}$$

$$\begin{aligned} \hat{\mathbb{Z}}_{53}(\mathbf{k}) = & \frac{\sqrt{2}\mathbb{X}_{17}[\mathbf{M}_1^{(a,B_1)}] \otimes \mathbb{U}_{10}[\mathbf{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_{12}[\mathbf{T}_2^{(k,A_2)}]}{4} + \frac{\sqrt{2}\mathbb{X}_{17}[\mathbf{M}_1^{(a,B_1)}] \otimes \mathbb{U}_{11}[\mathbf{T}_0^{(u,A_1)}] \otimes \mathbb{F}_6[\mathbf{Q}_1^{(k,B_1)}]}{4} + \frac{\sqrt{2}\mathbb{X}_{17}[\mathbf{M}_1^{(a,B_1)}] \otimes \mathbb{U}_{12}[\mathbf{T}_1^{(u,B_2)}] \otimes \mathbb{F}_8[\mathbf{Q}_2^{(k,A_2)}]}{4} \\ & + \frac{\sqrt{2}\mathbb{X}_{17}[\mathbf{M}_1^{(a,B_1)}] \otimes \mathbb{U}_9[\mathbf{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{10}[\mathbf{T}_1^{(k,B_1)}]}{4} + \frac{\sqrt{2}\mathbb{X}_{18}[\mathbf{M}_1^{(a,B_2)}] \otimes \mathbb{U}_{10}[\mathbf{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_9[\mathbf{T}_0^{(k,A_1)}]}{4} + \frac{\sqrt{2}\mathbb{X}_{18}[\mathbf{M}_1^{(a,B_2)}] \otimes \mathbb{U}_{11}[\mathbf{T}_0^{(u,A_1)}] \otimes \mathbb{F}_7[\mathbf{Q}_1^{(k,B_2)}]}{4} \\ & + \frac{\sqrt{2}\mathbb{X}_{18}[\mathbf{M}_1^{(a,B_2)}] \otimes \mathbb{U}_{12}[\mathbf{T}_1^{(u,B_2)}] \otimes \mathbb{F}_5[\mathbf{Q}_0^{(k,A_1)}]}{4} + \frac{\sqrt{2}\mathbb{X}_{18}[\mathbf{M}_1^{(a,B_2)}] \otimes \mathbb{U}_9[\mathbf{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{11}[\mathbf{T}_1^{(k,B_2)}]}{4} \end{aligned}$$

$$\boxed{\text{No. 54}} \quad \hat{\mathbb{Q}}_2^{(A_1,2)} [\mathbf{M}_1, \mathbf{B}_2]$$

$$\hat{\mathbb{Z}}_{54} = -\mathbb{X}_{16}[\mathbf{M}_1^{(a,A_2)}] \otimes \mathbb{Y}_{16}[\mathbf{T}_2^{(b,A_2)}]$$

$$\begin{aligned} \hat{\mathbb{Z}}_{54}(\mathbf{k}) = & -\frac{\mathbb{X}_{16}[\mathbf{M}_1^{(a,A_2)}] \otimes \mathbb{U}_{10}[\mathbf{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_{10}[\mathbf{T}_1^{(k,B_1)}]}{2} - \frac{\mathbb{X}_{16}[\mathbf{M}_1^{(a,A_2)}] \otimes \mathbb{U}_{11}[\mathbf{T}_0^{(u,A_1)}] \otimes \mathbb{F}_8[\mathbf{Q}_2^{(k,A_2)}]}{2} \\ & - \frac{\mathbb{X}_{16}[\mathbf{M}_1^{(a,A_2)}] \otimes \mathbb{U}_{12}[\mathbf{T}_1^{(u,B_2)}] \otimes \mathbb{F}_6[\mathbf{Q}_1^{(k,B_1)}]}{2} - \frac{\mathbb{X}_{16}[\mathbf{M}_1^{(a,A_2)}] \otimes \mathbb{U}_9[\mathbf{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{12}[\mathbf{T}_2^{(k,A_2)}]}{2} \end{aligned}$$

$$\boxed{\text{No. 55}} \quad \hat{\mathbb{Q}}_1^{(A_1)}(1, 1) [\mathbf{M}_1, \mathbf{B}_2]$$

$$\hat{\mathbb{Z}}_{55} = -\frac{\sqrt{2}\mathbb{X}_{24}[\mathbf{M}_1^{(a,B_1)}(1, 1)] \otimes \mathbb{Y}_{14}[\mathbf{T}_1^{(b,B_1)}]}{2} + \frac{\sqrt{2}\mathbb{X}_{29}[\mathbf{M}_1^{(a,B_2)}(1, 1)] \otimes \mathbb{Y}_{15}[\mathbf{T}_1^{(b,B_2)}]}{2}$$

$$\begin{aligned}
\hat{Z}_{55}(\mathbf{k}) = & -\frac{\sqrt{2}\mathbb{X}_{24}[\mathbb{M}_1^{(a,B_1)}(1,1)] \otimes \mathbb{U}_{10}[\mathbb{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_{12}[\mathbb{T}_2^{(k,A_2)}]}{4} - \frac{\sqrt{2}\mathbb{X}_{24}[\mathbb{M}_1^{(a,B_1)}(1,1)] \otimes \mathbb{U}_{11}[\mathbb{T}_0^{(u,A_1)}] \otimes \mathbb{F}_6[\mathbb{Q}_1^{(k,B_1)}]}{4} \\
& - \frac{\sqrt{2}\mathbb{X}_{24}[\mathbb{M}_1^{(a,B_1)}(1,1)] \otimes \mathbb{U}_{12}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_8[\mathbb{Q}_2^{(k,A_2)}]}{4} - \frac{\sqrt{2}\mathbb{X}_{24}[\mathbb{M}_1^{(a,B_1)}(1,1)] \otimes \mathbb{U}_9[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{10}[\mathbb{T}_1^{(k,B_1)}]}{4} \\
& + \frac{\sqrt{2}\mathbb{X}_{29}[\mathbb{M}_1^{(a,B_2)}(1,1)] \otimes \mathbb{U}_{10}[\mathbb{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_9[\mathbb{T}_0^{(k,A_1)}]}{4} + \frac{\sqrt{2}\mathbb{X}_{29}[\mathbb{M}_1^{(a,B_2)}(1,1)] \otimes \mathbb{U}_{11}[\mathbb{T}_0^{(u,A_1)}] \otimes \mathbb{F}_7[\mathbb{Q}_1^{(k,B_2)}]}{4} \\
& + \frac{\sqrt{2}\mathbb{X}_{29}[\mathbb{M}_1^{(a,B_2)}(1,1)] \otimes \mathbb{U}_{12}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_5[\mathbb{Q}_0^{(k,A_1)}]}{4} + \frac{\sqrt{2}\mathbb{X}_{29}[\mathbb{M}_1^{(a,B_2)}(1,1)] \otimes \mathbb{U}_9[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{11}[\mathbb{T}_1^{(k,B_2)}]}{4}
\end{aligned}$$

$$\boxed{\text{No. 56}} \quad \hat{\mathbb{G}}_2^{(A_1)}(1,1) [\mathbb{M}_1, \mathbb{B}_2]$$

$$\hat{Z}_{56} = \frac{\sqrt{2}\mathbb{X}_{24}[\mathbb{M}_1^{(a,B_1)}(1,1)] \otimes \mathbb{Y}_{14}[\mathbb{T}_1^{(b,B_1)}]}{2} + \frac{\sqrt{2}\mathbb{X}_{29}[\mathbb{M}_1^{(a,B_2)}(1,1)] \otimes \mathbb{Y}_{15}[\mathbb{T}_1^{(b,B_2)}]}{2}$$

$$\begin{aligned}
\hat{Z}_{56}(\mathbf{k}) = & \frac{\sqrt{2}\mathbb{X}_{24}[\mathbb{M}_1^{(a,B_1)}(1,1)] \otimes \mathbb{U}_{10}[\mathbb{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_{12}[\mathbb{T}_2^{(k,A_2)}]}{4} + \frac{\sqrt{2}\mathbb{X}_{24}[\mathbb{M}_1^{(a,B_1)}(1,1)] \otimes \mathbb{U}_{11}[\mathbb{T}_0^{(u,A_1)}] \otimes \mathbb{F}_6[\mathbb{Q}_1^{(k,B_1)}]}{4} \\
& + \frac{\sqrt{2}\mathbb{X}_{24}[\mathbb{M}_1^{(a,B_1)}(1,1)] \otimes \mathbb{U}_{12}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_8[\mathbb{Q}_2^{(k,A_2)}]}{4} + \frac{\sqrt{2}\mathbb{X}_{24}[\mathbb{M}_1^{(a,B_1)}(1,1)] \otimes \mathbb{U}_9[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{10}[\mathbb{T}_1^{(k,B_1)}]}{4} \\
& + \frac{\sqrt{2}\mathbb{X}_{29}[\mathbb{M}_1^{(a,B_2)}(1,1)] \otimes \mathbb{U}_{10}[\mathbb{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_9[\mathbb{T}_0^{(k,A_1)}]}{4} + \frac{\sqrt{2}\mathbb{X}_{29}[\mathbb{M}_1^{(a,B_2)}(1,1)] \otimes \mathbb{U}_{11}[\mathbb{T}_0^{(u,A_1)}] \otimes \mathbb{F}_7[\mathbb{Q}_1^{(k,B_2)}]}{4} \\
& + \frac{\sqrt{2}\mathbb{X}_{29}[\mathbb{M}_1^{(a,B_2)}(1,1)] \otimes \mathbb{U}_{12}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_5[\mathbb{Q}_0^{(k,A_1)}]}{4} + \frac{\sqrt{2}\mathbb{X}_{29}[\mathbb{M}_1^{(a,B_2)}(1,1)] \otimes \mathbb{U}_9[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{11}[\mathbb{T}_1^{(k,B_2)}]}{4}
\end{aligned}$$

$$\boxed{\text{No. 57}} \quad \hat{\mathbb{Q}}_2^{(A_1,2)}(1,1) [\mathbb{M}_1, \mathbb{B}_2]$$

$$\hat{Z}_{57} = -\mathbb{X}_{19}[\mathbb{M}_1^{(a,A_2)}(1,1)] \otimes \mathbb{Y}_{16}[\mathbb{T}_2^{(b,A_2)}]$$

$$\begin{aligned}
\hat{Z}_{57}(\mathbf{k}) = & -\frac{\mathbb{X}_{19}[\mathbb{M}_1^{(a,A_2)}(1,1)] \otimes \mathbb{U}_{10}[\mathbb{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_{10}[\mathbb{T}_1^{(k,B_1)}]}{2} - \frac{\mathbb{X}_{19}[\mathbb{M}_1^{(a,A_2)}(1,1)] \otimes \mathbb{U}_{11}[\mathbb{T}_0^{(u,A_1)}] \otimes \mathbb{F}_8[\mathbb{Q}_2^{(k,A_2)}]}{2} \\
& - \frac{\mathbb{X}_{19}[\mathbb{M}_1^{(a,A_2)}(1,1)] \otimes \mathbb{U}_{12}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_6[\mathbb{Q}_1^{(k,B_1)}]}{2} - \frac{\mathbb{X}_{19}[\mathbb{M}_1^{(a,A_2)}(1,1)] \otimes \mathbb{U}_9[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{12}[\mathbb{T}_2^{(k,A_2)}]}{2}
\end{aligned}$$

$$\boxed{\text{No. 58}} \quad \hat{\mathbb{Q}}_1^{(A_1)}(1,-1) [\mathbb{M}_1, \mathbb{B}_2]$$

$$\hat{Z}_{58} = -\frac{\sqrt{2}\mathbb{X}_{25}[\mathbb{M}_1^{(a,B_1)}(1,-1)] \otimes \mathbb{Y}_{14}[\mathbb{T}_1^{(b,B_1)}]}{2} + \frac{\sqrt{2}\mathbb{X}_{30}[\mathbb{M}_1^{(a,B_2)}(1,-1)] \otimes \mathbb{Y}_{15}[\mathbb{T}_1^{(b,B_2)}]}{2}$$

$$\begin{aligned}
\hat{Z}_{58}(\mathbf{k}) = & -\frac{\sqrt{2}\mathbb{X}_{25}[\mathbb{M}_1^{(a,B_1)}(1,-1)] \otimes \mathbb{U}_{10}[\mathbb{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_{12}[\mathbb{T}_2^{(k,A_2)}]}{4} - \frac{\sqrt{2}\mathbb{X}_{25}[\mathbb{M}_1^{(a,B_1)}(1,-1)] \otimes \mathbb{U}_{11}[\mathbb{T}_0^{(u,A_1)}] \otimes \mathbb{F}_6[\mathbb{Q}_1^{(k,B_1)}]}{4} \\
& - \frac{\sqrt{2}\mathbb{X}_{25}[\mathbb{M}_1^{(a,B_1)}(1,-1)] \otimes \mathbb{U}_{12}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_8[\mathbb{Q}_2^{(k,A_2)}]}{4} - \frac{\sqrt{2}\mathbb{X}_{25}[\mathbb{M}_1^{(a,B_1)}(1,-1)] \otimes \mathbb{U}_9[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{10}[\mathbb{T}_1^{(k,B_1)}]}{4} \\
& + \frac{\sqrt{2}\mathbb{X}_{30}[\mathbb{M}_1^{(a,B_2)}(1,-1)] \otimes \mathbb{U}_{10}[\mathbb{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_9[\mathbb{T}_0^{(k,A_1)}]}{4} + \frac{\sqrt{2}\mathbb{X}_{30}[\mathbb{M}_1^{(a,B_2)}(1,-1)] \otimes \mathbb{U}_{11}[\mathbb{T}_0^{(u,A_1)}] \otimes \mathbb{F}_7[\mathbb{Q}_1^{(k,B_2)}]}{4} \\
& + \frac{\sqrt{2}\mathbb{X}_{30}[\mathbb{M}_1^{(a,B_2)}(1,-1)] \otimes \mathbb{U}_{12}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_5[\mathbb{Q}_0^{(k,A_1)}]}{4} + \frac{\sqrt{2}\mathbb{X}_{30}[\mathbb{M}_1^{(a,B_2)}(1,-1)] \otimes \mathbb{U}_9[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{11}[\mathbb{T}_1^{(k,B_2)}]}{4}
\end{aligned}$$

$$\boxed{\text{No. 59}} \quad \hat{\mathbb{G}}_2^{(A_1)}(1,-1) [\mathbb{M}_1, \mathbb{B}_2]$$

$$\hat{Z}_{59} = \frac{\sqrt{2}\mathbb{X}_{25}[\mathbb{M}_1^{(a,B_1)}(1,-1)] \otimes \mathbb{Y}_{14}[\mathbb{T}_1^{(b,B_1)}]}{2} + \frac{\sqrt{2}\mathbb{X}_{30}[\mathbb{M}_1^{(a,B_2)}(1,-1)] \otimes \mathbb{Y}_{15}[\mathbb{T}_1^{(b,B_2)}]}{2}$$

$$\begin{aligned}
\hat{Z}_{59}(\mathbf{k}) = & \frac{\sqrt{2}\mathbb{X}_{25}[\mathbb{M}_1^{(a,B_1)}(1,-1)] \otimes \mathbb{U}_{10}[\mathbb{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_{12}[\mathbb{T}_2^{(k,A_2)}]}{4} + \frac{\sqrt{2}\mathbb{X}_{25}[\mathbb{M}_1^{(a,B_1)}(1,-1)] \otimes \mathbb{U}_{11}[\mathbb{T}_0^{(u,A_1)}] \otimes \mathbb{F}_6[\mathbb{Q}_1^{(k,B_1)}]}{4} \\
& + \frac{\sqrt{2}\mathbb{X}_{25}[\mathbb{M}_1^{(a,B_1)}(1,-1)] \otimes \mathbb{U}_{12}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_8[\mathbb{Q}_2^{(k,A_2)}]}{4} + \frac{\sqrt{2}\mathbb{X}_{25}[\mathbb{M}_1^{(a,B_1)}(1,-1)] \otimes \mathbb{U}_9[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{10}[\mathbb{T}_1^{(k,B_1)}]}{4} \\
& + \frac{\sqrt{2}\mathbb{X}_{30}[\mathbb{M}_1^{(a,B_2)}(1,-1)] \otimes \mathbb{U}_{10}[\mathbb{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_9[\mathbb{T}_0^{(k,A_1)}]}{4} + \frac{\sqrt{2}\mathbb{X}_{30}[\mathbb{M}_1^{(a,B_2)}(1,-1)] \otimes \mathbb{U}_{11}[\mathbb{T}_0^{(u,A_1)}] \otimes \mathbb{F}_7[\mathbb{Q}_1^{(k,B_2)}]}{4} \\
& + \frac{\sqrt{2}\mathbb{X}_{30}[\mathbb{M}_1^{(a,B_2)}(1,-1)] \otimes \mathbb{U}_{12}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_5[\mathbb{Q}_0^{(k,A_1)}]}{4} + \frac{\sqrt{2}\mathbb{X}_{30}[\mathbb{M}_1^{(a,B_2)}(1,-1)] \otimes \mathbb{U}_9[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{11}[\mathbb{T}_1^{(k,B_2)}]}{4}
\end{aligned}$$

$$\boxed{\text{No. 60}} \quad \hat{\mathbb{Q}}_2^{(A_1,2)}(1,-1) [\mathbb{M}_1, \mathbb{B}_2]$$

$$\hat{Z}_{60} = -\mathbb{X}_{20}[\mathbb{M}_1^{(a,A_2)}(1,-1)] \otimes \mathbb{Y}_{16}[\mathbb{T}_2^{(b,A_2)}]$$

$$\begin{aligned}
\hat{Z}_{60}(\mathbf{k}) = & -\frac{\mathbb{X}_{20}[\mathbb{M}_1^{(a,A_2)}(1,-1)] \otimes \mathbb{U}_{10}[\mathbb{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_{10}[\mathbb{T}_1^{(k,B_1)}]}{2} - \frac{\mathbb{X}_{20}[\mathbb{M}_1^{(a,A_2)}(1,-1)] \otimes \mathbb{U}_{11}[\mathbb{T}_0^{(u,A_1)}] \otimes \mathbb{F}_8[\mathbb{Q}_2^{(k,A_2)}]}{2} \\
& - \frac{\mathbb{X}_{20}[\mathbb{M}_1^{(a,A_2)}(1,-1)] \otimes \mathbb{U}_{12}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_6[\mathbb{Q}_1^{(k,B_1)}]}{2} - \frac{\mathbb{X}_{20}[\mathbb{M}_1^{(a,A_2)}(1,-1)] \otimes \mathbb{U}_9[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{12}[\mathbb{T}_2^{(k,A_2)}]}{2}
\end{aligned}$$

$$\boxed{\text{No. 61}} \quad \hat{\mathbb{G}}_3^{(A_1)}(1,-1) [\mathbb{M}_1, \mathbb{B}_2]$$

$$\hat{Z}_{61} = \mathbb{X}_{34}[\mathbb{M}_3^{(a,A_1)}(1,-1)] \otimes \mathbb{Y}_{13}[\mathbb{T}_0^{(b,A_1)}]$$

$$\begin{aligned}
\hat{Z}_{61}(\mathbf{k}) = & \frac{\mathbb{X}_{34}[\mathbb{M}_3^{(a,A_1)}(1,-1)] \otimes \mathbb{U}_{10}[\mathbb{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_{11}[\mathbb{T}_1^{(k,B_2)}]}{2} + \frac{\mathbb{X}_{34}[\mathbb{M}_3^{(a,A_1)}(1,-1)] \otimes \mathbb{U}_{11}[\mathbb{T}_0^{(u,A_1)}] \otimes \mathbb{F}_5[\mathbb{Q}_0^{(k,A_1)}]}{2} \\
& + \frac{\mathbb{X}_{34}[\mathbb{M}_3^{(a,A_1)}(1,-1)] \otimes \mathbb{U}_{12}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_7[\mathbb{Q}_1^{(k,B_2)}]}{2} + \frac{\mathbb{X}_{34}[\mathbb{M}_3^{(a,A_1)}(1,-1)] \otimes \mathbb{U}_9[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_9[\mathbb{T}_0^{(k,A_1)}]}{2}
\end{aligned}$$

$$\boxed{\text{No. 62}} \quad \hat{\mathbb{G}}_2^{(A_1)}(1, -1) [M_1, B_2]$$

$$\hat{\mathbb{Z}}_{62} = -\frac{\sqrt{3}\mathbb{X}_{26}[\mathbb{M}_3^{(a, B_1, 1)}(1, -1)] \otimes \mathbb{Y}_{14}[\mathbb{T}_1^{(b, B_1)}]}{4} - \frac{\sqrt{5}\mathbb{X}_{27}[\mathbb{M}_3^{(a, B_1, 2)}(1, -1)] \otimes \mathbb{Y}_{14}[\mathbb{T}_1^{(b, B_1)}]}{4} \\ - \frac{\sqrt{3}\mathbb{X}_{31}[\mathbb{M}_3^{(a, B_2, 1)}(1, -1)] \otimes \mathbb{Y}_{15}[\mathbb{T}_1^{(b, B_2)}]}{4} + \frac{\sqrt{5}\mathbb{X}_{32}[\mathbb{M}_3^{(a, B_2, 2)}(1, -1)] \otimes \mathbb{Y}_{15}[\mathbb{T}_1^{(b, B_2)}]}{4}$$

$$\hat{\mathbb{Z}}_{62}(\mathbf{k}) = -\frac{\sqrt{3}\mathbb{X}_{26}[\mathbb{M}_3^{(a, B_1, 1)}(1, -1)] \otimes \mathbb{U}_{10}[\mathbb{Q}_1^{(u, B_2)}] \otimes \mathbb{F}_{12}[\mathbb{T}_2^{(k, A_2)}]}{8} - \frac{\sqrt{3}\mathbb{X}_{26}[\mathbb{M}_3^{(a, B_1, 1)}(1, -1)] \otimes \mathbb{U}_{11}[\mathbb{T}_0^{(u, A_1)}] \otimes \mathbb{F}_6[\mathbb{Q}_1^{(k, B_1)}]}{8} \\ - \frac{\sqrt{3}\mathbb{X}_{26}[\mathbb{M}_3^{(a, B_1, 1)}(1, -1)] \otimes \mathbb{U}_{12}[\mathbb{T}_1^{(u, B_2)}] \otimes \mathbb{F}_8[\mathbb{Q}_2^{(k, A_2)}]}{8} - \frac{\sqrt{3}\mathbb{X}_{26}[\mathbb{M}_3^{(a, B_1, 1)}(1, -1)] \otimes \mathbb{U}_9[\mathbb{Q}_0^{(u, A_1)}] \otimes \mathbb{F}_{10}[\mathbb{T}_1^{(k, B_1)}]}{8} \\ - \frac{\sqrt{5}\mathbb{X}_{27}[\mathbb{M}_3^{(a, B_1, 2)}(1, -1)] \otimes \mathbb{U}_{10}[\mathbb{Q}_1^{(u, B_2)}] \otimes \mathbb{F}_{12}[\mathbb{T}_2^{(k, A_2)}]}{8} - \frac{\sqrt{5}\mathbb{X}_{27}[\mathbb{M}_3^{(a, B_1, 2)}(1, -1)] \otimes \mathbb{U}_{11}[\mathbb{T}_0^{(u, A_1)}] \otimes \mathbb{F}_6[\mathbb{Q}_1^{(k, B_1)}]}{8} \\ - \frac{\sqrt{5}\mathbb{X}_{27}[\mathbb{M}_3^{(a, B_1, 2)}(1, -1)] \otimes \mathbb{U}_{12}[\mathbb{T}_1^{(u, B_2)}] \otimes \mathbb{F}_8[\mathbb{Q}_2^{(k, A_2)}]}{8} - \frac{\sqrt{5}\mathbb{X}_{27}[\mathbb{M}_3^{(a, B_1, 2)}(1, -1)] \otimes \mathbb{U}_9[\mathbb{Q}_0^{(u, A_1)}] \otimes \mathbb{F}_{10}[\mathbb{T}_1^{(k, B_1)}]}{8} \\ - \frac{\sqrt{3}\mathbb{X}_{31}[\mathbb{M}_3^{(a, B_2, 1)}(1, -1)] \otimes \mathbb{U}_{10}[\mathbb{Q}_1^{(u, B_2)}] \otimes \mathbb{F}_9[\mathbb{T}_0^{(k, A_1)}]}{8} - \frac{\sqrt{3}\mathbb{X}_{31}[\mathbb{M}_3^{(a, B_2, 1)}(1, -1)] \otimes \mathbb{U}_{11}[\mathbb{T}_0^{(u, A_1)}] \otimes \mathbb{F}_7[\mathbb{Q}_1^{(k, B_2)}]}{8} \\ - \frac{\sqrt{3}\mathbb{X}_{31}[\mathbb{M}_3^{(a, B_2, 1)}(1, -1)] \otimes \mathbb{U}_{12}[\mathbb{T}_1^{(u, B_2)}] \otimes \mathbb{F}_5[\mathbb{Q}_0^{(k, A_1)}]}{8} - \frac{\sqrt{3}\mathbb{X}_{31}[\mathbb{M}_3^{(a, B_2, 1)}(1, -1)] \otimes \mathbb{U}_9[\mathbb{Q}_0^{(u, A_1)}] \otimes \mathbb{F}_{11}[\mathbb{T}_1^{(k, B_2)}]}{8} \\ + \frac{\sqrt{5}\mathbb{X}_{32}[\mathbb{M}_3^{(a, B_2, 2)}(1, -1)] \otimes \mathbb{U}_{10}[\mathbb{Q}_1^{(u, B_2)}] \otimes \mathbb{F}_9[\mathbb{T}_0^{(k, A_1)}]}{8} + \frac{\sqrt{5}\mathbb{X}_{32}[\mathbb{M}_3^{(a, B_2, 2)}(1, -1)] \otimes \mathbb{U}_{11}[\mathbb{T}_0^{(u, A_1)}] \otimes \mathbb{F}_7[\mathbb{Q}_1^{(k, B_2)}]}{8} \\ + \frac{\sqrt{5}\mathbb{X}_{32}[\mathbb{M}_3^{(a, B_2, 2)}(1, -1)] \otimes \mathbb{U}_{12}[\mathbb{T}_1^{(u, B_2)}] \otimes \mathbb{F}_5[\mathbb{Q}_0^{(k, A_1)}]}{8} + \frac{\sqrt{5}\mathbb{X}_{32}[\mathbb{M}_3^{(a, B_2, 2)}(1, -1)] \otimes \mathbb{U}_9[\mathbb{Q}_0^{(u, A_1)}] \otimes \mathbb{F}_{11}[\mathbb{T}_1^{(k, B_2)}]}{8}$$

$$\boxed{\text{No. 63}} \quad \hat{\mathbb{Q}}_3^{(A_1, 1)}(1, -1) [M_1, B_2]$$

$$\hat{\mathbb{Z}}_{63} = \frac{\sqrt{3}\mathbb{X}_{26}[\mathbb{M}_3^{(a, B_1, 1)}(1, -1)] \otimes \mathbb{Y}_{14}[\mathbb{T}_1^{(b, B_1)}]}{4} - \frac{\sqrt{5}\mathbb{X}_{27}[\mathbb{M}_3^{(a, B_1, 2)}(1, -1)] \otimes \mathbb{Y}_{14}[\mathbb{T}_1^{(b, B_1)}]}{4} \\ - \frac{\sqrt{3}\mathbb{X}_{31}[\mathbb{M}_3^{(a, B_2, 1)}(1, -1)] \otimes \mathbb{Y}_{15}[\mathbb{T}_1^{(b, B_2)}]}{4} - \frac{\sqrt{5}\mathbb{X}_{32}[\mathbb{M}_3^{(a, B_2, 2)}(1, -1)] \otimes \mathbb{Y}_{15}[\mathbb{T}_1^{(b, B_2)}]}{4}$$

$$\boxed{\text{No. 65}} \quad \hat{\mathbb{G}}_4^{(A_1,1)}(1, -1) [\mathbf{M}_1, \mathbf{B}_2]$$

$$\hat{\mathbb{Z}}_{65} = -\frac{\sqrt{5}\mathbb{X}_{26}[\mathbb{M}_3^{(a,B_1,1)}(1, -1)] \otimes \mathbb{Y}_{14}[\mathbb{T}_1^{(b,B_1)}]}{4} - \frac{\sqrt{3}\mathbb{X}_{27}[\mathbb{M}_3^{(a,B_1,2)}(1, -1)] \otimes \mathbb{Y}_{14}[\mathbb{T}_1^{(b,B_1)}]}{4} \\ + \frac{\sqrt{5}\mathbb{X}_{31}[\mathbb{M}_3^{(a,B_2,1)}(1, -1)] \otimes \mathbb{Y}_{15}[\mathbb{T}_1^{(b,B_2)}]}{4} - \frac{\sqrt{3}\mathbb{X}_{32}[\mathbb{M}_3^{(a,B_2,2)}(1, -1)] \otimes \mathbb{Y}_{15}[\mathbb{T}_1^{(b,B_2)}]}{4}$$

$$\hat{\mathbb{Z}}_{65}(\mathbf{k}) = -\frac{\sqrt{5}\mathbb{X}_{26}[\mathbb{M}_3^{(a,B_1,1)}(1, -1)] \otimes \mathbb{U}_{10}[\mathbb{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_{12}[\mathbb{T}_2^{(k,A_2)}]}{8} - \frac{\sqrt{5}\mathbb{X}_{26}[\mathbb{M}_3^{(a,B_1,1)}(1, -1)] \otimes \mathbb{U}_{11}[\mathbb{T}_0^{(u,A_1)}] \otimes \mathbb{F}_6[\mathbb{Q}_1^{(k,B_1)}]}{8} \\ - \frac{\sqrt{5}\mathbb{X}_{26}[\mathbb{M}_3^{(a,B_1,1)}(1, -1)] \otimes \mathbb{U}_{12}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_8[\mathbb{Q}_2^{(k,A_2)}]}{8} - \frac{\sqrt{5}\mathbb{X}_{26}[\mathbb{M}_3^{(a,B_1,1)}(1, -1)] \otimes \mathbb{U}_9[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{10}[\mathbb{T}_1^{(k,B_1)}]}{8} \\ - \frac{\sqrt{3}\mathbb{X}_{27}[\mathbb{M}_3^{(a,B_1,2)}(1, -1)] \otimes \mathbb{U}_{10}[\mathbb{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_{12}[\mathbb{T}_2^{(k,A_2)}]}{8} - \frac{\sqrt{3}\mathbb{X}_{27}[\mathbb{M}_3^{(a,B_1,2)}(1, -1)] \otimes \mathbb{U}_{11}[\mathbb{T}_0^{(u,A_1)}] \otimes \mathbb{F}_6[\mathbb{Q}_1^{(k,B_1)}]}{8} \\ - \frac{\sqrt{3}\mathbb{X}_{27}[\mathbb{M}_3^{(a,B_1,2)}(1, -1)] \otimes \mathbb{U}_{12}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_8[\mathbb{Q}_2^{(k,A_2)}]}{8} - \frac{\sqrt{3}\mathbb{X}_{27}[\mathbb{M}_3^{(a,B_1,2)}(1, -1)] \otimes \mathbb{U}_9[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{10}[\mathbb{T}_1^{(k,B_1)}]}{8} \\ + \frac{\sqrt{5}\mathbb{X}_{31}[\mathbb{M}_3^{(a,B_2,1)}(1, -1)] \otimes \mathbb{U}_{10}[\mathbb{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_9[\mathbb{T}_0^{(k,A_1)}]}{8} + \frac{\sqrt{5}\mathbb{X}_{31}[\mathbb{M}_3^{(a,B_2,1)}(1, -1)] \otimes \mathbb{U}_{11}[\mathbb{T}_0^{(u,A_1)}] \otimes \mathbb{F}_7[\mathbb{Q}_1^{(k,B_2)}]}{8} \\ + \frac{\sqrt{5}\mathbb{X}_{31}[\mathbb{M}_3^{(a,B_2,1)}(1, -1)] \otimes \mathbb{U}_{12}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_5[\mathbb{Q}_0^{(k,A_1)}]}{8} + \frac{\sqrt{5}\mathbb{X}_{31}[\mathbb{M}_3^{(a,B_2,1)}(1, -1)] \otimes \mathbb{U}_9[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{11}[\mathbb{T}_1^{(k,B_2)}]}{8} \\ - \frac{\sqrt{3}\mathbb{X}_{32}[\mathbb{M}_3^{(a,B_2,2)}(1, -1)] \otimes \mathbb{U}_{10}[\mathbb{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_9[\mathbb{T}_0^{(k,A_1)}]}{8} - \frac{\sqrt{3}\mathbb{X}_{32}[\mathbb{M}_3^{(a,B_2,2)}(1, -1)] \otimes \mathbb{U}_{11}[\mathbb{T}_0^{(u,A_1)}] \otimes \mathbb{F}_7[\mathbb{Q}_1^{(k,B_2)}]}{8} \\ - \frac{\sqrt{3}\mathbb{X}_{32}[\mathbb{M}_3^{(a,B_2,2)}(1, -1)] \otimes \mathbb{U}_{12}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_5[\mathbb{Q}_0^{(k,A_1)}]}{8} - \frac{\sqrt{3}\mathbb{X}_{32}[\mathbb{M}_3^{(a,B_2,2)}(1, -1)] \otimes \mathbb{U}_9[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{11}[\mathbb{T}_1^{(k,B_2)}]}{8}$$

$$\boxed{\text{No. 66}} \quad \hat{\mathbb{Q}}_2^{(A_1,1)}(1, -1) [\mathbf{M}_1, \mathbf{B}_2]$$

$$\hat{\mathbb{Z}}_{66} = \mathbb{X}_{22}[\mathbb{M}_3^{(a,A_2,2)}(1, -1)] \otimes \mathbb{Y}_{16}[\mathbb{T}_2^{(b,A_2)}]$$

$$\hat{\mathbb{Z}}_{66}(\mathbf{k}) = \frac{\mathbb{X}_{22}[\mathbb{M}_3^{(a,A_2,2)}(1, -1)] \otimes \mathbb{U}_{10}[\mathbb{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_{10}[\mathbb{T}_1^{(k,B_1)}]}{2} + \frac{\mathbb{X}_{22}[\mathbb{M}_3^{(a,A_2,2)}(1, -1)] \otimes \mathbb{U}_{11}[\mathbb{T}_0^{(u,A_1)}] \otimes \mathbb{F}_8[\mathbb{Q}_2^{(k,A_2)}]}{2} \\ + \frac{\mathbb{X}_{22}[\mathbb{M}_3^{(a,A_2,2)}(1, -1)] \otimes \mathbb{U}_{12}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_6[\mathbb{Q}_1^{(k,B_1)}]}{2} + \frac{\mathbb{X}_{22}[\mathbb{M}_3^{(a,A_2,2)}(1, -1)] \otimes \mathbb{U}_9[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{12}[\mathbb{T}_2^{(k,A_2)}]}{2}$$

$$\boxed{\text{No. 67}} \quad \hat{\mathbb{Q}}_2^{(A_1,2)}(1, -1) [\mathbf{M}_1, \mathbf{B}_2]$$

$$\hat{\mathbb{Z}}_{67} = \mathbb{X}_{21}[\mathbb{M}_3^{(a,A_2,1)}(1, -1)] \otimes \mathbb{Y}_{16}[\mathbb{T}_2^{(b,A_2)}]$$

$$\hat{\mathbb{Z}}_{67}(\mathbf{k}) = \frac{\mathbb{X}_{21}[\mathbb{M}_3^{(a,A_2,1)}(1,-1)] \otimes \mathbb{U}_{10}[\mathbb{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_{10}[\mathbb{T}_1^{(k,B_1)}]}{2} + \frac{\mathbb{X}_{21}[\mathbb{M}_3^{(a,A_2,1)}(1,-1)] \otimes \mathbb{U}_{11}[\mathbb{T}_0^{(u,A_1)}] \otimes \mathbb{F}_8[\mathbb{Q}_2^{(k,A_2)}]}{2} \\ + \frac{\mathbb{X}_{21}[\mathbb{M}_3^{(a,A_2,1)}(1,-1)] \otimes \mathbb{U}_{12}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_6[\mathbb{Q}_1^{(k,B_1)}]}{2} + \frac{\mathbb{X}_{21}[\mathbb{M}_3^{(a,A_2,1)}(1,-1)] \otimes \mathbb{U}_9[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{12}[\mathbb{T}_2^{(k,A_2)}]}{2}$$

$$\boxed{\text{No. 68}} \quad \hat{\mathbb{Q}}_2^{(A_1,1)}(1,0) \text{ } [\mathbb{M}_1, \mathbb{B}_2]$$

$$\hat{\mathbb{Z}}_{68} = \mathbb{X}_{35}[\mathbb{T}_2^{(a,A_1,1)}(1,0)] \otimes \mathbb{Y}_{13}[\mathbb{T}_0^{(b,A_1)}]$$

$$\hat{\mathbb{Z}}_{68}(\mathbf{k}) = \frac{\mathbb{X}_{35}[\mathbb{T}_2^{(a,A_1,1)}(1,0)] \otimes \mathbb{U}_{10}[\mathbb{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_{11}[\mathbb{T}_1^{(k,B_2)}]}{2} + \frac{\mathbb{X}_{35}[\mathbb{T}_2^{(a,A_1,1)}(1,0)] \otimes \mathbb{U}_{11}[\mathbb{T}_0^{(u,A_1)}] \otimes \mathbb{F}_5[\mathbb{Q}_0^{(k,A_1)}]}{2} \\ + \frac{\mathbb{X}_{35}[\mathbb{T}_2^{(a,A_1,1)}(1,0)] \otimes \mathbb{U}_{12}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_7[\mathbb{Q}_1^{(k,B_2)}]}{2} + \frac{\mathbb{X}_{35}[\mathbb{T}_2^{(a,A_1,1)}(1,0)] \otimes \mathbb{U}_9[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_9[\mathbb{T}_0^{(k,A_1)}]}{2}$$

$$\boxed{\text{No. 69}} \quad \hat{\mathbb{Q}}_2^{(A_1,2)}(1,0) \text{ } [\mathbb{M}_1, \mathbb{B}_2]$$

$$\hat{\mathbb{Z}}_{69} = \mathbb{X}_{36}[\mathbb{T}_2^{(a,A_1,2)}(1,0)] \otimes \mathbb{Y}_{13}[\mathbb{T}_0^{(b,A_1)}]$$

$$\hat{\mathbb{Z}}_{69}(\mathbf{k}) = \frac{\mathbb{X}_{36}[\mathbb{T}_2^{(a,A_1,2)}(1,0)] \otimes \mathbb{U}_{10}[\mathbb{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_{11}[\mathbb{T}_1^{(k,B_2)}]}{2} + \frac{\mathbb{X}_{36}[\mathbb{T}_2^{(a,A_1,2)}(1,0)] \otimes \mathbb{U}_{11}[\mathbb{T}_0^{(u,A_1)}] \otimes \mathbb{F}_5[\mathbb{Q}_0^{(k,A_1)}]}{2} \\ + \frac{\mathbb{X}_{36}[\mathbb{T}_2^{(a,A_1,2)}(1,0)] \otimes \mathbb{U}_{12}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_7[\mathbb{Q}_1^{(k,B_2)}]}{2} + \frac{\mathbb{X}_{36}[\mathbb{T}_2^{(a,A_1,2)}(1,0)] \otimes \mathbb{U}_9[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_9[\mathbb{T}_0^{(k,A_1)}]}{2}$$

$$\boxed{\text{No. 70}} \quad \hat{\mathbb{Q}}_1^{(A_1)}(1,0) \text{ } [\mathbb{M}_1, \mathbb{B}_2]$$

$$\hat{\mathbb{Z}}_{70} = \frac{\sqrt{2}\mathbb{X}_{28}[\mathbb{T}_2^{(a,B_1)}(1,0)] \otimes \mathbb{Y}_{14}[\mathbb{T}_1^{(b,B_1)}]}{2} + \frac{\sqrt{2}\mathbb{X}_{33}[\mathbb{T}_2^{(a,B_2)}(1,0)] \otimes \mathbb{Y}_{15}[\mathbb{T}_1^{(b,B_2)}]}{2}$$

$$\hat{\mathbb{Z}}_{70}(\mathbf{k}) = \frac{\sqrt{2}\mathbb{X}_{28}[\mathbb{T}_2^{(a,B_1)}(1,0)] \otimes \mathbb{U}_{10}[\mathbb{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_{12}[\mathbb{T}_2^{(k,A_2)}]}{4} + \frac{\sqrt{2}\mathbb{X}_{28}[\mathbb{T}_2^{(a,B_1)}(1,0)] \otimes \mathbb{U}_{11}[\mathbb{T}_0^{(u,A_1)}] \otimes \mathbb{F}_6[\mathbb{Q}_1^{(k,B_1)}]}{4} + \frac{\sqrt{2}\mathbb{X}_{28}[\mathbb{T}_2^{(a,B_1)}(1,0)] \otimes \mathbb{U}_{12}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_8[\mathbb{Q}_2^{(k,A_2)}]}{4} \\ + \frac{\sqrt{2}\mathbb{X}_{28}[\mathbb{T}_2^{(a,B_1)}(1,0)] \otimes \mathbb{U}_9[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{10}[\mathbb{T}_1^{(k,B_1)}]}{4} + \frac{\sqrt{2}\mathbb{X}_{33}[\mathbb{T}_2^{(a,B_2)}(1,0)] \otimes \mathbb{U}_{10}[\mathbb{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_9[\mathbb{T}_0^{(k,A_1)}]}{4} + \frac{\sqrt{2}\mathbb{X}_{33}[\mathbb{T}_2^{(a,B_2)}(1,0)] \otimes \mathbb{U}_{11}[\mathbb{T}_0^{(u,A_1)}] \otimes \mathbb{F}_7[\mathbb{Q}_1^{(k,B_2)}]}{4} \\ + \frac{\sqrt{2}\mathbb{X}_{33}[\mathbb{T}_2^{(a,B_2)}(1,0)] \otimes \mathbb{U}_{12}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_5[\mathbb{Q}_0^{(k,A_1)}]}{4} + \frac{\sqrt{2}\mathbb{X}_{33}[\mathbb{T}_2^{(a,B_2)}(1,0)] \otimes \mathbb{U}_9[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{11}[\mathbb{T}_1^{(k,B_2)}]}{4}$$

$$\boxed{\text{No. 71}} \quad \hat{\mathbb{G}}_2^{(A_1)}(1,0) \text{ } [\mathbb{M}_1, \mathbb{B}_2]$$

$$\hat{\mathbb{Z}}_{71} = \frac{\sqrt{2}\mathbb{X}_{28}[\mathbb{T}_2^{(a,B_1)}(1,0)] \otimes \mathbb{Y}_{14}[\mathbb{T}_1^{(b,B_1)}]}{2} - \frac{\sqrt{2}\mathbb{X}_{33}[\mathbb{T}_2^{(a,B_2)}(1,0)] \otimes \mathbb{Y}_{15}[\mathbb{T}_1^{(b,B_2)}]}{2}$$

$$\begin{aligned}\hat{Z}_{71}(\mathbf{k}) = & \frac{\sqrt{2}\mathbb{X}_{28}[\mathbb{T}_2^{(a,B_1)}(1,0)] \otimes \mathbb{U}_{10}[\mathbb{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_{12}[\mathbb{T}_2^{(k,A_2)}]}{4} + \frac{\sqrt{2}\mathbb{X}_{28}[\mathbb{T}_2^{(a,B_1)}(1,0)] \otimes \mathbb{U}_{11}[\mathbb{T}_0^{(u,A_1)}] \otimes \mathbb{F}_6[\mathbb{Q}_1^{(k,B_1)}]}{4} + \frac{\sqrt{2}\mathbb{X}_{28}[\mathbb{T}_2^{(a,B_1)}(1,0)] \otimes \mathbb{U}_{12}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_8[\mathbb{Q}_2^{(k,A_2)}]}{4} \\ & + \frac{\sqrt{2}\mathbb{X}_{28}[\mathbb{T}_2^{(a,B_1)}(1,0)] \otimes \mathbb{U}_9[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{10}[\mathbb{T}_1^{(k,B_1)}]}{4} - \frac{\sqrt{2}\mathbb{X}_{33}[\mathbb{T}_2^{(a,B_2)}(1,0)] \otimes \mathbb{U}_{10}[\mathbb{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_9[\mathbb{T}_0^{(k,A_1)}]}{4} - \frac{\sqrt{2}\mathbb{X}_{33}[\mathbb{T}_2^{(a,B_2)}(1,0)] \otimes \mathbb{U}_{11}[\mathbb{T}_0^{(u,A_1)}] \otimes \mathbb{F}_7[\mathbb{Q}_1^{(k,B_2)}]}{4} \\ & - \frac{\sqrt{2}\mathbb{X}_{33}[\mathbb{T}_2^{(a,B_2)}(1,0)] \otimes \mathbb{U}_{12}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_5[\mathbb{Q}_0^{(k,A_1)}]}{4} - \frac{\sqrt{2}\mathbb{X}_{33}[\mathbb{T}_2^{(a,B_2)}(1,0)] \otimes \mathbb{U}_9[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{11}[\mathbb{T}_1^{(k,B_2)}]}{4}\end{aligned}$$

$$\boxed{\text{No. 72}} \quad \hat{\mathbb{Q}}_0^{(A_1)}(1,0) [\mathbb{M}_1, \mathbb{B}_2]$$

$$\hat{Z}_{72} = \mathbb{X}_{23}[\mathbb{T}_2^{(a,A_2)}(1,0)] \otimes \mathbb{Y}_{16}[\mathbb{T}_2^{(b,A_2)}]$$

$$\begin{aligned}\hat{Z}_{72}(\mathbf{k}) = & \frac{\mathbb{X}_{23}[\mathbb{T}_2^{(a,A_2)}(1,0)] \otimes \mathbb{U}_{10}[\mathbb{Q}_1^{(u,B_2)}] \otimes \mathbb{F}_{10}[\mathbb{T}_1^{(k,B_1)}]}{2} + \frac{\mathbb{X}_{23}[\mathbb{T}_2^{(a,A_2)}(1,0)] \otimes \mathbb{U}_{11}[\mathbb{T}_0^{(u,A_1)}] \otimes \mathbb{F}_8[\mathbb{Q}_2^{(k,A_2)}]}{2} \\ & + \frac{\mathbb{X}_{23}[\mathbb{T}_2^{(a,A_2)}(1,0)] \otimes \mathbb{U}_{12}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_6[\mathbb{Q}_1^{(k,B_1)}]}{2} + \frac{\mathbb{X}_{23}[\mathbb{T}_2^{(a,A_2)}(1,0)] \otimes \mathbb{U}_9[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{12}[\mathbb{T}_2^{(k,A_2)}]}{2}\end{aligned}$$

$$\boxed{\text{No. 73}} \quad \hat{\mathbb{Q}}_0^{(A_1)} [\mathbb{M}_1, \mathbb{B}_3]$$

$$\hat{Z}_{73} = \mathbb{X}_1[\mathbb{Q}_0^{(a,A_1)}] \otimes \mathbb{Y}_{17}[\mathbb{Q}_0^{(b,A_1)}]$$

$$\hat{Z}_{73}(\mathbf{k}) = \frac{\sqrt{2}\mathbb{X}_1[\mathbb{Q}_0^{(a,A_1)}] \otimes \mathbb{U}_{13}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{13}[\mathbb{Q}_0^{(k,A_1)}]}{2} - \frac{\sqrt{2}\mathbb{X}_1[\mathbb{Q}_0^{(a,A_1)}] \otimes \mathbb{U}_{14}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{19}[\mathbb{T}_1^{(k,B_2)}]}{2}$$

$$\boxed{\text{No. 74}} \quad \hat{\mathbb{Q}}_2^{(A_1,1)} [\mathbb{M}_1, \mathbb{B}_3]$$

$$\hat{Z}_{74} = \mathbb{X}_2[\mathbb{Q}_2^{(a,A_1,1)}] \otimes \mathbb{Y}_{17}[\mathbb{Q}_0^{(b,A_1)}]$$

$$\hat{Z}_{74}(\mathbf{k}) = \frac{\sqrt{2}\mathbb{X}_2[\mathbb{Q}_2^{(a,A_1,1)}] \otimes \mathbb{U}_{13}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{13}[\mathbb{Q}_0^{(k,A_1)}]}{2} - \frac{\sqrt{2}\mathbb{X}_2[\mathbb{Q}_2^{(a,A_1,1)}] \otimes \mathbb{U}_{14}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{19}[\mathbb{T}_1^{(k,B_2)}]}{2}$$

$$\boxed{\text{No. 75}} \quad \hat{\mathbb{Q}}_2^{(A_1,2)} [\mathbb{M}_1, \mathbb{B}_3]$$

$$\hat{Z}_{75} = \mathbb{X}_3[\mathbb{Q}_2^{(a,A_1,2)}] \otimes \mathbb{Y}_{17}[\mathbb{Q}_0^{(b,A_1)}]$$

$$\hat{Z}_{75}(\mathbf{k}) = \frac{\sqrt{2}\mathbb{X}_3[\mathbb{Q}_2^{(a,A_1,2)}] \otimes \mathbb{U}_{13}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{13}[\mathbb{Q}_0^{(k,A_1)}]}{2} - \frac{\sqrt{2}\mathbb{X}_3[\mathbb{Q}_2^{(a,A_1,2)}] \otimes \mathbb{U}_{14}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{19}[\mathbb{T}_1^{(k,B_2)}]}{2}$$

$$\boxed{\text{No. 76}} \quad \hat{\mathbb{Q}}_1^{(A_1)} [\mathbf{M}_1, \mathbf{B}_3]$$

$$\hat{\mathbb{Z}}_{76} = \frac{\sqrt{2}\mathbb{X}_8[\mathbb{Q}_2^{(a,B_1)}] \otimes \mathbb{Y}_{18}[\mathbb{Q}_1^{(b,B_1)}]}{2} + \frac{\sqrt{2}\mathbb{X}_9[\mathbb{Q}_2^{(a,B_2)}] \otimes \mathbb{Y}_{19}[\mathbb{Q}_1^{(b,B_2)}]}{2}$$

$$\begin{aligned} \hat{\mathbb{Z}}_{76}(\mathbf{k}) = & \frac{\mathbb{X}_8[\mathbb{Q}_2^{(a,B_1)}] \otimes \mathbb{U}_{13}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{14}[\mathbb{Q}_1^{(k,B_1)}]}{2} - \frac{\mathbb{X}_8[\mathbb{Q}_2^{(a,B_1)}] \otimes \mathbb{U}_{14}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{20}[\mathbb{T}_2^{(k,A_2)}]}{2} \\ & + \frac{\mathbb{X}_9[\mathbb{Q}_2^{(a,B_2)}] \otimes \mathbb{U}_{13}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{15}[\mathbb{Q}_1^{(k,B_2)}]}{2} - \frac{\mathbb{X}_9[\mathbb{Q}_2^{(a,B_2)}] \otimes \mathbb{U}_{14}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{17}[\mathbb{T}_0^{(k,A_1)}]}{2} \end{aligned}$$

$$\boxed{\text{No. 77}} \quad \hat{\mathbb{G}}_2^{(A_1)} [\mathbf{M}_1, \mathbf{B}_3]$$

$$\hat{\mathbb{Z}}_{77} = \frac{\sqrt{2}\mathbb{X}_8[\mathbb{Q}_2^{(a,B_1)}] \otimes \mathbb{Y}_{18}[\mathbb{Q}_1^{(b,B_1)}]}{2} - \frac{\sqrt{2}\mathbb{X}_9[\mathbb{Q}_2^{(a,B_2)}] \otimes \mathbb{Y}_{19}[\mathbb{Q}_1^{(b,B_2)}]}{2}$$

$$\begin{aligned} \hat{\mathbb{Z}}_{77}(\mathbf{k}) = & \frac{\mathbb{X}_8[\mathbb{Q}_2^{(a,B_1)}] \otimes \mathbb{U}_{13}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{14}[\mathbb{Q}_1^{(k,B_1)}]}{2} - \frac{\mathbb{X}_8[\mathbb{Q}_2^{(a,B_1)}] \otimes \mathbb{U}_{14}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{20}[\mathbb{T}_2^{(k,A_2)}]}{2} \\ & - \frac{\mathbb{X}_9[\mathbb{Q}_2^{(a,B_2)}] \otimes \mathbb{U}_{13}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{15}[\mathbb{Q}_1^{(k,B_2)}]}{2} + \frac{\mathbb{X}_9[\mathbb{Q}_2^{(a,B_2)}] \otimes \mathbb{U}_{14}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{17}[\mathbb{T}_0^{(k,A_1)}]}{2} \end{aligned}$$

$$\boxed{\text{No. 78}} \quad \hat{\mathbb{Q}}_0^{(A_1)} [\mathbf{M}_1, \mathbf{B}_3]$$

$$\hat{\mathbb{Z}}_{78} = \mathbb{X}_7[\mathbb{Q}_2^{(a,A_2)}] \otimes \mathbb{Y}_{20}[\mathbb{Q}_2^{(b,A_2)}]$$

$$\hat{\mathbb{Z}}_{78}(\mathbf{k}) = \frac{\sqrt{2}\mathbb{X}_7[\mathbb{Q}_2^{(a,A_2)}] \otimes \mathbb{U}_{13}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{16}[\mathbb{Q}_2^{(k,A_2)}]}{2} - \frac{\sqrt{2}\mathbb{X}_7[\mathbb{Q}_2^{(a,A_2)}] \otimes \mathbb{U}_{14}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{18}[\mathbb{T}_1^{(k,B_1)}]}{2}$$

$$\boxed{\text{No. 79}} \quad \hat{\mathbb{Q}}_0^{(A_1)}(1, 1) [\mathbf{M}_1, \mathbf{B}_3]$$

$$\hat{\mathbb{Z}}_{79} = \mathbb{X}_4[\mathbb{Q}_0^{(a,A_1)}(1, 1)] \otimes \mathbb{Y}_{17}[\mathbb{Q}_0^{(b,A_1)}]$$

$$\hat{\mathbb{Z}}_{79}(\mathbf{k}) = \frac{\sqrt{2}\mathbb{X}_4[\mathbb{Q}_0^{(a,A_1)}(1, 1)] \otimes \mathbb{U}_{13}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{13}[\mathbb{Q}_0^{(k,A_1)}]}{2} - \frac{\sqrt{2}\mathbb{X}_4[\mathbb{Q}_0^{(a,A_1)}(1, 1)] \otimes \mathbb{U}_{14}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{19}[\mathbb{T}_1^{(k,B_2)}]}{2}$$

$$\boxed{\text{No. 80}} \quad \hat{\mathbb{Q}}_2^{(A_1,1)}(1, -1) [\mathbf{M}_1, \mathbf{B}_3]$$

$$\hat{\mathbb{Z}}_{80} = \mathbb{X}_5[\mathbb{Q}_2^{(a,A_1,1)}(1, -1)] \otimes \mathbb{Y}_{17}[\mathbb{Q}_0^{(b,A_1)}]$$

$$\hat{Z}_{80}(\mathbf{k}) = \frac{\sqrt{2}\mathbb{X}_5[\mathbb{Q}_2^{(a,A_1,1)}(1,-1)] \otimes \mathbb{U}_{13}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{13}[\mathbb{Q}_0^{(k,A_1)}]}{2} - \frac{\sqrt{2}\mathbb{X}_5[\mathbb{Q}_2^{(a,A_1,1)}(1,-1)] \otimes \mathbb{U}_{14}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{19}[\mathbb{T}_1^{(k,B_2)}]}{2}$$

$$\boxed{\text{No. 81}} \quad \hat{\mathbb{Q}}_2^{(A_1,2)}(1,-1) \text{ [M}_1, \text{B}_3]$$

$$\hat{Z}_{81} = \mathbb{X}_6[\mathbb{Q}_2^{(a,A_1,2)}(1,-1)] \otimes \mathbb{Y}_{17}[\mathbb{Q}_0^{(b,A_1)}]$$

$$\hat{Z}_{81}(\mathbf{k}) = \frac{\sqrt{2}\mathbb{X}_6[\mathbb{Q}_2^{(a,A_1,2)}(1,-1)] \otimes \mathbb{U}_{13}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{13}[\mathbb{Q}_0^{(k,A_1)}]}{2} - \frac{\sqrt{2}\mathbb{X}_6[\mathbb{Q}_2^{(a,A_1,2)}(1,-1)] \otimes \mathbb{U}_{14}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{19}[\mathbb{T}_1^{(k,B_2)}]}{2}$$

$$\boxed{\text{No. 82}} \quad \hat{\mathbb{Q}}_1^{(A_1)}(1,-1) \text{ [M}_1, \text{B}_3]$$

$$\hat{Z}_{82} = \frac{\sqrt{2}\mathbb{X}_{12}[\mathbb{Q}_2^{(a,B_1)}(1,-1)] \otimes \mathbb{Y}_{18}[\mathbb{Q}_1^{(b,B_1)}]}{2} + \frac{\sqrt{2}\mathbb{X}_{14}[\mathbb{Q}_2^{(a,B_2)}(1,-1)] \otimes \mathbb{Y}_{19}[\mathbb{Q}_1^{(b,B_2)}]}{2}$$

$$\begin{aligned} \hat{Z}_{82}(\mathbf{k}) = & \frac{\mathbb{X}_{12}[\mathbb{Q}_2^{(a,B_1)}(1,-1)] \otimes \mathbb{U}_{13}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{14}[\mathbb{Q}_1^{(k,B_1)}]}{2} - \frac{\mathbb{X}_{12}[\mathbb{Q}_2^{(a,B_1)}(1,-1)] \otimes \mathbb{U}_{14}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{20}[\mathbb{T}_2^{(k,A_2)}]}{2} \\ & + \frac{\mathbb{X}_{14}[\mathbb{Q}_2^{(a,B_2)}(1,-1)] \otimes \mathbb{U}_{13}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{15}[\mathbb{Q}_1^{(k,B_2)}]}{2} - \frac{\mathbb{X}_{14}[\mathbb{Q}_2^{(a,B_2)}(1,-1)] \otimes \mathbb{U}_{14}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{17}[\mathbb{T}_0^{(k,A_1)}]}{2} \end{aligned}$$

$$\boxed{\text{No. 83}} \quad \hat{\mathbb{G}}_2^{(A_1)}(1,-1) \text{ [M}_1, \text{B}_3]$$

$$\hat{Z}_{83} = \frac{\sqrt{2}\mathbb{X}_{12}[\mathbb{Q}_2^{(a,B_1)}(1,-1)] \otimes \mathbb{Y}_{18}[\mathbb{Q}_1^{(b,B_1)}]}{2} - \frac{\sqrt{2}\mathbb{X}_{14}[\mathbb{Q}_2^{(a,B_2)}(1,-1)] \otimes \mathbb{Y}_{19}[\mathbb{Q}_1^{(b,B_2)}]}{2}$$

$$\begin{aligned} \hat{Z}_{83}(\mathbf{k}) = & \frac{\mathbb{X}_{12}[\mathbb{Q}_2^{(a,B_1)}(1,-1)] \otimes \mathbb{U}_{13}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{14}[\mathbb{Q}_1^{(k,B_1)}]}{2} - \frac{\mathbb{X}_{12}[\mathbb{Q}_2^{(a,B_1)}(1,-1)] \otimes \mathbb{U}_{14}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{20}[\mathbb{T}_2^{(k,A_2)}]}{2} \\ & - \frac{\mathbb{X}_{14}[\mathbb{Q}_2^{(a,B_2)}(1,-1)] \otimes \mathbb{U}_{13}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{15}[\mathbb{Q}_1^{(k,B_2)}]}{2} + \frac{\mathbb{X}_{14}[\mathbb{Q}_2^{(a,B_2)}(1,-1)] \otimes \mathbb{U}_{14}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{17}[\mathbb{T}_0^{(k,A_1)}]}{2} \end{aligned}$$

$$\boxed{\text{No. 84}} \quad \hat{\mathbb{Q}}_0^{(A_1)}(1,-1) \text{ [M}_1, \text{B}_3]$$

$$\hat{Z}_{84} = \mathbb{X}_{10}[\mathbb{Q}_2^{(a,A_2)}(1,-1)] \otimes \mathbb{Y}_{20}[\mathbb{Q}_2^{(b,A_2)}]$$

$$\hat{Z}_{84}(\mathbf{k}) = \frac{\sqrt{2}\mathbb{X}_{10}[\mathbb{Q}_2^{(a,A_2)}(1,-1)] \otimes \mathbb{U}_{13}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{16}[\mathbb{Q}_2^{(k,A_2)}]}{2} - \frac{\sqrt{2}\mathbb{X}_{10}[\mathbb{Q}_2^{(a,A_2)}(1,-1)] \otimes \mathbb{U}_{14}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{18}[\mathbb{T}_1^{(k,B_1)}]}{2}$$

$$\boxed{\text{No. 85}} \quad \hat{\mathbb{Q}}_1^{(A_1)}(1, 0) \text{ [M}_1, \text{B}_3]$$

$$\hat{\mathbb{Z}}_{85} = -\frac{\sqrt{2}\mathbb{X}_{13}[\mathbb{G}_1^{(a, B_1)}(1, 0)] \otimes \mathbb{Y}_{18}[\mathbb{Q}_1^{(b, B_1)}]}{2} + \frac{\sqrt{2}\mathbb{X}_{15}[\mathbb{G}_1^{(a, B_2)}(1, 0)] \otimes \mathbb{Y}_{19}[\mathbb{Q}_1^{(b, B_2)}]}{2}$$

$$\begin{aligned} \hat{\mathbb{Z}}_{85}(\mathbf{k}) = & -\frac{\mathbb{X}_{13}[\mathbb{G}_1^{(a, B_1)}(1, 0)] \otimes \mathbb{U}_{13}[\mathbb{Q}_0^{(u, A_1)}] \otimes \mathbb{F}_{14}[\mathbb{Q}_1^{(k, B_1)}]}{2} + \frac{\mathbb{X}_{13}[\mathbb{G}_1^{(a, B_1)}(1, 0)] \otimes \mathbb{U}_{14}[\mathbb{T}_1^{(u, B_2)}] \otimes \mathbb{F}_{20}[\mathbb{T}_2^{(k, A_2)}]}{2} \\ & + \frac{\mathbb{X}_{15}[\mathbb{G}_1^{(a, B_2)}(1, 0)] \otimes \mathbb{U}_{13}[\mathbb{Q}_0^{(u, A_1)}] \otimes \mathbb{F}_{15}[\mathbb{Q}_1^{(k, B_2)}]}{2} - \frac{\mathbb{X}_{15}[\mathbb{G}_1^{(a, B_2)}(1, 0)] \otimes \mathbb{U}_{14}[\mathbb{T}_1^{(u, B_2)}] \otimes \mathbb{F}_{17}[\mathbb{T}_0^{(k, A_1)}]}{2} \end{aligned}$$

$$\boxed{\text{No. 86}} \quad \hat{\mathbb{G}}_2^{(A_1)}(1, 0) \text{ [M}_1, \text{B}_3]$$

$$\hat{\mathbb{Z}}_{86} = \frac{\sqrt{2}\mathbb{X}_{13}[\mathbb{G}_1^{(a, B_1)}(1, 0)] \otimes \mathbb{Y}_{18}[\mathbb{Q}_1^{(b, B_1)}]}{2} + \frac{\sqrt{2}\mathbb{X}_{15}[\mathbb{G}_1^{(a, B_2)}(1, 0)] \otimes \mathbb{Y}_{19}[\mathbb{Q}_1^{(b, B_2)}]}{2}$$

$$\begin{aligned} \hat{\mathbb{Z}}_{86}(\mathbf{k}) = & \frac{\mathbb{X}_{13}[\mathbb{G}_1^{(a, B_1)}(1, 0)] \otimes \mathbb{U}_{13}[\mathbb{Q}_0^{(u, A_1)}] \otimes \mathbb{F}_{14}[\mathbb{Q}_1^{(k, B_1)}]}{2} - \frac{\mathbb{X}_{13}[\mathbb{G}_1^{(a, B_1)}(1, 0)] \otimes \mathbb{U}_{14}[\mathbb{T}_1^{(u, B_2)}] \otimes \mathbb{F}_{20}[\mathbb{T}_2^{(k, A_2)}]}{2} \\ & + \frac{\mathbb{X}_{15}[\mathbb{G}_1^{(a, B_2)}(1, 0)] \otimes \mathbb{U}_{13}[\mathbb{Q}_0^{(u, A_1)}] \otimes \mathbb{F}_{15}[\mathbb{Q}_1^{(k, B_2)}]}{2} - \frac{\mathbb{X}_{15}[\mathbb{G}_1^{(a, B_2)}(1, 0)] \otimes \mathbb{U}_{14}[\mathbb{T}_1^{(u, B_2)}] \otimes \mathbb{F}_{17}[\mathbb{T}_0^{(k, A_1)}]}{2} \end{aligned}$$

$$\boxed{\text{No. 87}} \quad \hat{\mathbb{Q}}_2^{(A_1, 2)}(1, 0) \text{ [M}_1, \text{B}_3]$$

$$\hat{\mathbb{Z}}_{87} = -\mathbb{X}_{11}[\mathbb{G}_1^{(a, A_2)}(1, 0)] \otimes \mathbb{Y}_{20}[\mathbb{Q}_2^{(b, A_2)}]$$

$$\hat{\mathbb{Z}}_{87}(\mathbf{k}) = -\frac{\sqrt{2}\mathbb{X}_{11}[\mathbb{G}_1^{(a, A_2)}(1, 0)] \otimes \mathbb{U}_{13}[\mathbb{Q}_0^{(u, A_1)}] \otimes \mathbb{F}_{16}[\mathbb{Q}_2^{(k, A_2)}]}{2} + \frac{\sqrt{2}\mathbb{X}_{11}[\mathbb{G}_1^{(a, A_2)}(1, 0)] \otimes \mathbb{U}_{14}[\mathbb{T}_1^{(u, B_2)}] \otimes \mathbb{F}_{18}[\mathbb{T}_1^{(k, B_1)}]}{2}$$

$$\boxed{\text{No. 88}} \quad \hat{\mathbb{Q}}_1^{(A_1)} \text{ [M}_1, \text{B}_3]$$

$$\hat{\mathbb{Z}}_{88} = -\frac{\sqrt{2}\mathbb{X}_{17}[\mathbb{M}_1^{(a, B_1)}] \otimes \mathbb{Y}_{22}[\mathbb{T}_1^{(b, B_1)}]}{2} + \frac{\sqrt{2}\mathbb{X}_{18}[\mathbb{M}_1^{(a, B_2)}] \otimes \mathbb{Y}_{23}[\mathbb{T}_1^{(b, B_2)}]}{2}$$

$$\begin{aligned} \hat{\mathbb{Z}}_{88}(\mathbf{k}) = & -\frac{\mathbb{X}_{17}[\mathbb{M}_1^{(a, B_1)}] \otimes \mathbb{U}_{13}[\mathbb{Q}_0^{(u, A_1)}] \otimes \mathbb{F}_{18}[\mathbb{T}_1^{(k, B_1)}]}{2} - \frac{\mathbb{X}_{17}[\mathbb{M}_1^{(a, B_1)}] \otimes \mathbb{U}_{14}[\mathbb{T}_1^{(u, B_2)}] \otimes \mathbb{F}_{16}[\mathbb{Q}_2^{(k, A_2)}]}{2} \\ & + \frac{\mathbb{X}_{18}[\mathbb{M}_1^{(a, B_2)}] \otimes \mathbb{U}_{13}[\mathbb{Q}_0^{(u, A_1)}] \otimes \mathbb{F}_{19}[\mathbb{T}_1^{(k, B_2)}]}{2} + \frac{\mathbb{X}_{18}[\mathbb{M}_1^{(a, B_2)}] \otimes \mathbb{U}_{14}[\mathbb{T}_1^{(u, B_2)}] \otimes \mathbb{F}_{13}[\mathbb{Q}_0^{(k, A_1)}]}{2} \end{aligned}$$

$$\boxed{\text{No. 89}} \quad \hat{\mathbb{G}}_2^{(A_1)} [\mathbf{M}_1, \mathbf{B}_3]$$

$$\hat{\mathbb{Z}}_{89} = \frac{\sqrt{2}\mathbb{X}_{17}[\mathbb{M}_1^{(a,B_1)}] \otimes \mathbb{Y}_{22}[\mathbb{T}_1^{(b,B_1)}]}{2} + \frac{\sqrt{2}\mathbb{X}_{18}[\mathbb{M}_1^{(a,B_2)}] \otimes \mathbb{Y}_{23}[\mathbb{T}_1^{(b,B_2)}]}{2}$$

$$\begin{aligned} \hat{\mathbb{Z}}_{89}(\mathbf{k}) = & \frac{\mathbb{X}_{17}[\mathbb{M}_1^{(a,B_1)}] \otimes \mathbb{U}_{13}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{18}[\mathbb{T}_1^{(k,B_1)}]}{2} + \frac{\mathbb{X}_{17}[\mathbb{M}_1^{(a,B_1)}] \otimes \mathbb{U}_{14}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{16}[\mathbb{Q}_2^{(k,A_2)}]}{2} \\ & + \frac{\mathbb{X}_{18}[\mathbb{M}_1^{(a,B_2)}] \otimes \mathbb{U}_{13}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{19}[\mathbb{T}_1^{(k,B_2)}]}{2} + \frac{\mathbb{X}_{18}[\mathbb{M}_1^{(a,B_2)}] \otimes \mathbb{U}_{14}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{13}[\mathbb{Q}_0^{(k,A_1)}]}{2} \end{aligned}$$

$$\boxed{\text{No. 90}} \quad \hat{\mathbb{Q}}_2^{(A_1,2)} [\mathbf{M}_1, \mathbf{B}_3]$$

$$\hat{\mathbb{Z}}_{90} = -\mathbb{X}_{16}[\mathbb{M}_1^{(a,A_2)}] \otimes \mathbb{Y}_{24}[\mathbb{T}_2^{(b,A_2)}]$$

$$\hat{\mathbb{Z}}_{90}(\mathbf{k}) = -\frac{\sqrt{2}\mathbb{X}_{16}[\mathbb{M}_1^{(a,A_2)}] \otimes \mathbb{U}_{13}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{20}[\mathbb{T}_2^{(k,A_2)}]}{2} - \frac{\sqrt{2}\mathbb{X}_{16}[\mathbb{M}_1^{(a,A_2)}] \otimes \mathbb{U}_{14}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{14}[\mathbb{Q}_1^{(k,B_1)}]}{2}$$

$$\boxed{\text{No. 91}} \quad \hat{\mathbb{Q}}_1^{(A_1)}(1,1) [\mathbf{M}_1, \mathbf{B}_3]$$

$$\hat{\mathbb{Z}}_{91} = -\frac{\sqrt{2}\mathbb{X}_{24}[\mathbb{M}_1^{(a,B_1)}(1,1)] \otimes \mathbb{Y}_{22}[\mathbb{T}_1^{(b,B_1)}]}{2} + \frac{\sqrt{2}\mathbb{X}_{29}[\mathbb{M}_1^{(a,B_2)}(1,1)] \otimes \mathbb{Y}_{23}[\mathbb{T}_1^{(b,B_2)}]}{2}$$

$$\begin{aligned} \hat{\mathbb{Z}}_{91}(\mathbf{k}) = & -\frac{\mathbb{X}_{24}[\mathbb{M}_1^{(a,B_1)}(1,1)] \otimes \mathbb{U}_{13}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{18}[\mathbb{T}_1^{(k,B_1)}]}{2} - \frac{\mathbb{X}_{24}[\mathbb{M}_1^{(a,B_1)}(1,1)] \otimes \mathbb{U}_{14}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{16}[\mathbb{Q}_2^{(k,A_2)}]}{2} \\ & + \frac{\mathbb{X}_{29}[\mathbb{M}_1^{(a,B_2)}(1,1)] \otimes \mathbb{U}_{13}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{19}[\mathbb{T}_1^{(k,B_2)}]}{2} + \frac{\mathbb{X}_{29}[\mathbb{M}_1^{(a,B_2)}(1,1)] \otimes \mathbb{U}_{14}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{13}[\mathbb{Q}_0^{(k,A_1)}]}{2} \end{aligned}$$

$$\boxed{\text{No. 92}} \quad \hat{\mathbb{G}}_2^{(A_1)}(1,1) [\mathbf{M}_1, \mathbf{B}_3]$$

$$\hat{\mathbb{Z}}_{92} = \frac{\sqrt{2}\mathbb{X}_{24}[\mathbb{M}_1^{(a,B_1)}(1,1)] \otimes \mathbb{Y}_{22}[\mathbb{T}_1^{(b,B_1)}]}{2} + \frac{\sqrt{2}\mathbb{X}_{29}[\mathbb{M}_1^{(a,B_2)}(1,1)] \otimes \mathbb{Y}_{23}[\mathbb{T}_1^{(b,B_2)}]}{2}$$

$$\begin{aligned} \hat{\mathbb{Z}}_{92}(\mathbf{k}) = & \frac{\mathbb{X}_{24}[\mathbb{M}_1^{(a,B_1)}(1,1)] \otimes \mathbb{U}_{13}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{18}[\mathbb{T}_1^{(k,B_1)}]}{2} + \frac{\mathbb{X}_{24}[\mathbb{M}_1^{(a,B_1)}(1,1)] \otimes \mathbb{U}_{14}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{16}[\mathbb{Q}_2^{(k,A_2)}]}{2} \\ & + \frac{\mathbb{X}_{29}[\mathbb{M}_1^{(a,B_2)}(1,1)] \otimes \mathbb{U}_{13}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{19}[\mathbb{T}_1^{(k,B_2)}]}{2} + \frac{\mathbb{X}_{29}[\mathbb{M}_1^{(a,B_2)}(1,1)] \otimes \mathbb{U}_{14}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{13}[\mathbb{Q}_0^{(k,A_1)}]}{2} \end{aligned}$$

$$\boxed{\text{No. 93}} \quad \hat{\mathbb{Q}}_2^{(A_1,2)}(1,1) [\mathbf{M}_1, \mathbf{B}_3]$$

$$\hat{\mathbb{Z}}_{93} = -\mathbb{X}_{19}[\mathbb{M}_1^{(a,A_2)}(1,1)] \otimes \mathbb{Y}_{24}[\mathbb{T}_2^{(b,A_2)}]$$

$$\hat{Z}_{93}(\mathbf{k}) = -\frac{\sqrt{2}\mathbb{X}_{19}[\mathbb{M}_1^{(a,A_2)}(1,1)] \otimes \mathbb{U}_{13}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{20}[\mathbb{T}_2^{(k,A_2)}]}{2} - \frac{\sqrt{2}\mathbb{X}_{19}[\mathbb{M}_1^{(a,A_2)}(1,1)] \otimes \mathbb{U}_{14}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{14}[\mathbb{Q}_1^{(k,B_1)}]}{2}$$

$$\boxed{\text{No. 94}} \quad \hat{\mathbb{Q}}_1^{(A_1)}(1, -1) [\mathbb{M}_1, \mathbb{B}_3]$$

$$\hat{Z}_{94} = -\frac{\sqrt{2}\mathbb{X}_{25}[\mathbb{M}_1^{(a,B_1)}(1, -1)] \otimes \mathbb{Y}_{22}[\mathbb{T}_1^{(b,B_1)}]}{2} + \frac{\sqrt{2}\mathbb{X}_{30}[\mathbb{M}_1^{(a,B_2)}(1, -1)] \otimes \mathbb{Y}_{23}[\mathbb{T}_1^{(b,B_2)}]}{2}$$

$$\begin{aligned} \hat{Z}_{94}(\mathbf{k}) = & -\frac{\mathbb{X}_{25}[\mathbb{M}_1^{(a,B_1)}(1, -1)] \otimes \mathbb{U}_{13}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{18}[\mathbb{T}_1^{(k,B_1)}]}{2} - \frac{\mathbb{X}_{25}[\mathbb{M}_1^{(a,B_1)}(1, -1)] \otimes \mathbb{U}_{14}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{16}[\mathbb{Q}_2^{(k,A_2)}]}{2} \\ & + \frac{\mathbb{X}_{30}[\mathbb{M}_1^{(a,B_2)}(1, -1)] \otimes \mathbb{U}_{13}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{19}[\mathbb{T}_1^{(k,B_2)}]}{2} + \frac{\mathbb{X}_{30}[\mathbb{M}_1^{(a,B_2)}(1, -1)] \otimes \mathbb{U}_{14}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{13}[\mathbb{Q}_0^{(k,A_1)}]}{2} \end{aligned}$$

$$\boxed{\text{No. 95}} \quad \hat{\mathbb{G}}_2^{(A_1)}(1, -1) [\mathbb{M}_1, \mathbb{B}_3]$$

$$\hat{Z}_{95} = \frac{\sqrt{2}\mathbb{X}_{25}[\mathbb{M}_1^{(a,B_1)}(1, -1)] \otimes \mathbb{Y}_{22}[\mathbb{T}_1^{(b,B_1)}]}{2} + \frac{\sqrt{2}\mathbb{X}_{30}[\mathbb{M}_1^{(a,B_2)}(1, -1)] \otimes \mathbb{Y}_{23}[\mathbb{T}_1^{(b,B_2)}]}{2}$$

$$\begin{aligned} \hat{Z}_{95}(\mathbf{k}) = & \frac{\mathbb{X}_{25}[\mathbb{M}_1^{(a,B_1)}(1, -1)] \otimes \mathbb{U}_{13}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{18}[\mathbb{T}_1^{(k,B_1)}]}{2} + \frac{\mathbb{X}_{25}[\mathbb{M}_1^{(a,B_1)}(1, -1)] \otimes \mathbb{U}_{14}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{16}[\mathbb{Q}_2^{(k,A_2)}]}{2} \\ & + \frac{\mathbb{X}_{30}[\mathbb{M}_1^{(a,B_2)}(1, -1)] \otimes \mathbb{U}_{13}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{19}[\mathbb{T}_1^{(k,B_2)}]}{2} + \frac{\mathbb{X}_{30}[\mathbb{M}_1^{(a,B_2)}(1, -1)] \otimes \mathbb{U}_{14}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{13}[\mathbb{Q}_0^{(k,A_1)}]}{2} \end{aligned}$$

$$\boxed{\text{No. 96}} \quad \hat{\mathbb{Q}}_2^{(A_1,2)}(1, -1) [\mathbb{M}_1, \mathbb{B}_3]$$

$$\hat{Z}_{96} = -\mathbb{X}_{20}[\mathbb{M}_1^{(a,A_2)}(1, -1)] \otimes \mathbb{Y}_{24}[\mathbb{T}_2^{(b,A_2)}]$$

$$\hat{Z}_{96}(\mathbf{k}) = -\frac{\sqrt{2}\mathbb{X}_{20}[\mathbb{M}_1^{(a,A_2)}(1, -1)] \otimes \mathbb{U}_{13}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{20}[\mathbb{T}_2^{(k,A_2)}]}{2} - \frac{\sqrt{2}\mathbb{X}_{20}[\mathbb{M}_1^{(a,A_2)}(1, -1)] \otimes \mathbb{U}_{14}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{14}[\mathbb{Q}_1^{(k,B_1)}]}{2}$$

$$\boxed{\text{No. 97}} \quad \hat{\mathbb{G}}_3^{(A_1)}(1, -1) [\mathbb{M}_1, \mathbb{B}_3]$$

$$\hat{Z}_{97} = \mathbb{X}_{34}[\mathbb{M}_3^{(a,A_1)}(1, -1)] \otimes \mathbb{Y}_{21}[\mathbb{T}_0^{(b,A_1)}]$$

$$\hat{Z}_{97}(\mathbf{k}) = \frac{\sqrt{2}\mathbb{X}_{34}[\mathbb{M}_3^{(a,A_1)}(1, -1)] \otimes \mathbb{U}_{13}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{17}[\mathbb{T}_0^{(k,A_1)}]}{2} + \frac{\sqrt{2}\mathbb{X}_{34}[\mathbb{M}_3^{(a,A_1)}(1, -1)] \otimes \mathbb{U}_{14}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{15}[\mathbb{Q}_1^{(k,B_2)}]}{2}$$

$$\boxed{\text{No. 98}} \quad \hat{\mathbb{G}}_2^{(A_1)}(1, -1) [M_1, B_3]$$

$$\hat{Z}_{98} = -\frac{\sqrt{3}\mathbb{X}_{26}[\mathbb{M}_3^{(a, B_1, 1)}(1, -1)] \otimes \mathbb{Y}_{22}[\mathbb{T}_1^{(b, B_1)}]}{4} - \frac{\sqrt{5}\mathbb{X}_{27}[\mathbb{M}_3^{(a, B_1, 2)}(1, -1)] \otimes \mathbb{Y}_{22}[\mathbb{T}_1^{(b, B_1)}]}{4} \\ - \frac{\sqrt{3}\mathbb{X}_{31}[\mathbb{M}_3^{(a, B_2, 1)}(1, -1)] \otimes \mathbb{Y}_{23}[\mathbb{T}_1^{(b, B_2)}]}{4} + \frac{\sqrt{5}\mathbb{X}_{32}[\mathbb{M}_3^{(a, B_2, 2)}(1, -1)] \otimes \mathbb{Y}_{23}[\mathbb{T}_1^{(b, B_2)}]}{4}$$

$$\hat{Z}_{98}(\mathbf{k}) = -\frac{\sqrt{6}\mathbb{X}_{26}[\mathbb{M}_3^{(a, B_1, 1)}(1, -1)] \otimes \mathbb{U}_{13}[\mathbb{Q}_0^{(u, A_1)}] \otimes \mathbb{F}_{18}[\mathbb{T}_1^{(k, B_1)}]}{8} - \frac{\sqrt{6}\mathbb{X}_{26}[\mathbb{M}_3^{(a, B_1, 1)}(1, -1)] \otimes \mathbb{U}_{14}[\mathbb{T}_1^{(u, B_2)}] \otimes \mathbb{F}_{16}[\mathbb{Q}_2^{(k, A_2)}]}{8} \\ - \frac{\sqrt{10}\mathbb{X}_{27}[\mathbb{M}_3^{(a, B_1, 2)}(1, -1)] \otimes \mathbb{U}_{13}[\mathbb{Q}_0^{(u, A_1)}] \otimes \mathbb{F}_{18}[\mathbb{T}_1^{(k, B_1)}]}{8} - \frac{\sqrt{10}\mathbb{X}_{27}[\mathbb{M}_3^{(a, B_1, 2)}(1, -1)] \otimes \mathbb{U}_{14}[\mathbb{T}_1^{(u, B_2)}] \otimes \mathbb{F}_{16}[\mathbb{Q}_2^{(k, A_2)}]}{8} \\ - \frac{\sqrt{6}\mathbb{X}_{31}[\mathbb{M}_3^{(a, B_2, 1)}(1, -1)] \otimes \mathbb{U}_{13}[\mathbb{Q}_0^{(u, A_1)}] \otimes \mathbb{F}_{19}[\mathbb{T}_1^{(k, B_2)}]}{8} - \frac{\sqrt{6}\mathbb{X}_{31}[\mathbb{M}_3^{(a, B_2, 1)}(1, -1)] \otimes \mathbb{U}_{14}[\mathbb{T}_1^{(u, B_2)}] \otimes \mathbb{F}_{13}[\mathbb{Q}_0^{(k, A_1)}]}{8} \\ + \frac{\sqrt{10}\mathbb{X}_{32}[\mathbb{M}_3^{(a, B_2, 2)}(1, -1)] \otimes \mathbb{U}_{13}[\mathbb{Q}_0^{(u, A_1)}] \otimes \mathbb{F}_{19}[\mathbb{T}_1^{(k, B_2)}]}{8} + \frac{\sqrt{10}\mathbb{X}_{32}[\mathbb{M}_3^{(a, B_2, 2)}(1, -1)] \otimes \mathbb{U}_{14}[\mathbb{T}_1^{(u, B_2)}] \otimes \mathbb{F}_{13}[\mathbb{Q}_0^{(k, A_1)}]}{8}$$

$$\boxed{\text{No. 99}} \quad \hat{\mathbb{Q}}_3^{(A_1, 1)}(1, -1) [M_1, B_3]$$

$$\hat{Z}_{99} = \frac{\sqrt{3}\mathbb{X}_{26}[\mathbb{M}_3^{(a, B_1, 1)}(1, -1)] \otimes \mathbb{Y}_{22}[\mathbb{T}_1^{(b, B_1)}]}{4} - \frac{\sqrt{5}\mathbb{X}_{27}[\mathbb{M}_3^{(a, B_1, 2)}(1, -1)] \otimes \mathbb{Y}_{22}[\mathbb{T}_1^{(b, B_1)}]}{4} \\ - \frac{\sqrt{3}\mathbb{X}_{31}[\mathbb{M}_3^{(a, B_2, 1)}(1, -1)] \otimes \mathbb{Y}_{23}[\mathbb{T}_1^{(b, B_2)}]}{4} - \frac{\sqrt{5}\mathbb{X}_{32}[\mathbb{M}_3^{(a, B_2, 2)}(1, -1)] \otimes \mathbb{Y}_{23}[\mathbb{T}_1^{(b, B_2)}]}{4}$$

$$\hat{Z}_{99}(\mathbf{k}) = \frac{\sqrt{6}\mathbb{X}_{26}[\mathbb{M}_3^{(a, B_1, 1)}(1, -1)] \otimes \mathbb{U}_{13}[\mathbb{Q}_0^{(u, A_1)}] \otimes \mathbb{F}_{18}[\mathbb{T}_1^{(k, B_1)}]}{8} + \frac{\sqrt{6}\mathbb{X}_{26}[\mathbb{M}_3^{(a, B_1, 1)}(1, -1)] \otimes \mathbb{U}_{14}[\mathbb{T}_1^{(u, B_2)}] \otimes \mathbb{F}_{16}[\mathbb{Q}_2^{(k, A_2)}]}{8} \\ - \frac{\sqrt{10}\mathbb{X}_{27}[\mathbb{M}_3^{(a, B_1, 2)}(1, -1)] \otimes \mathbb{U}_{13}[\mathbb{Q}_0^{(u, A_1)}] \otimes \mathbb{F}_{18}[\mathbb{T}_1^{(k, B_1)}]}{8} - \frac{\sqrt{10}\mathbb{X}_{27}[\mathbb{M}_3^{(a, B_1, 2)}(1, -1)] \otimes \mathbb{U}_{14}[\mathbb{T}_1^{(u, B_2)}] \otimes \mathbb{F}_{16}[\mathbb{Q}_2^{(k, A_2)}]}{8} \\ - \frac{\sqrt{6}\mathbb{X}_{31}[\mathbb{M}_3^{(a, B_2, 1)}(1, -1)] \otimes \mathbb{U}_{13}[\mathbb{Q}_0^{(u, A_1)}] \otimes \mathbb{F}_{19}[\mathbb{T}_1^{(k, B_2)}]}{8} - \frac{\sqrt{6}\mathbb{X}_{31}[\mathbb{M}_3^{(a, B_2, 1)}(1, -1)] \otimes \mathbb{U}_{14}[\mathbb{T}_1^{(u, B_2)}] \otimes \mathbb{F}_{13}[\mathbb{Q}_0^{(k, A_1)}]}{8} \\ - \frac{\sqrt{10}\mathbb{X}_{32}[\mathbb{M}_3^{(a, B_2, 2)}(1, -1)] \otimes \mathbb{U}_{13}[\mathbb{Q}_0^{(u, A_1)}] \otimes \mathbb{F}_{19}[\mathbb{T}_1^{(k, B_2)}]}{8} - \frac{\sqrt{10}\mathbb{X}_{32}[\mathbb{M}_3^{(a, B_2, 2)}(1, -1)] \otimes \mathbb{U}_{14}[\mathbb{T}_1^{(u, B_2)}] \otimes \mathbb{F}_{13}[\mathbb{Q}_0^{(k, A_1)}]}{8}$$

$$\boxed{\text{No. 100}} \quad \hat{\mathbb{Q}}_3^{(A_1, 2)}(1, -1) [M_1, B_3]$$

$$\hat{Z}_{100} = \frac{\sqrt{5}\mathbb{X}_{26}[\mathbb{M}_3^{(a, B_1, 1)}(1, -1)] \otimes \mathbb{Y}_{22}[\mathbb{T}_1^{(b, B_1)}]}{4} - \frac{\sqrt{3}\mathbb{X}_{27}[\mathbb{M}_3^{(a, B_1, 2)}(1, -1)] \otimes \mathbb{Y}_{22}[\mathbb{T}_1^{(b, B_1)}]}{4} \\ + \frac{\sqrt{5}\mathbb{X}_{31}[\mathbb{M}_3^{(a, B_2, 1)}(1, -1)] \otimes \mathbb{Y}_{23}[\mathbb{T}_1^{(b, B_2)}]}{4} + \frac{\sqrt{3}\mathbb{X}_{32}[\mathbb{M}_3^{(a, B_2, 2)}(1, -1)] \otimes \mathbb{Y}_{23}[\mathbb{T}_1^{(b, B_2)}]}{4}$$

$$\begin{aligned}\hat{\mathbf{Z}}_{100}(\mathbf{k}) = & \frac{\sqrt{10}\mathbb{X}_{26}[\mathbb{M}_3^{(a,B_1,1)}(1,-1)] \otimes \mathbb{U}_{13}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{18}[\mathbb{T}_1^{(k,B_1)}]}{8} + \frac{\sqrt{10}\mathbb{X}_{26}[\mathbb{M}_3^{(a,B_1,1)}(1,-1)] \otimes \mathbb{U}_{14}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{16}[\mathbb{Q}_2^{(k,A_2)}]}{8} \\ & - \frac{\sqrt{6}\mathbb{X}_{27}[\mathbb{M}_3^{(a,B_1,2)}(1,-1)] \otimes \mathbb{U}_{13}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{18}[\mathbb{T}_1^{(k,B_1)}]}{8} - \frac{\sqrt{6}\mathbb{X}_{27}[\mathbb{M}_3^{(a,B_1,2)}(1,-1)] \otimes \mathbb{U}_{14}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{16}[\mathbb{Q}_2^{(k,A_2)}]}{8} \\ & + \frac{\sqrt{10}\mathbb{X}_{31}[\mathbb{M}_3^{(a,B_2,1)}(1,-1)] \otimes \mathbb{U}_{13}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{19}[\mathbb{T}_1^{(k,B_2)}]}{8} + \frac{\sqrt{10}\mathbb{X}_{31}[\mathbb{M}_3^{(a,B_2,1)}(1,-1)] \otimes \mathbb{U}_{14}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{13}[\mathbb{Q}_0^{(k,A_1)}]}{8} \\ & + \frac{\sqrt{6}\mathbb{X}_{32}[\mathbb{M}_3^{(a,B_2,2)}(1,-1)] \otimes \mathbb{U}_{13}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{19}[\mathbb{T}_1^{(k,B_2)}]}{8} + \frac{\sqrt{6}\mathbb{X}_{32}[\mathbb{M}_3^{(a,B_2,2)}(1,-1)] \otimes \mathbb{U}_{14}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{13}[\mathbb{Q}_0^{(k,A_1)}]}{8}\end{aligned}$$

$$\boxed{\text{No. 101}} \quad \hat{\mathbb{G}}_4^{(A_1,1)}(1,-1) \text{ } [\mathbb{M}_1, \mathbb{B}_3]$$

$$\begin{aligned}\hat{\mathbf{Z}}_{101} = & -\frac{\sqrt{5}\mathbb{X}_{26}[\mathbb{M}_3^{(a,B_1,1)}(1,-1)] \otimes \mathbb{Y}_{22}[\mathbb{T}_1^{(b,B_1)}]}{4} - \frac{\sqrt{3}\mathbb{X}_{27}[\mathbb{M}_3^{(a,B_1,2)}(1,-1)] \otimes \mathbb{Y}_{22}[\mathbb{T}_1^{(b,B_1)}]}{4} \\ & + \frac{\sqrt{5}\mathbb{X}_{31}[\mathbb{M}_3^{(a,B_2,1)}(1,-1)] \otimes \mathbb{Y}_{23}[\mathbb{T}_1^{(b,B_2)}]}{4} - \frac{\sqrt{3}\mathbb{X}_{32}[\mathbb{M}_3^{(a,B_2,2)}(1,-1)] \otimes \mathbb{Y}_{23}[\mathbb{T}_1^{(b,B_2)}]}{4}\end{aligned}$$

$$\begin{aligned}\hat{\mathbf{Z}}_{101}(\mathbf{k}) = & -\frac{\sqrt{10}\mathbb{X}_{26}[\mathbb{M}_3^{(a,B_1,1)}(1,-1)] \otimes \mathbb{U}_{13}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{18}[\mathbb{T}_1^{(k,B_1)}]}{8} - \frac{\sqrt{10}\mathbb{X}_{26}[\mathbb{M}_3^{(a,B_1,1)}(1,-1)] \otimes \mathbb{U}_{14}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{16}[\mathbb{Q}_2^{(k,A_2)}]}{8} \\ & - \frac{\sqrt{6}\mathbb{X}_{27}[\mathbb{M}_3^{(a,B_1,2)}(1,-1)] \otimes \mathbb{U}_{13}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{18}[\mathbb{T}_1^{(k,B_1)}]}{8} - \frac{\sqrt{6}\mathbb{X}_{27}[\mathbb{M}_3^{(a,B_1,2)}(1,-1)] \otimes \mathbb{U}_{14}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{16}[\mathbb{Q}_2^{(k,A_2)}]}{8} \\ & + \frac{\sqrt{10}\mathbb{X}_{31}[\mathbb{M}_3^{(a,B_2,1)}(1,-1)] \otimes \mathbb{U}_{13}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{19}[\mathbb{T}_1^{(k,B_2)}]}{8} + \frac{\sqrt{10}\mathbb{X}_{31}[\mathbb{M}_3^{(a,B_2,1)}(1,-1)] \otimes \mathbb{U}_{14}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{13}[\mathbb{Q}_0^{(k,A_1)}]}{8} \\ & - \frac{\sqrt{6}\mathbb{X}_{32}[\mathbb{M}_3^{(a,B_2,2)}(1,-1)] \otimes \mathbb{U}_{13}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{19}[\mathbb{T}_1^{(k,B_2)}]}{8} - \frac{\sqrt{6}\mathbb{X}_{32}[\mathbb{M}_3^{(a,B_2,2)}(1,-1)] \otimes \mathbb{U}_{14}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{13}[\mathbb{Q}_0^{(k,A_1)}]}{8}\end{aligned}$$

$$\boxed{\text{No. 102}} \quad \hat{\mathbb{Q}}_2^{(A_1,1)}(1,-1) \text{ } [\mathbb{M}_1, \mathbb{B}_3]$$

$$\hat{\mathbf{Z}}_{102} = \mathbb{X}_{22}[\mathbb{M}_3^{(a,A_2,2)}(1,-1)] \otimes \mathbb{Y}_{24}[\mathbb{T}_2^{(b,A_2)}]$$

$$\hat{\mathbf{Z}}_{102}(\mathbf{k}) = \frac{\sqrt{2}\mathbb{X}_{22}[\mathbb{M}_3^{(a,A_2,2)}(1,-1)] \otimes \mathbb{U}_{13}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{20}[\mathbb{T}_2^{(k,A_2)}]}{2} + \frac{\sqrt{2}\mathbb{X}_{22}[\mathbb{M}_3^{(a,A_2,2)}(1,-1)] \otimes \mathbb{U}_{14}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{14}[\mathbb{Q}_1^{(k,B_1)}]}{2}$$

$$\boxed{\text{No. 103}} \quad \hat{\mathbb{Q}}_2^{(A_1,2)}(1,-1) \text{ } [\mathbb{M}_1, \mathbb{B}_3]$$

$$\hat{\mathbf{Z}}_{103} = \mathbb{X}_{21}[\mathbb{M}_3^{(a,A_2,1)}(1,-1)] \otimes \mathbb{Y}_{24}[\mathbb{T}_2^{(b,A_2)}]$$

$$\hat{\mathbf{Z}}_{103}(\mathbf{k}) = \frac{\sqrt{2}\mathbb{X}_{21}[\mathbb{M}_3^{(a,A_2,1)}(1,-1)] \otimes \mathbb{U}_{13}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{20}[\mathbb{T}_2^{(k,A_2)}]}{2} + \frac{\sqrt{2}\mathbb{X}_{21}[\mathbb{M}_3^{(a,A_2,1)}(1,-1)] \otimes \mathbb{U}_{14}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{14}[\mathbb{Q}_1^{(k,B_1)}]}{2}$$

$$\boxed{\text{No. 104}} \quad \hat{\mathbb{Q}}_2^{(A_1,1)}(1,0) \text{ } [M_1, B_3]$$

$$\hat{\mathbb{Z}}_{104} = \mathbb{X}_{35}[\mathbb{T}_2^{(a,A_1,1)}(1,0)] \otimes \mathbb{Y}_{21}[\mathbb{T}_0^{(b,A_1)}]$$

$$\hat{\mathbb{Z}}_{104}(\mathbf{k}) = \frac{\sqrt{2}\mathbb{X}_{35}[\mathbb{T}_2^{(a,A_1,1)}(1,0)] \otimes \mathbb{U}_{13}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{17}[\mathbb{T}_0^{(k,A_1)}]}{2} + \frac{\sqrt{2}\mathbb{X}_{35}[\mathbb{T}_2^{(a,A_1,1)}(1,0)] \otimes \mathbb{U}_{14}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{15}[\mathbb{Q}_1^{(k,B_2)}]}{2}$$

$$\boxed{\text{No. 105}} \quad \hat{\mathbb{Q}}_2^{(A_1,2)}(1,0) \text{ } [M_1, B_3]$$

$$\hat{\mathbb{Z}}_{105} = \mathbb{X}_{36}[\mathbb{T}_2^{(a,A_1,2)}(1,0)] \otimes \mathbb{Y}_{21}[\mathbb{T}_0^{(b,A_1)}]$$

$$\hat{\mathbb{Z}}_{105}(\mathbf{k}) = \frac{\sqrt{2}\mathbb{X}_{36}[\mathbb{T}_2^{(a,A_1,2)}(1,0)] \otimes \mathbb{U}_{13}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{17}[\mathbb{T}_0^{(k,A_1)}]}{2} + \frac{\sqrt{2}\mathbb{X}_{36}[\mathbb{T}_2^{(a,A_1,2)}(1,0)] \otimes \mathbb{U}_{14}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{15}[\mathbb{Q}_1^{(k,B_2)}]}{2}$$

$$\boxed{\text{No. 106}} \quad \hat{\mathbb{Q}}_1^{(A_1)}(1,0) \text{ } [M_1, B_3]$$

$$\hat{\mathbb{Z}}_{106} = \frac{\sqrt{2}\mathbb{X}_{28}[\mathbb{T}_2^{(a,B_1)}(1,0)] \otimes \mathbb{Y}_{22}[\mathbb{T}_1^{(b,B_1)}]}{2} + \frac{\sqrt{2}\mathbb{X}_{33}[\mathbb{T}_2^{(a,B_2)}(1,0)] \otimes \mathbb{Y}_{23}[\mathbb{T}_1^{(b,B_2)}]}{2}$$

$$\begin{aligned} \hat{\mathbb{Z}}_{106}(\mathbf{k}) = & \frac{\mathbb{X}_{28}[\mathbb{T}_2^{(a,B_1)}(1,0)] \otimes \mathbb{U}_{13}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{18}[\mathbb{T}_1^{(k,B_1)}]}{2} + \frac{\mathbb{X}_{28}[\mathbb{T}_2^{(a,B_1)}(1,0)] \otimes \mathbb{U}_{14}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{16}[\mathbb{Q}_2^{(k,A_2)}]}{2} \\ & + \frac{\mathbb{X}_{33}[\mathbb{T}_2^{(a,B_2)}(1,0)] \otimes \mathbb{U}_{13}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{19}[\mathbb{T}_1^{(k,B_2)}]}{2} + \frac{\mathbb{X}_{33}[\mathbb{T}_2^{(a,B_2)}(1,0)] \otimes \mathbb{U}_{14}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{13}[\mathbb{Q}_0^{(k,A_1)}]}{2} \end{aligned}$$

$$\boxed{\text{No. 107}} \quad \hat{\mathbb{G}}_2^{(A_1)}(1,0) \text{ } [M_1, B_3]$$

$$\hat{\mathbb{Z}}_{107} = \frac{\sqrt{2}\mathbb{X}_{28}[\mathbb{T}_2^{(a,B_1)}(1,0)] \otimes \mathbb{Y}_{22}[\mathbb{T}_1^{(b,B_1)}]}{2} - \frac{\sqrt{2}\mathbb{X}_{33}[\mathbb{T}_2^{(a,B_2)}(1,0)] \otimes \mathbb{Y}_{23}[\mathbb{T}_1^{(b,B_2)}]}{2}$$

$$\begin{aligned} \hat{\mathbb{Z}}_{107}(\mathbf{k}) = & \frac{\mathbb{X}_{28}[\mathbb{T}_2^{(a,B_1)}(1,0)] \otimes \mathbb{U}_{13}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{18}[\mathbb{T}_1^{(k,B_1)}]}{2} + \frac{\mathbb{X}_{28}[\mathbb{T}_2^{(a,B_1)}(1,0)] \otimes \mathbb{U}_{14}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{16}[\mathbb{Q}_2^{(k,A_2)}]}{2} \\ & - \frac{\mathbb{X}_{33}[\mathbb{T}_2^{(a,B_2)}(1,0)] \otimes \mathbb{U}_{13}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{19}[\mathbb{T}_1^{(k,B_2)}]}{2} - \frac{\mathbb{X}_{33}[\mathbb{T}_2^{(a,B_2)}(1,0)] \otimes \mathbb{U}_{14}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{13}[\mathbb{Q}_0^{(k,A_1)}]}{2} \end{aligned}$$

$$\boxed{\text{No. 108}} \quad \hat{\mathbb{Q}}_0^{(A_1)}(1,0) \text{ } [M_1, B_3]$$

$$\hat{\mathbb{Z}}_{108} = \mathbb{X}_{23}[\mathbb{T}_2^{(a,A_2)}(1,0)] \otimes \mathbb{Y}_{24}[\mathbb{T}_2^{(b,A_2)}]$$

$$\hat{\mathbf{Z}}_{108}(\mathbf{k}) = \frac{\sqrt{2}\mathbb{X}_{23}[\mathbb{T}_2^{(a,A_2)}(1,0)] \otimes \mathbb{U}_{13}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{20}[\mathbb{T}_2^{(k,A_2)}]}{2} + \frac{\sqrt{2}\mathbb{X}_{23}[\mathbb{T}_2^{(a,A_2)}(1,0)] \otimes \mathbb{U}_{14}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{14}[\mathbb{Q}_1^{(k,B_1)}]}{2}$$

$$\boxed{\text{No. 109}} \quad \hat{\mathbb{Q}}_0^{(A_1)} [\mathbf{M}_1, \mathbf{B}_4]$$

$$\hat{\mathbf{Z}}_{109} = \mathbb{X}_1[\mathbb{Q}_0^{(a,A_1)}] \otimes \mathbb{Y}_{25}[\mathbb{Q}_0^{(b,A_1)}]$$

$$\hat{\mathbf{Z}}_{109}(\mathbf{k}) = \frac{\sqrt{2}\mathbb{X}_1[\mathbb{Q}_0^{(a,A_1)}] \otimes \mathbb{U}_{15}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{21}[\mathbb{Q}_0^{(k,A_1)}]}{2} - \frac{\sqrt{2}\mathbb{X}_1[\mathbb{Q}_0^{(a,A_1)}] \otimes \mathbb{U}_{16}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{27}[\mathbb{T}_1^{(k,B_2)}]}{2}$$

$$\boxed{\text{No. 110}} \quad \hat{\mathbb{Q}}_2^{(A_1,1)} [\mathbf{M}_1, \mathbf{B}_4]$$

$$\hat{\mathbf{Z}}_{110} = \mathbb{X}_2[\mathbb{Q}_2^{(a,A_1,1)}] \otimes \mathbb{Y}_{25}[\mathbb{Q}_0^{(b,A_1)}]$$

$$\hat{\mathbf{Z}}_{110}(\mathbf{k}) = \frac{\sqrt{2}\mathbb{X}_2[\mathbb{Q}_2^{(a,A_1,1)}] \otimes \mathbb{U}_{15}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{21}[\mathbb{Q}_0^{(k,A_1)}]}{2} - \frac{\sqrt{2}\mathbb{X}_2[\mathbb{Q}_2^{(a,A_1,1)}] \otimes \mathbb{U}_{16}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{27}[\mathbb{T}_1^{(k,B_2)}]}{2}$$

$$\boxed{\text{No. 111}} \quad \hat{\mathbb{Q}}_2^{(A_1,2)} [\mathbf{M}_1, \mathbf{B}_4]$$

$$\hat{\mathbf{Z}}_{111} = \mathbb{X}_3[\mathbb{Q}_2^{(a,A_1,2)}] \otimes \mathbb{Y}_{25}[\mathbb{Q}_0^{(b,A_1)}]$$

$$\hat{\mathbf{Z}}_{111}(\mathbf{k}) = \frac{\sqrt{2}\mathbb{X}_3[\mathbb{Q}_2^{(a,A_1,2)}] \otimes \mathbb{U}_{15}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{21}[\mathbb{Q}_0^{(k,A_1)}]}{2} - \frac{\sqrt{2}\mathbb{X}_3[\mathbb{Q}_2^{(a,A_1,2)}] \otimes \mathbb{U}_{16}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{27}[\mathbb{T}_1^{(k,B_2)}]}{2}$$

$$\boxed{\text{No. 112}} \quad \hat{\mathbb{Q}}_1^{(A_1)} [\mathbf{M}_1, \mathbf{B}_4]$$

$$\hat{\mathbf{Z}}_{112} = \frac{\sqrt{2}\mathbb{X}_8[\mathbb{Q}_2^{(a,B_1)}] \otimes \mathbb{Y}_{26}[\mathbb{Q}_1^{(b,B_1)}]}{2} + \frac{\sqrt{2}\mathbb{X}_9[\mathbb{Q}_2^{(a,B_2)}] \otimes \mathbb{Y}_{27}[\mathbb{Q}_1^{(b,B_2)}]}{2}$$

$$\begin{aligned} \hat{\mathbf{Z}}_{112}(\mathbf{k}) = & \frac{\mathbb{X}_8[\mathbb{Q}_2^{(a,B_1)}] \otimes \mathbb{U}_{15}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{22}[\mathbb{Q}_1^{(k,B_1)}]}{2} - \frac{\mathbb{X}_8[\mathbb{Q}_2^{(a,B_1)}] \otimes \mathbb{U}_{16}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{28}[\mathbb{T}_2^{(k,A_2)}]}{2} \\ & + \frac{\mathbb{X}_9[\mathbb{Q}_2^{(a,B_2)}] \otimes \mathbb{U}_{15}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{23}[\mathbb{Q}_1^{(k,B_2)}]}{2} - \frac{\mathbb{X}_9[\mathbb{Q}_2^{(a,B_2)}] \otimes \mathbb{U}_{16}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{25}[\mathbb{T}_0^{(k,A_1)}]}{2} \end{aligned}$$

$$\boxed{\text{No. 113}} \quad \hat{\mathbb{G}}_2^{(A_1)} [\mathbf{M}_1, \mathbf{B}_4]$$

$$\hat{\mathbf{Z}}_{113} = \frac{\sqrt{2}\mathbb{X}_8[\mathbb{Q}_2^{(a,B_1)}] \otimes \mathbb{Y}_{26}[\mathbb{Q}_1^{(b,B_1)}]}{2} - \frac{\sqrt{2}\mathbb{X}_9[\mathbb{Q}_2^{(a,B_2)}] \otimes \mathbb{Y}_{27}[\mathbb{Q}_1^{(b,B_2)}]}{2}$$

$$\hat{\mathbf{Z}}_{113}(\mathbf{k}) = \frac{\mathbb{X}_8[\mathbb{Q}_2^{(a,B_1)}] \otimes \mathbb{U}_{15}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{22}[\mathbb{Q}_1^{(k,B_1)}]}{2} - \frac{\mathbb{X}_8[\mathbb{Q}_2^{(a,B_1)}] \otimes \mathbb{U}_{16}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{28}[\mathbb{T}_2^{(k,A_2)}]}{2} \\ - \frac{\mathbb{X}_9[\mathbb{Q}_2^{(a,B_2)}] \otimes \mathbb{U}_{15}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{23}[\mathbb{Q}_1^{(k,B_2)}]}{2} + \frac{\mathbb{X}_9[\mathbb{Q}_2^{(a,B_2)}] \otimes \mathbb{U}_{16}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{25}[\mathbb{T}_0^{(k,A_1)}]}{2}$$

$$\boxed{\text{No. 114}} \quad \hat{\mathbb{Q}}_0^{(A_1)} [\mathbb{M}_1, \mathbb{B}_4]$$

$$\hat{\mathbf{Z}}_{114} = \mathbb{X}_7[\mathbb{Q}_2^{(a,A_2)}] \otimes \mathbb{Y}_{28}[\mathbb{Q}_2^{(b,A_2)}]$$

$$\hat{\mathbf{Z}}_{114}(\mathbf{k}) = \frac{\sqrt{2}\mathbb{X}_7[\mathbb{Q}_2^{(a,A_2)}] \otimes \mathbb{U}_{15}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{24}[\mathbb{Q}_2^{(k,A_2)}]}{2} - \frac{\sqrt{2}\mathbb{X}_7[\mathbb{Q}_2^{(a,A_2)}] \otimes \mathbb{U}_{16}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{26}[\mathbb{T}_1^{(k,B_1)}]}{2}$$

$$\boxed{\text{No. 115}} \quad \hat{\mathbb{Q}}_0^{(A_1)}(1, 1) [\mathbb{M}_1, \mathbb{B}_4]$$

$$\hat{\mathbf{Z}}_{115} = \mathbb{X}_4[\mathbb{Q}_0^{(a,A_1)}(1, 1)] \otimes \mathbb{Y}_{25}[\mathbb{Q}_0^{(b,A_1)}]$$

$$\hat{\mathbf{Z}}_{115}(\mathbf{k}) = \frac{\sqrt{2}\mathbb{X}_4[\mathbb{Q}_0^{(a,A_1)}(1, 1)] \otimes \mathbb{U}_{15}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{21}[\mathbb{Q}_0^{(k,A_1)}]}{2} - \frac{\sqrt{2}\mathbb{X}_4[\mathbb{Q}_0^{(a,A_1)}(1, 1)] \otimes \mathbb{U}_{16}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{27}[\mathbb{T}_1^{(k,B_2)}]}{2}$$

$$\boxed{\text{No. 116}} \quad \hat{\mathbb{Q}}_2^{(A_1,1)}(1, -1) [\mathbb{M}_1, \mathbb{B}_4]$$

$$\hat{\mathbf{Z}}_{116} = \mathbb{X}_5[\mathbb{Q}_2^{(a,A_1,1)}(1, -1)] \otimes \mathbb{Y}_{25}[\mathbb{Q}_0^{(b,A_1)}]$$

$$\hat{\mathbf{Z}}_{116}(\mathbf{k}) = \frac{\sqrt{2}\mathbb{X}_5[\mathbb{Q}_2^{(a,A_1,1)}(1, -1)] \otimes \mathbb{U}_{15}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{21}[\mathbb{Q}_0^{(k,A_1)}]}{2} - \frac{\sqrt{2}\mathbb{X}_5[\mathbb{Q}_2^{(a,A_1,1)}(1, -1)] \otimes \mathbb{U}_{16}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{27}[\mathbb{T}_1^{(k,B_2)}]}{2}$$

$$\boxed{\text{No. 117}} \quad \hat{\mathbb{Q}}_2^{(A_1,2)}(1, -1) [\mathbb{M}_1, \mathbb{B}_4]$$

$$\hat{\mathbf{Z}}_{117} = \mathbb{X}_6[\mathbb{Q}_2^{(a,A_1,2)}(1, -1)] \otimes \mathbb{Y}_{25}[\mathbb{Q}_0^{(b,A_1)}]$$

$$\hat{\mathbf{Z}}_{117}(\mathbf{k}) = \frac{\sqrt{2}\mathbb{X}_6[\mathbb{Q}_2^{(a,A_1,2)}(1, -1)] \otimes \mathbb{U}_{15}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{21}[\mathbb{Q}_0^{(k,A_1)}]}{2} - \frac{\sqrt{2}\mathbb{X}_6[\mathbb{Q}_2^{(a,A_1,2)}(1, -1)] \otimes \mathbb{U}_{16}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{27}[\mathbb{T}_1^{(k,B_2)}]}{2}$$

$$\boxed{\text{No. 118}} \quad \hat{\mathbb{Q}}_1^{(A_1)}(1, -1) [\mathbb{M}_1, \mathbb{B}_4]$$

$$\hat{\mathbf{Z}}_{118} = \frac{\sqrt{2}\mathbb{X}_{12}[\mathbb{Q}_2^{(a,B_1)}(1, -1)] \otimes \mathbb{Y}_{26}[\mathbb{Q}_1^{(b,B_1)}]}{2} + \frac{\sqrt{2}\mathbb{X}_{14}[\mathbb{Q}_2^{(a,B_2)}(1, -1)] \otimes \mathbb{Y}_{27}[\mathbb{Q}_1^{(b,B_2)}]}{2}$$

$$\hat{Z}_{118}(\mathbf{k}) = \frac{\mathbb{X}_{12}[\mathbb{Q}_2^{(a,B_1)}(1,-1)] \otimes \mathbb{U}_{15}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{22}[\mathbb{Q}_1^{(k,B_1)}]}{2} - \frac{\mathbb{X}_{12}[\mathbb{Q}_2^{(a,B_1)}(1,-1)] \otimes \mathbb{U}_{16}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{28}[\mathbb{T}_2^{(k,A_2)}]}{2} \\ + \frac{\mathbb{X}_{14}[\mathbb{Q}_2^{(a,B_2)}(1,-1)] \otimes \mathbb{U}_{15}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{23}[\mathbb{Q}_1^{(k,B_2)}]}{2} - \frac{\mathbb{X}_{14}[\mathbb{Q}_2^{(a,B_2)}(1,-1)] \otimes \mathbb{U}_{16}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{25}[\mathbb{T}_0^{(k,A_1)}]}{2}$$

$$\boxed{\text{No. 119}} \quad \hat{\mathbb{G}}_2^{(A_1)}(1,-1) \text{ [M}_1, \text{B}_4]$$

$$\hat{Z}_{119} = \frac{\sqrt{2}\mathbb{X}_{12}[\mathbb{Q}_2^{(a,B_1)}(1,-1)] \otimes \mathbb{Y}_{26}[\mathbb{Q}_1^{(b,B_1)}]}{2} - \frac{\sqrt{2}\mathbb{X}_{14}[\mathbb{Q}_2^{(a,B_2)}(1,-1)] \otimes \mathbb{Y}_{27}[\mathbb{Q}_1^{(b,B_2)}]}{2}$$

$$\hat{Z}_{119}(\mathbf{k}) = \frac{\mathbb{X}_{12}[\mathbb{Q}_2^{(a,B_1)}(1,-1)] \otimes \mathbb{U}_{15}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{22}[\mathbb{Q}_1^{(k,B_1)}]}{2} - \frac{\mathbb{X}_{12}[\mathbb{Q}_2^{(a,B_1)}(1,-1)] \otimes \mathbb{U}_{16}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{28}[\mathbb{T}_2^{(k,A_2)}]}{2} \\ - \frac{\mathbb{X}_{14}[\mathbb{Q}_2^{(a,B_2)}(1,-1)] \otimes \mathbb{U}_{15}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{23}[\mathbb{Q}_1^{(k,B_2)}]}{2} + \frac{\mathbb{X}_{14}[\mathbb{Q}_2^{(a,B_2)}(1,-1)] \otimes \mathbb{U}_{16}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{25}[\mathbb{T}_0^{(k,A_1)}]}{2}$$

$$\boxed{\text{No. 120}} \quad \hat{\mathbb{Q}}_0^{(A_1)}(1,-1) \text{ [M}_1, \text{B}_4]$$

$$\hat{Z}_{120} = \mathbb{X}_{10}[\mathbb{Q}_2^{(a,A_2)}(1,-1)] \otimes \mathbb{Y}_{28}[\mathbb{Q}_2^{(b,A_2)}]$$

$$\hat{Z}_{120}(\mathbf{k}) = \frac{\sqrt{2}\mathbb{X}_{10}[\mathbb{Q}_2^{(a,A_2)}(1,-1)] \otimes \mathbb{U}_{15}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{24}[\mathbb{Q}_2^{(k,A_2)}]}{2} - \frac{\sqrt{2}\mathbb{X}_{10}[\mathbb{Q}_2^{(a,A_2)}(1,-1)] \otimes \mathbb{U}_{16}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{26}[\mathbb{T}_1^{(k,B_1)}]}{2}$$

$$\boxed{\text{No. 121}} \quad \hat{\mathbb{Q}}_1^{(A_1)}(1,0) \text{ [M}_1, \text{B}_4]$$

$$\hat{Z}_{121} = -\frac{\sqrt{2}\mathbb{X}_{13}[\mathbb{G}_1^{(a,B_1)}(1,0)] \otimes \mathbb{Y}_{26}[\mathbb{Q}_1^{(b,B_1)}]}{2} + \frac{\sqrt{2}\mathbb{X}_{15}[\mathbb{G}_1^{(a,B_2)}(1,0)] \otimes \mathbb{Y}_{27}[\mathbb{Q}_1^{(b,B_2)}]}{2}$$

$$\hat{Z}_{121}(\mathbf{k}) = -\frac{\mathbb{X}_{13}[\mathbb{G}_1^{(a,B_1)}(1,0)] \otimes \mathbb{U}_{15}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{22}[\mathbb{Q}_1^{(k,B_1)}]}{2} + \frac{\mathbb{X}_{13}[\mathbb{G}_1^{(a,B_1)}(1,0)] \otimes \mathbb{U}_{16}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{28}[\mathbb{T}_2^{(k,A_2)}]}{2} \\ + \frac{\mathbb{X}_{15}[\mathbb{G}_1^{(a,B_2)}(1,0)] \otimes \mathbb{U}_{15}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{23}[\mathbb{Q}_1^{(k,B_2)}]}{2} - \frac{\mathbb{X}_{15}[\mathbb{G}_1^{(a,B_2)}(1,0)] \otimes \mathbb{U}_{16}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{25}[\mathbb{T}_0^{(k,A_1)}]}{2}$$

$$\boxed{\text{No. 122}} \quad \hat{\mathbb{G}}_2^{(A_1)}(1,0) \text{ [M}_1, \text{B}_4]$$

$$\hat{Z}_{122} = \frac{\sqrt{2}\mathbb{X}_{13}[\mathbb{G}_1^{(a,B_1)}(1,0)] \otimes \mathbb{Y}_{26}[\mathbb{Q}_1^{(b,B_1)}]}{2} + \frac{\sqrt{2}\mathbb{X}_{15}[\mathbb{G}_1^{(a,B_2)}(1,0)] \otimes \mathbb{Y}_{27}[\mathbb{Q}_1^{(b,B_2)}]}{2}$$

$$\hat{\mathbf{Z}}_{122}(\mathbf{k}) = \frac{\mathbb{X}_{13}[\mathbb{G}_1^{(a,B_1)}(1,0)] \otimes \mathbb{U}_{15}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{22}[\mathbb{Q}_1^{(k,B_1)}]}{2} - \frac{\mathbb{X}_{13}[\mathbb{G}_1^{(a,B_1)}(1,0)] \otimes \mathbb{U}_{16}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{28}[\mathbb{T}_2^{(k,A_2)}]}{2} \\ + \frac{\mathbb{X}_{15}[\mathbb{G}_1^{(a,B_2)}(1,0)] \otimes \mathbb{U}_{15}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{23}[\mathbb{Q}_1^{(k,B_2)}]}{2} - \frac{\mathbb{X}_{15}[\mathbb{G}_1^{(a,B_2)}(1,0)] \otimes \mathbb{U}_{16}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{25}[\mathbb{T}_0^{(k,A_1)}]}{2}$$

$$\boxed{\text{No. 123}} \quad \hat{\mathbb{Q}}_2^{(A_1,2)}(1,0) [\mathbb{M}_1, \mathbb{B}_4]$$

$$\hat{\mathbf{Z}}_{123} = -\mathbb{X}_{11}[\mathbb{G}_1^{(a,A_2)}(1,0)] \otimes \mathbb{Y}_{28}[\mathbb{Q}_2^{(b,A_2)}]$$

$$\hat{\mathbf{Z}}_{123}(\mathbf{k}) = -\frac{\sqrt{2}\mathbb{X}_{11}[\mathbb{G}_1^{(a,A_2)}(1,0)] \otimes \mathbb{U}_{15}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{24}[\mathbb{Q}_2^{(k,A_2)}]}{2} + \frac{\sqrt{2}\mathbb{X}_{11}[\mathbb{G}_1^{(a,A_2)}(1,0)] \otimes \mathbb{U}_{16}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{26}[\mathbb{T}_1^{(k,B_1)}]}{2}$$

$$\boxed{\text{No. 124}} \quad \hat{\mathbb{Q}}_1^{(A_1)} [\mathbb{M}_1, \mathbb{B}_4]$$

$$\hat{\mathbf{Z}}_{124} = -\frac{\sqrt{2}\mathbb{X}_{17}[\mathbb{M}_1^{(a,B_1)}] \otimes \mathbb{Y}_{30}[\mathbb{T}_1^{(b,B_1)}]}{2} + \frac{\sqrt{2}\mathbb{X}_{18}[\mathbb{M}_1^{(a,B_2)}] \otimes \mathbb{Y}_{31}[\mathbb{T}_1^{(b,B_2)}]}{2}$$

$$\hat{\mathbf{Z}}_{124}(\mathbf{k}) = -\frac{\mathbb{X}_{17}[\mathbb{M}_1^{(a,B_1)}] \otimes \mathbb{U}_{15}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{26}[\mathbb{T}_1^{(k,B_1)}]}{2} - \frac{\mathbb{X}_{17}[\mathbb{M}_1^{(a,B_1)}] \otimes \mathbb{U}_{16}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{24}[\mathbb{Q}_2^{(k,A_2)}]}{2} \\ + \frac{\mathbb{X}_{18}[\mathbb{M}_1^{(a,B_2)}] \otimes \mathbb{U}_{15}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{27}[\mathbb{T}_1^{(k,B_2)}]}{2} + \frac{\mathbb{X}_{18}[\mathbb{M}_1^{(a,B_2)}] \otimes \mathbb{U}_{16}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{21}[\mathbb{Q}_0^{(k,A_1)}]}{2}$$

$$\boxed{\text{No. 125}} \quad \hat{\mathbb{G}}_2^{(A_1)} [\mathbb{M}_1, \mathbb{B}_4]$$

$$\hat{\mathbf{Z}}_{125} = \frac{\sqrt{2}\mathbb{X}_{17}[\mathbb{M}_1^{(a,B_1)}] \otimes \mathbb{Y}_{30}[\mathbb{T}_1^{(b,B_1)}]}{2} + \frac{\sqrt{2}\mathbb{X}_{18}[\mathbb{M}_1^{(a,B_2)}] \otimes \mathbb{Y}_{31}[\mathbb{T}_1^{(b,B_2)}]}{2}$$

$$\hat{\mathbf{Z}}_{125}(\mathbf{k}) = \frac{\mathbb{X}_{17}[\mathbb{M}_1^{(a,B_1)}] \otimes \mathbb{U}_{15}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{26}[\mathbb{T}_1^{(k,B_1)}]}{2} + \frac{\mathbb{X}_{17}[\mathbb{M}_1^{(a,B_1)}] \otimes \mathbb{U}_{16}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{24}[\mathbb{Q}_2^{(k,A_2)}]}{2} \\ + \frac{\mathbb{X}_{18}[\mathbb{M}_1^{(a,B_2)}] \otimes \mathbb{U}_{15}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{27}[\mathbb{T}_1^{(k,B_2)}]}{2} + \frac{\mathbb{X}_{18}[\mathbb{M}_1^{(a,B_2)}] \otimes \mathbb{U}_{16}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{21}[\mathbb{Q}_0^{(k,A_1)}]}{2}$$

$$\boxed{\text{No. 126}} \quad \hat{\mathbb{Q}}_2^{(A_1,2)} [\mathbb{M}_1, \mathbb{B}_4]$$

$$\hat{\mathbf{Z}}_{126} = -\mathbb{X}_{16}[\mathbb{M}_1^{(a,A_2)}] \otimes \mathbb{Y}_{32}[\mathbb{T}_2^{(b,A_2)}]$$

$$\hat{\mathbf{Z}}_{126}(\mathbf{k}) = -\frac{\sqrt{2}\mathbb{X}_{16}[\mathbb{M}_1^{(a,A_2)}] \otimes \mathbb{U}_{15}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{28}[\mathbb{T}_2^{(k,A_2)}]}{2} - \frac{\sqrt{2}\mathbb{X}_{16}[\mathbb{M}_1^{(a,A_2)}] \otimes \mathbb{U}_{16}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{22}[\mathbb{Q}_1^{(k,B_1)}]}{2}$$

$$\boxed{\text{No. 127}} \quad \hat{\mathbb{Q}}_1^{(A_1)}(1, 1) \text{ } [M_1, B_4]$$

$$\hat{\mathbb{Z}}_{127} = -\frac{\sqrt{2}\mathbb{X}_{24}[\mathbb{M}_1^{(a, B_1)}(1, 1)] \otimes \mathbb{Y}_{30}[\mathbb{T}_1^{(b, B_1)}]}{2} + \frac{\sqrt{2}\mathbb{X}_{29}[\mathbb{M}_1^{(a, B_2)}(1, 1)] \otimes \mathbb{Y}_{31}[\mathbb{T}_1^{(b, B_2)}]}{2}$$

$$\begin{aligned} \hat{\mathbb{Z}}_{127}(\mathbf{k}) = & -\frac{\mathbb{X}_{24}[\mathbb{M}_1^{(a, B_1)}(1, 1)] \otimes \mathbb{U}_{15}[\mathbb{Q}_0^{(u, A_1)}] \otimes \mathbb{F}_{26}[\mathbb{T}_1^{(k, B_1)}]}{2} - \frac{\mathbb{X}_{24}[\mathbb{M}_1^{(a, B_1)}(1, 1)] \otimes \mathbb{U}_{16}[\mathbb{T}_1^{(u, B_2)}] \otimes \mathbb{F}_{24}[\mathbb{Q}_2^{(k, A_2)}]}{2} \\ & + \frac{\mathbb{X}_{29}[\mathbb{M}_1^{(a, B_2)}(1, 1)] \otimes \mathbb{U}_{15}[\mathbb{Q}_0^{(u, A_1)}] \otimes \mathbb{F}_{27}[\mathbb{T}_1^{(k, B_2)}]}{2} + \frac{\mathbb{X}_{29}[\mathbb{M}_1^{(a, B_2)}(1, 1)] \otimes \mathbb{U}_{16}[\mathbb{T}_1^{(u, B_2)}] \otimes \mathbb{F}_{21}[\mathbb{Q}_0^{(k, A_1)}]}{2} \end{aligned}$$

$$\boxed{\text{No. 128}} \quad \hat{\mathbb{G}}_2^{(A_1)}(1, 1) \text{ } [M_1, B_4]$$

$$\hat{\mathbb{Z}}_{128} = \frac{\sqrt{2}\mathbb{X}_{24}[\mathbb{M}_1^{(a, B_1)}(1, 1)] \otimes \mathbb{Y}_{30}[\mathbb{T}_1^{(b, B_1)}]}{2} + \frac{\sqrt{2}\mathbb{X}_{29}[\mathbb{M}_1^{(a, B_2)}(1, 1)] \otimes \mathbb{Y}_{31}[\mathbb{T}_1^{(b, B_2)}]}{2}$$

$$\begin{aligned} \hat{\mathbb{Z}}_{128}(\mathbf{k}) = & \frac{\mathbb{X}_{24}[\mathbb{M}_1^{(a, B_1)}(1, 1)] \otimes \mathbb{U}_{15}[\mathbb{Q}_0^{(u, A_1)}] \otimes \mathbb{F}_{26}[\mathbb{T}_1^{(k, B_1)}]}{2} + \frac{\mathbb{X}_{24}[\mathbb{M}_1^{(a, B_1)}(1, 1)] \otimes \mathbb{U}_{16}[\mathbb{T}_1^{(u, B_2)}] \otimes \mathbb{F}_{24}[\mathbb{Q}_2^{(k, A_2)}]}{2} \\ & + \frac{\mathbb{X}_{29}[\mathbb{M}_1^{(a, B_2)}(1, 1)] \otimes \mathbb{U}_{15}[\mathbb{Q}_0^{(u, A_1)}] \otimes \mathbb{F}_{27}[\mathbb{T}_1^{(k, B_2)}]}{2} + \frac{\mathbb{X}_{29}[\mathbb{M}_1^{(a, B_2)}(1, 1)] \otimes \mathbb{U}_{16}[\mathbb{T}_1^{(u, B_2)}] \otimes \mathbb{F}_{21}[\mathbb{Q}_0^{(k, A_1)}]}{2} \end{aligned}$$

$$\boxed{\text{No. 129}} \quad \hat{\mathbb{Q}}_2^{(A_1, 2)}(1, 1) \text{ } [M_1, B_4]$$

$$\hat{\mathbb{Z}}_{129} = -\mathbb{X}_{19}[\mathbb{M}_1^{(a, A_2)}(1, 1)] \otimes \mathbb{Y}_{32}[\mathbb{T}_2^{(b, A_2)}]$$

$$\hat{\mathbb{Z}}_{129}(\mathbf{k}) = -\frac{\sqrt{2}\mathbb{X}_{19}[\mathbb{M}_1^{(a, A_2)}(1, 1)] \otimes \mathbb{U}_{15}[\mathbb{Q}_0^{(u, A_1)}] \otimes \mathbb{F}_{28}[\mathbb{T}_2^{(k, A_2)}]}{2} - \frac{\sqrt{2}\mathbb{X}_{19}[\mathbb{M}_1^{(a, A_2)}(1, 1)] \otimes \mathbb{U}_{16}[\mathbb{T}_1^{(u, B_2)}] \otimes \mathbb{F}_{22}[\mathbb{Q}_1^{(k, B_1)}]}{2}$$

$$\boxed{\text{No. 130}} \quad \hat{\mathbb{Q}}_1^{(A_1)}(1, -1) \text{ } [M_1, B_4]$$

$$\hat{\mathbb{Z}}_{130} = -\frac{\sqrt{2}\mathbb{X}_{25}[\mathbb{M}_1^{(a, B_1)}(1, -1)] \otimes \mathbb{Y}_{30}[\mathbb{T}_1^{(b, B_1)}]}{2} + \frac{\sqrt{2}\mathbb{X}_{30}[\mathbb{M}_1^{(a, B_2)}(1, -1)] \otimes \mathbb{Y}_{31}[\mathbb{T}_1^{(b, B_2)}]}{2}$$

$$\begin{aligned} \hat{\mathbb{Z}}_{130}(\mathbf{k}) = & -\frac{\mathbb{X}_{25}[\mathbb{M}_1^{(a, B_1)}(1, -1)] \otimes \mathbb{U}_{15}[\mathbb{Q}_0^{(u, A_1)}] \otimes \mathbb{F}_{26}[\mathbb{T}_1^{(k, B_1)}]}{2} - \frac{\mathbb{X}_{25}[\mathbb{M}_1^{(a, B_1)}(1, -1)] \otimes \mathbb{U}_{16}[\mathbb{T}_1^{(u, B_2)}] \otimes \mathbb{F}_{24}[\mathbb{Q}_2^{(k, A_2)}]}{2} \\ & + \frac{\mathbb{X}_{30}[\mathbb{M}_1^{(a, B_2)}(1, -1)] \otimes \mathbb{U}_{15}[\mathbb{Q}_0^{(u, A_1)}] \otimes \mathbb{F}_{27}[\mathbb{T}_1^{(k, B_2)}]}{2} + \frac{\mathbb{X}_{30}[\mathbb{M}_1^{(a, B_2)}(1, -1)] \otimes \mathbb{U}_{16}[\mathbb{T}_1^{(u, B_2)}] \otimes \mathbb{F}_{21}[\mathbb{Q}_0^{(k, A_1)}]}{2} \end{aligned}$$

$$\boxed{\text{No. 131}} \quad \hat{\mathbb{G}}_2^{(A_1)}(1, -1) [\mathbf{M}_1, \mathbf{B}_4]$$

$$\hat{\mathbb{Z}}_{131} = \frac{\sqrt{2}\mathbb{X}_{25}[\mathbb{M}_1^{(a, B_1)}(1, -1)] \otimes \mathbb{Y}_{30}[\mathbb{T}_1^{(b, B_1)}]}{2} + \frac{\sqrt{2}\mathbb{X}_{30}[\mathbb{M}_1^{(a, B_2)}(1, -1)] \otimes \mathbb{Y}_{31}[\mathbb{T}_1^{(b, B_2)}]}{2}$$

$$\begin{aligned} \hat{\mathbb{Z}}_{131}(\mathbf{k}) = & \frac{\mathbb{X}_{25}[\mathbb{M}_1^{(a, B_1)}(1, -1)] \otimes \mathbb{U}_{15}[\mathbb{Q}_0^{(u, A_1)}] \otimes \mathbb{F}_{26}[\mathbb{T}_1^{(k, B_1)}]}{2} + \frac{\mathbb{X}_{25}[\mathbb{M}_1^{(a, B_1)}(1, -1)] \otimes \mathbb{U}_{16}[\mathbb{T}_1^{(u, B_2)}] \otimes \mathbb{F}_{24}[\mathbb{Q}_2^{(k, A_2)}]}{2} \\ & + \frac{\mathbb{X}_{30}[\mathbb{M}_1^{(a, B_2)}(1, -1)] \otimes \mathbb{U}_{15}[\mathbb{Q}_0^{(u, A_1)}] \otimes \mathbb{F}_{27}[\mathbb{T}_1^{(k, B_2)}]}{2} + \frac{\mathbb{X}_{30}[\mathbb{M}_1^{(a, B_2)}(1, -1)] \otimes \mathbb{U}_{16}[\mathbb{T}_1^{(u, B_2)}] \otimes \mathbb{F}_{21}[\mathbb{Q}_0^{(k, A_1)}]}{2} \end{aligned}$$

$$\boxed{\text{No. 132}} \quad \hat{\mathbb{Q}}_2^{(A_1, 2)}(1, -1) [\mathbf{M}_1, \mathbf{B}_4]$$

$$\hat{\mathbb{Z}}_{132} = -\mathbb{X}_{20}[\mathbb{M}_1^{(a, A_2)}(1, -1)] \otimes \mathbb{Y}_{32}[\mathbb{T}_2^{(b, A_2)}]$$

$$\hat{\mathbb{Z}}_{132}(\mathbf{k}) = -\frac{\sqrt{2}\mathbb{X}_{20}[\mathbb{M}_1^{(a, A_2)}(1, -1)] \otimes \mathbb{U}_{15}[\mathbb{Q}_0^{(u, A_1)}] \otimes \mathbb{F}_{28}[\mathbb{T}_2^{(k, A_2)}]}{2} - \frac{\sqrt{2}\mathbb{X}_{20}[\mathbb{M}_1^{(a, A_2)}(1, -1)] \otimes \mathbb{U}_{16}[\mathbb{T}_1^{(u, B_2)}] \otimes \mathbb{F}_{22}[\mathbb{Q}_1^{(k, B_1)}]}{2}$$

$$\boxed{\text{No. 133}} \quad \hat{\mathbb{G}}_3^{(A_1)}(1, -1) [\mathbf{M}_1, \mathbf{B}_4]$$

$$\hat{\mathbb{Z}}_{133} = \mathbb{X}_{34}[\mathbb{M}_3^{(a, A_1)}(1, -1)] \otimes \mathbb{Y}_{29}[\mathbb{T}_0^{(b, A_1)}]$$

$$\hat{\mathbb{Z}}_{133}(\mathbf{k}) = \frac{\sqrt{2}\mathbb{X}_{34}[\mathbb{M}_3^{(a, A_1)}(1, -1)] \otimes \mathbb{U}_{15}[\mathbb{Q}_0^{(u, A_1)}] \otimes \mathbb{F}_{25}[\mathbb{T}_0^{(k, A_1)}]}{2} + \frac{\sqrt{2}\mathbb{X}_{34}[\mathbb{M}_3^{(a, A_1)}(1, -1)] \otimes \mathbb{U}_{16}[\mathbb{T}_1^{(u, B_2)}] \otimes \mathbb{F}_{23}[\mathbb{Q}_1^{(k, B_2)}]}{2}$$

$$\boxed{\text{No. 134}} \quad \hat{\mathbb{G}}_2^{(A_1)}(1, -1) [\mathbf{M}_1, \mathbf{B}_4]$$

$$\begin{aligned} \hat{\mathbb{Z}}_{134} = & -\frac{\sqrt{3}\mathbb{X}_{26}[\mathbb{M}_3^{(a, B_1, 1)}(1, -1)] \otimes \mathbb{Y}_{30}[\mathbb{T}_1^{(b, B_1)}]}{4} - \frac{\sqrt{5}\mathbb{X}_{27}[\mathbb{M}_3^{(a, B_1, 2)}(1, -1)] \otimes \mathbb{Y}_{30}[\mathbb{T}_1^{(b, B_1)}]}{4} \\ & - \frac{\sqrt{3}\mathbb{X}_{31}[\mathbb{M}_3^{(a, B_2, 1)}(1, -1)] \otimes \mathbb{Y}_{31}[\mathbb{T}_1^{(b, B_2)}]}{4} + \frac{\sqrt{5}\mathbb{X}_{32}[\mathbb{M}_3^{(a, B_2, 2)}(1, -1)] \otimes \mathbb{Y}_{31}[\mathbb{T}_1^{(b, B_2)}]}{4} \end{aligned}$$

$$\begin{aligned} \hat{\mathbb{Z}}_{134}(\mathbf{k}) = & -\frac{\sqrt{6}\mathbb{X}_{26}[\mathbb{M}_3^{(a, B_1, 1)}(1, -1)] \otimes \mathbb{U}_{15}[\mathbb{Q}_0^{(u, A_1)}] \otimes \mathbb{F}_{26}[\mathbb{T}_1^{(k, B_1)}]}{8} - \frac{\sqrt{6}\mathbb{X}_{26}[\mathbb{M}_3^{(a, B_1, 1)}(1, -1)] \otimes \mathbb{U}_{16}[\mathbb{T}_1^{(u, B_2)}] \otimes \mathbb{F}_{24}[\mathbb{Q}_2^{(k, A_2)}]}{8} \\ & - \frac{\sqrt{10}\mathbb{X}_{27}[\mathbb{M}_3^{(a, B_1, 2)}(1, -1)] \otimes \mathbb{U}_{15}[\mathbb{Q}_0^{(u, A_1)}] \otimes \mathbb{F}_{26}[\mathbb{T}_1^{(k, B_1)}]}{8} - \frac{\sqrt{10}\mathbb{X}_{27}[\mathbb{M}_3^{(a, B_1, 2)}(1, -1)] \otimes \mathbb{U}_{16}[\mathbb{T}_1^{(u, B_2)}] \otimes \mathbb{F}_{24}[\mathbb{Q}_2^{(k, A_2)}]}{8} \\ & - \frac{\sqrt{6}\mathbb{X}_{31}[\mathbb{M}_3^{(a, B_2, 1)}(1, -1)] \otimes \mathbb{U}_{15}[\mathbb{Q}_0^{(u, A_1)}] \otimes \mathbb{F}_{27}[\mathbb{T}_1^{(k, B_2)}]}{8} - \frac{\sqrt{6}\mathbb{X}_{31}[\mathbb{M}_3^{(a, B_2, 1)}(1, -1)] \otimes \mathbb{U}_{16}[\mathbb{T}_1^{(u, B_2)}] \otimes \mathbb{F}_{21}[\mathbb{Q}_0^{(k, A_1)}]}{8} \\ & + \frac{\sqrt{10}\mathbb{X}_{32}[\mathbb{M}_3^{(a, B_2, 2)}(1, -1)] \otimes \mathbb{U}_{15}[\mathbb{Q}_0^{(u, A_1)}] \otimes \mathbb{F}_{27}[\mathbb{T}_1^{(k, B_2)}]}{8} + \frac{\sqrt{10}\mathbb{X}_{32}[\mathbb{M}_3^{(a, B_2, 2)}(1, -1)] \otimes \mathbb{U}_{16}[\mathbb{T}_1^{(u, B_2)}] \otimes \mathbb{F}_{21}[\mathbb{Q}_0^{(k, A_1)}]}{8} \end{aligned}$$

$$\boxed{\text{No. 135}} \quad \hat{Q}_3^{(A_1,1)}(1, -1) \text{ [M}_1, \text{B}_4]$$

$$\hat{Z}_{135} = \frac{\sqrt{3}\mathbb{X}_{26}[\mathbb{M}_3^{(a,B_1,1)}(1, -1)] \otimes \mathbb{Y}_{30}[\mathbb{T}_1^{(b,B_1)}]}{4} - \frac{\sqrt{5}\mathbb{X}_{27}[\mathbb{M}_3^{(a,B_1,2)}(1, -1)] \otimes \mathbb{Y}_{30}[\mathbb{T}_1^{(b,B_1)}]}{4} \\ - \frac{\sqrt{3}\mathbb{X}_{31}[\mathbb{M}_3^{(a,B_2,1)}(1, -1)] \otimes \mathbb{Y}_{31}[\mathbb{T}_1^{(b,B_2)}]}{4} - \frac{\sqrt{5}\mathbb{X}_{32}[\mathbb{M}_3^{(a,B_2,2)}(1, -1)] \otimes \mathbb{Y}_{31}[\mathbb{T}_1^{(b,B_2)}]}{4}$$

$$\hat{Z}_{135}(\mathbf{k}) = \frac{\sqrt{6}\mathbb{X}_{26}[\mathbb{M}_3^{(a,B_1,1)}(1, -1)] \otimes \mathbb{U}_{15}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{26}[\mathbb{T}_1^{(k,B_1)}]}{8} + \frac{\sqrt{6}\mathbb{X}_{26}[\mathbb{M}_3^{(a,B_1,1)}(1, -1)] \otimes \mathbb{U}_{16}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{24}[\mathbb{Q}_2^{(k,A_2)}]}{8} \\ - \frac{\sqrt{10}\mathbb{X}_{27}[\mathbb{M}_3^{(a,B_1,2)}(1, -1)] \otimes \mathbb{U}_{15}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{26}[\mathbb{T}_1^{(k,B_1)}]}{8} - \frac{\sqrt{10}\mathbb{X}_{27}[\mathbb{M}_3^{(a,B_1,2)}(1, -1)] \otimes \mathbb{U}_{16}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{24}[\mathbb{Q}_2^{(k,A_2)}]}{8} \\ - \frac{\sqrt{6}\mathbb{X}_{31}[\mathbb{M}_3^{(a,B_2,1)}(1, -1)] \otimes \mathbb{U}_{15}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{27}[\mathbb{T}_1^{(k,B_2)}]}{8} - \frac{\sqrt{6}\mathbb{X}_{31}[\mathbb{M}_3^{(a,B_2,1)}(1, -1)] \otimes \mathbb{U}_{16}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{21}[\mathbb{Q}_0^{(k,A_1)}]}{8} \\ - \frac{\sqrt{10}\mathbb{X}_{32}[\mathbb{M}_3^{(a,B_2,2)}(1, -1)] \otimes \mathbb{U}_{15}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{27}[\mathbb{T}_1^{(k,B_2)}]}{8} - \frac{\sqrt{10}\mathbb{X}_{32}[\mathbb{M}_3^{(a,B_2,2)}(1, -1)] \otimes \mathbb{U}_{16}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{21}[\mathbb{Q}_0^{(k,A_1)}]}{8}$$

$$\boxed{\text{No. 136}} \quad \hat{Q}_3^{(A_1,2)}(1, -1) \text{ [M}_1, \text{B}_4]$$

$$\hat{Z}_{136} = \frac{\sqrt{5}\mathbb{X}_{26}[\mathbb{M}_3^{(a,B_1,1)}(1, -1)] \otimes \mathbb{Y}_{30}[\mathbb{T}_1^{(b,B_1)}]}{4} - \frac{\sqrt{3}\mathbb{X}_{27}[\mathbb{M}_3^{(a,B_1,2)}(1, -1)] \otimes \mathbb{Y}_{30}[\mathbb{T}_1^{(b,B_1)}]}{4} \\ + \frac{\sqrt{5}\mathbb{X}_{31}[\mathbb{M}_3^{(a,B_2,1)}(1, -1)] \otimes \mathbb{Y}_{31}[\mathbb{T}_1^{(b,B_2)}]}{4} + \frac{\sqrt{3}\mathbb{X}_{32}[\mathbb{M}_3^{(a,B_2,2)}(1, -1)] \otimes \mathbb{Y}_{31}[\mathbb{T}_1^{(b,B_2)}]}{4}$$

$$\hat{Z}_{136}(\mathbf{k}) = \frac{\sqrt{10}\mathbb{X}_{26}[\mathbb{M}_3^{(a,B_1,1)}(1, -1)] \otimes \mathbb{U}_{15}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{26}[\mathbb{T}_1^{(k,B_1)}]}{8} + \frac{\sqrt{10}\mathbb{X}_{26}[\mathbb{M}_3^{(a,B_1,1)}(1, -1)] \otimes \mathbb{U}_{16}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{24}[\mathbb{Q}_2^{(k,A_2)}]}{8} \\ - \frac{\sqrt{6}\mathbb{X}_{27}[\mathbb{M}_3^{(a,B_1,2)}(1, -1)] \otimes \mathbb{U}_{15}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{26}[\mathbb{T}_1^{(k,B_1)}]}{8} - \frac{\sqrt{6}\mathbb{X}_{27}[\mathbb{M}_3^{(a,B_1,2)}(1, -1)] \otimes \mathbb{U}_{16}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{24}[\mathbb{Q}_2^{(k,A_2)}]}{8} \\ + \frac{\sqrt{10}\mathbb{X}_{31}[\mathbb{M}_3^{(a,B_2,1)}(1, -1)] \otimes \mathbb{U}_{15}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{27}[\mathbb{T}_1^{(k,B_2)}]}{8} + \frac{\sqrt{10}\mathbb{X}_{31}[\mathbb{M}_3^{(a,B_2,1)}(1, -1)] \otimes \mathbb{U}_{16}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{21}[\mathbb{Q}_0^{(k,A_1)}]}{8} \\ + \frac{\sqrt{6}\mathbb{X}_{32}[\mathbb{M}_3^{(a,B_2,2)}(1, -1)] \otimes \mathbb{U}_{15}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{27}[\mathbb{T}_1^{(k,B_2)}]}{8} + \frac{\sqrt{6}\mathbb{X}_{32}[\mathbb{M}_3^{(a,B_2,2)}(1, -1)] \otimes \mathbb{U}_{16}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{21}[\mathbb{Q}_0^{(k,A_1)}]}{8}$$

$$\boxed{\text{No. 137}} \quad \hat{G}_4^{(A_1,1)}(1, -1) \text{ [M}_1, \text{B}_4]$$

$$\hat{Z}_{137} = -\frac{\sqrt{5}\mathbb{X}_{26}[\mathbb{M}_3^{(a,B_1,1)}(1, -1)] \otimes \mathbb{Y}_{30}[\mathbb{T}_1^{(b,B_1)}]}{4} - \frac{\sqrt{3}\mathbb{X}_{27}[\mathbb{M}_3^{(a,B_1,2)}(1, -1)] \otimes \mathbb{Y}_{30}[\mathbb{T}_1^{(b,B_1)}]}{4} \\ + \frac{\sqrt{5}\mathbb{X}_{31}[\mathbb{M}_3^{(a,B_2,1)}(1, -1)] \otimes \mathbb{Y}_{31}[\mathbb{T}_1^{(b,B_2)}]}{4} - \frac{\sqrt{3}\mathbb{X}_{32}[\mathbb{M}_3^{(a,B_2,2)}(1, -1)] \otimes \mathbb{Y}_{31}[\mathbb{T}_1^{(b,B_2)}]}{4}$$

$$\begin{aligned}
\hat{Z}_{137}(\mathbf{k}) = & -\frac{\sqrt{10}\mathbb{X}_{26}[\mathbb{M}_3^{(a,B_1,1)}(1,-1)] \otimes \mathbb{U}_{15}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{26}[\mathbb{T}_1^{(k,B_1)}]}{8} - \frac{\sqrt{10}\mathbb{X}_{26}[\mathbb{M}_3^{(a,B_1,1)}(1,-1)] \otimes \mathbb{U}_{16}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{24}[\mathbb{Q}_2^{(k,A_2)}]}{8} \\
& - \frac{\sqrt{6}\mathbb{X}_{27}[\mathbb{M}_3^{(a,B_1,2)}(1,-1)] \otimes \mathbb{U}_{15}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{26}[\mathbb{T}_1^{(k,B_1)}]}{8} - \frac{\sqrt{6}\mathbb{X}_{27}[\mathbb{M}_3^{(a,B_1,2)}(1,-1)] \otimes \mathbb{U}_{16}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{24}[\mathbb{Q}_2^{(k,A_2)}]}{8} \\
& + \frac{\sqrt{10}\mathbb{X}_{31}[\mathbb{M}_3^{(a,B_2,1)}(1,-1)] \otimes \mathbb{U}_{15}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{27}[\mathbb{T}_1^{(k,B_2)}]}{8} + \frac{\sqrt{10}\mathbb{X}_{31}[\mathbb{M}_3^{(a,B_2,1)}(1,-1)] \otimes \mathbb{U}_{16}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{21}[\mathbb{Q}_0^{(k,A_1)}]}{8} \\
& - \frac{\sqrt{6}\mathbb{X}_{32}[\mathbb{M}_3^{(a,B_2,2)}(1,-1)] \otimes \mathbb{U}_{15}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{27}[\mathbb{T}_1^{(k,B_2)}]}{8} - \frac{\sqrt{6}\mathbb{X}_{32}[\mathbb{M}_3^{(a,B_2,2)}(1,-1)] \otimes \mathbb{U}_{16}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{21}[\mathbb{Q}_0^{(k,A_1)}]}{8}
\end{aligned}$$

$$\boxed{\text{No. 138}} \quad \hat{\mathbb{Q}}_2^{(A_1,1)}(1,-1) \text{ } [\mathbb{M}_1, \mathbb{B}_4]$$

$$\hat{Z}_{138} = \mathbb{X}_{22}[\mathbb{M}_3^{(a,A_2,2)}(1,-1)] \otimes \mathbb{Y}_{32}[\mathbb{T}_2^{(b,A_2)}]$$

$$\hat{Z}_{138}(\mathbf{k}) = \frac{\sqrt{2}\mathbb{X}_{22}[\mathbb{M}_3^{(a,A_2,2)}(1,-1)] \otimes \mathbb{U}_{15}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{28}[\mathbb{T}_2^{(k,A_2)}]}{2} + \frac{\sqrt{2}\mathbb{X}_{22}[\mathbb{M}_3^{(a,A_2,2)}(1,-1)] \otimes \mathbb{U}_{16}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{22}[\mathbb{Q}_1^{(k,B_1)}]}{2}$$

$$\boxed{\text{No. 139}} \quad \hat{\mathbb{Q}}_2^{(A_1,2)}(1,-1) \text{ } [\mathbb{M}_1, \mathbb{B}_4]$$

$$\hat{Z}_{139} = \mathbb{X}_{21}[\mathbb{M}_3^{(a,A_2,1)}(1,-1)] \otimes \mathbb{Y}_{32}[\mathbb{T}_2^{(b,A_2)}]$$

$$\hat{Z}_{139}(\mathbf{k}) = \frac{\sqrt{2}\mathbb{X}_{21}[\mathbb{M}_3^{(a,A_2,1)}(1,-1)] \otimes \mathbb{U}_{15}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{28}[\mathbb{T}_2^{(k,A_2)}]}{2} + \frac{\sqrt{2}\mathbb{X}_{21}[\mathbb{M}_3^{(a,A_2,1)}(1,-1)] \otimes \mathbb{U}_{16}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{22}[\mathbb{Q}_1^{(k,B_1)}]}{2}$$

$$\boxed{\text{No. 140}} \quad \hat{\mathbb{Q}}_2^{(A_1,1)}(1,0) \text{ } [\mathbb{M}_1, \mathbb{B}_4]$$

$$\hat{Z}_{140} = \mathbb{X}_{35}[\mathbb{T}_2^{(a,A_1,1)}(1,0)] \otimes \mathbb{Y}_{29}[\mathbb{T}_0^{(b,A_1)}]$$

$$\hat{Z}_{140}(\mathbf{k}) = \frac{\sqrt{2}\mathbb{X}_{35}[\mathbb{T}_2^{(a,A_1,1)}(1,0)] \otimes \mathbb{U}_{15}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{25}[\mathbb{T}_0^{(k,A_1)}]}{2} + \frac{\sqrt{2}\mathbb{X}_{35}[\mathbb{T}_2^{(a,A_1,1)}(1,0)] \otimes \mathbb{U}_{16}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{23}[\mathbb{Q}_1^{(k,B_2)}]}{2}$$

$$\boxed{\text{No. 141}} \quad \hat{\mathbb{Q}}_2^{(A_1,2)}(1,0) \text{ } [\mathbb{M}_1, \mathbb{B}_4]$$

$$\hat{Z}_{141} = \mathbb{X}_{36}[\mathbb{T}_2^{(a,A_1,2)}(1,0)] \otimes \mathbb{Y}_{29}[\mathbb{T}_0^{(b,A_1)}]$$

$$\hat{Z}_{141}(\mathbf{k}) = \frac{\sqrt{2}\mathbb{X}_{36}[\mathbb{T}_2^{(a,A_1,2)}(1,0)] \otimes \mathbb{U}_{15}[\mathbb{Q}_0^{(u,A_1)}] \otimes \mathbb{F}_{25}[\mathbb{T}_0^{(k,A_1)}]}{2} + \frac{\sqrt{2}\mathbb{X}_{36}[\mathbb{T}_2^{(a,A_1,2)}(1,0)] \otimes \mathbb{U}_{16}[\mathbb{T}_1^{(u,B_2)}] \otimes \mathbb{F}_{23}[\mathbb{Q}_1^{(k,B_2)}]}{2}$$

$$\boxed{\text{No. 142}} \quad \hat{\mathbb{Q}}_1^{(A_1)}(1, 0) \text{ [M}_1, \text{B}_4]$$

$$\hat{\mathbb{Z}}_{142} = \frac{\sqrt{2}\mathbb{X}_{28}[\mathbb{T}_2^{(a, B_1)}(1, 0)] \otimes \mathbb{Y}_{30}[\mathbb{T}_1^{(b, B_1)}]}{2} + \frac{\sqrt{2}\mathbb{X}_{33}[\mathbb{T}_2^{(a, B_2)}(1, 0)] \otimes \mathbb{Y}_{31}[\mathbb{T}_1^{(b, B_2)}]}{2}$$

$$\begin{aligned} \hat{\mathbb{Z}}_{142}(\mathbf{k}) = & \frac{\mathbb{X}_{28}[\mathbb{T}_2^{(a, B_1)}(1, 0)] \otimes \mathbb{U}_{15}[\mathbb{Q}_0^{(u, A_1)}] \otimes \mathbb{F}_{26}[\mathbb{T}_1^{(k, B_1)}]}{2} + \frac{\mathbb{X}_{28}[\mathbb{T}_2^{(a, B_1)}(1, 0)] \otimes \mathbb{U}_{16}[\mathbb{T}_1^{(u, B_2)}] \otimes \mathbb{F}_{24}[\mathbb{Q}_2^{(k, A_2)}]}{2} \\ & + \frac{\mathbb{X}_{33}[\mathbb{T}_2^{(a, B_2)}(1, 0)] \otimes \mathbb{U}_{15}[\mathbb{Q}_0^{(u, A_1)}] \otimes \mathbb{F}_{27}[\mathbb{T}_1^{(k, B_2)}]}{2} + \frac{\mathbb{X}_{33}[\mathbb{T}_2^{(a, B_2)}(1, 0)] \otimes \mathbb{U}_{16}[\mathbb{T}_1^{(u, B_2)}] \otimes \mathbb{F}_{21}[\mathbb{Q}_0^{(k, A_1)}]}{2} \end{aligned}$$

$$\boxed{\text{No. 143}} \quad \hat{\mathbb{G}}_2^{(A_1)}(1, 0) \text{ [M}_1, \text{B}_4]$$

$$\hat{\mathbb{Z}}_{143} = \frac{\sqrt{2}\mathbb{X}_{28}[\mathbb{T}_2^{(a, B_1)}(1, 0)] \otimes \mathbb{Y}_{30}[\mathbb{T}_1^{(b, B_1)}]}{2} - \frac{\sqrt{2}\mathbb{X}_{33}[\mathbb{T}_2^{(a, B_2)}(1, 0)] \otimes \mathbb{Y}_{31}[\mathbb{T}_1^{(b, B_2)}]}{2}$$

$$\begin{aligned} \hat{\mathbb{Z}}_{143}(\mathbf{k}) = & \frac{\mathbb{X}_{28}[\mathbb{T}_2^{(a, B_1)}(1, 0)] \otimes \mathbb{U}_{15}[\mathbb{Q}_0^{(u, A_1)}] \otimes \mathbb{F}_{26}[\mathbb{T}_1^{(k, B_1)}]}{2} + \frac{\mathbb{X}_{28}[\mathbb{T}_2^{(a, B_1)}(1, 0)] \otimes \mathbb{U}_{16}[\mathbb{T}_1^{(u, B_2)}] \otimes \mathbb{F}_{24}[\mathbb{Q}_2^{(k, A_2)}]}{2} \\ & - \frac{\mathbb{X}_{33}[\mathbb{T}_2^{(a, B_2)}(1, 0)] \otimes \mathbb{U}_{15}[\mathbb{Q}_0^{(u, A_1)}] \otimes \mathbb{F}_{27}[\mathbb{T}_1^{(k, B_2)}]}{2} - \frac{\mathbb{X}_{33}[\mathbb{T}_2^{(a, B_2)}(1, 0)] \otimes \mathbb{U}_{16}[\mathbb{T}_1^{(u, B_2)}] \otimes \mathbb{F}_{21}[\mathbb{Q}_0^{(k, A_1)}]}{2} \end{aligned}$$

$$\boxed{\text{No. 144}} \quad \hat{\mathbb{Q}}_0^{(A_1)}(1, 0) \text{ [M}_1, \text{B}_4]$$

$$\hat{\mathbb{Z}}_{144} = \mathbb{X}_{23}[\mathbb{T}_2^{(a, A_2)}(1, 0)] \otimes \mathbb{Y}_{32}[\mathbb{T}_2^{(b, A_2)}]$$

$$\hat{\mathbb{Z}}_{144}(\mathbf{k}) = \frac{\sqrt{2}\mathbb{X}_{23}[\mathbb{T}_2^{(a, A_2)}(1, 0)] \otimes \mathbb{U}_{15}[\mathbb{Q}_0^{(u, A_1)}] \otimes \mathbb{F}_{28}[\mathbb{T}_2^{(k, A_2)}]}{2} + \frac{\sqrt{2}\mathbb{X}_{23}[\mathbb{T}_2^{(a, A_2)}(1, 0)] \otimes \mathbb{U}_{16}[\mathbb{T}_1^{(u, B_2)}] \otimes \mathbb{F}_{22}[\mathbb{Q}_1^{(k, B_1)}]}{2}$$

Table 5: Atomic SAMB group.

group	bra	ket
M ₁	$(p_x, \uparrow), (p_x, \downarrow), (p_y, \uparrow), (p_y, \downarrow), (p_z, \uparrow), (p_z, \downarrow)$	$(p_x, \uparrow), (p_x, \downarrow), (p_y, \uparrow), (p_y, \downarrow), (p_z, \uparrow), (p_z, \downarrow)$

Table 6: Atomic SAMB.

symbol	type	group	form
\mathbb{X}_1	$\mathbb{Q}_0^{(a,A_1)}$	M_1	$\begin{pmatrix} \frac{\sqrt{6}}{6} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{6}}{6} & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{6}}{6} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{6}}{6} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{6} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{6} \end{pmatrix}$
\mathbb{X}_2	$\mathbb{Q}_2^{(a,A_1,1)}$	M_1	$\begin{pmatrix} -\frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{3}}{6} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{3} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{3} \end{pmatrix}$
\mathbb{X}_3	$\mathbb{Q}_2^{(a,A_1,2)}$	M_1	$\begin{pmatrix} \frac{1}{2} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{1}{2} & 0 & 0 & 0 & 0 \\ 0 & 0 & -\frac{1}{2} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{1}{2} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \end{pmatrix}$
\mathbb{X}_4	$\mathbb{Q}_0^{(a,A_1)}(1,1)$	M_1	$\begin{pmatrix} 0 & 0 & -\frac{\sqrt{3}i}{6} & 0 & 0 & \frac{\sqrt{3}}{6} \\ 0 & 0 & 0 & \frac{\sqrt{3}i}{6} & -\frac{\sqrt{3}}{6} & 0 \\ \frac{\sqrt{3}i}{6} & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}i}{6} \\ 0 & -\frac{\sqrt{3}i}{6} & 0 & 0 & -\frac{\sqrt{3}i}{6} & 0 \\ 0 & -\frac{\sqrt{3}}{6} & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 \\ \frac{\sqrt{3}}{6} & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 & 0 \end{pmatrix}$
\mathbb{X}_5	$\mathbb{Q}_2^{(a,A_1,1)}(1,-1)$	M_1	$\begin{pmatrix} 0 & 0 & -\frac{\sqrt{6}i}{6} & 0 & 0 & -\frac{\sqrt{6}}{12} \\ 0 & 0 & 0 & \frac{\sqrt{6}i}{6} & \frac{\sqrt{6}}{12} & 0 \\ \frac{\sqrt{6}i}{6} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{12} \\ 0 & -\frac{\sqrt{6}i}{6} & 0 & 0 & \frac{\sqrt{6}i}{12} & 0 \\ 0 & \frac{\sqrt{6}}{12} & 0 & -\frac{\sqrt{6}i}{12} & 0 & 0 \\ -\frac{\sqrt{6}}{12} & 0 & -\frac{\sqrt{6}i}{12} & 0 & 0 & 0 \end{pmatrix}$

continued ...

Table 6

symbol	type	group	form
\mathbb{X}_6	$\mathbb{Q}_2^{(a,A_1,2)}(1,-1)$	M_1	$\begin{pmatrix} 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 \\ 0 & \frac{\sqrt{2}}{4} & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 \\ -\frac{\sqrt{2}}{4} & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 \end{pmatrix}$
\mathbb{X}_7	$\mathbb{Q}_2^{(a,A_2)}$	M_1	$\begin{pmatrix} 0 & 0 & \frac{1}{2} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{1}{2} & 0 & 0 \\ \frac{1}{2} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{1}{2} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \end{pmatrix}$
\mathbb{X}_8	$\mathbb{Q}_2^{(a,B_1)}$	M_1	$\begin{pmatrix} 0 & 0 & 0 & 0 & \frac{1}{2} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{1}{2} \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ \frac{1}{2} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{1}{2} & 0 & 0 & 0 & 0 \end{pmatrix}$
\mathbb{X}_9	$\mathbb{Q}_2^{(a,B_2)}$	M_1	$\begin{pmatrix} 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{1}{2} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{1}{2} \\ 0 & 0 & \frac{1}{2} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{1}{2} & 0 & 0 \end{pmatrix}$
\mathbb{X}_{10}	$\mathbb{Q}_2^{(a,A_2)}(1,-1)$	M_1	$\begin{pmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 \\ 0 & -\frac{\sqrt{2}i}{4} & 0 & \frac{\sqrt{2}}{4} & 0 & 0 \\ -\frac{\sqrt{2}i}{4} & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 & 0 \end{pmatrix}$

continued ...

Table 6

symbol	type	group	form
\mathbb{X}_{11}	$\mathbb{G}_1^{(a,A_2)}(1,0)$	M_1	$\begin{pmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & 0 \\ 0 & -\frac{\sqrt{2}i}{4} & 0 & -\frac{\sqrt{2}}{4} & 0 & 0 \\ -\frac{\sqrt{2}i}{4} & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 \end{pmatrix}$
\mathbb{X}_{12}	$\mathbb{Q}_2^{(a,B_1)}(1,-1)$	M_1	$\begin{pmatrix} 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 \\ 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 \\ \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} \\ 0 & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 \end{pmatrix}$
\mathbb{X}_{13}	$\mathbb{G}_1^{(a,B_1)}(1,0)$	M_1	$\begin{pmatrix} 0 & 0 & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 \\ 0 & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 \\ -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} \\ 0 & 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 \end{pmatrix}$
\mathbb{X}_{14}	$\mathbb{Q}_2^{(a,B_2)}(1,-1)$	M_1	$\begin{pmatrix} 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & \frac{\sqrt{2}i}{4} & 0 \\ 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & -\frac{\sqrt{2}i}{4} \\ 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 \end{pmatrix}$
\mathbb{X}_{15}	$\mathbb{G}_1^{(a,B_2)}(1,0)$	M_1	$\begin{pmatrix} 0 & 0 & 0 & -\frac{\sqrt{2}}{4} & -\frac{\sqrt{2}i}{4} & 0 \\ 0 & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & \frac{\sqrt{2}i}{4} \\ 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 \\ -\frac{\sqrt{2}}{4} & 0 & 0 & 0 & 0 & 0 \\ \frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{2}i}{4} & 0 & 0 & 0 & 0 \end{pmatrix}$

continued ...

Table 6

symbol	type	group	form
\mathbb{X}_{16}	$\mathbb{M}_1^{(a, A_2)}$	M_1	$\begin{pmatrix} 0 & 0 & -\frac{i}{2} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{i}{2} & 0 & 0 \\ \frac{i}{2} & 0 & 0 & 0 & 0 & 0 \\ 0 & \frac{i}{2} & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \end{pmatrix}$
\mathbb{X}_{17}	$\mathbb{M}_1^{(a, B_1)}$	M_1	$\begin{pmatrix} 0 & 0 & 0 & 0 & \frac{i}{2} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{i}{2} \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ -\frac{i}{2} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{i}{2} & 0 & 0 & 0 & 0 \end{pmatrix}$
\mathbb{X}_{18}	$\mathbb{M}_1^{(a, B_2)}$	M_1	$\begin{pmatrix} 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & -\frac{i}{2} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{i}{2} \\ 0 & 0 & \frac{i}{2} & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{i}{2} & 0 & 0 \end{pmatrix}$
\mathbb{X}_{19}	$\mathbb{M}_1^{(a, A_2)}(1, 1)$	M_1	$\begin{pmatrix} -\frac{\sqrt{30}}{30} & 0 & 0 & 0 & 0 & \frac{\sqrt{30}}{20} \\ 0 & \frac{\sqrt{30}}{30} & 0 & 0 & \frac{\sqrt{30}}{20} & 0 \\ 0 & 0 & -\frac{\sqrt{30}}{30} & 0 & 0 & -\frac{\sqrt{30}i}{20} \\ 0 & 0 & 0 & \frac{\sqrt{30}}{30} & \frac{\sqrt{30}i}{20} & 0 \\ 0 & \frac{\sqrt{30}}{20} & 0 & -\frac{\sqrt{30}i}{20} & \frac{\sqrt{30}}{15} & 0 \\ \frac{\sqrt{30}}{20} & 0 & \frac{\sqrt{30}i}{20} & 0 & 0 & -\frac{\sqrt{30}}{15} \end{pmatrix}$
\mathbb{X}_{20}	$\mathbb{M}_1^{(a, A_2)}(1, -1)$	M_1	$\begin{pmatrix} \frac{\sqrt{6}}{6} & 0 & 0 & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{6}}{6} & 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{6}}{6} & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{6}}{6} & 0 & 0 \\ 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{6} & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{6} \end{pmatrix}$

continued ...

Table 6

symbol	type	group	form
\mathbb{X}_{21}	$\mathbb{M}_3^{(a, A_2, 1)}(1, -1)$	M_1	$\begin{pmatrix} -\frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{10} \\ 0 & \frac{\sqrt{5}}{10} & 0 & 0 & -\frac{\sqrt{5}}{10} & 0 \\ 0 & 0 & -\frac{\sqrt{5}}{10} & 0 & 0 & \frac{\sqrt{5}i}{10} \\ 0 & 0 & 0 & \frac{\sqrt{5}}{10} & -\frac{\sqrt{5}i}{10} & 0 \\ 0 & -\frac{\sqrt{5}}{10} & 0 & \frac{\sqrt{5}i}{10} & \frac{\sqrt{5}}{5} & 0 \\ -\frac{\sqrt{5}}{10} & 0 & -\frac{\sqrt{5}i}{10} & 0 & 0 & -\frac{\sqrt{5}}{5} \end{pmatrix}$
\mathbb{X}_{22}	$\mathbb{M}_3^{(a, A_2, 2)}(1, -1)$	M_1	$\begin{pmatrix} \frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{6} \\ 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & \frac{\sqrt{3}}{6} & 0 \\ 0 & 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & \frac{\sqrt{3}i}{6} \\ 0 & 0 & 0 & \frac{\sqrt{3}}{6} & -\frac{\sqrt{3}i}{6} & 0 \\ 0 & \frac{\sqrt{3}}{6} & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 \\ \frac{\sqrt{3}}{6} & 0 & -\frac{\sqrt{3}i}{6} & 0 & 0 & 0 \end{pmatrix}$
\mathbb{X}_{23}	$\mathbb{T}_2^{(a, A_2)}(1, 0)$	M_1	$\begin{pmatrix} \frac{\sqrt{6}}{6} & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{12} \\ 0 & -\frac{\sqrt{6}}{6} & 0 & 0 & -\frac{\sqrt{6}}{12} & 0 \\ 0 & 0 & -\frac{\sqrt{6}}{6} & 0 & 0 & -\frac{\sqrt{6}i}{12} \\ 0 & 0 & 0 & \frac{\sqrt{6}}{6} & \frac{\sqrt{6}i}{12} & 0 \\ 0 & -\frac{\sqrt{6}}{12} & 0 & -\frac{\sqrt{6}i}{12} & 0 & 0 \\ -\frac{\sqrt{6}}{12} & 0 & \frac{\sqrt{6}i}{12} & 0 & 0 & 0 \end{pmatrix}$
\mathbb{X}_{24}	$\mathbb{M}_1^{(a, B_1)}(1, 1)$	M_1	$\begin{pmatrix} 0 & \frac{\sqrt{30}i}{30} & 0 & \frac{\sqrt{30}}{20} & 0 & 0 \\ -\frac{\sqrt{30}i}{30} & 0 & \frac{\sqrt{30}}{20} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{30}}{20} & 0 & -\frac{\sqrt{30}i}{15} & \frac{\sqrt{30}}{20} & 0 \\ \frac{\sqrt{30}}{20} & 0 & \frac{\sqrt{30}i}{15} & 0 & 0 & -\frac{\sqrt{30}}{20} \\ 0 & 0 & \frac{\sqrt{30}}{20} & 0 & 0 & \frac{\sqrt{30}i}{30} \\ 0 & 0 & 0 & -\frac{\sqrt{30}}{20} & -\frac{\sqrt{30}i}{30} & 0 \end{pmatrix}$
\mathbb{X}_{25}	$\mathbb{M}_1^{(a, B_1)}(1, -1)$	M_1	$\begin{pmatrix} 0 & -\frac{\sqrt{6}i}{6} & 0 & 0 & 0 & 0 \\ \frac{\sqrt{6}i}{6} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{6}i}{6} & 0 & 0 \\ 0 & 0 & \frac{\sqrt{6}i}{6} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}i}{6} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{6}i}{6} & 0 \end{pmatrix}$

continued ...

Table 6

symbol	type	group	form
\mathbb{X}_{26}	$\mathbb{M}_3^{(a,B_1,1)}(1,-1)$	M_1	$\begin{pmatrix} 0 & \frac{\sqrt{5}i}{10} & 0 & -\frac{\sqrt{5}}{10} & 0 & 0 \\ -\frac{\sqrt{5}i}{10} & 0 & -\frac{\sqrt{5}}{10} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{5}}{10} & 0 & -\frac{\sqrt{5}i}{5} & -\frac{\sqrt{5}}{10} & 0 \\ -\frac{\sqrt{5}}{10} & 0 & \frac{\sqrt{5}i}{5} & 0 & 0 & \frac{\sqrt{5}}{10} \\ 0 & 0 & -\frac{\sqrt{5}}{10} & 0 & 0 & \frac{\sqrt{5}i}{10} \\ 0 & 0 & 0 & \frac{\sqrt{5}}{10} & -\frac{\sqrt{5}i}{10} & 0 \end{pmatrix}$
\mathbb{X}_{27}	$\mathbb{M}_3^{(a,B_1,2)}(1,-1)$	M_1	$\begin{pmatrix} 0 & \frac{\sqrt{3}i}{6} & 0 & -\frac{\sqrt{3}}{6} & 0 & 0 \\ -\frac{\sqrt{3}i}{6} & 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & \frac{\sqrt{3}}{6} & 0 \\ -\frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{6} \\ 0 & 0 & \frac{\sqrt{3}}{6} & 0 & 0 & -\frac{\sqrt{3}i}{6} \\ 0 & 0 & 0 & -\frac{\sqrt{3}}{6} & \frac{\sqrt{3}i}{6} & 0 \end{pmatrix}$
\mathbb{X}_{28}	$\mathbb{T}_2^{(a,B_1)}(1,0)$	M_1	$\begin{pmatrix} 0 & \frac{\sqrt{6}i}{6} & 0 & \frac{\sqrt{6}}{12} & 0 & 0 \\ -\frac{\sqrt{6}i}{6} & 0 & \frac{\sqrt{6}}{12} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{6}}{12} & 0 & 0 & -\frac{\sqrt{6}}{12} & 0 \\ \frac{\sqrt{6}}{12} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{12} \\ 0 & 0 & -\frac{\sqrt{6}}{12} & 0 & 0 & -\frac{\sqrt{6}i}{6} \\ 0 & 0 & 0 & \frac{\sqrt{6}}{12} & \frac{\sqrt{6}i}{6} & 0 \end{pmatrix}$
\mathbb{X}_{29}	$\mathbb{M}_1^{(a,B_2)}(1,1)$	M_1	$\begin{pmatrix} 0 & \frac{\sqrt{30}}{15} & 0 & -\frac{\sqrt{30}i}{20} & \frac{\sqrt{30}}{20} & 0 \\ \frac{\sqrt{30}}{15} & 0 & \frac{\sqrt{30}i}{20} & 0 & 0 & -\frac{\sqrt{30}}{20} \\ 0 & -\frac{\sqrt{30}i}{20} & 0 & -\frac{\sqrt{30}}{30} & 0 & 0 \\ \frac{\sqrt{30}i}{20} & 0 & -\frac{\sqrt{30}}{30} & 0 & 0 & 0 \\ \frac{\sqrt{30}}{20} & 0 & 0 & 0 & 0 & -\frac{\sqrt{30}}{30} \\ 0 & -\frac{\sqrt{30}}{20} & 0 & 0 & -\frac{\sqrt{30}i}{30} & 0 \end{pmatrix}$
\mathbb{X}_{30}	$\mathbb{M}_1^{(a,B_2)}(1,-1)$	M_1	$\begin{pmatrix} 0 & \frac{\sqrt{6}}{6} & 0 & 0 & 0 & 0 \\ \frac{\sqrt{6}}{6} & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{6}}{6} & 0 & 0 \\ 0 & 0 & \frac{\sqrt{6}}{6} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{6} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{6} & 0 \end{pmatrix}$

continued ...

Table 6

symbol	type	group	form
\mathbb{X}_{31}	$\mathbb{M}_3^{(a,B_2,1)}(1,-1)$	M_1	$\begin{pmatrix} 0 & \frac{\sqrt{5}}{5} & 0 & \frac{\sqrt{5}i}{10} & -\frac{\sqrt{5}}{10} & 0 \\ \frac{\sqrt{5}}{5} & 0 & -\frac{\sqrt{5}i}{10} & 0 & 0 & \frac{\sqrt{5}}{10} \\ 0 & \frac{\sqrt{5}i}{10} & 0 & -\frac{\sqrt{5}}{10} & 0 & 0 \\ -\frac{\sqrt{5}i}{10} & 0 & -\frac{\sqrt{5}}{10} & 0 & 0 & 0 \\ -\frac{\sqrt{5}}{10} & 0 & 0 & 0 & 0 & -\frac{\sqrt{5}}{10} \\ 0 & \frac{\sqrt{5}}{10} & 0 & 0 & -\frac{\sqrt{5}}{10} & 0 \end{pmatrix}$
\mathbb{X}_{32}	$\mathbb{M}_3^{(a,B_2,2)}(1,-1)$	M_1	$\begin{pmatrix} 0 & 0 & 0 & -\frac{\sqrt{3}i}{6} & -\frac{\sqrt{3}}{6} & 0 \\ 0 & 0 & \frac{\sqrt{3}i}{6} & 0 & 0 & \frac{\sqrt{3}}{6} \\ 0 & -\frac{\sqrt{3}i}{6} & 0 & \frac{\sqrt{3}}{6} & 0 & 0 \\ \frac{\sqrt{3}i}{6} & 0 & \frac{\sqrt{3}}{6} & 0 & 0 & 0 \\ -\frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & -\frac{\sqrt{3}}{6} \\ 0 & \frac{\sqrt{3}}{6} & 0 & 0 & -\frac{\sqrt{3}}{6} & 0 \end{pmatrix}$
\mathbb{X}_{33}	$\mathbb{T}_2^{(a,B_2)}(1,0)$	M_1	$\begin{pmatrix} 0 & 0 & 0 & \frac{\sqrt{6}i}{12} & \frac{\sqrt{6}}{12} & 0 \\ 0 & 0 & -\frac{\sqrt{6}i}{12} & 0 & 0 & -\frac{\sqrt{6}}{12} \\ 0 & \frac{\sqrt{6}i}{12} & 0 & \frac{\sqrt{6}}{6} & 0 & 0 \\ -\frac{\sqrt{6}i}{12} & 0 & \frac{\sqrt{6}}{6} & 0 & 0 & 0 \\ \frac{\sqrt{6}}{12} & 0 & 0 & 0 & 0 & -\frac{\sqrt{6}}{6} \\ 0 & -\frac{\sqrt{6}}{12} & 0 & 0 & -\frac{\sqrt{6}}{6} & 0 \end{pmatrix}$
\mathbb{X}_{34}	$\mathbb{M}_3^{(a,A_1)}(1,-1)$	M_1	$\begin{pmatrix} 0 & 0 & \frac{\sqrt{3}}{6} & 0 & 0 & -\frac{\sqrt{3}i}{6} \\ 0 & 0 & 0 & -\frac{\sqrt{3}}{6} & \frac{\sqrt{3}i}{6} & 0 \\ \frac{\sqrt{3}}{6} & 0 & 0 & 0 & 0 & \frac{\sqrt{3}}{6} \\ 0 & -\frac{\sqrt{3}}{6} & 0 & 0 & \frac{\sqrt{3}}{6} & 0 \\ 0 & -\frac{\sqrt{3}i}{6} & 0 & \frac{\sqrt{3}}{6} & 0 & 0 \\ \frac{\sqrt{3}i}{6} & 0 & \frac{\sqrt{3}}{6} & 0 & 0 & 0 \end{pmatrix}$
\mathbb{X}_{35}	$\mathbb{T}_2^{(a,A_1,1)}(1,0)$	M_1	$\begin{pmatrix} 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}i}{4} \\ 0 & 0 & 0 & 0 & -\frac{\sqrt{2}i}{4} & 0 \\ 0 & 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} \\ 0 & 0 & 0 & 0 & \frac{\sqrt{2}}{4} & 0 \\ 0 & \frac{\sqrt{2}i}{4} & 0 & \frac{\sqrt{2}}{4} & 0 & 0 \\ -\frac{\sqrt{2}i}{4} & 0 & \frac{\sqrt{2}}{4} & 0 & 0 & 0 \end{pmatrix}$

continued ...

Table 6

symbol	type	group	form
\mathbb{X}_{36}	$\mathbb{T}_2^{(a,A_1,2)}(1,0)$	M_1	$\begin{pmatrix} 0 & 0 & -\frac{\sqrt{6}}{6} & 0 & 0 & -\frac{\sqrt{6}i}{12} \\ 0 & 0 & 0 & \frac{\sqrt{6}}{6} & \frac{\sqrt{6}i}{12} & 0 \\ -\frac{\sqrt{6}}{6} & 0 & 0 & 0 & 0 & \frac{\sqrt{6}}{12} \\ 0 & \frac{\sqrt{6}}{6} & 0 & 0 & \frac{\sqrt{6}}{12} & 0 \\ 0 & -\frac{\sqrt{6}i}{12} & 0 & \frac{\sqrt{6}}{12} & 0 & 0 \\ \frac{\sqrt{6}i}{12} & 0 & \frac{\sqrt{6}}{12} & 0 & 0 & 0 \end{pmatrix}$

Table 7: Cluster SAMB.

symbol	type	cluster	form
\mathbb{Y}_1	$\mathbb{Q}_0^{(s,A_1)}$	S_1	$\begin{pmatrix} \frac{\sqrt{2}}{2} & \frac{\sqrt{2}}{2} \end{pmatrix}$
\mathbb{Y}_2	$\mathbb{Q}_1^{(s,B_2)}$	S_1	$\begin{pmatrix} \frac{\sqrt{2}}{2} & -\frac{\sqrt{2}}{2} \end{pmatrix}$
\mathbb{Y}_3	$\mathbb{Q}_0^{(s,A_1)}$	S_2	$\begin{pmatrix} \frac{\sqrt{2}}{2} & \frac{\sqrt{2}}{2} \end{pmatrix}$
\mathbb{Y}_4	$\mathbb{Q}_1^{(s,B_2)}$	S_2	$\begin{pmatrix} \frac{\sqrt{2}}{2} & -\frac{\sqrt{2}}{2} \end{pmatrix}$
\mathbb{Y}_5	$\mathbb{Q}_0^{(b,A_1)}$	B_1	$\begin{pmatrix} \frac{\sqrt{2}}{2} & \frac{\sqrt{2}}{2} \end{pmatrix}$
\mathbb{Y}_6	$\mathbb{Q}_1^{(b,B_2)}$	B_1	$\begin{pmatrix} \frac{\sqrt{2}}{2} & -\frac{\sqrt{2}}{2} \end{pmatrix}$
\mathbb{Y}_7	$\mathbb{T}_0^{(b,A_1)}$	B_1	$\begin{pmatrix} \frac{\sqrt{2}i}{2} & \frac{\sqrt{2}i}{2} \end{pmatrix}$
\mathbb{Y}_8	$\mathbb{T}_1^{(b,B_2)}$	B_1	$\begin{pmatrix} \frac{\sqrt{2}i}{2} & -\frac{\sqrt{2}i}{2} \end{pmatrix}$
\mathbb{Y}_9	$\mathbb{Q}_0^{(b,A_1)}$	B_2	$\begin{pmatrix} \frac{1}{2} & \frac{1}{2} & \frac{1}{2} & \frac{1}{2} \end{pmatrix}$
\mathbb{Y}_{10}	$\mathbb{Q}_1^{(b,B_1)}$	B_2	$\begin{pmatrix} \frac{1}{2} & -\frac{1}{2} & \frac{1}{2} & -\frac{1}{2} \end{pmatrix}$
\mathbb{Y}_{11}	$\mathbb{Q}_1^{(b,B_2)}$	B_2	$\begin{pmatrix} \frac{1}{2} & -\frac{1}{2} & -\frac{1}{2} & \frac{1}{2} \end{pmatrix}$
\mathbb{Y}_{12}	$\mathbb{Q}_2^{(b,A_2)}$	B_2	$\begin{pmatrix} \frac{1}{2} & \frac{1}{2} & -\frac{1}{2} & -\frac{1}{2} \end{pmatrix}$
\mathbb{Y}_{13}	$\mathbb{T}_0^{(b,A_1)}$	B_2	$\begin{pmatrix} \frac{i}{2} & \frac{i}{2} & \frac{i}{2} & \frac{i}{2} \end{pmatrix}$
\mathbb{Y}_{14}	$\mathbb{T}_1^{(b,B_1)}$	B_2	$\begin{pmatrix} \frac{i}{2} & -\frac{i}{2} & \frac{i}{2} & -\frac{i}{2} \end{pmatrix}$
\mathbb{Y}_{15}	$\mathbb{T}_1^{(b,B_2)}$	B_2	$\begin{pmatrix} \frac{i}{2} & -\frac{i}{2} & -\frac{i}{2} & \frac{i}{2} \end{pmatrix}$
\mathbb{Y}_{16}	$\mathbb{T}_2^{(b,A_2)}$	B_2	$\begin{pmatrix} \frac{i}{2} & \frac{i}{2} & -\frac{i}{2} & -\frac{i}{2} \end{pmatrix}$
\mathbb{Y}_{17}	$\mathbb{Q}_0^{(b,A_1)}$	B_3	$\begin{pmatrix} \frac{1}{2} & \frac{1}{2} & \frac{1}{2} & \frac{1}{2} \end{pmatrix}$

continued ...

Table 7

symbol	type	cluster	form
\mathbb{Y}_{18}	$\mathbb{Q}_1^{(b, B_1)}$	B_3	$\begin{pmatrix} \frac{1}{2} & -\frac{1}{2} & \frac{1}{2} & -\frac{1}{2} \end{pmatrix}$
\mathbb{Y}_{19}	$\mathbb{Q}_1^{(b, B_2)}$	B_3	$\begin{pmatrix} \frac{1}{2} & -\frac{1}{2} & -\frac{1}{2} & \frac{1}{2} \end{pmatrix}$
\mathbb{Y}_{20}	$\mathbb{Q}_2^{(b, A_2)}$	B_3	$\begin{pmatrix} \frac{1}{2} & \frac{1}{2} & -\frac{1}{2} & -\frac{1}{2} \end{pmatrix}$
\mathbb{Y}_{21}	$\mathbb{T}_0^{(b, A_1)}$	B_3	$\begin{pmatrix} \frac{i}{2} & -\frac{i}{2} & -\frac{i}{2} & \frac{i}{2} \end{pmatrix}$
\mathbb{Y}_{22}	$\mathbb{T}_1^{(b, B_1)}$	B_3	$\begin{pmatrix} \frac{i}{2} & \frac{i}{2} & -\frac{i}{2} & -\frac{i}{2} \end{pmatrix}$
\mathbb{Y}_{23}	$\mathbb{T}_1^{(b, B_2)}$	B_3	$\begin{pmatrix} \frac{i}{2} & \frac{i}{2} & \frac{i}{2} & \frac{i}{2} \end{pmatrix}$
\mathbb{Y}_{24}	$\mathbb{T}_2^{(b, A_2)}$	B_3	$\begin{pmatrix} \frac{i}{2} & -\frac{i}{2} & \frac{i}{2} & -\frac{i}{2} \end{pmatrix}$
\mathbb{Y}_{25}	$\mathbb{Q}_0^{(b, A_1)}$	B_4	$\begin{pmatrix} \frac{1}{2} & \frac{1}{2} & \frac{1}{2} & \frac{1}{2} \end{pmatrix}$
\mathbb{Y}_{26}	$\mathbb{Q}_1^{(b, B_1)}$	B_4	$\begin{pmatrix} \frac{1}{2} & -\frac{1}{2} & \frac{1}{2} & -\frac{1}{2} \end{pmatrix}$
\mathbb{Y}_{27}	$\mathbb{Q}_1^{(b, B_2)}$	B_4	$\begin{pmatrix} \frac{1}{2} & -\frac{1}{2} & -\frac{1}{2} & \frac{1}{2} \end{pmatrix}$
\mathbb{Y}_{28}	$\mathbb{Q}_2^{(b, A_2)}$	B_4	$\begin{pmatrix} \frac{1}{2} & \frac{1}{2} & -\frac{1}{2} & -\frac{1}{2} \end{pmatrix}$
\mathbb{Y}_{29}	$\mathbb{T}_0^{(b, A_1)}$	B_4	$\begin{pmatrix} \frac{i}{2} & -\frac{i}{2} & -\frac{i}{2} & \frac{i}{2} \end{pmatrix}$
\mathbb{Y}_{30}	$\mathbb{T}_1^{(b, B_1)}$	B_4	$\begin{pmatrix} \frac{i}{2} & \frac{i}{2} & -\frac{i}{2} & -\frac{i}{2} \end{pmatrix}$
\mathbb{Y}_{31}	$\mathbb{T}_1^{(b, B_2)}$	B_4	$\begin{pmatrix} \frac{i}{2} & \frac{i}{2} & \frac{i}{2} & \frac{i}{2} \end{pmatrix}$
\mathbb{Y}_{32}	$\mathbb{T}_2^{(b, A_2)}$	B_4	$\begin{pmatrix} \frac{i}{2} & -\frac{i}{2} & \frac{i}{2} & -\frac{i}{2} \end{pmatrix}$

Table 8: Uniform SAMB.

symbol	type	cluster	form
\mathbb{U}_1	$\mathbb{Q}_0^{(s, A_1)}$	S_1	$\begin{pmatrix} \frac{\sqrt{2}}{2} & 0 & 0 & 0 \\ 0 & \frac{\sqrt{2}}{2} & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \end{pmatrix}$
\mathbb{U}_2	$\mathbb{Q}_1^{(s, B_2)}$	S_1	$\begin{pmatrix} \frac{\sqrt{2}}{2} & 0 & 0 & 0 \\ 0 & -\frac{\sqrt{2}}{2} & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \end{pmatrix}$

continued ...

Table 8

symbol	type	cluster	form
\mathbb{U}_3	$\mathbb{Q}_0^{(s,A_1)}$	S_2	$\begin{pmatrix} 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{2}}{2} & 0 \\ 0 & 0 & 0 & \frac{\sqrt{2}}{2} \end{pmatrix}$
\mathbb{U}_4	$\mathbb{Q}_1^{(s,B_2)}$	S_2	$\begin{pmatrix} 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & \frac{\sqrt{2}}{2} & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{2}}{2} \end{pmatrix}$
\mathbb{U}_5	$\mathbb{Q}_0^{(u,A_1)}$	B_1	$\begin{pmatrix} 0 & 0 & \frac{1}{2} & 0 \\ 0 & 0 & 0 & \frac{1}{2} \\ \frac{1}{2} & 0 & 0 & 0 \\ 0 & \frac{1}{2} & 0 & 0 \end{pmatrix}$
\mathbb{U}_6	$\mathbb{Q}_1^{(u,B_2)}$	B_1	$\begin{pmatrix} 0 & 0 & \frac{1}{2} & 0 \\ 0 & 0 & 0 & -\frac{1}{2} \\ \frac{1}{2} & 0 & 0 & 0 \\ 0 & -\frac{1}{2} & 0 & 0 \end{pmatrix}$
\mathbb{U}_7	$\mathbb{T}_0^{(u,A_1)}$	B_1	$\begin{pmatrix} 0 & 0 & -\frac{i}{2} & 0 \\ 0 & 0 & 0 & -\frac{i}{2} \\ \frac{i}{2} & 0 & 0 & 0 \\ 0 & \frac{i}{2} & 0 & 0 \end{pmatrix}$
\mathbb{U}_8	$\mathbb{T}_1^{(u,B_2)}$	B_1	$\begin{pmatrix} 0 & 0 & -\frac{i}{2} & 0 \\ 0 & 0 & 0 & \frac{i}{2} \\ \frac{i}{2} & 0 & 0 & 0 \\ 0 & -\frac{i}{2} & 0 & 0 \end{pmatrix}$
\mathbb{U}_9	$\mathbb{Q}_0^{(u,A_1)}$	B_2	$\begin{pmatrix} 0 & 0 & 0 & \frac{1}{2} \\ 0 & 0 & \frac{1}{2} & 0 \\ 0 & \frac{1}{2} & 0 & 0 \\ \frac{1}{2} & 0 & 0 & 0 \end{pmatrix}$
\mathbb{U}_{10}	$\mathbb{Q}_1^{(u,B_2)}$	B_2	$\begin{pmatrix} 0 & 0 & 0 & \frac{1}{2} \\ 0 & 0 & -\frac{1}{2} & 0 \\ 0 & -\frac{1}{2} & 0 & 0 \\ \frac{1}{2} & 0 & 0 & 0 \end{pmatrix}$

continued ...

Table 8

symbol	type	cluster	form
\mathbb{U}_{11}	$\mathbb{T}_0^{(u, A_1)}$	B_2	$\begin{pmatrix} 0 & 0 & 0 & -\frac{i}{2} \\ 0 & 0 & -\frac{i}{2} & 0 \\ 0 & \frac{i}{2} & 0 & 0 \\ \frac{i}{2} & 0 & 0 & 0 \end{pmatrix}$
\mathbb{U}_{12}	$\mathbb{T}_1^{(u, B_2)}$	B_2	$\begin{pmatrix} 0 & 0 & 0 & -\frac{i}{2} \\ 0 & 0 & \frac{i}{2} & 0 \\ 0 & -\frac{i}{2} & 0 & 0 \\ \frac{i}{2} & 0 & 0 & 0 \end{pmatrix}$
\mathbb{U}_{13}	$\mathbb{Q}_0^{(u, A_1)}$	B_3	$\begin{pmatrix} 0 & \frac{\sqrt{2}}{2} & 0 & 0 \\ \frac{\sqrt{2}}{2} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \end{pmatrix}$
\mathbb{U}_{14}	$\mathbb{T}_1^{(u, B_2)}$	B_3	$\begin{pmatrix} 0 & -\frac{\sqrt{2}i}{2} & 0 & 0 \\ \frac{\sqrt{2}i}{2} & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \end{pmatrix}$
\mathbb{U}_{15}	$\mathbb{Q}_0^{(u, A_1)}$	B_4	$\begin{pmatrix} 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & \frac{\sqrt{2}}{2} \\ 0 & 0 & \frac{\sqrt{2}}{2} & 0 \end{pmatrix}$
\mathbb{U}_{16}	$\mathbb{T}_1^{(u, B_2)}$	B_4	$\begin{pmatrix} 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & -\frac{\sqrt{2}i}{2} \\ 0 & 0 & \frac{\sqrt{2}i}{2} & 0 \end{pmatrix}$

Table 9: Structure SAMB.

symbol	type	cluster	form
\mathbb{F}_1	$\mathbb{Q}_0^{(k, A_1)}$	B_1	$c_{001} + c_{002}$
\mathbb{F}_2	$\mathbb{Q}_1^{(k, B_2)}$	B_1	$c_{001} - c_{002}$

continued ...

Table 9

symbol	type	cluster	form
F ₃	$T_0^{(k,A_1)}$	B ₁	$s_{001} + s_{002}$
F ₄	$T_1^{(k,B_2)}$	B ₁	$s_{001} - s_{002}$
F ₅	$Q_0^{(k,A_1)}$	B ₂	$\frac{\sqrt{2}c_{003}}{2} + \frac{\sqrt{2}c_{004}}{2} + \frac{\sqrt{2}c_{005}}{2} + \frac{\sqrt{2}c_{006}}{2}$
F ₆	$Q_1^{(k,B_1)}$	B ₂	$\frac{\sqrt{2}c_{003}}{2} - \frac{\sqrt{2}c_{004}}{2} + \frac{\sqrt{2}c_{005}}{2} - \frac{\sqrt{2}c_{006}}{2}$
F ₇	$Q_1^{(k,B_2)}$	B ₂	$\frac{\sqrt{2}c_{003}}{2} - \frac{\sqrt{2}c_{004}}{2} - \frac{\sqrt{2}c_{005}}{2} + \frac{\sqrt{2}c_{006}}{2}$
F ₈	$Q_2^{(k,A_2)}$	B ₂	$\frac{\sqrt{2}c_{003}}{2} + \frac{\sqrt{2}c_{004}}{2} - \frac{\sqrt{2}c_{005}}{2} - \frac{\sqrt{2}c_{006}}{2}$
F ₉	$T_0^{(k,A_1)}$	B ₂	$\frac{\sqrt{2}s_{003}}{2} + \frac{\sqrt{2}s_{004}}{2} + \frac{\sqrt{2}s_{005}}{2} + \frac{\sqrt{2}s_{006}}{2}$
F ₁₀	$T_1^{(k,B_1)}$	B ₂	$\frac{\sqrt{2}s_{003}}{2} - \frac{\sqrt{2}s_{004}}{2} + \frac{\sqrt{2}s_{005}}{2} - \frac{\sqrt{2}s_{006}}{2}$
F ₁₁	$T_1^{(k,B_2)}$	B ₂	$\frac{\sqrt{2}s_{003}}{2} - \frac{\sqrt{2}s_{004}}{2} - \frac{\sqrt{2}s_{005}}{2} + \frac{\sqrt{2}s_{006}}{2}$
F ₁₂	$T_2^{(k,A_2)}$	B ₂	$\frac{\sqrt{2}s_{003}}{2} + \frac{\sqrt{2}s_{004}}{2} - \frac{\sqrt{2}s_{005}}{2} - \frac{\sqrt{2}s_{006}}{2}$
F ₁₃	$Q_0^{(k,A_1)}$	B ₃	$\frac{\sqrt{2}c_{007}}{2} + \frac{\sqrt{2}c_{008}}{2} + \frac{\sqrt{2}c_{009}}{2} + \frac{\sqrt{2}c_{010}}{2}$
F ₁₄	$Q_1^{(k,B_1)}$	B ₃	$\frac{\sqrt{2}c_{007}}{2} - \frac{\sqrt{2}c_{008}}{2} + \frac{\sqrt{2}c_{009}}{2} - \frac{\sqrt{2}c_{010}}{2}$
F ₁₅	$Q_1^{(k,B_2)}$	B ₃	$\frac{\sqrt{2}c_{007}}{2} - \frac{\sqrt{2}c_{008}}{2} - \frac{\sqrt{2}c_{009}}{2} + \frac{\sqrt{2}c_{010}}{2}$
F ₁₆	$Q_2^{(k,A_2)}$	B ₃	$\frac{\sqrt{2}c_{007}}{2} + \frac{\sqrt{2}c_{008}}{2} - \frac{\sqrt{2}c_{009}}{2} - \frac{\sqrt{2}c_{010}}{2}$
F ₁₇	$T_0^{(k,A_1)}$	B ₃	$\frac{\sqrt{2}s_{007}}{2} - \frac{\sqrt{2}s_{008}}{2} - \frac{\sqrt{2}s_{009}}{2} + \frac{\sqrt{2}s_{010}}{2}$
F ₁₈	$T_1^{(k,B_1)}$	B ₃	$\frac{\sqrt{2}s_{007}}{2} + \frac{\sqrt{2}s_{008}}{2} - \frac{\sqrt{2}s_{009}}{2} - \frac{\sqrt{2}s_{010}}{2}$
F ₁₉	$T_1^{(k,B_2)}$	B ₃	$\frac{\sqrt{2}s_{007}}{2} + \frac{\sqrt{2}s_{008}}{2} + \frac{\sqrt{2}s_{009}}{2} + \frac{\sqrt{2}s_{010}}{2}$
F ₂₀	$T_2^{(k,A_2)}$	B ₃	$\frac{\sqrt{2}s_{007}}{2} - \frac{\sqrt{2}s_{008}}{2} + \frac{\sqrt{2}s_{009}}{2} - \frac{\sqrt{2}s_{010}}{2}$
F ₂₁	$Q_0^{(k,A_1)}$	B ₄	$\frac{\sqrt{2}c_{011}}{2} + \frac{\sqrt{2}c_{012}}{2} + \frac{\sqrt{2}c_{013}}{2} + \frac{\sqrt{2}c_{014}}{2}$
F ₂₂	$Q_1^{(k,B_1)}$	B ₄	$\frac{\sqrt{2}c_{011}}{2} - \frac{\sqrt{2}c_{012}}{2} + \frac{\sqrt{2}c_{013}}{2} - \frac{\sqrt{2}c_{014}}{2}$
F ₂₃	$Q_1^{(k,B_2)}$	B ₄	$\frac{\sqrt{2}c_{011}}{2} - \frac{\sqrt{2}c_{012}}{2} - \frac{\sqrt{2}c_{013}}{2} + \frac{\sqrt{2}c_{014}}{2}$
F ₂₄	$Q_2^{(k,A_2)}$	B ₄	$\frac{\sqrt{2}c_{011}}{2} + \frac{\sqrt{2}c_{012}}{2} - \frac{\sqrt{2}c_{013}}{2} - \frac{\sqrt{2}c_{014}}{2}$
F ₂₅	$T_0^{(k,A_1)}$	B ₄	$\frac{\sqrt{2}s_{011}}{2} - \frac{\sqrt{2}s_{012}}{2} - \frac{\sqrt{2}s_{013}}{2} + \frac{\sqrt{2}s_{014}}{2}$
F ₂₆	$T_1^{(k,B_1)}$	B ₄	$\frac{\sqrt{2}s_{011}}{2} + \frac{\sqrt{2}s_{012}}{2} - \frac{\sqrt{2}s_{013}}{2} - \frac{\sqrt{2}s_{014}}{2}$
F ₂₇	$T_1^{(k,B_2)}$	B ₄	$\frac{\sqrt{2}s_{011}}{2} + \frac{\sqrt{2}s_{012}}{2} + \frac{\sqrt{2}s_{013}}{2} + \frac{\sqrt{2}s_{014}}{2}$
F ₂₈	$T_2^{(k,A_2)}$	B ₄	$\frac{\sqrt{2}s_{011}}{2} - \frac{\sqrt{2}s_{012}}{2} + \frac{\sqrt{2}s_{013}}{2} - \frac{\sqrt{2}s_{014}}{2}$

Table 10: Polar harmonics.

No.	symbol	rank	irrep.	mul.	comp.	form
1	$\mathbb{Q}_0^{(A_1)}$	0	A_1	—	—	1
2	$\mathbb{Q}_1^{(B_1)}$	1	B_1	—	—	x
3	$\mathbb{Q}_1^{(B_2)}$	1	B_2	—	—	y
4	$\mathbb{Q}_2^{(A_1,1)}$	2	A_1	1	—	$-\frac{x^2}{2} - \frac{y^2}{2} + z^2$
5	$\mathbb{Q}_2^{(A_1,2)}$	2	A_1	2	—	$\frac{\sqrt{3}(x-y)(x+y)}{2}$
6	$\mathbb{Q}_2^{(A_2)}$	2	A_2	—	—	$\sqrt{3}xy$
7	$\mathbb{Q}_2^{(B_1)}$	2	B_1	—	—	$\sqrt{3}xz$
8	$\mathbb{Q}_2^{(B_2)}$	2	B_2	—	—	$\sqrt{3}yz$

Table 11: Axial harmonics.

No.	symbol	rank	irrep.	mul.	comp.	form
1	$\mathbb{G}_1^{(A_2)}$	1	A_2	—	—	Z
2	$\mathbb{G}_1^{(B_1)}$	1	B_1	—	—	Y
3	$\mathbb{G}_1^{(B_2)}$	1	B_2	—	—	X
4	$\mathbb{G}_3^{(A_1)}$	3	A_1	—	—	$\frac{\sqrt{15}XYZ}{2}$
5	$\mathbb{G}_3^{(A_2,1)}$	3	A_2	1	—	$-\frac{Z(3X^2+3Y^2-2Z^2)}{2}$
6	$\mathbb{G}_3^{(A_2,2)}$	3	A_2	2	—	$\frac{\sqrt{15}Z(X-Y)(X+Y)}{2}$
7	$\mathbb{G}_3^{(B_1,1)}$	3	B_1	1	—	$-\frac{Y(3X^2-2Y^2+3Z^2)}{2}$
8	$\mathbb{G}_3^{(B_1,2)}$	3	B_1	2	—	$-\frac{\sqrt{15}Y(X-Z)(X+Z)}{2}$
9	$\mathbb{G}_3^{(B_2,1)}$	3	B_2	1	—	$\frac{X(2X^2-3Y^2-3Z^2)}{2}$
10	$\mathbb{G}_3^{(B_2,2)}$	3	B_2	2	—	$\frac{\sqrt{15}X(Y-Z)(Y+Z)}{2}$

-
- Group info.: Generator = $\{2_{001}|\frac{1}{2}0\frac{1}{2}\}, \{m_{010}|\frac{1}{2}0\frac{1}{2}\}$

Table 12: Conjugacy class (point-group part).

rep. SO	symmetry operations
$\{1 0\}$	$\{1 0\}$
$\{2_{001} \frac{1}{2}0\frac{1}{2}\}$	$\{2_{001} \frac{1}{2}0\frac{1}{2}\}$
$\{m_{010} \frac{1}{2}0\frac{1}{2}\}$	$\{m_{010} \frac{1}{2}0\frac{1}{2}\}$
$\{m_{100} 0\}$	$\{m_{100} 0\}$

Table 13: Symmetry operations.

	No.	SO	No.	SO	No.	SO	No.	SO	No.	SO
	1	$\{1 0\}$	2	$\{2_{001} \frac{1}{2}0\frac{1}{2}\}$	3	$\{m_{010} \frac{1}{2}0\frac{1}{2}\}$	4	$\{m_{100} 0\}$		

Table 14: Character table (point-group part).

	1	2_{001}	m_{010}	m_{100}
A_1	1	1	1	1
A_2	1	1	-1	-1
B_1	1	-1	1	-1
B_2	1	-1	-1	1

Table 15: Parity conversion.

\leftrightarrow	\leftrightarrow	\leftrightarrow	\leftrightarrow
$A_1 (A_2)$	$B_2 (B_1)$	$B_1 (B_2)$	$A_2 (A_1)$

Table 16: Symmetric product, $[\Gamma \otimes \Gamma']_+$.

	A_1	A_2	B_1	B_2
A_1	A_1	A_2	B_1	B_2
A_2		A_1	B_2	B_1
B_1			A_1	A_2
B_2				A_1

Table 17: Anti-symmetric product, $[\Gamma \otimes \Gamma']_-$.

A_1	A_2	B_1	B_2
-	-	-	-

Table 18: Virtual-cluster sites.

No.	position	No.	position	No.	position	No.	position
1	$\begin{pmatrix} 1 & 1 & 0 \end{pmatrix}$	2	$\begin{pmatrix} -1 & -1 & 0 \end{pmatrix}$	3	$\begin{pmatrix} 1 & -1 & 0 \end{pmatrix}$	4	$\begin{pmatrix} -1 & 1 & 0 \end{pmatrix}$

Table 19: Virtual-cluster basis.

symbol	1	2	3	4
$\mathbb{Q}_0^{(A_1)}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$
$\mathbb{Q}_1^{(B_1)}$	$\frac{1}{2}$	$-\frac{1}{2}$	$\frac{1}{2}$	$-\frac{1}{2}$
$\mathbb{Q}_1^{(B_2)}$	$\frac{1}{2}$	$-\frac{1}{2}$	$-\frac{1}{2}$	$\frac{1}{2}$
$\mathbb{Q}_2^{(A_2)}$	$\frac{1}{2}$	$\frac{1}{2}$	$-\frac{1}{2}$	$-\frac{1}{2}$