

Fusion data for a solution to the fusion rules for \mathcal{H} , the principal even half of the Haagerup subfactor.

May 17, 2018

1 notes

The data presented here are the F-matrices for the principle even half of the Haagerup subfactor. In the following, let $\lambda = \iota\sqrt{\frac{-1+\sqrt{13}}{6}}$ as in Morrison-Snyder arxiv:1002.0168v2. Object notation is taken from Grossman-Snyder, arxiv:1102.2631v2.

2 F-Matrices

$$\begin{aligned}
\bullet F_{abc}^d &= \begin{pmatrix} -3\lambda^2 - 1 & -\sqrt{-3\lambda^2 - 1} & \sqrt{-3\lambda^2 - 1} & \sqrt{-3\lambda^2 - 1} \\ -\sqrt{-3\lambda^2 - 1} & \lambda^2 & -\lambda^2 - 1 & -\lambda^2 \\ \sqrt{-3\lambda^2 - 1} & -\lambda^2 - 1 & \lambda^2 & \lambda^2 \\ \sqrt{-3\lambda^2 - 1} & -\lambda^2 & \lambda^2 & \lambda^2 + 1 \end{pmatrix} \\
&\quad - F_{\alpha^2\xi, \alpha^2\xi, \alpha^2\xi}^{\alpha^2\xi} \\
\bullet F_{abc}^d &= \begin{pmatrix} 3\lambda^2 + 1 & \sqrt{-3\lambda^2 - 1} & \sqrt{-3\lambda^2 - 1} & \sqrt{-3\lambda^2 - 1} \\ \sqrt{-3\lambda^2 - 1} & -\lambda^2 & -\lambda^2 - 1 & -\lambda^2 \\ \sqrt{-3\lambda^2 - 1} & -\lambda^2 - 1 & -\lambda^2 & -\lambda^2 \\ -\sqrt{-3\lambda^2 - 1} & \lambda^2 & \lambda^2 & \lambda^2 + 1 \end{pmatrix} \\
&\quad - F_{\alpha^2\xi, \xi, \alpha^2\xi}^{\alpha\xi}, F_{\alpha^2\xi, \alpha\xi, \alpha^2\xi}^{\xi} \\
\bullet F_{abc}^d &= \begin{pmatrix} -3\lambda^2 - 1 & \sqrt{-3\lambda^2 - 1} & \sqrt{-3\lambda^2 - 1} & \sqrt{-3\lambda^2 - 1} \\ -\sqrt{-3\lambda^2 - 1} & -\lambda^2 - 1 & -\lambda^2 & -\lambda^2 \\ \sqrt{-3\lambda^2 - 1} & \lambda^2 & \lambda^2 & \lambda^2 + 1 \\ -\sqrt{-3\lambda^2 - 1} & -\lambda^2 & -\lambda^2 - 1 & -\lambda^2 \end{pmatrix} \\
&\quad - F_{\alpha\xi, \alpha^2\xi, \alpha^2\xi}^{\alpha\xi}, F_{\alpha^2\xi, \alpha\xi, \alpha\xi}^{\alpha^2\xi}
\end{aligned}$$

$$\begin{aligned}
& \bullet F_{abc}^d = \begin{pmatrix} \frac{-3\lambda^2-1}{\sqrt{-3\lambda^2-1}} & -\sqrt{-3\lambda^2-1} & \sqrt{-3\lambda^2-1} & -\sqrt{-3\lambda^2-1} \\ \sqrt{-3\lambda^2-1} & -\lambda^2-1 & \lambda^2 & -\lambda^2 \\ \sqrt{-3\lambda^2-1} & -\lambda^2 & \lambda^2 & -\lambda^2-1 \\ \sqrt{-3\lambda^2-1} & -\lambda^2 & \lambda^2+1 & -\lambda^2 \end{pmatrix} \\
& \quad - F_{\alpha\xi,\alpha\xi,\alpha^2\xi}^{\alpha^2\xi}, F_{\alpha^2\xi,\alpha^2\xi,\alpha\xi}^{\alpha\xi} \\
& \bullet F_{abc}^d = \begin{pmatrix} \frac{-3\lambda^2-1}{\sqrt{-3\lambda^2-1}} & -\sqrt{-3\lambda^2-1} & \sqrt{-3\lambda^2-1} & \sqrt{-3\lambda^2-1} \\ -\sqrt{-3\lambda^2-1} & \lambda^2 & -\lambda^2 & -\lambda^2-1 \\ \sqrt{-3\lambda^2-1} & -\lambda^2 & \lambda^2+1 & \lambda^2 \\ \sqrt{-3\lambda^2-1} & -\lambda^2-1 & \lambda^2 & \lambda^2 \end{pmatrix} \\
& \quad - F_{\alpha\xi,\alpha\xi,\alpha\xi}^{\alpha\xi} \\
& \bullet F_{abc}^d = \begin{pmatrix} \frac{-3\lambda^2-1}{\sqrt{-3\lambda^2-1}} & \sqrt{-3\lambda^2-1} & \sqrt{-3\lambda^2-1} & -\sqrt{-3\lambda^2-1} \\ \sqrt{-3\lambda^2-1} & \lambda^2+1 & \lambda^2 & -\lambda^2 \\ -\sqrt{-3\lambda^2-1} & -\lambda^2 & -\lambda^2 & \lambda^2+1 \\ \sqrt{-3\lambda^2-1} & \lambda^2 & \lambda^2+1 & -\lambda^2 \end{pmatrix} \\
& \quad - F_{\alpha\xi,\xi,\alpha^2\xi}^{\xi}, F_{\alpha^2\xi,\xi,\alpha\xi}^{\xi} \\
& \bullet F_{abc}^d = \begin{pmatrix} \frac{3\lambda^2+1}{\sqrt{-3\lambda^2-1}} & \sqrt{-3\lambda^2-1} & \sqrt{-3\lambda^2-1} & -\sqrt{-3\lambda^2-1} \\ \sqrt{-3\lambda^2-1} & -\lambda^2 & -\lambda^2 & \lambda^2+1 \\ -\sqrt{-3\lambda^2-1} & \lambda^2 & \lambda^2+1 & -\lambda^2 \\ -\sqrt{-3\lambda^2-1} & \lambda^2+1 & \lambda^2 & -\lambda^2 \end{pmatrix} \\
& \quad - F_{\alpha\xi,\xi,\alpha\xi}^{\alpha^2\xi}, F_{\alpha\xi,\alpha^2\xi,\alpha\xi}^{\xi} \\
& \bullet F_{abc}^d = \begin{pmatrix} \frac{-3\lambda^2-1}{\sqrt{-3\lambda^2-1}} & \sqrt{-3\lambda^2-1} & \sqrt{-3\lambda^2-1} & -\sqrt{-3\lambda^2-1} \\ -\sqrt{-3\lambda^2-1} & -\lambda^2 & -\lambda^2 & \lambda^2+1 \\ \sqrt{-3\lambda^2-1} & \lambda^2 & \lambda^2+1 & -\lambda^2 \\ \sqrt{-3\lambda^2-1} & \lambda^2+1 & \lambda^2 & -\lambda^2 \end{pmatrix} \\
& \quad - F_{\xi,\alpha^2\xi,\alpha^2\xi}^{\xi}, F_{\alpha^2\xi,\xi,\xi}^{\alpha^2\xi} \\
& \bullet F_{abc}^d = \begin{pmatrix} \frac{3\lambda^2+1}{\sqrt{-3\lambda^2-1}} & \sqrt{-3\lambda^2-1} & \sqrt{-3\lambda^2-1} & -\sqrt{-3\lambda^2-1} \\ \sqrt{-3\lambda^2-1} & -\lambda^2 & -\lambda^2-1 & \lambda^2 \\ \sqrt{-3\lambda^2-1} & -\lambda^2-1 & -\lambda^2 & \lambda^2 \\ \sqrt{-3\lambda^2-1} & -\lambda^2 & -\lambda^2 & \lambda^2+1 \end{pmatrix} \\
& \quad - F_{\xi,\alpha^2\xi,\alpha\xi}^{\alpha^2\xi}, F_{\alpha\xi,\alpha^2\xi,\xi}^{\alpha^2\xi} \\
& \bullet F_{abc}^d = \begin{pmatrix} \frac{3\lambda^2+1}{\sqrt{-3\lambda^2-1}} & \sqrt{-3\lambda^2-1} & -\sqrt{-3\lambda^2-1} & -\sqrt{-3\lambda^2-1} \\ \sqrt{-3\lambda^2-1} & -\lambda^2 & \lambda^2 & \lambda^2+1 \\ \sqrt{-3\lambda^2-1} & -\lambda^2 & \lambda^2+1 & \lambda^2 \\ -\sqrt{-3\lambda^2-1} & \lambda^2+1 & -\lambda^2 & -\lambda^2 \end{pmatrix}
\end{aligned}$$

$$\begin{aligned}
& - F_{\xi, \alpha\xi, \alpha^2\xi}^{\alpha\xi}, F_{\alpha^2\xi, \alpha\xi, \xi}^{\alpha\xi} \\
\bullet F_{abc}^d &= \begin{pmatrix} \frac{-3\lambda^2-1}{-\sqrt{-3\lambda^2-1}} & \frac{\sqrt{-3\lambda^2-1}}{-\lambda^2} & \frac{-\sqrt{-3\lambda^2-1}}{\lambda^2+1} & \frac{\sqrt{-3\lambda^2-1}}{-\lambda^2} \\ \frac{\sqrt{-3\lambda^2-1}}{-\sqrt{-3\lambda^2-1}} & \lambda^2+1 & -\lambda^2 & \lambda^2 \\ -\sqrt{-3\lambda^2-1} & -\lambda^2 & \lambda^2 & -\lambda^2-1 \end{pmatrix} \\
& - F_{\xi, \alpha\xi, \alpha\xi}^{\xi}, F_{\alpha\xi, \xi, \xi}^{\alpha\xi} \\
\bullet F_{abc}^d &= \begin{pmatrix} \frac{-3\lambda^2-1}{\sqrt{-3\lambda^2-1}} & \frac{\sqrt{-3\lambda^2-1}}{\lambda^2+1} & \frac{-\sqrt{-3\lambda^2-1}}{-\lambda^2} & \frac{\sqrt{-3\lambda^2-1}}{\lambda^2} \\ \frac{\sqrt{-3\lambda^2-1}}{\sqrt{-3\lambda^2-1}} & \lambda^2 & -\lambda^2 & \lambda^2+1 \\ -\sqrt{-3\lambda^2-1} & -\lambda^2 & \lambda^2+1 & -\lambda^2 \end{pmatrix} \\
& - F_{\xi, \alpha\xi, \xi}^{\alpha^2\xi}, F_{\xi, \alpha^2\xi, \xi}^{\alpha\xi} \\
\bullet F_{abc}^d &= \begin{pmatrix} \frac{-3\lambda^2-1}{\sqrt{-3\lambda^2-1}} & \frac{-\sqrt{-3\lambda^2-1}}{-\lambda^2} & \frac{\sqrt{-3\lambda^2-1}}{\lambda^2} & \frac{\sqrt{-3\lambda^2-1}}{\lambda^2+1} \\ \frac{\sqrt{-3\lambda^2-1}}{\sqrt{-3\lambda^2-1}} & -\lambda^2 & \lambda^2+1 & \lambda^2 \\ -\sqrt{-3\lambda^2-1} & \lambda^2+1 & -\lambda^2 & -\lambda^2 \end{pmatrix} \\
& - F_{\xi, \xi, \alpha^2\xi}^{\alpha^2\xi}, F_{\alpha^2\xi, \alpha^2\xi, \xi}^{\xi} \\
\bullet F_{abc}^d &= \begin{pmatrix} \frac{-3\lambda^2-1}{\sqrt{-3\lambda^2-1}} & \frac{-\sqrt{-3\lambda^2-1}}{-\lambda^2} & \frac{\sqrt{-3\lambda^2-1}}{\lambda^2+1} & \frac{-\sqrt{-3\lambda^2-1}}{-\lambda^2} \\ \frac{-\sqrt{-3\lambda^2-1}}{\sqrt{-3\lambda^2-1}} & \lambda^2+1 & -\lambda^2 & \lambda^2 \\ \sqrt{-3\lambda^2-1} & -\lambda^2 & \lambda^2 & -\lambda^2-1 \end{pmatrix} \\
& - F_{\xi, \xi, \alpha\xi}^{\alpha\xi}, F_{\alpha\xi, \alpha\xi, \xi}^{\xi} \\
\bullet F_{abc}^d &= \begin{pmatrix} \frac{-3\lambda^2-1}{-\sqrt{-3\lambda^2-1}} & \frac{-\sqrt{-3\lambda^2-1}}{\lambda^2+1} & \frac{\sqrt{-3\lambda^2-1}}{-\lambda^2} & \frac{\sqrt{-3\lambda^2-1}}{-\lambda^2} \\ \frac{\sqrt{-3\lambda^2-1}}{\sqrt{-3\lambda^2-1}} & -\lambda^2 & \lambda^2 & \lambda^2+1 \\ \sqrt{-3\lambda^2-1} & -\lambda^2 & \lambda^2+1 & \lambda^2 \end{pmatrix} \\
& - F_{\xi, \xi, \xi}^{\xi} \\
\bullet F_{abc}^d &= \begin{pmatrix} \frac{-\lambda^2}{\lambda^2} & \frac{-\lambda^2}{\frac{1}{2}(i\sqrt{1-3\lambda^2}-\lambda^2)} & \frac{\frac{1}{2}(i\sqrt{1-3\lambda^2}-\lambda^2)}{-\lambda^2} \\ \frac{1}{2}(\lambda^2-i\sqrt{1-3\lambda^2}) & \frac{1}{2}(i\sqrt{1-3\lambda^2}-\lambda^2) & \frac{-\lambda^2}{\lambda^2} \end{pmatrix} \\
& - F_{\alpha^2\xi, \alpha\xi, \alpha^2\xi}^{\alpha^2\xi}, F_{\alpha^2\xi, \alpha^2\xi, \alpha^2\xi}^{\alpha\xi} \\
\bullet F_{abc}^d &= \begin{pmatrix} \frac{1}{2}(-\lambda^2-i\sqrt{1-3\lambda^2}) & -\lambda^2 & \frac{-\lambda^2}{\frac{1}{2}(-\lambda^2-i\sqrt{1-3\lambda^2})} \\ -\lambda^2 & \lambda^2 & \frac{1}{2}(-\lambda^2-i\sqrt{1-3\lambda^2}) \\ -\lambda^2 & \frac{1}{2}(-\lambda^2-i\sqrt{1-3\lambda^2}) & \lambda^2 \end{pmatrix}
\end{aligned}$$

$$\begin{aligned}
& - F_{\alpha^2\xi, \alpha\xi, \alpha^2\xi}^{\alpha\xi} \\
\bullet \quad F_{abc}^d &= \begin{pmatrix} \lambda^2 & -\lambda^2 & \frac{1}{2}(\lambda^2 - i\sqrt{1-3\lambda^2}) \\ -\lambda^2 & \frac{1}{2}(i\sqrt{1-3\lambda^2} - \lambda^2) & \lambda^2 \\ \frac{1}{2}(\lambda^2 - i\sqrt{1-3\lambda^2}) & \lambda^2 & \lambda^2 \end{pmatrix} \\
& - F_{\alpha^2\xi, \xi, \alpha^2\xi}^{\xi} \\
\bullet \quad F_{abc}^d &= \begin{pmatrix} -\lambda^2 & \lambda^2 & \frac{1}{2}(\lambda^2 + i\sqrt{1-3\lambda^2}) \\ -\lambda^2 & \frac{1}{2}(-\lambda^2 - i\sqrt{1-3\lambda^2}) & -\lambda^2 \\ \frac{1}{2}(-\lambda^2 - i\sqrt{1-3\lambda^2}) & -\lambda^2 & \lambda^2 \end{pmatrix} \\
& - F_{\alpha\xi, \alpha^2\xi, \alpha^2\xi}^{\alpha^2\xi}, F_{\alpha^2\xi, \alpha^2\xi, \alpha\xi}^{\alpha^2\xi} \\
\bullet \quad F_{abc}^d &= \begin{pmatrix} -\lambda^2 & \frac{1}{2}(i\sqrt{1-3\lambda^2} - \lambda^2) & \lambda^2 \\ \frac{1}{2}(\lambda^2 - i\sqrt{1-3\lambda^2}) & \lambda^2 & \lambda^2 \\ \lambda^2 & -\lambda^2 & \frac{1}{2}(\lambda^2 - i\sqrt{1-3\lambda^2}) \end{pmatrix} \\
& - F_{\alpha\xi, \alpha^2\xi, \alpha^2\xi}^{\xi}, F_{\alpha^2\xi, \xi, \alpha\xi}^{\alpha^2\xi} \\
\bullet \quad F_{abc}^d &= \begin{pmatrix} \frac{1}{2}(i\sqrt{1-3\lambda^2} - \lambda^2) & -\lambda^2 & -\lambda^2 \\ -\lambda^2 & \lambda^2 & \frac{1}{2}(i\sqrt{1-3\lambda^2} - \lambda^2) \\ -\lambda^2 & \frac{1}{2}(i\sqrt{1-3\lambda^2} - \lambda^2) & \lambda^2 \end{pmatrix} \\
& - F_{\alpha\xi, \alpha^2\xi, \alpha\xi}^{\alpha^2\xi} \\
\bullet \quad F_{abc}^d &= \begin{pmatrix} -\lambda^2 & \frac{1}{2}(\lambda^2 - i\sqrt{1-3\lambda^2}) & -\lambda^2 \\ \frac{1}{2}(i\sqrt{1-3\lambda^2} - \lambda^2) & \lambda^2 & \lambda^2 \\ \lambda^2 & \lambda^2 & \frac{1}{2}(i\sqrt{1-3\lambda^2} - \lambda^2) \end{pmatrix} \\
& - F_{\alpha\xi, \alpha\xi, \alpha^2\xi}^{\alpha\xi}, F_{\alpha^2\xi, \alpha\xi, \alpha\xi}^{\alpha\xi} \\
\bullet \quad F_{abc}^d &= \begin{pmatrix} -\lambda^2 & \lambda^2 & \frac{1}{2}(-\lambda^2 - i\sqrt{1-3\lambda^2}) \\ -\lambda^2 & \frac{1}{2}(-\lambda^2 - i\sqrt{1-3\lambda^2}) & \lambda^2 \\ \frac{1}{2}(\lambda^2 + i\sqrt{1-3\lambda^2}) & \lambda^2 & \lambda^2 \end{pmatrix} \\
& - F_{\alpha\xi, \alpha\xi, \alpha^2\xi}^{\xi}, F_{\alpha^2\xi, \xi, \alpha\xi}^{\alpha\xi} \\
\bullet \quad F_{abc}^d &= \begin{pmatrix} -\lambda^2 & \frac{1}{2}(-\lambda^2 - i\sqrt{1-3\lambda^2}) & \lambda^2 \\ \frac{1}{2}(\lambda^2 + i\sqrt{1-3\lambda^2}) & \lambda^2 & \lambda^2 \\ -\lambda^2 & \lambda^2 & \frac{1}{2}(-\lambda^2 - i\sqrt{1-3\lambda^2}) \end{pmatrix} \\
& - F_{\alpha\xi, \alpha\xi, \alpha\xi}^{\alpha^2\xi}, F_{\alpha\xi, \alpha^2\xi, \alpha\xi}^{\alpha\xi} \\
\bullet \quad F_{abc}^d &= \begin{pmatrix} \lambda^2 & -\lambda^2 & \frac{1}{2}(-\lambda^2 - i\sqrt{1-3\lambda^2}) \\ \lambda^2 & \frac{1}{2}(\lambda^2 + i\sqrt{1-3\lambda^2}) & \lambda^2 \\ \frac{1}{2}(\lambda^2 + i\sqrt{1-3\lambda^2}) & \lambda^2 & -\lambda^2 \end{pmatrix}
\end{aligned}$$

$$\begin{aligned}
& - F_{\alpha\xi,\xi,\alpha^2\xi}^{\alpha\xi}, F_{\alpha^2\xi,\alpha\xi,\alpha\xi}^\xi \\
\bullet F_{abc}^d &= \begin{pmatrix} \frac{1}{2}(i\sqrt{1-3\lambda^2}-\lambda^2) & \lambda^2 & -\lambda^2 \\ \lambda^2 & \lambda^2 & \frac{1}{2}(\lambda^2-i\sqrt{1-3\lambda^2}) \\ \lambda^2 & \frac{1}{2}(i\sqrt{1-3\lambda^2}-\lambda^2) & -\lambda^2 \end{pmatrix} \\
& - F_{\alpha\xi,\xi,\alpha\xi}^{\alpha\xi}, F_{\alpha\xi,\alpha\xi,\alpha\xi}^\xi \\
\bullet F_{abc}^d &= \begin{pmatrix} \lambda^2 & \frac{1}{2}(\lambda^2+i\sqrt{1-3\lambda^2}) & -\lambda^2 \\ \frac{1}{2}(\lambda^2+i\sqrt{1-3\lambda^2}) & \lambda^2 & \lambda^2 \\ -\lambda^2 & \lambda^2 & \frac{1}{2}(-\lambda^2-i\sqrt{1-3\lambda^2}) \end{pmatrix} \\
& - F_{\alpha\xi,\xi,\alpha\xi}^\xi \\
\bullet F_{abc}^d &= \begin{pmatrix} \lambda^2 & \lambda^2 & \frac{1}{2}(\lambda^2-i\sqrt{1-3\lambda^2}) \\ -\lambda^2 & \frac{1}{2}(\lambda^2-i\sqrt{1-3\lambda^2}) & \lambda^2 \\ \frac{1}{2}(i\sqrt{1-3\lambda^2}-\lambda^2) & \lambda^2 & -\lambda^2 \end{pmatrix} \\
& - F_{\xi,\alpha^2\xi,\alpha\xi}^{\alpha\xi}, F_{\alpha\xi,\alpha\xi,\xi}^{\alpha^2\xi} \\
\bullet F_{abc}^d &= \begin{pmatrix} \frac{1}{2}(\lambda^2+i\sqrt{1-3\lambda^2}) & \lambda^2 & \lambda^2 \\ -\lambda^2 & \lambda^2 & \frac{1}{2}(-\lambda^2-i\sqrt{1-3\lambda^2}) \\ \lambda^2 & \frac{1}{2}(\lambda^2+i\sqrt{1-3\lambda^2}) & -\lambda^2 \end{pmatrix} \\
& - F_{\xi,\alpha^2\xi,\alpha\xi}^\xi, F_{\alpha\xi,\xi,\xi}^{\alpha^2\xi} \\
\bullet F_{abc}^d &= \begin{pmatrix} \lambda^2 & -\lambda^2 & \frac{1}{2}(\lambda^2+i\sqrt{1-3\lambda^2}) \\ -\lambda^2 & \frac{1}{2}(-\lambda^2-i\sqrt{1-3\lambda^2}) & \lambda^2 \\ \frac{1}{2}(\lambda^2+i\sqrt{1-3\lambda^2}) & \lambda^2 & \lambda^2 \end{pmatrix} \\
& - F_{\xi,\alpha^2\xi,\xi}^{\alpha^2\xi} \\
\bullet F_{abc}^d &= \begin{pmatrix} -\lambda^2 & \frac{1}{2}(\lambda^2+i\sqrt{1-3\lambda^2}) & \lambda^2 \\ \frac{1}{2}(-\lambda^2-i\sqrt{1-3\lambda^2}) & \lambda^2 & -\lambda^2 \\ \lambda^2 & \lambda^2 & \frac{1}{2}(\lambda^2+i\sqrt{1-3\lambda^2}) \end{pmatrix} \\
& - F_{\xi,\alpha\xi,\alpha^2\xi}^{\alpha^2\xi}, F_{\alpha^2\xi,\alpha^2\xi,\xi}^{\alpha\xi} \\
\bullet F_{abc}^d &= \begin{pmatrix} \frac{1}{2}(i\sqrt{1-3\lambda^2}-\lambda^2) & \lambda^2 & \lambda^2 \\ -\lambda^2 & -\lambda^2 & \frac{1}{2}(\lambda^2-i\sqrt{1-3\lambda^2}) \\ \lambda^2 & \frac{1}{2}(i\sqrt{1-3\lambda^2}-\lambda^2) & \lambda^2 \end{pmatrix} \\
& - F_{\xi,\alpha\xi,\alpha^2\xi}^\xi, F_{\xi,\alpha^2\xi,\alpha^2\xi}^{\alpha^2\xi}, F_{\alpha^2\xi,\xi,\xi}^{\alpha\xi}, F_{\alpha^2\xi,\alpha^2\xi,\xi}^{\alpha^2\xi} \\
\bullet F_{abc}^d &= \begin{pmatrix} -\lambda^2 & -\lambda^2 & \frac{1}{2}(\lambda^2-i\sqrt{1-3\lambda^2}) \\ \lambda^2 & \frac{1}{2}(i\sqrt{1-3\lambda^2}-\lambda^2) & \lambda^2 \\ \frac{1}{2}(i\sqrt{1-3\lambda^2}-\lambda^2) & \lambda^2 & \lambda^2 \end{pmatrix}
\end{aligned}$$

$$\begin{aligned}
& - F_{\xi, \alpha \xi, \alpha \xi}^{\alpha^2 \xi}, F_{\alpha \xi, \alpha^2 \xi, \xi}^{\alpha \xi} \\
\bullet F_{abc}^d &= \begin{pmatrix} \frac{1}{2}(-\lambda^2 - i\sqrt{1-3\lambda^2}) & \lambda^2 & \lambda^2 \\ \lambda^2 & \lambda^2 & \frac{1}{2}(-\lambda^2 - i\sqrt{1-3\lambda^2}) \\ -\lambda^2 & \frac{1}{2}(\lambda^2 + i\sqrt{1-3\lambda^2}) & -\lambda^2 \end{pmatrix} \\
& - F_{\xi, \alpha \xi, \alpha \xi}^{\alpha \xi}, F_{\alpha \xi, \alpha \xi, \xi}^{\alpha \xi} \\
\bullet F_{abc}^d &= \begin{pmatrix} \lambda^2 & \frac{1}{2}(\lambda^2 - i\sqrt{1-3\lambda^2}) & -\lambda^2 \\ \frac{1}{2}(\lambda^2 - i\sqrt{1-3\lambda^2}) & \lambda^2 & \lambda^2 \\ -\lambda^2 & \lambda^2 & \frac{1}{2}(i\sqrt{1-3\lambda^2} - \lambda^2) \end{pmatrix} \\
& - F_{\xi, \alpha \xi, \xi}^{\alpha \xi} \\
\bullet F_{abc}^d &= \begin{pmatrix} \frac{1}{2}(\lambda^2 - i\sqrt{1-3\lambda^2}) & -\lambda^2 & \lambda^2 \\ \lambda^2 & \lambda^2 & \frac{1}{2}(\lambda^2 - i\sqrt{1-3\lambda^2}) \\ \lambda^2 & \frac{1}{2}(i\sqrt{1-3\lambda^2} - \lambda^2) & -\lambda^2 \end{pmatrix} \\
& - F_{\xi, \xi, \alpha^2 \xi}^{\alpha \xi}, F_{\alpha^2 \xi, \alpha \xi, \xi}^{\xi} \\
\bullet F_{abc}^d &= \begin{pmatrix} \lambda^2 & \frac{1}{2}(\lambda^2 + i\sqrt{1-3\lambda^2}) & \lambda^2 \\ \frac{1}{2}(-\lambda^2 - i\sqrt{1-3\lambda^2}) & -\lambda^2 & \lambda^2 \\ \lambda^2 & -\lambda^2 & \frac{1}{2}(-\lambda^2 - i\sqrt{1-3\lambda^2}) \end{pmatrix} \\
& - F_{\xi, \xi, \alpha^2 \xi}^{\xi}, F_{\xi, \alpha^2 \xi, \alpha^2 \xi}^{\alpha \xi}, F_{\alpha^2 \xi, \xi, \xi}^{\xi}, F_{\alpha^2 \xi, \alpha \xi, \xi}^{\alpha^2 \xi} \\
\bullet F_{abc}^d &= \begin{pmatrix} \frac{1}{2}(-\lambda^2 - i\sqrt{1-3\lambda^2}) & -\lambda^2 & \lambda^2 \\ \lambda^2 & -\lambda^2 & \frac{1}{2}(-\lambda^2 - i\sqrt{1-3\lambda^2}) \\ \lambda^2 & \frac{1}{2}(\lambda^2 + i\sqrt{1-3\lambda^2}) & \lambda^2 \end{pmatrix} \\
& - F_{\xi, \xi, \alpha \xi}^{\alpha^2 \xi}, F_{\alpha \xi, \alpha^2 \xi, \xi}^{\xi}, F_{\alpha^2 \xi, \xi, \alpha^2 \xi}^{\alpha^2 \xi}, F_{\alpha^2 \xi, \alpha^2 \xi, \alpha^2 \xi}^{\xi} \\
\bullet F_{abc}^d &= \begin{pmatrix} \lambda^2 & \lambda^2 & \frac{1}{2}(i\sqrt{1-3\lambda^2} - \lambda^2) \\ \lambda^2 & \frac{1}{2}(i\sqrt{1-3\lambda^2} - \lambda^2) & \lambda^2 \\ \frac{1}{2}(\lambda^2 - i\sqrt{1-3\lambda^2}) & -\lambda^2 & -\lambda^2 \end{pmatrix} \\
& - F_{\xi, \xi, \alpha \xi}^{\xi}, F_{\alpha \xi, \xi, \xi}^{\xi} \\
\bullet F_{abc}^d &= \begin{pmatrix} \lambda^2 & \frac{1}{2}(i\sqrt{1-3\lambda^2} - \lambda^2) & \lambda^2 \\ \frac{1}{2}(\lambda^2 - i\sqrt{1-3\lambda^2}) & -\lambda^2 & -\lambda^2 \\ \lambda^2 & \lambda^2 & \frac{1}{2}(i\sqrt{1-3\lambda^2} - \lambda^2) \end{pmatrix} \\
& - F_{\xi, \xi, \xi}^{\alpha^2 \xi}, F_{\xi, \alpha^2 \xi, \xi}^{\xi}, F_{\alpha \xi, \xi, \alpha^2 \xi}^{\alpha^2 \xi}, F_{\alpha^2 \xi, \alpha^2 \xi, \alpha \xi}^{\xi} \\
\bullet F_{abc}^d &= \begin{pmatrix} \lambda^2 & \lambda^2 & \frac{1}{2}(\lambda^2 + i\sqrt{1-3\lambda^2}) \\ \lambda^2 & \frac{1}{2}(-\lambda^2 - i\sqrt{1-3\lambda^2}) & -\lambda^2 \\ \frac{1}{2}(-\lambda^2 - i\sqrt{1-3\lambda^2}) & \lambda^2 & -\lambda^2 \end{pmatrix}
\end{aligned}$$

[illegible]

$$\begin{aligned}
& F_{\alpha^2\xi,\alpha^2,\alpha^2\xi}^{\alpha\xi}, F_{\alpha^2\xi,\xi,1}^{\alpha^2}, F_{\alpha^2\xi,\xi,1}^{\xi}, F_{\alpha^2\xi,\xi,1}^{\alpha\xi}, F_{\alpha^2\xi,\xi,1}^{\alpha^2\xi}, F_{\alpha^2\xi,\xi,\alpha}^1, F_{\alpha^2\xi,\xi,\alpha}^{\alpha^2\xi}, \\
& F_{\alpha^2\xi,\xi,\alpha^2}^{\alpha}, F_{\alpha^2\xi,\xi,\alpha^2}^{\xi}, F_{\alpha^2\xi,\xi,\xi}^1, F_{\alpha^2\xi,\xi,\xi}^{\alpha}, F_{\alpha^2\xi,\xi,\xi}^{\alpha^2}, F_{\alpha^2\xi,\xi,\alpha\xi}^1, F_{\alpha^2\xi,\xi,\alpha\xi}^{\alpha}, \\
& F_{\alpha^2\xi,\xi,\alpha\xi}^{\alpha^2}, F_{\alpha^2\xi,\xi,\alpha^2\xi}^1, F_{\alpha^2\xi,\xi,\alpha^2\xi}^{\alpha}, F_{\alpha^2\xi,\xi,\alpha^2\xi}^{\alpha^2}, F_{\alpha^2\xi,\alpha\xi,1}^{\alpha}, F_{\alpha^2\xi,\alpha\xi,1}^{\xi}, F_{\alpha^2\xi,\alpha\xi,1}^{\alpha\xi}, \\
& F_{\alpha^2\xi,\alpha\xi,1}^{\alpha^2\xi}, F_{\alpha^2\xi,\alpha\xi,\alpha}^{\alpha^2}, F_{\alpha^2\xi,\alpha\xi,\alpha}^{\alpha^2\xi}, F_{\alpha^2\xi,\alpha\xi,\alpha^2}^1, F_{\alpha^2\xi,\alpha\xi,\alpha^2}^{\xi}, F_{\alpha^2\xi,\alpha\xi,\xi}^1, F_{\alpha^2\xi,\alpha\xi,\xi}^{\alpha^2}, \\
& F_{\alpha^2\xi,\alpha\xi,\alpha\xi}^1, F_{\alpha^2\xi,\alpha\xi,\alpha\xi}^{\alpha}, F_{\alpha^2\xi,\alpha\xi,\alpha\xi}^{\alpha^2}, F_{\alpha^2\xi,\alpha\xi,\alpha^2\xi}^1, F_{\alpha^2\xi,\alpha\xi,\alpha^2\xi}^{\alpha}, F_{\alpha^2\xi,\alpha\xi,\alpha^2\xi}^{\alpha^2}, \\
& F_{\alpha^2\xi,\alpha^2\xi,1}^1, F_{\alpha^2\xi,\alpha^2\xi,1}^{\xi}, F_{\alpha^2\xi,\alpha^2\xi,1}^{\alpha\xi}, F_{\alpha^2\xi,\alpha^2\xi,1}^{\alpha^2\xi}, F_{\alpha^2\xi,\alpha^2\xi,\alpha}^{\alpha}, F_{\alpha^2\xi,\alpha^2\xi,\alpha}^{\alpha^2\xi}, \\
& F_{\alpha^2\xi,\alpha^2\xi,\alpha^2}^{\alpha^2}, F_{\alpha^2\xi,\alpha^2\xi,\alpha^2}^{\xi}, F_{\alpha^2\xi,\alpha^2\xi,\xi}^1, F_{\alpha^2\xi,\alpha^2\xi,\xi}^{\alpha^2}, F_{\alpha^2\xi,\alpha^2\xi,\alpha\xi}^1, F_{\alpha^2\xi,\alpha^2\xi,\alpha\xi}^{\alpha^2}, \\
& F_{\alpha^2\xi,\alpha^2\xi,\alpha^2\xi}^1, F_{\alpha^2\xi,\alpha^2\xi,\alpha^2\xi}^{\alpha^2}
\end{aligned}$$

3 Pivotal Structures

There is 1 pivotal structures.

- $\epsilon_1 = 1$, $\epsilon_\alpha = 1$, $\epsilon_{\alpha^2} = 1$, $\epsilon_\xi = 1$, $\epsilon_{\alpha\xi} = 1$, and $\epsilon_{\alpha^2\xi} = 1$ which is spherical with quantum dimensions $q_1 = 1$, $q_\alpha = 1$, $q_{\alpha^2} = 1$, $q_\xi = \frac{2}{\sqrt{13}-3}$, $q_{\alpha\xi} = \frac{2}{\sqrt{13}-3}$, and $q_{\alpha^2\xi} = \frac{2}{\sqrt{13}-3}$.