$$\mathcal{A}_{2112} = \mathcal{A}@\{X_{3,8,7,2},\ X_{7,10,9,1},\ X_{10,11,4,9},\ X_{8,6,5,11}\};$$

$$\mathcal{A}_{1221} = \mathcal{A}@\{X_{2,8,7,1},\ X_{3,10,9,8},\ X_{10,6,11,9},\ X_{11,5,4,7}\};$$

$$\mathcal{A}_{2211} = \mathcal{A}@\{X_{3,8,7,2},\ X_{8,6,9,7},\ X_{9,11,10,1},\ X_{11,5,4,10}\};$$

$$\mathcal{A}_{1122} = \mathcal{A}@\{X_{2,8,7,1},\ X_{8,9,4,7},\ X_{3,11,10,9},\ X_{11,6,5,10}\};$$

$$\mathcal{A}_{11} = \mathcal{A}@\{X_{2,8,7,1},\ X_{8,5,4,7},\ P_{3,6}\};\quad \mathcal{A}_{22} = \mathcal{A}@\{X_{3,8,7,2},\ X_{8,6,5,7},\ P_{1,4}\};$$

$$\mathcal{A}_{\phi} = \mathcal{A}@\{P_{1,4},\ P_{2,5},\ P_{3,6}\};$$

$$g_+[z\_] := z^{1/2} + z^{-1/2};\quad g_-[z\_] := z^{1/2} - z^{-1/2};$$

$$g_+[\tau_1]\, g_-[\tau_2]\, \mathcal{A}_{2112} - g_-[\tau_2]\, g_+[\tau_3]\, \mathcal{A}_{1221} - g_-[\tau_3/\tau_1]\, (\mathcal{A}_{2211} + \mathcal{A}_{1122}) +$$
$$g_-[\tau_2\,\tau_3/\tau_1]\, g_+[\tau_3]\, \mathcal{A}_{11} - g_+[\tau_1]\, g_-[\tau_1\,\tau_2/\tau_3]\, \mathcal{A}_{22} \equiv g_-\left[\tau_3^2/\tau_1^2\right] \mathcal{A}_{\phi}$$