

$$\begin{aligned}
 F_2 [ \{-1, i_{\theta\_}, j_{\theta\_}\}, \{1, i_{1\_}, j_{1\_}\} ] &= - \frac{(\tau_1 - 1) (\tau_3 - 1) g_{1,j_1,i_{\theta}} g_{2,i_1,i_{\theta}} g_{3,j_{\theta},i_1}}{\tau_1 (\tau_2 - 1) \tau_2} + \frac{(\tau_1 - 1) (\tau_3 - 1) g_{1,j_1,i_{\theta}} g_{2,i_1,j_{\theta}} g_{3,j_{\theta},i_1}}{\tau_1 (\tau_2 - 1)} \\
 &\quad + \frac{(\tau_1 - 1) (\tau_3 - 1) g_{1,j_1,i_{\theta}} g_{2,j_1,i_{\theta}} g_{3,j_{\theta},i_1}}{\tau_1 (\tau_2 - 1) \tau_2} - \frac{(\tau_1 - 1) (\tau_3 - 1) g_{1,j_1,i_{\theta}} g_{2,j_1,j_{\theta}} g_{3,j_{\theta},i_1}}{\tau_1 (\tau_2 - 1)};
 \end{aligned}$$