

/* Mathematica notebook for the transmembrane potential expression for an
myelinated axon that is under a transversal DC electric field exposure */
/* Step 1 : Solve equations (A5) - (A12) in Appendix */

Solve[-E0 a + C0 / a == a A1 + C1 / a
&& S0 (-E0 - C0 / a^2) == (A1 - C1 / a^2) S1
&& b A1 + C1 / b == b A2 + C2 / b
&& S1 (A1 - C1 / b^2) == S2 (A2 - C2 / b^2)
&& c A2 + C2 / c == c A3 + C3 / c
&& S2 (A2 - C2 / c^2) == S3 (A3 - C3 / c^2)
&& d A3 + C3 / d == d A4
&& S3 (A3 - C3 / d^2) == S4 A4, {C0, A1, C1, A2, C2, A3, C3, A4}]

{C0 →
- ((a^4 b^2 c^2 E0 S0 S1 S2 S3 + a^2 b^4 c^2 E0 S0 S1 S2 S3 + a^4 c^4 E0 S0 S1 S2 S3 + a^2 b^2 c^4 E0 S0 S1 S2
S3 + a^4 b^2 d^2 E0 S0 S1 S2 S3 + a^2 b^4 d^2 E0 S0 S1 S2 S3 + a^4 c^2 d^2 E0 S0 S1 S2 S3 +
a^2 b^2 c^2 d^2 E0 S0 S1 S2 S3 - a^4 b^2 c^2 E0 S1^2 S2 S3 + a^2 b^4 c^2 E0 S1^2 S2 S3 -
a^4 c^4 E0 S1^2 S2 S3 + a^2 b^2 c^4 E0 S1^2 S2 S3 - a^4 b^2 d^2 E0 S1^2 S2 S3 + a^2 b^4 d^2 E0 S1^2 S2 S3 -
a^4 c^2 d^2 E0 S1^2 S2 S3 + a^2 b^2 c^2 d^2 E0 S1^2 S2 S3 + a^4 b^2 c^2 E0 S0 S2^2 S3 -
a^2 b^4 c^2 E0 S0 S2^2 S3 - a^4 c^4 E0 S0 S2^2 S3 + a^2 b^2 c^4 E0 S0 S2^2 S3 + a^4 b^2 d^2 E0 S0 S2^2 S3 -
a^2 b^4 d^2 E0 S0 S2^2 S3 - a^4 c^2 d^2 E0 S0 S2^2 S3 + a^2 b^2 c^2 d^2 E0 S0 S2^2 S3 -
a^4 b^2 c^2 E0 S1 S2^2 S3 - a^2 b^4 c^2 E0 S1 S2^2 S3 + a^4 c^4 E0 S1 S2^2 S3 + a^2 b^2 c^4 E0 S1 S2^2 S3 -
a^4 b^2 d^2 E0 S1 S2^2 S3 - a^2 b^4 d^2 E0 S1 S2^2 S3 + a^4 c^2 d^2 E0 S1 S2^2 S3 +
a^2 b^2 c^2 d^2 E0 S1 S2^2 S3 + a^4 b^2 c^2 E0 S0 S1 S3^2 + a^2 b^4 c^2 E0 S0 S1 S3^2 - a^4 c^4 E0 S0 S1 S3^2 -
a^2 b^2 c^4 E0 S0 S1 S3^2 - a^4 b^2 d^2 E0 S0 S1 S3^2 - a^2 b^4 d^2 E0 S0 S1 S3^2 + a^4 c^2 d^2 E0 S0 S1 S3^2 +
a^2 b^2 c^2 d^2 E0 S0 S1 S3^2 - a^4 b^2 c^2 E0 S1^2 S3^2 + a^2 b^4 c^2 E0 S1^2 S3^2 + a^4 c^4 E0 S1^2 S3^2 -
a^2 b^2 c^4 E0 S1^2 S3^2 + a^4 b^2 d^2 E0 S1^2 S3^2 - a^2 b^4 d^2 E0 S1^2 S3^2 - a^4 c^2 d^2 E0 S1^2 S3^2 +
a^2 b^2 c^2 d^2 E0 S1^2 S3^2 + a^4 b^2 c^2 E0 S0 S2 S3^2 - a^2 b^4 c^2 E0 S0 S2 S3^2 + a^4 c^4 E0 S0 S2 S3^2 -
a^2 b^2 c^4 E0 S0 S2 S3^2 - a^4 b^2 d^2 E0 S0 S2 S3^2 + a^2 b^4 d^2 E0 S0 S2 S3^2 - a^4 c^2 d^2 E0 S0 S2 S3^2 +
a^2 b^2 c^2 d^2 E0 S0 S2 S3^2 - a^4 b^2 c^2 E0 S1 S2 S3^2 - a^2 b^4 c^2 E0 S1 S2 S3^2 - a^4 c^4 E0 S1 S2 S3^2 -
a^2 b^2 c^4 E0 S1 S2 S3^2 + a^4 b^2 d^2 E0 S1 S2 S3^2 + a^2 b^4 d^2 E0 S1 S2 S3^2 + a^4 c^2 d^2 E0 S1 S2 S3^2 +
a^2 b^2 c^2 d^2 E0 S1 S2 S3^2 + a^4 b^2 c^2 E0 S0 S1 S2 S4 + a^2 b^4 c^2 E0 S0 S1 S2 S4 +
a^4 c^4 E0 S0 S1 S2 S4 + a^2 b^2 c^4 E0 S0 S1 S2 S4 - a^4 b^2 d^2 E0 S0 S1 S2 S4 -
a^2 b^4 d^2 E0 S0 S1 S2 S4 - a^4 c^2 d^2 E0 S0 S1 S2 S4 - a^2 b^2 c^2 d^2 E0 S0 S1 S2 S4 -
a^4 b^2 c^2 E0 S1^2 S2 S4 + a^2 b^4 c^2 E0 S1^2 S2 S4 - a^4 c^4 E0 S1^2 S2 S4 + a^2 b^2 c^4 E0 S1^2 S2 S4 +
a^4 b^2 d^2 E0 S1^2 S2 S4 - a^2 b^4 d^2 E0 S1^2 S2 S4 + a^4 c^2 d^2 E0 S1^2 S2 S4 -
a^2 b^2 c^2 d^2 E0 S1^2 S2 S4 + a^4 b^2 c^2 E0 S0 S2^2 S4 - a^2 b^4 c^2 E0 S0 S2^2 S4 - a^4 c^4 E0 S0 S2^2 S4 +
a^2 b^2 c^4 E0 S0 S2^2 S4 - a^4 b^2 d^2 E0 S0 S2^2 S4 + a^2 b^4 d^2 E0 S0 S2^2 S4 + a^4 c^2 d^2 E0 S0 S2^2 S4 -
a^2 b^2 c^2 d^2 E0 S0 S2^2 S4 - a^4 b^2 c^2 E0 S1 S2^2 S4 - a^2 b^4 c^2 E0 S1 S2^2 S4 +
a^4 c^4 E0 S1 S2^2 S4 + a^2 b^2 c^4 E0 S1 S2^2 S4 + a^4 b^2 d^2 E0 S1 S2^2 S4 + a^2 b^4 d^2 E0 S1 S2^2 S4 -
a^4 c^2 d^2 E0 S1 S2^2 S4 - a^2 b^2 c^2 d^2 E0 S1 S2^2 S4 + a^4 b^2 c^2 E0 S0 S1 S3 S4 +
a^2 b^4 c^2 E0 S0 S1 S3 S4 - a^4 c^4 E0 S0 S1 S3 S4 - a^2 b^2 c^4 E0 S0 S1 S3 S4 +
a^4 b^2 d^2 E0 S0 S1 S3 S4 + a^2 b^4 d^2 E0 S0 S1 S3 S4 - a^4 c^2 d^2 E0 S0 S1 S3 S4 -
a^2 b^2 c^2 d^2 E0 S0 S1 S3 S4 - a^4 b^2 c^2 E0 S1^2 S3 S4 + a^2 b^4 c^2 E0 S1^2 S3 S4 +

$$\begin{aligned}
 & a^4 c^4 E_0 S_1^2 S_3 S_4 - a^2 b^2 c^4 E_0 S_1^2 S_3 S_4 - a^4 b^2 d^2 E_0 S_1^2 S_3 S_4 + a^2 b^4 d^2 E_0 S_1^2 S_3 S_4 + \\
 & a^4 c^2 d^2 E_0 S_1^2 S_3 S_4 - a^2 b^2 c^2 d^2 E_0 S_1^2 S_3 S_4 + a^4 b^2 c^2 E_0 S_0 S_2 S_3 S_4 - \\
 & a^2 b^4 c^2 E_0 S_0 S_2 S_3 S_4 + a^4 c^4 E_0 S_0 S_2 S_3 S_4 - a^2 b^2 c^4 E_0 S_0 S_2 S_3 S_4 + \\
 & a^4 b^2 d^2 E_0 S_0 S_2 S_3 S_4 - a^2 b^4 d^2 E_0 S_0 S_2 S_3 S_4 + a^4 c^2 d^2 E_0 S_0 S_2 S_3 S_4 - \\
 & a^2 b^2 c^2 d^2 E_0 S_0 S_2 S_3 S_4 - a^4 b^2 c^2 E_0 S_1 S_2 S_3 S_4 - a^2 b^4 c^2 E_0 S_1 S_2 S_3 S_4 - \\
 & a^4 c^4 E_0 S_1 S_2 S_3 S_4 - a^2 b^2 c^4 E_0 S_1 S_2 S_3 S_4 - a^4 b^2 d^2 E_0 S_1 S_2 S_3 S_4 - \\
 & a^2 b^4 d^2 E_0 S_1 S_2 S_3 S_4 - a^4 c^2 d^2 E_0 S_1 S_2 S_3 S_4 - a^2 b^2 c^2 d^2 E_0 S_1 S_2 S_3 S_4) / \\
 & (a^2 b^2 c^2 S_0 S_1 S_2 S_3 + b^4 c^2 S_0 S_1 S_2 S_3 + a^2 c^4 S_0 S_1 S_2 S_3 + b^2 c^4 S_0 S_1 S_2 S_3 + \\
 & a^2 b^2 d^2 S_0 S_1 S_2 S_3 + b^4 d^2 S_0 S_1 S_2 S_3 + a^2 c^2 d^2 S_0 S_1 S_2 S_3 + b^2 c^2 d^2 S_0 S_1 S_2 S_3 + \\
 & a^2 b^2 c^2 S_1^2 S_2 S_3 - b^4 c^2 S_1^2 S_2 S_3 + a^2 c^4 S_1^2 S_2 S_3 - b^2 c^4 S_1^2 S_2 S_3 + a^2 b^2 d^2 S_1^2 S_2 S_3 - \\
 & b^4 d^2 S_1^2 S_2 S_3 + a^2 c^2 d^2 S_1^2 S_2 S_3 - b^2 c^2 d^2 S_1^2 S_2 S_3 + a^2 b^2 c^2 S_0 S_2^2 S_3 - \\
 & b^4 c^2 S_0 S_2^2 S_3 - a^2 c^4 S_0 S_2^2 S_3 + b^2 c^4 S_0 S_2^2 S_3 + a^2 b^2 d^2 S_0 S_2^2 S_3 - b^4 d^2 S_0 S_2^2 S_3 - \\
 & a^2 c^2 d^2 S_0 S_2^2 S_3 + b^2 c^2 d^2 S_0 S_2^2 S_3 + a^2 b^2 c^2 S_1 S_2^2 S_3 + b^4 c^2 S_1 S_2^2 S_3 - \\
 & a^2 c^4 S_1 S_2^2 S_3 - b^2 c^4 S_1 S_2^2 S_3 + a^2 b^2 d^2 S_1 S_2^2 S_3 + b^4 d^2 S_1 S_2^2 S_3 - a^2 c^2 d^2 S_1 S_2^2 S_3 - \\
 & b^2 c^2 d^2 S_1 S_2^2 S_3 + a^2 b^2 c^2 S_0 S_1 S_3^2 + b^4 c^2 S_0 S_1 S_3^2 - a^2 c^4 S_0 S_1 S_3^2 - \\
 & b^2 c^4 S_0 S_1 S_3^2 - a^2 b^2 d^2 S_0 S_1 S_3^2 - b^4 d^2 S_0 S_1 S_3^2 + a^2 c^2 d^2 S_0 S_1 S_3^2 + \\
 & b^2 c^2 d^2 S_0 S_1 S_3^2 + a^2 b^2 c^2 S_1^2 S_3^2 - b^4 c^2 S_1^2 S_3^2 - a^2 c^4 S_1^2 S_3^2 + b^2 c^4 S_1^2 S_3^2 - \\
 & a^2 b^2 d^2 S_1^2 S_3^2 + b^4 d^2 S_1^2 S_3^2 + a^2 c^2 d^2 S_1^2 S_3^2 - b^2 c^2 d^2 S_1^2 S_3^2 + a^2 b^2 c^2 S_0 S_2 S_3^2 - \\
 & b^4 c^2 S_0 S_2 S_3^2 + a^2 c^4 S_0 S_2 S_3^2 - b^2 c^4 S_0 S_2 S_3^2 - a^2 b^2 d^2 S_0 S_2 S_3^2 + b^4 d^2 S_0 S_2 S_3^2 - \\
 & a^2 c^2 d^2 S_0 S_2 S_3^2 + b^2 c^2 d^2 S_0 S_2 S_3^2 + a^2 b^2 c^2 S_1 S_2 S_3^2 + b^4 c^2 S_1 S_2 S_3^2 + \\
 & a^2 c^4 S_1 S_2 S_3^2 + b^2 c^4 S_1 S_2 S_3^2 - a^2 b^2 d^2 S_1 S_2 S_3^2 - b^4 d^2 S_1 S_2 S_3^2 - a^2 c^2 d^2 S_1 S_2 S_3^2 - \\
 & b^2 c^2 d^2 S_1 S_2 S_3^2 + a^2 b^2 c^2 S_0 S_1 S_2 S_4 + b^4 c^2 S_0 S_1 S_2 S_4 + a^2 c^4 S_0 S_1 S_2 S_4 + \\
 & b^2 c^4 S_0 S_1 S_2 S_4 - a^2 b^2 d^2 S_0 S_1 S_2 S_4 - b^4 d^2 S_0 S_1 S_2 S_4 - a^2 c^2 d^2 S_0 S_1 S_2 S_4 - \\
 & b^2 c^2 d^2 S_0 S_1 S_2 S_4 + a^2 b^2 c^2 S_1^2 S_2 S_4 - b^4 c^2 S_1^2 S_2 S_4 + a^2 c^4 S_1^2 S_2 S_4 - \\
 & b^2 c^4 S_1^2 S_2 S_4 - a^2 b^2 d^2 S_1^2 S_2 S_4 + b^4 d^2 S_1^2 S_2 S_4 - a^2 c^2 d^2 S_1^2 S_2 S_4 + \\
 & b^2 c^2 d^2 S_1^2 S_2 S_4 + a^2 b^2 c^2 S_0 S_2^2 S_4 - b^4 c^2 S_0 S_2^2 S_4 - a^2 c^4 S_0 S_2^2 S_4 + \\
 & b^2 c^4 S_0 S_2^2 S_4 - a^2 b^2 d^2 S_0 S_2^2 S_4 + b^4 d^2 S_0 S_2^2 S_4 + a^2 c^2 d^2 S_0 S_2^2 S_4 - \\
 & b^2 c^2 d^2 S_0 S_2^2 S_4 + a^2 b^2 c^2 S_1 S_2^2 S_4 + b^4 c^2 S_1 S_2^2 S_4 - a^2 c^4 S_1 S_2^2 S_4 - b^2 c^4 S_1 S_2^2 S_4 - \\
 & a^2 b^2 d^2 S_1 S_2^2 S_4 - b^4 d^2 S_1 S_2^2 S_4 + a^2 c^2 d^2 S_1 S_2^2 S_4 + b^2 c^2 d^2 S_1 S_2^2 S_4 + \\
 & a^2 b^2 c^2 S_0 S_1 S_3 S_4 + b^4 c^2 S_0 S_1 S_3 S_4 - a^2 c^4 S_0 S_1 S_3 S_4 - b^2 c^4 S_0 S_1 S_3 S_4 + \\
 & a^2 b^2 d^2 S_0 S_1 S_3 S_4 + b^4 d^2 S_0 S_1 S_3 S_4 - a^2 c^2 d^2 S_0 S_1 S_3 S_4 - b^2 c^2 d^2 S_0 S_1 S_3 S_4 + \\
 & a^2 b^2 c^2 S_1^2 S_3 S_4 - b^4 c^2 S_1^2 S_3 S_4 - a^2 c^4 S_1^2 S_3 S_4 + b^2 c^4 S_1^2 S_3 S_4 + \\
 & a^2 b^2 d^2 S_1^2 S_3 S_4 - b^4 d^2 S_1^2 S_3 S_4 - a^2 c^2 d^2 S_1^2 S_3 S_4 + b^2 c^2 d^2 S_1^2 S_3 S_4 + \\
 & a^2 b^2 c^2 S_0 S_2 S_3 S_4 - b^4 c^2 S_0 S_2 S_3 S_4 + a^2 c^4 S_0 S_2 S_3 S_4 - b^2 c^4 S_0 S_2 S_3 S_4 + \\
 & a^2 b^2 d^2 S_0 S_2 S_3 S_4 - b^4 d^2 S_0 S_2 S_3 S_4 + a^2 c^2 d^2 S_0 S_2 S_3 S_4 - b^2 c^2 d^2 S_0 S_2 S_3 S_4 + \\
 & a^2 b^2 c^2 S_1 S_2 S_3 S_4 + b^4 c^2 S_1 S_2 S_3 S_4 + a^2 c^4 S_1 S_2 S_3 S_4 + b^2 c^4 S_1 S_2 S_3 S_4 + \\
 & a^2 b^2 d^2 S_1 S_2 S_3 S_4 + b^4 d^2 S_1 S_2 S_3 S_4 + a^2 c^2 d^2 S_1 S_2 S_3 S_4 + b^2 c^2 d^2 S_1 S_2 S_3 S_4)),
 \end{aligned}$$

$$A1 \rightarrow - \left(\left(2 E_0 S_0 \left(-\frac{1}{b^3} 2 S_1 S_2 \left(-\frac{2 S_2 S_3 \left(\frac{S_3}{d} + \frac{S_4}{d} \right)}{c^3} - \left(-\frac{S_2}{c^3} + \frac{S_3}{c^3} \right) \right. \right. \right. \right.$$

$$\left. \left. \left. \left. \left(S_3 \left(\frac{S_3}{d} + \frac{S_4}{d} \right) + \frac{S_3 (-d S_3 + d S_4)}{c^2} \right) \right) - \left(-\frac{S_1}{b^3} + \frac{S_2}{b^3} \right) \right) \right) \right)$$

$$\begin{aligned}
& a^2 b^2 d^2 S1^2 S2 S3 - b^4 d^2 S1^2 S2 S3 + a^2 c^2 d^2 S1^2 S2 S3 - b^2 c^2 d^2 S1^2 S2 S3 + \\
& a^2 b^2 c^2 S0 S2^2 S3 - b^4 c^2 S0 S2^2 S3 - a^2 c^4 S0 S2^2 S3 + b^2 c^4 S0 S2^2 S3 + \\
& a^2 b^2 d^2 S0 S2^2 S3 - b^4 d^2 S0 S2^2 S3 - a^2 c^2 d^2 S0 S2^2 S3 + b^2 c^2 d^2 S0 S2^2 S3 + \\
& a^2 b^2 c^2 S1 S2^2 S3 + b^4 c^2 S1 S2^2 S3 - a^2 c^4 S1 S2^2 S3 - b^2 c^4 S1 S2^2 S3 + \\
& a^2 b^2 d^2 S1 S2^2 S3 + b^4 d^2 S1 S2^2 S3 - a^2 c^2 d^2 S1 S2^2 S3 - b^2 c^2 d^2 S1 S2^2 S3 + \\
& a^2 b^2 c^2 S0 S1 S3^2 + b^4 c^2 S0 S1 S3^2 - a^2 c^4 S0 S1 S3^2 - b^2 c^4 S0 S1 S3^2 - \\
& a^2 b^2 d^2 S0 S1 S3^2 - b^4 d^2 S0 S1 S3^2 + a^2 c^2 d^2 S0 S1 S3^2 + b^2 c^2 d^2 S0 S1 S3^2 + \\
& a^2 b^2 c^2 S1^2 S3^2 - b^4 c^2 S1^2 S3^2 - a^2 c^4 S1^2 S3^2 + b^2 c^4 S1^2 S3^2 - a^2 b^2 d^2 S1^2 S3^2 + \\
& b^4 d^2 S1^2 S3^2 + a^2 c^2 d^2 S1^2 S3^2 - b^2 c^2 d^2 S1^2 S3^2 + a^2 b^2 c^2 S0 S2 S3^2 - \\
& b^4 c^2 S0 S2 S3^2 + a^2 c^4 S0 S2 S3^2 - b^2 c^4 S0 S2 S3^2 - a^2 b^2 d^2 S0 S2 S3^2 + \\
& b^4 d^2 S0 S2 S3^2 - a^2 c^2 d^2 S0 S2 S3^2 + b^2 c^2 d^2 S0 S2 S3^2 + a^2 b^2 c^2 S1 S2 S3^2 + \\
& b^4 c^2 S1 S2 S3^2 + a^2 c^4 S1 S2 S3^2 + b^2 c^4 S1 S2 S3^2 - a^2 b^2 d^2 S1 S2 S3^2 - \\
& b^4 d^2 S1 S2 S3^2 - a^2 c^2 d^2 S1 S2 S3^2 - b^2 c^2 d^2 S1 S2 S3^2 + a^2 b^2 c^2 S0 S1 S2 S4 + \\
& b^4 c^2 S0 S1 S2 S4 + a^2 c^4 S0 S1 S2 S4 + b^2 c^4 S0 S1 S2 S4 - a^2 b^2 d^2 S0 S1 S2 S4 - \\
& b^4 d^2 S0 S1 S2 S4 - a^2 c^2 d^2 S0 S1 S2 S4 - b^2 c^2 d^2 S0 S1 S2 S4 + a^2 b^2 c^2 S1^2 S2 S4 - \\
& b^4 c^2 S1^2 S2 S4 + a^2 c^4 S1^2 S2 S4 - b^2 c^4 S1^2 S2 S4 - a^2 b^2 d^2 S1^2 S2 S4 + \\
& b^4 d^2 S1^2 S2 S4 - a^2 c^2 d^2 S1^2 S2 S4 + b^2 c^2 d^2 S1^2 S2 S4 + a^2 b^2 c^2 S0 S2^2 S4 - \\
& b^4 c^2 S0 S2^2 S4 - a^2 c^4 S0 S2^2 S4 + b^2 c^4 S0 S2^2 S4 - a^2 b^2 d^2 S0 S2^2 S4 + \\
& b^4 d^2 S0 S2^2 S4 + a^2 c^2 d^2 S0 S2^2 S4 - b^2 c^2 d^2 S0 S2^2 S4 + a^2 b^2 c^2 S1 S2^2 S4 + \\
& b^4 c^2 S1 S2^2 S4 - a^2 c^4 S1 S2^2 S4 - b^2 c^4 S1 S2^2 S4 - a^2 b^2 d^2 S1 S2^2 S4 - \\
& b^4 d^2 S1 S2^2 S4 + a^2 c^2 d^2 S1 S2^2 S4 + b^2 c^2 d^2 S1 S2^2 S4 + a^2 b^2 c^2 S0 S1 S3 S4 + \\
& b^4 c^2 S0 S1 S3 S4 - a^2 c^4 S0 S1 S3 S4 - b^2 c^4 S0 S1 S3 S4 + a^2 b^2 d^2 S0 S1 S3 S4 + \\
& b^4 d^2 S0 S1 S3 S4 - a^2 c^2 d^2 S0 S1 S3 S4 - b^2 c^2 d^2 S0 S1 S3 S4 + a^2 b^2 c^2 S1^2 S3 S4 - \\
& b^4 c^2 S1^2 S3 S4 - a^2 c^4 S1^2 S3 S4 + b^2 c^4 S1^2 S3 S4 + a^2 b^2 d^2 S1^2 S3 S4 - \\
& b^4 d^2 S1^2 S3 S4 - a^2 c^2 d^2 S1^2 S3 S4 + b^2 c^2 d^2 S1^2 S3 S4 + a^2 b^2 c^2 S0 S2 S3 S4 - \\
& b^4 c^2 S0 S2 S3 S4 + a^2 c^4 S0 S2 S3 S4 - b^2 c^4 S0 S2 S3 S4 + a^2 b^2 d^2 S0 S2 S3 S4 - \\
& b^4 d^2 S0 S2 S3 S4 + a^2 c^2 d^2 S0 S2 S3 S4 - b^2 c^2 d^2 S0 S2 S3 S4 + a^2 b^2 c^2 S1 S2 S3 S4 + \\
& b^4 c^2 S1 S2 S3 S4 + a^2 c^4 S1 S2 S3 S4 + b^2 c^4 S1 S2 S3 S4 + a^2 b^2 d^2 S1 S2 S3 S4 + \\
& b^4 d^2 S1 S2 S3 S4 + a^2 c^2 d^2 S1 S2 S3 S4 + b^2 c^2 d^2 S1 S2 S3 S4) \Big), \\
A2 \rightarrow & - \left((4 b^2 E0 S0 (a^2 c^2 S1 S2 S3 + a^2 d^2 S1 S2 S3 + a^2 c^2 S1 S3^2 - a^2 d^2 S1 S3^2 + \right. \\
& \left. a^2 c^2 S1 S2 S4 - a^2 d^2 S1 S2 S4 + a^2 c^2 S1 S3 S4 + a^2 d^2 S1 S3 S4) \right) / \\
& (a^2 b^2 c^2 S0 S1 S2 S3 + b^4 c^2 S0 S1 S2 S3 + a^2 c^4 S0 S1 S2 S3 + b^2 c^4 S0 S1 S2 S3 + \\
& a^2 b^2 d^2 S0 S1 S2 S3 + b^4 d^2 S0 S1 S2 S3 + a^2 c^2 d^2 S0 S1 S2 S3 + b^2 c^2 d^2 S0 S1 S2 S3 + \\
& a^2 b^2 c^2 S1^2 S2 S3 - b^4 c^2 S1^2 S2 S3 + a^2 c^4 S1^2 S2 S3 - b^2 c^4 S1^2 S2 S3 + \\
& a^2 b^2 d^2 S1^2 S2 S3 - b^4 d^2 S1^2 S2 S3 + a^2 c^2 d^2 S1^2 S2 S3 - b^2 c^2 d^2 S1^2 S2 S3 + \\
& a^2 b^2 c^2 S0 S2^2 S3 - b^4 c^2 S0 S2^2 S3 - a^2 c^4 S0 S2^2 S3 + b^2 c^4 S0 S2^2 S3 + \\
& a^2 b^2 d^2 S0 S2^2 S3 - b^4 d^2 S0 S2^2 S3 - a^2 c^2 d^2 S0 S2^2 S3 + b^2 c^2 d^2 S0 S2^2 S3 + \\
& a^2 b^2 c^2 S1 S2^2 S3 + b^4 c^2 S1 S2^2 S3 - a^2 c^4 S1 S2^2 S3 - b^2 c^4 S1 S2^2 S3 + \\
& a^2 b^2 d^2 S1 S2^2 S3 + b^4 d^2 S1 S2^2 S3 - a^2 c^2 d^2 S1 S2^2 S3 - b^2 c^2 d^2 S1 S2^2 S3 + \\
& a^2 b^2 c^2 S0 S1 S3^2 + b^4 c^2 S0 S1 S3^2 - a^2 c^4 S0 S1 S3^2 - b^2 c^4 S0 S1 S3^2 - \\
& a^2 b^2 d^2 S0 S1 S3^2 - b^4 d^2 S0 S1 S3^2 + a^2 c^2 d^2 S0 S1 S3^2 + b^2 c^2 d^2 S0 S1 S3^2 + \\
& a^2 b^2 c^2 S1^2 S3^2 - b^4 c^2 S1^2 S3^2 - a^2 c^4 S1^2 S3^2 + b^2 c^4 S1^2 S3^2 - a^2 b^2 d^2 S1^2 S3^2 + \\
& b^4 d^2 S1^2 S3^2 + a^2 c^2 d^2 S1^2 S3^2 - b^2 c^2 d^2 S1^2 S3^2 + a^2 b^2 c^2 S0 S2 S3^2 -
\end{aligned}$$

$$\begin{aligned}
& b^4 c^2 S_0 S_2 S_3^2 + a^2 c^4 S_0 S_2 S_3^2 - b^2 c^4 S_0 S_2 S_3^2 - a^2 b^2 d^2 S_0 S_2 S_3^2 + \\
& b^4 d^2 S_0 S_2 S_3^2 - a^2 c^2 d^2 S_0 S_2 S_3^2 + b^2 c^2 d^2 S_0 S_2 S_3^2 + a^2 b^2 c^2 S_1 S_2 S_3^2 + \\
& b^4 c^2 S_1 S_2 S_3^2 + a^2 c^4 S_1 S_2 S_3^2 + b^2 c^4 S_1 S_2 S_3^2 - a^2 b^2 d^2 S_1 S_2 S_3^2 - \\
& b^4 d^2 S_1 S_2 S_3^2 - a^2 c^2 d^2 S_1 S_2 S_3^2 - b^2 c^2 d^2 S_1 S_2 S_3^2 + a^2 b^2 c^2 S_0 S_1 S_2 S_4 + \\
& b^4 c^2 S_0 S_1 S_2 S_4 + a^2 c^4 S_0 S_1 S_2 S_4 + b^2 c^4 S_0 S_1 S_2 S_4 - a^2 b^2 d^2 S_0 S_1 S_2 S_4 - \\
& b^4 d^2 S_0 S_1 S_2 S_4 - a^2 c^2 d^2 S_0 S_1 S_2 S_4 - b^2 c^2 d^2 S_0 S_1 S_2 S_4 + a^2 b^2 c^2 S_1^2 S_2 S_4 - \\
& b^4 c^2 S_1^2 S_2 S_4 + a^2 c^4 S_1^2 S_2 S_4 - b^2 c^4 S_1^2 S_2 S_4 - a^2 b^2 d^2 S_1^2 S_2 S_4 + \\
& b^4 d^2 S_1^2 S_2 S_4 - a^2 c^2 d^2 S_1^2 S_2 S_4 + b^2 c^2 d^2 S_1^2 S_2 S_4 + a^2 b^2 c^2 S_0 S_2^2 S_4 - \\
& b^4 c^2 S_0 S_2^2 S_4 - a^2 c^4 S_0 S_2^2 S_4 + b^2 c^4 S_0 S_2^2 S_4 - a^2 b^2 d^2 S_0 S_2^2 S_4 + \\
& b^4 d^2 S_0 S_2^2 S_4 + a^2 c^2 d^2 S_0 S_2^2 S_4 - b^2 c^2 d^2 S_0 S_2^2 S_4 + a^2 b^2 c^2 S_1 S_2^2 S_4 + \\
& b^4 c^2 S_1 S_2^2 S_4 - a^2 c^4 S_1 S_2^2 S_4 - b^2 c^4 S_1 S_2^2 S_4 - a^2 b^2 d^2 S_1 S_2^2 S_4 - \\
& b^4 d^2 S_1 S_2^2 S_4 + a^2 c^2 d^2 S_1 S_2^2 S_4 + b^2 c^2 d^2 S_1 S_2^2 S_4 + a^2 b^2 c^2 S_0 S_1 S_3 S_4 + \\
& b^4 c^2 S_0 S_1 S_3 S_4 - a^2 c^4 S_0 S_1 S_3 S_4 - b^2 c^4 S_0 S_1 S_3 S_4 + a^2 b^2 d^2 S_0 S_1 S_3 S_4 + \\
& b^4 d^2 S_0 S_1 S_3 S_4 - a^2 c^2 d^2 S_0 S_1 S_3 S_4 - b^2 c^2 d^2 S_0 S_1 S_3 S_4 + a^2 b^2 c^2 S_1^2 S_3 S_4 - \\
& b^4 c^2 S_1^2 S_3 S_4 - a^2 c^4 S_1^2 S_3 S_4 + b^2 c^4 S_1^2 S_3 S_4 + a^2 b^2 d^2 S_1^2 S_3 S_4 - \\
& b^4 d^2 S_1^2 S_3 S_4 - a^2 c^2 d^2 S_1^2 S_3 S_4 + b^2 c^2 d^2 S_1^2 S_3 S_4 + a^2 b^2 c^2 S_0 S_2 S_3 S_4 - \\
& b^4 c^2 S_0 S_2 S_3 S_4 + a^2 c^4 S_0 S_2 S_3 S_4 - b^2 c^4 S_0 S_2 S_3 S_4 + a^2 b^2 d^2 S_0 S_2 S_3 S_4 - \\
& b^4 d^2 S_0 S_2 S_3 S_4 + a^2 c^2 d^2 S_0 S_2 S_3 S_4 - b^2 c^2 d^2 S_0 S_2 S_3 S_4 + a^2 b^2 c^2 S_1 S_2 S_3 S_4 + \\
& b^4 c^2 S_1 S_2 S_3 S_4 + a^2 c^4 S_1 S_2 S_3 S_4 + b^2 c^4 S_1 S_2 S_3 S_4 + a^2 b^2 d^2 S_1 S_2 S_3 S_4 + \\
& b^4 d^2 S_1 S_2 S_3 S_4 + a^2 c^2 d^2 S_1 S_2 S_3 S_4 + b^2 c^2 d^2 S_1 S_2 S_3 S_4) , \\
C2 \rightarrow - & \left((4 E_0 S_0 (a^2 b^2 c^4 S_1 S_2 S_3 + a^2 b^2 c^2 d^2 S_1 S_2 S_3 - a^2 b^2 c^4 S_1 S_3^2 + a^2 b^2 c^2 d^2 S_1 S_3^2 + \right. \\
& \left. a^2 b^2 c^4 S_1 S_2 S_4 - a^2 b^2 c^2 d^2 S_1 S_2 S_4 - a^2 b^2 c^4 S_1 S_3 S_4 - a^2 b^2 c^2 d^2 S_1 S_3 S_4) \right) / \\
& (a^2 b^2 c^2 S_0 S_1 S_2 S_3 + b^4 c^2 S_0 S_1 S_2 S_3 + a^2 c^4 S_0 S_1 S_2 S_3 + b^2 c^4 S_0 S_1 S_2 S_3 + \\
& a^2 b^2 d^2 S_0 S_1 S_2 S_3 + b^4 d^2 S_0 S_1 S_2 S_3 + a^2 c^2 d^2 S_0 S_1 S_2 S_3 + b^2 c^2 d^2 S_0 S_1 S_2 S_3 + \\
& a^2 b^2 c^2 S_1^2 S_2 S_3 - b^4 c^2 S_1^2 S_2 S_3 + a^2 c^4 S_1^2 S_2 S_3 - b^2 c^4 S_1^2 S_2 S_3 + \\
& a^2 b^2 d^2 S_1^2 S_2 S_3 - b^4 d^2 S_1^2 S_2 S_3 + a^2 c^2 d^2 S_1^2 S_2 S_3 - b^2 c^2 d^2 S_1^2 S_2 S_3 + \\
& a^2 b^2 c^2 S_0 S_2^2 S_3 - b^4 c^2 S_0 S_2^2 S_3 - a^2 c^4 S_0 S_2^2 S_3 + b^2 c^4 S_0 S_2^2 S_3 + \\
& a^2 b^2 d^2 S_0 S_2^2 S_3 - b^4 d^2 S_0 S_2^2 S_3 - a^2 c^2 d^2 S_0 S_2^2 S_3 + b^2 c^2 d^2 S_0 S_2^2 S_3 + \\
& a^2 b^2 c^2 S_1 S_2^2 S_3 + b^4 c^2 S_1 S_2^2 S_3 - a^2 c^4 S_1 S_2^2 S_3 - b^2 c^4 S_1 S_2^2 S_3 + \\
& a^2 b^2 d^2 S_1 S_2^2 S_3 + b^4 d^2 S_1 S_2^2 S_3 - a^2 c^2 d^2 S_1 S_2^2 S_3 - b^2 c^2 d^2 S_1 S_2^2 S_3 + \\
& a^2 b^2 c^2 S_0 S_1 S_3^2 + b^4 c^2 S_0 S_1 S_3^2 - a^2 c^4 S_0 S_1 S_3^2 - b^2 c^4 S_0 S_1 S_3^2 - \\
& a^2 b^2 d^2 S_0 S_1 S_3^2 - b^4 d^2 S_0 S_1 S_3^2 + a^2 c^2 d^2 S_0 S_1 S_3^2 + b^2 c^2 d^2 S_0 S_1 S_3^2 + \\
& a^2 b^2 c^2 S_1^2 S_3^2 - b^4 c^2 S_1^2 S_3^2 - a^2 c^4 S_1^2 S_3^2 + b^2 c^4 S_1^2 S_3^2 - a^2 b^2 d^2 S_1^2 S_3^2 + \\
& b^4 d^2 S_1^2 S_3^2 + a^2 c^2 d^2 S_1^2 S_3^2 - b^2 c^2 d^2 S_1^2 S_3^2 + a^2 b^2 c^2 S_0 S_2 S_3^2 - \\
& b^4 c^2 S_0 S_2 S_3^2 + a^2 c^4 S_0 S_2 S_3^2 - b^2 c^4 S_0 S_2 S_3^2 - a^2 b^2 d^2 S_0 S_2 S_3^2 + \\
& b^4 d^2 S_0 S_2 S_3^2 - a^2 c^2 d^2 S_0 S_2 S_3^2 + b^2 c^2 d^2 S_0 S_2 S_3^2 + a^2 b^2 c^2 S_1 S_2 S_3^2 + \\
& b^4 c^2 S_1 S_2 S_3^2 + a^2 c^4 S_1 S_2 S_3^2 + b^2 c^4 S_1 S_2 S_3^2 - a^2 b^2 d^2 S_1 S_2 S_3^2 - \\
& b^4 d^2 S_1 S_2 S_3^2 - a^2 c^2 d^2 S_1 S_2 S_3^2 - b^2 c^2 d^2 S_1 S_2 S_3^2 + a^2 b^2 c^2 S_0 S_1 S_2 S_4 + \\
& b^4 c^2 S_0 S_1 S_2 S_4 + a^2 c^4 S_0 S_1 S_2 S_4 + b^2 c^4 S_0 S_1 S_2 S_4 - a^2 b^2 d^2 S_0 S_1 S_2 S_4 - \\
& b^4 d^2 S_0 S_1 S_2 S_4 - a^2 c^2 d^2 S_0 S_1 S_2 S_4 - b^2 c^2 d^2 S_0 S_1 S_2 S_4 + a^2 b^2 c^2 S_1^2 S_2 S_4 - \\
& b^4 c^2 S_1^2 S_2 S_4 + a^2 c^4 S_1^2 S_2 S_4 - b^2 c^4 S_1^2 S_2 S_4 - a^2 b^2 d^2 S_1^2 S_2 S_4 + \\
& b^4 d^2 S_1^2 S_2 S_4 - a^2 c^2 d^2 S_1^2 S_2 S_4 + b^2 c^2 d^2 S_1^2 S_2 S_4 + a^2 b^2 c^2 S_0 S_2^2 S_4 - \\
& b^4 c^2 S_0 S_2^2 S_4 - a^2 c^4 S_0 S_2^2 S_4 + b^2 c^4 S_0 S_2^2 S_4 - a^2 b^2 d^2 S_0 S_2^2 S_4 +
\end{aligned}$$

$$\begin{aligned}
& b^4 d^2 S_0 S_2^2 S_4 + a^2 c^2 d^2 S_0 S_2^2 S_4 - b^2 c^2 d^2 S_0 S_2^2 S_4 + a^2 b^2 c^2 S_1 S_2^2 S_4 + \\
& b^4 c^2 S_1 S_2^2 S_4 - a^2 c^4 S_1 S_2^2 S_4 - b^2 c^4 S_1 S_2^2 S_4 - a^2 b^2 d^2 S_1 S_2^2 S_4 - \\
& b^4 d^2 S_1 S_2^2 S_4 + a^2 c^2 d^2 S_1 S_2^2 S_4 + b^2 c^2 d^2 S_1 S_2^2 S_4 + a^2 b^2 c^2 S_0 S_1 S_3 S_4 + \\
& b^4 c^2 S_0 S_1 S_3 S_4 - a^2 c^4 S_0 S_1 S_3 S_4 - b^2 c^4 S_0 S_1 S_3 S_4 + a^2 b^2 d^2 S_0 S_1 S_3 S_4 + \\
& b^4 d^2 S_0 S_1 S_3 S_4 - a^2 c^2 d^2 S_0 S_1 S_3 S_4 - b^2 c^2 d^2 S_0 S_1 S_3 S_4 + a^2 b^2 c^2 S_1^2 S_3 S_4 - \\
& b^4 c^2 S_1^2 S_3 S_4 - a^2 c^4 S_1^2 S_3 S_4 + b^2 c^4 S_1^2 S_3 S_4 + a^2 b^2 d^2 S_1^2 S_3 S_4 - \\
& b^4 d^2 S_1^2 S_3 S_4 - a^2 c^2 d^2 S_1^2 S_3 S_4 + b^2 c^2 d^2 S_1^2 S_3 S_4 + a^2 b^2 c^2 S_0 S_2 S_3 S_4 - \\
& b^4 c^2 S_0 S_2 S_3 S_4 + a^2 c^4 S_0 S_2 S_3 S_4 - b^2 c^4 S_0 S_2 S_3 S_4 + a^2 b^2 d^2 S_0 S_2 S_3 S_4 - \\
& b^4 d^2 S_0 S_2 S_3 S_4 + a^2 c^2 d^2 S_0 S_2 S_3 S_4 - b^2 c^2 d^2 S_0 S_2 S_3 S_4 + a^2 b^2 c^2 S_1 S_2 S_3 S_4 + \\
& b^4 c^2 S_1 S_2 S_3 S_4 + a^2 c^4 S_1 S_2 S_3 S_4 + b^2 c^4 S_1 S_2 S_3 S_4 + a^2 b^2 d^2 S_1 S_2 S_3 S_4 + \\
& b^4 d^2 S_1 S_2 S_3 S_4 + a^2 c^2 d^2 S_1 S_2 S_3 S_4 + b^2 c^2 d^2 S_1 S_2 S_3 S_4) , \\
A3 \rightarrow & - \left((8 b^2 c^2 E_0 S_0 S_2 (a^2 S_1 S_3 + a^2 S_1 S_4)) / (a^2 b^2 c^2 S_0 S_1 S_2 S_3 + b^4 c^2 S_0 S_1 S_2 S_3 + \right. \\
& a^2 c^4 S_0 S_1 S_2 S_3 + b^2 c^4 S_0 S_1 S_2 S_3 + a^2 b^2 d^2 S_0 S_1 S_2 S_3 + b^4 d^2 S_0 S_1 S_2 S_3 + \\
& a^2 c^2 d^2 S_0 S_1 S_2 S_3 + b^2 c^2 d^2 S_0 S_1 S_2 S_3 + a^2 b^2 c^2 S_1^2 S_2 S_3 - b^4 c^2 S_1^2 S_2 S_3 + \\
& a^2 c^4 S_1^2 S_2 S_3 - b^2 c^4 S_1^2 S_2 S_3 + a^2 b^2 d^2 S_1^2 S_2 S_3 - b^4 d^2 S_1^2 S_2 S_3 + \\
& a^2 c^2 d^2 S_1^2 S_2 S_3 - b^2 c^2 d^2 S_1^2 S_2 S_3 + a^2 b^2 c^2 S_0 S_2^2 S_3 - b^4 c^2 S_0 S_2^2 S_3 - \\
& a^2 c^4 S_0 S_2^2 S_3 + b^2 c^4 S_0 S_2^2 S_3 + a^2 b^2 d^2 S_0 S_2^2 S_3 - b^4 d^2 S_0 S_2^2 S_3 - \\
& a^2 c^2 d^2 S_0 S_2^2 S_3 + b^2 c^2 d^2 S_0 S_2^2 S_3 + a^2 b^2 c^2 S_1 S_2^2 S_3 + b^4 c^2 S_1 S_2^2 S_3 - \\
& a^2 c^4 S_1 S_2^2 S_3 - b^2 c^4 S_1 S_2^2 S_3 + a^2 b^2 d^2 S_1 S_2^2 S_3 + b^4 d^2 S_1 S_2^2 S_3 - \\
& a^2 c^2 d^2 S_1 S_2^2 S_3 - b^2 c^2 d^2 S_1 S_2^2 S_3 + a^2 b^2 c^2 S_0 S_1 S_3^2 + b^4 c^2 S_0 S_1 S_3^2 - \\
& a^2 c^4 S_0 S_1 S_3^2 - b^2 c^4 S_0 S_1 S_3^2 - a^2 b^2 d^2 S_0 S_1 S_3^2 - b^4 d^2 S_0 S_1 S_3^2 + \\
& a^2 c^2 d^2 S_0 S_1 S_3^2 + b^2 c^2 d^2 S_0 S_1 S_3^2 + a^2 b^2 c^2 S_1^2 S_3^2 - b^4 c^2 S_1^2 S_3^2 - \\
& a^2 c^4 S_1^2 S_3^2 + b^2 c^4 S_1^2 S_3^2 - a^2 b^2 d^2 S_1^2 S_3^2 + b^4 d^2 S_1^2 S_3^2 + a^2 c^2 d^2 S_1^2 S_3^2 - \\
& b^2 c^2 d^2 S_1^2 S_3^2 + a^2 b^2 c^2 S_0 S_2 S_3^2 - b^4 c^2 S_0 S_2 S_3^2 + a^2 c^4 S_0 S_2 S_3^2 - \\
& b^2 c^4 S_0 S_2 S_3^2 - a^2 b^2 d^2 S_0 S_2 S_3^2 + b^4 d^2 S_0 S_2 S_3^2 - a^2 c^2 d^2 S_0 S_2 S_3^2 + \\
& b^2 c^2 d^2 S_0 S_2 S_3^2 + a^2 b^2 c^2 S_1 S_2 S_3^2 + b^4 c^2 S_1 S_2 S_3^2 + a^2 c^4 S_1 S_2 S_3^2 + \\
& b^2 c^4 S_1 S_2 S_3^2 - a^2 b^2 d^2 S_1 S_2 S_3^2 - b^4 d^2 S_1 S_2 S_3^2 - a^2 c^2 d^2 S_1 S_2 S_3^2 - \\
& b^2 c^2 d^2 S_1 S_2 S_3^2 + a^2 b^2 c^2 S_0 S_1 S_2 S_4 + b^4 c^2 S_0 S_1 S_2 S_4 + a^2 c^4 S_0 S_1 S_2 S_4 + \\
& b^2 c^4 S_0 S_1 S_2 S_4 - a^2 b^2 d^2 S_0 S_1 S_2 S_4 - b^4 d^2 S_0 S_1 S_2 S_4 - a^2 c^2 d^2 S_0 S_1 S_2 S_4 - \\
& b^2 c^2 d^2 S_0 S_1 S_2 S_4 + a^2 b^2 c^2 S_1^2 S_2 S_4 - b^4 c^2 S_1^2 S_2 S_4 + a^2 c^4 S_1^2 S_2 S_4 - \\
& b^2 c^4 S_1^2 S_2 S_4 - a^2 b^2 d^2 S_1^2 S_2 S_4 + b^4 d^2 S_1^2 S_2 S_4 - a^2 c^2 d^2 S_1^2 S_2 S_4 + \\
& b^2 c^2 d^2 S_1^2 S_2 S_4 + a^2 b^2 c^2 S_0 S_2^2 S_4 - b^4 c^2 S_0 S_2^2 S_4 - a^2 c^4 S_0 S_2^2 S_4 + \\
& b^2 c^4 S_0 S_2^2 S_4 - a^2 b^2 d^2 S_0 S_2^2 S_4 + b^4 d^2 S_0 S_2^2 S_4 + a^2 c^2 d^2 S_0 S_2^2 S_4 - \\
& b^2 c^2 d^2 S_0 S_2^2 S_4 + a^2 b^2 c^2 S_1 S_2^2 S_4 + b^4 c^2 S_1 S_2^2 S_4 - a^2 c^4 S_1 S_2^2 S_4 - b^2 c^4 S_1 S_2^2 S_4 - \\
& a^2 b^2 d^2 S_1 S_2^2 S_4 - b^4 d^2 S_1 S_2^2 S_4 + a^2 c^2 d^2 S_1 S_2^2 S_4 + b^2 c^2 d^2 S_1 S_2^2 S_4 + \\
& a^2 b^2 c^2 S_0 S_1 S_3 S_4 + b^4 c^2 S_0 S_1 S_3 S_4 - a^2 c^4 S_0 S_1 S_3 S_4 - b^2 c^4 S_0 S_1 S_3 S_4 + \\
& a^2 b^2 d^2 S_0 S_1 S_3 S_4 + b^4 d^2 S_0 S_1 S_3 S_4 - a^2 c^2 d^2 S_0 S_1 S_3 S_4 - b^2 c^2 d^2 S_0 S_1 S_3 S_4 + \\
& a^2 b^2 c^2 S_1^2 S_3 S_4 - b^4 c^2 S_1^2 S_3 S_4 - a^2 c^4 S_1^2 S_3 S_4 + b^2 c^4 S_1^2 S_3 S_4 + \\
& a^2 b^2 d^2 S_1^2 S_3 S_4 - b^4 d^2 S_1^2 S_3 S_4 - a^2 c^2 d^2 S_1^2 S_3 S_4 + b^2 c^2 d^2 S_1^2 S_3 S_4 + \\
& a^2 b^2 c^2 S_0 S_2 S_3 S_4 - b^4 c^2 S_0 S_2 S_3 S_4 + a^2 c^4 S_0 S_2 S_3 S_4 - b^2 c^4 S_0 S_2 S_3 S_4 + \\
& a^2 b^2 d^2 S_0 S_2 S_3 S_4 - b^4 d^2 S_0 S_2 S_3 S_4 + a^2 c^2 d^2 S_0 S_2 S_3 S_4 - b^2 c^2 d^2 S_0 S_2 S_3 S_4 + \\
& a^2 b^2 c^2 S_1 S_2 S_3 S_4 + b^4 c^2 S_1 S_2 S_3 S_4 + a^2 c^4 S_1 S_2 S_3 S_4 + b^2 c^4 S_1 S_2 S_3 S_4 + \\
& a^2 b^2 d^2 S_1 S_2 S_3 S_4 + b^4 d^2 S_1 S_2 S_3 S_4 + a^2 c^2 d^2 S_1 S_2 S_3 S_4 + b^2 c^2 d^2 S_1 S_2 S_3 S_4) ,
\end{aligned}$$

$$\begin{aligned}
C3 \rightarrow & - \left((8 b^2 E0 S0 S2 (a^2 c^2 d^2 S1 S3 - a^2 c^2 d^2 S1 S4)) / \right. \\
& (a^2 b^2 c^2 S0 S1 S2 S3 + b^4 c^2 S0 S1 S2 S3 + a^2 c^4 S0 S1 S2 S3 + b^2 c^4 S0 S1 S2 S3 + \\
& a^2 b^2 d^2 S0 S1 S2 S3 + b^4 d^2 S0 S1 S2 S3 + a^2 c^2 d^2 S0 S1 S2 S3 + b^2 c^2 d^2 S0 S1 S2 S3 + \\
& a^2 b^2 c^2 S1^2 S2 S3 - b^4 c^2 S1^2 S2 S3 + a^2 c^4 S1^2 S2 S3 - b^2 c^4 S1^2 S2 S3 + \\
& a^2 b^2 d^2 S1^2 S2 S3 - b^4 d^2 S1^2 S2 S3 + a^2 c^2 d^2 S1^2 S2 S3 - b^2 c^2 d^2 S1^2 S2 S3 + \\
& a^2 b^2 c^2 S0 S2^2 S3 - b^4 c^2 S0 S2^2 S3 - a^2 c^4 S0 S2^2 S3 + b^2 c^4 S0 S2^2 S3 + \\
& a^2 b^2 d^2 S0 S2^2 S3 - b^4 d^2 S0 S2^2 S3 - a^2 c^2 d^2 S0 S2^2 S3 + b^2 c^2 d^2 S0 S2^2 S3 + \\
& a^2 b^2 c^2 S1 S2^2 S3 + b^4 c^2 S1 S2^2 S3 - a^2 c^4 S1 S2^2 S3 - b^2 c^4 S1 S2^2 S3 + \\
& a^2 b^2 d^2 S1 S2^2 S3 + b^4 d^2 S1 S2^2 S3 - a^2 c^2 d^2 S1 S2^2 S3 - b^2 c^2 d^2 S1 S2^2 S3 + \\
& a^2 b^2 c^2 S0 S1 S3^2 + b^4 c^2 S0 S1 S3^2 - a^2 c^4 S0 S1 S3^2 - b^2 c^4 S0 S1 S3^2 - \\
& a^2 b^2 d^2 S0 S1 S3^2 - b^4 d^2 S0 S1 S3^2 + a^2 c^2 d^2 S0 S1 S3^2 + b^2 c^2 d^2 S0 S1 S3^2 + \\
& a^2 b^2 c^2 S1^2 S3^2 - b^4 c^2 S1^2 S3^2 - a^2 c^4 S1^2 S3^2 + b^2 c^4 S1^2 S3^2 - a^2 b^2 d^2 S1^2 S3^2 + \\
& b^4 d^2 S1^2 S3^2 + a^2 c^2 d^2 S1^2 S3^2 - b^2 c^2 d^2 S1^2 S3^2 + a^2 b^2 c^2 S0 S2 S3^2 - \\
& b^4 c^2 S0 S2 S3^2 + a^2 c^4 S0 S2 S3^2 - b^2 c^4 S0 S2 S3^2 - a^2 b^2 d^2 S0 S2 S3^2 + \\
& b^4 d^2 S0 S2 S3^2 - a^2 c^2 d^2 S0 S2 S3^2 + b^2 c^2 d^2 S0 S2 S3^2 + a^2 b^2 c^2 S1 S2 S3^2 + \\
& b^4 c^2 S1 S2 S3^2 + a^2 c^4 S1 S2 S3^2 + b^2 c^4 S1 S2 S3^2 - a^2 b^2 d^2 S1 S2 S3^2 - \\
& b^4 d^2 S1 S2 S3^2 - a^2 c^2 d^2 S1 S2 S3^2 - b^2 c^2 d^2 S1 S2 S3^2 + a^2 b^2 c^2 S0 S1 S2 S4 + \\
& b^4 c^2 S0 S1 S2 S4 + a^2 c^4 S0 S1 S2 S4 + b^2 c^4 S0 S1 S2 S4 - a^2 b^2 d^2 S0 S1 S2 S4 - \\
& b^4 d^2 S0 S1 S2 S4 - a^2 c^2 d^2 S0 S1 S2 S4 - b^2 c^2 d^2 S0 S1 S2 S4 + a^2 b^2 c^2 S1^2 S2 S4 - \\
& b^4 c^2 S1^2 S2 S4 + a^2 c^4 S1^2 S2 S4 - b^2 c^4 S1^2 S2 S4 - a^2 b^2 d^2 S1^2 S2 S4 + \\
& b^4 d^2 S1^2 S2 S4 - a^2 c^2 d^2 S1^2 S2 S4 + b^2 c^2 d^2 S1^2 S2 S4 + a^2 b^2 c^2 S0 S2^2 S4 - \\
& b^4 c^2 S0 S2^2 S4 - a^2 c^4 S0 S2^2 S4 + b^2 c^4 S0 S2^2 S4 - a^2 b^2 d^2 S0 S2^2 S4 + \\
& b^4 d^2 S0 S2^2 S4 + a^2 c^2 d^2 S0 S2^2 S4 - b^2 c^2 d^2 S0 S2^2 S4 + a^2 b^2 c^2 S1 S2^2 S4 + \\
& b^4 c^2 S1 S2^2 S4 - a^2 c^4 S1 S2^2 S4 - b^2 c^4 S1 S2^2 S4 - a^2 b^2 d^2 S1 S2^2 S4 - \\
& b^4 d^2 S1 S2^2 S4 + a^2 c^2 d^2 S1 S2^2 S4 + b^2 c^2 d^2 S1 S2^2 S4 + a^2 b^2 c^2 S0 S1 S3 S4 + \\
& b^4 c^2 S0 S1 S3 S4 - a^2 c^4 S0 S1 S3 S4 - b^2 c^4 S0 S1 S3 S4 + a^2 b^2 d^2 S0 S1 S3 S4 + \\
& b^4 d^2 S0 S1 S3 S4 - a^2 c^2 d^2 S0 S1 S3 S4 - b^2 c^2 d^2 S0 S1 S3 S4 + a^2 b^2 c^2 S1^2 S3 S4 - \\
& b^4 c^2 S1^2 S3 S4 - a^2 c^4 S1^2 S3 S4 + b^2 c^4 S1^2 S3 S4 + a^2 b^2 d^2 S1^2 S3 S4 - \\
& b^4 d^2 S1^2 S3 S4 - a^2 c^2 d^2 S1^2 S3 S4 + b^2 c^2 d^2 S1^2 S3 S4 + a^2 b^2 c^2 S0 S2 S3 S4 - \\
& b^4 c^2 S0 S2 S3 S4 + a^2 c^4 S0 S2 S3 S4 - b^2 c^4 S0 S2 S3 S4 + a^2 b^2 d^2 S0 S2 S3 S4 - \\
& b^4 d^2 S0 S2 S3 S4 + a^2 c^2 d^2 S0 S2 S3 S4 - b^2 c^2 d^2 S0 S2 S3 S4 + a^2 b^2 c^2 S1 S2 S3 S4 + \\
& b^4 c^2 S1 S2 S3 S4 + a^2 c^4 S1 S2 S3 S4 + b^2 c^4 S1 S2 S3 S4 + a^2 b^2 d^2 S1 S2 S3 S4 + \\
& b^4 d^2 S1 S2 S3 S4 + a^2 c^2 d^2 S1 S2 S3 S4 + b^2 c^2 d^2 S1 S2 S3 S4) , \\
A4 \rightarrow & - \left((16 a^2 b^2 c^2 E0 S0 S1 S2 S3) / (a^2 b^2 c^2 S0 S1 S2 S3 + b^4 c^2 S0 S1 S2 S3 + \right. \\
& a^2 c^4 S0 S1 S2 S3 + b^2 c^4 S0 S1 S2 S3 + a^2 b^2 d^2 S0 S1 S2 S3 + b^4 d^2 S0 S1 S2 S3 + \\
& a^2 c^2 d^2 S0 S1 S2 S3 + b^2 c^2 d^2 S0 S1 S2 S3 + a^2 b^2 c^2 S1^2 S2 S3 - b^4 c^2 S1^2 S2 S3 + \\
& a^2 c^4 S1^2 S2 S3 - b^2 c^4 S1^2 S2 S3 + a^2 b^2 d^2 S1^2 S2 S3 - b^4 d^2 S1^2 S2 S3 + \\
& a^2 c^2 d^2 S1^2 S2 S3 - b^2 c^2 d^2 S1^2 S2 S3 + a^2 b^2 c^2 S0 S2^2 S3 - b^4 c^2 S0 S2^2 S3 - \\
& a^2 c^4 S0 S2^2 S3 + b^2 c^4 S0 S2^2 S3 + a^2 b^2 d^2 S0 S2^2 S3 - b^4 d^2 S0 S2^2 S3 - \\
& a^2 c^2 d^2 S0 S2^2 S3 + b^2 c^2 d^2 S0 S2^2 S3 + a^2 b^2 c^2 S1 S2^2 S3 + b^4 c^2 S1 S2^2 S3 - \\
& a^2 c^4 S1 S2^2 S3 - b^2 c^4 S1 S2^2 S3 + a^2 b^2 d^2 S1 S2^2 S3 + b^4 d^2 S1 S2^2 S3 - \\
& a^2 c^2 d^2 S1 S2^2 S3 - b^2 c^2 d^2 S1 S2^2 S3 + a^2 b^2 c^2 S0 S1 S3^2 + b^4 c^2 S0 S1 S3^2 - \\
& a^2 c^4 S0 S1 S3^2 - b^2 c^4 S0 S1 S3^2 - a^2 b^2 d^2 S0 S1 S3^2 - b^4 d^2 S0 S1 S3^2 +
\end{aligned}$$

$$\begin{aligned}
& a^2 c^2 d^2 S_0 S_1 S_3^2 + b^2 c^2 d^2 S_0 S_1 S_3^2 + a^2 b^2 c^2 S_1^2 S_3^2 - b^4 c^2 S_1^2 S_3^2 - \\
& a^2 c^4 S_1^2 S_3^2 + b^2 c^4 S_1^2 S_3^2 - a^2 b^2 d^2 S_1^2 S_3^2 + b^4 d^2 S_1^2 S_3^2 + a^2 c^2 d^2 S_1^2 S_3^2 - \\
& b^2 c^2 d^2 S_1^2 S_3^2 + a^2 b^2 c^2 S_0 S_2 S_3^2 - b^4 c^2 S_0 S_2 S_3^2 + a^2 c^4 S_0 S_2 S_3^2 - \\
& b^2 c^4 S_0 S_2 S_3^2 - a^2 b^2 d^2 S_0 S_2 S_3^2 + b^4 d^2 S_0 S_2 S_3^2 - a^2 c^2 d^2 S_0 S_2 S_3^2 + \\
& b^2 c^2 d^2 S_0 S_2 S_3^2 + a^2 b^2 c^2 S_1 S_2 S_3^2 + b^4 c^2 S_1 S_2 S_3^2 + a^2 c^4 S_1 S_2 S_3^2 + \\
& b^2 c^4 S_1 S_2 S_3^2 - a^2 b^2 d^2 S_1 S_2 S_3^2 - b^4 d^2 S_1 S_2 S_3^2 - a^2 c^2 d^2 S_1 S_2 S_3^2 - \\
& b^2 c^2 d^2 S_1 S_2 S_3^2 + a^2 b^2 c^2 S_0 S_1 S_2 S_4 + b^4 c^2 S_0 S_1 S_2 S_4 + a^2 c^4 S_0 S_1 S_2 S_4 + \\
& b^2 c^4 S_0 S_1 S_2 S_4 - a^2 b^2 d^2 S_0 S_1 S_2 S_4 - b^4 d^2 S_0 S_1 S_2 S_4 - a^2 c^2 d^2 S_0 S_1 S_2 S_4 - \\
& b^2 c^2 d^2 S_0 S_1 S_2 S_4 + a^2 b^2 c^2 S_1^2 S_2 S_4 - b^4 c^2 S_1^2 S_2 S_4 + a^2 c^4 S_1^2 S_2 S_4 - \\
& b^2 c^4 S_1^2 S_2 S_4 - a^2 b^2 d^2 S_1^2 S_2 S_4 + b^4 d^2 S_1^2 S_2 S_4 - a^2 c^2 d^2 S_1^2 S_2 S_4 + \\
& b^2 c^2 d^2 S_1^2 S_2 S_4 + a^2 b^2 c^2 S_0 S_2^2 S_4 - b^4 c^2 S_0 S_2^2 S_4 - a^2 c^4 S_0 S_2^2 S_4 + \\
& b^2 c^4 S_0 S_2^2 S_4 - a^2 b^2 d^2 S_0 S_2^2 S_4 + b^4 d^2 S_0 S_2^2 S_4 + a^2 c^2 d^2 S_0 S_2^2 S_4 - \\
& b^2 c^2 d^2 S_0 S_2^2 S_4 + a^2 b^2 c^2 S_1 S_2^2 S_4 + b^4 c^2 S_1 S_2^2 S_4 - a^2 c^4 S_1 S_2^2 S_4 - b^2 c^4 S_1 S_2^2 S_4 - \\
& a^2 b^2 d^2 S_1 S_2^2 S_4 - b^4 d^2 S_1 S_2^2 S_4 + a^2 c^2 d^2 S_1 S_2^2 S_4 + b^2 c^2 d^2 S_1 S_2^2 S_4 + \\
& a^2 b^2 c^2 S_0 S_1 S_3 S_4 + b^4 c^2 S_0 S_1 S_3 S_4 - a^2 c^4 S_0 S_1 S_3 S_4 - b^2 c^4 S_0 S_1 S_3 S_4 + \\
& a^2 b^2 d^2 S_0 S_1 S_3 S_4 + b^4 d^2 S_0 S_1 S_3 S_4 - a^2 c^2 d^2 S_0 S_1 S_3 S_4 - b^2 c^2 d^2 S_0 S_1 S_3 S_4 + \\
& a^2 b^2 c^2 S_1^2 S_3 S_4 - b^4 c^2 S_1^2 S_3 S_4 - a^2 c^4 S_1^2 S_3 S_4 + b^2 c^4 S_1^2 S_3 S_4 + \\
& a^2 b^2 d^2 S_1^2 S_3 S_4 - b^4 d^2 S_1^2 S_3 S_4 - a^2 c^2 d^2 S_1^2 S_3 S_4 + b^2 c^2 d^2 S_1^2 S_3 S_4 + \\
& a^2 b^2 c^2 S_0 S_2 S_3 S_4 - b^4 c^2 S_0 S_2 S_3 S_4 + a^2 c^4 S_0 S_2 S_3 S_4 - b^2 c^4 S_0 S_2 S_3 S_4 + \\
& a^2 b^2 d^2 S_0 S_2 S_3 S_4 - b^4 d^2 S_0 S_2 S_3 S_4 + a^2 c^2 d^2 S_0 S_2 S_3 S_4 - b^2 c^2 d^2 S_0 S_2 S_3 S_4 + \\
& a^2 b^2 c^2 S_1 S_2 S_3 S_4 + b^4 c^2 S_1 S_2 S_3 S_4 + a^2 c^4 S_1 S_2 S_3 S_4 + b^2 c^4 S_1 S_2 S_3 S_4 + \\
& a^2 b^2 d^2 S_1 S_2 S_3 S_4 + b^4 d^2 S_1 S_2 S_3 S_4 + a^2 c^2 d^2 S_1 S_2 S_3 S_4 + b^2 c^2 d^2 S_1 S_2 S_3 S_4) \} \}
\end{aligned}$$

$C_0 =$

$$\begin{aligned}
& - \left((a^4 b^2 c^2 E_0 S_0 S_1 S_2 S_3 + a^2 b^4 c^2 E_0 S_0 S_1 S_2 S_3 + a^4 c^4 E_0 S_0 S_1 S_2 S_3 + a^2 b^2 c^4 E_0 S_0 S_1 S_2 S_3 + \right. \\
& a^4 b^2 d^2 E_0 S_0 S_1 S_2 S_3 + a^2 b^4 d^2 E_0 S_0 S_1 S_2 S_3 + a^4 c^2 d^2 E_0 S_0 S_1 S_2 S_3 + \\
& a^2 b^2 c^2 d^2 E_0 S_0 S_1 S_2 S_3 - a^4 b^2 c^2 E_0 S_1^2 S_2 S_3 + a^2 b^4 c^2 E_0 S_1^2 S_2 S_3 - a^4 c^4 E_0 S_1^2 S_2 S_3 + \\
& a^2 b^2 c^4 E_0 S_1^2 S_2 S_3 - a^4 b^2 d^2 E_0 S_1^2 S_2 S_3 + a^2 b^4 d^2 E_0 S_1^2 S_2 S_3 - a^4 c^2 d^2 E_0 S_1^2 S_2 S_3 + \\
& a^2 b^2 c^2 d^2 E_0 S_1^2 S_2 S_3 + a^4 b^2 c^2 E_0 S_0 S_2^2 S_3 - a^2 b^4 c^2 E_0 S_0 S_2^2 S_3 - a^4 c^4 E_0 S_0 S_2^2 S_3 + \\
& a^2 b^2 c^4 E_0 S_0 S_2^2 S_3 + a^4 b^2 d^2 E_0 S_0 S_2^2 S_3 - a^2 b^4 d^2 E_0 S_0 S_2^2 S_3 - a^4 c^2 d^2 E_0 S_0 S_2^2 S_3 + \\
& a^2 b^2 c^2 d^2 E_0 S_0 S_2^2 S_3 - a^4 b^2 c^2 E_0 S_1 S_2^2 S_3 - a^2 b^4 c^2 E_0 S_1 S_2^2 S_3 + a^4 c^4 E_0 S_1 S_2^2 S_3 + \\
& a^2 b^2 c^4 E_0 S_1 S_2^2 S_3 - a^4 b^2 d^2 E_0 S_1 S_2^2 S_3 - a^2 b^4 d^2 E_0 S_1 S_2^2 S_3 + a^4 c^2 d^2 E_0 S_1 S_2^2 S_3 + \\
& a^2 b^2 c^2 d^2 E_0 S_1 S_2^2 S_3 + a^4 b^2 c^2 E_0 S_0 S_1 S_3^2 + a^2 b^4 c^2 E_0 S_0 S_1 S_3^2 - a^4 c^4 E_0 S_0 S_1 S_3^2 - \\
& a^2 b^2 c^4 E_0 S_0 S_1 S_3^2 - a^4 b^2 d^2 E_0 S_0 S_1 S_3^2 - a^2 b^4 d^2 E_0 S_0 S_1 S_3^2 + a^4 c^2 d^2 E_0 S_0 S_1 S_3^2 + \\
& a^2 b^2 c^2 d^2 E_0 S_0 S_1 S_3^2 - a^4 b^2 c^2 E_0 S_1^2 S_3^2 + a^2 b^4 c^2 E_0 S_1^2 S_3^2 + a^4 c^4 E_0 S_1^2 S_3^2 - \\
& a^2 b^2 c^4 E_0 S_1^2 S_3^2 + a^4 b^2 d^2 E_0 S_1^2 S_3^2 - a^2 b^4 d^2 E_0 S_1^2 S_3^2 - a^4 c^2 d^2 E_0 S_1^2 S_3^2 + \\
& a^2 b^2 c^2 d^2 E_0 S_1^2 S_3^2 + a^4 b^2 c^2 E_0 S_0 S_2 S_3^2 - a^2 b^4 c^2 E_0 S_0 S_2 S_3^2 + a^4 c^4 E_0 S_0 S_2 S_3^2 - \\
& a^2 b^2 c^4 E_0 S_0 S_2 S_3^2 - a^4 b^2 d^2 E_0 S_0 S_2 S_3^2 + a^2 b^4 d^2 E_0 S_0 S_2 S_3^2 - a^4 c^2 d^2 E_0 S_0 S_2 S_3^2 + \\
& a^2 b^2 c^2 d^2 E_0 S_0 S_2 S_3^2 - a^4 b^2 c^2 E_0 S_1 S_2 S_3^2 - a^2 b^4 c^2 E_0 S_1 S_2 S_3^2 - \\
& a^4 c^4 E_0 S_1 S_2 S_3^2 - a^2 b^2 c^4 E_0 S_1 S_2 S_3^2 + a^4 b^2 d^2 E_0 S_1 S_2 S_3^2 + a^2 b^4 d^2 E_0 S_1 S_2 S_3^2 + \\
& a^4 c^2 d^2 E_0 S_1 S_2 S_3^2 + a^2 b^2 c^2 d^2 E_0 S_1 S_2 S_3^2 + a^4 b^2 c^2 E_0 S_0 S_1 S_2 S_4 + \\
& a^2 b^4 c^2 E_0 S_0 S_1 S_2 S_4 + a^4 c^4 E_0 S_0 S_1 S_2 S_4 + a^2 b^2 c^4 E_0 S_0 S_1 S_2 S_4 - \\
& a^4 b^2 d^2 E_0 S_0 S_1 S_2 S_4 - a^2 b^4 d^2 E_0 S_0 S_1 S_2 S_4 - a^4 c^2 d^2 E_0 S_0 S_1 S_2 S_4 -
\end{aligned}$$

$$\begin{aligned}
& a^2 b^2 c^2 d^2 E0 S0 S1 S2 S4 - a^4 b^2 c^2 E0 S1^2 S2 S4 + a^2 b^4 c^2 E0 S1^2 S2 S4 - \\
& a^4 c^4 E0 S1^2 S2 S4 + a^2 b^2 c^4 E0 S1^2 S2 S4 + a^4 b^2 d^2 E0 S1^2 S2 S4 - a^2 b^4 d^2 E0 S1^2 S2 S4 + \\
& a^4 c^2 d^2 E0 S1^2 S2 S4 - a^2 b^2 c^2 d^2 E0 S1^2 S2 S4 + a^4 b^2 c^2 E0 S0 S2^2 S4 - a^2 b^4 c^2 E0 S0 S2^2 S4 - \\
& a^4 c^4 E0 S0 S2^2 S4 + a^2 b^2 c^4 E0 S0 S2^2 S4 - a^4 b^2 d^2 E0 S0 S2^2 S4 + a^2 b^4 d^2 E0 S0 S2^2 S4 + \\
& a^4 c^2 d^2 E0 S0 S2^2 S4 - a^2 b^2 c^2 d^2 E0 S0 S2^2 S4 - a^4 b^2 c^2 E0 S1 S2^2 S4 - a^2 b^4 c^2 E0 S1 S2^2 S4 + \\
& a^4 c^4 E0 S1 S2^2 S4 + a^2 b^2 c^4 E0 S1 S2^2 S4 + a^4 b^2 d^2 E0 S1 S2^2 S4 + a^2 b^4 d^2 E0 S1 S2^2 S4 - \\
& a^4 c^2 d^2 E0 S1 S2^2 S4 - a^2 b^2 c^2 d^2 E0 S1 S2^2 S4 + a^4 b^2 c^2 E0 S0 S1 S3 S4 + \\
& a^2 b^4 c^2 E0 S0 S1 S3 S4 - a^4 c^4 E0 S0 S1 S3 S4 - a^2 b^2 c^4 E0 S0 S1 S3 S4 + \\
& a^4 b^2 d^2 E0 S0 S1 S3 S4 + a^2 b^4 d^2 E0 S0 S1 S3 S4 - a^4 c^2 d^2 E0 S0 S1 S3 S4 - \\
& a^2 b^2 c^2 d^2 E0 S0 S1 S3 S4 - a^4 b^2 c^2 E0 S1^2 S3 S4 + a^2 b^4 c^2 E0 S1^2 S3 S4 + \\
& a^4 c^4 E0 S1^2 S3 S4 - a^2 b^2 c^4 E0 S1^2 S3 S4 - a^4 b^2 d^2 E0 S1^2 S3 S4 + a^2 b^4 d^2 E0 S1^2 S3 S4 + \\
& a^4 c^2 d^2 E0 S1^2 S3 S4 - a^2 b^2 c^2 d^2 E0 S1^2 S3 S4 + a^4 b^2 c^2 E0 S0 S2 S3 S4 - \\
& a^2 b^4 c^2 E0 S0 S2 S3 S4 + a^4 c^4 E0 S0 S2 S3 S4 - a^2 b^2 c^4 E0 S0 S2 S3 S4 + \\
& a^4 b^2 d^2 E0 S0 S2 S3 S4 - a^2 b^4 d^2 E0 S0 S2 S3 S4 + a^4 c^2 d^2 E0 S0 S2 S3 S4 - \\
& a^2 b^2 c^2 d^2 E0 S0 S2 S3 S4 - a^4 b^2 c^2 E0 S1 S2 S3 S4 - a^2 b^4 c^2 E0 S1 S2 S3 S4 - \\
& a^4 c^4 E0 S1 S2 S3 S4 - a^2 b^2 c^4 E0 S1 S2 S3 S4 - a^4 b^2 d^2 E0 S1 S2 S3 S4 - \\
& a^2 b^4 d^2 E0 S1 S2 S3 S4 - a^4 c^2 d^2 E0 S1 S2 S3 S4 - a^2 b^2 c^2 d^2 E0 S1 S2 S3 S4) / \\
& (a^2 b^2 c^2 S0 S1 S2 S3 + b^4 c^2 S0 S1 S2 S3 + a^2 c^4 S0 S1 S2 S3 + b^2 c^4 S0 S1 S2 S3 + \\
& a^2 b^2 d^2 S0 S1 S2 S3 + b^4 d^2 S0 S1 S2 S3 + a^2 c^2 d^2 S0 S1 S2 S3 + b^2 c^2 d^2 S0 S1 S2 S3 + \\
& a^2 b^2 c^2 S1^2 S2 S3 - b^4 c^2 S1^2 S2 S3 + a^2 c^4 S1^2 S2 S3 - b^2 c^4 S1^2 S2 S3 + a^2 b^2 d^2 S1^2 S2 S3 - \\
& b^4 d^2 S1^2 S2 S3 + a^2 c^2 d^2 S1^2 S2 S3 - b^2 c^2 d^2 S1^2 S2 S3 + a^2 b^2 c^2 S0 S2^2 S3 - \\
& b^4 c^2 S0 S2^2 S3 - a^2 c^4 S0 S2^2 S3 + b^2 c^4 S0 S2^2 S3 + a^2 b^2 d^2 S0 S2^2 S3 - b^4 d^2 S0 S2^2 S3 - \\
& a^2 c^2 d^2 S0 S2^2 S3 + b^2 c^2 d^2 S0 S2^2 S3 + a^2 b^2 c^2 S1 S2^2 S3 + b^4 c^2 S1 S2^2 S3 - \\
& a^2 c^4 S1 S2^2 S3 - b^2 c^4 S1 S2^2 S3 + a^2 b^2 d^2 S1 S2^2 S3 + b^4 d^2 S1 S2^2 S3 - a^2 c^2 d^2 S1 S2^2 S3 - \\
& b^2 c^2 d^2 S1 S2^2 S3 + a^2 b^2 c^2 S0 S1 S3^2 + b^4 c^2 S0 S1 S3^2 - a^2 c^4 S0 S1 S3^2 - b^2 c^4 S0 S1 S3^2 - \\
& a^2 b^2 d^2 S0 S1 S3^2 - b^4 d^2 S0 S1 S3^2 + a^2 c^2 d^2 S0 S1 S3^2 + b^2 c^2 d^2 S0 S1 S3^2 + \\
& a^2 b^2 c^2 S1^2 S3^2 - b^4 c^2 S1^2 S3^2 - a^2 c^4 S1^2 S3^2 + b^2 c^4 S1^2 S3^2 - a^2 b^2 d^2 S1^2 S3^2 + \\
& b^4 d^2 S1^2 S3^2 + a^2 c^2 d^2 S1^2 S3^2 - b^2 c^2 d^2 S1^2 S3^2 + a^2 b^2 c^2 S0 S2 S3^2 - b^4 c^2 S0 S2 S3^2 + \\
& a^2 c^4 S0 S2 S3^2 - b^2 c^4 S0 S2 S3^2 - a^2 b^2 d^2 S0 S2 S3^2 + b^4 d^2 S0 S2 S3^2 - a^2 c^2 d^2 S0 S2 S3^2 + \\
& b^2 c^2 d^2 S0 S2 S3^2 + a^2 b^2 c^2 S1 S2 S3^2 + b^4 c^2 S1 S2 S3^2 + a^2 c^4 S1 S2 S3^2 + b^2 c^4 S1 S2 S3^2 - \\
& a^2 b^2 d^2 S1 S2 S3^2 - b^4 d^2 S1 S2 S3^2 - a^2 c^2 d^2 S1 S2 S3^2 - b^2 c^2 d^2 S1 S2 S3^2 + \\
& a^2 b^2 c^2 S0 S1 S2 S4 + b^4 c^2 S0 S1 S2 S4 + a^2 c^4 S0 S1 S2 S4 + b^2 c^4 S0 S1 S2 S4 - \\
& a^2 b^2 d^2 S0 S1 S2 S4 - b^4 d^2 S0 S1 S2 S4 - a^2 c^2 d^2 S0 S1 S2 S4 - b^2 c^2 d^2 S0 S1 S2 S4 + \\
& a^2 b^2 c^2 S1^2 S2 S4 - b^4 c^2 S1^2 S2 S4 + a^2 c^4 S1^2 S2 S4 - b^2 c^4 S1^2 S2 S4 - a^2 b^2 d^2 S1^2 S2 S4 + \\
& b^4 d^2 S1^2 S2 S4 - a^2 c^2 d^2 S1^2 S2 S4 + b^2 c^2 d^2 S1^2 S2 S4 + a^2 b^2 c^2 S0 S2^2 S4 - \\
& b^4 c^2 S0 S2^2 S4 - a^2 c^4 S0 S2^2 S4 + b^2 c^4 S0 S2^2 S4 - a^2 b^2 d^2 S0 S2^2 S4 + b^4 d^2 S0 S2^2 S4 + \\
& a^2 c^2 d^2 S0 S2^2 S4 - b^2 c^2 d^2 S0 S2^2 S4 + a^2 b^2 c^2 S1 S2^2 S4 + b^4 c^2 S1 S2^2 S4 - \\
& a^2 c^4 S1 S2^2 S4 - b^2 c^4 S1 S2^2 S4 - a^2 b^2 d^2 S1 S2^2 S4 - b^4 d^2 S1 S2^2 S4 + a^2 c^2 d^2 S1 S2^2 S4 + \\
& b^2 c^2 d^2 S1 S2^2 S4 + a^2 b^2 c^2 S0 S1 S3 S4 + b^4 c^2 S0 S1 S3 S4 - a^2 c^4 S0 S1 S3 S4 - \\
& b^2 c^4 S0 S1 S3 S4 + a^2 b^2 d^2 S0 S1 S3 S4 + b^4 d^2 S0 S1 S3 S4 - a^2 c^2 d^2 S0 S1 S3 S4 - \\
& b^2 c^2 d^2 S0 S1 S3 S4 + a^2 b^2 c^2 S1^2 S3 S4 - b^4 c^2 S1^2 S3 S4 - a^2 c^4 S1^2 S3 S4 + b^2 c^4 S1^2 S3 S4 + \\
& a^2 b^2 d^2 S1^2 S3 S4 - b^4 d^2 S1^2 S3 S4 - a^2 c^2 d^2 S1^2 S3 S4 + b^2 c^2 d^2 S1^2 S3 S4 + \\
& a^2 b^2 c^2 S0 S2 S3 S4 - b^4 c^2 S0 S2 S3 S4 + a^2 c^4 S0 S2 S3 S4 - b^2 c^4 S0 S2 S3 S4 +
\end{aligned}$$

$$\begin{aligned}
& \mathbf{a^2 b^2 d^2 s_0 s_2 s_3 s_4 - b^4 d^2 s_0 s_2 s_3 s_4 + a^2 c^2 d^2 s_0 s_2 s_3 s_4 - b^2 c^2 d^2 s_0 s_2 s_3 s_4 +} \\
& \mathbf{a^2 b^2 c^2 s_1 s_2 s_3 s_4 + b^4 c^2 s_1 s_2 s_3 s_4 + a^2 c^4 s_1 s_2 s_3 s_4 + b^2 c^4 s_1 s_2 s_3 s_4 +} \\
& \mathbf{a^2 b^2 d^2 s_1 s_2 s_3 s_4 + b^4 d^2 s_1 s_2 s_3 s_4 + a^2 c^2 d^2 s_1 s_2 s_3 s_4 + b^2 c^2 d^2 s_1 s_2 s_3 s_4)} \\
- & \left((a^4 b^2 c^2 E_0 S_0 S_1 S_2 S_3 + a^2 b^4 c^2 E_0 S_0 S_1 S_2 S_3 + a^4 c^4 E_0 S_0 S_1 S_2 S_3 + a^2 b^2 c^4 E_0 S_0 S_1 S_2 S_3 + \right. \\
& a^4 b^2 d^2 E_0 S_0 S_1 S_2 S_3 + a^2 b^4 d^2 E_0 S_0 S_1 S_2 S_3 + a^4 c^2 d^2 E_0 S_0 S_1 S_2 S_3 + \\
& a^2 b^2 c^2 d^2 E_0 S_0 S_1 S_2 S_3 - a^4 b^2 c^2 E_0 S_1^2 S_2 S_3 + a^2 b^4 c^2 E_0 S_1^2 S_2 S_3 - a^4 c^4 E_0 S_1^2 S_2 S_3 + \\
& a^2 b^2 c^4 E_0 S_1^2 S_2 S_3 - a^4 b^2 d^2 E_0 S_1^2 S_2 S_3 + a^2 b^4 d^2 E_0 S_1^2 S_2 S_3 - a^4 c^2 d^2 E_0 S_1^2 S_2 S_3 + \\
& a^2 b^2 c^2 d^2 E_0 S_1^2 S_2 S_3 + a^4 b^2 c^2 E_0 S_0 S_2^2 S_3 - a^2 b^4 c^2 E_0 S_0 S_2^2 S_3 - a^4 c^4 E_0 S_0 S_2^2 S_3 + \\
& a^2 b^2 c^4 E_0 S_0 S_2^2 S_3 + a^4 b^2 d^2 E_0 S_0 S_2^2 S_3 - a^2 b^4 d^2 E_0 S_0 S_2^2 S_3 - a^4 c^2 d^2 E_0 S_0 S_2^2 S_3 + \\
& a^2 b^2 c^2 d^2 E_0 S_0 S_2^2 S_3 - a^4 b^2 c^2 E_0 S_1 S_2^2 S_3 - a^2 b^4 c^2 E_0 S_1 S_2^2 S_3 + a^4 c^4 E_0 S_1 S_2^2 S_3 + \\
& a^2 b^2 c^4 E_0 S_1 S_2^2 S_3 - a^4 b^2 d^2 E_0 S_1 S_2^2 S_3 - a^2 b^4 d^2 E_0 S_1 S_2^2 S_3 + a^4 c^2 d^2 E_0 S_1 S_2^2 S_3 + \\
& a^2 b^2 c^2 d^2 E_0 S_1 S_2^2 S_3 + a^4 b^2 c^2 E_0 S_0 S_1 S_3^2 + a^2 b^4 c^2 E_0 S_0 S_1 S_3^2 - a^4 c^4 E_0 S_0 S_1 S_3^2 - \\
& a^2 b^2 c^4 E_0 S_0 S_1 S_3^2 - a^4 b^2 d^2 E_0 S_0 S_1 S_3^2 - a^2 b^4 d^2 E_0 S_0 S_1 S_3^2 + a^4 c^2 d^2 E_0 S_0 S_1 S_3^2 + \\
& a^2 b^2 c^2 d^2 E_0 S_0 S_1 S_3^2 - a^4 b^2 c^2 E_0 S_1^2 S_3^2 + a^2 b^4 c^2 E_0 S_1^2 S_3^2 + a^4 c^4 E_0 S_1^2 S_3^2 - \\
& a^2 b^2 c^4 E_0 S_1^2 S_3^2 + a^4 b^2 d^2 E_0 S_1^2 S_3^2 - a^2 b^4 d^2 E_0 S_1^2 S_3^2 - a^4 c^2 d^2 E_0 S_1^2 S_3^2 + \\
& a^2 b^2 c^2 d^2 E_0 S_1^2 S_3^2 + a^4 b^2 c^2 E_0 S_0 S_2 S_3^2 - a^2 b^4 c^2 E_0 S_0 S_2 S_3^2 + a^4 c^4 E_0 S_0 S_2 S_3^2 - \\
& a^2 b^2 c^4 E_0 S_0 S_2 S_3^2 - a^4 b^2 d^2 E_0 S_0 S_2 S_3^2 + a^2 b^4 d^2 E_0 S_0 S_2 S_3^2 - a^4 c^2 d^2 E_0 S_0 S_2 S_3^2 + \\
& a^2 b^2 c^2 d^2 E_0 S_0 S_2 S_3^2 - a^4 b^2 c^2 E_0 S_1 S_2 S_3^2 - a^2 b^4 c^2 E_0 S_1 S_2 S_3^2 - \\
& a^4 c^4 E_0 S_1 S_2 S_3^2 - a^2 b^2 c^4 E_0 S_1 S_2 S_3^2 + a^4 b^2 d^2 E_0 S_1 S_2 S_3^2 + a^2 b^4 d^2 E_0 S_1 S_2 S_3^2 + \\
& a^4 c^2 d^2 E_0 S_1 S_2 S_3^2 + a^2 b^2 c^2 d^2 E_0 S_1 S_2 S_3^2 + a^4 b^2 c^2 E_0 S_0 S_1 S_2 S_4 + \\
& a^2 b^4 c^2 E_0 S_0 S_1 S_2 S_4 + a^4 c^4 E_0 S_0 S_1 S_2 S_4 + a^2 b^2 c^4 E_0 S_0 S_1 S_2 S_4 - \\
& a^4 b^2 d^2 E_0 S_0 S_1 S_2 S_4 - a^2 b^4 d^2 E_0 S_0 S_1 S_2 S_4 - a^4 c^2 d^2 E_0 S_0 S_1 S_2 S_4 - \\
& a^2 b^2 c^2 d^2 E_0 S_0 S_1 S_2 S_4 - a^4 b^2 c^2 E_0 S_1^2 S_2 S_4 + a^2 b^4 c^2 E_0 S_1^2 S_2 S_4 - \\
& a^4 c^4 E_0 S_1^2 S_2 S_4 + a^2 b^2 c^4 E_0 S_1^2 S_2 S_4 + a^4 b^2 d^2 E_0 S_1^2 S_2 S_4 - a^2 b^4 d^2 E_0 S_1^2 S_2 S_4 + \\
& a^4 c^2 d^2 E_0 S_1^2 S_2 S_4 - a^2 b^2 c^2 d^2 E_0 S_1^2 S_2 S_4 + a^4 b^2 c^2 E_0 S_0 S_2^2 S_4 - a^2 b^4 c^2 E_0 S_0 S_2^2 S_4 - \\
& a^4 c^4 E_0 S_0 S_2^2 S_4 + a^2 b^2 c^4 E_0 S_0 S_2^2 S_4 - a^4 b^2 d^2 E_0 S_0 S_2^2 S_4 + a^2 b^4 d^2 E_0 S_0 S_2^2 S_4 + \\
& a^4 c^2 d^2 E_0 S_0 S_2^2 S_4 - a^2 b^2 c^2 d^2 E_0 S_0 S_2^2 S_4 - a^4 b^2 c^2 E_0 S_1 S_2^2 S_4 - a^2 b^4 c^2 E_0 S_1 S_2^2 S_4 + \\
& a^4 c^4 E_0 S_1 S_2^2 S_4 + a^2 b^2 c^4 E_0 S_1 S_2^2 S_4 + a^4 b^2 d^2 E_0 S_1 S_2^2 S_4 + a^2 b^4 d^2 E_0 S_1 S_2^2 S_4 - \\
& a^4 c^2 d^2 E_0 S_1 S_2^2 S_4 - a^2 b^2 c^2 d^2 E_0 S_1 S_2^2 S_4 + a^4 b^2 c^2 E_0 S_0 S_1 S_3 S_4 + \\
& a^2 b^4 c^2 E_0 S_0 S_1 S_3 S_4 - a^4 c^4 E_0 S_0 S_1 S_3 S_4 - a^2 b^2 c^4 E_0 S_0 S_1 S_3 S_4 + \\
& a^4 b^2 d^2 E_0 S_0 S_1 S_3 S_4 + a^2 b^4 d^2 E_0 S_0 S_1 S_3 S_4 - a^4 c^2 d^2 E_0 S_0 S_1 S_3 S_4 - \\
& a^2 b^2 c^2 d^2 E_0 S_0 S_1 S_3 S_4 - a^4 b^2 c^2 E_0 S_1^2 S_3 S_4 + a^2 b^4 c^2 E_0 S_1^2 S_3 S_4 + \\
& a^4 c^4 E_0 S_1^2 S_3 S_4 - a^2 b^2 c^4 E_0 S_1^2 S_3 S_4 - a^4 b^2 d^2 E_0 S_1^2 S_3 S_4 + a^2 b^4 d^2 E_0 S_1^2 S_3 S_4 + \\
& a^4 c^2 d^2 E_0 S_1^2 S_3 S_4 - a^2 b^2 c^2 d^2 E_0 S_1^2 S_3 S_4 + a^4 b^2 c^2 E_0 S_0 S_2 S_3 S_4 - \\
& a^2 b^4 c^2 E_0 S_0 S_2 S_3 S_4 + a^4 c^4 E_0 S_0 S_2 S_3 S_4 - a^2 b^2 c^4 E_0 S_0 S_2 S_3 S_4 + \\
& a^4 b^2 d^2 E_0 S_0 S_2 S_3 S_4 - a^2 b^4 d^2 E_0 S_0 S_2 S_3 S_4 + a^4 c^2 d^2 E_0 S_0 S_2 S_3 S_4 - \\
& a^2 b^2 c^2 d^2 E_0 S_0 S_2 S_3 S_4 - a^4 b^2 c^2 E_0 S_1 S_2 S_3 S_4 - a^2 b^4 c^2 E_0 S_1 S_2 S_3 S_4 - \\
& a^4 c^4 E_0 S_1 S_2 S_3 S_4 - a^2 b^2 c^4 E_0 S_1 S_2 S_3 S_4 - a^4 b^2 d^2 E_0 S_1 S_2 S_3 S_4 - \\
& a^2 b^4 d^2 E_0 S_1 S_2 S_3 S_4 - a^4 c^2 d^2 E_0 S_1 S_2 S_3 S_4 - a^2 b^2 c^2 d^2 E_0 S_1 S_2 S_3 S_4) / \\
& (a^2 b^2 c^2 S_0 S_1 S_2 S_3 + b^4 c^2 S_0 S_1 S_2 S_3 + a^2 c^4 S_0 S_1 S_2 S_3 + b^2 c^4 S_0 S_1 S_2 S_3 + \\
& a^2 b^2 d^2 S_0 S_1 S_2 S_3 + b^4 d^2 S_0 S_1 S_2 S_3 + a^2 c^2 d^2 S_0 S_1 S_2 S_3 + b^2 c^2 d^2 S_0 S_1 S_2 S_3 + \\
& a^2 b^2 c^2 S_1^2 S_2 S_3 - b^4 c^2 S_1^2 S_2 S_3 + a^2 c^4 S_1^2 S_2 S_3 - b^2 c^4 S_1^2 S_2 S_3 + a^2 b^2 d^2 S_1^2 S_2 S_3 -
\end{aligned}$$

$$\begin{aligned}
& b^4 d^2 S1^2 S2 S3 + a^2 c^2 d^2 S1^2 S2 S3 - b^2 c^2 d^2 S1^2 S2 S3 + a^2 b^2 c^2 S0 S2^2 S3 - \\
& b^4 c^2 S0 S2^2 S3 - a^2 c^4 S0 S2^2 S3 + b^2 c^4 S0 S2^2 S3 + a^2 b^2 d^2 S0 S2^2 S3 - b^4 d^2 S0 S2^2 S3 - \\
& a^2 c^2 d^2 S0 S2^2 S3 + b^2 c^2 d^2 S0 S2^2 S3 + a^2 b^2 c^2 S1 S2^2 S3 + b^4 c^2 S1 S2^2 S3 - \\
& a^2 c^4 S1 S2^2 S3 - b^2 c^4 S1 S2^2 S3 + a^2 b^2 d^2 S1 S2^2 S3 + b^4 d^2 S1 S2^2 S3 - a^2 c^2 d^2 S1 S2^2 S3 - \\
& b^2 c^2 d^2 S1 S2^2 S3 + a^2 b^2 c^2 S0 S1 S3^2 + b^4 c^2 S0 S1 S3^2 - a^2 c^4 S0 S1 S3^2 - b^2 c^4 S0 S1 S3^2 - \\
& a^2 b^2 d^2 S0 S1 S3^2 - b^4 d^2 S0 S1 S3^2 + a^2 c^2 d^2 S0 S1 S3^2 + b^2 c^2 d^2 S0 S1 S3^2 + \\
& a^2 b^2 c^2 S1^2 S3^2 - b^4 c^2 S1^2 S3^2 - a^2 c^4 S1^2 S3^2 + b^2 c^4 S1^2 S3^2 - a^2 b^2 d^2 S1^2 S3^2 + \\
& b^4 d^2 S1^2 S3^2 + a^2 c^2 d^2 S1^2 S3^2 - b^2 c^2 d^2 S1^2 S3^2 + a^2 b^2 c^2 S0 S2 S3^2 - b^4 c^2 S0 S2 S3^2 + \\
& a^2 c^4 S0 S2 S3^2 - b^2 c^4 S0 S2 S3^2 - a^2 b^2 d^2 S0 S2 S3^2 + b^4 d^2 S0 S2 S3^2 - a^2 c^2 d^2 S0 S2 S3^2 + \\
& b^2 c^2 d^2 S0 S2 S3^2 + a^2 b^2 c^2 S1 S2 S3^2 + b^4 c^2 S1 S2 S3^2 + a^2 c^4 S1 S2 S3^2 + b^2 c^4 S1 S2 S3^2 - \\
& a^2 b^2 d^2 S1 S2 S3^2 - b^4 d^2 S1 S2 S3^2 - a^2 c^2 d^2 S1 S2 S3^2 - b^2 c^2 d^2 S1 S2 S3^2 + \\
& a^2 b^2 c^2 S0 S1 S2 S4 + b^4 c^2 S0 S1 S2 S4 + a^2 c^4 S0 S1 S2 S4 + b^2 c^4 S0 S1 S2 S4 - \\
& a^2 b^2 d^2 S0 S1 S2 S4 - b^4 d^2 S0 S1 S2 S4 - a^2 c^2 d^2 S0 S1 S2 S4 - b^2 c^2 d^2 S0 S1 S2 S4 + \\
& a^2 b^2 c^2 S1^2 S2 S4 - b^4 c^2 S1^2 S2 S4 + a^2 c^4 S1^2 S2 S4 - b^2 c^4 S1^2 S2 S4 - a^2 b^2 d^2 S1^2 S2 S4 + \\
& b^4 d^2 S1^2 S2 S4 - a^2 c^2 d^2 S1^2 S2 S4 + b^2 c^2 d^2 S1^2 S2 S4 + a^2 b^2 c^2 S0 S2^2 S4 - \\
& b^4 c^2 S0 S2^2 S4 - a^2 c^4 S0 S2^2 S4 + b^2 c^4 S0 S2^2 S4 - a^2 b^2 d^2 S0 S2^2 S4 + b^4 d^2 S0 S2^2 S4 + \\
& a^2 c^2 d^2 S0 S2^2 S4 - b^2 c^2 d^2 S0 S2^2 S4 + a^2 b^2 c^2 S1 S2^2 S4 + b^4 c^2 S1 S2^2 S4 - \\
& a^2 c^4 S1 S2^2 S4 - b^2 c^4 S1 S2^2 S4 - a^2 b^2 d^2 S1 S2^2 S4 - b^4 d^2 S1 S2^2 S4 + a^2 c^2 d^2 S1 S2^2 S4 + \\
& b^2 c^2 d^2 S1 S2^2 S4 + a^2 b^2 c^2 S0 S1 S3 S4 + b^4 c^2 S0 S1 S3 S4 - a^2 c^4 S0 S1 S3 S4 - \\
& b^2 c^4 S0 S1 S3 S4 + a^2 b^2 d^2 S0 S1 S3 S4 + b^4 d^2 S0 S1 S3 S4 - a^2 c^2 d^2 S0 S1 S3 S4 - \\
& b^2 c^2 d^2 S0 S1 S3 S4 + a^2 b^2 c^2 S1^2 S3 S4 - b^4 c^2 S1^2 S3 S4 - a^2 c^4 S1^2 S3 S4 + b^2 c^4 S1^2 S3 S4 + \\
& a^2 b^2 d^2 S1^2 S3 S4 - b^4 d^2 S1^2 S3 S4 - a^2 c^2 d^2 S1^2 S3 S4 + b^2 c^2 d^2 S1^2 S3 S4 + \\
& a^2 b^2 c^2 S0 S2 S3 S4 - b^4 c^2 S0 S2 S3 S4 + a^2 c^4 S0 S2 S3 S4 - b^2 c^4 S0 S2 S3 S4 + \\
& a^2 b^2 d^2 S0 S2 S3 S4 - b^4 d^2 S0 S2 S3 S4 + a^2 c^2 d^2 S0 S2 S3 S4 - b^2 c^2 d^2 S0 S2 S3 S4 + \\
& a^2 b^2 c^2 S1 S2 S3 S4 + b^4 c^2 S1 S2 S3 S4 + a^2 c^4 S1 S2 S3 S4 + b^2 c^4 S1 S2 S3 S4 + \\
& a^2 b^2 d^2 S1 S2 S3 S4 + b^4 d^2 S1 S2 S3 S4 + a^2 c^2 d^2 S1 S2 S3 S4 + b^2 c^2 d^2 S1 S2 S3 S4))
\end{aligned}$$

Simplify[C0]

$$\begin{aligned}
& (a^2 E0 (-b^2 (S0 + S1) (c^2 (S1 + S2) (d^2 (S2 + S3) (S3 - S4) + c^2 (S2 - S3) (S3 + S4)) + \\
& \quad b^2 (S1 - S2) (d^2 (S2 - S3) (S3 - S4) + c^2 (S2 + S3) (S3 + S4))) - \\
& \quad a^2 (S0 - S1) (c^2 (S1 - S2) (d^2 (S2 + S3) (S3 - S4) + c^2 (S2 - S3) (S3 + S4)) + \\
& \quad \quad b^2 (S1 + S2) (d^2 (S2 - S3) (S3 - S4) + c^2 (S2 + S3) (S3 + S4)))) / \\
& (b^2 (S0 - S1) (c^2 (S1 + S2) (d^2 (S2 + S3) (S3 - S4) + c^2 (S2 - S3) (S3 + S4)) + \\
& \quad b^2 (S1 - S2) (d^2 (S2 - S3) (S3 - S4) + c^2 (S2 + S3) (S3 + S4))) + \\
& \quad a^2 (S0 + S1) (c^2 (S1 - S2) (d^2 (S2 + S3) (S3 - S4) + c^2 (S2 - S3) (S3 + S4)) + \\
& \quad \quad b^2 (S1 + S2) (d^2 (S2 - S3) (S3 - S4) + c^2 (S2 + S3) (S3 + S4))))
\end{aligned}$$

C1 =

$$\begin{aligned}
& - \left((2 E0 S0 (a^2 b^4 c^2 S1 S2 S3 + a^2 b^2 c^4 S1 S2 S3 + a^2 b^4 d^2 S1 S2 S3 + a^2 b^2 c^2 d^2 S1 S2 S3 - a^2 b^4 c^2 \right. \\
& \quad S2^2 S3 + a^2 b^2 c^4 S2^2 S3 - a^2 b^4 d^2 S2^2 S3 + a^2 b^2 c^2 d^2 S2^2 S3 + a^2 b^4 c^2 S1 S3^2 - \\
& \quad a^2 b^2 c^4 S1 S3^2 - a^2 b^4 d^2 S1 S3^2 + a^2 b^2 c^2 d^2 S1 S3^2 - a^2 b^4 c^2 S2 S3^2 - a^2 b^2 c^4 S2 S3^2 + \\
& \quad a^2 b^4 d^2 S2 S3^2 + a^2 b^2 c^2 d^2 S2 S3^2 + a^2 b^4 c^2 S1 S2 S4 + a^2 b^2 c^4 S1 S2 S4 - \\
& \quad a^2 b^4 d^2 S1 S2 S4 - a^2 b^2 c^2 d^2 S1 S2 S4 - a^2 b^4 c^2 S2^2 S4 + a^2 b^2 c^4 S2^2 S4 + a^2 b^4 d^2 S2^2 S4 - \\
& \quad a^2 b^2 c^2 d^2 S2^2 S4 + a^2 b^4 c^2 S1 S3 S4 - a^2 b^2 c^4 S1 S3 S4 + a^2 b^4 d^2 S1 S3 S4 - a^2 b^2 c^2 d^2 S1 \\
& \quad \left. S3 S4 - a^2 b^4 c^2 S2 S3 S4 - a^2 b^2 c^4 S2 S3 S4 - a^2 b^4 d^2 S2 S3 S4 - a^2 b^2 c^2 d^2 S2 S3 S4) \right) / \\
& \left(a^2 b^2 c^2 S0 S1 S2 S3 + b^4 c^2 S0 S1 S2 S3 + a^2 c^4 S0 S1 S2 S3 + b^2 c^4 S0 S1 S2 S3 + \right. \\
& \quad a^2 b^2 d^2 S0 S1 S2 S3 + b^4 d^2 S0 S1 S2 S3 + a^2 c^2 d^2 S0 S1 S2 S3 + b^2 c^2 d^2 S0 S1 S2 S3 + \\
& \quad a^2 b^2 c^2 S1^2 S2 S3 - b^4 c^2 S1^2 S2 S3 + a^2 c^4 S1^2 S2 S3 - b^2 c^4 S1^2 S2 S3 + a^2 b^2 d^2 S1^2 S2 S3 - \\
& \quad b^4 d^2 S1^2 S2 S3 + a^2 c^2 d^2 S1^2 S2 S3 - b^2 c^2 d^2 S1^2 S2 S3 + a^2 b^2 c^2 S0 S2^2 S3 - \\
& \quad b^4 c^2 S0 S2^2 S3 - a^2 c^4 S0 S2^2 S3 + b^2 c^4 S0 S2^2 S3 + a^2 b^2 d^2 S0 S2^2 S3 - b^4 d^2 S0 S2^2 S3 - \\
& \quad a^2 c^2 d^2 S0 S2^2 S3 + b^2 c^2 d^2 S0 S2^2 S3 + a^2 b^2 c^2 S1 S2^2 S3 + b^4 c^2 S1 S2^2 S3 - \\
& \quad a^2 c^4 S1 S2^2 S3 - b^2 c^4 S1 S2^2 S3 + a^2 b^2 d^2 S1 S2^2 S3 + b^4 d^2 S1 S2^2 S3 - \\
& \quad a^2 c^2 d^2 S1 S2^2 S3 - b^2 c^2 d^2 S1 S2^2 S3 + a^2 b^2 c^2 S0 S1 S3^2 + b^4 c^2 S0 S1 S3^2 - \\
& \quad a^2 c^4 S0 S1 S3^2 - b^2 c^4 S0 S1 S3^2 - a^2 b^2 d^2 S0 S1 S3^2 - b^4 d^2 S0 S1 S3^2 + \\
& \quad a^2 c^2 d^2 S0 S1 S3^2 + b^2 c^2 d^2 S0 S1 S3^2 + a^2 b^2 c^2 S1^2 S3^2 - b^4 c^2 S1^2 S3^2 - a^2 c^4 S1^2 S3^2 + \\
& \quad b^2 c^4 S1^2 S3^2 - a^2 b^2 d^2 S1^2 S3^2 + b^4 d^2 S1^2 S3^2 + a^2 c^2 d^2 S1^2 S3^2 - b^2 c^2 d^2 S1^2 S3^2 + \\
& \quad a^2 b^2 c^2 S0 S2 S3^2 - b^4 c^2 S0 S2 S3^2 + a^2 c^4 S0 S2 S3^2 - b^2 c^4 S0 S2 S3^2 - a^2 b^2 d^2 S0 S2 S3^2 + \\
& \quad b^4 d^2 S0 S2 S3^2 - a^2 c^2 d^2 S0 S2 S3^2 + b^2 c^2 d^2 S0 S2 S3^2 + a^2 b^2 c^2 S1 S2 S3^2 + \\
& \quad b^4 c^2 S1 S2 S3^2 + a^2 c^4 S1 S2 S3^2 + b^2 c^4 S1 S2 S3^2 - a^2 b^2 d^2 S1 S2 S3^2 - b^4 d^2 S1 S2 S3^2 - \\
& \quad a^2 c^2 d^2 S1 S2 S3^2 - b^2 c^2 d^2 S1 S2 S3^2 + a^2 b^2 c^2 S0 S1 S2 S4 + b^4 c^2 S0 S1 S2 S4 + \\
& \quad a^2 c^4 S0 S1 S2 S4 + b^2 c^4 S0 S1 S2 S4 - a^2 b^2 d^2 S0 S1 S2 S4 - b^4 d^2 S0 S1 S2 S4 - \\
& \quad a^2 c^2 d^2 S0 S1 S2 S4 - b^2 c^2 d^2 S0 S1 S2 S4 + a^2 b^2 c^2 S1^2 S2 S4 - b^4 c^2 S1^2 S2 S4 + \\
& \quad a^2 c^4 S1^2 S2 S4 - b^2 c^4 S1^2 S2 S4 - a^2 b^2 d^2 S1^2 S2 S4 + b^4 d^2 S1^2 S2 S4 - a^2 c^2 d^2 S1^2 S2 S4 + \\
& \quad b^2 c^2 d^2 S1^2 S2 S4 + a^2 b^2 c^2 S0 S2^2 S4 - b^4 c^2 S0 S2^2 S4 - a^2 c^4 S0 S2^2 S4 + \\
& \quad b^2 c^4 S0 S2^2 S4 - a^2 b^2 d^2 S0 S2^2 S4 + b^4 d^2 S0 S2^2 S4 + a^2 c^2 d^2 S0 S2^2 S4 - \\
& \quad b^2 c^2 d^2 S0 S2^2 S4 + a^2 b^2 c^2 S1 S2^2 S4 + b^4 c^2 S1 S2^2 S4 - a^2 c^4 S1 S2^2 S4 - b^2 c^4 S1 S2^2 S4 - \\
& \quad a^2 b^2 d^2 S1 S2^2 S4 - b^4 d^2 S1 S2^2 S4 + a^2 c^2 d^2 S1 S2^2 S4 + b^2 c^2 d^2 S1 S2^2 S4 + \\
& \quad a^2 b^2 c^2 S0 S1 S3 S4 + b^4 c^2 S0 S1 S3 S4 - a^2 c^4 S0 S1 S3 S4 - b^2 c^4 S0 S1 S3 S4 + \\
& \quad a^2 b^2 d^2 S0 S1 S3 S4 + b^4 d^2 S0 S1 S3 S4 - a^2 c^2 d^2 S0 S1 S3 S4 - b^2 c^2 d^2 S0 S1 S3 S4 + \\
& \quad a^2 b^2 c^2 S1^2 S3 S4 - b^4 c^2 S1^2 S3 S4 - a^2 c^4 S1^2 S3 S4 + b^2 c^4 S1^2 S3 S4 + \\
& \quad a^2 b^2 d^2 S1^2 S3 S4 - b^4 d^2 S1^2 S3 S4 - a^2 c^2 d^2 S1^2 S3 S4 + b^2 c^2 d^2 S1^2 S3 S4 + \\
& \quad a^2 b^2 c^2 S0 S2 S3 S4 - b^4 c^2 S0 S2 S3 S4 + a^2 c^4 S0 S2 S3 S4 - b^2 c^4 S0 S2 S3 S4 + \\
& \quad a^2 b^2 d^2 S0 S2 S3 S4 - b^4 d^2 S0 S2 S3 S4 + a^2 c^2 d^2 S0 S2 S3 S4 - b^2 c^2 d^2 S0 S2 S3 S4 + \\
& \quad a^2 b^2 c^2 S1 S2 S3 S4 + b^4 c^2 S1 S2 S3 S4 + a^2 c^4 S1 S2 S3 S4 + b^2 c^4 S1 S2 S3 S4 + \\
& \quad \left. a^2 b^2 d^2 S1 S2 S3 S4 + b^4 d^2 S1 S2 S3 S4 + a^2 c^2 d^2 S1 S2 S3 S4 + b^2 c^2 d^2 S1 S2 S3 S4) \right)
\end{aligned}$$

$$\begin{aligned}
& - \left((2 E_0 S_0 (a^2 b^4 c^2 S_1 S_2 S_3 + a^2 b^2 c^4 S_1 S_2 S_3 + a^2 b^4 d^2 S_1 S_2 S_3 + a^2 b^2 c^2 d^2 S_1 S_2 S_3 - \right. \\
& \quad a^2 b^4 c^2 S_2^2 S_3 + a^2 b^2 c^4 S_2^2 S_3 - a^2 b^4 d^2 S_2^2 S_3 + a^2 b^2 c^2 d^2 S_2^2 S_3 + a^2 b^4 c^2 S_1 S_3^2 - \\
& \quad a^2 b^2 c^4 S_1 S_3^2 - a^2 b^4 d^2 S_1 S_3^2 + a^2 b^2 c^2 d^2 S_1 S_3^2 - a^2 b^4 c^2 S_2 S_3^2 - a^2 b^2 c^4 S_2 S_3^2 + \\
& \quad a^2 b^4 d^2 S_2 S_3^2 + a^2 b^2 c^2 d^2 S_2 S_3^2 + a^2 b^4 c^2 S_1 S_2 S_4 + a^2 b^2 c^4 S_1 S_2 S_4 - a^2 b^4 d^2 S_1 S_2 S_4 - \\
& \quad a^2 b^2 c^2 d^2 S_1 S_2 S_4 - a^2 b^4 c^2 S_2^2 S_4 + a^2 b^2 c^4 S_2^2 S_4 + a^2 b^4 d^2 S_2^2 S_4 - a^2 b^2 c^2 d^2 S_2^2 S_4 + \\
& \quad a^2 b^4 c^2 S_1 S_3 S_4 - a^2 b^2 c^4 S_1 S_3 S_4 + a^2 b^4 d^2 S_1 S_3 S_4 - a^2 b^2 c^2 d^2 S_1 S_3 S_4 - \\
& \quad \left. a^2 b^4 c^2 S_2 S_3 S_4 - a^2 b^2 c^4 S_2 S_3 S_4 - a^2 b^4 d^2 S_2 S_3 S_4 - a^2 b^2 c^2 d^2 S_2 S_3 S_4) \right) / \\
& \left(a^2 b^2 c^2 S_0 S_1 S_2 S_3 + b^4 c^2 S_0 S_1 S_2 S_3 + a^2 c^4 S_0 S_1 S_2 S_3 + b^2 c^4 S_0 S_1 S_2 S_3 + \right. \\
& \quad a^2 b^2 d^2 S_0 S_1 S_2 S_3 + b^4 d^2 S_0 S_1 S_2 S_3 + a^2 c^2 d^2 S_0 S_1 S_2 S_3 + b^2 c^2 d^2 S_0 S_1 S_2 S_3 + \\
& \quad a^2 b^2 c^2 S_1^2 S_2 S_3 - b^4 c^2 S_1^2 S_2 S_3 + a^2 c^4 S_1^2 S_2 S_3 - b^2 c^4 S_1^2 S_2 S_3 + \\
& \quad a^2 b^2 d^2 S_1^2 S_2 S_3 - b^4 d^2 S_1^2 S_2 S_3 + a^2 c^2 d^2 S_1^2 S_2 S_3 - b^2 c^2 d^2 S_1^2 S_2 S_3 + \\
& \quad a^2 b^2 c^2 S_0 S_2^2 S_3 - b^4 c^2 S_0 S_2^2 S_3 - a^2 c^4 S_0 S_2^2 S_3 + b^2 c^4 S_0 S_2^2 S_3 + a^2 b^2 d^2 S_0 S_2^2 S_3 - \\
& \quad b^4 d^2 S_0 S_2^2 S_3 - a^2 c^2 d^2 S_0 S_2^2 S_3 + b^2 c^2 d^2 S_0 S_2^2 S_3 + a^2 b^2 c^2 S_1 S_2^2 S_3 + \\
& \quad b^4 c^2 S_1 S_2^2 S_3 - a^2 c^4 S_1 S_2^2 S_3 - b^2 c^4 S_1 S_2^2 S_3 + a^2 b^2 d^2 S_1 S_2^2 S_3 + \\
& \quad b^4 d^2 S_1 S_2^2 S_3 - a^2 c^2 d^2 S_1 S_2^2 S_3 - b^2 c^2 d^2 S_1 S_2^2 S_3 + a^2 b^2 c^2 S_0 S_1 S_3^2 + \\
& \quad b^4 c^2 S_0 S_1 S_3^2 - a^2 c^4 S_0 S_1 S_3^2 - b^2 c^4 S_0 S_1 S_3^2 - a^2 b^2 d^2 S_0 S_1 S_3^2 - b^4 d^2 S_0 S_1 S_3^2 + \\
& \quad a^2 c^2 d^2 S_0 S_1 S_3^2 + b^2 c^2 d^2 S_0 S_1 S_3^2 + a^2 b^2 c^2 S_1^2 S_3^2 - b^4 c^2 S_1^2 S_3^2 - \\
& \quad a^2 c^4 S_1^2 S_3^2 + b^2 c^4 S_1^2 S_3^2 - a^2 b^2 d^2 S_1^2 S_3^2 + b^4 d^2 S_1^2 S_3^2 + a^2 c^2 d^2 S_1^2 S_3^2 - \\
& \quad b^2 c^2 d^2 S_1^2 S_3^2 + a^2 b^2 c^2 S_0 S_2 S_3^2 - b^4 c^2 S_0 S_2 S_3^2 + a^2 c^4 S_0 S_2 S_3^2 - b^2 c^4 S_0 S_2 S_3^2 - \\
& \quad a^2 b^2 d^2 S_0 S_2 S_3^2 + b^4 d^2 S_0 S_2 S_3^2 - a^2 c^2 d^2 S_0 S_2 S_3^2 + b^2 c^2 d^2 S_0 S_2 S_3^2 + \\
& \quad a^2 b^2 c^2 S_1 S_2 S_3^2 + b^4 c^2 S_1 S_2 S_3^2 + a^2 c^4 S_1 S_2 S_3^2 + b^2 c^4 S_1 S_2 S_3^2 - \\
& \quad a^2 b^2 d^2 S_1 S_2 S_3^2 - b^4 d^2 S_1 S_2 S_3^2 - a^2 c^2 d^2 S_1 S_2 S_3^2 - b^2 c^2 d^2 S_1 S_2 S_3^2 + \\
& \quad a^2 b^2 c^2 S_0 S_1 S_2 S_4 + b^4 c^2 S_0 S_1 S_2 S_4 + a^2 c^4 S_0 S_1 S_2 S_4 + b^2 c^4 S_0 S_1 S_2 S_4 - \\
& \quad a^2 b^2 d^2 S_0 S_1 S_2 S_4 - b^4 d^2 S_0 S_1 S_2 S_4 - a^2 c^2 d^2 S_0 S_1 S_2 S_4 - b^2 c^2 d^2 S_0 S_1 S_2 S_4 + \\
& \quad a^2 b^2 c^2 S_1^2 S_2 S_4 - b^4 c^2 S_1^2 S_2 S_4 + a^2 c^4 S_1^2 S_2 S_4 - b^2 c^4 S_1^2 S_2 S_4 - a^2 b^2 d^2 S_1^2 S_2 S_4 + \\
& \quad b^4 d^2 S_1^2 S_2 S_4 - a^2 c^2 d^2 S_1^2 S_2 S_4 + b^2 c^2 d^2 S_1^2 S_2 S_4 + a^2 b^2 c^2 S_0 S_2^2 S_4 - \\
& \quad b^4 c^2 S_0 S_2^2 S_4 - a^2 c^4 S_0 S_2^2 S_4 + b^2 c^4 S_0 S_2^2 S_4 - a^2 b^2 d^2 S_0 S_2^2 S_4 + b^4 d^2 S_0 S_2^2 S_4 + \\
& \quad a^2 c^2 d^2 S_0 S_2^2 S_4 - b^2 c^2 d^2 S_0 S_2^2 S_4 + a^2 b^2 c^2 S_1 S_2^2 S_4 + b^4 c^2 S_1 S_2^2 S_4 - \\
& \quad a^2 c^4 S_1 S_2^2 S_4 - b^2 c^4 S_1 S_2^2 S_4 - a^2 b^2 d^2 S_1 S_2^2 S_4 - b^4 d^2 S_1 S_2^2 S_4 + a^2 c^2 d^2 S_1 S_2^2 S_4 + \\
& \quad b^2 c^2 d^2 S_1 S_2^2 S_4 + a^2 b^2 c^2 S_0 S_1 S_3 S_4 + b^4 c^2 S_0 S_1 S_3 S_4 - a^2 c^4 S_0 S_1 S_3 S_4 - \\
& \quad b^2 c^4 S_0 S_1 S_3 S_4 + a^2 b^2 d^2 S_0 S_1 S_3 S_4 + b^4 d^2 S_0 S_1 S_3 S_4 - a^2 c^2 d^2 S_0 S_1 S_3 S_4 - \\
& \quad b^2 c^2 d^2 S_0 S_1 S_3 S_4 + a^2 b^2 c^2 S_1^2 S_3 S_4 - b^4 c^2 S_1^2 S_3 S_4 - a^2 c^4 S_1^2 S_3 S_4 + b^2 c^4 S_1^2 S_3 S_4 + \\
& \quad a^2 b^2 d^2 S_1^2 S_3 S_4 - b^4 d^2 S_1^2 S_3 S_4 - a^2 c^2 d^2 S_1^2 S_3 S_4 + b^2 c^2 d^2 S_1^2 S_3 S_4 + \\
& \quad a^2 b^2 c^2 S_0 S_2 S_3 S_4 - b^4 c^2 S_0 S_2 S_3 S_4 + a^2 c^4 S_0 S_2 S_3 S_4 - b^2 c^4 S_0 S_2 S_3 S_4 + \\
& \quad a^2 b^2 d^2 S_0 S_2 S_3 S_4 - b^4 d^2 S_0 S_2 S_3 S_4 + a^2 c^2 d^2 S_0 S_2 S_3 S_4 - b^2 c^2 d^2 S_0 S_2 S_3 S_4 + \\
& \quad a^2 b^2 c^2 S_1 S_2 S_3 S_4 + b^4 c^2 S_1 S_2 S_3 S_4 + a^2 c^4 S_1 S_2 S_3 S_4 + b^2 c^4 S_1 S_2 S_3 S_4 + \\
& \quad \left. a^2 b^2 d^2 S_1 S_2 S_3 S_4 + b^4 d^2 S_1 S_2 S_3 S_4 + a^2 c^2 d^2 S_1 S_2 S_3 S_4 + b^2 c^2 d^2 S_1 S_2 S_3 S_4) \right)
\end{aligned}$$

$$\begin{aligned}
& - \left(\left(4 b^2 E_0 S_0 \left(a^2 c^2 S_1 S_2 S_3 + a^2 d^2 S_1 S_2 S_3 + a^2 c^2 S_1 S_3^2 - \right. \right. \right. \\
& \quad \left. \left. \left. a^2 d^2 S_1 S_3^2 + a^2 c^2 S_1 S_2 S_4 - a^2 d^2 S_1 S_2 S_4 + a^2 c^2 S_1 S_3 S_4 + a^2 d^2 S_1 S_3 S_4 \right) \right) \right) / \\
& \left(a^2 b^2 c^2 S_0 S_1 S_2 S_3 + b^4 c^2 S_0 S_1 S_2 S_3 + a^2 c^4 S_0 S_1 S_2 S_3 + b^2 c^4 S_0 S_1 S_2 S_3 + \right. \\
& \quad a^2 b^2 d^2 S_0 S_1 S_2 S_3 + b^4 d^2 S_0 S_1 S_2 S_3 + a^2 c^2 d^2 S_0 S_1 S_2 S_3 + b^2 c^2 d^2 S_0 S_1 S_2 S_3 + \\
& \quad a^2 b^2 c^2 S_1^2 S_2 S_3 - b^4 c^2 S_1^2 S_2 S_3 + a^2 c^4 S_1^2 S_2 S_3 - b^2 c^4 S_1^2 S_2 S_3 + a^2 b^2 d^2 S_1^2 S_2 S_3 - \\
& \quad b^4 d^2 S_1^2 S_2 S_3 + a^2 c^2 d^2 S_1^2 S_2 S_3 - b^2 c^2 d^2 S_1^2 S_2 S_3 + a^2 b^2 c^2 S_0 S_2^2 S_3 - \\
& \quad b^4 c^2 S_0 S_2^2 S_3 - a^2 c^4 S_0 S_2^2 S_3 + b^2 c^4 S_0 S_2^2 S_3 + a^2 b^2 d^2 S_0 S_2^2 S_3 - b^4 d^2 S_0 S_2^2 S_3 - \\
& \quad a^2 c^2 d^2 S_0 S_2^2 S_3 + b^2 c^2 d^2 S_0 S_2^2 S_3 + a^2 b^2 c^2 S_1 S_2^2 S_3 + b^4 c^2 S_1 S_2^2 S_3 - \\
& \quad a^2 c^4 S_1 S_2^2 S_3 - b^2 c^4 S_1 S_2^2 S_3 + a^2 b^2 d^2 S_1 S_2^2 S_3 + b^4 d^2 S_1 S_2^2 S_3 - a^2 c^2 d^2 S_1 S_2^2 S_3 - \\
& \quad b^2 c^2 d^2 S_1 S_2^2 S_3 + a^2 b^2 c^2 S_0 S_1 S_3^2 + b^4 c^2 S_0 S_1 S_3^2 - a^2 c^4 S_0 S_1 S_3^2 - b^2 c^4 S_0 S_1 S_3^2 - \\
& \quad a^2 b^2 d^2 S_0 S_1 S_3^2 - b^4 d^2 S_0 S_1 S_3^2 + a^2 c^2 d^2 S_0 S_1 S_3^2 + b^2 c^2 d^2 S_0 S_1 S_3^2 + \\
& \quad a^2 b^2 c^2 S_1^2 S_3^2 - b^4 c^2 S_1^2 S_3^2 - a^2 c^4 S_1^2 S_3^2 + b^2 c^4 S_1^2 S_3^2 - a^2 b^2 d^2 S_1^2 S_3^2 + \\
& \quad b^4 d^2 S_1^2 S_3^2 + a^2 c^2 d^2 S_1^2 S_3^2 - b^2 c^2 d^2 S_1^2 S_3^2 + a^2 b^2 c^2 S_0 S_2 S_3^2 - b^4 c^2 S_0 S_2 S_3^2 + \\
& \quad a^2 c^4 S_0 S_2 S_3^2 - b^2 c^4 S_0 S_2 S_3^2 - a^2 b^2 d^2 S_0 S_2 S_3^2 + b^4 d^2 S_0 S_2 S_3^2 - a^2 c^2 d^2 S_0 S_2 S_3^2 + \\
& \quad b^2 c^2 d^2 S_0 S_2 S_3^2 + a^2 b^2 c^2 S_1 S_2 S_3^2 + b^4 c^2 S_1 S_2 S_3^2 + a^2 c^4 S_1 S_2 S_3^2 + b^2 c^4 S_1 S_2 S_3^2 - \\
& \quad a^2 b^2 d^2 S_1 S_2 S_3^2 - b^4 d^2 S_1 S_2 S_3^2 - a^2 c^2 d^2 S_1 S_2 S_3^2 - b^2 c^2 d^2 S_1 S_2 S_3^2 + \\
& \quad a^2 b^2 c^2 S_0 S_1 S_2 S_4 + b^4 c^2 S_0 S_1 S_2 S_4 + a^2 c^4 S_0 S_1 S_2 S_4 + b^2 c^4 S_0 S_1 S_2 S_4 - \\
& \quad a^2 b^2 d^2 S_0 S_1 S_2 S_4 - b^4 d^2 S_0 S_1 S_2 S_4 - a^2 c^2 d^2 S_0 S_1 S_2 S_4 - b^2 c^2 d^2 S_0 S_1 S_2 S_4 + \\
& \quad a^2 b^2 c^2 S_1^2 S_2 S_4 - b^4 c^2 S_1^2 S_2 S_4 + a^2 c^4 S_1^2 S_2 S_4 - b^2 c^4 S_1^2 S_2 S_4 - a^2 b^2 d^2 S_1^2 S_2 S_4 + \\
& \quad b^4 d^2 S_1^2 S_2 S_4 - a^2 c^2 d^2 S_1^2 S_2 S_4 + b^2 c^2 d^2 S_1^2 S_2 S_4 + a^2 b^2 c^2 S_0 S_2^2 S_4 - \\
& \quad b^4 c^2 S_0 S_2^2 S_4 - a^2 c^4 S_0 S_2^2 S_4 + b^2 c^4 S_0 S_2^2 S_4 - a^2 b^2 d^2 S_0 S_2^2 S_4 + b^4 d^2 S_0 S_2^2 S_4 + \\
& \quad a^2 c^2 d^2 S_0 S_2^2 S_4 - b^2 c^2 d^2 S_0 S_2^2 S_4 + a^2 b^2 c^2 S_1 S_2^2 S_4 + b^4 c^2 S_1 S_2^2 S_4 - \\
& \quad a^2 c^4 S_1 S_2^2 S_4 - b^2 c^4 S_1 S_2^2 S_4 - a^2 b^2 d^2 S_1 S_2^2 S_4 - b^4 d^2 S_1 S_2^2 S_4 + a^2 c^2 d^2 S_1 S_2^2 S_4 + \\
& \quad b^2 c^2 d^2 S_1 S_2^2 S_4 + a^2 b^2 c^2 S_0 S_1 S_3 S_4 + b^4 c^2 S_0 S_1 S_3 S_4 - a^2 c^4 S_0 S_1 S_3 S_4 - \\
& \quad b^2 c^4 S_0 S_1 S_3 S_4 + a^2 b^2 d^2 S_0 S_1 S_3 S_4 + b^4 d^2 S_0 S_1 S_3 S_4 - a^2 c^2 d^2 S_0 S_1 S_3 S_4 - \\
& \quad b^2 c^2 d^2 S_0 S_1 S_3 S_4 + a^2 b^2 c^2 S_1^2 S_3 S_4 - b^4 c^2 S_1^2 S_3 S_4 - a^2 c^4 S_1^2 S_3 S_4 + b^2 c^4 S_1^2 S_3 S_4 + \\
& \quad a^2 b^2 d^2 S_1^2 S_3 S_4 - b^4 d^2 S_1^2 S_3 S_4 - a^2 c^2 d^2 S_1^2 S_3 S_4 + b^2 c^2 d^2 S_1^2 S_3 S_4 + \\
& \quad a^2 b^2 c^2 S_0 S_2 S_3 S_4 - b^4 c^2 S_0 S_2 S_3 S_4 + a^2 c^4 S_0 S_2 S_3 S_4 - b^2 c^4 S_0 S_2 S_3 S_4 + \\
& \quad a^2 b^2 d^2 S_0 S_2 S_3 S_4 - b^4 d^2 S_0 S_2 S_3 S_4 + a^2 c^2 d^2 S_0 S_2 S_3 S_4 - b^2 c^2 d^2 S_0 S_2 S_3 S_4 + \\
& \quad a^2 b^2 c^2 S_1 S_2 S_3 S_4 + b^4 c^2 S_1 S_2 S_3 S_4 + a^2 c^4 S_1 S_2 S_3 S_4 + b^2 c^4 S_1 S_2 S_3 S_4 + \\
& \quad \left. \left. \left. a^2 b^2 d^2 S_1 S_2 S_3 S_4 + b^4 d^2 S_1 S_2 S_3 S_4 + a^2 c^2 d^2 S_1 S_2 S_3 S_4 + b^2 c^2 d^2 S_1 S_2 S_3 S_4 \right) \right) \right)
\end{aligned}$$

FullSimplify[A2]

$$\begin{aligned}
& - \left(\left(4 a^2 b^2 E_0 S_0 S_1 \left(d^2 (S_2 - S_3) (S_3 - S_4) + c^2 (S_2 + S_3) (S_3 + S_4) \right) \right) \right) / \\
& \left(b^2 (S_0 - S_1) \left(c^2 (S_1 + S_2) \left(d^2 (S_2 + S_3) (S_3 - S_4) + c^2 (S_2 - S_3) (S_3 + S_4) \right) + \right. \right. \\
& \quad \left. \left. b^2 (S_1 - S_2) \left(d^2 (S_2 - S_3) (S_3 - S_4) + c^2 (S_2 + S_3) (S_3 + S_4) \right) \right) \right) + \\
& \quad a^2 (S_0 + S_1) \left(c^2 (S_1 - S_2) \left(d^2 (S_2 + S_3) (S_3 - S_4) + c^2 (S_2 - S_3) (S_3 + S_4) \right) + \right. \\
& \quad \left. \left. b^2 (S_1 + S_2) \left(d^2 (S_2 - S_3) (S_3 - S_4) + c^2 (S_2 + S_3) (S_3 + S_4) \right) \right) \right)
\end{aligned}$$

C2 =

$$\begin{aligned}
& - \left((4 E0 S0 (a^2 b^2 c^4 S1 S2 S3 + a^2 b^2 c^2 d^2 S1 S2 S3 - a^2 b^2 c^4 S1 S3^2 + a^2 b^2 c^2 d^2 S1 S3^2 + a^2 b^2 c^4 \right. \\
& \quad \left. S1 S2 S4 - a^2 b^2 c^2 d^2 S1 S2 S4 - a^2 b^2 c^4 S1 S3 S4 - a^2 b^2 c^2 d^2 S1 S3 S4) \right) / \\
& (a^2 b^2 c^2 S0 S1 S2 S3 + b^4 c^2 S0 S1 S2 S3 + a^2 c^4 S0 S1 S2 S3 + b^2 c^4 S0 S1 S2 S3 + \\
& \quad a^2 b^2 d^2 S0 S1 S2 S3 + b^4 d^2 S0 S1 S2 S3 + a^2 c^2 d^2 S0 S1 S2 S3 + b^2 c^2 d^2 S0 S1 S2 S3 + \\
& \quad a^2 b^2 c^2 S1^2 S2 S3 - b^4 c^2 S1^2 S2 S3 + a^2 c^4 S1^2 S2 S3 - b^2 c^4 S1^2 S2 S3 + a^2 b^2 d^2 S1^2 S2 S3 - \\
& \quad b^4 d^2 S1^2 S2 S3 + a^2 c^2 d^2 S1^2 S2 S3 - b^2 c^2 d^2 S1^2 S2 S3 + a^2 b^2 c^2 S0 S2^2 S3 - \\
& \quad b^4 c^2 S0 S2^2 S3 - a^2 c^4 S0 S2^2 S3 + b^2 c^4 S0 S2^2 S3 + a^2 b^2 d^2 S0 S2^2 S3 - b^4 d^2 S0 S2^2 S3 - \\
& \quad a^2 c^2 d^2 S0 S2^2 S3 + b^2 c^2 d^2 S0 S2^2 S3 + a^2 b^2 c^2 S1 S2^2 S3 + b^4 c^2 S1 S2^2 S3 - \\
& \quad a^2 c^4 S1 S2^2 S3 - b^2 c^4 S1 S2^2 S3 + a^2 b^2 d^2 S1 S2^2 S3 + b^4 d^2 S1 S2^2 S3 - a^2 c^2 d^2 S1 S2^2 S3 - \\
& \quad b^2 c^2 d^2 S1 S2^2 S3 + a^2 b^2 c^2 S0 S1 S3^2 + b^4 c^2 S0 S1 S3^2 - a^2 c^4 S0 S1 S3^2 - b^2 c^4 S0 S1 S3^2 - \\
& \quad a^2 b^2 d^2 S0 S1 S3^2 - b^4 d^2 S0 S1 S3^2 + a^2 c^2 d^2 S0 S1 S3^2 + b^2 c^2 d^2 S0 S1 S3^2 + \\
& \quad a^2 b^2 c^2 S1^2 S3^2 - b^4 c^2 S1^2 S3^2 - a^2 c^4 S1^2 S3^2 + b^2 c^4 S1^2 S3^2 - a^2 b^2 d^2 S1^2 S3^2 + \\
& \quad b^4 d^2 S1^2 S3^2 + a^2 c^2 d^2 S1^2 S3^2 - b^2 c^2 d^2 S1^2 S3^2 + a^2 b^2 c^2 S0 S2 S3^2 - b^4 c^2 S0 S2 S3^2 + \\
& \quad a^2 c^4 S0 S2 S3^2 - b^2 c^4 S0 S2 S3^2 - a^2 b^2 d^2 S0 S2 S3^2 + b^4 d^2 S0 S2 S3^2 - a^2 c^2 d^2 S0 S2 S3^2 + \\
& \quad b^2 c^2 d^2 S0 S2 S3^2 + a^2 b^2 c^2 S1 S2 S3^2 + b^4 c^2 S1 S2 S3^2 + a^2 c^4 S1 S2 S3^2 + b^2 c^4 S1 S2 S3^2 - \\
& \quad a^2 b^2 d^2 S1 S2 S3^2 - b^4 d^2 S1 S2 S3^2 - a^2 c^2 d^2 S1 S2 S3^2 - b^2 c^2 d^2 S1 S2 S3^2 + \\
& \quad a^2 b^2 c^2 S0 S1 S2 S4 + b^4 c^2 S0 S1 S2 S4 + a^2 c^4 S0 S1 S2 S4 + b^2 c^4 S0 S1 S2 S4 - \\
& \quad a^2 b^2 d^2 S0 S1 S2 S4 - b^4 d^2 S0 S1 S2 S4 - a^2 c^2 d^2 S0 S1 S2 S4 - b^2 c^2 d^2 S0 S1 S2 S4 + \\
& \quad a^2 b^2 c^2 S1^2 S2 S4 - b^4 c^2 S1^2 S2 S4 + a^2 c^4 S1^2 S2 S4 - b^2 c^4 S1^2 S2 S4 - a^2 b^2 d^2 S1^2 S2 S4 + \\
& \quad b^4 d^2 S1^2 S2 S4 - a^2 c^2 d^2 S1^2 S2 S4 + b^2 c^2 d^2 S1^2 S2 S4 + a^2 b^2 c^2 S0 S2^2 S4 - \\
& \quad b^4 c^2 S0 S2^2 S4 - a^2 c^4 S0 S2^2 S4 + b^2 c^4 S0 S2^2 S4 - a^2 b^2 d^2 S0 S2^2 S4 + b^4 d^2 S0 S2^2 S4 + \\
& \quad a^2 c^2 d^2 S0 S2^2 S4 - b^2 c^2 d^2 S0 S2^2 S4 + a^2 b^2 c^2 S1 S2^2 S4 + b^4 c^2 S1 S2^2 S4 - \\
& \quad a^2 c^4 S1 S2^2 S4 - b^2 c^4 S1 S2^2 S4 - a^2 b^2 d^2 S1 S2^2 S4 - b^4 d^2 S1 S2^2 S4 + a^2 c^2 d^2 S1 S2^2 S4 + \\
& \quad b^2 c^2 d^2 S1 S2^2 S4 + a^2 b^2 c^2 S0 S1 S3 S4 + b^4 c^2 S0 S1 S3 S4 - a^2 c^4 S0 S1 S3 S4 - \\
& \quad b^2 c^4 S0 S1 S3 S4 + a^2 b^2 d^2 S0 S1 S3 S4 + b^4 d^2 S0 S1 S3 S4 - a^2 c^2 d^2 S0 S1 S3 S4 - \\
& \quad b^2 c^2 d^2 S0 S1 S3 S4 + a^2 b^2 c^2 S1^2 S3 S4 - b^4 c^2 S1^2 S3 S4 - a^2 c^4 S1^2 S3 S4 + b^2 c^4 S1^2 S3 S4 + \\
& \quad a^2 b^2 d^2 S1^2 S3 S4 - b^4 d^2 S1^2 S3 S4 - a^2 c^2 d^2 S1^2 S3 S4 + b^2 c^2 d^2 S1^2 S3 S4 + \\
& \quad a^2 b^2 c^2 S0 S2 S3 S4 - b^4 c^2 S0 S2 S3 S4 + a^2 c^4 S0 S2 S3 S4 - b^2 c^4 S0 S2 S3 S4 + \\
& \quad a^2 b^2 d^2 S0 S2 S3 S4 - b^4 d^2 S0 S2 S3 S4 + a^2 c^2 d^2 S0 S2 S3 S4 - b^2 c^2 d^2 S0 S2 S3 S4 + \\
& \quad a^2 b^2 c^2 S1 S2 S3 S4 + b^4 c^2 S1 S2 S3 S4 + a^2 c^4 S1 S2 S3 S4 + b^2 c^4 S1 S2 S3 S4 + \\
& \quad a^2 b^2 d^2 S1 S2 S3 S4 + b^4 d^2 S1 S2 S3 S4 + a^2 c^2 d^2 S1 S2 S3 S4 + b^2 c^2 d^2 S1 S2 S3 S4))
\end{aligned}$$

$$\begin{aligned}
& - \left(\left(4 E_0 S_0 \left(a^2 b^2 c^4 S_1 S_2 S_3 + a^2 b^2 c^2 d^2 S_1 S_2 S_3 - a^2 b^2 c^4 S_1 S_3^2 + a^2 b^2 c^2 d^2 S_1 S_3^2 + \right. \right. \right. \\
& \quad \left. \left. \left. a^2 b^2 c^4 S_1 S_2 S_4 - a^2 b^2 c^2 d^2 S_1 S_2 S_4 - a^2 b^2 c^4 S_1 S_3 S_4 - a^2 b^2 c^2 d^2 S_1 S_3 S_4 \right) \right) / \right. \\
& \left(a^2 b^2 c^2 S_0 S_1 S_2 S_3 + b^4 c^2 S_0 S_1 S_2 S_3 + a^2 c^4 S_0 S_1 S_2 S_3 + b^2 c^4 S_0 S_1 S_2 S_3 + \right. \\
& \quad a^2 b^2 d^2 S_0 S_1 S_2 S_3 + b^4 d^2 S_0 S_1 S_2 S_3 + a^2 c^2 d^2 S_0 S_1 S_2 S_3 + b^2 c^2 d^2 S_0 S_1 S_2 S_3 + \\
& \quad a^2 b^2 c^2 S_1^2 S_2 S_3 - b^4 c^2 S_1^2 S_2 S_3 + a^2 c^4 S_1^2 S_2 S_3 - b^2 c^4 S_1^2 S_2 S_3 + a^2 b^2 d^2 S_1^2 S_2 S_3 - \\
& \quad b^4 d^2 S_1^2 S_2 S_3 + a^2 c^2 d^2 S_1^2 S_2 S_3 - b^2 c^2 d^2 S_1^2 S_2 S_3 + a^2 b^2 c^2 S_0 S_2^2 S_3 - \\
& \quad b^4 c^2 S_0 S_2^2 S_3 - a^2 c^4 S_0 S_2^2 S_3 + b^2 c^4 S_0 S_2^2 S_3 + a^2 b^2 d^2 S_0 S_2^2 S_3 - b^4 d^2 S_0 S_2^2 S_3 - \\
& \quad a^2 c^2 d^2 S_0 S_2^2 S_3 + b^2 c^2 d^2 S_0 S_2^2 S_3 + a^2 b^2 c^2 S_1 S_2^2 S_3 + b^4 c^2 S_1 S_2^2 S_3 - \\
& \quad a^2 c^4 S_1 S_2^2 S_3 - b^2 c^4 S_1 S_2^2 S_3 + a^2 b^2 d^2 S_1 S_2^2 S_3 + b^4 d^2 S_1 S_2^2 S_3 - a^2 c^2 d^2 S_1 S_2^2 S_3 - \\
& \quad b^2 c^2 d^2 S_1 S_2^2 S_3 + a^2 b^2 c^2 S_0 S_1 S_3^2 + b^4 c^2 S_0 S_1 S_3^2 - a^2 c^4 S_0 S_1 S_3^2 - b^2 c^4 S_0 S_1 S_3^2 - \\
& \quad a^2 b^2 d^2 S_0 S_1 S_3^2 - b^4 d^2 S_0 S_1 S_3^2 + a^2 c^2 d^2 S_0 S_1 S_3^2 + b^2 c^2 d^2 S_0 S_1 S_3^2 + \\
& \quad a^2 b^2 c^2 S_1^2 S_3^2 - b^4 c^2 S_1^2 S_3^2 - a^2 c^4 S_1^2 S_3^2 + b^2 c^4 S_1^2 S_3^2 - a^2 b^2 d^2 S_1^2 S_3^2 + \\
& \quad b^4 d^2 S_1^2 S_3^2 + a^2 c^2 d^2 S_1^2 S_3^2 - b^2 c^2 d^2 S_1^2 S_3^2 + a^2 b^2 c^2 S_0 S_2 S_3^2 - b^4 c^2 S_0 S_2 S_3^2 + \\
& \quad a^2 c^4 S_0 S_2 S_3^2 - b^2 c^4 S_0 S_2 S_3^2 - a^2 b^2 d^2 S_0 S_2 S_3^2 + b^4 d^2 S_0 S_2 S_3^2 - a^2 c^2 d^2 S_0 S_2 S_3^2 + \\
& \quad b^2 c^2 d^2 S_0 S_2 S_3^2 + a^2 b^2 c^2 S_1 S_2 S_3^2 + b^4 c^2 S_1 S_2 S_3^2 + a^2 c^4 S_1 S_2 S_3^2 + b^2 c^4 S_1 S_2 S_3^2 - \\
& \quad a^2 b^2 d^2 S_1 S_2 S_3^2 - b^4 d^2 S_1 S_2 S_3^2 - a^2 c^2 d^2 S_1 S_2 S_3^2 - b^2 c^2 d^2 S_1 S_2 S_3^2 + \\
& \quad a^2 b^2 c^2 S_0 S_1 S_2 S_4 + b^4 c^2 S_0 S_1 S_2 S_4 + a^2 c^4 S_0 S_1 S_2 S_4 + b^2 c^4 S_0 S_1 S_2 S_4 - \\
& \quad a^2 b^2 d^2 S_0 S_1 S_2 S_4 - b^4 d^2 S_0 S_1 S_2 S_4 - a^2 c^2 d^2 S_0 S_1 S_2 S_4 - b^2 c^2 d^2 S_0 S_1 S_2 S_4 + \\
& \quad a^2 b^2 c^2 S_1^2 S_2 S_4 - b^4 c^2 S_1^2 S_2 S_4 + a^2 c^4 S_1^2 S_2 S_4 - b^2 c^4 S_1^2 S_2 S_4 - a^2 b^2 d^2 S_1^2 S_2 S_4 + \\
& \quad b^4 d^2 S_1^2 S_2 S_4 - a^2 c^2 d^2 S_1^2 S_2 S_4 + b^2 c^2 d^2 S_1^2 S_2 S_4 + a^2 b^2 c^2 S_0 S_2^2 S_4 - \\
& \quad b^4 c^2 S_0 S_2^2 S_4 - a^2 c^4 S_0 S_2^2 S_4 + b^2 c^4 S_0 S_2^2 S_4 - a^2 b^2 d^2 S_0 S_2^2 S_4 + b^4 d^2 S_0 S_2^2 S_4 + \\
& \quad a^2 c^2 d^2 S_0 S_2^2 S_4 - b^2 c^2 d^2 S_0 S_2^2 S_4 + a^2 b^2 c^2 S_1 S_2^2 S_4 + b^4 c^2 S_1 S_2^2 S_4 - \\
& \quad a^2 c^4 S_1 S_2^2 S_4 - b^2 c^4 S_1 S_2^2 S_4 - a^2 b^2 d^2 S_1 S_2^2 S_4 - b^4 d^2 S_1 S_2^2 S_4 + a^2 c^2 d^2 S_1 S_2^2 S_4 + \\
& \quad b^2 c^2 d^2 S_1 S_2^2 S_4 + a^2 b^2 c^2 S_0 S_1 S_3 S_4 + b^4 c^2 S_0 S_1 S_3 S_4 - a^2 c^4 S_0 S_1 S_3 S_4 - \\
& \quad b^2 c^4 S_0 S_1 S_3 S_4 + a^2 b^2 d^2 S_0 S_1 S_3 S_4 + b^4 d^2 S_0 S_1 S_3 S_4 - a^2 c^2 d^2 S_0 S_1 S_3 S_4 - \\
& \quad b^2 c^2 d^2 S_0 S_1 S_3 S_4 + a^2 b^2 c^2 S_1^2 S_3 S_4 - b^4 c^2 S_1^2 S_3 S_4 - a^2 c^4 S_1^2 S_3 S_4 + b^2 c^4 S_1^2 S_3 S_4 + \\
& \quad a^2 b^2 d^2 S_1^2 S_3 S_4 - b^4 d^2 S_1^2 S_3 S_4 - a^2 c^2 d^2 S_1^2 S_3 S_4 + b^2 c^2 d^2 S_1^2 S_3 S_4 + \\
& \quad a^2 b^2 c^2 S_0 S_2 S_3 S_4 - b^4 c^2 S_0 S_2 S_3 S_4 + a^2 c^4 S_0 S_2 S_3 S_4 - b^2 c^4 S_0 S_2 S_3 S_4 + \\
& \quad a^2 b^2 d^2 S_0 S_2 S_3 S_4 - b^4 d^2 S_0 S_2 S_3 S_4 + a^2 c^2 d^2 S_0 S_2 S_3 S_4 - b^2 c^2 d^2 S_0 S_2 S_3 S_4 + \\
& \quad a^2 b^2 c^2 S_1 S_2 S_3 S_4 + b^4 c^2 S_1 S_2 S_3 S_4 + a^2 c^4 S_1 S_2 S_3 S_4 + b^2 c^4 S_1 S_2 S_3 S_4 + \\
& \quad \left. \left. \left. a^2 b^2 d^2 S_1 S_2 S_3 S_4 + b^4 d^2 S_1 S_2 S_3 S_4 + a^2 c^2 d^2 S_1 S_2 S_3 S_4 + b^2 c^2 d^2 S_1 S_2 S_3 S_4 \right) \right) \right)
\end{aligned}$$

FullSimplify[C2]

$$\begin{aligned}
& - \left(\left(4 a^2 b^2 c^2 E_0 S_0 S_1 \left(d^2 (S_2 + S_3) (S_3 - S_4) + c^2 (S_2 - S_3) (S_3 + S_4) \right) \right) / \right. \\
& \left(b^2 (S_0 - S_1) \left(c^2 (S_1 + S_2) \left(d^2 (S_2 + S_3) (S_3 - S_4) + c^2 (S_2 - S_3) (S_3 + S_4) \right) + \right. \right. \\
& \quad \left. \left. b^2 (S_1 - S_2) \left(d^2 (S_2 - S_3) (S_3 - S_4) + c^2 (S_2 + S_3) (S_3 + S_4) \right) \right) \right) + \\
& \quad a^2 (S_0 + S_1) \left(c^2 (S_1 - S_2) \left(d^2 (S_2 + S_3) (S_3 - S_4) + c^2 (S_2 - S_3) (S_3 + S_4) \right) + \right. \\
& \quad \left. \left. b^2 (S_1 + S_2) \left(d^2 (S_2 - S_3) (S_3 - S_4) + c^2 (S_2 + S_3) (S_3 + S_4) \right) \right) \right) \right)
\end{aligned}$$

A3 =

$$\begin{aligned}
 & - \left((8 b^2 c^2 E_0 S_0 S_2 (a^2 S_1 S_3 + a^2 S_1 S_4)) / (a^2 b^2 c^2 S_0 S_1 S_2 S_3 + b^4 c^2 S_0 S_1 S_2 S_3 + a^2 c^4 S_0 S_1 \right. \\
 & \quad S_2 S_3 + b^2 c^4 S_0 S_1 S_2 S_3 + a^2 b^2 d^2 S_0 S_1 S_2 S_3 + b^4 d^2 S_0 S_1 S_2 S_3 + a^2 c^2 d^2 S_0 S_1 S_2 S_3 + \\
 & \quad b^2 c^2 d^2 S_0 S_1 S_2 S_3 + a^2 b^2 c^2 S_1^2 S_2 S_3 - b^4 c^2 S_1^2 S_2 S_3 + a^2 c^4 S_1^2 S_2 S_3 - \\
 & \quad b^2 c^4 S_1^2 S_2 S_3 + a^2 b^2 d^2 S_1^2 S_2 S_3 - b^4 d^2 S_1^2 S_2 S_3 + a^2 c^2 d^2 S_1^2 S_2 S_3 - b^2 c^2 d^2 S_1^2 S_2 S_3 + \\
 & \quad a^2 b^2 c^2 S_0 S_2^2 S_3 - b^4 c^2 S_0 S_2^2 S_3 - a^2 c^4 S_0 S_2^2 S_3 + b^2 c^4 S_0 S_2^2 S_3 + a^2 b^2 d^2 S_0 S_2^2 S_3 - \\
 & \quad b^4 d^2 S_0 S_2^2 S_3 - a^2 c^2 d^2 S_0 S_2^2 S_3 + b^2 c^2 d^2 S_0 S_2^2 S_3 + a^2 b^2 c^2 S_1 S_2^2 S_3 + \\
 & \quad b^4 c^2 S_1 S_2^2 S_3 - a^2 c^4 S_1 S_2^2 S_3 - b^2 c^4 S_1 S_2^2 S_3 + a^2 b^2 d^2 S_1 S_2^2 S_3 + b^4 d^2 S_1 S_2^2 S_3 - \\
 & \quad a^2 c^2 d^2 S_1 S_2^2 S_3 - b^2 c^2 d^2 S_1 S_2^2 S_3 + a^2 b^2 c^2 S_0 S_1 S_3^2 + b^4 c^2 S_0 S_1 S_3^2 - \\
 & \quad a^2 c^4 S_0 S_1 S_3^2 - b^2 c^4 S_0 S_1 S_3^2 - a^2 b^2 d^2 S_0 S_1 S_3^2 - b^4 d^2 S_0 S_1 S_3^2 + a^2 c^2 d^2 S_0 S_1 S_3^2 + \\
 & \quad b^2 c^2 d^2 S_0 S_1 S_3^2 + a^2 b^2 c^2 S_1^2 S_3^2 - b^4 c^2 S_1^2 S_3^2 - a^2 c^4 S_1^2 S_3^2 + b^2 c^4 S_1^2 S_3^2 - \\
 & \quad a^2 b^2 d^2 S_1^2 S_3^2 + b^4 d^2 S_1^2 S_3^2 + a^2 c^2 d^2 S_1^2 S_3^2 - b^2 c^2 d^2 S_1^2 S_3^2 + a^2 b^2 c^2 S_0 S_2 S_3^2 - \\
 & \quad b^4 c^2 S_0 S_2 S_3^2 + a^2 c^4 S_0 S_2 S_3^2 - b^2 c^4 S_0 S_2 S_3^2 - a^2 b^2 d^2 S_0 S_2 S_3^2 + b^4 d^2 S_0 S_2 S_3^2 - \\
 & \quad a^2 c^2 d^2 S_0 S_2 S_3^2 + b^2 c^2 d^2 S_0 S_2 S_3^2 + a^2 b^2 c^2 S_1 S_2 S_3^2 + b^4 c^2 S_1 S_2 S_3^2 + a^2 c^4 S_1 S_2 S_3^2 + \\
 & \quad b^2 c^4 S_1 S_2 S_3^2 - a^2 b^2 d^2 S_1 S_2 S_3^2 - b^4 d^2 S_1 S_2 S_3^2 - a^2 c^2 d^2 S_1 S_2 S_3^2 - b^2 c^2 d^2 S_1 S_2 S_3^2 + \\
 & \quad a^2 b^2 c^2 S_0 S_1 S_2 S_4 + b^4 c^2 S_0 S_1 S_2 S_4 + a^2 c^4 S_0 S_1 S_2 S_4 + b^2 c^4 S_0 S_1 S_2 S_4 - \\
 & \quad a^2 b^2 d^2 S_0 S_1 S_2 S_4 - b^4 d^2 S_0 S_1 S_2 S_4 - a^2 c^2 d^2 S_0 S_1 S_2 S_4 - b^2 c^2 d^2 S_0 S_1 S_2 S_4 + \\
 & \quad a^2 b^2 c^2 S_1^2 S_2 S_4 - b^4 c^2 S_1^2 S_2 S_4 + a^2 c^4 S_1^2 S_2 S_4 - b^2 c^4 S_1^2 S_2 S_4 - a^2 b^2 d^2 S_1^2 S_2 S_4 + \\
 & \quad b^4 d^2 S_1^2 S_2 S_4 - a^2 c^2 d^2 S_1^2 S_2 S_4 + b^2 c^2 d^2 S_1^2 S_2 S_4 + a^2 b^2 c^2 S_0 S_2^2 S_4 - \\
 & \quad b^4 c^2 S_0 S_2^2 S_4 - a^2 c^4 S_0 S_2^2 S_4 + b^2 c^4 S_0 S_2^2 S_4 - a^2 b^2 d^2 S_0 S_2^2 S_4 + b^4 d^2 S_0 S_2^2 S_4 + \\
 & \quad a^2 c^2 d^2 S_0 S_2^2 S_4 - b^2 c^2 d^2 S_0 S_2^2 S_4 + a^2 b^2 c^2 S_1 S_2^2 S_4 + b^4 c^2 S_1 S_2^2 S_4 - \\
 & \quad a^2 c^4 S_1 S_2^2 S_4 - b^2 c^4 S_1 S_2^2 S_4 - a^2 b^2 d^2 S_1 S_2^2 S_4 - b^4 d^2 S_1 S_2^2 S_4 + a^2 c^2 d^2 S_1 S_2^2 S_4 + \\
 & \quad b^2 c^2 d^2 S_1 S_2^2 S_4 + a^2 b^2 c^2 S_0 S_1 S_3 S_4 + b^4 c^2 S_0 S_1 S_3 S_4 - a^2 c^4 S_0 S_1 S_3 S_4 - \\
 & \quad b^2 c^4 S_0 S_1 S_3 S_4 + a^2 b^2 d^2 S_0 S_1 S_3 S_4 + b^4 d^2 S_0 S_1 S_3 S_4 - a^2 c^2 d^2 S_0 S_1 S_3 S_4 - \\
 & \quad b^2 c^2 d^2 S_0 S_1 S_3 S_4 + a^2 b^2 c^2 S_1^2 S_3 S_4 - b^4 c^2 S_1^2 S_3 S_4 - a^2 c^4 S_1^2 S_3 S_4 + b^2 c^4 S_1^2 S_3 S_4 + \\
 & \quad a^2 b^2 d^2 S_1^2 S_3 S_4 - b^4 d^2 S_1^2 S_3 S_4 - a^2 c^2 d^2 S_1^2 S_3 S_4 + b^2 c^2 d^2 S_1^2 S_3 S_4 + \\
 & \quad a^2 b^2 c^2 S_0 S_2 S_3 S_4 - b^4 c^2 S_0 S_2 S_3 S_4 + a^2 c^4 S_0 S_2 S_3 S_4 - b^2 c^4 S_0 S_2 S_3 S_4 + \\
 & \quad a^2 b^2 d^2 S_0 S_2 S_3 S_4 - b^4 d^2 S_0 S_2 S_3 S_4 + a^2 c^2 d^2 S_0 S_2 S_3 S_4 - b^2 c^2 d^2 S_0 S_2 S_3 S_4 + \\
 & \quad a^2 b^2 c^2 S_1 S_2 S_3 S_4 + b^4 c^2 S_1 S_2 S_3 S_4 + a^2 c^4 S_1 S_2 S_3 S_4 + b^2 c^4 S_1 S_2 S_3 S_4 + \\
 & \quad a^2 b^2 d^2 S_1 S_2 S_3 S_4 + b^4 d^2 S_1 S_2 S_3 S_4 + a^2 c^2 d^2 S_1 S_2 S_3 S_4 + b^2 c^2 d^2 S_1 S_2 S_3 S_4))
 \end{aligned}$$

$$\begin{aligned}
& - \left((8 b^2 c^2 E_0 S_0 S_2 (a^2 S_1 S_3 + a^2 S_1 S_4)) / \right. \\
& \quad (a^2 b^2 c^2 S_0 S_1 S_2 S_3 + b^4 c^2 S_0 S_1 S_2 S_3 + a^2 c^4 S_0 S_1 S_2 S_3 + b^2 c^4 S_0 S_1 S_2 S_3 + \\
& \quad a^2 b^2 d^2 S_0 S_1 S_2 S_3 + b^4 d^2 S_0 S_1 S_2 S_3 + a^2 c^2 d^2 S_0 S_1 S_2 S_3 + b^2 c^2 d^2 S_0 S_1 S_2 S_3 + \\
& \quad a^2 b^2 c^2 S_1^2 S_2 S_3 - b^4 c^2 S_1^2 S_2 S_3 + a^2 c^4 S_1^2 S_2 S_3 - b^2 c^4 S_1^2 S_2 S_3 + a^2 b^2 d^2 S_1^2 S_2 S_3 - \\
& \quad b^4 d^2 S_1^2 S_2 S_3 + a^2 c^2 d^2 S_1^2 S_2 S_3 - b^2 c^2 d^2 S_1^2 S_2 S_3 + a^2 b^2 c^2 S_0 S_2^2 S_3 - \\
& \quad b^4 c^2 S_0 S_2^2 S_3 - a^2 c^4 S_0 S_2^2 S_3 + b^2 c^4 S_0 S_2^2 S_3 + a^2 b^2 d^2 S_0 S_2^2 S_3 - b^4 d^2 S_0 S_2^2 S_3 - \\
& \quad a^2 c^2 d^2 S_0 S_2^2 S_3 + b^2 c^2 d^2 S_0 S_2^2 S_3 + a^2 b^2 c^2 S_1 S_2^2 S_3 + b^4 c^2 S_1 S_2^2 S_3 - \\
& \quad a^2 c^4 S_1 S_2^2 S_3 - b^2 c^4 S_1 S_2^2 S_3 + a^2 b^2 d^2 S_1 S_2^2 S_3 + b^4 d^2 S_1 S_2^2 S_3 - a^2 c^2 d^2 S_1 S_2^2 S_3 - \\
& \quad b^2 c^2 d^2 S_1 S_2^2 S_3 + a^2 b^2 c^2 S_0 S_1 S_3^2 + b^4 c^2 S_0 S_1 S_3^2 - a^2 c^4 S_0 S_1 S_3^2 - b^2 c^4 S_0 S_1 S_3^2 - \\
& \quad a^2 b^2 d^2 S_0 S_1 S_3^2 - b^4 d^2 S_0 S_1 S_3^2 + a^2 c^2 d^2 S_0 S_1 S_3^2 + b^2 c^2 d^2 S_0 S_1 S_3^2 + \\
& \quad a^2 b^2 c^2 S_1^2 S_3^2 - b^4 c^2 S_1^2 S_3^2 - a^2 c^4 S_1^2 S_3^2 + b^2 c^4 S_1^2 S_3^2 - a^2 b^2 d^2 S_1^2 S_3^2 + \\
& \quad b^4 d^2 S_1^2 S_3^2 + a^2 c^2 d^2 S_1^2 S_3^2 - b^2 c^2 d^2 S_1^2 S_3^2 + a^2 b^2 c^2 S_0 S_2 S_3^2 - b^4 c^2 S_0 S_2 S_3^2 + \\
& \quad a^2 c^4 S_0 S_2 S_3^2 - b^2 c^4 S_0 S_2 S_3^2 - a^2 b^2 d^2 S_0 S_2 S_3^2 + b^4 d^2 S_0 S_2 S_3^2 - a^2 c^2 d^2 S_0 S_2 S_3^2 + \\
& \quad b^2 c^2 d^2 S_0 S_2 S_3^2 + a^2 b^2 c^2 S_1 S_2 S_3^2 + b^4 c^2 S_1 S_2 S_3^2 + a^2 c^4 S_1 S_2 S_3^2 + b^2 c^4 S_1 S_2 S_3^2 - \\
& \quad a^2 b^2 d^2 S_1 S_2 S_3^2 - b^4 d^2 S_1 S_2 S_3^2 - a^2 c^2 d^2 S_1 S_2 S_3^2 - b^2 c^2 d^2 S_1 S_2 S_3^2 + \\
& \quad a^2 b^2 c^2 S_0 S_1 S_2 S_4 + b^4 c^2 S_0 S_1 S_2 S_4 + a^2 c^4 S_0 S_1 S_2 S_4 + b^2 c^4 S_0 S_1 S_2 S_4 - \\
& \quad a^2 b^2 d^2 S_0 S_1 S_2 S_4 - b^4 d^2 S_0 S_1 S_2 S_4 - a^2 c^2 d^2 S_0 S_1 S_2 S_4 - b^2 c^2 d^2 S_0 S_1 S_2 S_4 + \\
& \quad a^2 b^2 c^2 S_1^2 S_2 S_4 - b^4 c^2 S_1^2 S_2 S_4 + a^2 c^4 S_1^2 S_2 S_4 - b^2 c^4 S_1^2 S_2 S_4 - a^2 b^2 d^2 S_1^2 S_2 S_4 + \\
& \quad b^4 d^2 S_1^2 S_2 S_4 - a^2 c^2 d^2 S_1^2 S_2 S_4 + b^2 c^2 d^2 S_1^2 S_2 S_4 + a^2 b^2 c^2 S_0 S_2^2 S_4 - \\
& \quad b^4 c^2 S_0 S_2^2 S_4 - a^2 c^4 S_0 S_2^2 S_4 + b^2 c^4 S_0 S_2^2 S_4 - a^2 b^2 d^2 S_0 S_2^2 S_4 + b^4 d^2 S_0 S_2^2 S_4 + \\
& \quad a^2 c^2 d^2 S_0 S_2^2 S_4 - b^2 c^2 d^2 S_0 S_2^2 S_4 + a^2 b^2 c^2 S_1 S_2^2 S_4 + b^4 c^2 S_1 S_2^2 S_4 - \\
& \quad a^2 c^4 S_1 S_2^2 S_4 - b^2 c^4 S_1 S_2^2 S_4 - a^2 b^2 d^2 S_1 S_2^2 S_4 - b^4 d^2 S_1 S_2^2 S_4 + a^2 c^2 d^2 S_1 S_2^2 S_4 + \\
& \quad b^2 c^2 d^2 S_1 S_2^2 S_4 + a^2 b^2 c^2 S_0 S_1 S_3 S_4 + b^4 c^2 S_0 S_1 S_3 S_4 - a^2 c^4 S_0 S_1 S_3 S_4 - \\
& \quad b^2 c^4 S_0 S_1 S_3 S_4 + a^2 b^2 d^2 S_0 S_1 S_3 S_4 + b^4 d^2 S_0 S_1 S_3 S_4 - a^2 c^2 d^2 S_0 S_1 S_3 S_4 - \\
& \quad b^2 c^2 d^2 S_0 S_1 S_3 S_4 + a^2 b^2 c^2 S_1^2 S_3 S_4 - b^4 c^2 S_1^2 S_3 S_4 - a^2 c^4 S_1^2 S_3 S_4 + b^2 c^4 S_1^2 S_3 S_4 + \\
& \quad a^2 b^2 d^2 S_1^2 S_3 S_4 - b^4 d^2 S_1^2 S_3 S_4 - a^2 c^2 d^2 S_1^2 S_3 S_4 + b^2 c^2 d^2 S_1^2 S_3 S_4 + \\
& \quad a^2 b^2 c^2 S_0 S_2 S_3 S_4 - b^4 c^2 S_0 S_2 S_3 S_4 + a^2 c^4 S_0 S_2 S_3 S_4 - b^2 c^4 S_0 S_2 S_3 S_4 + \\
& \quad a^2 b^2 d^2 S_0 S_2 S_3 S_4 - b^4 d^2 S_0 S_2 S_3 S_4 + a^2 c^2 d^2 S_0 S_2 S_3 S_4 - b^2 c^2 d^2 S_0 S_2 S_3 S_4 + \\
& \quad a^2 b^2 c^2 S_1 S_2 S_3 S_4 + b^4 c^2 S_1 S_2 S_3 S_4 + a^2 c^4 S_1 S_2 S_3 S_4 + b^2 c^4 S_1 S_2 S_3 S_4 + \\
& \quad a^2 b^2 d^2 S_1 S_2 S_3 S_4 + b^4 d^2 S_1 S_2 S_3 S_4 + a^2 c^2 d^2 S_1 S_2 S_3 S_4 + b^2 c^2 d^2 S_1 S_2 S_3 S_4) \left. \right)
\end{aligned}$$

FullSimplify[A3]

$$\begin{aligned}
& - \left((8 a^2 b^2 c^2 E_0 S_0 S_1 S_2 (S_3 + S_4)) / \right. \\
& \quad (b^2 (S_0 - S_1) (c^2 (S_1 + S_2) (d^2 (S_2 + S_3) (S_3 - S_4) + c^2 (S_2 - S_3) (S_3 + S_4)) + \\
& \quad b^2 (S_1 - S_2) (d^2 (S_2 - S_3) (S_3 - S_4) + c^2 (S_2 + S_3) (S_3 + S_4))) + \\
& \quad a^2 (S_0 + S_1) (c^2 (S_1 - S_2) (d^2 (S_2 + S_3) (S_3 - S_4) + c^2 (S_2 - S_3) (S_3 + S_4)) + \\
& \quad b^2 (S_1 + S_2) (d^2 (S_2 - S_3) (S_3 - S_4) + c^2 (S_2 + S_3) (S_3 + S_4)))) \left. \right)
\end{aligned}$$

$$\begin{aligned}
C3 = & - \left((8 b^2 E0 S0 S2 (a^2 c^2 d^2 S1 S3 - a^2 c^2 d^2 S1 S4)) / \right. \\
& (a^2 b^2 c^2 S0 S1 S2 S3 + b^4 c^2 S0 S1 S2 S3 + a^2 c^4 S0 S1 S2 S3 + b^2 c^4 S0 S1 S2 S3 + \\
& a^2 b^2 d^2 S0 S1 S2 S3 + b^4 d^2 S0 S1 S2 S3 + a^2 c^2 d^2 S0 S1 S2 S3 + b^2 c^2 d^2 S0 S1 S2 S3 + \\
& a^2 b^2 c^2 S1^2 S2 S3 - b^4 c^2 S1^2 S2 S3 + a^2 c^4 S1^2 S2 S3 - b^2 c^4 S1^2 S2 S3 + a^2 b^2 d^2 S1^2 S2 S3 - \\
& b^4 d^2 S1^2 S2 S3 + a^2 c^2 d^2 S1^2 S2 S3 - b^2 c^2 d^2 S1^2 S2 S3 + a^2 b^2 c^2 S0 S2^2 S3 - \\
& b^4 c^2 S0 S2^2 S3 - a^2 c^4 S0 S2^2 S3 + b^2 c^4 S0 S2^2 S3 + a^2 b^2 d^2 S0 S2^2 S3 - b^4 d^2 S0 S2^2 S3 - \\
& a^2 c^2 d^2 S0 S2^2 S3 + b^2 c^2 d^2 S0 S2^2 S3 + a^2 b^2 c^2 S1 S2^2 S3 + b^4 c^2 S1 S2^2 S3 - \\
& a^2 c^4 S1 S2^2 S3 - b^2 c^4 S1 S2^2 S3 + a^2 b^2 d^2 S1 S2^2 S3 + b^4 d^2 S1 S2^2 S3 - a^2 c^2 d^2 S1 S2^2 S3 - \\
& b^2 c^2 d^2 S1 S2^2 S3 + a^2 b^2 c^2 S0 S1 S3^2 + b^4 c^2 S0 S1 S3^2 - a^2 c^4 S0 S1 S3^2 - b^2 c^4 S0 S1 S3^2 - \\
& a^2 b^2 d^2 S0 S1 S3^2 - b^4 d^2 S0 S1 S3^2 + a^2 c^2 d^2 S0 S1 S3^2 + b^2 c^2 d^2 S0 S1 S3^2 + \\
& a^2 b^2 c^2 S1^2 S3^2 - b^4 c^2 S1^2 S3^2 - a^2 c^4 S1^2 S3^2 + b^2 c^4 S1^2 S3^2 - a^2 b^2 d^2 S1^2 S3^2 + \\
& b^4 d^2 S1^2 S3^2 + a^2 c^2 d^2 S1^2 S3^2 - b^2 c^2 d^2 S1^2 S3^2 + a^2 b^2 c^2 S0 S2 S3^2 - b^4 c^2 S0 S2 S3^2 + \\
& a^2 c^4 S0 S2 S3^2 - b^2 c^4 S0 S2 S3^2 - a^2 b^2 d^2 S0 S2 S3^2 + b^4 d^2 S0 S2 S3^2 - a^2 c^2 d^2 S0 S2 S3^2 + \\
& b^2 c^2 d^2 S0 S2 S3^2 + a^2 b^2 c^2 S1 S2 S3^2 + b^4 c^2 S1 S2 S3^2 + a^2 c^4 S1 S2 S3^2 + b^2 c^4 S1 S2 S3^2 - \\
& a^2 b^2 d^2 S1 S2 S3^2 - b^4 d^2 S1 S2 S3^2 - a^2 c^2 d^2 S1 S2 S3^2 - b^2 c^2 d^2 S1 S2 S3^2 + \\
& a^2 b^2 c^2 S0 S1 S2 S4 + b^4 c^2 S0 S1 S2 S4 + a^2 c^4 S0 S1 S2 S4 + b^2 c^4 S0 S1 S2 S4 - \\
& a^2 b^2 d^2 S0 S1 S2 S4 - b^4 d^2 S0 S1 S2 S4 - a^2 c^2 d^2 S0 S1 S2 S4 - b^2 c^2 d^2 S0 S1 S2 S4 + \\
& a^2 b^2 c^2 S1^2 S2 S4 - b^4 c^2 S1^2 S2 S4 + a^2 c^4 S1^2 S2 S4 - b^2 c^4 S1^2 S2 S4 - a^2 b^2 d^2 S1^2 S2 S4 + \\
& b^4 d^2 S1^2 S2 S4 - a^2 c^2 d^2 S1^2 S2 S4 + b^2 c^2 d^2 S1^2 S2 S4 + a^2 b^2 c^2 S0 S2^2 S4 - \\
& b^4 c^2 S0 S2^2 S4 - a^2 c^4 S0 S2^2 S4 + b^2 c^4 S0 S2^2 S4 - a^2 b^2 d^2 S0 S2^2 S4 + b^4 d^2 S0 S2^2 S4 + \\
& a^2 c^2 d^2 S0 S2^2 S4 - b^2 c^2 d^2 S0 S2^2 S4 + a^2 b^2 c^2 S1 S2^2 S4 + b^4 c^2 S1 S2^2 S4 - \\
& a^2 c^4 S1 S2^2 S4 - b^2 c^4 S1 S2^2 S4 - a^2 b^2 d^2 S1 S2^2 S4 - b^4 d^2 S1 S2^2 S4 + a^2 c^2 d^2 S1 S2^2 S4 + \\
& b^2 c^2 d^2 S1 S2^2 S4 + a^2 b^2 c^2 S0 S1 S3 S4 + b^4 c^2 S0 S1 S3 S4 - a^2 c^4 S0 S1 S3 S4 - \\
& b^2 c^4 S0 S1 S3 S4 + a^2 b^2 d^2 S0 S1 S3 S4 + b^4 d^2 S0 S1 S3 S4 - a^2 c^2 d^2 S0 S1 S3 S4 - \\
& b^2 c^2 d^2 S0 S1 S3 S4 + a^2 b^2 c^2 S1^2 S3 S4 - b^4 c^2 S1^2 S3 S4 - a^2 c^4 S1^2 S3 S4 + b^2 c^4 S1^2 S3 S4 + \\
& a^2 b^2 d^2 S1^2 S3 S4 - b^4 d^2 S1^2 S3 S4 - a^2 c^2 d^2 S1^2 S3 S4 + b^2 c^2 d^2 S1^2 S3 S4 + \\
& a^2 b^2 c^2 S0 S2 S3 S4 - b^4 c^2 S0 S2 S3 S4 + a^2 c^4 S0 S2 S3 S4 - b^2 c^4 S0 S2 S3 S4 + \\
& a^2 b^2 d^2 S0 S2 S3 S4 - b^4 d^2 S0 S2 S3 S4 + a^2 c^2 d^2 S0 S2 S3 S4 - b^2 c^2 d^2 S0 S2 S3 S4 + \\
& a^2 b^2 c^2 S1 S2 S3 S4 + b^4 c^2 S1 S2 S3 S4 + a^2 c^4 S1 S2 S3 S4 + b^2 c^4 S1 S2 S3 S4 + \\
& a^2 b^2 d^2 S1 S2 S3 S4 + b^4 d^2 S1 S2 S3 S4 + a^2 c^2 d^2 S1 S2 S3 S4 + b^2 c^2 d^2 S1 S2 S3 S4))
\end{aligned}$$

$$\begin{aligned}
& - \left((8 b^2 E_0 S_0 S_2 (a^2 c^2 d^2 S_1 S_3 - a^2 c^2 d^2 S_1 S_4)) / \right. \\
& \quad (a^2 b^2 c^2 S_0 S_1 S_2 S_3 + b^4 c^2 S_0 S_1 S_2 S_3 + a^2 c^4 S_0 S_1 S_2 S_3 + b^2 c^4 S_0 S_1 S_2 S_3 + \\
& \quad a^2 b^2 d^2 S_0 S_1 S_2 S_3 + b^4 d^2 S_0 S_1 S_2 S_3 + a^2 c^2 d^2 S_0 S_1 S_2 S_3 + b^2 c^2 d^2 S_0 S_1 S_2 S_3 + \\
& \quad a^2 b^2 c^2 S_1^2 S_2 S_3 - b^4 c^2 S_1^2 S_2 S_3 + a^2 c^4 S_1^2 S_2 S_3 - b^2 c^4 S_1^2 S_2 S_3 + a^2 b^2 d^2 S_1^2 S_2 S_3 - \\
& \quad b^4 d^2 S_1^2 S_2 S_3 + a^2 c^2 d^2 S_1^2 S_2 S_3 - b^2 c^2 d^2 S_1^2 S_2 S_3 + a^2 b^2 c^2 S_0 S_2^2 S_3 - \\
& \quad b^4 c^2 S_0 S_2^2 S_3 - a^2 c^4 S_0 S_2^2 S_3 + b^2 c^4 S_0 S_2^2 S_3 + a^2 b^2 d^2 S_0 S_2^2 S_3 - b^4 d^2 S_0 S_2^2 S_3 - \\
& \quad a^2 c^2 d^2 S_0 S_2^2 S_3 + b^2 c^2 d^2 S_0 S_2^2 S_3 + a^2 b^2 c^2 S_1 S_2^2 S_3 + b^4 c^2 S_1 S_2^2 S_3 - \\
& \quad a^2 c^4 S_1 S_2^2 S_3 - b^2 c^4 S_1 S_2^2 S_3 + a^2 b^2 d^2 S_1 S_2^2 S_3 + b^4 d^2 S_1 S_2^2 S_3 - a^2 c^2 d^2 S_1 S_2^2 S_3 - \\
& \quad b^2 c^2 d^2 S_1 S_2^2 S_3 + a^2 b^2 c^2 S_0 S_1 S_3^2 + b^4 c^2 S_0 S_1 S_3^2 - a^2 c^4 S_0 S_1 S_3^2 - b^2 c^4 S_0 S_1 S_3^2 - \\
& \quad a^2 b^2 d^2 S_0 S_1 S_3^2 - b^4 d^2 S_0 S_1 S_3^2 + a^2 c^2 d^2 S_0 S_1 S_3^2 + b^2 c^2 d^2 S_0 S_1 S_3^2 + \\
& \quad a^2 b^2 c^2 S_1^2 S_3^2 - b^4 c^2 S_1^2 S_3^2 - a^2 c^4 S_1^2 S_3^2 + b^2 c^4 S_1^2 S_3^2 - a^2 b^2 d^2 S_1^2 S_3^2 + \\
& \quad b^4 d^2 S_1^2 S_3^2 + a^2 c^2 d^2 S_1^2 S_3^2 - b^2 c^2 d^2 S_1^2 S_3^2 + a^2 b^2 c^2 S_0 S_2 S_3^2 - b^4 c^2 S_0 S_2 S_3^2 + \\
& \quad a^2 c^4 S_0 S_2 S_3^2 - b^2 c^4 S_0 S_2 S_3^2 - a^2 b^2 d^2 S_0 S_2 S_3^2 + b^4 d^2 S_0 S_2 S_3^2 - a^2 c^2 d^2 S_0 S_2 S_3^2 + \\
& \quad b^2 c^2 d^2 S_0 S_2 S_3^2 + a^2 b^2 c^2 S_1 S_2 S_3^2 + b^4 c^2 S_1 S_2 S_3^2 + a^2 c^4 S_1 S_2 S_3^2 + b^2 c^4 S_1 S_2 S_3^2 - \\
& \quad a^2 b^2 d^2 S_1 S_2 S_3^2 - b^4 d^2 S_1 S_2 S_3^2 - a^2 c^2 d^2 S_1 S_2 S_3^2 - b^2 c^2 d^2 S_1 S_2 S_3^2 + \\
& \quad a^2 b^2 c^2 S_0 S_1 S_2 S_4 + b^4 c^2 S_0 S_1 S_2 S_4 + a^2 c^4 S_0 S_1 S_2 S_4 + b^2 c^4 S_0 S_1 S_2 S_4 - \\
& \quad a^2 b^2 d^2 S_0 S_1 S_2 S_4 - b^4 d^2 S_0 S_1 S_2 S_4 - a^2 c^2 d^2 S_0 S_1 S_2 S_4 - b^2 c^2 d^2 S_0 S_1 S_2 S_4 + \\
& \quad a^2 b^2 c^2 S_1^2 S_2 S_4 - b^4 c^2 S_1^2 S_2 S_4 + a^2 c^4 S_1^2 S_2 S_4 - b^2 c^4 S_1^2 S_2 S_4 - a^2 b^2 d^2 S_1^2 S_2 S_4 + \\
& \quad b^4 d^2 S_1^2 S_2 S_4 - a^2 c^2 d^2 S_1^2 S_2 S_4 + b^2 c^2 d^2 S_1^2 S_2 S_4 + a^2 b^2 c^2 S_0 S_2^2 S_4 - \\
& \quad b^4 c^2 S_0 S_2^2 S_4 - a^2 c^4 S_0 S_2^2 S_4 + b^2 c^4 S_0 S_2^2 S_4 - a^2 b^2 d^2 S_0 S_2^2 S_4 + b^4 d^2 S_0 S_2^2 S_4 + \\
& \quad a^2 c^2 d^2 S_0 S_2^2 S_4 - b^2 c^2 d^2 S_0 S_2^2 S_4 + a^2 b^2 c^2 S_1 S_2^2 S_4 + b^4 c^2 S_1 S_2^2 S_4 - \\
& \quad a^2 c^4 S_1 S_2^2 S_4 - b^2 c^4 S_1 S_2^2 S_4 - a^2 b^2 d^2 S_1 S_2^2 S_4 - b^4 d^2 S_1 S_2^2 S_4 + a^2 c^2 d^2 S_1 S_2^2 S_4 + \\
& \quad b^2 c^2 d^2 S_1 S_2^2 S_4 + a^2 b^2 c^2 S_0 S_1 S_3 S_4 + b^4 c^2 S_0 S_1 S_3 S_4 - a^2 c^4 S_0 S_1 S_3 S_4 - \\
& \quad b^2 c^4 S_0 S_1 S_3 S_4 + a^2 b^2 d^2 S_0 S_1 S_3 S_4 + b^4 d^2 S_0 S_1 S_3 S_4 - a^2 c^2 d^2 S_0 S_1 S_3 S_4 - \\
& \quad b^2 c^2 d^2 S_0 S_1 S_3 S_4 + a^2 b^2 c^2 S_1^2 S_3 S_4 - b^4 c^2 S_1^2 S_3 S_4 - a^2 c^4 S_1^2 S_3 S_4 + b^2 c^4 S_1^2 S_3 S_4 + \\
& \quad a^2 b^2 d^2 S_1^2 S_3 S_4 - b^4 d^2 S_1^2 S_3 S_4 - a^2 c^2 d^2 S_1^2 S_3 S_4 + b^2 c^2 d^2 S_1^2 S_3 S_4 + \\
& \quad a^2 b^2 c^2 S_0 S_2 S_3 S_4 - b^4 c^2 S_0 S_2 S_3 S_4 + a^2 c^4 S_0 S_2 S_3 S_4 - b^2 c^4 S_0 S_2 S_3 S_4 + \\
& \quad a^2 b^2 d^2 S_0 S_2 S_3 S_4 - b^4 d^2 S_0 S_2 S_3 S_4 + a^2 c^2 d^2 S_0 S_2 S_3 S_4 - b^2 c^2 d^2 S_0 S_2 S_3 S_4 + \\
& \quad a^2 b^2 c^2 S_1 S_2 S_3 S_4 + b^4 c^2 S_1 S_2 S_3 S_4 + a^2 c^4 S_1 S_2 S_3 S_4 + b^2 c^4 S_1 S_2 S_3 S_4 + \\
& \quad a^2 b^2 d^2 S_1 S_2 S_3 S_4 + b^4 d^2 S_1 S_2 S_3 S_4 + a^2 c^2 d^2 S_1 S_2 S_3 S_4 + b^2 c^2 d^2 S_1 S_2 S_3 S_4) \left. \right)
\end{aligned}$$

FullSimplify[C3]

$$\begin{aligned}
& (8 a^2 b^2 c^2 d^2 E_0 S_0 S_1 S_2 (-S_3 + S_4)) / \\
& \quad (b^2 (S_0 - S_1) (c^2 (S_1 + S_2) (d^2 (S_2 + S_3) (S_3 - S_4) + c^2 (S_2 - S_3) (S_3 + S_4)) + \\
& \quad \quad b^2 (S_1 - S_2) (d^2 (S_2 - S_3) (S_3 - S_4) + c^2 (S_2 + S_3) (S_3 + S_4))) + \\
& \quad a^2 (S_0 + S_1) (c^2 (S_1 - S_2) (d^2 (S_2 + S_3) (S_3 - S_4) + c^2 (S_2 - S_3) (S_3 + S_4)) + \\
& \quad \quad b^2 (S_1 + S_2) (d^2 (S_2 - S_3) (S_3 - S_4) + c^2 (S_2 + S_3) (S_3 + S_4))))
\end{aligned}$$

$$\begin{aligned}
A4 = & - \left((16 a^2 b^2 c^2 E0 S0 S1 S2 S3) / \right. \\
& (a^2 b^2 c^2 S0 S1 S2 S3 + b^4 c^2 S0 S1 S2 S3 + a^2 c^4 S0 S1 S2 S3 + b^2 c^4 S0 S1 S2 S3 + \\
& a^2 b^2 d^2 S0 S1 S2 S3 + b^4 d^2 S0 S1 S2 S3 + a^2 c^2 d^2 S0 S1 S2 S3 + b^2 c^2 d^2 S0 S1 S2 S3 + \\
& a^2 b^2 c^2 S1^2 S2 S3 - b^4 c^2 S1^2 S2 S3 + a^2 c^4 S1^2 S2 S3 - b^2 c^4 S1^2 S2 S3 + a^2 b^2 d^2 S1^2 S2 S3 - \\
& b^4 d^2 S1^2 S2 S3 + a^2 c^2 d^2 S1^2 S2 S3 - b^2 c^2 d^2 S1^2 S2 S3 + a^2 b^2 c^2 S0 S2^2 S3 - \\
& b^4 c^2 S0 S2^2 S3 - a^2 c^4 S0 S2^2 S3 + b^2 c^4 S0 S2^2 S3 + a^2 b^2 d^2 S0 S2^2 S3 - b^4 d^2 S0 S2^2 S3 - \\
& a^2 c^2 d^2 S0 S2^2 S3 + b^2 c^2 d^2 S0 S2^2 S3 + a^2 b^2 c^2 S1 S2^2 S3 + b^4 c^2 S1 S2^2 S3 - \\
& a^2 c^4 S1 S2^2 S3 - b^2 c^4 S1 S2^2 S3 + a^2 b^2 d^2 S1 S2^2 S3 + b^4 d^2 S1 S2^2 S3 - a^2 c^2 d^2 S1 S2^2 S3 - \\
& b^2 c^2 d^2 S1 S2^2 S3 + a^2 b^2 c^2 S0 S1 S3^2 + b^4 c^2 S0 S1 S3^2 - a^2 c^4 S0 S1 S3^2 - b^2 c^4 S0 S1 S3^2 - \\
& a^2 b^2 d^2 S0 S1 S3^2 - b^4 d^2 S0 S1 S3^2 + a^2 c^2 d^2 S0 S1 S3^2 + b^2 c^2 d^2 S0 S1 S3^2 + \\
& a^2 b^2 c^2 S1^2 S3^2 - b^4 c^2 S1^2 S3^2 - a^2 c^4 S1^2 S3^2 + b^2 c^4 S1^2 S3^2 - a^2 b^2 d^2 S1^2 S3^2 + \\
& b^4 d^2 S1^2 S3^2 + a^2 c^2 d^2 S1^2 S3^2 - b^2 c^2 d^2 S1^2 S3^2 + a^2 b^2 c^2 S0 S2 S3^2 - b^4 c^2 S0 S2 S3^2 + \\
& a^2 c^4 S0 S2 S3^2 - b^2 c^4 S0 S2 S3^2 - a^2 b^2 d^2 S0 S2 S3^2 + b^4 d^2 S0 S2 S3^2 - a^2 c^2 d^2 S0 S2 S3^2 + \\
& b^2 c^2 d^2 S0 S2 S3^2 + a^2 b^2 c^2 S1 S2 S3^2 + b^4 c^2 S1 S2 S3^2 + a^2 c^4 S1 S2 S3^2 + b^2 c^4 S1 S2 S3^2 - \\
& a^2 b^2 d^2 S1 S2 S3^2 - b^4 d^2 S1 S2 S3^2 - a^2 c^2 d^2 S1 S2 S3^2 - b^2 c^2 d^2 S1 S2 S3^2 + \\
& a^2 b^2 c^2 S0 S1 S2 S4 + b^4 c^2 S0 S1 S2 S4 + a^2 c^4 S0 S1 S2 S4 + b^2 c^4 S0 S1 S2 S4 - \\
& a^2 b^2 d^2 S0 S1 S2 S4 - b^4 d^2 S0 S1 S2 S4 - a^2 c^2 d^2 S0 S1 S2 S4 - b^2 c^2 d^2 S0 S1 S2 S4 + \\
& a^2 b^2 c^2 S1^2 S2 S4 - b^4 c^2 S1^2 S2 S4 + a^2 c^4 S1^2 S2 S4 - b^2 c^4 S1^2 S2 S4 - a^2 b^2 d^2 S1^2 S2 S4 + \\
& b^4 d^2 S1^2 S2 S4 - a^2 c^2 d^2 S1^2 S2 S4 + b^2 c^2 d^2 S1^2 S2 S4 + a^2 b^2 c^2 S0 S2^2 S4 - \\
& b^4 c^2 S0 S2^2 S4 - a^2 c^4 S0 S2^2 S4 + b^2 c^4 S0 S2^2 S4 - a^2 b^2 d^2 S0 S2^2 S4 + b^4 d^2 S0 S2^2 S4 + \\
& a^2 c^2 d^2 S0 S2^2 S4 - b^2 c^2 d^2 S0 S2^2 S4 + a^2 b^2 c^2 S1 S2^2 S4 + b^4 c^2 S1 S2^2 S4 - \\
& a^2 c^4 S1 S2^2 S4 - b^2 c^4 S1 S2^2 S4 - a^2 b^2 d^2 S1 S2^2 S4 - b^4 d^2 S1 S2^2 S4 + a^2 c^2 d^2 S1 S2^2 S4 + \\
& b^2 c^2 d^2 S1 S2^2 S4 + a^2 b^2 c^2 S0 S1 S3 S4 + b^4 c^2 S0 S1 S3 S4 - a^2 c^4 S0 S1 S3 S4 - \\
& b^2 c^4 S0 S1 S3 S4 + a^2 b^2 d^2 S0 S1 S3 S4 + b^4 d^2 S0 S1 S3 S4 - a^2 c^2 d^2 S0 S1 S3 S4 - \\
& b^2 c^2 d^2 S0 S1 S3 S4 + a^2 b^2 c^2 S1^2 S3 S4 - b^4 c^2 S1^2 S3 S4 - a^2 c^4 S1^2 S3 S4 + b^2 c^4 S1^2 S3 S4 + \\
& a^2 b^2 d^2 S1^2 S3 S4 - b^4 d^2 S1^2 S3 S4 - a^2 c^2 d^2 S1^2 S3 S4 + b^2 c^2 d^2 S1^2 S3 S4 + \\
& a^2 b^2 c^2 S0 S2 S3 S4 - b^4 c^2 S0 S2 S3 S4 + a^2 c^4 S0 S2 S3 S4 - b^2 c^4 S0 S2 S3 S4 + \\
& a^2 b^2 d^2 S0 S2 S3 S4 - b^4 d^2 S0 S2 S3 S4 + a^2 c^2 d^2 S0 S2 S3 S4 - b^2 c^2 d^2 S0 S2 S3 S4 + \\
& a^2 b^2 c^2 S1 S2 S3 S4 + b^4 c^2 S1 S2 S3 S4 + a^2 c^4 S1 S2 S3 S4 + b^2 c^4 S1 S2 S3 S4 + \\
& a^2 b^2 d^2 S1 S2 S3 S4 + b^4 d^2 S1 S2 S3 S4 + a^2 c^2 d^2 S1 S2 S3 S4 + b^2 c^2 d^2 S1 S2 S3 S4))
\end{aligned}$$

$$\begin{aligned}
& - \left((16 a^2 b^2 c^2 E_0 S_0 S_1 S_2 S_3) / \right. \\
& \quad (a^2 b^2 c^2 S_0 S_1 S_2 S_3 + b^4 c^2 S_0 S_1 S_2 S_3 + a^2 c^4 S_0 S_1 S_2 S_3 + b^2 c^4 S_0 S_1 S_2 S_3 + \\
& \quad a^2 b^2 d^2 S_0 S_1 S_2 S_3 + b^4 d^2 S_0 S_1 S_2 S_3 + a^2 c^2 d^2 S_0 S_1 S_2 S_3 + b^2 c^2 d^2 S_0 S_1 S_2 S_3 + \\
& \quad a^2 b^2 c^2 S_1^2 S_2 S_3 - b^4 c^2 S_1^2 S_2 S_3 + a^2 c^4 S_1^2 S_2 S_3 - b^2 c^4 S_1^2 S_2 S_3 + a^2 b^2 d^2 S_1^2 S_2 S_3 - \\
& \quad b^4 d^2 S_1^2 S_2 S_3 + a^2 c^2 d^2 S_1^2 S_2 S_3 - b^2 c^2 d^2 S_1^2 S_2 S_3 + a^2 b^2 c^2 S_0 S_2^2 S_3 - \\
& \quad b^4 c^2 S_0 S_2^2 S_3 - a^2 c^4 S_0 S_2^2 S_3 + b^2 c^4 S_0 S_2^2 S_3 + a^2 b^2 d^2 S_0 S_2^2 S_3 - b^4 d^2 S_0 S_2^2 S_3 - \\
& \quad a^2 c^2 d^2 S_0 S_2^2 S_3 + b^2 c^2 d^2 S_0 S_2^2 S_3 + a^2 b^2 c^2 S_1 S_2^2 S_3 + b^4 c^2 S_1 S_2^2 S_3 - \\
& \quad a^2 c^4 S_1 S_2^2 S_3 - b^2 c^4 S_1 S_2^2 S_3 + a^2 b^2 d^2 S_1 S_2^2 S_3 + b^4 d^2 S_1 S_2^2 S_3 - a^2 c^2 d^2 S_1 S_2^2 S_3 - \\
& \quad b^2 c^2 d^2 S_1 S_2^2 S_3 + a^2 b^2 c^2 S_0 S_1 S_3^2 + b^4 c^2 S_0 S_1 S_3^2 - a^2 c^4 S_0 S_1 S_3^2 - b^2 c^4 S_0 S_1 S_3^2 - \\
& \quad a^2 b^2 d^2 S_0 S_1 S_3^2 - b^4 d^2 S_0 S_1 S_3^2 + a^2 c^2 d^2 S_0 S_1 S_3^2 + b^2 c^2 d^2 S_0 S_1 S_3^2 + \\
& \quad a^2 b^2 c^2 S_1^2 S_3^2 - b^4 c^2 S_1^2 S_3^2 - a^2 c^4 S_1^2 S_3^2 + b^2 c^4 S_1^2 S_3^2 - a^2 b^2 d^2 S_1^2 S_3^2 + \\
& \quad b^4 d^2 S_1^2 S_3^2 + a^2 c^2 d^2 S_1^2 S_3^2 - b^2 c^2 d^2 S_1^2 S_3^2 + a^2 b^2 c^2 S_0 S_2 S_3^2 - b^4 c^2 S_0 S_2 S_3^2 + \\
& \quad a^2 c^4 S_0 S_2 S_3^2 - b^2 c^4 S_0 S_2 S_3^2 - a^2 b^2 d^2 S_0 S_2 S_3^2 + b^4 d^2 S_0 S_2 S_3^2 - a^2 c^2 d^2 S_0 S_2 S_3^2 + \\
& \quad b^2 c^2 d^2 S_0 S_2 S_3^2 + a^2 b^2 c^2 S_1 S_2 S_3^2 + b^4 c^2 S_1 S_2 S_3^2 + a^2 c^4 S_1 S_2 S_3^2 + b^2 c^4 S_1 S_2 S_3^2 - \\
& \quad a^2 b^2 d^2 S_1 S_2 S_3^2 - b^4 d^2 S_1 S_2 S_3^2 - a^2 c^2 d^2 S_1 S_2 S_3^2 - b^2 c^2 d^2 S_1 S_2 S_3^2 + \\
& \quad a^2 b^2 c^2 S_0 S_1 S_2 S_4 + b^4 c^2 S_0 S_1 S_2 S_4 + a^2 c^4 S_0 S_1 S_2 S_4 + b^2 c^4 S_0 S_1 S_2 S_4 - \\
& \quad a^2 b^2 d^2 S_0 S_1 S_2 S_4 - b^4 d^2 S_0 S_1 S_2 S_4 - a^2 c^2 d^2 S_0 S_1 S_2 S_4 - b^2 c^2 d^2 S_0 S_1 S_2 S_4 + \\
& \quad a^2 b^2 c^2 S_1^2 S_2 S_4 - b^4 c^2 S_1^2 S_2 S_4 + a^2 c^4 S_1^2 S_2 S_4 - b^2 c^4 S_1^2 S_2 S_4 - a^2 b^2 d^2 S_1^2 S_2 S_4 + \\
& \quad b^4 d^2 S_1^2 S_2 S_4 - a^2 c^2 d^2 S_1^2 S_2 S_4 + b^2 c^2 d^2 S_1^2 S_2 S_4 + a^2 b^2 c^2 S_0 S_2^2 S_4 - \\
& \quad b^4 c^2 S_0 S_2^2 S_4 - a^2 c^4 S_0 S_2^2 S_4 + b^2 c^4 S_0 S_2^2 S_4 - a^2 b^2 d^2 S_0 S_2^2 S_4 + b^4 d^2 S_0 S_2^2 S_4 + \\
& \quad a^2 c^2 d^2 S_0 S_2^2 S_4 - b^2 c^2 d^2 S_0 S_2^2 S_4 + a^2 b^2 c^2 S_1 S_2^2 S_4 + b^4 c^2 S_1 S_2^2 S_4 - \\
& \quad a^2 c^4 S_1 S_2^2 S_4 - b^2 c^4 S_1 S_2^2 S_4 - a^2 b^2 d^2 S_1 S_2^2 S_4 - b^4 d^2 S_1 S_2^2 S_4 + a^2 c^2 d^2 S_1 S_2^2 S_4 + \\
& \quad b^2 c^2 d^2 S_1 S_2^2 S_4 + a^2 b^2 c^2 S_0 S_1 S_3 S_4 + b^4 c^2 S_0 S_1 S_3 S_4 - a^2 c^4 S_0 S_1 S_3 S_4 - \\
& \quad b^2 c^4 S_0 S_1 S_3 S_4 + a^2 b^2 d^2 S_0 S_1 S_3 S_4 + b^4 d^2 S_0 S_1 S_3 S_4 - a^2 c^2 d^2 S_0 S_1 S_3 S_4 - \\
& \quad b^2 c^2 d^2 S_0 S_1 S_3 S_4 + a^2 b^2 c^2 S_1^2 S_3 S_4 - b^4 c^2 S_1^2 S_3 S_4 - a^2 c^4 S_1^2 S_3 S_4 + b^2 c^4 S_1^2 S_3 S_4 + \\
& \quad a^2 b^2 d^2 S_1^2 S_3 S_4 - b^4 d^2 S_1^2 S_3 S_4 - a^2 c^2 d^2 S_1^2 S_3 S_4 + b^2 c^2 d^2 S_1^2 S_3 S_4 + \\
& \quad a^2 b^2 c^2 S_0 S_2 S_3 S_4 - b^4 c^2 S_0 S_2 S_3 S_4 + a^2 c^4 S_0 S_2 S_3 S_4 - b^2 c^4 S_0 S_2 S_3 S_4 + \\
& \quad a^2 b^2 d^2 S_0 S_2 S_3 S_4 - b^4 d^2 S_0 S_2 S_3 S_4 + a^2 c^2 d^2 S_0 S_2 S_3 S_4 - b^2 c^2 d^2 S_0 S_2 S_3 S_4 + \\
& \quad a^2 b^2 c^2 S_1 S_2 S_3 S_4 + b^4 c^2 S_1 S_2 S_3 S_4 + a^2 c^4 S_1 S_2 S_3 S_4 + b^2 c^4 S_1 S_2 S_3 S_4 + \\
& \quad a^2 b^2 d^2 S_1 S_2 S_3 S_4 + b^4 d^2 S_1 S_2 S_3 S_4 + a^2 c^2 d^2 S_1 S_2 S_3 S_4 + b^2 c^2 d^2 S_1 S_2 S_3 S_4) \left. \right)
\end{aligned}$$

FullSimplify[A4]

$$\begin{aligned}
& - \left((16 a^2 b^2 c^2 E_0 S_0 S_1 S_2 S_3) / \right. \\
& \quad (b^2 (S_0 - S_1) (c^2 (S_1 + S_2) (d^2 (S_2 + S_3) (S_3 - S_4) + c^2 (S_2 - S_3) (S_3 + S_4)) + \\
& \quad b^2 (S_1 - S_2) (d^2 (S_2 - S_3) (S_3 - S_4) + c^2 (S_2 + S_3) (S_3 + S_4))) + \\
& \quad a^2 (S_0 + S_1) (c^2 (S_1 - S_2) (d^2 (S_2 + S_3) (S_3 - S_4) + c^2 (S_2 - S_3) (S_3 + S_4)) + \\
& \quad b^2 (S_1 + S_2) (d^2 (S_2 - S_3) (S_3 - S_4) + c^2 (S_2 + S_3) (S_3 + S_4)))) \left. \right)
\end{aligned}$$

/ Step 2 : Analytical expressions for the voltages in all the model area : 0, 1, 2, 3, 4. * /

$$V_0[r_, \theta_] := -E_0 r \text{Cos}[\theta] + C_0 / r \text{Cos}[\theta]$$

$$V_1[r_, \theta_] := r A_1 \text{Cos}[\theta] + C_1 / r \text{Cos}[\theta]$$

$$\mathbf{V2}[\mathbf{r}_-, \theta_-] := \mathbf{r} \mathbf{A2} \cos[\theta] + \mathbf{C2} / \mathbf{r} \cos[\theta]$$

$$\mathbf{V3}[\mathbf{r}_-, \theta_-] := \mathbf{r} \mathbf{A3} \cos[\theta] + \mathbf{C3} / \mathbf{r} \cos[\theta]$$

$$\mathbf{V4}[\mathbf{r}_-, \theta_-] := \mathbf{r} \mathbf{A4} \cos[\theta]$$

$$\mathbf{V0}[\mathbf{r}, \theta]$$

$$-E0 \mathbf{r} \cos[\theta] -$$

$$\left(\begin{aligned} & (a^4 b^2 c^2 E0 S0 S1 S2 S3 + a^2 b^4 c^2 E0 S0 S1 S2 S3 + a^4 c^4 E0 S0 S1 S2 S3 + a^2 b^2 c^4 E0 S0 S1 S2 S3 + \\ & a^4 b^2 d^2 E0 S0 S1 S2 S3 + a^2 b^4 d^2 E0 S0 S1 S2 S3 + a^4 c^2 d^2 E0 S0 S1 S2 S3 + \\ & a^2 b^2 c^2 d^2 E0 S0 S1 S2 S3 - a^4 b^2 c^2 E0 S1^2 S2 S3 + a^2 b^4 c^2 E0 S1^2 S2 S3 - a^4 c^4 E0 S1^2 S2 S3 + \\ & a^2 b^2 c^4 E0 S1^2 S2 S3 - a^4 b^2 d^2 E0 S1^2 S2 S3 + a^2 b^4 d^2 E0 S1^2 S2 S3 - a^4 c^2 d^2 E0 S1^2 S2 S3 + \\ & a^2 b^2 c^2 d^2 E0 S1^2 S2 S3 + a^4 b^2 c^2 E0 S0 S2^2 S3 - a^2 b^4 c^2 E0 S0 S2^2 S3 - a^4 c^4 E0 S0 S2^2 S3 + \\ & a^2 b^2 c^4 E0 S0 S2^2 S3 + a^4 b^2 d^2 E0 S0 S2^2 S3 - a^2 b^4 d^2 E0 S0 S2^2 S3 - a^4 c^2 d^2 E0 S0 S2^2 S3 + \\ & a^2 b^2 c^2 d^2 E0 S0 S2^2 S3 - a^4 b^2 c^2 E0 S1 S2^2 S3 - a^2 b^4 c^2 E0 S1 S2^2 S3 + a^4 c^4 E0 S1 S2^2 S3 + \\ & a^2 b^2 c^4 E0 S1 S2^2 S3 - a^4 b^2 d^2 E0 S1 S2^2 S3 - a^2 b^4 d^2 E0 S1 S2^2 S3 + a^4 c^2 d^2 E0 S1 S2^2 S3 + \\ & a^2 b^2 c^2 d^2 E0 S1 S2^2 S3 + a^4 b^2 c^2 E0 S0 S1 S3^2 + a^2 b^4 c^2 E0 S0 S1 S3^2 - a^4 c^4 E0 S0 S1 S3^2 - \\ & a^2 b^2 c^4 E0 S0 S1 S3^2 - a^4 b^2 d^2 E0 S0 S1 S3^2 - a^2 b^4 d^2 E0 S0 S1 S3^2 + a^4 c^2 d^2 E0 S0 S1 S3^2 + \\ & a^2 b^2 c^2 d^2 E0 S0 S1 S3^2 - a^4 b^2 c^2 E0 S1^2 S3^2 + a^2 b^4 c^2 E0 S1^2 S3^2 + a^4 c^4 E0 S1^2 S3^2 - \\ & a^2 b^2 c^4 E0 S1^2 S3^2 + a^4 b^2 d^2 E0 S1^2 S3^2 - a^2 b^4 d^2 E0 S1^2 S3^2 - a^4 c^2 d^2 E0 S1^2 S3^2 + \\ & a^2 b^2 c^2 d^2 E0 S1^2 S3^2 + a^4 b^2 c^2 E0 S0 S2 S3^2 - a^2 b^4 c^2 E0 S0 S2 S3^2 + a^4 c^4 E0 S0 S2 S3^2 - \\ & a^2 b^2 c^4 E0 S0 S2 S3^2 - a^4 b^2 d^2 E0 S0 S2 S3^2 + a^2 b^4 d^2 E0 S0 S2 S3^2 - a^4 c^2 d^2 E0 S0 S2 S3^2 + \\ & a^2 b^2 c^2 d^2 E0 S0 S2 S3^2 - a^4 b^2 c^2 E0 S1 S2 S3^2 - a^2 b^4 c^2 E0 S1 S2 S3^2 - \\ & a^4 c^4 E0 S1 S2 S3^2 - a^2 b^2 c^4 E0 S1 S2 S3^2 + a^4 b^2 d^2 E0 S1 S2 S3^2 + a^2 b^4 d^2 E0 S1 S2 S3^2 + \\ & a^4 c^2 d^2 E0 S1 S2 S3^2 + a^2 b^2 c^2 d^2 E0 S1 S2 S3^2 + a^4 b^2 c^2 E0 S0 S1 S2 S4 + \\ & a^2 b^4 c^2 E0 S0 S1 S2 S4 + a^4 c^4 E0 S0 S1 S2 S4 + a^2 b^2 c^4 E0 S0 S1 S2 S4 - \\ & a^4 b^2 d^2 E0 S0 S1 S2 S4 - a^2 b^4 d^2 E0 S0 S1 S2 S4 - a^4 c^2 d^2 E0 S0 S1 S2 S4 - \\ & a^2 b^2 c^2 d^2 E0 S0 S1 S2 S4 - a^4 b^2 c^2 E0 S1^2 S2 S4 + a^2 b^4 c^2 E0 S1^2 S2 S4 - \\ & a^4 c^4 E0 S1^2 S2 S4 + a^2 b^2 c^4 E0 S1^2 S2 S4 + a^4 b^2 d^2 E0 S1^2 S2 S4 - a^2 b^4 d^2 E0 S1^2 S2 S4 + \\ & a^4 c^2 d^2 E0 S1^2 S2 S4 - a^2 b^2 c^2 d^2 E0 S1^2 S2 S4 + a^4 b^2 c^2 E0 S0 S2^2 S4 - a^2 b^4 c^2 E0 S0 S2^2 S4 - \\ & a^4 c^4 E0 S0 S2^2 S4 + a^2 b^2 c^4 E0 S0 S2^2 S4 - a^4 b^2 d^2 E0 S0 S2^2 S4 + a^2 b^4 d^2 E0 S0 S2^2 S4 + \\ & a^4 c^2 d^2 E0 S0 S2^2 S4 - a^2 b^2 c^2 d^2 E0 S0 S2^2 S4 - a^4 b^2 c^2 E0 S1 S2^2 S4 - a^2 b^4 c^2 E0 S1 S2^2 S4 + \\ & a^4 c^4 E0 S1 S2^2 S4 + a^2 b^2 c^4 E0 S1 S2^2 S4 + a^4 b^2 d^2 E0 S1 S2^2 S4 + a^2 b^4 d^2 E0 S1 S2^2 S4 - \\ & a^4 c^2 d^2 E0 S1 S2^2 S4 - a^2 b^2 c^2 d^2 E0 S1 S2^2 S4 + a^4 b^2 c^2 E0 S0 S1 S3 S4 + \\ & a^2 b^4 c^2 E0 S0 S1 S3 S4 - a^4 c^4 E0 S0 S1 S3 S4 - a^2 b^2 c^4 E0 S0 S1 S3 S4 + \\ & a^4 b^2 d^2 E0 S0 S1 S3 S4 + a^2 b^4 d^2 E0 S0 S1 S3 S4 - a^4 c^2 d^2 E0 S0 S1 S3 S4 - \\ & a^2 b^2 c^2 d^2 E0 S0 S1 S3 S4 - a^4 b^2 c^2 E0 S1^2 S3 S4 + a^2 b^4 c^2 E0 S1^2 S3 S4 + \\ & a^4 c^4 E0 S1^2 S3 S4 - a^2 b^2 c^4 E0 S1^2 S3 S4 - a^4 b^2 d^2 E0 S1^2 S3 S4 + a^2 b^4 d^2 E0 S1^2 S3 S4 + \\ & a^4 c^2 d^2 E0 S1^2 S3 S4 - a^2 b^2 c^2 d^2 E0 S1^2 S3 S4 + a^4 b^2 c^2 E0 S0 S2 S3 S4 - \\ & a^2 b^4 c^2 E0 S0 S2 S3 S4 + a^4 c^4 E0 S0 S2 S3 S4 - a^2 b^2 c^4 E0 S0 S2 S3 S4 + \\ & a^4 b^2 d^2 E0 S0 S2 S3 S4 - a^2 b^4 d^2 E0 S0 S2 S3 S4 + a^4 c^2 d^2 E0 S0 S2 S3 S4 - \\ & a^2 b^2 c^2 d^2 E0 S0 S2 S3 S4 - a^4 b^2 c^2 E0 S1 S2 S3 S4 - a^2 b^4 c^2 E0 S1 S2 S3 S4 - \\ & a^4 c^4 E0 S1 S2 S3 S4 - a^2 b^2 c^4 E0 S1 S2 S3 S4 - a^4 b^2 d^2 E0 S1 S2 S3 S4 - \\ & a^2 b^4 d^2 E0 S1 S2 S3 S4 - a^4 c^2 d^2 E0 S1 S2 S3 S4 - a^2 b^2 c^2 d^2 E0 S1 S2 S3 S4) \cos[\theta] \end{aligned} \right) /$$

$$\begin{aligned}
& \left(r \left(a^2 b^2 c^2 s_0 s_1 s_2 s_3 + b^4 c^2 s_0 s_1 s_2 s_3 + a^2 c^4 s_0 s_1 s_2 s_3 + b^2 c^4 s_0 s_1 s_2 s_3 + \right. \right. \\
& \quad a^2 b^2 d^2 s_0 s_1 s_2 s_3 + b^4 d^2 s_0 s_1 s_2 s_3 + a^2 c^2 d^2 s_0 s_1 s_2 s_3 + b^2 c^2 d^2 s_0 s_1 s_2 s_3 + \\
& \quad a^2 b^2 c^2 s_1^2 s_2 s_3 - b^4 c^2 s_1^2 s_2 s_3 + a^2 c^4 s_1^2 s_2 s_3 - b^2 c^4 s_1^2 s_2 s_3 + a^2 b^2 d^2 s_1^2 s_2 s_3 - \\
& \quad b^4 d^2 s_1^2 s_2 s_3 + a^2 c^2 d^2 s_1^2 s_2 s_3 - b^2 c^2 d^2 s_1^2 s_2 s_3 + a^2 b^2 c^2 s_0 s_2^2 s_3 - \\
& \quad b^4 c^2 s_0 s_2^2 s_3 - a^2 c^4 s_0 s_2^2 s_3 + b^2 c^4 s_0 s_2^2 s_3 + a^2 b^2 d^2 s_0 s_2^2 s_3 - b^4 d^2 s_0 s_2^2 s_3 - \\
& \quad a^2 c^2 d^2 s_0 s_2^2 s_3 + b^2 c^2 d^2 s_0 s_2^2 s_3 + a^2 b^2 c^2 s_1 s_2^2 s_3 + b^4 c^2 s_1 s_2^2 s_3 - \\
& \quad a^2 c^4 s_1 s_2^2 s_3 - b^2 c^4 s_1 s_2^2 s_3 + a^2 b^2 d^2 s_1 s_2^2 s_3 + b^4 d^2 s_1 s_2^2 s_3 - a^2 c^2 d^2 s_1 s_2^2 s_3 - \\
& \quad b^2 c^2 d^2 s_1 s_2^2 s_3 + a^2 b^2 c^2 s_0 s_1 s_3^2 + b^4 c^2 s_0 s_1 s_3^2 - a^2 c^4 s_0 s_1 s_3^2 - b^2 c^4 s_0 s_1 s_3^2 - \\
& \quad a^2 b^2 d^2 s_0 s_1 s_3^2 - b^4 d^2 s_0 s_1 s_3^2 + a^2 c^2 d^2 s_0 s_1 s_3^2 + b^2 c^2 d^2 s_0 s_1 s_3^2 + \\
& \quad a^2 b^2 c^2 s_1^2 s_3^2 - b^4 c^2 s_1^2 s_3^2 - a^2 c^4 s_1^2 s_3^2 + b^2 c^4 s_1^2 s_3^2 - a^2 b^2 d^2 s_1^2 s_3^2 + \\
& \quad b^4 d^2 s_1^2 s_3^2 + a^2 c^2 d^2 s_1^2 s_3^2 - b^2 c^2 d^2 s_1^2 s_3^2 + a^2 b^2 c^2 s_0 s_2 s_3^2 - b^4 c^2 s_0 s_2 s_3^2 + \\
& \quad a^2 c^4 s_0 s_2 s_3^2 - b^2 c^4 s_0 s_2 s_3^2 - a^2 b^2 d^2 s_0 s_2 s_3^2 + b^4 d^2 s_0 s_2 s_3^2 - a^2 c^2 d^2 s_0 s_2 s_3^2 + \\
& \quad b^2 c^2 d^2 s_0 s_2 s_3^2 + a^2 b^2 c^2 s_1 s_2 s_3^2 + b^4 c^2 s_1 s_2 s_3^2 + a^2 c^4 s_1 s_2 s_3^2 + b^2 c^4 s_1 s_2 s_3^2 - \\
& \quad a^2 b^2 d^2 s_1 s_2 s_3^2 - b^4 d^2 s_1 s_2 s_3^2 - a^2 c^2 d^2 s_1 s_2 s_3^2 - b^2 c^2 d^2 s_1 s_2 s_3^2 + \\
& \quad a^2 b^2 c^2 s_0 s_1 s_2 s_4 + b^4 c^2 s_0 s_1 s_2 s_4 + a^2 c^4 s_0 s_1 s_2 s_4 + b^2 c^4 s_0 s_1 s_2 s_4 - \\
& \quad a^2 b^2 d^2 s_0 s_1 s_2 s_4 - b^4 d^2 s_0 s_1 s_2 s_4 - a^2 c^2 d^2 s_0 s_1 s_2 s_4 - b^2 c^2 d^2 s_0 s_1 s_2 s_4 + \\
& \quad a^2 b^2 c^2 s_1^2 s_2 s_4 - b^4 c^2 s_1^2 s_2 s_4 + a^2 c^4 s_1^2 s_2 s_4 - b^2 c^4 s_1^2 s_2 s_4 - a^2 b^2 d^2 s_1^2 s_2 s_4 + \\
& \quad b^4 d^2 s_1^2 s_2 s_4 - a^2 c^2 d^2 s_1^2 s_2 s_4 + b^2 c^2 d^2 s_1^2 s_2 s_4 + a^2 b^2 c^2 s_0 s_2^2 s_4 - \\
& \quad b^4 c^2 s_0 s_2^2 s_4 - a^2 c^4 s_0 s_2^2 s_4 + b^2 c^4 s_0 s_2^2 s_4 - a^2 b^2 d^2 s_0 s_2^2 s_4 + b^4 d^2 s_0 s_2^2 s_4 + \\
& \quad a^2 c^2 d^2 s_0 s_2^2 s_4 - b^2 c^2 d^2 s_0 s_2^2 s_4 + a^2 b^2 c^2 s_1 s_2^2 s_4 + b^4 c^2 s_1 s_2^2 s_4 - \\
& \quad a^2 c^4 s_1 s_2^2 s_4 - b^2 c^4 s_1 s_2^2 s_4 - a^2 b^2 d^2 s_1 s_2^2 s_4 - b^4 d^2 s_1 s_2^2 s_4 + a^2 c^2 d^2 s_1 s_2^2 s_4 + \\
& \quad b^2 c^2 d^2 s_1 s_2^2 s_4 + a^2 b^2 c^2 s_0 s_1 s_3 s_4 + b^4 c^2 s_0 s_1 s_3 s_4 - a^2 c^4 s_0 s_1 s_3 s_4 - \\
& \quad b^2 c^4 s_0 s_1 s_3 s_4 + a^2 b^2 d^2 s_0 s_1 s_3 s_4 + b^4 d^2 s_0 s_1 s_3 s_4 - a^2 c^2 d^2 s_0 s_1 s_3 s_4 - \\
& \quad b^2 c^2 d^2 s_0 s_1 s_3 s_4 + a^2 b^2 c^2 s_1^2 s_3 s_4 - b^4 c^2 s_1^2 s_3 s_4 - a^2 c^4 s_1^2 s_3 s_4 + b^2 c^4 s_1^2 s_3 s_4 + \\
& \quad a^2 b^2 d^2 s_1^2 s_3 s_4 - b^4 d^2 s_1^2 s_3 s_4 - a^2 c^2 d^2 s_1^2 s_3 s_4 + b^2 c^2 d^2 s_1^2 s_3 s_4 + \\
& \quad a^2 b^2 c^2 s_0 s_2 s_3 s_4 - b^4 c^2 s_0 s_2 s_3 s_4 + a^2 c^4 s_0 s_2 s_3 s_4 - b^2 c^4 s_0 s_2 s_3 s_4 + \\
& \quad a^2 b^2 d^2 s_0 s_2 s_3 s_4 - b^4 d^2 s_0 s_2 s_3 s_4 + a^2 c^2 d^2 s_0 s_2 s_3 s_4 - b^2 c^2 d^2 s_0 s_2 s_3 s_4 + \\
& \quad a^2 b^2 c^2 s_1 s_2 s_3 s_4 + b^4 c^2 s_1 s_2 s_3 s_4 + a^2 c^4 s_1 s_2 s_3 s_4 + b^2 c^4 s_1 s_2 s_3 s_4 + \\
& \quad \left. \left. a^2 b^2 d^2 s_1 s_2 s_3 s_4 + b^4 d^2 s_1 s_2 s_3 s_4 + a^2 c^2 d^2 s_1 s_2 s_3 s_4 + b^2 c^2 d^2 s_1 s_2 s_3 s_4 \right) \right)
\end{aligned}$$

FullSimplify[%24]

$$\begin{aligned}
& - \left(\left(E_0 \left(b^2 r^2 (S_0 - S_1) \left(c^2 (S_1 + S_2) \left(d^2 (S_2 + S_3) (S_3 - S_4) + c^2 (S_2 - S_3) (S_3 + S_4) \right) + \right. \right. \right. \right. \\
& \quad \left. \left. \left. b^2 (S_1 - S_2) \left(d^2 (S_2 - S_3) (S_3 - S_4) + c^2 (S_2 + S_3) (S_3 + S_4) \right) \right) \right) + \right. \\
& \quad \left. a^4 (S_0 - S_1) \left(c^2 (S_1 - S_2) \left(d^2 (S_2 + S_3) (S_3 - S_4) + c^2 (S_2 - S_3) (S_3 + S_4) \right) + \right. \right. \\
& \quad \quad \left. \left. b^2 (S_1 + S_2) \left(d^2 (S_2 - S_3) (S_3 - S_4) + c^2 (S_2 + S_3) (S_3 + S_4) \right) \right) \right) + \\
& \quad a^2 (S_0 + S_1) \left(c^2 r^2 (S_1 - S_2) \left(d^2 (S_2 + S_3) (S_3 - S_4) + c^2 (S_2 - S_3) (S_3 + S_4) \right) + \right. \\
& \quad \quad \left. b^4 (S_1 - S_2) \left(d^2 (S_2 - S_3) (S_3 - S_4) + c^2 (S_2 + S_3) (S_3 + S_4) \right) + \right. \\
& \quad \quad \left. b^2 (S_1 + S_2) \left(d^2 r^2 (S_2 - S_3) (S_3 - S_4) + c^4 (S_2 - S_3) (S_3 + S_4) + \right. \right. \\
& \quad \quad \quad \left. \left. c^2 (S_2 + S_3) \left(d^2 (S_3 - S_4) + r^2 (S_3 + S_4) \right) \right) \right) \right) \text{Cos}[\theta] \Big/ \\
& \left(r \left(b^2 (S_0 - S_1) \left(c^2 (S_1 + S_2) \left(d^2 (S_2 + S_3) (S_3 - S_4) + c^2 (S_2 - S_3) (S_3 + S_4) \right) + \right. \right. \right. \\
& \quad \left. \left. b^2 (S_1 - S_2) \left(d^2 (S_2 - S_3) (S_3 - S_4) + c^2 (S_2 + S_3) (S_3 + S_4) \right) \right) \right) + \right. \\
& \quad \left. a^2 (S_0 + S_1) \left(c^2 (S_1 - S_2) \left(d^2 (S_2 + S_3) (S_3 - S_4) + c^2 (S_2 - S_3) (S_3 + S_4) \right) + \right. \right. \\
& \quad \quad \left. \left. b^2 (S_1 + S_2) \left(d^2 (S_2 - S_3) (S_3 - S_4) + c^2 (S_2 + S_3) (S_3 + S_4) \right) \right) \right) \Big) \Big)
\end{aligned}$$

v1[r, θ]

$$\begin{aligned}
& - \left(\left(2 E_0 S_0 \left(a^2 b^4 c^2 S_1 S_2 S_3 + a^2 b^2 c^4 S_1 S_2 S_3 + a^2 b^4 d^2 S_1 S_2 S_3 + a^2 b^2 c^2 d^2 S_1 S_2 S_3 - \right. \right. \right. \\
& \quad a^2 b^4 c^2 S_2^2 S_3 + a^2 b^2 c^4 S_2^2 S_3 - a^2 b^4 d^2 S_2^2 S_3 + a^2 b^2 c^2 d^2 S_2^2 S_3 + a^2 b^4 c^2 S_1 S_3^2 - \\
& \quad a^2 b^2 c^4 S_1 S_3^2 - a^2 b^4 d^2 S_1 S_3^2 + a^2 b^2 c^2 d^2 S_1 S_3^2 - a^2 b^4 c^2 S_2 S_3^2 - \\
& \quad a^2 b^2 c^4 S_2 S_3^2 + a^2 b^4 d^2 S_2 S_3^2 + a^2 b^2 c^2 d^2 S_2 S_3^2 + a^2 b^4 c^2 S_1 S_2 S_4 + \\
& \quad a^2 b^2 c^4 S_1 S_2 S_4 - a^2 b^4 d^2 S_1 S_2 S_4 - a^2 b^2 c^2 d^2 S_1 S_2 S_4 - a^2 b^4 c^2 S_2^2 S_4 + \\
& \quad a^2 b^2 c^4 S_2^2 S_4 + a^2 b^4 d^2 S_2^2 S_4 - a^2 b^2 c^2 d^2 S_2^2 S_4 + a^2 b^4 c^2 S_1 S_3 S_4 - \\
& \quad a^2 b^2 c^4 S_1 S_3 S_4 + a^2 b^4 d^2 S_1 S_3 S_4 - a^2 b^2 c^2 d^2 S_1 S_3 S_4 - a^2 b^4 c^2 S_2 S_3 S_4 - \\
& \quad a^2 b^2 c^4 S_2 S_3 S_4 - a^2 b^4 d^2 S_2 S_3 S_4 - a^2 b^2 c^2 d^2 S_2 S_3 S_4 \Big) \text{Cos}[\theta] \Big/ \\
& \left(r \left(a^2 b^2 c^2 S_0 S_1 S_2 S_3 + b^4 c^2 S_0 S_1 S_2 S_3 + a^2 c^4 S_0 S_1 S_2 S_3 + b^2 c^4 S_0 S_1 S_2 S_3 + \right. \right. \\
& \quad a^2 b^2 d^2 S_0 S_1 S_2 S_3 + b^4 d^2 S_0 S_1 S_2 S_3 + a^2 c^2 d^2 S_0 S_1 S_2 S_3 + b^2 c^2 d^2 S_0 S_1 S_2 S_3 + \\
& \quad a^2 b^2 c^2 S_1^2 S_2 S_3 - b^4 c^2 S_1^2 S_2 S_3 + a^2 c^4 S_1^2 S_2 S_3 - b^2 c^4 S_1^2 S_2 S_3 + a^2 b^2 d^2 S_1^2 S_2 S_3 - \\
& \quad b^4 d^2 S_1^2 S_2 S_3 + a^2 c^2 d^2 S_1^2 S_2 S_3 - b^2 c^2 d^2 S_1^2 S_2 S_3 + a^2 b^2 c^2 S_0 S_2^2 S_3 - \\
& \quad b^4 c^2 S_0 S_2^2 S_3 - a^2 c^4 S_0 S_2^2 S_3 + b^2 c^4 S_0 S_2^2 S_3 + a^2 b^2 d^2 S_0 S_2^2 S_3 - b^4 d^2 S_0 S_2^2 S_3 - \\
& \quad a^2 c^2 d^2 S_0 S_2^2 S_3 + b^2 c^2 d^2 S_0 S_2^2 S_3 + a^2 b^2 c^2 S_1 S_2^2 S_3 + b^4 c^2 S_1 S_2^2 S_3 - \\
& \quad a^2 c^4 S_1 S_2^2 S_3 - b^2 c^4 S_1 S_2^2 S_3 + a^2 b^2 d^2 S_1 S_2^2 S_3 + b^4 d^2 S_1 S_2^2 S_3 - a^2 c^2 d^2 S_1 S_2^2 S_3 - \\
& \quad b^2 c^2 d^2 S_1 S_2^2 S_3 + a^2 b^2 c^2 S_0 S_1 S_3^2 + b^4 c^2 S_0 S_1 S_3^2 - a^2 c^4 S_0 S_1 S_3^2 - \\
& \quad b^2 c^4 S_0 S_1 S_3^2 - a^2 b^2 d^2 S_0 S_1 S_3^2 - b^4 d^2 S_0 S_1 S_3^2 + a^2 c^2 d^2 S_0 S_1 S_3^2 + \\
& \quad b^2 c^2 d^2 S_0 S_1 S_3^2 + a^2 b^2 c^2 S_1^2 S_3^2 - b^4 c^2 S_1^2 S_3^2 - a^2 c^4 S_1^2 S_3^2 + b^2 c^4 S_1^2 S_3^2 - \\
& \quad a^2 b^2 d^2 S_1^2 S_3^2 + b^4 d^2 S_1^2 S_3^2 + a^2 c^2 d^2 S_1^2 S_3^2 - b^2 c^2 d^2 S_1^2 S_3^2 + a^2 b^2 c^2 S_0 S_2 S_3^2 - \\
& \quad b^4 c^2 S_0 S_2 S_3^2 + a^2 c^4 S_0 S_2 S_3^2 - b^2 c^4 S_0 S_2 S_3^2 - a^2 b^2 d^2 S_0 S_2 S_3^2 + b^4 d^2 S_0 S_2 S_3^2 - \\
& \quad a^2 c^2 d^2 S_0 S_2 S_3^2 + b^2 c^2 d^2 S_0 S_2 S_3^2 + a^2 b^2 c^2 S_1 S_2 S_3^2 + b^4 c^2 S_1 S_2 S_3^2 + \\
& \quad a^2 c^4 S_1 S_2 S_3^2 + b^2 c^4 S_1 S_2 S_3^2 - a^2 b^2 d^2 S_1 S_2 S_3^2 - b^4 d^2 S_1 S_2 S_3^2 - a^2 c^2 d^2 S_1 S_2 S_3^2 - \\
& \quad b^2 c^2 d^2 S_1 S_2 S_3^2 + a^2 b^2 c^2 S_0 S_1 S_2 S_4 + b^4 c^2 S_0 S_1 S_2 S_4 + a^2 c^4 S_0 S_1 S_2 S_4 + \\
& \quad b^2 c^4 S_0 S_1 S_2 S_4 - a^2 b^2 d^2 S_0 S_1 S_2 S_4 - b^4 d^2 S_0 S_1 S_2 S_4 - a^2 c^2 d^2 S_0 S_1 S_2 S_4 - \\
& \quad b^2 c^2 d^2 S_0 S_1 S_2 S_4 + a^2 b^2 c^2 S_1^2 S_2 S_4 - b^4 c^2 S_1^2 S_2 S_4 + a^2 c^4 S_1^2 S_2 S_4 - \\
& \quad b^2 c^4 S_1^2 S_2 S_4 - a^2 b^2 d^2 S_1^2 S_2 S_4 + b^4 d^2 S_1^2 S_2 S_4 - a^2 c^2 d^2 S_1^2 S_2 S_4 + \\
& \quad b^2 c^2 d^2 S_1^2 S_2 S_4 + a^2 b^2 c^2 S_0 S_2^2 S_4 - b^4 c^2 S_0 S_2^2 S_4 - a^2 c^4 S_0 S_2^2 S_4 + \\
& \quad b^2 c^4 S_0 S_2^2 S_4 - a^2 b^2 d^2 S_0 S_2^2 S_4 + b^4 d^2 S_0 S_2^2 S_4 + a^2 c^2 d^2 S_0 S_2^2 S_4 - \\
& \quad b^2 c^2 d^2 S_0 S_2^2 S_4 + a^2 b^2 c^2 S_1 S_2^2 S_4 + b^4 c^2 S_1 S_2^2 S_4 - a^2 c^4 S_1 S_2^2 S_4 - b^2 c^4 S_1 S_2^2 S_4 -
\end{aligned}$$

$$\begin{aligned}
& a^2 b^2 d^2 S1 S2^2 S4 - b^4 d^2 S1 S2^2 S4 + a^2 c^2 d^2 S1 S2^2 S4 + b^2 c^2 d^2 S1 S2^2 S4 + \\
& a^2 b^2 c^2 S0 S1 S3 S4 + b^4 c^2 S0 S1 S3 S4 - a^2 c^4 S0 S1 S3 S4 - b^2 c^4 S0 S1 S3 S4 + \\
& a^2 b^2 d^2 S0 S1 S3 S4 + b^4 d^2 S0 S1 S3 S4 - a^2 c^2 d^2 S0 S1 S3 S4 - b^2 c^2 d^2 S0 S1 S3 S4 + \\
& a^2 b^2 c^2 S1^2 S3 S4 - b^4 c^2 S1^2 S3 S4 - a^2 c^4 S1^2 S3 S4 + b^2 c^4 S1^2 S3 S4 + \\
& a^2 b^2 d^2 S1^2 S3 S4 - b^4 d^2 S1^2 S3 S4 - a^2 c^2 d^2 S1^2 S3 S4 + b^2 c^2 d^2 S1^2 S3 S4 + \\
& a^2 b^2 c^2 S0 S2 S3 S4 - b^4 c^2 S0 S2 S3 S4 + a^2 c^4 S0 S2 S3 S4 - b^2 c^4 S0 S2 S3 S4 + \\
& a^2 b^2 d^2 S0 S2 S3 S4 - b^4 d^2 S0 S2 S3 S4 + a^2 c^2 d^2 S0 S2 S3 S4 - b^2 c^2 d^2 S0 S2 S3 S4 + \\
& a^2 b^2 c^2 S1 S2 S3 S4 + b^4 c^2 S1 S2 S3 S4 + a^2 c^4 S1 S2 S3 S4 + b^2 c^4 S1 S2 S3 S4 + \\
& a^2 b^2 d^2 S1 S2 S3 S4 + b^4 d^2 S1 S2 S3 S4 + a^2 c^2 d^2 S1 S2 S3 S4 + b^2 c^2 d^2 S1 S2 S3 S4)) - \\
& \left(2 E0 r S0 \left(-\frac{1}{b^3} 2 S1 S2 \left(-\frac{2 S2 S3 \left(\frac{S3}{d} + \frac{S4}{d} \right)}{c^3} - \left(-\frac{S2}{c^3} + \frac{S3}{c^3} \right) \left(S3 \left(\frac{S3}{d} + \frac{S4}{d} \right) + \frac{S3 (-d S3 + d S4)}{c^2} \right) \right) - \right. \right. \\
& \left. \left(-\frac{S1}{b^3} + \frac{S2}{b^3} \right) \left(S2 \left(-\frac{2 S2 S3 \left(\frac{S3}{d} + \frac{S4}{d} \right)}{c^3} - \left(-\frac{S2}{c^3} + \frac{S3}{c^3} \right) \left(S3 \left(\frac{S3}{d} + \frac{S4}{d} \right) + \frac{S3 (-d S3 + d S4)}{c^2} \right) \right) \right) + \right. \\
& \left. \left. \frac{1}{b^2} S2 \left(-\frac{2 S3 \left(-\frac{S2 S3}{d} - \frac{S2 S4}{d} \right)}{c} - \left(\frac{S2}{c} + \frac{S3}{c} \right) \left(S3 \left(\frac{S3}{d} + \frac{S4}{d} \right) + \frac{S3 (-d S3 + d S4)}{c^2} \right) \right) \right) \right) \right) \\
& \cos[\theta] \left/ \left(a \left(\left(\frac{S0}{a} + \frac{S1}{a} \right) \left(-\frac{1}{b^3} 2 S1 S2 \left(-\frac{2 S2 S3 \left(\frac{S3}{d} + \frac{S4}{d} \right)}{c^3} - \right. \right. \right. \right. \right. \right. \right. \\
& \left. \left. \left(-\frac{S2}{c^3} + \frac{S3}{c^3} \right) \left(S3 \left(\frac{S3}{d} + \frac{S4}{d} \right) + \frac{S3 (-d S3 + d S4)}{c^2} \right) \right) - \left(-\frac{S1}{b^3} + \frac{S2}{b^3} \right) \right. \right. \\
& \left. \left. \left(S2 \left(-\frac{2 S2 S3 \left(\frac{S3}{d} + \frac{S4}{d} \right)}{c^3} - \left(-\frac{S2}{c^3} + \frac{S3}{c^3} \right) \left(S3 \left(\frac{S3}{d} + \frac{S4}{d} \right) + \frac{S3 (-d S3 + d S4)}{c^2} \right) \right) \right) + \right. \right. \\
& \left. \left. \left. \frac{1}{b^2} S2 \left(-\frac{2 S3 \left(-\frac{S2 S3}{d} - \frac{S2 S4}{d} \right)}{c} - \left(\frac{S2}{c} + \frac{S3}{c} \right) \left(S3 \left(\frac{S3}{d} + \frac{S4}{d} \right) + \frac{S3 (-d S3 + d S4)}{c^2} \right) \right) \right) \right) \right) \right) \right) + \\
& \left(-\frac{S0}{a^3} + \frac{S1}{a^3} \right) \left(\frac{1}{b} 2 S1 S2 \left(-\frac{2 S2 S3 \left(\frac{S3}{d} + \frac{S4}{d} \right)}{c^3} - \left(-\frac{S2}{c^3} + \frac{S3}{c^3} \right) \right. \right. \\
& \left. \left. \left(S3 \left(\frac{S3}{d} + \frac{S4}{d} \right) + \frac{S3 (-d S3 + d S4)}{c^2} \right) \right) - \left(\frac{S1}{b} + \frac{S2}{b} \right) \right. \\
& \left. \left. \left(S2 \left(-\frac{2 S2 S3 \left(\frac{S3}{d} + \frac{S4}{d} \right)}{c^3} - \left(-\frac{S2}{c^3} + \frac{S3}{c^3} \right) \left(S3 \left(\frac{S3}{d} + \frac{S4}{d} \right) + \frac{S3 (-d S3 + d S4)}{c^2} \right) \right) \right) + \frac{1}{b^2} \right. \right. \\
& \left. \left. \left. S2 \left(-\frac{2 S3 \left(-\frac{S2 S3}{d} - \frac{S2 S4}{d} \right)}{c} - \left(\frac{S2}{c} + \frac{S3}{c} \right) \left(S3 \left(\frac{S3}{d} + \frac{S4}{d} \right) + \frac{S3 (-d S3 + d S4)}{c^2} \right) \right) \right) \right) \right) \right) \right) \right) \right)
\end{aligned}$$

FullSimplify[%26]

$$\begin{aligned}
& - \left(\left(2 a^2 E_0 S_0 \left(c^2 r^2 (S_1 - S_2) \left(d^2 (S_2 + S_3) (S_3 - S_4) + c^2 (S_2 - S_3) (S_3 + S_4) \right) + \right. \right. \right. \\
& \quad b^4 (S_1 - S_2) \left(d^2 (S_2 - S_3) (S_3 - S_4) + c^2 (S_2 + S_3) (S_3 + S_4) \right) + \\
& \quad \left. \left. \left. b^2 (S_1 + S_2) \left(d^2 r^2 (S_2 - S_3) (S_3 - S_4) + c^4 (S_2 - S_3) (S_3 + S_4) + \right. \right. \right. \\
& \quad \quad \left. \left. \left. c^2 (S_2 + S_3) \left(d^2 (S_3 - S_4) + r^2 (S_3 + S_4) \right) \right) \right) \right) \cos[\theta] \right) / \\
& \left(r \left(b^2 (S_0 - S_1) \left(c^2 (S_1 + S_2) \left(d^2 (S_2 + S_3) (S_3 - S_4) + c^2 (S_2 - S_3) (S_3 + S_4) \right) + \right. \right. \right. \\
& \quad \left. \left. \left. b^2 (S_1 - S_2) \left(d^2 (S_2 - S_3) (S_3 - S_4) + c^2 (S_2 + S_3) (S_3 + S_4) \right) \right) + \right. \right. \\
& \quad \left. \left. \left. a^2 (S_0 + S_1) \left(c^2 (S_1 - S_2) \left(d^2 (S_2 + S_3) (S_3 - S_4) + c^2 (S_2 - S_3) (S_3 + S_4) \right) + \right. \right. \right. \\
& \quad \quad \left. \left. \left. b^2 (S_1 + S_2) \left(d^2 (S_2 - S_3) (S_3 - S_4) + c^2 (S_2 + S_3) (S_3 + S_4) \right) \right) \right) \right) \right)
\end{aligned}$$

$v_2[r, \theta]$

$$\begin{aligned}
& - \left(\left(4 b^2 E_0 r S_0 \left(a^2 c^2 S_1 S_2 S_3 + a^2 d^2 S_1 S_2 S_3 + a^2 c^2 S_1 S_3^2 - a^2 d^2 S_1 S_3^2 + \right. \right. \right. \\
& \quad \left. \left. \left. a^2 c^2 S_1 S_2 S_4 - a^2 d^2 S_1 S_2 S_4 + a^2 c^2 S_1 S_3 S_4 + a^2 d^2 S_1 S_3 S_4 \right) \cos[\theta] \right) \right) / \\
& \left(a^2 b^2 c^2 S_0 S_1 S_2 S_3 + b^4 c^2 S_0 S_1 S_2 S_3 + a^2 c^4 S_0 S_1 S_2 S_3 + b^2 c^4 S_0 S_1 S_2 S_3 + \right. \\
& \quad a^2 b^2 d^2 S_0 S_1 S_2 S_3 + b^4 d^2 S_0 S_1 S_2 S_3 + a^2 c^2 d^2 S_0 S_1 S_2 S_3 + b^2 c^2 d^2 S_0 S_1 S_2 S_3 + \\
& \quad a^2 b^2 c^2 S_1^2 S_2 S_3 - b^4 c^2 S_1^2 S_2 S_3 + a^2 c^4 S_1^2 S_2 S_3 - b^2 c^4 S_1^2 S_2 S_3 + a^2 b^2 d^2 S_1^2 S_2 S_3 - \\
& \quad b^4 d^2 S_1^2 S_2 S_3 + a^2 c^2 d^2 S_1^2 S_2 S_3 - b^2 c^2 d^2 S_1^2 S_2 S_3 + a^2 b^2 c^2 S_0 S_2^2 S_3 - \\
& \quad b^4 c^2 S_0 S_2^2 S_3 - a^2 c^4 S_0 S_2^2 S_3 + b^2 c^4 S_0 S_2^2 S_3 + a^2 b^2 d^2 S_0 S_2^2 S_3 - b^4 d^2 S_0 S_2^2 S_3 - \\
& \quad a^2 c^2 d^2 S_0 S_2^2 S_3 + b^2 c^2 d^2 S_0 S_2^2 S_3 + a^2 b^2 c^2 S_1 S_2^2 S_3 + b^4 c^2 S_1 S_2^2 S_3 - \\
& \quad a^2 c^4 S_1 S_2^2 S_3 - b^2 c^4 S_1 S_2^2 S_3 + a^2 b^2 d^2 S_1 S_2^2 S_3 + b^4 d^2 S_1 S_2^2 S_3 - a^2 c^2 d^2 S_1 S_2^2 S_3 - \\
& \quad b^2 c^2 d^2 S_1 S_2^2 S_3 + a^2 b^2 c^2 S_0 S_1 S_3^2 + b^4 c^2 S_0 S_1 S_3^2 - a^2 c^4 S_0 S_1 S_3^2 - b^2 c^4 S_0 S_1 S_3^2 - \\
& \quad a^2 b^2 d^2 S_0 S_1 S_3^2 - b^4 d^2 S_0 S_1 S_3^2 + a^2 c^2 d^2 S_0 S_1 S_3^2 + b^2 c^2 d^2 S_0 S_1 S_3^2 + \\
& \quad a^2 b^2 c^2 S_1^2 S_3^2 - b^4 c^2 S_1^2 S_3^2 - a^2 c^4 S_1^2 S_3^2 + b^2 c^4 S_1^2 S_3^2 - a^2 b^2 d^2 S_1^2 S_3^2 + \\
& \quad b^4 d^2 S_1^2 S_3^2 + a^2 c^2 d^2 S_1^2 S_3^2 - b^2 c^2 d^2 S_1^2 S_3^2 + a^2 b^2 c^2 S_0 S_2 S_3^2 - b^4 c^2 S_0 S_2 S_3^2 + \\
& \quad a^2 c^4 S_0 S_2 S_3^2 - b^2 c^4 S_0 S_2 S_3^2 - a^2 b^2 d^2 S_0 S_2 S_3^2 + b^4 d^2 S_0 S_2 S_3^2 - a^2 c^2 d^2 S_0 S_2 S_3^2 + \\
& \quad b^2 c^2 d^2 S_0 S_2 S_3^2 + a^2 b^2 c^2 S_1 S_2 S_3^2 + b^4 c^2 S_1 S_2 S_3^2 + a^2 c^4 S_1 S_2 S_3^2 + b^2 c^4 S_1 S_2 S_3^2 - \\
& \quad a^2 b^2 d^2 S_1 S_2 S_3^2 - b^4 d^2 S_1 S_2 S_3^2 - a^2 c^2 d^2 S_1 S_2 S_3^2 - b^2 c^2 d^2 S_1 S_2 S_3^2 + \\
& \quad a^2 b^2 c^2 S_0 S_1 S_2 S_4 + b^4 c^2 S_0 S_1 S_2 S_4 + a^2 c^4 S_0 S_1 S_2 S_4 + b^2 c^4 S_0 S_1 S_2 S_4 - \\
& \quad a^2 b^2 d^2 S_0 S_1 S_2 S_4 - b^4 d^2 S_0 S_1 S_2 S_4 - a^2 c^2 d^2 S_0 S_1 S_2 S_4 - b^2 c^2 d^2 S_0 S_1 S_2 S_4 + \\
& \quad a^2 b^2 c^2 S_1^2 S_2 S_4 - b^4 c^2 S_1^2 S_2 S_4 + a^2 c^4 S_1^2 S_2 S_4 - b^2 c^4 S_1^2 S_2 S_4 - a^2 b^2 d^2 S_1^2 S_2 S_4 + \\
& \quad b^4 d^2 S_1^2 S_2 S_4 - a^2 c^2 d^2 S_1^2 S_2 S_4 + b^2 c^2 d^2 S_1^2 S_2 S_4 + a^2 b^2 c^2 S_0 S_2^2 S_4 - \\
& \quad b^4 c^2 S_0 S_2^2 S_4 - a^2 c^4 S_0 S_2^2 S_4 + b^2 c^4 S_0 S_2^2 S_4 - a^2 b^2 d^2 S_0 S_2^2 S_4 + b^4 d^2 S_0 S_2^2 S_4 + \\
& \quad a^2 c^2 d^2 S_0 S_2^2 S_4 - b^2 c^2 d^2 S_0 S_2^2 S_4 + a^2 b^2 c^2 S_1 S_2^2 S_4 + b^4 c^2 S_1 S_2^2 S_4 - \\
& \quad a^2 c^4 S_1 S_2^2 S_4 - b^2 c^4 S_1 S_2^2 S_4 - a^2 b^2 d^2 S_1 S_2^2 S_4 - b^4 d^2 S_1 S_2^2 S_4 + a^2 c^2 d^2 S_1 S_2^2 S_4 + \\
& \quad b^2 c^2 d^2 S_1 S_2^2 S_4 + a^2 b^2 c^2 S_0 S_1 S_3 S_4 + b^4 c^2 S_0 S_1 S_3 S_4 - a^2 c^4 S_0 S_1 S_3 S_4 - \\
& \quad b^2 c^4 S_0 S_1 S_3 S_4 + a^2 b^2 d^2 S_0 S_1 S_3 S_4 + b^4 d^2 S_0 S_1 S_3 S_4 - a^2 c^2 d^2 S_0 S_1 S_3 S_4 - \\
& \quad b^2 c^2 d^2 S_0 S_1 S_3 S_4 + a^2 b^2 c^2 S_1^2 S_3 S_4 - b^4 c^2 S_1^2 S_3 S_4 - a^2 c^4 S_1^2 S_3 S_4 + b^2 c^4 S_1^2 S_3 S_4 + \\
& \quad a^2 b^2 d^2 S_1^2 S_3 S_4 - b^4 d^2 S_1^2 S_3 S_4 - a^2 c^2 d^2 S_1^2 S_3 S_4 + b^2 c^2 d^2 S_1^2 S_3 S_4 + \\
& \quad a^2 b^2 c^2 S_0 S_2 S_3 S_4 - b^4 c^2 S_0 S_2 S_3 S_4 + a^2 c^4 S_0 S_2 S_3 S_4 - b^2 c^4 S_0 S_2 S_3 S_4 + \\
& \quad a^2 b^2 d^2 S_0 S_2 S_3 S_4 - b^4 d^2 S_0 S_2 S_3 S_4 + a^2 c^2 d^2 S_0 S_2 S_3 S_4 - b^2 c^2 d^2 S_0 S_2 S_3 S_4 + \\
& \quad a^2 b^2 c^2 S_1 S_2 S_3 S_4 + b^4 c^2 S_1 S_2 S_3 S_4 + a^2 c^4 S_1 S_2 S_3 S_4 + b^2 c^4 S_1 S_2 S_3 S_4 + \\
& \quad a^2 b^2 d^2 S_1 S_2 S_3 S_4 + b^4 d^2 S_1 S_2 S_3 S_4 + a^2 c^2 d^2 S_1 S_2 S_3 S_4 + b^2 c^2 d^2 S_1 S_2 S_3 S_4) - \\
& \left(4 E_0 S_0 \left(a^2 b^2 c^4 S_1 S_2 S_3 + a^2 b^2 c^2 d^2 S_1 S_2 S_3 - a^2 b^2 c^4 S_1 S_3^2 + a^2 b^2 c^2 d^2 S_1 S_3^2 + \right. \right. \\
& \quad \left. \left. a^2 b^2 c^4 S_1 S_2 S_4 - a^2 b^2 c^2 d^2 S_1 S_2 S_4 - a^2 b^2 c^4 S_1 S_3 S_4 - a^2 b^2 c^2 d^2 S_1 S_3 S_4 \right) \cos[\theta] \right) /
\end{aligned}$$

$$\begin{aligned}
& \left(r \left(a^2 b^2 c^2 s_0 s_1 s_2 s_3 + b^4 c^2 s_0 s_1 s_2 s_3 + a^2 c^4 s_0 s_1 s_2 s_3 + b^2 c^4 s_0 s_1 s_2 s_3 + \right. \right. \\
& \quad a^2 b^2 d^2 s_0 s_1 s_2 s_3 + b^4 d^2 s_0 s_1 s_2 s_3 + a^2 c^2 d^2 s_0 s_1 s_2 s_3 + b^2 c^2 d^2 s_0 s_1 s_2 s_3 + \\
& \quad a^2 b^2 c^2 s_1^2 s_2 s_3 - b^4 c^2 s_1^2 s_2 s_3 + a^2 c^4 s_1^2 s_2 s_3 - b^2 c^4 s_1^2 s_2 s_3 + a^2 b^2 d^2 s_1^2 s_2 s_3 - \\
& \quad b^4 d^2 s_1^2 s_2 s_3 + a^2 c^2 d^2 s_1^2 s_2 s_3 - b^2 c^2 d^2 s_1^2 s_2 s_3 + a^2 b^2 c^2 s_0 s_2^2 s_3 - \\
& \quad b^4 c^2 s_0 s_2^2 s_3 - a^2 c^4 s_0 s_2^2 s_3 + b^2 c^4 s_0 s_2^2 s_3 + a^2 b^2 d^2 s_0 s_2^2 s_3 - b^4 d^2 s_0 s_2^2 s_3 - \\
& \quad a^2 c^2 d^2 s_0 s_2^2 s_3 + b^2 c^2 d^2 s_0 s_2^2 s_3 + a^2 b^2 c^2 s_1 s_2^2 s_3 + b^4 c^2 s_1 s_2^2 s_3 - \\
& \quad a^2 c^4 s_1 s_2^2 s_3 - b^2 c^4 s_1 s_2^2 s_3 + a^2 b^2 d^2 s_1 s_2^2 s_3 + b^4 d^2 s_1 s_2^2 s_3 - a^2 c^2 d^2 s_1 s_2^2 s_3 - \\
& \quad b^2 c^2 d^2 s_1 s_2^2 s_3 + a^2 b^2 c^2 s_0 s_1 s_3^2 + b^4 c^2 s_0 s_1 s_3^2 - a^2 c^4 s_0 s_1 s_3^2 - b^2 c^4 s_0 s_1 s_3^2 - \\
& \quad a^2 b^2 d^2 s_0 s_1 s_3^2 - b^4 d^2 s_0 s_1 s_3^2 + a^2 c^2 d^2 s_0 s_1 s_3^2 + b^2 c^2 d^2 s_0 s_1 s_3^2 + \\
& \quad a^2 b^2 c^2 s_1^2 s_3^2 - b^4 c^2 s_1^2 s_3^2 - a^2 c^4 s_1^2 s_3^2 + b^2 c^4 s_1^2 s_3^2 - a^2 b^2 d^2 s_1^2 s_3^2 + \\
& \quad b^4 d^2 s_1^2 s_3^2 + a^2 c^2 d^2 s_1^2 s_3^2 - b^2 c^2 d^2 s_1^2 s_3^2 + a^2 b^2 c^2 s_0 s_2 s_3^2 - b^4 c^2 s_0 s_2 s_3^2 + \\
& \quad a^2 c^4 s_0 s_2 s_3^2 - b^2 c^4 s_0 s_2 s_3^2 - a^2 b^2 d^2 s_0 s_2 s_3^2 + b^4 d^2 s_0 s_2 s_3^2 - a^2 c^2 d^2 s_0 s_2 s_3^2 + \\
& \quad b^2 c^2 d^2 s_0 s_2 s_3^2 + a^2 b^2 c^2 s_1 s_2 s_3^2 + b^4 c^2 s_1 s_2 s_3^2 + a^2 c^4 s_1 s_2 s_3^2 + b^2 c^4 s_1 s_2 s_3^2 - \\
& \quad a^2 b^2 d^2 s_1 s_2 s_3^2 - b^4 d^2 s_1 s_2 s_3^2 - a^2 c^2 d^2 s_1 s_2 s_3^2 - b^2 c^2 d^2 s_1 s_2 s_3^2 + \\
& \quad a^2 b^2 c^2 s_0 s_1 s_2 s_4 + b^4 c^2 s_0 s_1 s_2 s_4 + a^2 c^4 s_0 s_1 s_2 s_4 + b^2 c^4 s_0 s_1 s_2 s_4 - \\
& \quad a^2 b^2 d^2 s_0 s_1 s_2 s_4 - b^4 d^2 s_0 s_1 s_2 s_4 - a^2 c^2 d^2 s_0 s_1 s_2 s_4 - b^2 c^2 d^2 s_0 s_1 s_2 s_4 + \\
& \quad a^2 b^2 c^2 s_1^2 s_2 s_4 - b^4 c^2 s_1^2 s_2 s_4 + a^2 c^4 s_1^2 s_2 s_4 - b^2 c^4 s_1^2 s_2 s_4 - a^2 b^2 d^2 s_1^2 s_2 s_4 + \\
& \quad b^4 d^2 s_1^2 s_2 s_4 - a^2 c^2 d^2 s_1^2 s_2 s_4 + b^2 c^2 d^2 s_1^2 s_2 s_4 + a^2 b^2 c^2 s_0 s_2^2 s_4 - \\
& \quad b^4 c^2 s_0 s_2^2 s_4 - a^2 c^4 s_0 s_2^2 s_4 + b^2 c^4 s_0 s_2^2 s_4 - a^2 b^2 d^2 s_0 s_2^2 s_4 + b^4 d^2 s_0 s_2^2 s_4 + \\
& \quad a^2 c^2 d^2 s_0 s_2^2 s_4 - b^2 c^2 d^2 s_0 s_2^2 s_4 + a^2 b^2 c^2 s_1 s_2^2 s_4 + b^4 c^2 s_1 s_2^2 s_4 - \\
& \quad a^2 c^4 s_1 s_2^2 s_4 - b^2 c^4 s_1 s_2^2 s_4 - a^2 b^2 d^2 s_1 s_2^2 s_4 - b^4 d^2 s_1 s_2^2 s_4 + a^2 c^2 d^2 s_1 s_2^2 s_4 + \\
& \quad b^2 c^2 d^2 s_1 s_2^2 s_4 + a^2 b^2 c^2 s_0 s_1 s_3 s_4 + b^4 c^2 s_0 s_1 s_3 s_4 - a^2 c^4 s_0 s_1 s_3 s_4 - \\
& \quad b^2 c^4 s_0 s_1 s_3 s_4 + a^2 b^2 d^2 s_0 s_1 s_3 s_4 + b^4 d^2 s_0 s_1 s_3 s_4 - a^2 c^2 d^2 s_0 s_1 s_3 s_4 - \\
& \quad b^2 c^2 d^2 s_0 s_1 s_3 s_4 + a^2 b^2 c^2 s_1^2 s_3 s_4 - b^4 c^2 s_1^2 s_3 s_4 - a^2 c^4 s_1^2 s_3 s_4 + b^2 c^4 s_1^2 s_3 s_4 + \\
& \quad a^2 b^2 d^2 s_1^2 s_3 s_4 - b^4 d^2 s_1^2 s_3 s_4 - a^2 c^2 d^2 s_1^2 s_3 s_4 + b^2 c^2 d^2 s_1^2 s_3 s_4 + \\
& \quad a^2 b^2 c^2 s_0 s_2 s_3 s_4 - b^4 c^2 s_0 s_2 s_3 s_4 + a^2 c^4 s_0 s_2 s_3 s_4 - b^2 c^4 s_0 s_2 s_3 s_4 + \\
& \quad a^2 b^2 d^2 s_0 s_2 s_3 s_4 - b^4 d^2 s_0 s_2 s_3 s_4 + a^2 c^2 d^2 s_0 s_2 s_3 s_4 - b^2 c^2 d^2 s_0 s_2 s_3 s_4 + \\
& \quad a^2 b^2 c^2 s_1 s_2 s_3 s_4 + b^4 c^2 s_1 s_2 s_3 s_4 + a^2 c^4 s_1 s_2 s_3 s_4 + b^2 c^4 s_1 s_2 s_3 s_4 + \\
& \quad a^2 b^2 d^2 s_1 s_2 s_3 s_4 + b^4 d^2 s_1 s_2 s_3 s_4 + a^2 c^2 d^2 s_1 s_2 s_3 s_4 + b^2 c^2 d^2 s_1 s_2 s_3 s_4 \left. \right) \left. \right)
\end{aligned}$$

FullSimplify[%28]

$$\begin{aligned}
& - \left(\left(4 a^2 b^2 E_0 s_0 s_1 \left(d^2 r^2 (s_2 - s_3) (s_3 - s_4) + \right. \right. \right. \\
& \quad \left. \left. c^4 (s_2 - s_3) (s_3 + s_4) + c^2 (s_2 + s_3) \left(d^2 (s_3 - s_4) + r^2 (s_3 + s_4) \right) \right) \right) \cos[\theta] \left. \right) / \\
& \left(r \left(b^2 (s_0 - s_1) \left(c^2 (s_1 + s_2) \left(d^2 (s_2 + s_3) (s_3 - s_4) + c^2 (s_2 - s_3) (s_3 + s_4) \right) + \right. \right. \right. \\
& \quad \left. \left. b^2 (s_1 - s_2) \left(d^2 (s_2 - s_3) (s_3 - s_4) + c^2 (s_2 + s_3) (s_3 + s_4) \right) \right) + \right. \\
& \quad \left. a^2 (s_0 + s_1) \left(c^2 (s_1 - s_2) \left(d^2 (s_2 + s_3) (s_3 - s_4) + c^2 (s_2 - s_3) (s_3 + s_4) \right) + \right. \right. \\
& \quad \left. \left. b^2 (s_1 + s_2) \left(d^2 (s_2 - s_3) (s_3 - s_4) + c^2 (s_2 + s_3) (s_3 + s_4) \right) \right) \right) \left. \right) \left. \right)
\end{aligned}$$

v3[r, θ]

$$\begin{aligned}
& - \left(\left(8 b^2 c^2 E_0 r s_0 s_2 \left(a^2 s_1 s_3 + a^2 s_1 s_4 \right) \cos[\theta] \right) \left. \right) / \\
& \left(a^2 b^2 c^2 s_0 s_1 s_2 s_3 + b^4 c^2 s_0 s_1 s_2 s_3 + a^2 c^4 s_0 s_1 s_2 s_3 + b^2 c^4 s_0 s_1 s_2 s_3 + \right. \\
& \quad a^2 b^2 d^2 s_0 s_1 s_2 s_3 + b^4 d^2 s_0 s_1 s_2 s_3 + a^2 c^2 d^2 s_0 s_1 s_2 s_3 + b^2 c^2 d^2 s_0 s_1 s_2 s_3 + \\
& \quad a^2 b^2 c^2 s_1^2 s_2 s_3 - b^4 c^2 s_1^2 s_2 s_3 + a^2 c^4 s_1^2 s_2 s_3 - b^2 c^4 s_1^2 s_2 s_3 + a^2 b^2 d^2 s_1^2 s_2 s_3 -
\end{aligned}$$

$$\begin{aligned}
& b^4 d^2 S1^2 S2 S3 + a^2 c^2 d^2 S1^2 S2 S3 - b^2 c^2 d^2 S1^2 S2 S3 + a^2 b^2 c^2 S0 S2^2 S3 - \\
& b^4 c^2 S0 S2^2 S3 - a^2 c^4 S0 S2^2 S3 + b^2 c^4 S0 S2^2 S3 + a^2 b^2 d^2 S0 S2^2 S3 - b^4 d^2 S0 S2^2 S3 - \\
& a^2 c^2 d^2 S0 S2^2 S3 + b^2 c^2 d^2 S0 S2^2 S3 + a^2 b^2 c^2 S1 S2^2 S3 + b^4 c^2 S1 S2^2 S3 - \\
& a^2 c^4 S1 S2^2 S3 - b^2 c^4 S1 S2^2 S3 + a^2 b^2 d^2 S1 S2^2 S3 + b^4 d^2 S1 S2^2 S3 - a^2 c^2 d^2 S1 S2^2 S3 - \\
& b^2 c^2 d^2 S1 S2^2 S3 + a^2 b^2 c^2 S0 S1 S3^2 + b^4 c^2 S0 S1 S3^2 - a^2 c^4 S0 S1 S3^2 - b^2 c^4 S0 S1 S3^2 - \\
& a^2 b^2 d^2 S0 S1 S3^2 - b^4 d^2 S0 S1 S3^2 + a^2 c^2 d^2 S0 S1 S3^2 + b^2 c^2 d^2 S0 S1 S3^2 + \\
& a^2 b^2 c^2 S1^2 S3^2 - b^4 c^2 S1^2 S3^2 - a^2 c^4 S1^2 S3^2 + b^2 c^4 S1^2 S3^2 - a^2 b^2 d^2 S1^2 S3^2 + \\
& b^4 d^2 S1^2 S3^2 + a^2 c^2 d^2 S1^2 S3^2 - b^2 c^2 d^2 S1^2 S3^2 + a^2 b^2 c^2 S0 S2 S3^2 - b^4 c^2 S0 S2 S3^2 + \\
& a^2 c^4 S0 S2 S3^2 - b^2 c^4 S0 S2 S3^2 - a^2 b^2 d^2 S0 S2 S3^2 + b^4 d^2 S0 S2 S3^2 - a^2 c^2 d^2 S0 S2 S3^2 + \\
& b^2 c^2 d^2 S0 S2 S3^2 + a^2 b^2 c^2 S1 S2 S3^2 + b^4 c^2 S1 S2 S3^2 + a^2 c^4 S1 S2 S3^2 + b^2 c^4 S1 S2 S3^2 - \\
& a^2 b^2 d^2 S1 S2 S3^2 - b^4 d^2 S1 S2 S3^2 - a^2 c^2 d^2 S1 S2 S3^2 - b^2 c^2 d^2 S1 S2 S3^2 + \\
& a^2 b^2 c^2 S0 S1 S2 S4 + b^4 c^2 S0 S1 S2 S4 + a^2 c^4 S0 S1 S2 S4 + b^2 c^4 S0 S1 S2 S4 - \\
& a^2 b^2 d^2 S0 S1 S2 S4 - b^4 d^2 S0 S1 S2 S4 - a^2 c^2 d^2 S0 S1 S2 S4 - b^2 c^2 d^2 S0 S1 S2 S4 + \\
& a^2 b^2 c^2 S1^2 S2 S4 - b^4 c^2 S1^2 S2 S4 + a^2 c^4 S1^2 S2 S4 - b^2 c^4 S1^2 S2 S4 - a^2 b^2 d^2 S1^2 S2 S4 + \\
& b^4 d^2 S1^2 S2 S4 - a^2 c^2 d^2 S1^2 S2 S4 + b^2 c^2 d^2 S1^2 S2 S4 + a^2 b^2 c^2 S0 S2^2 S4 - \\
& b^4 c^2 S0 S2^2 S4 - a^2 c^4 S0 S2^2 S4 + b^2 c^4 S0 S2^2 S4 - a^2 b^2 d^2 S0 S2^2 S4 + b^4 d^2 S0 S2^2 S4 + \\
& a^2 c^2 d^2 S0 S2^2 S4 - b^2 c^2 d^2 S0 S2^2 S4 + a^2 b^2 c^2 S1 S2^2 S4 + b^4 c^2 S1 S2^2 S4 - \\
& a^2 c^4 S1 S2^2 S4 - b^2 c^4 S1 S2^2 S4 - a^2 b^2 d^2 S1 S2^2 S4 - b^4 d^2 S1 S2^2 S4 + a^2 c^2 d^2 S1 S2^2 S4 + \\
& b^2 c^2 d^2 S1 S2^2 S4 + a^2 b^2 c^2 S0 S1 S3 S4 + b^4 c^2 S0 S1 S3 S4 - a^2 c^4 S0 S1 S3 S4 - \\
& b^2 c^4 S0 S1 S3 S4 + a^2 b^2 d^2 S0 S1 S3 S4 + b^4 d^2 S0 S1 S3 S4 - a^2 c^2 d^2 S0 S1 S3 S4 - \\
& b^2 c^2 d^2 S0 S1 S3 S4 + a^2 b^2 c^2 S1^2 S3 S4 - b^4 c^2 S1^2 S3 S4 - a^2 c^4 S1^2 S3 S4 + b^2 c^4 S1^2 S3 S4 + \\
& a^2 b^2 d^2 S1^2 S3 S4 - b^4 d^2 S1^2 S3 S4 - a^2 c^2 d^2 S1^2 S3 S4 + b^2 c^2 d^2 S1^2 S3 S4 + \\
& a^2 b^2 c^2 S0 S2 S3 S4 - b^4 c^2 S0 S2 S3 S4 + a^2 c^4 S0 S2 S3 S4 - b^2 c^4 S0 S2 S3 S4 + \\
& a^2 b^2 d^2 S0 S2 S3 S4 - b^4 d^2 S0 S2 S3 S4 + a^2 c^2 d^2 S0 S2 S3 S4 - b^2 c^2 d^2 S0 S2 S3 S4 + \\
& a^2 b^2 c^2 S1 S2 S3 S4 + b^4 c^2 S1 S2 S3 S4 + a^2 c^4 S1 S2 S3 S4 + b^2 c^4 S1 S2 S3 S4 + \\
& a^2 b^2 d^2 S1 S2 S3 S4 + b^4 d^2 S1 S2 S3 S4 + a^2 c^2 d^2 S1 S2 S3 S4 + b^2 c^2 d^2 S1 S2 S3 S4) - \\
& (8 b^2 E0 S0 S2 (a^2 c^2 d^2 S1 S3 - a^2 c^2 d^2 S1 S4) \text{Cos}[\theta]) / \\
& (r (a^2 b^2 c^2 S0 S1 S2 S3 + b^4 c^2 S0 S1 S2 S3 + a^2 c^4 S0 S1 S2 S3 + b^2 c^4 S0 S1 S2 S3 + \\
& a^2 b^2 d^2 S0 S1 S2 S3 + b^4 d^2 S0 S1 S2 S3 + a^2 c^2 d^2 S0 S1 S2 S3 + b^2 c^2 d^2 S0 S1 S2 S3 + \\
& a^2 b^2 c^2 S1^2 S2 S3 - b^4 c^2 S1^2 S2 S3 + a^2 c^4 S1^2 S2 S3 - b^2 c^4 S1^2 S2 S3 + a^2 b^2 d^2 S1^2 S2 S3 - \\
& b^4 d^2 S1^2 S2 S3 + a^2 c^2 d^2 S1^2 S2 S3 - b^2 c^2 d^2 S1^2 S2 S3 + a^2 b^2 c^2 S0 S2^2 S3 - \\
& b^4 c^2 S0 S2^2 S3 - a^2 c^4 S0 S2^2 S3 + b^2 c^4 S0 S2^2 S3 + a^2 b^2 d^2 S0 S2^2 S3 - b^4 d^2 S0 S2^2 S3 - \\
& a^2 c^2 d^2 S0 S2^2 S3 + b^2 c^2 d^2 S0 S2^2 S3 + a^2 b^2 c^2 S1 S2^2 S3 + b^4 c^2 S1 S2^2 S3 - \\
& a^2 c^4 S1 S2^2 S3 - b^2 c^4 S1 S2^2 S3 + a^2 b^2 d^2 S1 S2^2 S3 + b^4 d^2 S1 S2^2 S3 - a^2 c^2 d^2 S1 S2^2 S3 - \\
& b^2 c^2 d^2 S1 S2^2 S3 + a^2 b^2 c^2 S0 S1 S3^2 + b^4 c^2 S0 S1 S3^2 - a^2 c^4 S0 S1 S3^2 - b^2 c^4 S0 S1 S3^2 - \\
& a^2 b^2 d^2 S0 S1 S3^2 - b^4 d^2 S0 S1 S3^2 + a^2 c^2 d^2 S0 S1 S3^2 + b^2 c^2 d^2 S0 S1 S3^2 + \\
& a^2 b^2 c^2 S1^2 S3^2 - b^4 c^2 S1^2 S3^2 - a^2 c^4 S1^2 S3^2 + b^2 c^4 S1^2 S3^2 - a^2 b^2 d^2 S1^2 S3^2 + \\
& b^4 d^2 S1^2 S3^2 + a^2 c^2 d^2 S1^2 S3^2 - b^2 c^2 d^2 S1^2 S3^2 + a^2 b^2 c^2 S0 S2 S3^2 - b^4 c^2 S0 S2 S3^2 + \\
& a^2 c^4 S0 S2 S3^2 - b^2 c^4 S0 S2 S3^2 - a^2 b^2 d^2 S0 S2 S3^2 + b^4 d^2 S0 S2 S3^2 - a^2 c^2 d^2 S0 S2 S3^2 + \\
& b^2 c^2 d^2 S0 S2 S3^2 + a^2 b^2 c^2 S1 S2 S3^2 + b^4 c^2 S1 S2 S3^2 + a^2 c^4 S1 S2 S3^2 + b^2 c^4 S1 S2 S3^2 - \\
& a^2 b^2 d^2 S1 S2 S3^2 - b^4 d^2 S1 S2 S3^2 - a^2 c^2 d^2 S1 S2 S3^2 - b^2 c^2 d^2 S1 S2 S3^2 + \\
& a^2 b^2 c^2 S0 S1 S2 S4 + b^4 c^2 S0 S1 S2 S4 + a^2 c^4 S0 S1 S2 S4 + b^2 c^4 S0 S1 S2 S4 - \\
& a^2 b^2 d^2 S0 S1 S2 S4 - b^4 d^2 S0 S1 S2 S4 - a^2 c^2 d^2 S0 S1 S2 S4 - b^2 c^2 d^2 S0 S1 S2 S4 +
\end{aligned}$$

$$\begin{aligned}
& a^2 b^2 c^2 S1^2 S2 S4 - b^4 c^2 S1^2 S2 S4 + a^2 c^4 S1^2 S2 S4 - b^2 c^4 S1^2 S2 S4 - a^2 b^2 d^2 S1^2 S2 S4 + \\
& b^4 d^2 S1^2 S2 S4 - a^2 c^2 d^2 S1^2 S2 S4 + b^2 c^2 d^2 S1^2 S2 S4 + a^2 b^2 c^2 S0 S2^2 S4 - \\
& b^4 c^2 S0 S2^2 S4 - a^2 c^4 S0 S2^2 S4 + b^2 c^4 S0 S2^2 S4 - a^2 b^2 d^2 S0 S2^2 S4 + b^4 d^2 S0 S2^2 S4 + \\
& a^2 c^2 d^2 S0 S2^2 S4 - b^2 c^2 d^2 S0 S2^2 S4 + a^2 b^2 c^2 S1 S2^2 S4 + b^4 c^2 S1 S2^2 S4 - \\
& a^2 c^4 S1 S2^2 S4 - b^2 c^4 S1 S2^2 S4 - a^2 b^2 d^2 S1 S2^2 S4 - b^4 d^2 S1 S2^2 S4 + a^2 c^2 d^2 S1 S2^2 S4 + \\
& b^2 c^2 d^2 S1 S2^2 S4 + a^2 b^2 c^2 S0 S1 S3 S4 + b^4 c^2 S0 S1 S3 S4 - a^2 c^4 S0 S1 S3 S4 - \\
& b^2 c^4 S0 S1 S3 S4 + a^2 b^2 d^2 S0 S1 S3 S4 + b^4 d^2 S0 S1 S3 S4 - a^2 c^2 d^2 S0 S1 S3 S4 - \\
& b^2 c^2 d^2 S0 S1 S3 S4 + a^2 b^2 c^2 S1^2 S3 S4 - b^4 c^2 S1^2 S3 S4 - a^2 c^4 S1^2 S3 S4 + b^2 c^4 S1^2 S3 S4 + \\
& a^2 b^2 d^2 S1^2 S3 S4 - b^4 d^2 S1^2 S3 S4 - a^2 c^2 d^2 S1^2 S3 S4 + b^2 c^2 d^2 S1^2 S3 S4 + \\
& a^2 b^2 c^2 S0 S2 S3 S4 - b^4 c^2 S0 S2 S3 S4 + a^2 c^4 S0 S2 S3 S4 - b^2 c^4 S0 S2 S3 S4 + \\
& a^2 b^2 d^2 S0 S2 S3 S4 - b^4 d^2 S0 S2 S3 S4 + a^2 c^2 d^2 S0 S2 S3 S4 - b^2 c^2 d^2 S0 S2 S3 S4 + \\
& a^2 b^2 c^2 S1 S2 S3 S4 + b^4 c^2 S1 S2 S3 S4 + a^2 c^4 S1 S2 S3 S4 + b^2 c^4 S1 S2 S3 S4 + \\
& a^2 b^2 d^2 S1 S2 S3 S4 + b^4 d^2 S1 S2 S3 S4 + a^2 c^2 d^2 S1 S2 S3 S4 + b^2 c^2 d^2 S1 S2 S3 S4)
\end{aligned}$$

FullSimplify[%30]

$$\begin{aligned}
& - \left(\left(8 a^2 b^2 c^2 E0 S0 S1 S2 \left(d^2 (S3 - S4) + r^2 (S3 + S4) \right) \text{Cos}[\theta] \right) / \right. \\
& \left(r \left(b^2 (S0 - S1) \left(c^2 (S1 + S2) \left(d^2 (S2 + S3) (S3 - S4) + c^2 (S2 - S3) (S3 + S4) \right) + \right. \right. \right. \\
& \quad \left. \left. b^2 (S1 - S2) \left(d^2 (S2 - S3) (S3 - S4) + c^2 (S2 + S3) (S3 + S4) \right) \right) \right) + \\
& \quad \left. a^2 (S0 + S1) \left(c^2 (S1 - S2) \left(d^2 (S2 + S3) (S3 - S4) + c^2 (S2 - S3) (S3 + S4) \right) + \right. \right. \\
& \quad \left. \left. b^2 (S1 + S2) \left(d^2 (S2 - S3) (S3 - S4) + c^2 (S2 + S3) (S3 + S4) \right) \right) \right) \right)
\end{aligned}$$

V4[r, θ]

$$\begin{aligned}
 & - \left((16 a^2 b^2 c^2 E_0 r S_0 S_1 S_2 S_3 \text{Cos}[\theta]) / \right. \\
 & \quad \left(a^2 b^2 c^2 S_0 S_1 S_2 S_3 + b^4 c^2 S_0 S_1 S_2 S_3 + a^2 c^4 S_0 S_1 S_2 S_3 + b^2 c^4 S_0 S_1 S_2 S_3 + \right. \\
 & \quad a^2 b^2 d^2 S_0 S_1 S_2 S_3 + b^4 d^2 S_0 S_1 S_2 S_3 + a^2 c^2 d^2 S_0 S_1 S_2 S_3 + b^2 c^2 d^2 S_0 S_1 S_2 S_3 + \\
 & \quad a^2 b^2 c^2 S_1^2 S_2 S_3 - b^4 c^2 S_1^2 S_2 S_3 + a^2 c^4 S_1^2 S_2 S_3 - b^2 c^4 S_1^2 S_2 S_3 + a^2 b^2 d^2 S_1^2 S_2 S_3 - \\
 & \quad b^4 d^2 S_1^2 S_2 S_3 + a^2 c^2 d^2 S_1^2 S_2 S_3 - b^2 c^2 d^2 S_1^2 S_2 S_3 + a^2 b^2 c^2 S_0 S_2^2 S_3 - \\
 & \quad b^4 c^2 S_0 S_2^2 S_3 - a^2 c^4 S_0 S_2^2 S_3 + b^2 c^4 S_0 S_2^2 S_3 + a^2 b^2 d^2 S_0 S_2^2 S_3 - b^4 d^2 S_0 S_2^2 S_3 - \\
 & \quad a^2 c^2 d^2 S_0 S_2^2 S_3 + b^2 c^2 d^2 S_0 S_2^2 S_3 + a^2 b^2 c^2 S_1 S_2^2 S_3 + b^4 c^2 S_1 S_2^2 S_3 - \\
 & \quad a^2 c^4 S_1 S_2^2 S_3 - b^2 c^4 S_1 S_2^2 S_3 + a^2 b^2 d^2 S_1 S_2^2 S_3 + b^4 d^2 S_1 S_2^2 S_3 - a^2 c^2 d^2 S_1 S_2^2 S_3 - \\
 & \quad b^2 c^2 d^2 S_1 S_2^2 S_3 + a^2 b^2 c^2 S_0 S_1 S_3^2 + b^4 c^2 S_0 S_1 S_3^2 - a^2 c^4 S_0 S_1 S_3^2 - b^2 c^4 S_0 S_1 S_3^2 - \\
 & \quad a^2 b^2 d^2 S_0 S_1 S_3^2 - b^4 d^2 S_0 S_1 S_3^2 + a^2 c^2 d^2 S_0 S_1 S_3^2 + b^2 c^2 d^2 S_0 S_1 S_3^2 + \\
 & \quad a^2 b^2 c^2 S_1^2 S_3^2 - b^4 c^2 S_1^2 S_3^2 - a^2 c^4 S_1^2 S_3^2 + b^2 c^4 S_1^2 S_3^2 - a^2 b^2 d^2 S_1^2 S_3^2 + \\
 & \quad b^4 d^2 S_1^2 S_3^2 + a^2 c^2 d^2 S_1^2 S_3^2 - b^2 c^2 d^2 S_1^2 S_3^2 + a^2 b^2 c^2 S_0 S_2 S_3^2 - b^4 c^2 S_0 S_2 S_3^2 + \\
 & \quad a^2 c^4 S_0 S_2 S_3^2 - b^2 c^4 S_0 S_2 S_3^2 - a^2 b^2 d^2 S_0 S_2 S_3^2 + b^4 d^2 S_0 S_2 S_3^2 - a^2 c^2 d^2 S_0 S_2 S_3^2 + \\
 & \quad b^2 c^2 d^2 S_0 S_2 S_3^2 + a^2 b^2 c^2 S_1 S_2 S_3^2 + b^4 c^2 S_1 S_2 S_3^2 + a^2 c^4 S_1 S_2 S_3^2 + b^2 c^4 S_1 S_2 S_3^2 - \\
 & \quad a^2 b^2 d^2 S_1 S_2 S_3^2 - b^4 d^2 S_1 S_2 S_3^2 - a^2 c^2 d^2 S_1 S_2 S_3^2 - b^2 c^2 d^2 S_1 S_2 S_3^2 + \\
 & \quad a^2 b^2 c^2 S_0 S_1 S_2 S_4 + b^4 c^2 S_0 S_1 S_2 S_4 + a^2 c^4 S_0 S_1 S_2 S_4 + b^2 c^4 S_0 S_1 S_2 S_4 - \\
 & \quad a^2 b^2 d^2 S_0 S_1 S_2 S_4 - b^4 d^2 S_0 S_1 S_2 S_4 - a^2 c^2 d^2 S_0 S_1 S_2 S_4 - b^2 c^2 d^2 S_0 S_1 S_2 S_4 + \\
 & \quad a^2 b^2 c^2 S_1^2 S_2 S_4 - b^4 c^2 S_1^2 S_2 S_4 + a^2 c^4 S_1^2 S_2 S_4 - b^2 c^4 S_1^2 S_2 S_4 - a^2 b^2 d^2 S_1^2 S_2 S_4 + \\
 & \quad b^4 d^2 S_1^2 S_2 S_4 - a^2 c^2 d^2 S_1^2 S_2 S_4 + b^2 c^2 d^2 S_1^2 S_2 S_4 + a^2 b^2 c^2 S_0 S_2^2 S_4 - \\
 & \quad b^4 c^2 S_0 S_2^2 S_4 - a^2 c^4 S_0 S_2^2 S_4 + b^2 c^4 S_0 S_2^2 S_4 - a^2 b^2 d^2 S_0 S_2^2 S_4 + b^4 d^2 S_0 S_2^2 S_4 + \\
 & \quad a^2 c^2 d^2 S_0 S_2^2 S_4 - b^2 c^2 d^2 S_0 S_2^2 S_4 + a^2 b^2 c^2 S_1 S_2^2 S_4 + b^4 c^2 S_1 S_2^2 S_4 - \\
 & \quad a^2 c^4 S_1 S_2^2 S_4 - b^2 c^4 S_1 S_2^2 S_4 - a^2 b^2 d^2 S_1 S_2^2 S_4 - b^4 d^2 S_1 S_2^2 S_4 + a^2 c^2 d^2 S_1 S_2^2 S_4 + \\
 & \quad b^2 c^2 d^2 S_1 S_2^2 S_4 + a^2 b^2 c^2 S_0 S_1 S_3 S_4 + b^4 c^2 S_0 S_1 S_3 S_4 - a^2 c^4 S_0 S_1 S_3 S_4 - \\
 & \quad b^2 c^4 S_0 S_1 S_3 S_4 + a^2 b^2 d^2 S_0 S_1 S_3 S_4 + b^4 d^2 S_0 S_1 S_3 S_4 - a^2 c^2 d^2 S_0 S_1 S_3 S_4 - \\
 & \quad b^2 c^2 d^2 S_0 S_1 S_3 S_4 + a^2 b^2 c^2 S_1^2 S_3 S_4 - b^4 c^2 S_1^2 S_3 S_4 - a^2 c^4 S_1^2 S_3 S_4 + b^2 c^4 S_1^2 S_3 S_4 + \\
 & \quad a^2 b^2 d^2 S_1^2 S_3 S_4 - b^4 d^2 S_1^2 S_3 S_4 - a^2 c^2 d^2 S_1^2 S_3 S_4 + b^2 c^2 d^2 S_1^2 S_3 S_4 + \\
 & \quad a^2 b^2 c^2 S_0 S_2 S_3 S_4 - b^4 c^2 S_0 S_2 S_3 S_4 + a^2 c^4 S_0 S_2 S_3 S_4 - b^2 c^4 S_0 S_2 S_3 S_4 + \\
 & \quad a^2 b^2 d^2 S_0 S_2 S_3 S_4 - b^4 d^2 S_0 S_2 S_3 S_4 + a^2 c^2 d^2 S_0 S_2 S_3 S_4 - b^2 c^2 d^2 S_0 S_2 S_3 S_4 + \\
 & \quad a^2 b^2 c^2 S_1 S_2 S_3 S_4 + b^4 c^2 S_1 S_2 S_3 S_4 + a^2 c^4 S_1 S_2 S_3 S_4 + b^2 c^4 S_1 S_2 S_3 S_4 + \\
 & \quad a^2 b^2 d^2 S_1 S_2 S_3 S_4 + b^4 d^2 S_1 S_2 S_3 S_4 + a^2 c^2 d^2 S_1 S_2 S_3 S_4 + b^2 c^2 d^2 S_1 S_2 S_3 S_4) \left. \right)
 \end{aligned}$$

FullSimplify[%32]

$$\begin{aligned}
 & - \left((16 a^2 b^2 c^2 E_0 r S_0 S_1 S_2 S_3 \text{Cos}[\theta]) / \right. \\
 & \quad \left(b^2 (S_0 - S_1) (c^2 (S_1 + S_2) (d^2 (S_2 + S_3) (S_3 - S_4) + c^2 (S_2 - S_3) (S_3 + S_4)) + \right. \\
 & \quad \quad \left. b^2 (S_1 - S_2) (d^2 (S_2 - S_3) (S_3 - S_4) + c^2 (S_2 + S_3) (S_3 + S_4)) \right) + \\
 & \quad a^2 (S_0 + S_1) (c^2 (S_1 - S_2) (d^2 (S_2 + S_3) (S_3 - S_4) + c^2 (S_2 - S_3) (S_3 + S_4)) + \\
 & \quad \quad \left. b^2 (S_1 + S_2) (d^2 (S_2 - S_3) (S_3 - S_4) + c^2 (S_2 + S_3) (S_3 + S_4)) \right) \left. \right)
 \end{aligned}$$

/* Step 3 : Expression for voltage (V3) on each side of the axonal membrane */

$$\begin{aligned}
V3 = & - \left((8 a^2 b^2 c^2 E0 S0 S1 S2 (d^2 (S3 - S4) + r^2 (S3 + S4)) \text{Cos}[\theta]) / \right. \\
& (r (b^2 (S0 - S1) (c^2 (S1 + S2) (d^2 (S2 + S3) (S3 - S4) + c^2 (S2 - S3) (S3 + S4)) + \\
& \quad b^2 (S1 - S2) (d^2 (S2 - S3) (S3 - S4) + c^2 (S2 + S3) (S3 + S4))) + \\
& \quad \left. a^2 (S0 + S1) (c^2 (S1 - S2) (d^2 (S2 + S3) (S3 - S4) + c^2 (S2 - S3) (S3 + S4)) + \right. \\
& \quad \left. \left. b^2 (S1 + S2) (d^2 (S2 - S3) (S3 - S4) + c^2 (S2 + S3) (S3 + S4)))) \right) \right)
\end{aligned}$$

r = c

c

$$\begin{aligned}
V3out = & - \left((8 a^2 b^2 c^2 E0 S0 S1 S2 (d^2 (S3 - S4) + r^2 (S3 + S4)) \text{Cos}[\theta]) / \right. \\
& (r (b^2 (S0 - S1) (c^2 (S1 + S2) (d^2 (S2 + S3) (S3 - S4) + c^2 (S2 - S3) (S3 + S4)) + \\
& \quad b^2 (S1 - S2) (d^2 (S2 - S3) (S3 - S4) + c^2 (S2 + S3) (S3 + S4))) + \\
& \quad \left. a^2 (S0 + S1) (c^2 (S1 - S2) (d^2 (S2 + S3) (S3 - S4) + c^2 (S2 - S3) (S3 + S4)) + \right. \\
& \quad \left. \left. b^2 (S1 + S2) (d^2 (S2 - S3) (S3 - S4) + c^2 (S2 + S3) (S3 + S4)))) \right) \right) \\
- & \left((8 a^2 b^2 c E0 S0 S1 S2 (d^2 (S3 - S4) + c^2 (S3 + S4)) \text{Cos}[\theta]) / \right. \\
& (b^2 (S0 - S1) (c^2 (S1 + S2) (d^2 (S2 + S3) (S3 - S4) + c^2 (S2 - S3) (S3 + S4)) + \\
& \quad b^2 (S1 - S2) (d^2 (S2 - S3) (S3 - S4) + c^2 (S2 + S3) (S3 + S4))) + \\
& \quad \left. a^2 (S0 + S1) (c^2 (S1 - S2) (d^2 (S2 + S3) (S3 - S4) + c^2 (S2 - S3) (S3 + S4)) + \right. \\
& \quad \left. \left. b^2 (S1 + S2) (d^2 (S2 - S3) (S3 - S4) + c^2 (S2 + S3) (S3 + S4)))) \right) \right)
\end{aligned}$$

FullSimplify[V3out]

$$\begin{aligned}
- & \left((8 a^2 b^2 c E0 S0 S1 S2 (d^2 (S3 - S4) + c^2 (S3 + S4)) \text{Cos}[\theta]) / \right. \\
& (b^2 (S0 - S1) (c^2 (S1 + S2) (d^2 (S2 + S3) (S3 - S4) + c^2 (S2 - S3) (S3 + S4)) + \\
& \quad b^2 (S1 - S2) (d^2 (S2 - S3) (S3 - S4) + c^2 (S2 + S3) (S3 + S4))) + \\
& \quad \left. a^2 (S0 + S1) (c^2 (S1 - S2) (d^2 (S2 + S3) (S3 - S4) + c^2 (S2 - S3) (S3 + S4)) + \right. \\
& \quad \left. \left. b^2 (S1 + S2) (d^2 (S2 - S3) (S3 - S4) + c^2 (S2 + S3) (S3 + S4)))) \right) \right)
\end{aligned}$$

r = d

d

$$\begin{aligned}
V3in = & - \left((8 a^2 b^2 c^2 E0 S0 S1 S2 (d^2 (S3 - S4) + r^2 (S3 + S4)) \text{Cos}[\theta]) / \right. \\
& (r (b^2 (S0 - S1) (c^2 (S1 + S2) (d^2 (S2 + S3) (S3 - S4) + c^2 (S2 - S3) (S3 + S4)) + \\
& \quad b^2 (S1 - S2) (d^2 (S2 - S3) (S3 - S4) + c^2 (S2 + S3) (S3 + S4))) + \\
& \quad \left. a^2 (S0 + S1) (c^2 (S1 - S2) (d^2 (S2 + S3) (S3 - S4) + c^2 (S2 - S3) (S3 + S4)) + \right. \\
& \quad \left. \left. b^2 (S1 + S2) (d^2 (S2 - S3) (S3 - S4) + c^2 (S2 + S3) (S3 + S4)))) \right) \right) \\
- & \left((8 a^2 b^2 c^2 E0 S0 S1 S2 (d^2 (S3 - S4) + d^2 (S3 + S4)) \text{Cos}[\theta]) / \right. \\
& (d (b^2 (S0 - S1) (c^2 (S1 + S2) (d^2 (S2 + S3) (S3 - S4) + c^2 (S2 - S3) (S3 + S4)) + \\
& \quad b^2 (S1 - S2) (d^2 (S2 - S3) (S3 - S4) + c^2 (S2 + S3) (S3 + S4))) + \\
& \quad \left. a^2 (S0 + S1) (c^2 (S1 - S2) (d^2 (S2 + S3) (S3 - S4) + c^2 (S2 - S3) (S3 + S4)) + \right. \\
& \quad \left. \left. b^2 (S1 + S2) (d^2 (S2 - S3) (S3 - S4) + c^2 (S2 + S3) (S3 + S4)))) \right) \right)
\end{aligned}$$

FullSimplify[V3in]

$$- \left((16 a^2 b^2 c^2 d E_0 S_0 S_1 S_2 S_3 \cos[\theta]) / \right. \\ \left. (b^2 (S_0 - S_1) (c^2 (S_1 + S_2) (d^2 (S_2 + S_3) (S_3 - S_4) + c^2 (S_2 - S_3) (S_3 + S_4)) + \right. \\ \left. b^2 (S_1 - S_2) (d^2 (S_2 - S_3) (S_3 - S_4) + c^2 (S_2 + S_3) (S_3 + S_4))) + \right. \\ \left. a^2 (S_0 + S_1) (c^2 (S_1 - S_2) (d^2 (S_2 + S_3) (S_3 - S_4) + c^2 (S_2 - S_3) (S_3 + S_4)) + \right. \\ \left. b^2 (S_1 + S_2) (d^2 (S_2 - S_3) (S_3 - S_4) + c^2 (S_2 + S_3) (S_3 + S_4))) \right)$$

/* Step 4 : Transmembrane potential calculator,
which is defined as the difference between V3in and V3out. */

Vm = V3in - V3out

$$(8 a^2 b^2 c E_0 S_0 S_1 S_2 (d^2 (S_3 - S_4) + c^2 (S_3 + S_4)) \cos[\theta]) / \\ (b^2 (S_0 - S_1) (c^2 (S_1 + S_2) (d^2 (S_2 + S_3) (S_3 - S_4) + c^2 (S_2 - S_3) (S_3 + S_4)) + \\ b^2 (S_1 - S_2) (d^2 (S_2 - S_3) (S_3 - S_4) + c^2 (S_2 + S_3) (S_3 + S_4))) + \\ a^2 (S_0 + S_1) (c^2 (S_1 - S_2) (d^2 (S_2 + S_3) (S_3 - S_4) + c^2 (S_2 - S_3) (S_3 + S_4)) + \\ b^2 (S_1 + S_2) (d^2 (S_2 - S_3) (S_3 - S_4) + c^2 (S_2 + S_3) (S_3 + S_4)))) - \\ (8 a^2 b^2 c^2 E_0 S_0 S_1 S_2 (d^2 (S_3 - S_4) + d^2 (S_3 + S_4)) \cos[\theta]) / \\ (d (b^2 (S_0 - S_1) (c^2 (S_1 + S_2) (d^2 (S_2 + S_3) (S_3 - S_4) + c^2 (S_2 - S_3) (S_3 + S_4)) + \\ b^2 (S_1 - S_2) (d^2 (S_2 - S_3) (S_3 - S_4) + c^2 (S_2 + S_3) (S_3 + S_4))) + \\ a^2 (S_0 + S_1) (c^2 (S_1 - S_2) (d^2 (S_2 + S_3) (S_3 - S_4) + c^2 (S_2 - S_3) (S_3 + S_4)) + \\ b^2 (S_1 + S_2) (d^2 (S_2 - S_3) (S_3 - S_4) + c^2 (S_2 + S_3) (S_3 + S_4)))))$$

/* Expression of Vm in equation (11). */

FullSimplify[Vm]

$$(8 a^2 b^2 c (c - d) E_0 S_0 S_1 S_2 (d (-S_3 + S_4) + c (S_3 + S_4)) \cos[\theta]) / \\ (b^2 (S_0 - S_1) (c^2 (S_1 + S_2) (d^2 (S_2 + S_3) (S_3 - S_4) + c^2 (S_2 - S_3) (S_3 + S_4)) + \\ b^2 (S_1 - S_2) (d^2 (S_2 - S_3) (S_3 - S_4) + c^2 (S_2 + S_3) (S_3 + S_4))) + \\ a^2 (S_0 + S_1) (c^2 (S_1 - S_2) (d^2 (S_2 + S_3) (S_3 - S_4) + c^2 (S_2 - S_3) (S_3 + S_4)) + \\ b^2 (S_1 + S_2) (d^2 (S_2 - S_3) (S_3 - S_4) + c^2 (S_2 + S_3) (S_3 + S_4))))$$