$$
C_{ll}^{i1\_i2\_i3\_i4\_} \to
$$

$$
\hbar \left(\frac{1}{144} \frac{1}{m_{\tilde{\gamma}}^2} s_\gamma^2 y_e^{i3p} \left(\overline{y_e}^{i4p} \left(-7 g_1^2 + g_2^2 \right) \delta_{i1i2} - 2 \overline{y_e}^{i2p} \left(9 c_\gamma^2 \overline{y_e}^{i4r} y_e^{i1r} + g_2^2 \delta_{i1i4} \right) \right) + \right.
$$

$$
\frac{1}{18} g_2^4 \left(2 \delta_{i1i4} \delta_{i2i3} - \delta_{i1i2} \delta_{i3i4} \right) LF_{3,0}[m_2] + \frac{1}{12} g_2^4 \left(2 \delta_{i1i4} \delta_{i2i3} - \delta_{i1i2} \delta_{i3i4} \right) LF_{4,-1}[m_2] +
$$

$$
\frac{4}{45} g_2^4 \left(-2 \delta_{i1i4} \delta_{i2i3} + \delta_{i1i2} \delta_{i3i4} \right) LF_{5,-2}[m_2] + \frac{1}{54} \sum_p g_1^4 LF_{3,0}\left[m_{\tilde{d}}^p \right] \delta_{i1i2} \delta_{i3i4} -
$$

$$
\frac{5}{144} \sum_p g_1^4 LF_{4,-1}\left[m_{\tilde{d}}^p \right] \delta_{i1i2} \delta_{i3i4} + \frac{2}{135} \sum_p g_1^4 LF_{5,-2}\left[m_{\tilde{d}}^p \right] \delta_{i1i2} \delta_{i3i4} +
$$

$$
\frac{1}{18} \sum_p g_1^4 LF_{3,0}\left[m_{\tilde{e}}^p \right] \delta_{i1i2} \delta_{i3i4} - \frac{5}{48} \sum_p g_1^4 LF_{4,-1}\left[m_{\tilde{e}}^p \right] \delta_{i1i2} \delta_{i3i4} + \frac{2}{45} \sum_p g_1^4
$$

$$
LF_{5,-2}\left[m_{\tilde{e}}^p \right] \delta_{i1i2} \delta_{i3i4} + \frac{1}{36} \sum_p \left(2 g_2^4 \delta_{i1i4} \delta_{i2i3} + \left(g_1^4 - g_2^4 \right) \delta_{i1i2} \delta_{i3i4} \right) LF_{3,0}\left[m_{\tilde{l}}^p \right] -
$$

$$
\frac{5}{96} \sum_p \left(2 g_2^4 \delta_{i1i4} \delta_{i2i3} + \left(g_1^4 - g_2^4 \right) \delta_{i1i2} \delta_{i3i4} \right) LF_{4,-1}\left[m_{\tilde{l}}^p \right] +
$$

$$
\frac{1}{45} \sum_p \left(2 g_2^4 \delta_{i1i4} \delta_{i2i3} + \left(g_1^4 - g_2^4 \right) \delta_{i1i2} \delta_{i3i4} \right) LF_{5,-2}\left[m_{\tilde{l}}^p \right] +
$$

$$
\frac{1}{108} \sum_p \left(18 g_2^4 \delta_{i1i4} \delta_{i2i3} + \left(g_1^4 - 9 g_2^4 \right) \delta_{i1i2} \delta_{i3i4} \right) LF_{3,0}\left[m_{\tilde{q}}^p \right] -
$$

$$
\frac{5}{288} \sum_p \left(18 g_2^4 \delta_{i1i4} \delta_{i2i3} + \left(g_1^4 - 9 g_2^4 \right) \delta_{i1i2} \delta_{i3i4} \right) LF_{4,-1}\left[m_{\tilde{q}}^p \right] +
$$

$$
\frac{1}{135} \sum_p \left(18 g_2^4 \delta_{i1i4} \delta_{i2i3} + \left(g_1^4 - 9 g_2^4 \right) \delta_{i1i2} \delta_{i3i4} \right) LF_{5,-2}\left[m_{\tilde{q}}^p \right] +
$$

$$
\frac{2}{27} \sum_p g_1^4 LF_{3,0}\left[m_{\tilde{u}}^p \right] \delta_{i1i2} \delta_{i3i4} - \frac{5}{36} \sum_p g_1^4 LF_{4,-1}\left[m_{\tilde{u}}^p \right] \delta_{i1i2} \delta_{i3i4} + \frac{8}{135} \sum_p g_1^4 LF_{5,-2}\left[m_{\tilde{u}}^p \right]
$$

$$
\delta_{i1i2} \delta_{i3i4} + \frac{1}{12} s_\gamma^2 y_e^{i3p} \left(3 c_\gamma^2 \overline{y_e}^{i2p} \overline{y_e}^{i4r} y_e^{i1r} - 2 g_1^2 \overline{y_e}^{i4p} \delta_{i1i2} \right) LF_{1,2}[m_\oplus] +
$$

$$
\frac{1}{24} s_\gamma^2 y_e^{i3p} \left(\overline{y_e}^{i4p} \left(g_1^2 + g_2^2 \right) \delta_{i1i2} + \overline{y_e}^{i2p} \left(3 s_\gamma^2 \overline{y_e}^{i4r} y_e^{i1r} - 2 g_2^2 \delta_{i1i4} \right) \right) LF_{2,1}[m_\oplus] +
$$

$$
\frac{1}{72} \left(-3 s_\gamma^2 \overline{y_e}^{i4p} y_e^{i3p} \left(g_1^2 + g_2^2 \right) \delta_{i1i2} + 2 g_2^2 \left(3 s_\gamma^2 \overline{y_e}^{i2p} y_e^{i3p} + 2 g_2^2 \delta_{i2i3} \right) \delta_{i1i4} + \right.
$$

$$
\left. 2 \left(g_1^4 - g_2^4 \right) \delta_{i1i2} \delta_{i3i4} \right) LF_{3,0}[m_\oplus] + \frac{1}{96} \left(-10 g_2^4 \delta_{i1i4} \delta_{i2i3} + 5 \left(-g_1^4 + g_2^4 \right) \delta_{i1i2} \delta_{i3i4} \right)
$$

$$
LF_{4,-1}[m_\oplus] + \frac{1}{45} \left(2 g_2^4 \delta_{i1i4} \delta_{i2i3} + \left(g_1^4 - g_2^4 \right) \delta_{i1i2} \delta_{i3i4} \right) LF_{5,-2}[m_\oplus] +
$$

$$
\frac{1}{36} \left(2 g_2^4 \delta_{i1i4} \delta_{i2i3} + \left(g_1^4 - g_2^4 \right) \delta_{i1i2} \delta_{i3i4} \right) LF_{3,0}[\tilde{\mu}] +
$$

$$
\frac{1}{24} \left(2 g_2^4 \delta_{i1i4} \delta_{i2i3} + \left(g_1^4 - g_2^4 \right) \delta_{i1i2} \delta_{i3i4} \right) LF_{4,-1}[\tilde{\mu}] +
$$

$$
\frac{1}{45} \left(-4 g_2^4 \delta_{i1i4} \delta_{i2i3} + 2 \left(-g_1^4 + g_2^4 \right) \delta_{i1i2} \delta_{i3i4} \right) LF_{5,-2}[\tilde{\mu}] +
$$

$$
\frac{1}{48} g_1^2 \left(2 g_2^2 \delta_{i1i4} \delta_{i2i3} + \left(g_1^2 - g_2^2 \right) \delta_{i1i2} \delta_{i3i4} \right) LF_{2,1,0}\left[m_1, m_{\tilde{l}}^{i4} \right] +
$$

$$
\frac{1}{48} g_1^2 \left(2 g_2^2 \delta_{i1i4} \delta_{i2i3} + \left(g_1^2 - g_2^2 \right) \delta_{i1i2} \delta_{i3i4} \right) LF_{2,2,-1}\left[m_1, m_{\tilde{l}}^{i4} \right] +
$$

$$
\frac{1}{24} g_1^2 \left(-2 g_2^2 \delta_{i1i4} \delta_{i2i3} + \left(-g_1^2 + g_2^2 \right) \delta_{i1i2} \delta_{i3i4} \right) LF_{3,1,-1}\left[m_1, m_{\tilde{l}}^{i4} \right] +
$$

$$
\frac{1}{48} g_1^2 \left(2 g_2^2 \delta_{i1i4} \delta_{i2i3} + \left(g_1^2 - g_2^2 \right) \delta_{i1i2} \delta_{i3i4} \right) LF_{4,1,-2}\left[m_1, m_{\tilde{l}}^{i4} \right] +
$$

$$
\frac{1}{48} \left(-2 g_2^4 \delta_{i1i4} \delta_{i2i3} + g_2^2 \left(3 g_1^2 + g_2^2 \right) \delta_{i1i2} \delta_{i3i4} \right) LF_{2,1,0}\left[m_2, m_{\tilde{l}}^{i4} \right] +
$$

$$
\frac{1}{48} \left(-2 g_2^4 \delta_{i1i4} \delta_{i2i3} + g_2^2 \left(3 g_1^2 + g_2^2 \right) \delta_{i1i2} \delta_{i3i4} \right) LF_{2,2,-1}\left[m_2, m_{\tilde{l}}^{i4} \right] +
$$

$$
\frac{1}{24} \left(-10 g_2^4 \delta_{i1i4} \delta_{i2i3} + g_2^2 \left(-3 g_1^2 + 5 g_2^2 \right) \delta_{i1i2} \delta_{i3i4} \right) LF_{3,1,-1}\left[m_2, m_{\tilde{l}}^{i4} \right] +
$$

$$
\frac{1}{16} \left(2 g_2^4 \delta_{i1i4} \delta_{i2i3} + g_2^2 \left(g_1^2 - g_2^2 \right) \delta_{i1i2} \delta_{i3i4} \right) LF_{4,1,-2}\left[m_2, m_{\tilde{l}}^{i4} \right] -
$$

$$
\frac{1}{6} g_1^2 \overline{y_e}^{i4p} y_e^{i3p} LF_{2,1,0}\left[m_{\tilde{e}}^p, \tilde{\mu} \right] \delta_{i1i2} + \frac{1}{12} g_1^2 \overline{y_e}^{i4p} y_e^{i3p} LF_{2,2,-1}\left[m_{\tilde{e}}^p, \tilde{\mu} \right] \delta_{i1i2} +
$$

$$
\frac{1}{12} g_1^2 \overline{y_e}^{i4p} y_e^{i3p} LF_{3,1,-1}\left[m_{\tilde{e}}^p, \tilde{\mu} \right] \delta_{i1i2} +
$$

$$
\frac{1}{24} g_1^2 \left(-2 g_2^2 \delta_{i1i4} \delta_{i2i3} + \left(-g_1^2 + g_2^2 \right) \delta_{i1i2} \delta_{i3i4} \right) LF_{2,1,0}\left[m_{\tilde{l}}^{i4}, m_1 \right] +
$$

$$
\frac{1}{48} g_1^2 \left(2 g_2^2 \delta_{i1i4} \delta_{i2i3} + \left(g_1^2 - g_2^2 \right) \delta_{i1i2} \delta_{i3i4} \right) LF_{3,1,-1}\left[m_{\tilde{l}}^{i4}, m_1 \right] +
$$

$$
\frac{1}{24} \left(2 g_2^4 \delta_{i1i4} \delta_{i2i3} - g_2^2 \left(3 g_1^2 + g_2^2 \right) \delta_{i1i2} \delta_{i3i4} \right) LF_{2,1,0}\left[m_{\tilde{l}}^{i4}, m_2 \right] +
$$

$$
\frac{1}{48} \left(-2 g_2^4 \delta_{i1i4} \delta_{i2i3} + g_2^2 \left(3 g_1^2 + g_2^2 \right) \delta_{i1i2} \delta_{i3i4} \right) LF_{3,1,-1}\left[m_{\tilde{l}}^{i4}, m_2 \right] +
$$

$$
\frac{1}{12} g_1^2 \overline{y_e}^{i4p} y_e^{i3p} LF_{2,1,0}\left[\tilde{\mu}, m_{\tilde{e}}^p \right] \delta_{i1i2} -
$$

$$
\frac{1}{24} y_e^{i3p} \left(\overline{y_e}^{i4p} \left(g_1^2 - 3 g_2^2 \right) \delta_{i1i2} + 6 g_2^2 \overline{y_e}^{i2p} \delta_{i1i4} \right) LF_{3,1,-1}\left[\tilde{\mu}, m_{\tilde{e}}^p \right] +
$$

$$
\frac{1}{24} y_e^{i3p} \left(\overline{y_e}^{i4p} \left(g_1^2 - g_2^2 \right) \delta_{i1i2} + 2 g_2^2 \overline{y_e}^{i2p} \delta_{i1i4} \right) LF_{4,1,-2}\left[\tilde{\mu}, m_{\tilde{e}}^p \right] +
$$

$$
\frac{1}{32} g_1^4 LF_{2,1,1,-1}\left[m_1, m_{\tilde{l}}^{i2}, m_{\tilde{l}}^{i4} \right] \delta_{i1i2} \delta_{i3i4} + \frac{1}{16} g_1^4 m_1^2 LF_{2,1,1,0}\left[m_1, m_{\tilde{l}}^{i2}, m_{\tilde{l}}^{i4} \right] \delta_{i1i2} \delta_{i3i4} +
$$

$$
\frac{1}{32} g_2^4 LF_{2,1,1,-1}\left[m_2, m_{\tilde{l}}^{i2}, m_{\tilde{l}}^{i4} \right] \delta_{i1i2} \delta_{i3i4} + \frac{5}{16} g_2^4 m_2^2 LF_{2,1,1,0}\left[m_2, m_{\tilde{l}}^{i2}, m_{\tilde{l}}^{i4} \right] \delta_{i1i2} \delta_{i3i4} +
$$

$$
\frac{1}{8} g_2^4 LF_{2,1,1,-1}\left[m_2, m_{\tilde{l}}^{i4}, m_{\tilde{l}}^{i3} \right] \delta_{i1i4} \delta_{i2i3} - \frac{1}{4} g_2^4 m_2^2 LF_{2,1,1,0}\left[m_2, m_{\tilde{l}}^{i4}, m_{\tilde{l}}^{i3} \right] \delta_{i1i4} \delta_{i2i3} +
$$

$$
\frac{1}{8} \overline{y_e}^{i2p} \overline{y_e}^{i4r} y_e^{i1r} y_e^{i3p} LF_{2,1,1,-1}\left[\tilde{\mu}, m_{\tilde{e}}^p, m_{\tilde{e}}^r \right] -
$$

$$
\frac{1}{16} g_1^2 g_2^2 LF_{1,1,1,1,-1}\left[m_1, m_2, m_{\tilde{l}}^{i2}, m_{\tilde{l}}^{i4} \right] \delta_{i1i2} \delta_{i3i4} -
$$

$$
\frac{1}{8} m_1 m_2 g_1^2 g_2^2 LF_{1,1,1,1,0}\left[m_1, m_2, m_{\tilde{l}}^{i2}, m_{\tilde{l}}^{i4} \right] \delta_{i1i2} \delta_{i3i4} +
$$

$$
\frac{1}{8} g_1^2 g_2^2 LF_{1,1,1,1,-1}\left[m_1, m_2, m_{\tilde{l}}^{i4}, m_{\tilde{l}}^{i3} \right] \delta_{i1i4} \delta_{i2i3} +
$$

$$
\left. \frac{1}{4} m_1 m_2 g_1^2 g_2^2 LF_{1,1,1,1,0}\left[m_1, m_2, m_{\tilde{l}}^{i4}, m_{\tilde{l}}^{i3} \right] \delta_{i1i4} \delta_{i2i3} \right)
$$