

$$\begin{aligned}
& \frac{1}{16} \frac{1}{m_e^2} \left(-\frac{1}{144} \frac{1}{m_e^2} (S_\gamma^2 \bar{y}_d^{i2p} (g_2^2 y_d^{i1p} + 12 c_\gamma^2 y_d^{i1p} (\bar{y}_d^{rs} y_d^{i1s} + 3 \bar{y}_u^{rs} y_u^{i1s})) + \right. \\
& \quad \left. c_\gamma^2 (36 s_\gamma^2 \bar{y}_d^{i2p} y_d^{i1r} \bar{y}_u^{i2s} y_u^{ps} + \bar{y}_u^{i2p} (g_2^2 y_u^{i1p} + 12 s_\gamma^2 \bar{y}_u^{rs} y_u^{rp} y_u^{i1s})) \right) + \\
& \frac{1}{9} g_2^4 LF_{3,0}[m_2] \delta_{i1i2} + \frac{1}{6} g_2^4 LF_{4,-1}[m_2] \delta_{i1i2} - \frac{8}{45} g_2^4 LF_{5,-2}[m_2] \delta_{i1i2} + \\
& \frac{1}{18} \sum_p g_2^4 LF_{3,0}[m_1^p] \delta_{i1i2} - \frac{5}{48} \sum_p g_2^4 LF_{4,-1}[m_1^p] \delta_{i1i2} + \\
& \frac{1}{24} \sum_p g_2^4 LF_{5,-2}[m_1^p] \delta_{i1i2} + \frac{1}{6} \sum_p g_2^4 LF_{3,0}[m_q^p] \delta_{i1i2} - \frac{5}{16} \sum_p g_2^4 LF_{4,-1}[m_q^p] \delta_{i1i2} + \\
& \frac{1}{24} \sum_p g_2^4 LF_{5,-2}[m_q^p] \delta_{i1i2} - \frac{1}{24} g_2^2 (s_\gamma^2 \bar{y}_d^{i2p} y_d^{i1p} + c_\gamma^2 \bar{y}_u^{i2p} y_u^{i1p}) LF_{2,1,0}[m_\phi] + \\
& \frac{1}{72} g_2^2 (3 s_\gamma^2 \bar{y}_d^{i2p} y_d^{i1p} + 3 c_\gamma^2 \bar{y}_u^{i2p} y_u^{i1p} + 4 g_2^2 \delta_{i1i2}) LF_{3,0}[m_\phi] - \frac{5}{48} g_2^4 LF_{4,-1}[m_\phi] \delta_{i1i2} + \\
& \frac{2}{45} g_2^4 LF_{5,-2}[m_\phi] \delta_{i1i2} + \frac{1}{18} g_2^4 LF_{3,0}[\tilde{\mu}] \delta_{i1i2} + \frac{1}{12} g_2^4 LF_{4,-1}[\tilde{\mu}] \delta_{i1i2} - \frac{4}{45} g_2^4 LF_{5,-2}[\tilde{\mu}] \delta_{i1i2} + \\
& \frac{1}{18} g_1^2 c_\gamma^2 \bar{y}_d^{i2p} y_d^{i1p} LF_{2,1,0}[m_1, m_d^p] - \frac{1}{9} g_1^2 c_\gamma^2 \bar{y}_d^{i2p} y_d^{i1p} LF_{3,1,-1}[m_1, m_d^p] + \\
& \frac{1}{18} g_1^2 c_\gamma^2 \bar{y}_d^{i2p} y_d^{i1p} LF_{4,1,-2}[m_1, m_d^p] + \frac{1}{432} g_1^2 g_2^2 LF_{2,1,0}[m_1, m_q^{i2}] \delta_{i1i2} + \\
& \frac{1}{432} g_1^2 g_2^2 LF_{2,2,-1}[m_1, m_q^{i2}] \delta_{i1i2} - \frac{1}{216} g_1^2 g_2^2 LF_{3,1,-1}[m_1, m_q^{i2}] \delta_{i1i2} + \\
& \frac{1}{432} g_1^2 g_2^2 LF_{4,1,-2}[m_1, m_q^{i2}] \delta_{i1i2} + \frac{2}{9} g_1^2 s_\gamma^2 \bar{y}_u^{i2p} y_u^{i1p} LF_{2,1,0}[m_1, m_\mu^p] - \\
& \frac{4}{9} g_1^2 s_\gamma^2 \bar{y}_u^{i2p} y_u^{i1p} LF_{3,1,-1}[m_1, m_\mu^p] + \frac{2}{3} g_1^2 s_\gamma^2 \bar{y}_u^{i2p} y_u^{i1p} LF_{4,1,-2}[m_1, m_\mu^p] - \\
& \frac{1}{48} g_2^4 LF_{2,1,0}[m_2, m_q^{i2}] \delta_{i1i2} - \frac{1}{48} g_2^4 LF_{2,2,-1}[m_2, m_q^{i2}] \delta_{i1i2} - \frac{5}{24} g_2^4 LF_{3,1,-1}[m_2, m_q^{i2}] \delta_{i1i2} + \\
& \frac{1}{16} g_2^4 LF_{4,1,-2}[m_2, m_q^{i2}] \delta_{i1i2} - \frac{1}{3} g_2^4 LF_{2,1,0}[m_2, \tilde{\mu}] \delta_{i1i2} - \frac{1}{3} g_2^4 LF_{2,2,-1}[m_2, \tilde{\mu}] \delta_{i1i2} - \\
& \frac{2}{3} m_2 s_\gamma \tilde{\mu} c_\gamma g_2^4 LF_{2,2,0}[m_2, \tilde{\mu}] \delta_{i1i2} + \frac{1}{6} g_2^4 LF_{3,1,-1}[m_2, \tilde{\mu}] \delta_{i1i2} + \\
& \frac{1}{6} g_2^4 LF_{3,2,-2}[m_2, \tilde{\mu}] \delta_{i1i2} + \frac{1}{3} m_2 s_\gamma \tilde{\mu} c_\gamma g_2^4 LF_{3,2,-1}[m_2, \tilde{\mu}] \delta_{i1i2} + \\
& \frac{2}{3} g_3^2 c_\gamma^2 \bar{y}_d^{i2p} y_d^{i1p} LF_{2,1,0}[m_3, m_d^p] - \frac{4}{3} g_3^2 c_\gamma^2 \bar{y}_d^{i2p} y_d^{i1p} LF_{3,1,-1}[m_3, m_d^p] + \\
& \frac{2}{3} g_3^2 c_\gamma^2 \bar{y}_d^{i2p} y_d^{i1p} LF_{4,1,-2}[m_3, m_d^p] + \frac{1}{9} g_2^2 g_3^2 LF_{2,1,0}[m_3, m_q^{i2}] \delta_{i1i2} + \\
& \frac{1}{9} g_2^2 g_3^2 LF_{2,2,-1}[m_3, m_q^{i2}] \delta_{i1i2} - \frac{2}{9} g_2^2 g_3^2 LF_{3,1,-1}[m_3, m_q^{i2}] \delta_{i1i2} + \\
& \frac{1}{9} g_2^2 g_3^2 LF_{4,1,-2}[m_3, m_q^{i2}] \delta_{i1i2} + \frac{2}{3} g_3^2 s_\gamma^2 \bar{y}_u^{i2p} y_u^{i1p} LF_{2,1,0}[m_3, m_\mu^p] - \\
& \frac{4}{3} g_3^2 s_\gamma^2 \bar{y}_u^{i2p} y_u^{i1p} LF_{3,1,-1}[m_3, m_\mu^p] + \frac{2}{3} g_3^2 s_\gamma^2 \bar{y}_u^{i2p} y_u^{i1p} LF_{4,1,-2}[m_3, m_\mu^p] + \\
& \frac{1}{8} g_2^2 (c_\gamma \bar{a}_e^{pr} - s_\gamma \tilde{\mu} \bar{y}_e^{pr}) (c_\gamma a_e^{pr} - s_\gamma \tilde{\mu} y_e^{pr}) LF_{4,1,-1}[m_e^p, m_e^r] \delta_{i1i2} - \\
& \frac{1}{6} g_2^2 (c_\gamma \bar{a}_e^{pr} - s_\gamma \tilde{\mu} \bar{y}_e^{pr}) (c_\gamma a_e^{pr} - s_\gamma \tilde{\mu} y_e^{pr}) LF_{5,1,-2}[m_e^p, m_e^r] \delta_{i1i2} + \\
& \frac{3}{8} g_2^2 (c_\gamma \bar{a}_d^{pr} - s_\gamma \tilde{\mu} \bar{y}_d^{pr}) (c_\gamma a_d^{pr} - s_\gamma \tilde{\mu} y_d^{pr}) LF_{4,1,-1}[m_q^p, m_d^r] \delta_{i1i2} - \\
& \frac{1}{2} g_2^2 (c_\gamma \bar{a}_d^{pr} - s_\gamma \tilde{\mu} \bar{y}_d^{pr}) (c_\gamma a_d^{pr} - s_\gamma \tilde{\mu} y_d^{pr}) LF_{5,1,-2}[m_q^p, m_d^r] \delta_{i1i2} + \\
& \frac{1}{4} g_2^2 (s_\gamma \bar{a}_u^{pr} - \tilde{\mu} c_\gamma \bar{y}_u^{pr}) (s_\gamma a_u^{pr} - \tilde{\mu} c_\gamma y_u^{pr}) LF_{2,2,0}[m_q^p, m_u^r] \delta_{i1i2} - \\
& \frac{1}{8} g_2^2 (s_\gamma \bar{a}_u^{pr} - \tilde{\mu} c_\gamma \bar{y}_u^{pr}) (s_\gamma a_u^{pr} - \tilde{\mu} c_\gamma y_u^{pr}) LF_{3,2,-1}[m_q^p, m_u^r] \delta_{i1i2} - \\
& \frac{1}{216} g_1^2 g_2^2 LF_{2,1,0}[m_q^{i2}, m_1] \delta_{i1i2} + \frac{1}{432} g_1^2 g_2^2 LF_{3,1,-1}[m_q^{i2}, m_1] \delta_{i1i2} + \\
& \frac{1}{24} g_2^4 LF_{2,1,0}[m_q^{i2}, m_2] \delta_{i1i2} - \frac{1}{48} g_2^4 LF_{3,1,-1}[m_q^{i2}, m_2] \delta_{i1i2} - \\
& \frac{2}{9} g_2^2 g_3^2 LF_{2,1,0}[m_q^{i2}, m_3] \delta_{i1i2} + \frac{1}{9} g_2^2 g_3^2 LF_{3,1,-1}[m_q^{i2}, m_3] \delta_{i1i2} - \\
& \frac{1}{4} g_2^2 (s_\gamma \bar{a}_u^{pr} - \tilde{\mu} c_\gamma \bar{y}_u^{pr}) (s_\gamma a_u^{pr} - \tilde{\mu} c_\gamma y_u^{pr}) LF_{3,1,0}[m_u^r, m_q^p] \delta_{i1i2} - \\
& \frac{1}{4} g_2^2 (s_\gamma \bar{a}_u^{pr} - \tilde{\mu} c_\gamma \bar{y}_u^{pr}) (s_\gamma a_u^{pr} - \tilde{\mu} c_\gamma y_u^{pr}) LF_{3,2,-1}[m_u^r, m_q^p] \delta_{i1i2} + \\
& \frac{3}{4} g_2^2 (s_\gamma \bar{a}_u^{pr} - \tilde{\mu} c_\gamma \bar{y}_u^{pr}) (s_\gamma a_u^{pr} - \tilde{\mu} c_\gamma y_u^{pr}) LF_{4,1,-1}[m_u^r, m_q^p] \delta_{i1i2} - \\
& \frac{1}{4} g_2^2 (s_\gamma \bar{a}_u^{pr} - \tilde{\mu} c_\gamma \bar{y}_u^{pr}) (s_\gamma a_u^{pr} - \tilde{\mu} c_\gamma y_u^{pr}) LF_{5,1,-2}[m_u^r, m_q^p] \delta_{i1i2} - \\
& \frac{5}{24} g_1^2 g_2^2 LF_{4,1,-2}[\tilde{\mu}, m_1] \delta_{i1i2} - \frac{1}{4} m_1 s_\gamma \tilde{\mu} c_\gamma g_1^2 g_2^2 LF_{4,1,-1}[\tilde{\mu}, m_1] \delta_{i1i2} + \\
& \frac{1}{6} g_1^2 g_2^2 LF_{5,1,-3}[\tilde{\mu}, m_1] \delta_{i1i2} + \frac{1}{3} m_1 s_\gamma \tilde{\mu} c_\gamma g_1^2 g_2^2 LF_{5,1,-2}[\tilde{\mu}, m_1] \delta_{i1i2} + \\
& \frac{2}{3} g_2^4 LF_{3,1,-1}[\tilde{\mu}, m_2] \delta_{i1i2} + \frac{2}{3} m_2 s_\gamma \tilde{\mu} c_\gamma g_2^4 LF_{3,1,0}[\tilde{\mu}, m_2] \delta_{i1i2} + \\
& \frac{1}{3} g_2^4 LF_{3,2,-2}[\tilde{\mu}, m_2] \delta_{i1i2} + \frac{2}{3} m_2 s_\gamma \tilde{\mu} c_\gamma g_2^4 LF_{3,2,-1}[\tilde{\mu}, m$$