

$$\begin{aligned}
& i2-13-i4 \rightarrow -s_\gamma c_\gamma \frac{1}{m_e^2} y_d^{i3i4} y_u^{i1i2} + \\
& \left(-\frac{1}{216} s_\gamma c_\gamma \frac{1}{m_e^2} (18 y_d^{i3i4} y_u^{i1i2} (g_1^2 + 16 g_3^2) + 9 \overline{y_d}^{\text{pr}} (y_u^{pi2} (-2 s_\gamma^2 y_d^{i1i4} y_d^{i3r} + 3 y_d^{i1r} y_d^{i3i4} \right. \\
& \quad (1 + 2 c_\gamma^2 + 5 s_\gamma^2)) + 9 y_u^{i1i2} (y_d^{pi4} y_d^{i3r} (1 + s_\gamma^2) + 4 s_\gamma^2 y_d^{\text{pr}} y_d^{i3i4})) + 27 \overline{y_u}^{\text{pr}} \\
& \quad (3 y_d^{i3i4} (y_u^{pi2} y_u^{i1r} (1 + c_\gamma^2) + 4 c_\gamma^2 y_u^{\text{pr}} y_u^{i1i2}) + y_d^{pi4} y_u^{i1i2} y_u^{i3r} (1 + 5 c_\gamma^2 + 2 s_\gamma^2)) + \\
& \quad 2 y_u^{i3i2} (y_d^{i1i4} (5 g_1^2 + 27 g_2^2 - 192 g_3^2) - 9 c_\gamma^2 y_d^{pi4} \overline{y_u}^{\text{pr}} y_u^{i1r})) - \\
& \quad \frac{1}{2} \sum_p g_1^2 \frac{1}{m_e^4} y_d^{i3i4} y_u^{i1i2} (s_{2\gamma} c_\gamma^2 + s_\gamma c_{2\gamma} c_\gamma - s_{2\gamma} s_\gamma^2) \text{LF}_{1,0}[m_d^p] + \\
& \quad \frac{3}{2} \frac{1}{m_e^4} \overline{y_d}^{\text{pr}} y_d^{\text{pr}} y_d^{i3i4} y_u^{i1i2} (s_{2\gamma} c_\gamma^2 - s_{2\gamma} s_\gamma^2 - 2 c_\gamma s_\gamma^3) \text{LF}_{1,0}[m_d^r] - \\
& \quad \frac{1}{2} \sum_p g_1^2 \frac{1}{m_e^4} y_d^{i3i4} y_u^{i1i2} (s_{2\gamma} c_\gamma^2 + s_\gamma c_{2\gamma} c_\gamma - s_{2\gamma} s_\gamma^2) \text{LF}_{1,0}[m_e^p] + \\
& \quad \frac{1}{2} \frac{1}{m_e^4} y_d^{i3i4} \overline{y_e}^{\text{pr}} y_e^{\text{pr}} y_u^{i1i2} (s_{2\gamma} c_\gamma^2 - s_{2\gamma} s_\gamma^2 - 2 c_\gamma s_\gamma^3) \text{LF}_{1,0}[m_e^r] + \frac{1}{2} \frac{1}{m_e^4} y_d^{i3i4} y_u^{i1i2} \\
& \quad (\overline{y_e}^{\text{pr}} y_e^{\text{pr}} (s_{2\gamma} c_\gamma^2 - s_{2\gamma} s_\gamma^2 - 2 c_\gamma s_\gamma^3) + \sum_p g_1^2 (s_{2\gamma} c_\gamma^2 + s_\gamma c_{2\gamma} c_\gamma - s_{2\gamma} s_\gamma^2)) \text{LF}_{1,0}[m_l^p] + \\
& \quad \frac{1}{2} \frac{1}{m_e^4} y_d^{i3i4} y_u^{i1i2} (3 \overline{y_d}^{\text{pr}} y_d^{\text{pr}} (s_{2\gamma} c_\gamma^2 - s_{2\gamma} s_\gamma^2 - 2 c_\gamma s_\gamma^3) - \\
& \quad 3 \overline{y_u}^{\text{pr}} y_u^{\text{pr}} (s_{2\gamma} c_\gamma^2 + 2 s_\gamma c_\gamma^3 - s_{2\gamma} s_\gamma^2) - \sum_p g_1^2 (s_{2\gamma} c_\gamma^2 + s_\gamma c_{2\gamma} c_\gamma - s_{2\gamma} s_\gamma^2)) \text{LF}_{1,0}[m_q^p] + \\
& \quad \sum_p g_1^2 \frac{1}{m_e^4} y_d^{i3i4} y_u^{i1i2} (s_{2\gamma} c_\gamma^2 + s_\gamma c_{2\gamma} c_\gamma - s_{2\gamma} s_\gamma^2) \text{LF}_{1,0}[m_u^p] - \\
& \quad \frac{3}{2} \frac{1}{m_e^4} y_d^{i3i4} \overline{y_u}^{\text{pr}} y_u^{\text{pr}} y_u^{i1i2} (s_{2\gamma} c_\gamma^2 + 2 s_\gamma c_\gamma^3 - s_{2\gamma} s_\gamma^2) \text{LF}_{1,0}[m_u^r] + \\
& \quad \frac{1}{8} \frac{1}{m_e^4} y_d^{i3i4} y_u^{i1i2} (-3 s_{4\gamma} c_\gamma^2 (g_1^2 + g_2^2) + \\
& \quad 2 s_\gamma c_\gamma (g_1^2 (1 - 3 c_{2\gamma}^2) - 3 g_2^2 (-1 + c_{2\gamma}^2)) + 3 s_{4\gamma} s_\gamma^2 (g_1^2 + g_2^2)) \text{LF}_{1,0}[m_\pi] + \\
& \quad \frac{1}{4} s_\gamma c_\gamma \frac{1}{m_e^2} (-2 y_d^{i3i4} y_u^{i1i2} (g_1^2 + 3 g_2^2) + 3 s_\gamma^2 \overline{y_d}^{\text{pr}} (-y_d^{i1r} y_d^{i3i4} y_u^{pi2} + y_d^{pi4} y_d^{i3r} y_u^{i1i2}) + \\
& \quad 3 c_\gamma^2 \overline{y_u}^{\text{pr}} (y_d^{i3i4} y_u^{pi2} y_u^{i1r} - y_d^{pi4} y_u^{i1i2} y_u^{i3r})) \text{LF}_{1,1}[m_\pi] + \frac{1}{54} s_\gamma c_\gamma \\
& \quad (-27 c_\gamma^2 \overline{y_d}^{\text{pr}} y_d^{i1r} y_d^{i3i4} y_u^{pi2} + 3 y_u^{i1i2} (y_d^{i3i4} (7 g_1^2 + 27 g_2^2) - 9 s_\gamma^2 y_d^{pi4} \overline{y_u}^{\text{pr}} y_u^{i3r}) + \\
& \quad y_d^{i1i4} y_u^{i3i2} (-5 g_1^2 - 27 g_2^2 + 192 g_3^2)) \text{LF}_{1,2}[m_\pi] + \\
& \quad \frac{1}{9} s_\gamma c_\gamma g_1^2 \frac{1}{m_e^2} y_d^{i3i4} y_u^{i1i2} \text{LF}_{1,1,0}[m_1, m_d^{i4}] - \frac{1}{18} s_\gamma c_\gamma g_1^2 \frac{1}{m_e^2} y_d^{i3i4} y_u^{i1i2} \text{LF}_{2,1,-1}[m_1, m_d^{i4}] + \\
& \quad \frac{1}{36} s_\gamma c_\gamma g_1^2 \frac{1}{m_e^2} y_d^{i3i4} y_u^{i1i2} \text{LF}_{1,1,0}[m_1, m_q^{i1}] - \\
& \quad \frac{1}{72} s_\gamma c_\gamma g_1^2 \frac{1}{m_e^2} y_d^{i3i4} y_u^{i1i2} \text{LF}_{2,1,-1}[m_1, m_q^{i1}] + \\
& \quad \frac{1}{36} s_\gamma c_\gamma g_1^2 \frac{1}{m_e^2} y_d^{i3i4} y_u^{i1i2} \text{LF}_{1,1,0}[m_1, m_q^{i3}] - \\
& \quad \frac{1}{72} s_\gamma c_\gamma g_1^2 \frac{1}{m_e^2} y_d^{i3i4} y_u^{i1i2} \text{LF}_{2,1,-1}[m_1, m_q^{i3}] + \\
& \quad \frac{4}{9} s_\gamma c_\gamma g_1^2 \frac{1}{m_e^2} y_d^{i3i4} y_u^{i1i2} \text{LF}_{1,1,0}[m_1, m_u^{i2}] - \\
& \quad \frac{2}{9} s_\gamma c_\gamma g_1^2 \frac{1}{m_e^2} y_d^{i3i4} y_u^{i1i2} \text{LF}_{2,1,-1}[m_1, m_u^{i2}] + \\
& \quad s_\gamma c_\gamma g_1^2 \frac{1}{m_e^4} y_d^{i3i4} y_u^{i1i2} (c_\gamma^2 + s_\gamma^2) \text{LF}_{1,1,-1}[m_1, \tilde{\mu}] + \\
& \quad m_1 \tilde{\mu} g_1^2 \frac{1}{m_e^2} y_d^{i3i4} y_u^{i1i2} (c_\gamma^4 - 4 s_\gamma^2 c_\gamma^2 + s_\gamma^4) \text{LF}_{1,1,0}[m_1, \tilde{\mu}] + \\
& \quad \frac{3}{4} s_\gamma c_\gamma g_2^2 \frac{1}{m_e^2} y_d^{i3i4} y_u^{i1i2} \text{LF}_{1,1,0}[m_2, m_q^{i1}] - \frac{3}{8} s_\gamma c_\gamma g_2^2 \frac{1}{m_e^2} y_d^{i3i4} y_u^{i1i2} \text{LF}_{2,1,-1}[m_2, m_q^{i1}] - \\
& \quad \frac{3}{4} s_\gamma c_\gamma g_2^2 \frac{1}{m_e^2} y_d^{i3i4} y_u^{i1i2} \text{LF}_{1,1,0}[m_2, m_q^{i3}] - \frac{3}{8} s_\gamma c_\gamma g_2^2 \frac{1}{m_e^2} y_d^{i3i4} y_u^{i1i2} \text{LF}_{2,1,-1}[m_2, m_q^{i3}] + \\
& \quad 3 s_\gamma c_\gamma g_2^2 \frac{1}{m_e^4} y_d^{i3i4} y_u^{i1i2} (c_\gamma^2 + s_\gamma^2) \text{LF}_{1,1,-1}[m_2, \tilde{\mu}] + \\
& \quad 3 m_2 \tilde{\mu} g_2^2 \frac{1}{m_e^4} y_d^{i3i4} y_u^{i1i2} (c_\gamma^4 - 4 s_\gamma^2 c_\gamma^2 + s_\gamma^4) \text{LF}_{1,1,0}[m_2, \tilde{\mu}] + \\
& \quad \frac{4}{3} s_\gamma c_\gamma g_3^2 \frac{1}{m_e^2} y_d^{i3i4} y_u^{i1i2} \text{LF}_{1,1,0}[m_3, m_d^{i4}] - \frac{2}{3} s_\gamma c_\gamma g_3^2 \frac{1}{m_e^2} y_d^{i3i4} y_u^{i1i2} \text{LF}_{2,1,-1}[m_3, m_d^{i4}] + \\
& \quad \frac{4}{3} s_\gamma c_\gamma g_3^2 \frac{1}{m_e^2} y_d^{i3i4} y_u^{i1i2} \text{LF}_{1,1,0}[m_3, m_q^{i1}] - \frac{2}{3} s_\gamma c_\gamma g_3^2 \frac{1}{m_e^2} y_d^{i3i4} y_u^{i1i2} \text{LF}_{2,1,-1}[m_3, m_q^{i1}] + \\
& \quad \frac{4}{3} s_\gamma c_\gamma g_3^2 \frac{1}{m_e^2} y_d^{i3i4} y_u^{i1i2} \text{LF}_{1,1,0}[m_3, m_q^{i3}] - \frac{2}{3} s_\gamma c_\gamma g_3^2 \frac{1}{m_e^2} y_d^{i3i4} y_u^{i1i2} \text{LF}_{2,1,-1}[m_3, m_q^{i3}] + \\
& \quad \frac{4}{3} s_\gamma c_\gamma g_3^2 \frac{1}{m_e^2} y_d^{i3i4} y_u^{i1i2} \text{LF}_{1,1,0}[m_3, m_u^{i2}] - \frac{2}{3} s_\gamma c_\gamma g_3^2 \frac{1}{m_e^2} y_d^{i3i4} y_u^{i1i2} \text{LF}_{2,1,-1}[m_3, m_u^{i2}] + \\
& \quad 3 \frac{1}{m_e^4} y_d^{i3i4} y_u^{i1i2} (s_\gamma \tilde{\mu} c_\gamma \overline{y_d}^{\text{pr}} (-3 s_\gamma c_\gamma a_d^{\text{pr}} + \tilde{\mu} y_d^{\text{pr}} (-2 c_\gamma^2 + s_\gamma^2)) + \\
& \quad \overline{a_d}^{\text{pr}} (s_\gamma c_\gamma a_d^{\text{pr}} (c_\gamma^2 - 2 s_\gamma^2) + \tilde{\mu} y_d^{\text{pr}} (c_\gamma^4 - s_\gamma^2 c_\gamma^2 + s_\gamma^4))) \text{LF}_{1,1,0}[m_d^r, m_q^p] + \\
& \quad \frac{1}{2} s_\gamma c_\gamma \frac{1}{m_e^2} \overline{y_d}^{\text{pr}} (y_d^{i1r} y_d^{i3i4} y_u^{pi2} +$$