

$$\begin{aligned} & \frac{1}{2} \frac{1}{m_e^2} s_Y^2 \overline{y_e}^{i2i3} y_e^{i1i4} + \\ & h \left( -\frac{1}{144} \frac{1}{m_e^2} s_Y^2 \left( -72 c_Y^2 \overline{y_e}^{pr} \overline{y_e}^{i2i3} y_e^{pr} y_e^{i1i4} + 9 \overline{y_e}^{i2i3} \left( 3 \overline{y_e}^{pr} y_e^{pi4} y_e^{i1r} \left( 1 + s_Y^2 \right) + \right. \right. \right. \\ & \quad \left. \left. \left. y_e^{i1i4} \left( 5 g_1^2 + 3 g_2^2 \right) \right) + 27 \overline{y_e}^{r13} \overline{y_e}^{i2p} \left( 4 c_Y^2 y_e^{ri4} y_e^{i1p} + y_e^{rp} y_e^{i1i4} \left( 1 + s_Y^2 \right) \right) + \right. \right. \\ & \quad \left. \left. 10 g_1^2 \overline{y_e}^{pi3} y_e^{pi4} \delta_{i1i2} + 14 g_1^2 \overline{y_e}^{i2p} y_e^{i1p} \delta_{i3i4} \right) - \frac{1}{4} \sum_p s_Y g_1^2 \frac{1}{m_e^4} \overline{y_e}^{i2i3} y_e^{i1i4} \right. \\ & \quad \left. \left( 2 s_{2Y} c_Y + s_Y c_{2Y} \right) \text{LF}_{1,0} \left[ m_d^p \right] + \frac{2}{27} \sum_p g_1^4 \text{LF}_{3,0} \left[ m_d^p \right] \delta_{i1i2} \delta_{i3i4} - \right. \\ & \quad \left. \frac{5}{36} \sum_p g_1^4 \text{LF}_{4,-1} \left[ m_d^p \right] \delta_{i1i2} \delta_{i3i4} + \frac{8}{135} \sum_p g_1^4 \text{LF}_{5,-2} \left[ m_d^p \right] \delta_{i1i2} \delta_{i3i4} - \right. \\ & \quad \left. \frac{3}{2} s_Y \frac{1}{m_e^4} \overline{y_d}^{pr} y_d^{pr} \overline{y_e}^{i2i3} y_e^{i1i4} \left( -s_{2Y} c_Y + s_Y^3 \right) \text{LF}_{1,0} \left[ m_d^r \right] - \right. \\ & \quad \left. \frac{1}{4} \sum_p s_Y g_1^2 \frac{1}{m_e^4} \overline{y_e}^{i2i3} y_e^{i1i4} \left( 2 s_{2Y} c_Y + s_Y c_{2Y} \right) \text{LF}_{1,0} \left[ m_e^p \right] + \frac{2}{9} \sum_p g_1^4 \text{LF}_{3,0} \left[ m_e^p \right] \delta_{i1i2} \delta_{i3i4} - \right. \\ & \quad \left. \frac{5}{12} \sum_p g_1^4 \text{LF}_{4,-1} \left[ m_e^p \right] \delta_{i1i2} \delta_{i3i4} + \frac{8}{45} \sum_p g_1^4 \text{LF}_{5,-2} \left[ m_e^p \right] \delta_{i1i2} \delta_{i3i4} - \right. \\ & \quad \left. \frac{1}{2} s_Y \frac{1}{m_e^4} \overline{y_e}^{pr} \overline{y_e}^{i2i3} y_e^{pr} y_e^{i1i4} \left( -s_{2Y} c_Y + s_Y^3 \right) \text{LF}_{1,0} \left[ m_e^r \right] + \right. \\ & \quad \left. \frac{1}{4} s_Y \frac{1}{m_e^4} \overline{y_e}^{i2i3} y_e^{i1i4} \left( 2 \overline{y_e}^{pr} y_e^{pr} \left( s_{2Y} c_Y - s_Y^3 \right) + \sum_p g_1^2 \left( 2 s_{2Y} c_Y + s_Y c_{2Y} \right) \right) \text{LF}_{1,0} \left[ m_l^p \right] + \right. \\ & \quad \left. \frac{1}{9} \sum_p g_1^4 \text{LF}_{3,0} \left[ m_l^p \right] \delta_{i1i2} \delta_{i3i4} - \frac{5}{24} \sum_p g_1^4 \text{LF}_{4,-1} \left[ m_l^p \right] \delta_{i1i2} \delta_{i3i4} + \right. \\ & \quad \left. \frac{4}{45} \sum_p g_1^4 \text{LF}_{5,-2} \left[ m_l^p \right] \delta_{i1i2} \delta_{i3i4} - \frac{1}{4} s_Y \frac{1}{m_e^4} \overline{y_e}^{i2i3} y_e^{i1i4} \right. \\ & \quad \left. \left( 6 \overline{y_d}^{pr} y_d^{pr} \left( -s_{2Y} c_Y + s_Y^3 \right) + 6 c_Y \overline{y_u}^{pr} y_u^{pr} \left( s_{2Y} + s_Y c_Y \right) + \sum_p g_1^2 \left( 2 s_{2Y} c_Y + s_Y c_{2Y} \right) \right) \right. \\ & \quad \left. \text{LF}_{1,0} \left[ m_q^p \right] + \frac{1}{27} \sum_p g_1^4 \text{LF}_{3,0} \left[ m_q^p \right] \delta_{i1i2} \delta_{i3i4} - \right. \\ & \quad \left. \frac{5}{72} \sum_p g_1^4 \text{LF}_{4,-1} \left[ m_q^p \right] \delta_{i1i2} \delta_{i3i4} + \frac{4}{135} \sum_p g_1^4 \text{LF}_{5,-2} \left[ m_q^p \right] \delta_{i1i2} \delta_{i3i4} + \right. \\ & \quad \left. \frac{1}{2} \sum_p s_Y g_1^2 \frac{1}{m_e^4} \overline{y_e}^{i2i3} y_e^{i1i4} \left( 2 s_{2Y} c_Y + s_Y c_{2Y} \right) \text{LF}_{1,0} \left[ m_u^p \right] + \frac{8}{27} \sum_p g_1^4 \text{LF}_{3,0} \left[ m_u^p \right] \delta_{i1i2} \delta_{i3i4} - \right. \\ & \quad \left. \frac{5}{9} \sum_p g_1^4 \text{LF}_{4,-1} \left[ m_u^p \right] \delta_{i1i2} \delta_{i3i4} + \frac{32}{135} \sum_p g_1^4 \text{LF}_{5,-2} \left[ m_u^p \right] \delta_{i1i2} \delta_{i3i4} - \right. \\ & \quad \left. \frac{3}{2} s_Y c_Y \frac{1}{m_e^4} \overline{y_e}^{i2i3} y_e^{i1i4} \overline{y_u}^{pr} y_u^{pr} \left( s_{2Y} + s_Y c_Y \right) \text{LF}_{1,0} \left[ m_u^r \right] - \frac{1}{8} s_Y \frac{1}{m_e^4} \overline{y_e}^{i2i3} y_e^{i1i4} \right. \\ & \quad \left. \left( 3 s_{4Y} c_Y \left( g_1^2 + g_2^2 \right) + s_Y \left( g_1^2 \left( -1 + 3 c_{2Y}^2 \right) + 3 g_2^2 \left( -1 + c_{2Y}^2 \right) \right) \right) \text{LF}_{1,0} \left[ m_\Phi \right] + \right. \\ & \quad \left. \frac{1}{8} \frac{1}{m_e^2} \left( 3 s_{4Y} \overline{y_e}^{pr} \overline{y_e}^{i2i3} y_e^{pi4} y_e^{i1r} + s_Y^2 y_e^{i1i4} \left( -2 \overline{y_e}^{i2i3} \left( g_1^2 + 3 g_2^2 \right) + 3 s_Y^2 \overline{y_e}^{r13} \overline{y_e}^{i2p} y_e^{rp} \right) \right) \right. \\ & \quad \left. \text{LF}_{1,1} \left[ m_\Phi \right] + \frac{1}{24} s_Y^2 \left( 3 \overline{y_e}^{i2i3} y_e^{i1i4} \left( g_1^2 + 3 g_2^2 \right) - 4 g_1^2 \overline{y_e}^{pi3} y_e^{pi4} \delta_{i1i2} - \right. \right. \\ & \quad \left. \left. 4 \overline{y_e}^{i2p} y_e^{i1p} \left( 3 c_Y^2 \overline{y_e}^{r13} y_e^{ri4} + 2 g_1^2 \delta_{i3i4} \right) \right) \text{LF}_{1,2} \left[ m_\Phi \right] + \right. \\ & \quad \left. \frac{1}{12} s_Y^2 \left( -g_1^2 \overline{y_e}^{pi3} y_e^{pi4} \delta_{i1i2} + \overline{y_e}^{i2p} y_e^{i1p} \left( -3 s_Y^2 \overline{y_e}^{r13} y_e^{ri4} + g_1^2 \delta_{i3i4} \right) \right) \text{LF}_{2,1} \left[ m_\Phi \right] + \right. \\ & \quad \left. \frac{1}{36} g_1^2 \left( 3 s_Y^2 \overline{y_e}^{pi3} y_e^{pi4} \delta_{i1i2} + \left( -3 s_Y^2 \overline{y_e}^{i2p} y_e^{i1p} + 4 g_1^2 \delta_{i1i2} \right) \delta_{i3i4} \right) \text{LF}_{3,0} \left[ m_\Phi \right] - \right. \\ & \quad \left. \frac{5}{24} g_1^4 \text{LF}_{4,-1} \left[ m_\Phi \right] \delta_{i1i2} \delta_{i3i4} + \frac{4}{45} g_1^4 \text{LF}_{5,-2} \left[ m_\Phi \right] \delta_{i1i2} \delta_{i3i4} + \right. \\ & \quad \left. \frac{1}{9} g_1^4 \text{LF}_{3,0} \left[ \tilde{\mu} \right] \delta_{i1i2} \delta_{i3i4} + \frac{1}{6} g_1^4 \text{LF}_{4,-1} \left[ \tilde{\mu} \right] \delta_{i1i2} \delta_{i3i4} - \right. \\ & \quad \left. \frac{8}{45} g_1^4 \text{LF}_{5,-2} \left[ \tilde{\mu} \right] \delta_{i1i2} \delta_{i3i4} + \frac{1}{2} g_1^2 \frac{1}{m_e^2} s_Y^2 \overline{y_e}^{i2i3} y_e^{i1i4} \text{LF}_{1,1,0} \left[ m_1, m_e^{i3} \right] - \right. \\ & \quad \left. \frac{1}{4} g_1^2 \frac{1}{m_e^2} s_Y^2 \overline{y_e}^{i2i3} y_e^{i1i4} \text{LF}_{2,1,-1} \left[ m_1, m_e^{i3} \right] + \frac{1}{2} g_1^2 \frac{1}{m_e^2} s_Y^2 \overline{y_e}^{i2i3} y_e^{i1i4} \text{LF}_{1,1,0} \left[ m_1, m_e^{i4} \right] - \right. \\ & \quad \left. \frac{1}{4} g_1^2 \frac{1}{m_e^2} s_Y^2 \overline{y_e}^{i2i3} y_e^{i1i4} \text{LF}_{2,1,-1} \left[ m_1, m_e^{i4} \right] + \frac{1}{6} g_1^4 \text{LF}_{2,1,0} \left[ m_1, m_e^{i4} \right] \delta_{i1i2} \delta_{i3i4} + \right. \\ & \quad \left. \frac{1}{6} g_1^4 \text{LF}_{2,2,-1} \left[ m_1, m_e^{i4} \right] \delta_{i1i2} \delta_{i3i4} - \frac{1}{3} g_1^4 \text{LF}_{3,1,-1} \left[ m_1, m_e^{i4} \right] \delta_{i1i2} \delta_{i3i4} + \right. \\ & \quad \left. \frac{1}{6} g_1^4 \text{LF}_{4,1,-2} \left[ m_1, m_e^{i4} \right] \delta_{i1i2} \delta_{i3i4} + \frac{1}{8} g_1^2 \frac{1}{m_e^2} s_Y^2 \overline{y_e}^{i2i3} y_e^{i1i4} \text{LF}_{1,1,0} \left[ m_1, m_l^{i1} \right] - \right. \\ & \quad \left. \frac{1}{16} g_1^2 \frac{1}{m_e^2} s_Y^2 \overline{y_e}^{i2i3} y_e^{i1i4} \text{LF}_{2,1,-1} \left[ m_1, m_l^{i1} \right] + \frac{1$$