$$C_{H\square}\to\hbar\left(-\frac{3}{128}\frac{1}{m_2{}^2}s_{4\gamma}{}^2\left(g_1{}^2+g_2{}^2\right)^2+\frac{1}{6}g_2{}^4LF_{3,0}[m_2]+\frac{1}{4}g_2{}^4LF_{4,-1}[m_2]-\frac{4}{15}g_2{}^4LF_{5,-2}[m_2]+\right.$$

$$\frac{1}{216}\sum_p g_1{}^4\left(4+9c_{2\gamma}{}^2\right)LF_{3,0}\left[m_{\tilde d}{}^p\right]-\frac{1}{144}\sum_p g_1{}^4\left(5+6c_{2\gamma}{}^2\right)LF_{4,-1}\left[m_{\tilde d}{}^p\right]+$$

$$\frac{2}{135}\sum_p g_1{}^4LF_{5,-2}\left[m_{\tilde d}{}^p\right]-\frac{1}{2}c_{2\gamma}g_1{}^2c_\gamma{}^2\overline{y_d}^{pr}y_d{}^{pr}LF_{3,0}\left[m_{\tilde d}{}^r\right]+\frac{1}{2}c_{2\gamma}g_1{}^2c_\gamma{}^2\overline{y_d}^{pr}y_d{}^{pr}LF_{4,-1}\left[m_{\tilde d}{}^r\right]+$$

$$\frac{1}{72}\sum_p g_1{}^4\left(4+9c_{2\gamma}{}^2\right)LF_{3,0}\left[m_{\tilde e}{}^p\right]-\frac{1}{48}\sum_p g_1{}^4\left(5+6c_{2\gamma}{}^2\right)LF_{4,-1}\left[m_{\tilde e}{}^p\right]+\frac{2}{45}\sum_p g_1{}^4LF_{5,-2}\left[m_{\tilde e}{}^p\right]-$$

$$\frac{1}{2}c_{2\gamma}g_1{}^2c_\gamma{}^2\overline{y_e}^{pr}y_e{}^{pr}LF_{3,0}\left[m_{\tilde e}{}^r\right]+\frac{1}{2}c_{2\gamma}g_1{}^2c_\gamma{}^2\overline{y_e}^{pr}y_e{}^{pr}LF_{4,-1}\left[m_{\tilde e}{}^r\right]+$$

$$\frac{1}{144}\left(36c_{2\gamma}c_\gamma{}^2\overline{y_e}^{pr}y_e{}^{pr}\left(g_1{}^2+g_2{}^2\right)+\sum_p\left(g_1{}^4\left(4+9c_{2\gamma}{}^2\right)+3g_2{}^4\left(4-3c_{2\gamma}{}^2\right)\right)\right)LF_{3,0}\left[m_{\tilde l}{}^p\right]+$$

$$\left(-\frac{1}{4}c_{2\gamma}c_\gamma{}^2\overline{y_e}^{pr}y_e{}^{pr}\left(g_1{}^2+g_2{}^2\right)-\frac{1}{96}\sum_p\left(g_1{}^4\left(5+6c_{2\gamma}{}^2\right)+3g_2{}^4\left(5-2c_{2\gamma}{}^2\right)\right)\right)LF_{4,-1}\left[m_{\tilde l}{}^p\right]+$$

$$\frac{1}{45}\sum_p\left(g_1{}^4+3g_2{}^4\right)LF_{5,-2}\left[m_{\tilde l}{}^p\right]+\left(-\frac{1}{4}c_{2\gamma}c_\gamma{}^2\overline{y_d}^{pr}y_d{}^{pr}\left(g_1{}^2-3g_2{}^2\right)-\right.$$

$$\left.\frac{1}{4}c_{2\gamma}s_\gamma{}^2\overline{y_u}^{pr}y_u{}^{pr}\left(g_1{}^2+3g_2{}^2\right)+\frac{1}{432}\sum_p\left(g_1{}^4\left(4+9c_{2\gamma}{}^2\right)+27g_2{}^4\left(4-3c_{2\gamma}{}^2\right)\right)\right)$$

$$LF_{3,0}\left[m_{\tilde q}{}^p\right]+\left(\frac{1}{4}c_{2\gamma}\left(c_\gamma{}^2\overline{y_d}^{pr}y_d{}^{pr}\left(g_1{}^2-3g_2{}^2\right)+s_\gamma{}^2\overline{y_u}^{pr}y_u{}^{pr}\left(g_1{}^2+3g_2{}^2\right)\right)-\right.$$

$$\left.\frac{1}{288}\sum_p\left(g_1{}^4\left(5+6c_{2\gamma}{}^2\right)+27g_2{}^4\left(5-2c_{2\gamma}{}^2\right)\right)\right)LF_{4,-1}\left[m_{\tilde q}{}^p\right]+$$

$$\frac{1}{135}\sum_p\left(g_1{}^4+27g_2{}^4\right)LF_{5,-2}\left[m_{\tilde q}{}^p\right]+\frac{1}{54}\sum_p g_1{}^4\left(4+9c_{2\gamma}{}^2\right)LF_{3,0}\left[m_{\tilde u}{}^p\right]-$$

$$\frac{1}{36}\sum_p g_1{}^4\left(5+6c_{2\gamma}{}^2\right)LF_{4,-1}\left[m_{\tilde u}{}^p\right]+\frac{8}{135}\sum_p g_1{}^4LF_{5,-2}\left[m_{\tilde u}{}^p\right]+$$

$$c_{2\gamma}g_1{}^2s_\gamma{}^2\overline{y_u}^{pr}y_u{}^{pr}LF_{3,0}\left[m_{\tilde u}{}^r\right]-c_{2\gamma}g_1{}^2s_\gamma{}^2\overline{y_u}^{pr}y_u{}^{pr}LF_{4,-1}\left[m_{\tilde u}{}^r\right]+$$

$$\frac{1}{288}\left(g_1{}^4\left(8+9c_{4\gamma}\left(1+c_{4\gamma}\right)-9s_{2\gamma}{}^4\right)+3g_2{}^4\left(8+3c_{4\gamma}\left(-3+c_{4\gamma}\right)-3s_{2\gamma}{}^4\right)+\right.$$

$$\left.18g_1{}^2g_2{}^2\left(c_{4\gamma}\left(-1+c_{4\gamma}\right)-s_{2\gamma}{}^4\right)\right)LF_{3,0}[m_\Phi]+\frac{1}{96}\left(-g_1{}^4\left(5+3c_{4\gamma}\left(1+c_{4\gamma}\right)-3s_{2\gamma}{}^4\right)+\right.$$

$$\left.3g_2{}^4\left(-5-c_{4\gamma}\left(-3+c_{4\gamma}\right)+s_{2\gamma}{}^4\right)+6g_1{}^2g_2{}^2\left(c_{4\gamma}-c_{4\gamma}{}^2+s_{2\gamma}{}^4\right)\right)LF_{4,-1}[m_\Phi]+$$

$$\frac{1}{45}\left(g_1{}^4+3g_2{}^4\right)LF_{5,-2}[m_\Phi]+\frac{1}{36}\left(g_1{}^4+3g_2{}^4\right)LF_{3,0}[\tilde\mu]+\frac{1}{24}\left(g_1{}^4+3g_2{}^4\right)LF_{4,-1}[\tilde\mu]-$$

$$\frac{2}{45}\left(g_1{}^4+3g_2{}^4\right)LF_{5,-2}[\tilde\mu]+\frac{1}{8}g_1{}^4\left(2c_\gamma{}^4+3s_\gamma{}^2c_\gamma{}^2+2s_\gamma{}^4\right)LF_{2,2,-1}[m_1,\tilde\mu]+$$

$$\frac{1}{8}m_1g_1{}^4\left(m_1\left(c_\gamma{}^4+s_\gamma{}^4\right)+4s_\gamma\tilde\mu c_\gamma\left(c_\gamma{}^2+s_\gamma{}^2\right)\right)LF_{2,2,0}[m_1,\tilde\mu]-$$

$$\frac{1}{2}g_1{}^4LF_{3,2,-2}[m_1,\tilde\mu]\left(c_\gamma{}^2+s_\gamma{}^2\right)^2+$$

$$\frac{3}{8}g_1{}^4\left(-m_1{}^2\left(c_\gamma{}^2+s_\gamma{}^2\right)^2-8m_1s_\gamma\tilde\mu c_\gamma\left(c_\gamma{}^2+s_\gamma{}^2\right)-4s_\gamma{}^2\tilde\mu^2c_\gamma{}^2\right)LF_{3,2,-1}[m_1,\tilde\mu]-$$

$$g_1{}^4m_1{}^2s_\gamma{}^2\tilde\mu^2c_\gamma{}^2LF_{3,2,0}[m_1,\tilde\mu]+\frac{1}{4}g_1{}^4LF_{3,3,-3}[m_1,\tilde\mu]\left(c_\gamma{}^2+s_\gamma{}^2\right)^2+$$

$$\frac{1}{4}g_1{}^4\left(m_1{}^2\left(c_\gamma{}^2+s_\gamma{}^2\right)^2+8m_1s_\gamma\tilde\mu c_\gamma\left(c_\gamma{}^2+s_\gamma{}^2\right)+4s_\gamma{}^2\tilde\mu^2c_\gamma{}^2\right)LF_{3,3,-2}[m_1,\tilde\mu]+$$

$$g_1{}^4m_1{}^2s_\gamma{}^2\tilde\mu^2c_\gamma{}^2LF_{3,3,-1}[m_1,\tilde\mu]+\frac{1}{4}g_1{}^4LF_{4,2,-3}[m_1,\tilde\mu]\left(c_\gamma{}^2+s_\gamma{}^2\right)^2+$$

$$\frac{1}{4}g_1{}^4\left(m_1{}^2\left(c_\gamma{}^2+s_\gamma{}^2\right)^2+8m_1s_\gamma\tilde\mu c_\gamma\left(c_\gamma{}^2+s_\gamma{}^2\right)+4s_\gamma{}^2\tilde\mu^2c_\gamma{}^2\right)LF_{4,2,-2}[m_1,\tilde\mu]+$$

$$g_1{}^4m_1{}^2s_\gamma{}^2\tilde\mu^2c_\gamma{}^2LF_{4,2,-1}[m_1,\tilde\mu]-g_2{}^4\left(c_\gamma{}^2+s_\gamma{}^2\right)LF_{2,1,0}[m_2,\tilde\mu]+$$

$$\frac{1}{8}g_2{}^4\left(4c_\gamma{}^4+4s_\gamma{}^2\left(-2+s_\gamma{}^2\right)+c_\gamma{}^2\left(-8+19s_\gamma{}^2\right)\right)LF_{2,2,-1}[m_2,\tilde\mu]+$$

$$\frac{1}{8}m_2g_2{}^4\left(m_2\left(c_\gamma{}^4-8s_\gamma{}^2c_\gamma{}^2+s_\gamma{}^4\right)+4s_\gamma\tilde\mu c_\gamma\left(-4+3c_\gamma{}^2+3s_\gamma{}^2\right)\right)LF_{2,2,0}[m_2,\tilde\mu]+$$

$$\frac{1}{2}g_2{}^4\left(c_\gamma{}^2+s_\gamma{}^2\right)LF_{3,1,-1}[m_2,\tilde\mu]-\frac{1}{2}g_2{}^4\left(c_\gamma{}^4-s_\gamma{}^2+s_\gamma{}^4+c_\gamma{}^2\left(-1+10s_\gamma{}^2\right)\right)LF_{3,2,-2}[m_2,\tilde\mu]+$$

$$\frac{1}{8}g_2{}^4\left(-3m_2{}^2\left(5c_\gamma{}^4+2s_\gamma{}^2c_\gamma{}^2+5s_\gamma{}^4\right)-8m_2s_\gamma\tilde\mu c_\gamma\left(-1+9c_\gamma{}^2+9s_\gamma{}^2\right)-36s_\gamma{}^2\tilde\mu^2c_\gamma{}^2\right)$$

$$LF_{3,2,-1}[m_2,\tilde\mu]-3g_2{}^4m_2{}^2s_\gamma{}^2\tilde\mu^2c_\gamma{}^2LF_{3,2,0}[m_2,\tilde\mu]+$$

$$\frac{1}{4}g_2{}^4\left(c_\gamma{}^4+10s_\gamma{}^2c_\gamma{}^2+s_\gamma{}^4\right)LF_{3,3,-3}[m_2,\tilde\mu]+$$

$$\frac{1}{4}g_2{}^4\left(m_2{}^2\left(5c_\gamma{}^4+2s_\gamma{}^2c_\gamma{}^2+5s_\gamma{}^4\right)+24m_2s_\gamma\tilde\mu c_\gamma\left(c_\gamma{}^2+s_\gamma{}^2\right)+12s_\gamma{}^2\tilde\mu^2c_\gamma{}^2\right)LF_{3,3,-2}[m_2,\tilde\mu]+$$

$$3g_2{}^4m_2{}^2s_\gamma{}^2\tilde\mu^2c_\gamma{}^2LF_{3,3,-1}[m_2,\tilde\mu]+\frac{1}{4}g_2{}^4\left(c_\gamma{}^4+10s_\gamma{}^2c_\gamma{}^2+s_\gamma{}^4\right)LF_{4,2,-3}[m_2,\tilde\mu]+$$

$$\frac{1}{4}g_2{}^4\left(m_2{}^2\left(5c_\gamma{}^4+2s_\gamma{}^2c_\gamma{}^2+5s_\gamma{}^4\right)+24m_2s_\gamma\tilde\mu c_\gamma\left(c_\gamma{}^2+s_\gamma{}^2\right)+12s_\gamma{}^2\tilde\mu^2c_\gamma{}^2\right)LF_{4,2,-2}[m_2,\tilde\mu]+$$

$$3g_2{}^4m_2{}^2s_\gamma{}^2\tilde\mu^2c_\gamma{}^2LF_{4,2,-1}[m_2,\tilde\mu]+\frac{3}{2}c_\gamma{}^4\overline{y_d}^{pr}\overline{y_d}^{st}y_d{}^{pt}y_d{}^{sr}LF_{2,1,0}\left[m_{\tilde d}{}^r,m_{\tilde d}{}^t\right]-$$

$$\frac{3}{2}c_\gamma{}^4\overline{y_d}^{pr}\overline{y_d}^{st}y_d{}^{pt}y_d{}^{sr}LF_{3,1,-1}\left[m_{\tilde d}{}^r,m_{\tilde d}{}^t\right]+$$

$$\frac{1}{6}g_1{}^2\left(c_\gamma\overline{a_d}^{pr}-s_\gamma\tilde\mu\overline{y_d}^{pr}\right)\left(c_\gamma a_d{}^{pr}-s_\gamma\tilde\mu y_d{}^{pr}\right)LF_{2,2,0}\left[m_{\tilde d}{}^r,m_{\tilde q}{}^p\right]-$$

$$\frac{1}{2}c_{2\gamma}g_1{}^2\left(c_\gamma\overline{a_d}^{pr}-s_\gamma\tilde\mu\overline{y_d}^{pr}\right)\left(c_\gamma a_d{}^{pr}-s_\gamma\tilde\mu y_d{}^{pr}\right)LF_{3,1,0}\left[m_{\tilde d}{}^r,m_{\tilde q}{}^p\right]+$$

$$\frac{1}{12}g_1{}^2\left(-1+3c_{2\gamma}\right)\left(c_\gamma\overline{a_d}^{pr}-s_\gamma\tilde\mu\overline{y_d}^{pr}\right)\left(c_\gamma a_d{}^{pr}-s_\gamma\tilde\mu y_d{}^{pr}\right)LF_{3,2,-1}\left[m_{\tilde d}{}^r,m_{\tilde q}{}^p\right]+$$

$$\frac{1}{2}c_{2\gamma}g_1{}^2\left(c_\gamma\overline{a_d}^{pr}-s_\gamma\tilde\mu\overline{y_d}^{pr}\right)\left(c_\gamma a_d{}^{pr}-s_\gamma\tilde\mu y_d{}^{pr}\right)LF_{4,1,-1}\left[m_{\tilde d}{}^r,m_{\tilde q}{}^p\right]+$$

$$\frac{1}{2}c_\gamma{}^4\overline{y_e}^{pr}\overline{y_e}^{st}y_e{}^{pt}y_e{}^{sr}LF_{2,1,0}\left[m_{\tilde e}{}^r,m_{\tilde e}{}^t\right]-\frac{1}{2}c_\gamma{}^4\overline{y_e}^{pr}\overline{y_e}^{st}y_e{}^{pt}y_e{}^{sr}LF_{3,1,-1}\left[m_{\tilde e}{}^r,m_{\tilde e}{}^t\right]+$$

$$\frac{1}{6}g_1{}^2\left(c_\gamma\overline{a_e}^{pr}-s_\gamma\tilde\mu\overline{y_e}^{pr}\right)\left(c_\gamma a_e{}^{pr}-s_\gamma\tilde\mu y_e{}^{pr}\right)LF_{2,2,0}\left[m_{\tilde e}{}^r,m_{\tilde l}{}^p\right]-$$

$$\frac{1}{2}c_{2\gamma}g_1{}^2\left(c_\gamma\overline{a_e}^{pr}-s_\gamma\tilde\mu\overline{y_e}^{pr}\right)\left(c_\gamma a_e{}^{pr}-s_\gamma\tilde\mu y_e{}^{pr}\right)LF_{3,1,0}\left[m_{\tilde e}{}^r,m_{\tilde l}{}^p\right]+$$

$$\frac{1}{12}g_1{}^2\left(-1+3c_{2\gamma}\right)\left(c_\gamma\overline{a_e}^{pr}-s_\gamma\tilde\mu\overline{y_e}^{pr}\right)\left(c_\gamma a_e{}^{pr}-s_\gamma\tilde\mu y_e{}^{pr}\right)LF_{3,2,-1}\left[m_{\tilde e}{}^r,m_{\tilde l}{}^p\right]+$$

$$\frac{1}{2}c_{2\gamma}g_1{}^2\left(c_\gamma\overline{a_e}^{pr}-s_\gamma\tilde\mu\overline{y_e}^{pr}\right)\left(c_\gamma a_e{}^{pr}-s_\gamma\tilde\mu y_e{}^{pr}\right)LF_{4,1,-1}\left[m_{\tilde e}{}^r,m_{\tilde l}{}^p\right]-$$

$$\frac{1}{6}g_1{}^2\left(c_\gamma\overline{a_e}^{pr}-s_\gamma\tilde\mu\overline{y_e}^{pr}\right)\left(c_\gamma a_e{}^{pr}-s_\gamma\tilde\mu y_e{}^{pr}\right)LF_{3,1,0}\left[m_{\tilde l}{}^p,m_{\tilde e}{}^r\right]-$$

$$\frac{1}{6}g_1{}^2\left(c_\gamma\overline{a_e}^{pr}-s_\gamma\tilde\mu\overline{y_e}^{pr}\right)\left(c_\gamma a_e{}^{pr}-s_\gamma\tilde\mu y_e{}^{pr}\right)LF_{3,2,-1}\left[m_{\tilde l}{}^p,m_{\tilde e}{}^r\right]+$$

$$\frac{1}{8}\left(3+c_{2\gamma}\right)\left(g_1{}^2+g_2{}^2\right)\left(c_\gamma\overline{a_e}^{pr}-s_\gamma\tilde\mu\overline{y_e}^{pr}\right)\left(c_\gamma a_e{}^{pr}-s_\gamma\tilde\mu y_e{}^{pr}\right)LF_{4,1,-1}\left[m_{\tilde l}{}^p,m_{\tilde e}{}^r\right]-$$

$$\frac{1}{6}\left(g_1{}^2+3g_2{}^2\right)\left(c_\gamma\overline{a_e}^{pr}-s_\gamma\tilde\mu\overline{y_e}^{pr}\right)\left(c_\gamma a_e{}^{pr}-s_\gamma\tilde\mu y_e{}^{pr}\right)LF_{5,1,-2}\left[m_{\tilde l}{}^p,m_{\tilde e}{}^r\right]-$$

$$\frac{1}{6}g_1{}^2\left(c_\gamma\overline{a_d}^{pr}-s_\gamma\tilde\mu\overline{y_d}^{pr}\right)\left(c_\gamma a_d{}^{pr}-s_\gamma\tilde\mu y_d{}^{pr}\right)LF_{3,1,0}\left[m_{\tilde q}{}^p,m_{\tilde d}{}^r\right]-$$

$$\frac{1}{6}g_1{}^2\left(c_\gamma\overline{a_d}^{pr}-s_\gamma\tilde\mu\overline{y_d}^{pr}\right)\left(c_\gamma a_d{}^{pr}-s_\gamma\tilde\mu y_d{}^{pr}\right)LF_{3,2,-1}\left[m_{\tilde q}{}^p,m_{\tilde d}{}^r\right]-$$

$$\frac{1}{8}\left(g_1{}^2\left(-5+c_{2\gamma}\right)-3g_2{}^2\left(3+c_{2\gamma}\right)\right)\left(c_\gamma\overline{a_d}^{pr}-s_\gamma\tilde\mu\overline{y_d}^{pr}\right)\left(c_\gamma a_d{}^{pr}-s_\gamma\tilde\mu y_d{}^{pr}\right)LF_{4,1,-1}\left[m_{\tilde q}{}^p,m_{\tilde d}{}^r\right]-$$

$$\frac{1}{2}\left(g_1{}^2+3g_2{}^2\right)\left(c_\gamma\overline{a_d}^{pr}-s_\gamma\tilde\mu\overline{y_d}^{pr}\right)\left(c_\gamma a_d{}^{pr}-s_\gamma\tilde\mu y_d{}^{pr}\right)LF_{5,1,-2}\left[m_{\tilde q}{}^p,m_{\tilde d}{}^r\right]+$$

$$\frac{3}{2}s_\gamma{}^2c_\gamma{}^2\overline{y_d}^{pr}y_d{}^{sr}\overline{y_u}^{st}y_u{}^{pt}LF_{2,1,0}\left[m_{\tilde q}{}^p,m_{\tilde q}{}^s\right]-\frac{3}{2}s_\gamma{}^2c_\gamma{}^2\overline{y_d}^{pr}y_d{}^{sr}\overline{y_u}^{st}y_u{}^{pt}LF_{3,1,-1}\left[m_{\tilde q}{}^p,m_{\tilde q}{}^s\right]-$$

$$\frac{1}{12}\left(g_1{}^2-9g_2{}^2\right)\left(s_\gamma\overline{a_u}^{pr}-\tilde\mu c_\gamma\overline{y_u}^{pr}\right)\left(s_\gamma a_u{}^{pr}-\tilde\mu c_\gamma y_u{}^{pr}\right)LF_{2,2,0}\left[m_{\tilde q}{}^p,m_{\tilde u}{}^r\right]-$$

$$\frac{1}{4}c_{2\gamma}\left(g_1{}^2+3g_2{}^2\right)\left(s_\gamma\overline{a_u}^{pr}-\tilde\mu c_\gamma\overline{y_u}^{pr}\right)\left(s_\gamma a_u{}^{pr}-\tilde\mu c_\gamma y_u{}^{pr}\right)LF_{3,1,0}\left[m_{\tilde q}{}^p,m_{\tilde u}{}^r\right]+$$

$$\frac{1}{24}\left(g_1{}^2\left(1+3c_{2\gamma}\right)+9g_2{}^2\left(-1+c_{2\gamma}\right)\right)$$

$$\left(s_\gamma\overline{a_u}^{pr}-\tilde\mu c_\gamma\overline{y_u}^{pr}\right)\left(s_\gamma a_u{}^{pr}-\tilde\mu c_\gamma y_u{}^{pr}\right)LF_{3,2,-1}\left[m_{\tilde q}{}^p,m_{\tilde u}{}^r\right]+$$

$$\frac{1}{4}c_{2\gamma}\left(g_1{}^2+3g_2{}^2\right)\left(s_\gamma\overline{a_u}^{pr}-\tilde\mu c_\gamma\overline{y_u}^{pr}\right)\left(s_\gamma a_u{}^{pr}-\tilde\mu c_\gamma y_u{}^{pr}\right)LF_{4,1,-1}\left[m_{\tilde q}{}^p,m_{\tilde u}{}^r\right]+$$

$$\frac{3}{2}s_\gamma{}^2c_\gamma{}^2\overline{y_d}^{pr}y_d{}^{sr}\overline{y_u}^{st}y_u{}^{pt}LF_{2,1,0}\left[m_{\tilde q}{}^s,m_{\tilde q}{}^p\right]-\frac{3}{2}s_\gamma{}^2c_\gamma{}^2\overline{y_d}^{pr}y_d{}^{sr}\overline{y_u}^{st}y_u{}^{pt}LF_{3,1,-1}\left[m_{\tilde q}{}^s,m_{\tilde q}{}^p\right]+$$

$$\frac{1}{12}\left(g_1{}^2-9g_2{}^2\right)\left(s_\gamma\overline{a_u}^{pr}-\tilde\mu c_\gamma\overline{y_u}^{pr}\right)\left(s_\gamma a_u{}^{pr}-\tilde\mu c_\gamma y_u{}^{pr}\right)LF_{3,1,0}\left[m_{\tilde u}{}^r,m_{\tilde q}{}^p\right]+$$

$$\frac{1}{12}\left(g_1{}^2-9g_2{}^2\right)\left(s_\gamma\overline{a_u}^{pr}-\tilde\mu c_\gamma\overline{y_u}^{pr}\right)\left(s_\gamma a_u{}^{pr}-\tilde\mu c_\gamma y_u{}^{pr}\right)LF_{3,2,-1}\left[m_{\tilde u}{}^r,m_{\tilde q}{}^p\right]+$$

$$\frac{1}{4}\left(g_1{}^2\left(1+2c_{2\gamma}\right)+9g_2{}^2\right)\left(s_\gamma\overline{a_u}^{pr}-\tilde\mu c_\gamma\overline{y_u}^{pr}\right)\left(s_\gamma a_u{}^{pr}-\tilde\mu c_\gamma y_u{}^{pr}\right)LF_{4,1,-1}\left[m_{\tilde u}{}^r,m_{\tilde q}{}^p\right]-$$

$$\frac{1}{2}\left(g_1{}^2+3g_2{}^2\right)\left(s_\gamma\overline{a_u}^{pr}-\tilde\mu c_\gamma\overline{y_u}^{pr}\right)\left(s_\gamma a_u{}^{pr}-\tilde\mu c_\gamma y_u{}^{pr}\right)LF_{5,1,-2}\left[m_{\tilde u}{}^r,m_{\tilde q}{}^p\right]+$$

$$\frac{3}{2}s_\gamma{}^4\overline{y_u}^{pr}\overline{y_u}^{st}y_u{}^{pt}y_u{}^{sr}LF_{2,1,0}\left[m_{\tilde u}{}^r,m_{\tilde u}{}^t\right]-\frac{3}{2}s_\gamma{}^4\overline{y_u}^{pr}\overline{y_u}^{st}y_u{}^{pt}y_u{}^{sr}LF_{3,1,-1}\left[m_{\tilde u}{}^r,m_{\tilde u}{}^t\right]-$$

$$\frac{1}{8}g_1{}^4\left(c_\gamma{}^4+4s_\gamma{}^2c_\gamma{}^2+s_\gamma{}^4\right)LF_{3,2,-2}[\tilde\mu,m_1]-$$

$$\frac{1}{8}g_1{}^4\left(m_1{}^2\left(c_\gamma{}^4+s_\gamma{}^4\right)+6m_1s_\gamma\tilde\mu c_\gamma\left(c_\gamma{}^2+s_\gamma{}^2\right)+4s_\gamma{}^2\tilde\mu^2c_\gamma{}^2\right)LF_{3,2,-1}[\tilde\mu,m_1]-$$

$$\frac{5}{24}g_1{}^2\left(g_1{}^2+3g_2{}^2\right)\left(c_\gamma{}^2+s_\gamma{}^2\right)LF_{4,1,-2}[\tilde\mu,m_1]-$$

$$\frac{1}{4}m_1s_\gamma\tilde\mu c_\gamma g_1{}^2\left(g_1{}^2+3g_2{}^2\right)LF_{4,1,-1}[\tilde\mu,m_1]+\frac{1}{4}g_1{}^4s_\gamma{}^2c_\gamma{}^2LF_{4,2,-3}[\tilde\mu,m_1]+$$

$$\frac{1}{8}g_1{}^4\left(m_1{}^2\left(c_\gamma{}^4+s_\gamma{}^4\right)+4m_1s_\gamma\tilde\mu c_\gamma\left(c_\gamma{}^2+s_\gamma{}^2\right)+2s_\gamma{}^2\tilde\mu^2c_\gamma{}^2\right)LF_{4,2,-2}[\tilde\mu,m_1]+$$

$$\frac{1}{4}g_1{}^4m_1{}^2s_\gamma{}^2\tilde\mu^2c_\gamma{}^2LF_{4,2,-1}[\tilde\mu,m_1]+\frac{1}{6}g_1{}^2\left(g_1{}^2+3g_2{}^2\right)\left(c_\gamma{}^2+s_\gamma{}^2\right)LF_{5,1,-3}[\tilde\mu,m_1]+$$

$$\frac{1}{3}m_1s_\gamma\tilde\mu c_\gamma g_1{}^2\left(g_1{}^2+3g_2{}^2\right)LF_{5,1,-2}[\tilde\mu,m_1]+2g_2{}^4\left(c_\gamma{}^2+s_\gamma{}^2\right)LF_{3,1,-1}[\tilde\mu,m_2]+$$

$$2m_2s_\gamma\tilde\mu c_\gamma g_2{}^4LF_{3,1,0}[\tilde\mu,m_2]+\frac{1}{8}g_2{}^4\left(3c_\gamma{}^4+8s_\gamma{}^2+3s_\gamma{}^4+c_\gamma{}^2\left(8-12s_\gamma{}^2\right)\right)LF_{3,2,-2}[\tilde\mu,m_2]+$$

$$\frac{1}{8}g_2{}^4\left(-m_2{}^2\left(c_\gamma{}^4-8s_\gamma{}^2c_\gamma{}^2+s_\gamma{}^4\right)-2m_2s_\gamma\tilde\mu c_\gamma\left(-8+3c_\gamma{}^2+3s_\gamma{}^2\right)-12s_\gamma{}^2\tilde\mu^2c_\gamma{}^2\right)$$

$$LF_{3,2,-1}[\tilde\mu,m_2]-\frac{1}{8}g_2{}^2\left(5g_1{}^2+27g_2{}^2\right)\left(c_\gamma{}^2+s_\gamma{}^2\right)LF_{4,1,-2}[\tilde\mu,m_2]-$$

$$\frac{3}{4}m_2s_\gamma\tilde\mu c_\gamma g_2{}^2\left(g_1{}^2+7g_2{}^2\right)LF_{4,1,-1}[\tilde\mu,m_2]+\frac{1}{4}g_2{}^4\left(-2c_\gamma{}^4+s_\gamma{}^2c_\gamma{}^2-2s_\gamma{}^4\right)LF_{4,2,-3}[\tilde\mu,m_2]+$$

$$\frac{1}{8}g_2{}^4\left(m_2{}^2\left(c_\gamma{}^4-8s_\gamma{}^2c_\gamma{}^2+s_\gamma{}^4\right)-12m_2s_\gamma\tilde\mu c_\gamma\left(c_\gamma{}^2+s_\gamma{}^2\right)-6s_\gamma{}^2\tilde\mu^2c_\gamma{}^2\right)LF_{4,2,-2}[\tilde\mu,m_2]-$$

$$\frac{3}{4}g_2{}^4m_2{}^2s_\gamma{}^2\tilde\mu^2c_\gamma{}^2LF_{4,2,-1}[\tilde\mu,m_2]+\frac{1}{2}g_2{}^2\left(g_1{}^2+3g_2{}^2\right)\left(c_\gamma{}^2+s_\gamma{}^2\right)LF_{5,1,-3}[\tilde\mu,m_2]+$$

$$m_2s_\gamma\tilde\mu c_\gamma g_2{}^2\left(g_1{}^2+3g_2{}^2\right)LF_{5,1,-2}[\tilde\mu,m_2]+g_1{}^2g_2{}^2LF_{2,2,1,-2}[m_2,\tilde\mu,m_1]\left(c_\gamma{}^2+s_\gamma{}^2\right)^2+\frac{1}{4}g_1{}^2g_2{}^2$$

$$\left(3m_1m_2\left(c_\gamma{}^2+s_\gamma{}^2\right)^2+2s_\gamma\tilde\mu c_\gamma\left(7m_1+5m_2\right)\left(c_\gamma{}^2+s_\gamma{}^2\right)+12s_\gamma{}^2\tilde\mu^2c_\gamma{}^2\right)LF_{2,2,1,-1}[m_2,\tilde\mu,m_1]+$$

$$2m_1m_2g_1{}^2g_2{}^2s_\gamma{}^2\tilde\mu^2c_\gamma{}^2LF_{2,2,1,0}[m_2,\tilde\mu,m_1]-\frac{1}{2}g_1{}^2g_2{}^2LF_{3,2,1,-3}[m_2,\tilde\mu,m_1]\left(c_\gamma{}^2+s_\gamma{}^2\right)^2+$$

$$\frac{1}{2}g_1{}^2g_2{}^2\left(-m_1m_2\left(c_\gamma{}^2+s_\gamma{}^2\right)^2-4s_\gamma\tilde\mu c_\gamma\left(m_1+m_2\right)\left(c_\gamma{}^2+s_\gamma{}^2\right)-4s_\gamma{}^2\tilde\mu^2c_\gamma{}^2\right)$$

$$LF_{3,2,1,-2}[m_2,\tilde\mu,m_1]-2m_1m_2g_1{}^2g_2{}^2s_\gamma{}^2\tilde\mu^2c_\gamma{}^2LF_{3,2,1,-1}[m_2,\tilde\mu,m_1]+$$

$$\frac{3}{2}c_\gamma{}^3\overline{y_d}^{st}y_d{}^{sr}\left(-s_\gamma\tilde\mu\overline{y_d}^{pr}a_d{}^{pt}+\overline{a_d}^{pr}\left(c_\gamma a_d{}^{pt}-s_\gamma\tilde\mu y_d{}^{pt}\right)\right)LF_{2,1,1,0}\left[m_{\tilde d}{}^r,m_{\tilde d}{}^t,m_{\tilde q}{}^p\right]+$$

$$\frac{3}{2}c_\gamma{}^3\overline{y_d}^{st}y_d{}^{sr}\left(s_\gamma\tilde\mu\overline{y_d}^{pr}a_d{}^{pt}+\overline{a_d}^{pr}\left(-c_\gamma a_d{}^{pt}+s_\gamma\tilde\mu y_d{}^{pt}\right)\right)LF_{3,1,1,-1}\left[m_{\tilde d}{}^r,m_{\tilde d}{}^t,m_{\tilde q}{}^p\right]+$$

$$\frac{3}{2}s_\gamma{}^2\tilde\mu^2c_\gamma{}^2\overline{y_d}^{pr}\overline{y_d}^{st}y_d{}^{pt}y_d{}^{sr}LF_{2,1,1,0}\left[m_{\tilde d}{}^r,m_{\tilde d}{}^t,m_{\tilde q}{}^s\right]-$$

$$\frac{3}{2}s_\gamma{}^2\tilde\mu^2c_\gamma{}^2\overline{y_d}^{pr}\overline{y_d}^{st}y_d{}^{pt}y_d{}^{sr}LF_{3,1,1,-1}\left[m_{\tilde d}{}^r,m_{\tilde d}{}^t,m_{\tilde q}{}^s\right]+$$

$$\frac{3}{4}c_\gamma{}^3\overline{y_d}^{st}y_d{}^{sr}\left(s_\gamma\tilde\mu\overline{y_d}^{pr}a_d{}^{pt}+\overline{a_d}^{pr}\left(-c_\gamma a_d{}^{pt}+s_\gamma\tilde\mu y_d{}^{pt}\right)\right)LF_{2,2,1,-1}\left[m_{\tilde d}{}^r,m_{\tilde q}{}^p,m_{\tilde d}{}^t\right]-$$

$$\frac{3}{4}s_\gamma{}^2\tilde\mu^2c_\gamma{}^2\overline{y_d}^{pr}\overline{y_d}^{st}y_d{}^{pt}y_d{}^{sr}LF_{2,2,1,-1}\left[m_{\tilde d}{}^r,m_{\tilde q}{}^s,m_{\tilde d}{}^t\right]+$$

$$\frac{3}{2}c_\gamma{}^3\overline{y_d}^{st}y_d{}^{sr}\left(-s_\gamma\tilde\mu\overline{y_d}^{pr}a_d{}^{pt}+\overline{a_d}^{pr}\left(c_\gamma a_d{}^{pt}-s_\gamma\tilde\mu y_d{}^{pt}\right)\right)LF_{2,1,1,0}\left[m_{\tilde d}{}^t,m_{\tilde d}{}^r,m_{\tilde q}{}^p\right]+$$

$$\frac{3}{2}c_\gamma{}^3\overline{y_d}^{st}y_d{}^{sr}\left(s_\gamma\tilde\mu\overline{y_d}^{pr}a_d{}^{pt}+\overline{a_d}^{pr}\left(-c_\gamma a_d{}^{pt}+s_\gamma\tilde\mu y_d{}^{pt}\right)\right)LF_{3,1,1,-1}\left[m_{\tilde d}{}^t,m_{\tilde d}{}^r,m_{\tilde q}{}^p\right]+$$

$$\frac{3}{2}s_\gamma{}^2\tilde\mu^2c_\gamma{}^2\overline{y_d}^{pr}\overline{y_d}^{st}y_d{}^{pt}y_d{}^{sr}LF_{2,1,1,0}\left[m_{\tilde d}{}^t,m_{\tilde d}{}^r,m_{\tilde q}{}^s\right]-$$

$$\frac{3}{2}s_\gamma{}^2\tilde\mu^2c_\gamma{}^2\overline{y_d}^{pr}\overline{y_d}^{st}y_d{}^{pt}y_d{}^{sr}LF_{3,1,1,-1}\left[m_{\tilde d}{}^t,m_{\tilde d}{}^r,m_{\tilde q}{}^s\right]+$$

$$\frac{3}{4}c_\gamma{}^3\overline{y_d}^{st}y_d{}^{sr}\left(s_\gamma\tilde\mu\overline{y_d}^{pr}a_d{}^{pt}+\overline{a_d}^{pr}\left(-c_\gamma a_d{}^{pt}+s_\gamma\tilde\mu y_d{}^{pt}\right)\right)LF_{2,2,1,-1}\left[m_{\tilde d}{}^t,m_{\tilde q}{}^p,m_{\tilde d}{}^r\right]-$$

$$\frac{3}{4}s_\gamma{}^2\tilde\mu^2c_\gamma{}^2\overline{y_d}^{pr}\overline{y_d}^{st}y_d{}^{pt}y_d{}^{sr}LF_{2,2,1,-1}\left[m_{\tilde d}{}^t,m_{\tilde q}{}^s,m_{\tilde d}{}^r\right]+$$

$$\frac{1}{2}c_\gamma{}^3\overline{y_e}^{st}y_e{}^{sr}\left(-s_\gamma\tilde\mu\overline{y_e}^{pr}a_e{}^{pt}+\overline{a_e}^{pr}\left(c_\gamma a_e{}^{pt}-s_\gamma\tilde\mu y_e{}^{pt}\right)\right)LF_{2,1,1,0}\left[m_{\tilde e}{}^r,m_{\tilde e}{}^t,m_{\tilde l}{}^p\right]+$$

$$\frac{1}{2}c_\gamma{}^3\overline{y_e}^{st}y_e{}^{sr}\left(s_\gamma\tilde\mu\overline{y_e}^{pr}a_e{}^{pt}+\overline{a_e}^{pr}\left(-c_\gamma a_e{}^{pt}+s_\gamma\tilde\mu y_e{}^{pt}\right)\right)LF_{3,1,1,-1}\left[m_{\tilde e}{}^r,m_{\tilde e}{}^t,m_{\tilde l}{}^p\right]+$$

$$\frac{1}{2}s_\gamma{}^2\tilde\mu^2c_\gamma{}^2\overline{y_e}^{pr}\overline{y_e}^{st}y_e{}^{pt}y_e{}^{sr}LF_{2,1,1,0}\left[m_{\tilde e}{}^r,m_{\tilde e}{}^t,m_{\tilde l}{}^s\right]-$$

$$\frac{1}{2}s_\gamma{}^2\tilde\mu^2c_\gamma{}^2\overline{y_e}^{pr}\overline{y_e}^{st}y_e{}^{pt}y_e{}^{sr}LF_{3,1,1,-1}\left[m_{\tilde e}{}^r,m_{\tilde e}{}^t,m_{\tilde l}{}^s\right]+$$

$$\frac{1}{4}c_\gamma{}^3\overline{y_e}^{st}y_e{}^{sr}\left(s_\gamma\tilde\mu\overline{y_e}^{pr}a_e{}^{pt}+\overline{a_e}^{pr}\left(-c_\gamma a_e{}^{pt}+s_\gamma\tilde\mu y_e{}^{pt}\right)\right)LF_{2,2,1,-1}\left[m_{\tilde e}{}^r,m_{\tilde l}{}^p,m_{\tilde e}{}^t\right]-$$

$$\frac{1}{4}s_\gamma{}^2\tilde\mu^2c_\gamma{}^2\overline{y_e}^{pr}\overline{y_e}^{st}y_e{}^{pt}y_e{}^{sr}LF_{2,2,1,-1}\left[m_{\tilde e}{}^r,m_{\tilde l}{}^s,m_{\tilde e}{}^t\right]+$$

$$\frac{1}{2}c_\gamma{}^3\overline{y_e}^{st}y_e{}^{sr}\left(-s_\gamma\tilde\mu\overline{y_e}^{pr}a_e{}^{pt}+\overline{a_e}^{pr}\left(c_\gamma a_e{}^{pt}-s_\gamma\tilde\mu y_e{}^{pt}\right)\right)LF_{2,1,1,0}\left[m_{\tilde e}{}^t,m_{\tilde e}{}^r,m_{\tilde l}{}^p\right]+$$

$$\frac{1}{2}c_\gamma{}^3\overline{y_e}^{st}y_e{}^{sr}\left(s_\gamma\tilde\mu\overline{y_e}^{pr}a_e{}^{pt}+\overline{a_e}^{pr}\left(-c_\gamma a_e{}^{pt}+s_\gamma\tilde\mu y_e{}^{pt}\right)\right)LF_{3,1,1,-1}\left[m_{\tilde e}{}^t,m_{\tilde e}{}^r,m_{\tilde l}{}^p\right]+$$

$$\frac{1}{2}s_\gamma{}^2\tilde\mu^2c_\gamma{}^2\overline{y_e}^{pr}\overline{y_e}^{st}y_e{}^{pt}y_e{}^{sr}LF_{2,1,1,0}\left[m_{\tilde e}{}^t,m_{\tilde e}{}^r,m_{\tilde l}{}^s\right]-$$

$$\frac{1}{2}s_\gamma{}^2\tilde\mu^2c_\gamma{}^2\overline{y_e}^{pr}\overline{y_e}^{st}y_e{}^{pt}y_e{}^{sr}LF_{3,1,1,-1}\left[m_{\tilde e}{}^t,m_{\tilde e}{}^r,m_{\tilde l}{}^s\right]+$$

$$\frac{1}{4}c_\gamma{}^3\overline{y_e}^{st}y_e{}^{sr}\left(s_\gamma\tilde\mu\overline{y_e}^{pr}a_e{}^{pt}+\overline{a_e}^{pr}\left(-c_\gamma a_e{}^{pt}+s_\gamma\tilde\mu y_e{}^{pt}\right)\right)LF_{2,2,1,-1}\left[m_{\tilde e}{}^t,m_{\tilde l}{}^p,m_{\tilde e}{}^r\right]-$$

$$\frac{1}{4}s_\gamma{}^2\tilde\mu^2c_\gamma{}^2\overline{y_e}^{pr}\overline{y_e}^{st}y_e{}^{pt}y_e{}^{sr}LF_{2,2,1,-1}\left[m_{\tilde e}{}^t,m_{\tilde l}{}^s,m_{\tilde e}{}^r\right]+$$

$$\frac{3}{2}s_\gamma{}^2\overline{y_u}^{st}y_u{}^{pt}\left(-c_\gamma\overline{a_d}^{pr}+s_\gamma\tilde\mu\overline{y_d}^{pr}\right)\left(-c_\gamma a_d{}^{sr}+s_\gamma\tilde\mu y_d{}^{sr}\right)LF_{2,2,1,-1}\left[m_{\tilde q}{}^p,m_{\tilde q}{}^s,m_{\tilde d}{}^r\right]+$$

$$\frac{3}{2}s_\gamma c_\gamma{}^2\overline{y_d}^{st}y_d{}^{pt}\overline{a_u}^{pr}\left(s_\gamma a_u{}^{sr}-\tilde\mu c_\gamma y_u{}^{sr}\right)LF_{2,1,1,0}\left[m_{\tilde q}{}^p,m_{\tilde q}{}^s,m_{\tilde u}{}^r\right]+$$

$$\frac{3}{2}s_\gamma c_\gamma{}^2\overline{y_d}^{st}y_d{}^{pt}\overline{a_u}^{pr}\left(-s_\gamma a_u{}^{sr}+\tilde\mu c_\gamma y_u{}^{sr}\right)LF_{3,1,1,-1}\left[m_{\tilde q}{}^p,m_{\tilde q}{}^s,m_{\tilde u}{}^r\right]+$$

$$\frac{3}{2}\tilde\mu c_\gamma{}^3\overline{y_d}^{pr}y_d{}^{sr}\overline{y_u}^{st}\left(-s_\gamma a_u{}^{pt}+\tilde\mu c_\gamma y_u{}^{pt}\right)LF_{2,1,1,0}\left[m_{\tilde q}{}^p,m_{\tilde q}{}^s,m_{\tilde u}{}^t\right]+$$

$$\frac{3}{2}\tilde\mu c_\gamma{}^3\overline{y_d}^{pr}y_d{}^{sr}\overline{y_u}^{st}\left(s_\gamma a_u{}^{pt}-\tilde\mu c_\gamma y_u{}^{pt}\right)LF_{3,1,1,-1}\left[m_{\tilde q}{}^p,m_{\tilde q}{}^s,m_{\tilde u}{}^t\right]+$$

$$\frac{3}{4}s_\gamma c_\gamma{}^2\overline{y_d}^{st}y_d{}^{pt}\overline{a_u}^{pr}\left(-s_\gamma a_u{}^{sr}+\tilde\mu c_\gamma y_u{}^{sr}\right)LF_{2,2,1,-1}\left[m_{\tilde q}{}^p,m_{\tilde u}{}^r,m_{\tilde q}{}^s\right]+$$

$$\frac{3}{4}\tilde\mu c_\gamma{}^3\overline{y_d}^{pr}y_d{}^{sr}\overline{y_u}^{st}\left(s_\gamma a_u{}^{pt}-\tilde\mu c_\gamma y_u{}^{pt}\right)LF_{2,2,1,-1}\left[m_{\tilde q}{}^p,m_{\tilde u}{}^t,m_{\tilde q}{}^s\right]+$$

$$\frac{3}{2}s_\gamma c_\gamma{}^2\overline{y_d}^{st}y_d{}^{pt}\overline{a_u}^{pr}\left(s_\gamma a_u{}^{sr}-\tilde\mu c_\gamma y_u{}^{sr}\right)LF_{2,1,1,0}\left[m_{\tilde q}{}^s,m_{\tilde q}{}^p,m_{\tilde u}{}^r\right]+$$

$$\frac{3}{2}s_\gamma c_\gamma{}^2\overline{y_d}^{st}y_d{}^{pt}\overline{a_u}^{pr}\left(-s_\gamma a_u{}^{sr}+\tilde\mu c_\gamma y_u{}^{sr}\right)LF_{3,1,1,-1}\left[m_{\tilde q}{}^s,m_{\tilde q}{}^p,m_{\tilde u}{}^r\right]+$$

$$\frac{3}{2}\tilde\mu c_\gamma{}^3\overline{y_d}^{pr}y_d{}^{sr}\overline{y_u}^{st}\left(-s_\gamma a_u{}^{pt}+\tilde\mu c_\gamma y_u{}^{pt}\right)LF_{2,1,1,0}\left[m_{\tilde q}{}^s,m_{\tilde q}{}^p,m_{\tilde u}{}^t\right]+$$

$$\frac{3}{2}\tilde\mu c_\gamma{}^3\overline{y_d}^{pr}y_d{}^{sr}\overline{y_u}^{st}\left(s_\gamma a_u{}^{pt}-\tilde\mu c_\gamma y_u{}^{pt}\right)LF_{3,1,1,-1}\left[m_{\tilde q}{}^s,m_{\tilde q}{}^p,m_{\tilde u}{}^t\right]+$$

$$\frac{3}{4}s_\gamma c_\gamma{}^2\overline{y_d}^{st}y_d{}^{pt}\overline{a_u}^{pr}\left(-s_\gamma a_u{}^{sr}+\tilde\mu c_\gamma y_u{}^{sr}\right)LF_{2,2,1,-1}\left[m_{\tilde q}{}^s,m_{\tilde u}{}^r,m_{\tilde q}{}^p\right]+$$

$$\frac{3}{4}\tilde\mu c_\gamma{}^3\overline{y_d}^{pr}y_d{}^{sr}\overline{y_u}^{st}\left(s_\gamma a_u{}^{pt}-\tilde\mu c_\gamma y_u{}^{pt}\right)LF_{2,2,1,-1}\left[m_{\tilde q}{}^s,m_{\tilde u}{}^t,m_{\tilde q}{}^p\right]+$$

$$\frac{3}{2}s_\gamma{}^3\overline{y_u}^{st}y_u{}^{sr}\left(-\tilde\mu c_\gamma\overline{y_u}^{pr}a_u{}^{pt}+\overline{a_u}^{pr}\left(s_\gamma a_u{}^{pt}-\tilde\mu c_\gamma y_u{}^{pt}\right)\right)LF_{2,2,1,-1}\left[m_{\tilde u}{}^r,m_{\tilde u}{}^t,m_{\tilde q}{}^p\right]+$$

$$\frac{3}{2}s_\gamma{}^2\tilde\mu^2c_\gamma{}^2\overline{y_u}^{pr}\overline{y_u}^{st}y_u{}^{pt}y_u{}^{sr}LF_{2,2,1,-1}\left[m_{\tilde u}{}^r,m_{\tilde u}{}^t,m_{\tilde q}{}^s\right]-$$

$$\frac{1}{4}g_1{}^2g_2{}^2\left(c_\gamma{}^4+5s_\gamma{}^2c_\gamma{}^2+s_\gamma{}^4\right)LF_{2,1,1,-1}[\tilde\mu,m_1,m_2]+$$

$$\frac{1}{4}m_1g_1{}^2g_2{}^2\left(m_2\left(c_\gamma{}^4-4s_\gamma{}^2c_\gamma{}^2+s_\gamma{}^4\right)-4s_\gamma\tilde\mu c_\gamma\left(c_\gamma{}^2+s_\gamma{}^2\right)\right)LF_{2,1,1,0}[\tilde\mu,m_1,m_2]+$$

$$\frac{3}{4}g_1{}^2g_2{}^2\left(c_\gamma{}^4+s_\gamma{}^4\right)LF_{3,1,1,-2}[\tilde\mu,m_1,m_2]+$$

$$\frac{1}{4}g_1{}^2g_2{}^2\left(-m_1m_2\left(c_\gamma{}^4-4s_\gamma{}^2c_\gamma{}^2+s_\gamma{}^4\right)+s_\gamma\tilde\mu c_\gamma\left(5m_1+m_2\right)\left(c_\gamma{}^2+s_\gamma{}^2\right)+4s_\gamma{}^2\tilde\mu^2c_\gamma{}^2\right)$$

$$LF_{3,1,1,-1}[\tilde\mu,m_1,m_2]-\frac{1}{2}g_1{}^2g_2{}^2\left(c_\gamma{}^4-s_\gamma{}^2c_\gamma{}^2+s_\gamma{}^4\right)LF_{4,1,1,-3}[\tilde\mu,m_1,m_2]+$$

$$\frac{1}{4}g_1{}^2g_2{}^2\left(m_1m_2\left(c_\gamma{}^4-4s_\gamma{}^2c_\gamma{}^2+s_\gamma{}^4\right)-2s_\gamma\tilde\mu c_\gamma\left(m_1+m_2\right)\left(c_\gamma{}^2+s_\gamma{}^2\right)-2s_\gamma{}^2\tilde\mu^2c_\gamma{}^2\right)$$

$$LF_{4,1,1,-2}[\tilde\mu,m_1,m_2]-\frac{1}{2}m_1m_2g_1{}^2g_2{}^2s_\gamma{}^2\tilde\mu^2c_\gamma{}^2LF_{4,1,1,-1}[\tilde\mu,m_1,m_2]-$$

$$\frac{1}{2}g_1{}^2g_2{}^2LF_{3,2,1,-3}[\tilde\mu,m_2,m_1]\left(c_\gamma{}^2+s_\gamma{}^2\right)^2+$$

$$\frac{1}{2}g_1{}^2g_2{}^2\left(-m_1m_2\left(c_\gamma{}^2+s_\gamma{}^2\right)^2-4s_\gamma\tilde\mu c_\gamma\left(m_1+m_2\right)\left(c_\gamma{}^2+s_\gamma{}^2\right)-4s_\gamma{}^2\tilde\mu^2c_\gamma{}^2\right)$$

$$LF_{3,2,1,-2}[\tilde\mu,m_2,m_1]-2m_1m_2g_1{}^2g_2{}^2s_\gamma{}^2\tilde\mu^2c_\gamma{}^2LF_{3,2,1,-1}[\tilde\mu,m_2,m_1]+$$

$$\frac{3}{2}\left(s_\gamma{}^2\tilde\mu^2\overline{y_d}^{pr}\overline{y_d}^{st}\left(s_\gamma{}^2\tilde\mu^2y_d{}^{pt}y_d{}^{sr}+c_\gamma a_d{}^{pt}\left(c_\gamma a_d{}^{sr}-s_\gamma\tilde\mu y_d{}^{sr}\right)\right)+\right.$$

$$c_\gamma\overline{a_d}^{pr}\left(-s_\gamma\tilde\mu\overline{y_d}^{st}\left(-c_\gamma a_d{}^{pt}+s_\gamma\tilde\mu y_d{}^{pt}\right)\left(-c_\gamma a_d{}^{sr}+s_\gamma\tilde\mu y_d{}^{sr}\right)+c_\gamma\overline{a_d}^{st}\right.$$

$$\left.\left.\left(s_\gamma{}^2\tilde\mu^2y_d{}^{pt}y_d{}^{sr}+c_\gamma a_d{}^{pt}\left(c_\gamma a_d{}^{sr}-s_\gamma\tilde\mu y_d{}^{sr}\right)\right)\right)\right)LF_{2,1,1,1,0}\left[m_{\tilde d}{}^r,m_{\tilde d}{}^t,m_{\tilde q}{}^p,m_{\tilde q}{}^s\right]-$$

$$\frac{3}{2}\left(s_\gamma{}^2\tilde\mu^2\overline{y_d}^{pr}\overline{y_d}^{st}\left(s_\gamma{}^2\tilde\mu^2y_d{}^{pt}y_d{}^{sr}+c_\gamma a_d{}^{pt}\left(c_\gamma a_d{}^{sr}-s_\gamma\tilde\mu y_d{}^{sr}\right)\right)+\right.$$

$$c_\gamma\overline{a_d}^{pr}\left(-s_\gamma\tilde\mu\overline{y_d}^{st}\left(-c_\gamma a_d{}^{pt}+s_\gamma\tilde\mu y_d{}^{pt}\right)\left(-c_\gamma a_d{}^{sr}+s_\gamma\tilde\mu y_d{}^{sr}\right)+c_\gamma\overline{a_d}^{st}\right.$$

$$\left.\left.\left(s_\gamma{}^2\tilde\mu^2y_d{}^{pt}y_d{}^{sr}+c_\gamma a_d{}^{pt}\left(c_\gamma a_d{}^{sr}-s_\gamma\tilde\mu y_d{}^{sr}\right)\right)\right)\right)LF_{3,1,1,1,-1}\left[m_{\tilde d}{}^r,m_{\tilde d}{}^t,m_{\tilde q}{}^p,m_{\tilde q}{}^s\right]-$$

$$\frac{3}{4}\left(s_\gamma{}^2\tilde\mu^2\overline{y_d}^{pr}\overline{y_d}^{st}\left(s_\gamma{}^2\tilde\mu^2y_d{}^{pt}y_d{}^{sr}+c_\gamma a_d{}^{pt}\left(c_\gamma a_d{}^{sr}-s_\gamma\tilde\mu y_d{}^{sr}\right)\right)+\right.$$

$$c_\gamma\overline{a_d}^{pr}\left(-s_\gamma\tilde\mu\overline{y_d}^{st}\left(-c_\gamma a_d{}^{pt}+s_\gamma\tilde\mu y_d{}^{pt}\right)\left(-c_\gamma a_d{}^{sr}+s_\gamma\tilde\mu y_d{}^{sr}\right)+c_\gamma\overline{a_d}^{st}\right.$$

$$\left.\left.\left(s_\gamma{}^2\tilde\mu^2y_d{}^{pt}y_d{}^{sr}+c_\gamma a_d{}^{pt}\left(c_\gamma a_d{}^{sr}-s_\gamma\tilde\mu y_d{}^{sr}\right)\right)\right)\right)LF_{2,2,1,1,-1}\left[m_{\tilde d}{}^r,m_{\tilde q}{}^p,m_{\tilde d}{}^t,m_{\tilde q}{}^s\right]-$$

$$\frac{3}{4}\left(s_\gamma{}^2\tilde\mu^2\overline{y_d}^{pr}\overline{y_d}^{st}\left(s_\gamma{}^2\tilde\mu^2y_d{}^{pt}y_d{}^{sr}+c_\gamma a_d{}^{pt}\left(c_\gamma a_d{}^{sr}-s_\gamma\tilde\mu y_d{}^{sr}\right)\right)+\right.$$

$$c_\gamma\overline{a_d}^{pr}\left(-s_\gamma\tilde\mu\overline{y_d}^{st}\left(-c_\gamma a_d{}^{pt}+s_\gamma\tilde\mu y_d{}^{pt}\right)\left(-c_\gamma a_d{}^{sr}+s_\gamma\tilde\mu y_d{}^{sr}\right)+\right.$$

$$\left.\left.c_\gamma\overline{a_d}^{st}\left(s_\gamma{}^2\tilde\mu^2y_d{}^{pt}y_d{}^{sr}+c_\gamma a_d{}^{pt}\left(c_\gamma a_d{}^{sr}-s_\gamma\tilde\mu y_d{}^{sr}\right)\right)\right)\right)$$

$$LF_{2,2,1,1,-1}\left[m_{\tilde d}{}^r,m_{\tilde q}{}^s,m_{\tilde d}{}^t,m_{\tilde q}{}^p\right]-\frac{3}{2}s_\gamma\tilde\mu c_\gamma\left(s_\gamma{}^2\tilde\mu^2\overline{y_d}^{pr}\overline{y_d}^{st}y_d{}^{sr}a_d{}^{pt}+\right.$$

$$\left.\overline{a_d}^{pr}\left(c_\gamma{}^2y_d{}^{sr}\overline{a_d}^{st}a_d{}^{pt}+\overline{y_d}^{st}\left(c_\gamma a_d{}^{pt}-s_\gamma\tilde\mu y_d{}^{pt}\right)\left(c_\gamma a_d{}^{sr}-s_\gamma\tilde\mu y_d{}^{sr}\right)\right)\right)$$

$$LF_{2,1,1,1,0}\left[m_{\tilde d}{}^t,m_{\tilde d}{}^r,m_{\tilde q}{}^p,m_{\tilde q}{}^s\right]+\frac{3}{2}s_\gamma\tilde\mu c_\gamma\left(s_\gamma{}^2\tilde\mu^2\overline{y_d}^{pr}\overline{y_d}^{st}y_d{}^{sr}a_d{}^{pt}+\right.$$

$$\left.\overline{a_d}^{pr}\left(c_\gamma{}^2y_d{}^{sr}\overline{a_d}^{st}a_d{}^{pt}+\overline{y_d}^{st}\left(c_\gamma a_d{}^{pt}-s_\gamma\tilde\mu y_d{}^{pt}\right)\left(c_\gamma a_d{}^{sr}-s_\gamma\tilde\mu y_d{}^{sr}\right)\right)\right)$$

$$LF_{3,1,1,1,-1}\left[m_{\tilde d}{}^t,m_{\tilde d}{}^r,m_{\tilde q}{}^p,m_{\tilde q}{}^s\right]+\frac{3}{4}s_\gamma\tilde\mu c_\gamma\left(s_\gamma{}^2\tilde\mu^2\overline{y_d}^{pr}\overline{y_d}^{st}y_d{}^{sr}a_d{}^{pt}+\right.$$

$$\left.\overline{a_d}^{pr}\left(c_\gamma{}^2y_d{}^{sr}\overline{a_d}^{st}a_d{}^{pt}+\overline{y_d}^{st}\left(c_\gamma a_d{}^{pt}-s_\gamma\tilde\mu y_d{}^{pt}\right)\left(c_\gamma a_d{}^{sr}-s_\gamma\tilde\mu y_d{}^{sr}\right)\right)\right)$$

$$LF_{2,2,1,1,-1}\left[m_{\tilde d}{}^t,m_{\tilde q}{}^p,m_{\tilde d}{}^r,m_{\tilde q}{}^s\right]+\frac{3}{4}s_\gamma\tilde\mu c_\gamma\left(s_\gamma{}^2\tilde\mu^2\overline{y_d}^{pr}\overline{y_d}^{st}y_d{}^{sr}a_d{}^{pt}+\right.$$

$$\left.\overline{a_d}^{pr}\left(c_\gamma{}^2y_d{}^{sr}\overline{a_d}^{st}a_d{}^{pt}+\overline{y_d}^{st}\left(c_\gamma a_d{}^{pt}-s_\gamma\tilde\mu y_d{}^{pt}\right)\left(c_\gamma a_d{}^{sr}-s_\gamma\tilde\mu y_d{}^{sr}\right)\right)\right)LF_{2,2,1,1,-1}\left[m_{\tilde d}{}^t,\right.$$

$$\left.m_{\tilde q}{}^s,m_{\tilde d}{}^r,m_{\tilde q}{}^p\right]+\frac{1}{2}\left(s_\gamma{}^2\tilde\mu^2\overline{y_e}^{pr}\overline{y_e}^{st}\left(s_\gamma{}^2\tilde\mu^2y_e{}^{pt}y_e{}^{sr}+c_\gamma a_e{}^{pt}\left(c_\gamma a_e{}^{sr}-s_\gamma\tilde\mu y_e{}^{sr}\right)\right)+\right.$$

$$c_\gamma\overline{a_e}^{pr}\left(-s_\gamma\tilde\mu\overline{y_e}^{st}\left(-c_\gamma a_e{}^{pt}+s_\gamma\tilde\mu y_e{}^{pt}\right)\left(-c_\gamma a_e{}^{sr}+s_\gamma\tilde\mu y_e{}^{sr}\right)+c_\gamma\overline{a_e}^{st}\right.$$

$$\left.\left.\left(s_\gamma{}^2\tilde\mu^2y_e{}^{pt}y_e{}^{sr}+c_\gamma a_e{}^{pt}\left(c_\gamma a_e{}^{sr}-s_\gamma\tilde\mu y_e{}^{sr}\right)\right)\right)\right)LF_{2,1,1,1,0}\left[m_{\tilde e}{}^r,m_{\tilde e}{}^t,m_{\tilde l}{}^p,m_{\tilde l}{}^s\right]+$$

$$\frac{1}{2}\left(-s_\gamma{}^2\tilde\mu^2\overline{y_e}^{pr}\overline{y_e}^{st}\left(s_\gamma{}^2\tilde\mu^2y_e{}^{pt}y_e{}^{sr}+c_\gamma a_e{}^{pt}\left(c_\gamma a_e{}^{sr}-s_\gamma\tilde\mu y_e{}^{sr}\right)\right)+\right.$$

$$c_\gamma\overline{a_e}^{pr}\left(s_\gamma\tilde\mu\overline{y_e}^{st}\left(-c_\gamma a_e{}^{pt}+s_\gamma\tilde\mu y_e{}^{pt}\right)\left(-c_\gamma a_e{}^{sr}+s_\gamma\tilde\mu y_e{}^{sr}\right)-c_\gamma\overline{a_e}^{st}\right.$$

$$\left.\left.\left(s_\gamma{}^2\tilde\mu^2y_e{}^{pt}y_e{}^{sr}+c_\gamma a_e{}^{pt}\left(c_\gamma a_e{}^{sr}-s_\gamma\tilde\mu y_e{}^{sr}\right)\right)\right)\right)LF_{3,1,1,1,-1}\left[m_{\tilde e}{}^r,m_{\tilde e}{}^t,m_{\tilde l}{}^p,m_{\tilde l}{}^s\right]+$$

$$\frac{1}{4}\left(-s_\gamma{}^2\tilde\mu^2\overline{y_e}^{pr}\overline{y_e}^{st}\left(s_\gamma{}^2\tilde\mu^2y_e{}^{pt}y_e{}^{sr}+c_\gamma a_e{}^{pt}\left(c_\gamma a_e{}^{sr}-s_\gamma\tilde\mu y_e{}^{sr}\right)\right)+\right.$$

$$c_\gamma\overline{a_e}^{pr}\left(s_\gamma\tilde\mu\overline{y_e}^{st}\left(-c_\gamma a_e{}^{pt}+s_\gamma\tilde\mu y_e{}^{pt}\right)\left(-c_\gamma a_e{}^{sr}+s_\gamma\tilde\mu y_e{}^{sr}\right)-c_\gamma\overline{a_e}^{st}\right.$$

$$\left.\left.\left(s_\gamma{}^2\tilde\mu^2y_e{}^{pt}y_e{}^{sr}+c_\gamma a_e{}^{pt}\left(c_\gamma a_e{}^{sr}-s_\gamma\tilde\mu y_e{}^{sr}\right)\right)\right)\right)LF_{2,2,1,1,-1}\left[m_{\tilde e}{}^r,m_{\tilde l}{}^p,m_{\tilde e}{}^t,m_{\tilde l}{}^s\right]+$$

$$\frac{1}{4}\left(-s_\gamma{}^2\tilde\mu^2\overline{y_e}^{pr}\overline{y_e}^{st}\left(s_\gamma{}^2\tilde\mu^2y_e{}^{pt}y_e{}^{sr}+c_\gamma a_e{}^{pt}\left(c_\gamma a_e{}^{sr}-s_\gamma\tilde\mu y_e{}^{sr}\right)\right)+\right.$$

$$c_\gamma\overline{a_e}^{pr}\left(s_\gamma\tilde\mu\overline{y_e}^{st}\left(-c_\gamma a_e{}^{pt}+s_\gamma\tilde\mu y_e{}^{pt}\right)\left(-c_\gamma a_e{}^{sr}+s_\gamma\tilde\mu y_e{}^{sr}\right)-\right.$$

$$\left.\left.c_\gamma\overline{a_e}^{st}\left(s_\gamma{}^2\tilde\mu^2y_e{}^{pt}y_e{}^{sr}+c_\gamma a_e{}^{pt}\left(c_\gamma a_e{}^{sr}-s_\gamma\tilde\mu y_e{}^{sr}\right)\right)\right)\right)$$

$$LF_{2,2,1,1,-1}\left[m_{\tilde e}{}^r,m_{\tilde l}{}^s,m_{\tilde e}{}^t,m_{\tilde l}{}^p\right]-\frac{1}{2}s_\gamma\tilde\mu c_\gamma\left(s_\gamma{}^2\tilde\mu^2\overline{y_e}^{pr}\overline{y_e}^{st}y_e{}^{sr}a_e{}^{pt}+\right.$$

$$\left.\overline{a_e}^{pr}\left(c_\gamma{}^2y_e{}^{sr}\overline{a_e}^{st}a_e{}^{pt}+\overline{y_e}^{st}\left(c_\gamma a_e{}^{pt}-s_\gamma\tilde\mu y_e{}^{pt}\right)\left(c_\gamma a_e{}^{sr}-s_\gamma\tilde\mu y_e{}^{sr}\right)\right)\right)$$

$$LF_{2,1,1,1,0}\left[m_{\tilde e}{}^t,m_{\tilde e}{}^r,m_{\tilde l}{}^p,m_{\tilde l}{}^s\right]+\frac{1}{2}s_\gamma\tilde\mu c_\gamma\left(s_\gamma{}^2\tilde\mu^2\overline{y_e}^{pr}\overline{y_e}^{st}y_e{}^{sr}a_e{}^{pt}+\right.$$

$$\left.\overline{a_e}^{pr}\left(c_\gamma{}^2y_e{}^{sr}\overline{a_e}^{st}a_e{}^{pt}+\overline{y_e}^{st}\left(c_\gamma a_e{}^{pt}-s_\gamma\tilde\mu y_e{}^{pt}\right)\left(c_\gamma a_e{}^{sr}-s_\gamma\tilde\mu y_e{}^{sr}\right)\right)\right)$$

$$LF_{3,1,1,1,-1}\left[m_{\tilde e}{}^t,m_{\tilde e}{}^r,m_{\tilde l}{}^p,m_{\tilde l}{}^s\right]+\frac{1}{4}s_\gamma\tilde\mu c_\gamma\left(s_\gamma{}^2\tilde\mu^2\overline{y_e}^{pr}\overline{y_e}^{st}y_e{}^{sr}a_e{}^{pt}+\right.$$

$$\left.\overline{a_e}^{pr}\left(c_\gamma{}^2y_e{}^{sr}\overline{a_e}^{st}a_e{}^{pt}+\overline{y_e}^{st}\left(c_\gamma a_e{}^{pt}-s_\gamma\tilde\mu y_e{}^{pt}\right)\left(c_\gamma a_e{}^{sr}-s_\gamma\tilde\mu y_e{}^{sr}\right)\right)\right)$$

$$LF_{2,2,1,1,-1}\left[m_{\tilde e}{}^t,m_{\tilde l}{}^p,m_{\tilde e}{}^r,m_{\tilde l}{}^s\right]+\frac{1}{4}s_\gamma\tilde\mu c_\gamma\left(s_\gamma{}^2\tilde\mu^2\overline{y_e}^{pr}\overline{y_e}^{st}y_e{}^{sr}a_e{}^{pt}+\right.$$

$$\left.\overline{a_e}^{pr}\left(c_\gamma{}^2y_e{}^{sr}\overline{a_e}^{st}a_e{}^{pt}+\overline{y_e}^{st}\left(c_\gamma a_e{}^{pt}-s_\gamma\tilde\mu y_e{}^{pt}\right)\left(c_\gamma a_e{}^{sr}-s_\gamma\tilde\mu y_e{}^{sr}\right)\right)\right)$$

$$LF_{2,2,1,1,-1}\left[m_{\tilde e}{}^t,m_{\tilde l}{}^s,m_{\tilde e}{}^r,m_{\tilde l}{}^p\right]+\frac{3}{2}c_\gamma\left(c_\gamma a_d{}^{sr}-s_\gamma\tilde\mu y_d{}^{sr}\right)\left(s_\gamma a_u{}^{pt}-\tilde\mu c_\gamma y_u{}^{pt}\right)$$

$$\left(s_\gamma\tilde\mu^2\overline{y_d}^{pr}\overline{y_u}^{st}+\overline{a_d}^{pr}\left(s_\gamma\overline{a_u}^{st}-\tilde\mu c_\gamma\overline{y_u}^{st}\right)\right)LF_{2,2,1,1,-1}\left[m_{\tilde q}{}^p,m_{\tilde q}{}^s,m_{\tilde d}{}^r,m_{\tilde u}{}^t\right]+$$

$$\frac{3}{2}\tilde\mu s_\gamma{}^2\overline{y_d}^{st}\overline{a_u}^{pr}\left(-c_\gamma a_d{}^{pt}+s_\gamma\tilde\mu y_d{}^{pt}\right)\left(s_\gamma a_u{}^{sr}-\tilde\mu c_\gamma y_u{}^{sr}\right)LF_{2,2,1,1,-1}\left[m_{\tilde q}{}^p,m_{\tilde q}{}^s,m_{\tilde d}{}^t,m_{\tilde u}{}^r\right]+$$

$$\frac{3}{4}\left(\tilde\mu^2c_\gamma{}^2\overline{y_u}^{pr}\overline{y_u}^{st}\left(\tilde\mu^2c_\gamma{}^2y_u{}^{pt}y_u{}^{sr}+s_\gamma a_u{}^{pt}\left(s_\gamma a_u{}^{sr}-2\tilde\mu c_\gamma y_u{}^{sr}\right)\right)+\right.$$

$$s_\gamma\overline{a_u}^{pr}\left(-2\tilde\mu c_\gamma\overline{y_u}^{st}\left(-s_\gamma a_u{}^{pt}+\tilde\mu c_\gamma y_u{}^{pt}\right)\left(-s_\gamma a_u{}^{sr}+\tilde\mu c_\gamma y_u{}^{sr}\right)+s_\gamma\overline{a_u}^{st}\right.$$

$$\left.\left.\left.\left(\tilde\mu^2c_\gamma{}^2y_u{}^{pt}y_u{}^{sr}+s_\gamma a_u{}^{pt}\left(s_\gamma a_u{}^{sr}-2\tilde\mu c_\gamma y_u{}^{sr}\right)\right)\right)\right)LF_{2,2,1,1,-1}\left[m_{\tilde u}{}^r,m_{\tilde u}{}^t,m_{\tilde q}{}^p,m_{\tilde q}{}^s\right]\right)$$