$$C_{H\square}\to\frac{1}{16\pi^2}\ \Bigg(-\frac{3}{128}\,\frac{1}{m_\Phi^2}\,s_{4\gamma}^2\left(g_1^2+g_2^2\right)^2+\frac{1}{6}\,g_2^4\,LF_{3,0}[m_2]+\frac{1}{4}\,g_2^4\,LF_{4,-1}[m_2]-\frac{4}{15}\,g_2^4\,LF_{5,-2}[m_2]+$$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$$\frac{1}{8}\,m_1\,g_1^4\left(m_1\left(c_\gamma^4+s_\gamma^4\right)+4s_\gamma\tilde\mu c_\gamma\right)LF_{2,2,0}[m_1,\tilde\mu]-\frac{1}{2}\,g_1^4\,LF_{3,2,-2}[m_1,\tilde\mu]+$$

$$\frac{3}{8}\,g_1^4\left(-m_1^2-8m_1s_\gamma\tilde\mu c_\gamma-4s_\gamma^2\tilde\mu^2c_\gamma^2\right)LF_{3,2,-1}[m_1,\tilde\mu]-g_1^4m_1^2s_\gamma^2\tilde\mu^2c_\gamma^2\,LF_{3,2,0}[m_1,\tilde\mu]+$$

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

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

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

$$g_2^4\,LF_{2,1,0}[m_2,\tilde\mu]+\frac{1}{8}\,g_2^4\left(4c_\gamma^4+4s_\gamma^2\left(-2+s_\gamma^2\right)+c_\gamma^2\left(-8+19s_\gamma^2\right)\right)LF_{2,2,-1}[m_2,\tilde\mu]+$$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$$\frac{5}{24}\,g_1^2\left(g_1^2+3g_2^2\right)LF_{4,1,-2}[\tilde\mu,m_1]-\frac{1}{4}\,m_1s_\gamma\tilde\mu c_\gamma g_1^2\left(g_1^2+3g_2^2\right)LF_{4,1,-1}[\tilde\mu,m_1]+$$

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

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

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

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

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

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

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

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

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

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

$$\frac{1}{4}\,g_1^2g_2^2\left(3m_1m_2+2s_\gamma\tilde\mu c_\gamma\left(7m_1+5m_2\right)+12s_\gamma^2\tilde\mu^2c_\gamma^2\right)LF_{2,2,1,-1}[m_2,\tilde\mu,m_1]+$$

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

$$\frac{1}{2}\,g_1^2g_2^2\left(-m_1m_2-4s_\gamma\tilde\mu c_\gamma\left(m_1+m_2\right)-4s_\gamma^2\tilde\mu^2c_\gamma^2\right)LF_{3,2,1,-2}[m_2,\tilde\mu,m_1]-$$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$$\frac{1}{4}\,g_1^2g_2^2\left(-m_1m_2\left(c_\gamma^4-4s_\gamma^2c_\gamma^2+s_\gamma^4\right)+s_\gamma\tilde\mu c_\gamma\left(5m_1+m_2\right)+4s_\gamma^2\tilde\mu^2c_\gamma^2\right)LF_{3,1,1,-1}[\tilde\mu,m_1,m_2]-$$

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

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

$$\frac{1}{2}\,m_1m_2g_1^2g_2^2s_\gamma^2\tilde\mu^2c_\gamma^2\,LF_{4,1,1,-1}[\tilde\mu,m_1,m_2]-\frac{1}{2}\,g_1^2g_2^2\,LF_{3,2,1,-3}[\tilde\mu,m_2,m_1]+$$

$$\frac{1}{2}\,g_1^2g_2^2\left(-m_1m_2-4s_\gamma\tilde\mu c_\gamma\left(m_1+m_2\right)-4s_\gamma^2\tilde\mu^2c_\gamma^2\right)LF_{3,2,1,-2}[\tilde\mu,m_2,m_1]-$$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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