

$$\begin{aligned}
C_{H^2} \rightarrow & -m_H^2 + \frac{1}{16\pi^2} \left(-\frac{1}{2} \sum_{\mathbf{p}} c_{2\gamma} g_1^2 \text{LF}_{1,0} [m_{\tilde{d}}^{\mathbf{p}}] + 3 c_\gamma^2 \overline{y_d^{\text{pr}}} y_d^{\text{pr}} \text{LF}_{1,0} [m_{\tilde{d}}^{\mathbf{r}}] - \frac{1}{2} \sum_{\mathbf{p}} c_{2\gamma} g_1^2 \text{LF}_{1,0} [m_{\tilde{e}}^{\mathbf{p}}] + \right. \\
& c_\gamma^2 \overline{y_e^{\text{pr}}} y_e^{\text{pr}} \text{LF}_{1,0} [m_{\tilde{e}}^{\mathbf{r}}] + \left(c_\gamma^2 \overline{y_e^{\text{pr}}} y_e^{\text{pr}} + \frac{1}{2} \sum_{\mathbf{p}} c_{2\gamma} g_1^2 \right) \text{LF}_{1,0} [m_{\tilde{l}}^{\mathbf{p}}] + \\
& \left(3 c_\gamma^2 \overline{y_d^{\text{pr}}} y_d^{\text{pr}} + 3 s_\gamma^2 \overline{y_u^{\text{pr}}} y_u^{\text{pr}} - \frac{1}{2} \sum_{\mathbf{p}} c_{2\gamma} g_1^2 \right) \text{LF}_{1,0} [m_{\tilde{q}}^{\mathbf{p}}] + \sum_{\mathbf{p}} c_{2\gamma} g_1^2 \text{LF}_{1,0} [m_{\tilde{u}}^{\mathbf{p}}] + \\
& 3 s_\gamma^2 \overline{y_u^{\text{pr}}} y_u^{\text{pr}} \text{LF}_{1,0} [m_{\tilde{u}}^{\mathbf{r}}] + \frac{1}{8} \left(-g_1^2 (1 + 3 c_{4\gamma}) - 3 g_2^2 (-1 + c_{4\gamma}) \right) \text{LF}_{1,0} [m_\Phi] - \\
& g_1^2 \text{LF}_{1,1,-1} [m_1, \tilde{\mu}] - 2 m_1 s_\gamma \tilde{\mu} c_\gamma g_1^2 \text{LF}_{1,1,0} [m_1, \tilde{\mu}] - 3 g_2^2 \text{LF}_{1,1,-1} [m_2, \tilde{\mu}] - \\
& 6 m_2 s_\gamma \tilde{\mu} c_\gamma g_2^2 \text{LF}_{1,1,0} [m_2, \tilde{\mu}] + 3 \left(c_\gamma \overline{a_d^{\text{pr}}} - s_\gamma \tilde{\mu} \overline{y_d^{\text{pr}}} \right) \left(c_\gamma a_d^{\text{pr}} - s_\gamma \tilde{\mu} y_d^{\text{pr}} \right) \text{LF}_{1,1,0} [m_{\tilde{d}}^{\mathbf{r}}, m_{\tilde{q}}^{\mathbf{p}}] + \\
& \left(c_\gamma \overline{a_e^{\text{pr}}} - s_\gamma \tilde{\mu} \overline{y_e^{\text{pr}}} \right) \left(c_\gamma a_e^{\text{pr}} - s_\gamma \tilde{\mu} y_e^{\text{pr}} \right) \text{LF}_{1,1,0} [m_{\tilde{e}}^{\mathbf{r}}, m_{\tilde{l}}^{\mathbf{p}}] + \\
& 3 \left(s_\gamma \overline{a_u^{\text{pr}}} - \tilde{\mu} c_\gamma \overline{y_u^{\text{pr}}} \right) \left(s_\gamma a_u^{\text{pr}} - \tilde{\mu} c_\gamma y_u^{\text{pr}} \right) \text{LF}_{1,1,0} [m_{\tilde{q}}^{\mathbf{p}}, m_{\tilde{u}}^{\mathbf{r}}] \Big)
\end{aligned}$$