

$M_H \rightarrow$

$$\begin{aligned}
& m_H^2 + \hbar \left(\frac{1}{4} m_H^2 (g_1^2 + 3 g_2^2) (c_Y^2 + s_Y^2) + \frac{1}{2} \sum_{\mathbf{p}} c_{2Y} g_1^2 \text{LF}_{1,0} [m_d^{\mathbf{p}}] - 3 c_Y^2 \overline{y_d^{\text{pr}}} y_d^{\text{pr}} \text{LF}_{1,0} [m_d^{\mathbf{r}}] + \frac{1}{2} \sum_{\mathbf{p}} c_{2Y} \right. \\
& g_1^2 \text{LF}_{1,0} [m_e^{\mathbf{p}}] - c_Y^2 \overline{y_e^{\text{pr}}} y_e^{\text{pr}} \text{LF}_{1,0} [m_e^{\mathbf{r}}] + \left(-c_Y^2 \overline{y_e^{\text{pr}}} y_e^{\text{pr}} - \frac{1}{2} \sum_{\mathbf{p}} c_{2Y} g_1^2 \right) \text{LF}_{1,0} [m_l^{\mathbf{p}}] + \\
& \left(-3 c_Y^2 \overline{y_d^{\text{pr}}} y_d^{\text{pr}} - 3 s_Y^2 \overline{y_u^{\text{pr}}} y_u^{\text{pr}} + \frac{1}{2} \sum_{\mathbf{p}} c_{2Y} g_1^2 \right) \text{LF}_{1,0} [m_q^{\mathbf{p}}] - \sum_{\mathbf{p}} c_{2Y} g_1^2 \text{LF}_{1,0} [m_u^{\mathbf{p}}] - \\
& 3 s_Y^2 \overline{y_u^{\text{pr}}} y_u^{\text{pr}} \text{LF}_{1,0} [m_u^{\mathbf{r}}] + \frac{1}{8} (g_1^2 (1 + 3 c_{4Y}) + 3 g_2^2 (-1 + c_{4Y})) \text{LF}_{1,0} [m_{\Phi}] + \\
& g_1^2 (c_Y^2 + s_Y^2) \text{LF}_{1,1,-1} [m_1, \tilde{\mu}] + 2 m_1 s_Y \tilde{\mu} c_Y g_1^2 \text{LF}_{1,1,0} [m_1, \tilde{\mu}] + \\
& 3 g_2^2 (c_Y^2 + s_Y^2) \text{LF}_{1,1,-1} [m_2, \tilde{\mu}] + 6 m_2 s_Y \tilde{\mu} c_Y g_2^2 \text{LF}_{1,1,0} [m_2, \tilde{\mu}] - \\
& 3 (c_Y \overline{a_d^{\text{pr}}} - s_Y \tilde{\mu} \overline{y_d^{\text{pr}}}) (c_Y a_d^{\text{pr}} - s_Y \tilde{\mu} y_d^{\text{pr}}) \text{LF}_{1,1,0} [m_d^{\mathbf{r}}, m_q^{\mathbf{p}}] - \\
& (c_Y \overline{a_e^{\text{pr}}} - s_Y \tilde{\mu} \overline{y_e^{\text{pr}}}) (c_Y a_e^{\text{pr}} - s_Y \tilde{\mu} y_e^{\text{pr}}) \text{LF}_{1,1,0} [m_e^{\mathbf{r}}, m_l^{\mathbf{p}}] + \\
& m_H^2 (c_Y \overline{a_e^{\text{pr}}} - s_Y \tilde{\mu} \overline{y_e^{\text{pr}}}) (c_Y a_e^{\text{pr}} - s_Y \tilde{\mu} y_e^{\text{pr}}) \text{LF}_{2,1,0} [m_l^{\mathbf{p}}, m_e^{\mathbf{r}}] - \\
& m_H^2 (c_Y \overline{a_e^{\text{pr}}} - s_Y \tilde{\mu} \overline{y_e^{\text{pr}}}) (c_Y a_e^{\text{pr}} - s_Y \tilde{\mu} y_e^{\text{pr}}) \text{LF}_{3,1,-1} [m_l^{\mathbf{p}}, m_e^{\mathbf{r}}] - \\
& m_H^{22} (c_Y \overline{a_e^{\text{pr}}} - s_Y \tilde{\mu} \overline{y_e^{\text{pr}}}) (c_Y a_e^{\text{pr}} - s_Y \tilde{\mu} y_e^{\text{pr}}) \text{LF}_{3,1,0} [m_l^{\mathbf{p}}, m_e^{\mathbf{r}}] + \\
& 3 m_H^{22} (c_Y \overline{a_e^{\text{pr}}} - s_Y \tilde{\mu} \overline{y_e^{\text{pr}}}) (c_Y a_e^{\text{pr}} - s_Y \tilde{\mu} y_e^{\text{pr}}) \text{LF}_{4,1,-1} [m_l^{\mathbf{p}}, m_e^{\mathbf{r}}] - \\
& 2 m_H^{22} (c_Y \overline{a_e^{\text{pr}}} - s_Y \tilde{\mu} \overline{y_e^{\text{pr}}}) (c_Y a_e^{\text{pr}} - s_Y \tilde{\mu} y_e^{\text{pr}}) \text{LF}_{5,1,-2} [m_l^{\mathbf{p}}, m_e^{\mathbf{r}}] + \\
& 3 m_H^2 (c_Y \overline{a_d^{\text{pr}}} - s_Y \tilde{\mu} \overline{y_d^{\text{pr}}}) (c_Y a_d^{\text{pr}} - s_Y \tilde{\mu} y_d^{\text{pr}}) \text{LF}_{2,1,0} [m_q^{\mathbf{p}}, m_d^{\mathbf{r}}] - \\
& 3 m_H^2 (c_Y \overline{a_d^{\text{pr}}} - s_Y \tilde{\mu} \overline{y_d^{\text{pr}}}) (c_Y a_d^{\text{pr}} - s_Y \tilde{\mu} y_d^{\text{pr}}) \text{LF}_{3,1,-1} [m_q^{\mathbf{p}}, m_d^{\mathbf{r}}] - \\
& 3 m_H^{22} (c_Y \overline{a_d^{\text{pr}}} - s_Y \tilde{\mu} \overline{y_d^{\text{pr}}}) (c_Y a_d^{\text{pr}} - s_Y \tilde{\mu} y_d^{\text{pr}}) \text{LF}_{3,1,0} [m_q^{\mathbf{p}}, m_d^{\mathbf{r}}] + \\
& 9 m_H^{22} (c_Y \overline{a_d^{\text{pr}}} - s_Y \tilde{\mu} \overline{y_d^{\text{pr}}}) (c_Y a_d^{\text{pr}} - s_Y \tilde{\mu} y_d^{\text{pr}}) \text{LF}_{4,1,-1} [m_q^{\mathbf{p}}, m_d^{\mathbf{r}}] - \\
& 6 m_H^{22} (c_Y \overline{a_d^{\text{pr}}} - s_Y \tilde{\mu} \overline{y_d^{\text{pr}}}) (c_Y a_d^{\text{pr}} - s_Y \tilde{\mu} y_d^{\text{pr}}) \text{LF}_{5,1,-2} [m_q^{\mathbf{p}}, m_d^{\mathbf{r}}] - \\
& 3 (s_Y \overline{a_u^{\text{pr}}} - \tilde{\mu} c_Y \overline{y_u^{\text{pr}}}) (s_Y a_u^{\text{pr}} - \tilde{\mu} c_Y y_u^{\text{pr}}) \text{LF}_{1,1,0} [m_q^{\mathbf{p}}, m_u^{\mathbf{r}}] + \\
& 3 m_H^2 (s_Y \overline{a_u^{\text{pr}}} - \tilde{\mu} c_Y \overline{y_u^{\text{pr}}}) (s_Y a_u^{\text{pr}} - \tilde{\mu} c_Y y_u^{\text{pr}}) \text{LF}_{2,1,0} [m_u^{\mathbf{r}}, m_q^{\mathbf{p}}] - \\
& 3 m_H^2 (s_Y \overline{a_u^{\text{pr}}} - \tilde{\mu} c_Y \overline{y_u^{\text{pr}}}) (s_Y a_u^{\text{pr}} - \tilde{\mu} c_Y y_u^{\text{pr}}) \text{LF}_{3,1,-1} [m_u^{\mathbf{r}}, m_q^{\mathbf{p}}] - \\
& 3 m_H^{22} (s_Y \overline{a_u^{\text{pr}}} - \tilde{\mu} c_Y \overline{y_u^{\text{pr}}}) (s_Y a_u^{\text{pr}} - \tilde{\mu} c_Y y_u^{\text{pr}}) \text{LF}_{3,1,0} [m_u^{\mathbf{r}}, m_q^{\mathbf{p}}] + \\
& 9 m_H^{22} (s_Y \overline{a_u^{\text{pr}}} - \tilde{\mu} c_Y \overline{y_u^{\text{pr}}}) (s_Y a_u^{\text{pr}} - \tilde{\mu} c_Y y_u^{\text{pr}}) \text{LF}_{4,1,-1} [m_u^{\mathbf{r}}, m_q^{\mathbf{p}}] - \\
& 6 m_H^{22} (s_Y \overline{a_u^{\text{pr}}} - \tilde{\mu} c_Y \overline{y_u^{\text{pr}}}) (s_Y a_u^{\text{pr}} - \tilde{\mu} c_Y y_u^{\text{pr}}) \text{LF}_{5,1,-2} [m_u^{\mathbf{r}}, m_q^{\mathbf{p}}] - \\
& \frac{3}{2} m_H^2 g_1^2 (c_Y^2 + s_Y^2) \text{LF}_{2,1,-1} [\tilde{\mu}, m_1] - 2 m_1 m_H^2 s_Y \tilde{\mu} c_Y g_1^2 \text{LF}_{2,1,0} [\tilde{\mu}, m_1] + \\
& m_H^2 g_1^2 (c_Y^2 + s_Y^2) \text{LF}_{3,1,-2} [\tilde{\mu}, m_1] + 2 m_H^2 g_1^2 (m_H^2 (c_Y^2 + s_Y^2) + m_1 s_Y \tilde{\mu} c_Y) \text{LF}_{3,1,-1} [\tilde{\mu}, m_1] + \\
& 2 m_1 s_Y \tilde{\mu} c_Y g_1^2 m_H^{22} \text{LF}_{3,1,0} [\tilde{\mu}, m_1] - 4 g_1^2 m_H^{22} (c_Y^2 + s_Y^2) \text{LF}_{4,1,-2} [\tilde{\mu}, m_1] - \\
& 6 m_1 s_Y \tilde{\mu} c_Y g_1^2 m_H^{22} \text{LF}_{4,1,-1} [\tilde{\mu}, m_1] + 2 g_1^2 m_H^{22} (c_Y^2 + s_Y^2) \text{LF}_{5,1,-3} [\tilde{\mu}, m_1] + \\
& 4 m_1 s_Y \tilde{\mu} c_Y g_1^2 m_H^{22} \text{LF}_{5,1,-2} [\tilde{\mu}, m_1] - \frac{9}{2} m_H^2 g_2^2 (c_Y^2 + s_Y^2) \text{LF}_{2,1,-1} [\tilde{\mu}, m_2] - \\
& 6 m_2 m_H^2 s_Y \tilde{\mu} c_Y g_2^2 \text{LF}_{2,1,0} [\tilde{\mu}, m_2] + 3 m_H^2 g_2^2 (c_Y^2 + s_Y^2) \text{LF}_{3,1,-2} [\tilde{\mu}, m_2] + \\
& 6 m_H^2 g_2^2 (m_H^2 (c_Y^2 + s_Y^2) + m_2 s_Y \tilde{\mu} c_Y) \text{LF}_{3,1,-1} [\tilde{\mu}, m_2] + 6 m_2 s_Y \tilde{\mu} c_Y g_2^2 m_H^{22} \text{LF}_{3,1,0} [\tilde{\mu}, m_2] - \\
& 12 g_2^2 m_H^{22} (c_Y^2 + s_Y^2) \text{LF}_{4,1,-2} [\tilde{\mu}, m_2] - 18 m_2 s_Y \tilde{\mu} c_Y g_2^2 m_H^{22} \text{LF}_{4,1,-1} [\tilde{\mu}, m_2] + \\
& 6 g_2^2 m_H^{22} (c_Y^2 + s_Y^2) \text{LF}_{5,1,-3} [\tilde{\mu}, m_2] + 12 m_2 s_Y \tilde{\mu} c_Y g_2^2 m_H^{22} \text{LF}_{5,1,-2} [\tilde{\mu}, m_2] \Big)
\end{aligned}$$