

$$C_{\text{HWB}} \rightarrow \tilde{\hbar} \left(-\frac{1}{8} g_1 g_2 (-2 c_\gamma^2 \overline{y_e^{pr}} y_e^{pr} + \sum_p c_{2\gamma} g_2^2) LF_{3,0}[m_l^p] + \frac{1}{8} g_1 g_2 (-2 c_\gamma^2 \overline{y_e^{pr}} y_e^{pr} + \sum_p c_{2\gamma} g_2^2) \right. \\ - LF_{4,-1}[m_l^p] + \frac{1}{8} g_1 g_2 (-2 c_\gamma^2 \overline{y_d^{pr}} y_d^{pr} + 2 s_\gamma^2 \overline{y_u^{pr}} y_u^{pr} + \sum_p c_{2\gamma} g_2^2) LF_{3,0}[m_q^p] - \\ \frac{1}{8} g_1 g_2 (-2 c_\gamma^2 \overline{y_d^{pr}} y_d^{pr} + 2 s_\gamma^2 \overline{y_u^{pr}} y_u^{pr} + \sum_p c_{2\gamma} g_2^2) LF_{4,-1}[m_q^p] + \\ \frac{1}{32} (g_2 g_1^3 (-1 + c_{4\gamma}) + g_1 g_2^3 (3 + c_{4\gamma})) LF_{3,0}[m_\Phi] - \\ \frac{1}{32} g_1 g_2 (g_1^2 (-1 + c_{4\gamma}) + g_2^2 (3 + c_{4\gamma})) LF_{4,-1}[m_\Phi] + \\ \frac{1}{4} g_1 g_2^3 (c_\gamma^2 + s_\gamma^2) LF_{2,2,-1}[m_2, \tilde{\mu}] + g_1 m_2 s_\gamma \tilde{\mu} c_\gamma g_2^3 LF_{2,2,0}[m_2, \tilde{\mu}] + \\ \frac{1}{2} g_1 g_2 (c_\gamma \overline{a_e^{pr}} - s_\gamma \tilde{\mu} \overline{y_e^{pr}}) (c_\gamma a_e^{pr} - s_\gamma \tilde{\mu} y_e^{pr}) LF_{3,1,0}[m_l^p, m_e^r] - \\ g_1 g_2 (c_\gamma \overline{a_e^{pr}} - s_\gamma \tilde{\mu} \overline{y_e^{pr}}) (c_\gamma a_e^{pr} - s_\gamma \tilde{\mu} y_e^{pr}) LF_{4,1,-1}[m_l^p, m_e^r] + \\ \frac{1}{2} g_1 g_2 (c_\gamma \overline{a_e^{pr}} - s_\gamma \tilde{\mu} \overline{y_e^{pr}}) (c_\gamma a_e^{pr} - s_\gamma \tilde{\mu} y_e^{pr}) LF_{5,1,-2}[m_l^p, m_e^r] + \\ \frac{1}{2} g_1 g_2 (c_\gamma \overline{a_d^{pr}} - s_\gamma \tilde{\mu} \overline{y_d^{pr}}) (c_\gamma a_d^{pr} - s_\gamma \tilde{\mu} y_d^{pr}) LF_{3,1,0}[m_q^p, m_d^r] - \\ 2 g_1 g_2 (c_\gamma \overline{a_d^{pr}} - s_\gamma \tilde{\mu} \overline{y_d^{pr}}) (c_\gamma a_d^{pr} - s_\gamma \tilde{\mu} y_d^{pr}) LF_{4,1,-1}[m_q^p, m_d^r] + \\ \frac{3}{2} g_1 g_2 (c_\gamma \overline{a_d^{pr}} - s_\gamma \tilde{\mu} \overline{y_d^{pr}}) (c_\gamma a_d^{pr} - s_\gamma \tilde{\mu} y_d^{pr}) LF_{5,1,-2}[m_q^p, m_d^r] + \\ \frac{1}{4} g_1 g_2 (s_\gamma \overline{a_u^{pr}} - \tilde{\mu} c_\gamma \overline{y_u^{pr}}) (s_\gamma a_u^{pr} - \tilde{\mu} c_\gamma y_u^{pr}) LF_{2,2,0}[m_q^p, m_u^r] + \\ \frac{1}{4} g_1 g_2 (s_\gamma \overline{a_u^{pr}} - \tilde{\mu} c_\gamma \overline{y_u^{pr}}) (s_\gamma a_u^{pr} - \tilde{\mu} c_\gamma y_u^{pr}) LF_{3,1,0}[m_q^p, m_u^r] - \\ \frac{1}{4} g_1 g_2 (s_\gamma \overline{a_u^{pr}} - \tilde{\mu} c_\gamma \overline{y_u^{pr}}) (s_\gamma a_u^{pr} - \tilde{\mu} c_\gamma y_u^{pr}) LF_{3,2,-1}[m_q^p, m_u^r] - \\ \frac{1}{4} g_1 g_2 (s_\gamma \overline{a_u^{pr}} - \tilde{\mu} c_\gamma \overline{y_u^{pr}}) (s_\gamma a_u^{pr} - \tilde{\mu} c_\gamma y_u^{pr}) LF_{4,1,-1}[m_q^p, m_u^r] + \\ \frac{3}{4} g_1 g_2 (s_\gamma \overline{a_u^{pr}} - \tilde{\mu} c_\gamma \overline{y_u^{pr}}) (s_\gamma a_u^{pr} - \tilde{\mu} c_\gamma y_u^{pr}) LF_{3,1,0}[m_u^r, m_q^p] - \\ \frac{1}{4} g_1 g_2 (s_\gamma \overline{a_u^{pr}} - \tilde{\mu} c_\gamma \overline{y_u^{pr}}) (s_\gamma a_u^{pr} - \tilde{\mu} c_\gamma y_u^{pr}) LF_{3,2,-1}[m_u^r, m_q^p] - \\ \frac{9}{4} g_1 g_2 (s_\gamma \overline{a_u^{pr}} - \tilde{\mu} c_\gamma \overline{y_u^{pr}}) (s_\gamma a_u^{pr} - \tilde{\mu} c_\gamma y_u^{pr}) LF_{4,1,-1}[m_u^r, m_q^p] + \\ \frac{3}{2} g_1 g_2 (s_\gamma \overline{a_u^{pr}} - \tilde{\mu} c_\gamma \overline{y_u^{pr}}) (s_\gamma a_u^{pr} - \tilde{\mu} c_\gamma y_u^{pr}) LF_{5,1,-2}[m_u^r, m_q^p] - \\ \frac{1}{4} g_2 g_1^3 (c_\gamma^2 + s_\gamma^2) LF_{3,1,-1}[\tilde{\mu}, m_1] - \frac{1}{2} g_2 m_1 s_\gamma \tilde{\mu} c_\gamma g_1^3 LF_{3,1,0}[\tilde{\mu}, m_1] + \\ \frac{3}{4} g_2 g_1^3 (c_\gamma^2 + s_\gamma^2) LF_{4,1,-2}[\tilde{\mu}, m_1] + g_2 m_1 s_\gamma \tilde{\mu} c_\gamma g_1^3 LF_{4,1,-1}[\tilde{\mu}, m_1] - \\ \frac{1}{2} g_2 g_1^3 (c_\gamma^2 + s_\gamma^2) LF_{5,1,-3}[\tilde{\mu}, m_1] - g_2 m_1 s_\gamma \tilde{\mu} c_\gamma g_1^3 LF_{5,1,-2}[\tilde{\mu}, m_1] - \\ \frac{7}{4} g_1 g_2^3 (c_\gamma^2 + s_\gamma^2) LF_{3,1,-1}[\tilde{\mu}, m_2] - \frac{3}{2} g_1 m_2 s_\gamma \tilde{\mu} c_\gamma g_2^3 LF_{3,1,0}[\tilde{\mu}, m_2] + \\ \frac{13}{4} g_1 g_2^3 (c_\gamma^2 + s_\gamma^2) LF_{4,1,-2}[\tilde{\mu}, m_2] + 5 g_1 m_2 s_\gamma \tilde{\mu} c_\gamma g_2^3 LF_{4,1,-1}[\tilde{\mu}, m_2] - \\ \left. \frac{3}{2} g_1 g_2^3 (c_\gamma^2 + s_\gamma^2) LF_{5,1,-3}[\tilde{\mu}, m_2] - 3 g_1 m_2 s_\gamma \tilde{\mu} c_\gamma g_2^3 LF_{5,1,-2}[\tilde{\mu}, m_2] \right)$$