```
\textit{C}_{\mathsf{HB}} \to \hbar \, \left( \frac{1}{36} \, \sum_{p} \, c_{2\, \curlyvee} \, g_{1}^{\ 4} \, \mathsf{LF}_{3\,,\,0} \left[ \, m_{\widetilde{d}}^{\ p} \, \right] \, - \, \frac{1}{36} \, \sum_{p} \, c_{2\, \curlyvee} \, g_{1}^{\ 4} \, \, \mathsf{LF}_{4\,,\,-1} \left[ \, m_{\widetilde{d}}^{\ p} \, \right] \, - \, \frac{1}{36} \, \sum_{p} \, c_{2\, \curlyvee} \, g_{1}^{\ 4} \, \, \mathsf{LF}_{4\,,\,-1} \left[ \, m_{\widetilde{d}}^{\ p} \, \right] \, - \, \frac{1}{36} \, \sum_{p} \, c_{2\, \curlyvee} \, g_{1}^{\ 4} \, \, \mathsf{LF}_{4\,,\,-1} \left[ \, m_{\widetilde{d}}^{\ p} \, \right] \, - \, \frac{1}{36} \, \sum_{p} \, c_{2\, \curlyvee} \, g_{1}^{\ 4} \, \, \mathsf{LF}_{4\,,\,-1} \left[ \, m_{\widetilde{d}}^{\ p} \, \right] \, - \, \frac{1}{36} \, \sum_{p} \, c_{2\, \curlyvee} \, g_{1}^{\ 4} \, \, \mathsf{LF}_{4\,,\,-1} \left[ \, m_{\widetilde{d}}^{\ p} \, \right] \, - \, \frac{1}{36} \, \sum_{p} \, c_{2\, \curlyvee} \, g_{1}^{\ 4} \, \, \mathsf{LF}_{4\,,\,-1} \left[ \, m_{\widetilde{d}}^{\ p} \, \right] \, - \, \frac{1}{36} \, \sum_{p} \, c_{2\, \curlyvee} \, g_{1}^{\ 4} \, \, \mathsf{LF}_{4\,,\,-1} \left[ \, m_{\widetilde{d}}^{\ p} \, \right] \, - \, \frac{1}{36} \, \sum_{p} \, c_{2\, \curlyvee} \, g_{1}^{\ 4} \, \, \mathsf{LF}_{4\,,\,-1} \left[ \, m_{\widetilde{d}}^{\ p} \, \right] \, - \, \frac{1}{36} \, \sum_{p} \, c_{2\, \curlyvee} \, g_{1}^{\ 4} \, \, \mathsf{LF}_{4\,,\,-1} \left[ \, m_{\widetilde{d}}^{\ p} \, \right] \, - \, \frac{1}{36} \, \sum_{p} \, c_{2\, \curlyvee} \, g_{1}^{\ 4} \, \, \mathsf{LF}_{4\,,\,-1} \left[ \, m_{\widetilde{d}}^{\ p} \, \right] \, - \, \frac{1}{36} \, \sum_{p} \, c_{2\, \curlyvee} \, g_{1}^{\ p} \, \, \mathsf{LF}_{4\,,\,-1} \left[ \, m_{\widetilde{d}}^{\ p} \, \right] \, - \, \frac{1}{36} \, \sum_{p} \, c_{2\, \curlyvee} \, g_{1}^{\ p} \, \, \mathsf{LF}_{4\,,\,-1} \left[ \, m_{\widetilde{d}}^{\ p} \, \right] \, - \, \frac{1}{36} \, \sum_{p} \, c_{2\, \curlyvee} \, g_{1}^{\ p} \, \, \mathsf{LF}_{4\,,\,-1} \left[ \, m_{\widetilde{d}}^{\ p} \, \right] \, - \, \frac{1}{36} \, \sum_{p} \, c_{2\, \curlyvee} \, g_{1}^{\ p} \, \, \mathsf{LF}_{4\,,\,-1} \left[ \, m_{\widetilde{d}}^{\ p} \, \right] \, - \, \frac{1}{36} \, \sum_{p} \, c_{2\, \mathclap} \, \mathsf{LF}_{4\,,\,-1} \left[ \, m_{\widetilde{d}}^{\ p} \, \right] \, + \, \frac{1}{36} \, \sum_{p} \, c_{2\, \mathclap} \, \mathsf{LF}_{4\,,\,-1} \left[ \, m_{\widetilde{d}}^{\ p} \, \right] \, + \, \frac{1}{36} \, \sum_{p} \, c_{2\, \mathclap} \, \mathsf{LF}_{4\,,\,-1} \left[ \, m_{\widetilde{d}}^{\ p} \, \right] \, + \, \frac{1}{36} \, \sum_{p} \, c_{2\, \mathclap} \, \mathsf{LF}_{4\,,\,-1} \left[ \, m_{\widetilde{d}}^{\ p} \, \right] \, + \, \frac{1}{36} \, \sum_{p} \, c_{2\, \mathclap} \, \mathsf{LF}_{4\,,\,-1} \left[ \, m_{\widetilde{d}}^{\ p} \, \right] \, + \, \frac{1}{36} \, \sum_{p} \, c_{2\, \mathclap} \, \mathsf{LF}_{4\,,\,-1} \left[ \, m_{\widetilde{d}}^{\ p} \, \right] \, + \, \frac{1}{36} \, \sum_{p} \, c_{2\, \mathclap} \, \mathsf{LF}_{4\,,\,-1} \left[ \, m_{\widetilde{d}}^{\ p} \, \right] \, + \, \frac{1}{36} \, \sum_{p} \, c_{2\, \mathclap} \, \mathsf{LF}_{4\,,\,-1} \left[ \, m_{\widetilde{d}}^{\ p} \, \right] \, + \, \frac{1}{36} \, \sum_{p} \, c_{2\, \mathclap} \, \mathsf{LF}_{
                                                                                                                                                                                            g_{1}{}^{2}\;c_{\gamma}{}^{2}\;\overline{y_{d}}{}^{pr}\;y_{d}{}^{pr}\;\mathsf{LF_{3,0}}\left[\,m_{\tilde{d}}^{\;\;r}\,\right]\,+\,\frac{1}{6}\;g_{1}{}^{2}\;c_{\gamma}{}^{2}\;\overline{y_{d}}{}^{pr}\;y_{d}{}^{pr}\;\mathsf{LF_{4,-1}}\!\left[\,m_{\tilde{d}}^{\;\;r}\,\right]\,+\,\frac{1}{6}\;g_{1}{}^{2}\;c_{\gamma}{}^{2}\;\overline{y_{d}}{}^{pr}\;y_{d}{}^{pr}\;\mathsf{LF_{4,-1}}\!\left[\,m_{\tilde{d}}^{\;\;r}\,\right]\,+\,\frac{1}{6}\;g_{1}{}^{2}\;c_{\gamma}{}^{2}\;\overline{y_{d}}{}^{pr}\;y_{d}{}^{pr}\;\mathsf{LF_{4,-1}}\!\left[\,m_{\tilde{d}}^{\;\;r}\,\right]\,+\,\frac{1}{6}\;g_{1}{}^{2}\;c_{\gamma}{}^{2}\;\overline{y_{d}}{}^{pr}\;y_{d}{}^{pr}\;\mathsf{LF_{4,-1}}\!\left[\,m_{\tilde{d}}^{\;\;r}\,\right]\,+\,\frac{1}{6}\;g_{1}{}^{2}\;c_{\gamma}{}^{2}\;\overline{y_{d}}{}^{pr}\;y_{d}{}^{pr}\;\mathsf{LF_{4,-1}}\!\left[\,m_{\tilde{d}}^{\;\;r}\,\right]\,+\,\frac{1}{6}\;g_{1}{}^{2}\;c_{\gamma}{}^{2}\;\overline{y_{d}}{}^{pr}\;y_{d}{}^{pr}\;\mathsf{LF_{4,-1}}\!\left[\,m_{\tilde{d}}^{\;\;r}\,\right]\,+\,\frac{1}{6}\;g_{1}{}^{2}\;c_{\gamma}{}^{2}\;\overline{y_{d}}{}^{pr}\;y_{d}{}^{pr}\;\mathsf{LF_{4,-1}}\!\left[\,m_{\tilde{d}}^{\;\;r}\,\right]\,+\,\frac{1}{6}\;g_{1}{}^{2}\;c_{\gamma}{}^{2}\;\overline{y_{d}}{}^{pr}\;y_{d}{}^{pr}\;\mathsf{LF_{4,-1}}\!\left[\,m_{\tilde{d}}^{\;\;r}\,\right]\,+\,\frac{1}{6}\;g_{1}{}^{2}\;c_{\gamma}{}^{2}\;\overline{y_{d}}{}^{pr}\;y_{d}{}^{pr}\;\mathsf{LF_{4,-1}}\!\left[\,m_{\tilde{d}}^{\;\;r}\,\right]\,+\,\frac{1}{6}\;g_{1}{}^{2}\;c_{\gamma}{}^{2}\;\overline{y_{d}}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{pr}\;y_{d}{}^{
                                                                                                                                                                                                 \sum_{p} c_{2\,\gamma} \, g_{1}^{\ 4} \, \mathsf{LF}_{3,0} \big[ \, \mathsf{m}_{\tilde{e}}^{\ p} \, \big] \, - \, \frac{1}{4} \, \sum_{p} c_{2\,\gamma} \, g_{1}^{\ 4} \, \mathsf{LF}_{4,-1} \big[ \, \mathsf{m}_{\tilde{e}}^{\ p} \, \big] \, - \, \frac{1}{2} \, g_{1}^{\ 2} \, c_{\gamma}^{\ 2} \, \, \overline{y_{e}}^{pr} \, y_{e}^{pr} \, \, \mathsf{LF}_{3,0} \big[ \, \mathsf{m}_{\tilde{e}}^{\ r} \, \big] \, + \, \frac{1}{2} \, \, \mathsf{m}_{\tilde{e}}^{\ p} \, \big[ \, \mathsf{m}_{\tilde{e}}^{\ p} \, \big] \, + \, \frac{1}{2} \, \, \mathsf{m}_{\tilde{e}}^{\ p} \, \big[ \, \mathsf{m}_{\tilde{e}}^{\ p} \, \big] \, + \, \frac{1}{2} \, \, \mathsf{m}_{\tilde{e}}^{\ p} \, \big[ \, \mathsf{m}_{\tilde{e}}^{\ p} \, \big] \, + \, \frac{1}{2} \, \, \mathsf{m}_{\tilde{e}}^{\ p} \, \big[ \, \mathsf{m}_{\tilde{e}}^{\ p} \, \big] \, + \, \frac{1}{2} \, \, \mathsf{m}_{\tilde{e}}^{\ p} \, \big[ \, \mathsf{m}_{\tilde{e}}^{\ p} \, \big] \, + \, \frac{1}{2} \, \, \mathsf{m}_{\tilde{e}}^{\ p} \, \big[ \, \mathsf{m}_{\tilde{e}}^{\ p} \, \big] \, + \, \frac{1}{2} \, \, \mathsf{m}_{\tilde{e}}^{\ p} \, \big[ \, \mathsf{m}_{\tilde{e}}^{\ p} \, \big] \, + \, \frac{1}{2} \, \, \mathsf{m}_{\tilde{e}}^{\ p} \, \big[ \, \mathsf{m}_{\tilde{e}}^{\ p} \, \big] \, + \, \frac{1}{2} \, \, \mathsf{m}_{\tilde{e}}^{\ p} \, \big[ \, \mathsf{m}_{\tilde{e}}^{\ p} \, \big] \, + \, \frac{1}{2} \, \, \mathsf{m}_{\tilde{e}}^{\ p} \, \big[ \, \mathsf{m}_{\tilde{e}}^{\ p} \, \big] \, + \, \frac{1}{2} \, \, \mathsf{m}_{\tilde{e}}^{\ p} \, \big[ \, \mathsf{m}_{\tilde{e}}^{\ p} \, \big] \, + \, \frac{1}{2} \, \, \mathsf{m}_{\tilde{e}}^{\ p} \, \big[ \, \mathsf{m}_{\tilde{e}}^{\ p} \, \big] \, + \, \frac{1}{2} \, \, \mathsf{m}_{\tilde{e}}^{\ p} \, \big[ \, \mathsf{m}_{\tilde{e}}^{\ p} \, \big] \, + \, \frac{1}{2} \, \, \mathsf{m}_{\tilde{e}}^{\ p} \, \big[ \, \mathsf{m}_{\tilde{e}}^{\ p} \, \big] \, + \, \frac{1}{2} \, \, \mathsf{m}_{\tilde{e}}^{\ p} \, \big[ \, \mathsf{m}_{\tilde{e}}^{\ p} \, \big] \, + \, \frac{1}{2} \, \, \mathsf{m}_{\tilde{e}}^{\ p} \, \big[ \, \mathsf{m}_{\tilde{e}}^{\ p} \, \big] \, + \, \frac{1}{2} \, \, \mathsf{m}_{\tilde{e}}^{\ p} \, \big[ \, \mathsf{m}_{\tilde{e}}^{\ p} \, \big] \, + \, \frac{1}{2} \, \, \mathsf{m}_{\tilde{e}}^{\ p} \, \big[ \, \mathsf{m}_{\tilde{e}}^{\ p} \, \big] \, + \, \frac{1}{2} \, \, \mathsf{m}_{\tilde{e}}^{\ p} \, \big[ \, \mathsf{m}_{\tilde{e}}^{\ p} \, \big] \, + \, \frac{1}{2} \, \, \mathsf{m}_{\tilde{e}}^{\ p} \, \big[ \, \mathsf{m}_{\tilde{e}}^{\ p} \, \big] \, + \, \frac{1}{2} \, \, \mathsf{m}_{\tilde{e}}^{\ p} \, \big[ \, \mathsf{m}_{\tilde{e}}^{\ p} \, \big] \, + \, \frac{1}{2} \, \, \mathsf{m}_{\tilde{e}}^{\ p} \, \big[ \, \mathsf{m}_{\tilde{e}}^{\ p} \, \big] \, + \, \frac{1}{2} \, \, \mathsf{m}_{\tilde{e}}^{\ p} \, \big[ \, \mathsf{m}_{\tilde{e}}^{\ p} \, \big] \, + \, \frac{1}{2} \, \, \mathsf{m}_{\tilde{e}}^{\ p} \, \big[ \, \mathsf{m}_{\tilde{e}}^{\ p} \, \big] \, + \, \frac{1}{2} \, \, \mathsf{m}_{\tilde{e}}^{\ p} \, \big[ \, \mathsf{m}_{\tilde{e}}^{\ p} \, \big] \, + \, \frac{1}{2} \, \, \mathsf{m}_{\tilde{e}}^{\ p} \, \big[ \, \mathsf{m}_{\tilde{e}}^{\ p} \, \big] \, + \, \frac{1}{2} \, \, \mathsf{m}_{\tilde{e}}^{\ p} \, \big[ \, \mathsf{m}_{\tilde{e}}
                                                                                                                                                         \frac{1}{2} \; g_{1}^{\; 2} \; c_{\gamma}^{\; 2} \; \overline{y_{e}}^{pr} \; y_{e}^{\; pr} \; \mathsf{LF_{4,-1}} \left[ \, m_{\widetilde{e}}^{\; r} \, \right] \; - \; \frac{1}{16} \; g_{1}^{\; 2} \; \left( 2 \; c_{\gamma}^{\; 2} \; \overline{y_{e}}^{pr} \; y_{e}^{\; pr} \; + \sum_{p} c_{2 \; \gamma} \; g_{1}^{\; 2} \right) \; \mathsf{LF_{3,0}} \left[ \, m_{\widetilde{l}}^{\; p} \, \right] \; + \; \frac{1}{16} \; g_{1}^{\; 2} \; \left( 2 \; c_{\gamma}^{\; 2} \; \overline{y_{e}}^{pr} \; y_{e}^{\; pr} \; + \sum_{p} c_{2 \; \gamma} \; g_{1}^{\; 2} \right) \; \mathsf{LF_{3,0}} \left[ \, m_{\widetilde{l}}^{\; p} \, \right] \; + \; \frac{1}{16} \; g_{1}^{\; 2} \; \left( 2 \; c_{\gamma}^{\; 2} \; \overline{y_{e}}^{pr} \; y_{e}^{\; pr} \; + \sum_{p} c_{2 \; \gamma} \; g_{1}^{\; 2} \right) \; \mathsf{LF_{3,0}} \left[ \, m_{\widetilde{l}}^{\; p} \, \right] \; + \; \frac{1}{16} \; g_{1}^{\; 2} \; \left( 2 \; c_{\gamma}^{\; 2} \; \overline{y_{e}}^{pr} \; y_{e}^{\; pr} \; + \sum_{p} c_{2 \; \gamma} \; g_{1}^{\; 2} \right) \; \mathsf{LF_{3,0}} \left[ \, m_{\widetilde{l}}^{\; p} \, \right] \; + \; \frac{1}{16} \; g_{1}^{\; 2} \; \left( 2 \; c_{\gamma}^{\; 2} \; \overline{y_{e}}^{pr} \; y_{e}^{\; pr} \; + \sum_{p} c_{2 \; \gamma} \; g_{1}^{\; 2} \right) \; \mathsf{LF_{3,0}} \left[ \, m_{\widetilde{l}}^{\; p} \, \right] \; + \; \frac{1}{16} \; g_{1}^{\; 2} \; \left( 2 \; c_{\gamma}^{\; 2} \; \overline{y_{e}}^{pr} \; y_{e}^{\; pr} \; + \sum_{p} c_{2 \; \gamma} \; g_{1}^{\; 2} \right) \; \mathsf{LF_{3,0}} \left[ \, m_{\widetilde{l}}^{\; p} \; \right] \; + \; \frac{1}{16} \; g_{1}^{\; p} \; + \; \frac{1
                                                                                                                                                              \frac{1}{16} \left( 2 g_1^2 c_{\gamma}^2 \overline{y_e}^{pr} y_e^{pr} + \sum_{p} c_{2\gamma} g_1^4 \right) LF_{4,-1} \left[ m_{\tilde{l}}^{-p} \right] +
                                                                                                                                                              \frac{1}{144} g_1^2 \left(-6 c_{\gamma}^2 \overline{y_d}^{pr} y_d^{pr} - 6 s_{\gamma}^2 \overline{y_u}^{pr} y_u^{pr} + \sum_{p} c_{2\gamma} g_1^2 \right) LF_{3,0} \left[ m_{\tilde{q}}^{p} \right] +
                                                                                                                                                         \frac{1}{144} \ g_1{}^2 \ \left( 6 \ c_{\gamma}{}^2 \ \overline{y_d}^{pr} \ y_d{}^{pr} + 6 \ s_{\gamma}{}^2 \ \overline{y_u}^{pr} \ y_u{}^{pr} - \sum_p c_{2\,\gamma} \ g_1{}^2 \right) \ LF_{4,-1} \left[ \ m_{\tilde{q}}^{-p} \ \right] - \left[ \ m_{\tilde{q}}^{-p} \ \right] 
                                                                                                                                                         \frac{2}{9} \, \sum_{p} \, c_{2\,\gamma} \, g_{1}^{\ 4} \, LF_{3,\,0} \left[\, m_{\tilde{u}}^{\ p} \,\right] \, + \, \frac{2}{9} \, \sum_{p} \, c_{2\,\gamma} \, g_{1}^{\ 4} \, LF_{4,\,-1} \left[\, m_{\tilde{u}}^{\ p} \,\right] \, - \, \frac{2}{3} \, g_{1}^{\ 2} \, s_{\gamma}^{\ 2} \, \overline{y_{u}}^{pr} \, y_{u}^{\ pr} \, LF_{3,\,0} \left[\, m_{\tilde{u}}^{\ u} \, \right] \, + \, \frac{2}{9} \, \sum_{p} \, c_{2\,\gamma} \, g_{1}^{\ 4} \, LF_{4,\,-1} \left[\, m_{\tilde{u}}^{\ p} \,\right] \, - \, \frac{2}{3} \, g_{1}^{\ 2} \, s_{\gamma}^{\ 2} \, \overline{y_{u}}^{pr} \, y_{u}^{\ pr} \, LF_{3,\,0} \left[\, m_{\tilde{u}}^{\ u} \, \right] \, + \, \frac{2}{9} \, \sum_{p} \, c_{2\,\gamma} \, g_{1}^{\ 4} \, LF_{4,\,-1} \left[\, m_{\tilde{u}}^{\ p} \,\right] \, - \, \frac{2}{3} \, g_{1}^{\ 2} \, s_{\gamma}^{\ 2} \, \overline{y_{u}}^{pr} \, y_{u}^{\ pr} \, LF_{3,\,0} \left[\, m_{\tilde{u}}^{\ u} \,\right] \, + \, \frac{2}{9} \, \sum_{p} \, c_{2\,\gamma} \, g_{1}^{\ 4} \, LF_{4,\,-1} \left[\, m_{\tilde{u}}^{\ p} \,\right] \, - \, \frac{2}{3} \, g_{1}^{\ 2} \, s_{\gamma}^{\ 2} \, \overline{y_{u}}^{pr} \, y_{u}^{\ pr} \, LF_{3,\,0} \left[\, m_{\tilde{u}}^{\ u} \,\right] \, + \, \frac{2}{9} \, \sum_{p} \, c_{2\,\gamma} \, g_{1}^{\ 4} \, LF_{4,\,-1} \left[\, m_{\tilde{u}}^{\ p} \,\right] \, - \, \frac{2}{3} \, g_{1}^{\ 2} \, s_{\gamma}^{\ 2} \, \overline{y_{u}}^{pr} \, y_{u}^{\ pr} \, LF_{3,\,0} \left[\, m_{\tilde{u}}^{\ p} \,\right] \, + \, \frac{2}{9} \, \sum_{p} \, c_{2\,\gamma} \, g_{1}^{\ 4} \, LF_{4,\,-1} \left[\, m_{\tilde{u}}^{\ p} \,\right] \, - \, \frac{2}{3} \, g_{1}^{\ 2} \, g_{1}^{\ p} \, s_{\gamma}^{\ 2} \, \overline{y_{u}}^{pr} \, y_{u}^{\ pr} \, LF_{3,\,0} \left[\, m_{\tilde{u}}^{\ p} \,\right] \, + \, \frac{2}{9} \, \sum_{p} \, c_{2\,\gamma} \, g_{1}^{\ p} \, s_{\gamma}^{\ 
                                                                                                                                                         \frac{2}{3} \; g_{1}^{\; 2} \; s_{\gamma}^{\; 2} \; \overline{y_{u}}^{pr} \; y_{u}^{\; pr} \; \mathsf{LF_{4,-1}} \Big[ \, m_{\tilde{u}}^{\; r} \, \Big] \; + \; \frac{1}{64} \; \Big( g_{1}^{\; 4} \; \left( 1 + 3 \; c_{4 \; \gamma} \right) \; + \; 3 \; g_{1}^{\; 2} \; g_{2}^{\; 2} \; \left( -1 + c_{4 \; \gamma} \right) \, \Big) \; \; \mathsf{LF_{3,0}} \left[ \, m_{\Phi} \, \right] \; - \; \mathsf{LF_{4,-1}} \left[ \, m_{\tilde{u}}^{\; r} \, \right] \; + \; \mathsf{LF_{4,-1}} \left[ \, m_{\tilde{u}}^{\; r} \, \right] \; + \; \mathsf{LF_{4,-1}} \left[ \, m_{\tilde{u}}^{\; r} \, \right] \; + \; \mathsf{LF_{4,-1}} \left[ \, m_{\tilde{u}}^{\; r} \, \right] \; + \; \mathsf{LF_{4,-1}} \left[ \, m_{\tilde{u}}^{\; r} \, \right] \; + \; \mathsf{LF_{4,-1}} \left[ \, m_{\tilde{u}}^{\; r} \, \right] \; + \; \mathsf{LF_{4,-1}} \left[ \, m_{\tilde{u}}^{\; r} \, \right] \; + \; \mathsf{LF_{4,-1}} \left[ \, m_{\tilde{u}}^{\; r} \, \right] \; + \; \mathsf{LF_{4,-1}} \left[ \, m_{\tilde{u}}^{\; r} \, \right] \; + \; \mathsf{LF_{4,-1}} \left[ \, m_{\tilde{u}}^{\; r} \, \right] \; + \; \mathsf{LF_{4,-1}} \left[ \, m_{\tilde{u}}^{\; r} \, \right] \; + \; \mathsf{LF_{4,-1}} \left[ \, m_{\tilde{u}}^{\; r} \, \right] \; + \; \mathsf{LF_{4,-1}} \left[ \, m_{\tilde{u}}^{\; r} \, \right] \; + \; \mathsf{LF_{4,-1}} \left[ \, m_{\tilde{u}}^{\; r} \, \right] \; + \; \mathsf{LF_{4,-1}} \left[ \, m_{\tilde{u}}^{\; r} \, \right] \; + \; \mathsf{LF_{4,-1}} \left[ \, m_{\tilde{u}}^{\; r} \, \right] \; + \; \mathsf{LF_{4,-1}} \left[ \, m_{\tilde{u}}^{\; r} \, \right] \; + \; \mathsf{LF_{4,-1}} \left[ \, m_{\tilde{u}}^{\; r} \, \right] \; + \; \mathsf{LF_{4,-1}} \left[ \, m_{\tilde{u}}^{\; r} \, \right] \; + \; \mathsf{LF_{4,-1}} \left[ \, m_{\tilde{u}}^{\; r} \, \right] \; + \; \mathsf{LF_{4,-1}} \left[ \, m_{\tilde{u}}^{\; r} \, \right] \; + \; \mathsf{LF_{4,-1}} \left[ \, m_{\tilde{u}}^{\; r} \, \right] \; + \; \mathsf{LF_{4,-1}} \left[ \, m_{\tilde{u}}^{\; r} \, \right] \; + \; \mathsf{LF_{4,-1}} \left[ \, m_{\tilde{u}}^{\; r} \, \right] \; + \; \mathsf{LF_{4,-1}} \left[ \, m_{\tilde{u}}^{\; r} \, \right] \; + \; \mathsf{LF_{4,-1}} \left[ \, m_{\tilde{u}}^{\; r} \, \right] \; + \; \mathsf{LF_{4,-1}} \left[ \, m_{\tilde{u}}^{\; r} \, \right] \; + \; \mathsf{LF_{4,-1}} \left[ \, m_{\tilde{u}}^{\; r} \, \right] \; + \; \mathsf{LF_{4,-1}} \left[ \, m_{\tilde{u}}^{\; r} \, \right] \; + \; \mathsf{LF_{4,-1}} \left[ \, m_{\tilde{u}}^{\; r} \, \right] \; + \; \mathsf{LF_{4,-1}} \left[ \, m_{\tilde{u}}^{\; r} \, \right] \; + \; \mathsf{LF_{4,-1}} \left[ \, m_{\tilde{u}}^{\; r} \, \right] \; + \; \mathsf{LF_{4,-1}} \left[ \, m_{\tilde{u}}^{\; r} \, \right] \; + \; \mathsf{LF_{4,-1}} \left[ \, m_{\tilde{u}}^{\; r} \, \right] \; + \; \mathsf{LF_{4,-1}} \left[ \, m_{\tilde{u}}^{\; r} \, \right] \; + \; \mathsf{LF_{4,-1}} \left[ \, m_{\tilde{u}}^{\; r} \, \right] \; + \; \mathsf{LF_{4,-1}} \left[ \, m_{\tilde{u}}^{\; r} \, \right] \; + \; \mathsf{LF_{4,-1}} \left[ \, m_{\tilde{u}}^{\; r} \, \right] \; + \; \mathsf{LF_{4,-1}} \left[ \, m_{\tilde{u}}^{\; r} \, \right] \; + \; \mathsf{LF_{4,-1}} \left[ \, m_{\tilde{u}}^{\; r} \, \right] \; + \; \mathsf{LF_{4,-1}} \left[ \,
                                                                                                                                                              \frac{1}{64} g_1^2 (g_1^2 (1+3 c_{4\gamma}) + 3 g_2^2 (-1+c_{4\gamma})) LF_{4,-1}[m_{\Phi}] -
                                                                                                                                                                                                       g_{1}^{2}\left(c_{\gamma}\;\overline{a_{d}}^{pr}-s_{\gamma}\;\widetilde{\mu}\;\overline{y_{d}}^{pr}\right)\;\left(c_{\gamma}\;a_{d}^{\;pr}-s_{\gamma}\;\widetilde{\mu}\;y_{d}^{\;pr}\right)\;\mathsf{LF}_{2,2,0}\left[\,\mathsf{m_{\tilde{d}}}^{\;r},\;\mathsf{m_{\tilde{q}}}^{\;p}\,\right]\;-\,\mathsf{LF}_{2,2,0}\left[\,\mathsf{m_{\tilde{d}}}^{\;r},\;\mathsf{m_{\tilde{q}}}^{\;p}\,\right]\;-\,\mathsf{LF}_{2,2,0}\left[\,\mathsf{m_{\tilde{d}}}^{\;r},\;\mathsf{m_{\tilde{q}}}^{\;p}\,\right]\;-\,\mathsf{LF}_{2,2,0}\left[\,\mathsf{m_{\tilde{d}}}^{\;r},\;\mathsf{m_{\tilde{q}}}^{\;p}\,\right]\;-\,\mathsf{LF}_{2,2,0}\left[\,\mathsf{m_{\tilde{d}}}^{\;r},\;\mathsf{m_{\tilde{q}}}^{\;p}\,\right]\;-\,\mathsf{LF}_{2,2,0}\left[\,\mathsf{m_{\tilde{d}}}^{\;r},\;\mathsf{m_{\tilde{q}}}^{\;p}\,\right]\;-\,\mathsf{LF}_{2,2,0}\left[\,\mathsf{m_{\tilde{d}}}^{\;r},\;\mathsf{m_{\tilde{q}}}^{\;p}\,\right]\;-\,\mathsf{LF}_{2,2,0}\left[\,\mathsf{m_{\tilde{d}}}^{\;r},\;\mathsf{m_{\tilde{q}}}^{\;p}\,\right]\;-\,\mathsf{LF}_{2,2,0}\left[\,\mathsf{m_{\tilde{d}}}^{\;r},\;\mathsf{m_{\tilde{q}}}^{\;p}\,\right]\;-\,\mathsf{LF}_{2,2,0}\left[\,\mathsf{m_{\tilde{d}}}^{\;r},\;\mathsf{m_{\tilde{q}}}^{\;p}\,\right]\;-\,\mathsf{LF}_{2,2,0}\left[\,\mathsf{m_{\tilde{d}}}^{\;r},\;\mathsf{m_{\tilde{q}}}^{\;p}\,\right]\;-\,\mathsf{LF}_{2,2,0}\left[\,\mathsf{m_{\tilde{d}}}^{\;r},\;\mathsf{m_{\tilde{q}}}^{\;p}\,\right]\;-\,\mathsf{LF}_{2,2,0}\left[\,\mathsf{m_{\tilde{d}}}^{\;r},\;\mathsf{m_{\tilde{q}}}^{\;p}\,\right]\;-\,\mathsf{LF}_{2,2,0}\left[\,\mathsf{m_{\tilde{d}}}^{\;r},\;\mathsf{m_{\tilde{q}}}^{\;p}\,\right]\;-\,\mathsf{LF}_{2,2,0}\left[\,\mathsf{m_{\tilde{d}}}^{\;r},\;\mathsf{m_{\tilde{q}}}^{\;p}\,\right]\;-\,\mathsf{LF}_{2,2,0}\left[\,\mathsf{m_{\tilde{d}}}^{\;r},\;\mathsf{m_{\tilde{q}}}^{\;p}\,\right]\;-\,\mathsf{LF}_{2,2,0}\left[\,\mathsf{m_{\tilde{d}}}^{\;r},\;\mathsf{m_{\tilde{q}}}^{\;p}\,\right]\;-\,\mathsf{LF}_{2,2,0}\left[\,\mathsf{m_{\tilde{d}}}^{\;r},\;\mathsf{m_{\tilde{q}}}^{\;p}\,\right]\;-\,\mathsf{LF}_{2,2,0}\left[\,\mathsf{m_{\tilde{d}}}^{\;r},\;\mathsf{m_{\tilde{q}}}^{\;p}\,\right]\;-\,\mathsf{LF}_{2,2,0}\left[\,\mathsf{m_{\tilde{d}}}^{\;r},\;\mathsf{m_{\tilde{q}}}^{\;p}\,\right]\;-\,\mathsf{LF}_{2,2,0}\left[\,\mathsf{m_{\tilde{d}}}^{\;r},\;\mathsf{m_{\tilde{q}}}^{\;p}\,\right]\;-\,\mathsf{LF}_{2,2,0}\left[\,\mathsf{m_{\tilde{d}}}^{\;r},\;\mathsf{m_{\tilde{q}}}^{\;p}\,\right]\;-\,\mathsf{LF}_{2,2,0}\left[\,\mathsf{m_{\tilde{d}}}^{\;r},\;\mathsf{m_{\tilde{q}}}^{\;p}\,\right]\;-\,\mathsf{LF}_{2,2,0}\left[\,\mathsf{m_{\tilde{d}}}^{\;r},\;\mathsf{m_{\tilde{q}}}^{\;p}\,\right]\;-\,\mathsf{LF}_{2,2,0}\left[\,\mathsf{m_{\tilde{d}}}^{\;r},\;\mathsf{m_{\tilde{d}}}^{\;p}\,\right]\;-\,\mathsf{LF}_{2,2,0}\left[\,\mathsf{m_{\tilde{d}}}^{\;r},\;\mathsf{m_{\tilde{d}}}^{\;p}\,\right]\;-\,\mathsf{LF}_{2,2,0}\left[\,\mathsf{m_{\tilde{d}}}^{\;r},\;\mathsf{m_{\tilde{d}}}^{\;p}\,\right]\;-\,\mathsf{LF}_{2,2,0}\left[\,\mathsf{m_{\tilde{d}}}^{\;r},\;\mathsf{m_{\tilde{d}}}^{\;p}\,\right]\;-\,\mathsf{LF}_{2,2,0}\left[\,\mathsf{m_{\tilde{d}}}^{\;r},\;\mathsf{m_{\tilde{d}}}^{\;p}\,\right]\;-\,\mathsf{LF}_{2,2,0}\left[\,\mathsf{m_{\tilde{d}}}^{\;r},\;\mathsf{m_{\tilde{d}}}^{\;p}\,\right]\;-\,\mathsf{LF}_{2,2,0}\left[\,\mathsf{m_{\tilde{d}}}^{\;r},\;\mathsf{m_{\tilde{d}}}^{\;p}\,\right]\;-\,\mathsf{LF}_{2,2,0}\left[\,\mathsf{m_{\tilde{d}}}^{\;r},\;\mathsf{m_{\tilde{d}}}^{\;p}\,\right]\;-\,\mathsf{LF}_{2,2,0}\left[\,\mathsf{m_{\tilde{d}}}^{\;r},\;\mathsf{m_{\tilde{d}}}^{\;p}\,\right]\;-\,\mathsf{LF}_{2,2,0}\left[\,\mathsf{m_{\tilde{d}}}^{\;r},\;\mathsf{m_{\tilde{d}}}^{\;p}\,\right]\;-\,\mathsf{LF}_{2,2,0}\left[\,\mathsf{m_{\tilde{d}}}^{\;r},\;\mathsf{m
                                                                                                                                                                                                       g_{1}^{2} \left( c_{\gamma} \; \overline{a_{d}}^{\text{pr}} - s_{\gamma} \, \widetilde{\mu} \; \overline{y_{d}}^{\text{pr}} \right) \; \left( c_{\gamma} \; a_{d}^{\text{pr}} - s_{\gamma} \, \widetilde{\mu} \; y_{d}^{\text{pr}} \right) \; \text{LF}_{3,1,0} \left[ \, m_{\tilde{d}}^{\text{ r}} \, , \; m_{\tilde{q}}^{\text{ p}} \, \right] \; + \; \left[ \, m_{\tilde{d}}^{\text{ r}} \, , \; m_{\tilde{q}}^{\text{ p}} \, \right] \; + \; \left[ \, m_{\tilde{d}}^{\text{ r}} \, , \; m_{\tilde{d}}^{\text{ pr}} \, \right] \; + \; \left[ \, m_{\tilde{d}}^{\text{ r}} \, , \; m_{\tilde{d}}^{\text{ pr}} \, \right] \; + \; \left[ \, m_{\tilde{d}}^{\text{ r}} \, , \; m_{\tilde{d}}^{\text{ pr}} \, \right] \; + \; \left[ \, m_{\tilde{d}}^{\text{ r}} \, , \; m_{\tilde{d}}^{\text{ pr}} \, \right] \; + \; \left[ \, m_{\tilde{d}}^{\text{ r}} \, , \; m_{\tilde{d}}^{\text{ pr}} \, \right] \; + \; \left[ \, m_{\tilde{d}}^{\text{ r}} \, , \; m_{\tilde{d}}^{\text{ pr}} \, \right] \; + \; \left[ \, m_{\tilde{d}}^{\text{ r}} \, , \; m_{\tilde{d}}^{\text{ pr}} \, \right] \; + \; \left[ \, m_{\tilde{d}}^{\text{ r}} \, , \; m_{\tilde{d}}^{\text{ pr}} \, \right] \; + \; \left[ \, m_{\tilde{d}}^{\text{ r}} \, , \; m_{\tilde{d}}^{\text{ pr}} \, \right] \; + \; \left[ \, m_{\tilde{d}}^{\text{ r}} \, , \; m_{\tilde{d}}^{\text{ pr}} \, \right] \; + \; \left[ \, m_{\tilde{d}}^{\text{ r}} \, , \; m_{\tilde{d}}^{\text{ pr}} \, \right] \; + \; \left[ \, m_{\tilde{d}}^{\text{ r}} \, , \; m_{\tilde{d}}^{\text{ pr}} \, \right] \; + \; \left[ \, m_{\tilde{d}}^{\text{ r}} \, , \; m_{\tilde{d}}^{\text{ pr}} \, \right] \; + \; \left[ \, m_{\tilde{d}}^{\text{ r}} \, , \; m_{\tilde{d}}^{\text{ pr}} \, \right] \; + \; \left[ \, m_{\tilde{d}}^{\text{ r}} \, , \; m_{\tilde{d}}^{\text{ pr}} \, \right] \; + \; \left[ \, m_{\tilde{d}}^{\text{ r}} \, , \; m_{\tilde{d}}^{\text{ pr}} \, \right] \; + \; \left[ \, m_{\tilde{d}}^{\text{ r}} \, , \; m_{\tilde{d}}^{\text{ pr}} \, \right] \; + \; \left[ \, m_{\tilde{d}}^{\text{ r}} \, , \; m_{\tilde{d}}^{\text{ pr}} \, \right] \; + \; \left[ \, m_{\tilde{d}}^{\text{ r}} \, , \; m_{\tilde{d}}^{\text{ pr}} \, \right] \; + \; \left[ \, m_{\tilde{d}}^{\text{ r}} \, , \; m_{\tilde{d}}^{\text{ pr}} \, \right] \; + \; \left[ \, m_{\tilde{d}}^{\text{ r}} \, , \; m_{\tilde{d}}^{\text{ pr}} \, \right] \; + \; \left[ \, m_{\tilde{d}}^{\text{ r}} \, , \; m_{\tilde{d}}^{\text{ pr}} \, \right] \; + \; \left[ \, m_{\tilde{d}}^{\text{ r}} \, , \; m_{\tilde{d}}^{\text{ r}} \, \right] \; + \; \left[ \, m_{\tilde{d}}^{\text{ r}} \, , \; m_{\tilde{d}}^{\text{ r}} \, \right] \; + \; \left[ \, m_{\tilde{d}}^{\text{ r}} \, , \; m_{\tilde{d}}^{\text{ r}} \, \right] \; + \; \left[ \, m_{\tilde{d}}^{\text{ r}} \, , \; m_{\tilde{d}}^{\text{ r}} \, \right] \; + \; \left[ \, m_{\tilde{d}}^{\text{ r}} \, , \; m_{\tilde{d}}^{\text{ r}} \, \right] \; + \; \left[ \, m_{\tilde{d}}^{\text{ r}} \, , \; m_{\tilde{d}}^{\text{ r}} \, \right] \; + \; \left[ \, m_{\tilde{d}}^{\text{ r}} \, , \; m_{\tilde{d}}^{\text{ r}} \, \right] \; + \; \left[ \, m_{\tilde{d}}^{\text{ r}} \, , \; m_{\tilde{d}}^{\text{ r}} \, \right] \; + \; \left[ \, m_{\tilde{d}}^{\text{ r}} \, , \; m_{\tilde{d}}^{\text{ r}} \, \right] \; + \; \left[ \, m_{\tilde{d}}^{\text{ r}} 
                                                                                                                                                                                                       g_{1}^{2} \; \left( c_{\gamma} \; \overline{a_{d}}^{\text{pr}} - s_{\gamma} \; \widetilde{\mu} \; \overline{y_{d}}^{\text{pr}} \right) \; \left( c_{\gamma} \; a_{d}^{\text{pr}} - s_{\gamma} \; \widetilde{\mu} \; y_{d}^{\text{pr}} \right) \; \text{LF}_{3,2,-1} \left[ m_{\tilde{d}}^{\text{r}} \text{, } m_{\tilde{q}}^{\text{p}} \right] \; + \; \text{LF}_{3,2,-1} \left[ m_{\tilde{d}}^{\text{r}} \text{, } m_{\tilde{q}}^{\text{p}} \right] \; + \; \text{LF}_{3,2,-1} \left[ m_{\tilde{d}}^{\text{r}} \text{, } m_{\tilde{q}}^{\text{p}} \right] \; + \; \text{LF}_{3,2,-1} \left[ m_{\tilde{d}}^{\text{r}} \text{, } m_{\tilde{q}}^{\text{p}} \right] \; + \; \text{LF}_{3,2,-1} \left[ m_{\tilde{d}}^{\text{r}} \text{, } m_{\tilde{q}}^{\text{p}} \right] \; + \; \text{LF}_{3,2,-1} \left[ m_{\tilde{d}}^{\text{r}} \text{, } m_{\tilde{q}}^{\text{p}} \right] \; + \; \text{LF}_{3,2,-1} \left[ m_{\tilde{d}}^{\text{r}} \text{, } m_{\tilde{q}}^{\text{p}} \right] \; + \; \text{LF}_{3,2,-1} \left[ m_{\tilde{d}}^{\text{r}} \text{, } m_{\tilde{q}}^{\text{p}} \right] \; + \; \text{LF}_{3,2,-1} \left[ m_{\tilde{d}}^{\text{r}} \text{, } m_{\tilde{q}}^{\text{p}} \right] \; + \; \text{LF}_{3,2,-1} \left[ m_{\tilde{d}}^{\text{r}} \text{, } m_{\tilde{q}}^{\text{p}} \right] \; + \; \text{LF}_{3,2,-1} \left[ m_{\tilde{d}}^{\text{r}} \text{, } m_{\tilde{q}}^{\text{p}} \right] \; + \; \text{LF}_{3,2,-1} \left[ m_{\tilde{d}}^{\text{r}} \text{, } m_{\tilde{q}}^{\text{p}} \right] \; + \; \text{LF}_{3,2,-1} \left[ m_{\tilde{d}}^{\text{r}} \text{, } m_{\tilde{q}}^{\text{p}} \right] \; + \; \text{LF}_{3,2,-1} \left[ m_{\tilde{d}}^{\text{r}} \text{, } m_{\tilde{q}}^{\text{p}} \right] \; + \; \text{LF}_{3,2,-1} \left[ m_{\tilde{d}}^{\text{r}} \text{, } m_{\tilde{q}}^{\text{p}} \right] \; + \; \text{LF}_{3,2,-1} \left[ m_{\tilde{d}}^{\text{r}} \text{, } m_{\tilde{q}}^{\text{p}} \right] \; + \; \text{LF}_{3,2,-1} \left[ m_{\tilde{d}}^{\text{r}} \text{, } m_{\tilde{q}}^{\text{p}} \right] \; + \; \text{LF}_{3,2,-1} \left[ m_{\tilde{d}}^{\text{r}} \text{, } m_{\tilde{q}}^{\text{p}} \right] \; + \; \text{LF}_{3,2,-1} \left[ m_{\tilde{d}}^{\text{r}} \text{, } m_{\tilde{q}}^{\text{p}} \right] \; + \; \text{LF}_{3,2,-1} \left[ m_{\tilde{d}}^{\text{r}} \text{, } m_{\tilde{q}}^{\text{p}} \right] \; + \; \text{LF}_{3,2,-1} \left[ m_{\tilde{d}}^{\text{r}} \text{, } m_{\tilde{q}}^{\text{p}} \right] \; + \; \text{LF}_{3,2,-1} \left[ m_{\tilde{d}}^{\text{r}} \text{, } m_{\tilde{q}}^{\text{p}} \right] \; + \; \text{LF}_{3,2,-1} \left[ m_{\tilde{d}}^{\text{r}} \text{, } m_{\tilde{q}}^{\text{p}} \right] \; + \; \text{LF}_{3,2,-1} \left[ m_{\tilde{d}}^{\text{r}} \text{, } m_{\tilde{q}}^{\text{p}} \right] \; + \; \text{LF}_{3,2,-1} \left[ m_{\tilde{d}}^{\text{r}} \text{, } m_{\tilde{q}}^{\text{p}} \right] \; + \; \text{LF}_{3,2,-1} \left[ m_{\tilde{d}}^{\text{r}} \text{, } m_{\tilde{q}}^{\text{p}} \right] \; + \; \text{LF}_{3,2,-1} \left[ m_{\tilde{d}}^{\text{r}} \text{, } m_{\tilde{q}}^{\text{p}} \right] \; + \; \text{LF}_{3,2,-1} \left[ m_{\tilde{d}}^{\text{r}} \text{, } m_{\tilde{q}}^{\text{p}} \right] \; + \; \text{LF}_{3,2,-1} \left[ m_{\tilde{d}}^{\text{r}} \text{, } m_{\tilde{q}}^{\text{p}} \right] \; + \; \text{LF}_{3,2,-1} \left[ m
                                                                                                                                                                                                       g_{1}^{2} \; \left( c_{\gamma} \; \overline{a_{d}}^{\text{pr}} - s_{\gamma} \; \widetilde{\mu} \; \overline{y_{d}}^{\text{pr}} \right) \; \left( c_{\gamma} \; a_{d}^{\text{pr}} - s_{\gamma} \; \widetilde{\mu} \; y_{d}^{\text{pr}} \right) \; \text{LF}_{4,1,-1} \left[ \, m_{\tilde{d}}^{\text{r}} \, , \; m_{\tilde{q}}^{\text{p}} \, \right] \; - \; \left( c_{\gamma} \; a_{d}^{\text{pr}} - s_{\gamma} \; \widetilde{\mu} \; y_{d}^{\text{pr}} \right) \; \text{LF}_{4,1,-1} \left[ \, m_{\tilde{d}}^{\text{r}} \, , \; m_{\tilde{q}}^{\text{p}} \, \right] \; - \; \left( c_{\gamma} \; a_{d}^{\text{pr}} - s_{\gamma} \; \widetilde{\mu} \; y_{d}^{\text{pr}} \right) \; \left( c_{\gamma} \; a_{d}^{\text{pr}} - s_{\gamma} \; \widetilde{\mu} \; y_{d}^{\text{pr}} \right) \; \left( c_{\gamma} \; a_{d}^{\text{pr}} - s_{\gamma} \; \widetilde{\mu} \; y_{d}^{\text{pr}} \right) \; - \; \left( c_{\gamma} \; a_{d}^{\text{pr}} - s_{\gamma} \; \widetilde{\mu} \; y_{d}^{\text{pr}} \right) \; \left( c_{\gamma} \; a_{d}^{\text{pr}} - s_{\gamma} \; \widetilde{\mu} \; y_{d}^{\text{pr}} \right) \; \left( c_{\gamma} \; a_{d}^{\text{pr}} - s_{\gamma} \; \widetilde{\mu} \; y_{d}^{\text{pr}} \right) \; \left( c_{\gamma} \; a_{d}^{\text{pr}} - s_{\gamma} \; \widetilde{\mu} \; y_{d}^{\text{pr}} \right) \; \left( c_{\gamma} \; a_{d}^{\text{pr}} - s_{\gamma} \; \widetilde{\mu} \; y_{d}^{\text{pr}} \right) \; \left( c_{\gamma} \; a_{d}^{\text{pr}} - s_{\gamma} \; \widetilde{\mu} \; y_{d}^{\text{pr}} \right) \; \left( c_{\gamma} \; a_{d}^{\text{pr}} - s_{\gamma} \; \widetilde{\mu} \; y_{d}^{\text{pr}} \right) \; \left( c_{\gamma} \; a_{d}^{\text{pr}} - s_{\gamma} \; \widetilde{\mu} \; y_{d}^{\text{pr}} \right) \; \left( c_{\gamma} \; a_{d}^{\text{pr}} - s_{\gamma} \; \widetilde{\mu} \; y_{d}^{\text{pr}} \right) \; \left( c_{\gamma} \; a_{d}^{\text{pr}} - s_{\gamma} \; \widetilde{\mu} \; y_{d}^{\text{pr}} \right) \; \left( c_{\gamma} \; a_{d}^{\text{pr}} - s_{\gamma} \; \widetilde{\mu} \; y_{d}^{\text{pr}} \right) \; \left( c_{\gamma} \; a_{d}^{\text{pr}} - s_{\gamma} \; \widetilde{\mu} \; y_{d}^{\text{pr}} \right) \; \left( c_{\gamma} \; a_{d}^{\text{pr}} - s_{\gamma} \; \widetilde{\mu} \; y_{d}^{\text{pr}} \right) \; \left( c_{\gamma} \; a_{d}^{\text{pr}} - s_{\gamma} \; \widetilde{\mu} \; y_{d}^{\text{pr}} \right) \; \left( c_{\gamma} \; a_{d}^{\text{pr}} - s_{\gamma} \; \widetilde{\mu} \; y_{d}^{\text{pr}} \right) \; \left( c_{\gamma} \; a_{d}^{\text{pr}} - s_{\gamma} \; \widetilde{\mu} \; y_{d}^{\text{pr}} \right) \; \left( c_{\gamma} \; a_{d}^{\text{pr}} - s_{\gamma} \; \widetilde{\mu} \; y_{d}^{\text{pr}} \right) \; \left( c_{\gamma} \; a_{d}^{\text{pr}} - s_{\gamma} \; \widetilde{\mu} \; y_{d}^{\text{pr}} \right) \; \left( c_{\gamma} \; a_{d}^{\text{pr}} - s_{\gamma} \; \widetilde{\mu} \; y_{d}^{\text{pr}} \right) \; \left( c_{\gamma} \; a_{d}^{\text{pr}} - s_{\gamma} \; \widetilde{\mu} \; y_{d}^{\text{pr}} \right) \; \left( c_{\gamma} \; a_{d}^{\text{pr}} - s_{\gamma} \; \widetilde{\mu} \; y_{d}^{\text{pr}} \right) \; \left( c_{\gamma} \; a_{d}^{\text{pr}} - s_{\gamma} \; \widetilde{\mu} \; y_{d}^{\text{pr}} \right) \; \left( c_{\gamma} \; a_{d}^{\text{pr}} - s_{\gamma} \; \widetilde{\mu} \; y_{d}^{\text{pr}} \right) \; \left( c_{\gamma} \; a_{d}^{\text{pr}} - s_{\gamma} \; \widetilde{\mu} \; y_{d}^{\text{pr}} \right) \; \left( c_{\gamma} \; a_{d}^{\text{pr}} - s_{\gamma} \; \widetilde{\mu} \; y_{d}^{\text{pr}
                                                                                                                                                                                                       g_{1}^{2} \left( c_{\gamma} \; \overline{a_{e}}^{pr} - s_{\gamma} \, \widetilde{\mu} \; \overline{y_{e}}^{pr} \right) \; \left( c_{\gamma} \; a_{e}^{pr} - s_{\gamma} \, \widetilde{\mu} \; y_{e}^{pr} \right) \; \mathsf{LF}_{2,2,0} \left[ \, \mathsf{m_{\tilde{e}}}^{r} \, , \; \mathsf{m_{\tilde{l}}}^{\tilde{p}} \, \right] \; - \; \mathsf{LF}_{2,2,0} \left[ \, \mathsf{m_{\tilde{e}}}^{r} \, , \; \mathsf{m_{\tilde{l}}}^{\tilde{p}} \, \right] \; - \; \mathsf{LF}_{2,2,0} \left[ \, \mathsf{m_{\tilde{e}}}^{r} \, , \; \mathsf{m_{\tilde{l}}}^{\tilde{p}} \, \right] \; - \; \mathsf{LF}_{2,2,0} \left[ \, \mathsf{m_{\tilde{e}}}^{r} \, , \; \mathsf{m_{\tilde{l}}}^{\tilde{p}} \, \right] \; - \; \mathsf{LF}_{2,2,0} \left[ \, \mathsf{m_{\tilde{e}}}^{r} \, , \; \mathsf{m_{\tilde{l}}}^{\tilde{p}} \, \right] \; - \; \mathsf{LF}_{2,2,0} \left[ \, \mathsf{m_{\tilde{e}}}^{r} \, , \; \mathsf{m_{\tilde{l}}}^{\tilde{p}} \, \right] \; - \; \mathsf{LF}_{2,2,0} \left[ \, \mathsf{m_{\tilde{e}}}^{r} \, , \; \mathsf{m_{\tilde{l}}}^{\tilde{p}} \, \right] \; - \; \mathsf{LF}_{2,2,0} \left[ \, \mathsf{m_{\tilde{e}}}^{r} \, , \; \mathsf{m_{\tilde{l}}}^{\tilde{p}} \, \right] \; - \; \mathsf{LF}_{2,2,0} \left[ \, \mathsf{m_{\tilde{e}}}^{r} \, , \; \mathsf{m_{\tilde{l}}}^{\tilde{p}} \, \right] \; - \; \mathsf{LF}_{2,2,0} \left[ \, \mathsf{m_{\tilde{e}}}^{r} \, , \; \mathsf{m_{\tilde{l}}}^{\tilde{p}} \, \right] \; - \; \mathsf{LF}_{2,2,0} \left[ \, \mathsf{m_{\tilde{e}}}^{r} \, , \; \mathsf{m_{\tilde{l}}}^{\tilde{p}} \, \right] \; - \; \mathsf{LF}_{2,2,0} \left[ \, \mathsf{m_{\tilde{e}}}^{r} \, , \; \mathsf{m_{\tilde{l}}}^{\tilde{p}} \, \right] \; - \; \mathsf{LF}_{2,2,0} \left[ \, \mathsf{m_{\tilde{e}}}^{r} \, , \; \mathsf{m_{\tilde{l}}}^{\tilde{p}} \, \right] \; - \; \mathsf{LF}_{2,2,0} \left[ \, \mathsf{m_{\tilde{e}}}^{r} \, , \; \mathsf{m_{\tilde{l}}}^{\tilde{p}} \, \right] \; - \; \mathsf{LF}_{2,2,0} \left[ \, \mathsf{m_{\tilde{e}}}^{r} \, , \; \mathsf{m_{\tilde{l}}}^{\tilde{p}} \, \right] \; - \; \mathsf{LF}_{2,2,0} \left[ \, \mathsf{m_{\tilde{e}}}^{r} \, , \; \mathsf{m_{\tilde{l}}}^{\tilde{p}} \, \right] \; - \; \mathsf{LF}_{2,2,0} \left[ \, \mathsf{m_{\tilde{e}}}^{r} \, , \; \mathsf{m_{\tilde{l}}}^{\tilde{p}} \, \right] \; - \; \mathsf{LF}_{2,2,0} \left[ \, \mathsf{m_{\tilde{e}}}^{r} \, , \; \mathsf{m_{\tilde{l}}}^{\tilde{p}} \, \right] \; - \; \mathsf{LF}_{2,2,0} \left[ \, \mathsf{m_{\tilde{e}}}^{r} \, , \; \mathsf{m_{\tilde{l}}}^{\tilde{p}} \, \right] \; - \; \mathsf{LF}_{2,2,0} \left[ \, \mathsf{m_{\tilde{e}}}^{r} \, , \; \mathsf{m_{\tilde{l}}}^{\tilde{p}} \, \right] \; - \; \mathsf{LF}_{2,2,0} \left[ \, \mathsf{m_{\tilde{e}}}^{r} \, , \; \mathsf{m_{\tilde{l}}}^{\tilde{p}} \, \right] \; - \; \mathsf{LF}_{2,2,0} \left[ \, \mathsf{m_{\tilde{e}}}^{r} \, , \; \mathsf{m_{\tilde{l}}}^{\tilde{p}} \, \right] \; - \; \mathsf{LF}_{2,2,0} \left[ \, \mathsf{m_{\tilde{l}}}^{\tilde{p}} \, , \; \mathsf{m_{\tilde{l}}}^{\tilde{p}} \, \right] \; - \; \mathsf{LF}_{2,2,0} \left[ \, \mathsf{m_{\tilde{l}}}^{\tilde{p}} \, , \; \mathsf{m_{\tilde{l}}}^{\tilde{p}} \, \right] \; - \; \mathsf{LF}_{2,2,0} \left[ \, \mathsf{m_{\tilde{l}}}^{\tilde{p}} \, , \; \mathsf{m_{\tilde{l}}}^{\tilde{p}} \, , \; \mathsf{m_{\tilde{l}}}^{\tilde{p}} \, \right] \; - \; \mathsf{LF}_{2,2,0} \left[ \, \mathsf{m_{\tilde{l}}}^{\tilde{p}} \, , \; \mathsf{m_{\tilde{l}}}^{\tilde{p}} \, , \; \mathsf{m_{\tilde{l}}}^{\tilde{p}} \, \right] \; - \; \mathsf{LF}_{2,2
                                                                                                                                                                                                            g_{1}^{2} \; \left( c_{\gamma} \; \overline{a_{e}}^{\text{pr}} - s_{\gamma} \; \widetilde{\mu} \; \overline{y_{e}}^{\text{pr}} \right) \; \left( c_{\gamma} \; a_{e}^{\; \text{pr}} - s_{\gamma} \; \widetilde{\mu} \; y_{e}^{\; \text{pr}} \right) \; \text{LF}_{4,1,-1} \left[ \textbf{m}_{\tilde{e}}^{\; \text{r}} \; , \; \textbf{m}_{\tilde{l}}^{\; \text{p}} \right] \; + \; \text{Tr} \left[ \textbf{m}_{\tilde{e}}^{\; \text{r}} \; , \; \textbf{m}_{\tilde{l}}^{\; \text{pr}} \right] \; + \; \text{Tr} \left[ \textbf{m}_{\tilde{e}}^{\; \text{r}} \; , \; \textbf{m}_{\tilde{l}}^{\; \text{pr}} \right] \; + \; \text{Tr} \left[ \textbf{m}_{\tilde{e}}^{\; \text{r}} \; , \; \textbf{m}_{\tilde{l}}^{\; \text{pr}} \right] \; + \; \text{Tr} \left[ \textbf{m}_{\tilde{e}}^{\; \text{r}} \; , \; \textbf{m}_{\tilde{l}}^{\; \text{pr}} \right] \; + \; \text{Tr} \left[ \textbf{m}_{\tilde{e}}^{\; \text{r}} \; , \; \textbf{m}_{\tilde{l}}^{\; \text{pr}} \right] \; + \; \text{Tr} \left[ \textbf{m}_{\tilde{e}}^{\; \text{r}} \; , \; \textbf{m}_{\tilde{l}}^{\; \text{pr}} \right] \; + \; \text{Tr} \left[ \textbf{m}_{\tilde{e}}^{\; \text{r}} \; , \; \textbf{m}_{\tilde{l}}^{\; \text{pr}} \right] \; + \; \text{Tr} \left[ \textbf{m}_{\tilde{e}}^{\; \text{r}} \; , \; \textbf{m}_{\tilde{l}}^{\; \text{pr}} \right] \; + \; \text{Tr} \left[ \textbf{m}_{\tilde{e}}^{\; \text{r}} \; , \; \textbf{m}_{\tilde{l}}^{\; \text{pr}} \right] \; + \; \text{Tr} \left[ \textbf{m}_{\tilde{e}}^{\; \text{r}} \; , \; \textbf{m}_{\tilde{l}}^{\; \text{pr}} \right] \; + \; \text{Tr} \left[ \textbf{m}_{\tilde{e}}^{\; \text{r}} \; , \; \textbf{m}_{\tilde{l}}^{\; \text{pr}} \right] \; + \; \text{Tr} \left[ \textbf{m}_{\tilde{e}}^{\; \text{r}} \; , \; \textbf{m}_{\tilde{l}}^{\; \text{pr}} \right] \; + \; \text{Tr} \left[ \textbf{m}_{\tilde{e}}^{\; \text{r}} \; , \; \textbf{m}_{\tilde{l}}^{\; \text{pr}} \right] \; + \; \text{Tr} \left[ \textbf{m}_{\tilde{e}}^{\; \text{r}} \; , \; \textbf{m}_{\tilde{l}}^{\; \text{pr}} \right] \; + \; \text{Tr} \left[ \textbf{m}_{\tilde{e}}^{\; \text{r}} \; , \; \textbf{m}_{\tilde{l}}^{\; \text{pr}} \right] \; + \; \text{Tr} \left[ \textbf{m}_{\tilde{e}}^{\; \text{r}} \; , \; \textbf{m}_{\tilde{l}}^{\; \text{r}} \; , \; \textbf{m}_{\tilde{l}}^{\; \text{pr}} \right] \; + \; \text{Tr} \left[ \textbf{m}_{\tilde{e}}^{\; \text{r}} \; , \; \textbf{m}_{\tilde{l}}^{\; \text{pr}} \; , \; \textbf{m}_{\tilde{l}}^{\; \text{pr}} \right] \; + \; \text{Tr} \left[ \textbf{m}_{\tilde{e}}^{\; \text{r}} \; , \; \textbf{m}_{\tilde{l}}^{\; \text{pr}} \; , \; \textbf{m}_{\tilde{l}}^{\; \text{pr}} \; , \; \textbf{m}_{\tilde{l}}^{\; \text{pr}} \right] \; + \; \text{Tr} \left[ \textbf{m}_{\tilde{e}}^{\; \text{r}} \; , \; \textbf{m}_{\tilde{l}}^{\; \text{pr}} \; , \; \textbf{m}_{\tilde{l}}^{\; \text{pr}} \; , \; \textbf{m}_{\tilde{l}}^{\; \text{pr}} \right] \; + \; \text{Tr} \left[ \textbf{m}_{\tilde{l}}^{\; \text{pr}} \; , \; \textbf{m}_{\tilde{l}}^{\; \text{pr}} \right] \; + \; \text{Tr} \left[ \textbf{m}_{\tilde{l}}^{\; \text{pr}} \; , \; 
                                                                                                                                                                                                            \mathbf{g_1}^2 \; \left( \mathbf{c_{\scriptscriptstyle Y}} \; \overline{\mathbf{a_e}}^{\text{pr}} - \mathbf{s_{\scriptscriptstyle Y}} \, \widetilde{\boldsymbol{\mu}} \; \overline{\mathbf{y_e}}^{\text{pr}} \right) \; \left( \mathbf{c_{\scriptscriptstyle Y}} \; a_e^{\; \text{pr}} - \mathbf{s_{\scriptscriptstyle Y}} \, \widetilde{\boldsymbol{\mu}} \; \mathbf{y_e}^{\text{pr}} \right) \; \mathsf{LF_{3,2,-1}} \big[ \, \mathbf{m_{\scriptscriptstyle \tilde{l}}}^{\; \text{p}} \, , \; \mathbf{m_{\tilde{e}}}^{\; \text{r}} \, \big] \; - \; \mathbf{m_{\scriptscriptstyle \tilde{l}}}^{\; \text{pr}} \, , \; \mathbf{m_{\scriptscriptstyle \tilde{e}}}^{\; \text{r}} \, \big] \; - \; \mathbf{m_{\scriptscriptstyle \tilde{e}}}^{\; \text{pr}} \, , \; \mathbf{m_{\scriptscriptstyle \tilde{e}}}^{\; \text{pr}} \, \big] \; - \; \mathbf{m_{\scriptscriptstyle \tilde{e}}}^{\; \text{pr}} \, , \; \mathbf{m_{\scriptscriptstyle \tilde{e}}}^{\; \text{pr}} \, \big] \; - \; \mathbf{m_{\scriptscriptstyle \tilde{e}}}^{\; \text{pr}} \, \big[ \, \mathbf{m_{\scriptscriptstyle \tilde{e}}}^{\; \text{pr}} \, \big] \; - \; \mathbf{m_{\scriptscriptstyle \tilde{e}}}^{\; \text{pr}} \, \big[ \, \mathbf{m_{\scriptscriptstyle \tilde{e}}}^{\; \text{pr}} \, \big] \; - \; \mathbf{m_{\scriptscriptstyle \tilde{e}}}^{\; \text{pr}} \, \big[ \, \mathbf{m_{\scriptscriptstyle \tilde{e}}}^{\; \text{pr}} \, \big] \; - \; \mathbf{m_{\scriptscriptstyle \tilde{e}}}^{\; \text{pr}} \, \big[ \, \mathbf{m_{\scriptscriptstyle \tilde{e}}}^{\; \text{pr}} \, \big] \; - \; \mathbf{m_{\scriptscriptstyle \tilde{e}}}^{\; \text{pr}} \, \big[ \, \mathbf{m_{\scriptscriptstyle \tilde{e}}}^{\; \text{pr}} \, \big[ \, \mathbf{m_{\scriptscriptstyle \tilde{e}}}^{\; \text{pr}} \, \big[ \, \mathbf{m_{\scriptscriptstyle \tilde{e}}}^{\; \text{pr}} \, \big] \; - \; \mathbf{m_{\scriptscriptstyle \tilde{e}}}^{\; \text{pr}} \, \big[ \, 
                                                                                                                                                                                                            \mathbf{g_{1}}^{2} \; \left( \mathbf{c}_{\mathrm{Y}} \; \overline{\mathbf{a_{e}}}^{\mathrm{pr}} - \mathbf{s}_{\mathrm{Y}} \, \widetilde{\mu} \; \overline{\mathbf{y_{e}}}^{\mathrm{pr}} \right) \; \left( \mathbf{c}_{\mathrm{Y}} \; \mathbf{a_{e}}^{\mathrm{pr}} - \mathbf{s}_{\mathrm{Y}} \, \widetilde{\mu} \; \mathbf{y_{e}}^{\mathrm{pr}} \right) \; \mathsf{LF_{4,1,-1}} \left[ \mathbf{m_{\tilde{l}}}^{\mathrm{p}} \mathbf{,} \; \mathbf{m_{\tilde{e}}} \right] \; \mathsf{m_{\tilde{e}}}^{\mathrm{pr}} \; 
                                                                                                                                                                                                            \mathbf{g_1}^2 \; \left( \mathbf{c_{\scriptscriptstyle Y}} \; \overline{\mathbf{a_e}}^{\text{pr}} - \mathbf{s_{\scriptscriptstyle Y}} \, \widetilde{\boldsymbol{\mu}} \; \overline{\mathbf{y_e}}^{\text{pr}} \right) \; \left( \mathbf{c_{\scriptscriptstyle Y}} \; \mathbf{a_e}^{\text{pr}} - \mathbf{s_{\scriptscriptstyle Y}} \, \widetilde{\boldsymbol{\mu}} \; \mathbf{y_e}^{\text{pr}} \right) \; \mathsf{LF_{5,1,-2}} \left[ \, \mathbf{m_{\tilde{l}}}^{\text{p}} \boldsymbol{\mathsf{,}} \; \mathbf{m_{\tilde{e}}} \right] \; \mathbf{m_{\tilde{e}}}^{\text{pr}} \; \mathbf{m_{
                                                                                                                                                                                                            {g_1}^2 \; \left( {{c_{_Y}}\; \overline{{a_d}}^{pr} - {s_{_Y}}\; \widetilde \mu \; \overline{{y_d}}^{pr}} \right) \; \left( {{c_{_Y}}\; {a_d}^{pr} - {s_{_Y}}\; \widetilde \mu \; {y_d}^{pr}} \right) \; LF_{3,1,0} \left[ {m_{\widetilde q}}^p , \; m_{\widetilde d} \right] \; .
                                                                                                                                                                                                       \mathbf{g_{1}}^{2} \; \left( \mathbf{c_{\gamma}} \; \overline{\mathbf{a_{d}}}^{\text{pr}} - \mathbf{s_{\gamma}} \; \widetilde{\boldsymbol{\mu}} \; \overline{\mathbf{y_{d}}}^{\text{pr}} \right) \; \left( \mathbf{c_{\gamma}} \; \mathbf{a_{d}}^{\text{pr}} - \mathbf{s_{\gamma}} \; \widetilde{\boldsymbol{\mu}} \; \mathbf{y_{d}}^{\text{pr}} \right) \; \mathsf{LF_{3,2,-1}} \left[ \, \mathbf{m_{\tilde{q}}} \right] \; \mathsf{LF_{3,2,-1}} \left[ \, \mathbf
                                                                                                                                                                                                                                     \mathbf{g_1}^2 \; \left( \mathbf{c_{\scriptscriptstyle Y}} \; \overline{\mathbf{a_d}}^{\text{pr}} - \mathbf{s_{\scriptscriptstyle Y}} \, \widetilde{\boldsymbol{\mu}} \; \overline{\mathbf{y_d}}^{\text{pr}} \right) \; \left( \mathbf{c_{\scriptscriptstyle Y}} \; \mathbf{a_d}^{\text{pr}} - \mathbf{s_{\scriptscriptstyle Y}} \, \widetilde{\boldsymbol{\mu}} \; \mathbf{y_d}^{\text{pr}} \right) \; \mathsf{LF_{4,1,-1}} \left[ \, \mathbf{m_{\tilde{q}}}^{\, p} \, , \; \mathbf{m_{\tilde{d}}} \, \right] \; \mathsf{M_{\tilde{q}}}^{\, p} \; \mathsf{M_{\tilde{q}}}^
                                                                                                                                                                                                 g_{1}^{2}\left(c_{\gamma}\;\overline{a_{d}}^{pr}-s_{\gamma}\;\widetilde{\mu}\;\overline{y_{d}}^{pr}\right)\;\left(c_{\gamma}\;a_{d}^{\;pr}-s_{\gamma}\;\widetilde{\mu}\;y_{d}^{pr}\right)\;\mathsf{LF}_{5,1,-2}\!\left[\mathsf{m}_{\tilde{\mathsf{q}}}^{\;p},\;\mathsf{m}_{\tilde{\mathsf{d}}}^{\;r}\right]
                                                                                                                                                                                                                           g_{1}^{2}\left(s_{\gamma}\;\overline{a_{u}}^{\text{pr}}-\widetilde{\mu}\;c_{\gamma}\;\overline{y_{u}}^{\text{pr}}\right)\;\left(s_{\gamma}\;a_{u}^{\;\text{pr}}-\widetilde{\mu}\;c_{\gamma}\;y_{u}^{\;\text{pr}}\right)\;\text{LF}_{2,2,0}\!\left[m_{\widetilde{q}}^{\;\;p},\;m_{\widetilde{u}}^{\;\;p}\right]
                                                                                                                                                         \frac{1}{24} g_1^2 \left( s_{\Upsilon} \overline{a_u}^{pr} - \widetilde{\mu} c_{\Upsilon} \overline{y_u}^{pr} \right) \left( s_{\Upsilon} a_u^{pr} - \widetilde{\mu} c_{\Upsilon} y_u^{pr} \right) LF_{3,1,0} \left[ m_{\tilde{q}}^{p}, m_{\tilde{u}}^{-} \right]
                                                                                                                                                         \frac{1}{24} \ g_1^2 \ \left( s_\gamma \ \overline{a_u}^{pr} - \widetilde{\mu} \ c_\gamma \ \overline{y_u}^{pr} \right) \ \left( s_\gamma \ a_u^{pr} - \widetilde{\mu} \ c_\gamma \ y_u^{pr} \right) \ \mathsf{LF_{3,2,-1}} \left[ \ \mathsf{m}_{\tilde{q}}^{\ p}, \ \mathsf{m}_{\tilde{u}} \right] \ \mathsf{m}_{\tilde{u}}^{p} \ \mathsf{m}_{\tilde{u}}^{
                                                                                                                                                         \frac{1}{24} \ g_1^2 \ \left( s_\gamma \ \overline{a_u}^{\text{pr}} - \widetilde{\mu} \ c_\gamma \ \overline{y_u}^{\text{pr}} \right) \ \left( s_\gamma \ a_u^{\text{pr}} - \widetilde{\mu} \ c_\gamma \ y_u^{\text{pr}} \right) \ \mathsf{LF_{4,1,-1}} \left[ \mathsf{m}_{\tilde{\mathsf{q}}} \right]
                                                                                                                                                         \frac{7}{24} \ g_1^2 \ \left(s_\gamma \ \overline{a_u}^{pr} - \widetilde{\mu} \ c_\gamma \ \overline{y_u}^{pr}\right) \ \left(s_\gamma \ a_u^{pr} - \widetilde{\mu} \ c_\gamma \ y_u^{pr}\right) \ \mathsf{LF_{3,1,0}} \left[m_{\tilde{u}}^{\ r} \, , \ m_{\tilde{q}}^{\ p}\right] \ + \\
                                                                                                                                                         \frac{1}{24} \ g_{1}^{2} \ \left(s_{\gamma} \ \overline{a_{u}}^{pr} - \widetilde{\mu} \ c_{\gamma} \ \overline{y_{u}}^{pr}\right) \ \left(s_{\gamma} \ a_{u}^{pr} - \widetilde{\mu} \ c_{\gamma} \ y_{u}^{pr}\right) \ LF_{3,2,-1}\left[\boldsymbol{m_{\tilde{u}}}^{r}, \ \boldsymbol{m_{\tilde{q}}}^{p}\right] - \widetilde{\mu} \ c_{\gamma} \ \boldsymbol{m_{\tilde{q}}}^{p} \right] - \widetilde{\mu} \ \boldsymbol{m_{\tilde{q}}}^{p} \ \boldsymbol{m_{\tilde{q}}}^{p
                                                                                                                                                         \frac{\mathbf{11}}{\mathbf{24}}\ \mathbf{g_{1}}^{2}\ \left(\mathbf{s_{\gamma}}\ \overline{\mathbf{a_{u}}}^{\text{pr}}-\widetilde{\mu}\ \mathbf{c_{\gamma}}\ \overline{\mathbf{y_{u}}}^{\text{pr}}\right)\ \left(\mathbf{s_{\gamma}}\ \mathbf{a_{u}}^{\text{pr}}-\widetilde{\mu}\ \mathbf{c_{\gamma}}\ \mathbf{y_{u}}^{\text{pr}}\right)\ \mathsf{LF_{4,1,-1}}\left[\mathbf{m_{\tilde{u}}}^{\text{r}},\ \mathbf{m_{\tilde{q}}}\right]
                                                                                                                                                                                                 g_{1}^{2}\left(s_{\gamma}\,\overline{a_{u}}^{\text{pr}}-\widetilde{\mu}\;c_{\gamma}\,\overline{y_{u}}^{\text{pr}}\right)\;\left(s_{\gamma}\,a_{u}^{\text{pr}}-\widetilde{\mu}\;c_{\gamma}\,y_{u}^{\text{pr}}\right)\;\mathsf{LF_{5,1,-2}}\!\left[\mathsf{m_{\tilde{u}}}^{\text{r}},\,\mathsf{m_{\tilde{q}}}^{\text{p}}\right]-\mathsf{m_{\tilde{u}}}^{\text{pr}}\right)
                                                                                                                                                                                                       g_1^4 LF_{3,1,-1}[\tilde{\mu}, m_1] - \frac{1}{4} m_1 s_{\gamma} \tilde{\mu} c_{\gamma} g_1^4 LF_{3,1,0}[\tilde{\mu}, m_1] + \frac{3}{8} g_1^4 LF_{4,1,-2}[\tilde{\mu}, m_1] + \frac{3}
                                                                                                                                                                                                       m_1 s_{\gamma} \tilde{\mu} c_{\gamma} g_1^4 LF_{4,1,-1}[\tilde{\mu}, m_1] - \frac{1}{4} g_1^4 LF_{5,1,-3}[\tilde{\mu}, m_1] - \frac{1}{2} m_1 s_{\gamma} \tilde{\mu} c_{\gamma} g_1^4 LF_{5,1,-2}[\tilde{\mu}, m_1] - \frac{1}{4} m_1 s_{\gamma} \tilde{\mu} c_{\gamma} g_1^4 LF_{5,1,-2}[\tilde{\mu}, m_1] - \frac{1}{4} m_1 s_{\gamma} \tilde{\mu} c_{\gamma} g_1^4 LF_{5,1,-2}[\tilde{\mu}, m_1] - \frac{1}{4} m_1 s_{\gamma} \tilde{\mu} c_{\gamma} g_1^4 LF_{5,1,-2}[\tilde{\mu}, m_1] - \frac{1}{4} m_1 s_{\gamma} \tilde{\mu} c_{\gamma} g_1^4 LF_{5,1,-2}[\tilde{\mu}, m_1] - \frac{1}{4} m_1 s_{\gamma} \tilde{\mu} c_{\gamma} g_1^4 LF_{5,1,-2}[\tilde{\mu}, m_1] - \frac{1}{4} m_1 s_{\gamma} \tilde{\mu} c_{\gamma} g_1^4 LF_{5,1,-2}[\tilde{\mu}, m_1] - \frac{1}{4} m_1 s_{\gamma} \tilde{\mu} c_{\gamma} g_1^4 LF_{5,1,-2}[\tilde{\mu}, m_1] - \frac{1}{4} m_1 s_{\gamma} \tilde{\mu} c_{\gamma} g_1^4 LF_{5,1,-2}[\tilde{\mu}, m_1] - \frac{1}{4} m_1 s_{\gamma} \tilde{\mu} c_{\gamma} g_1^4 LF_{5,1,-2}[\tilde{\mu}, m_1] - \frac{1}{4} m_1 s_{\gamma} \tilde{\mu} c_{\gamma} g_1^4 LF_{5,1,-2}[\tilde{\mu}, m_1] - \frac{1}{4} m_1 s_{\gamma} \tilde{\mu} c_{\gamma} g_1^4 LF_{5,1,-2}[\tilde{\mu}, m_1] - \frac{1}{4} m_1 s_{\gamma} \tilde{\mu} c_{\gamma} g_1^4 LF_{5,1,-2}[\tilde{\mu}, m_1] - \frac{1}{4} m_1 s_{\gamma} \tilde{\mu} c_{\gamma} g_1^4 LF_{5,1,-2}[\tilde{\mu}, m_1] - \frac{1}{4} m_1 s_{\gamma} \tilde{\mu} c_{\gamma} g_1^4 LF_{5,1,-2}[\tilde{\mu}, m_1] - \frac{1}{4} m_1 s_{\gamma} \tilde{\mu} c_{\gamma} g_1^4 LF_{5,1,-2}[\tilde{\mu}, m_1] - \frac{1}{4} m_1 s_{\gamma} \tilde{\mu} c_{\gamma} g_1^4 LF_{5,1,-2}[\tilde{\mu}, m_1] - \frac{1}{4} m_1 s_{\gamma} \tilde{\mu} c_{\gamma} g_1^4 LF_{5,1,-2}[\tilde{\mu}, m_1] - \frac{1}{4} m_1 s_{\gamma} \tilde{\mu} c_{\gamma} g_1^4 LF_{5,1,-2}[\tilde{\mu}, m_1] - \frac{1}{4} m_1 s_{\gamma} \tilde{\mu} c_{\gamma} g_1^4 LF_{5,1,-2}[\tilde{\mu}, m_1] - \frac{1}{4} m_1 s_{\gamma} \tilde{\mu} c_{\gamma} g_1^4 LF_{5,1,-2}[\tilde{\mu}, m_1] - \frac{1}{4} m_1 s_{\gamma} \tilde{\mu} c_{\gamma} g_1^4 LF_{5,1,-2}[\tilde{\mu}, m_1] - \frac{1}{4} m_1 s_{\gamma} \tilde{\mu} c_{\gamma} g_1^4 LF_{5,1,-2}[\tilde{\mu}, m_1] - \frac{1}{4} m_1 s_{\gamma} \tilde{\mu} c_{\gamma} g_1^4 LF_{5,1,-2}[\tilde{\mu}, m_1] - \frac{1}{4} m_1 s_{\gamma} \tilde{\mu} c_{\gamma} g_1^4 LF_{5,1,-2}[\tilde{\mu}, m_1] - \frac{1}{4} m_1 s_{\gamma} \tilde{\mu} c_{\gamma} g_1^4 LF_{5,1,-2}[\tilde{\mu}, m_1] - \frac{1}{4} m_1 s_{\gamma} \tilde{\mu} c_{\gamma} g_1^4 LF_{5,1,-2}[\tilde{\mu}, m_1] - \frac{1}{4} m_1 s_{\gamma} \tilde{\mu} c_{\gamma} g_1^4 LF_{5,1,-2}[\tilde{\mu}, m_1] - \frac{1}{4} m_1 s_{\gamma} \tilde{\mu} c_{\gamma} g_1^4 LF_{5,1,-2}[\tilde{\mu}, m_1] - \frac{1}{4} m_1 s_{\gamma} \tilde{\mu} c_{\gamma} g_1^4 LF_{5,1,-2}[\tilde{\mu}, m_1] - \frac{1}{4} m_1 s_{\gamma} \tilde{\mu} c_{\gamma} g_1^4 LF_{5,1,-2}[\tilde{\mu}, m_1] - \frac{1}{4} m_1 s_{\gamma} \tilde{\mu} c_{\gamma} g_1^4 LF_{5,1,-2}[\tilde{\mu}, m_1] - \frac{1}{4} m_1 s_{\gamma} \tilde{\mu} c_{\gamma} g_1^
                                                                                                                                                                                                       g_1^2 g_2^2 LF_{3,1,-1}[\tilde{\mu}, m_2] - \frac{3}{4} m_2 s_{\gamma} \tilde{\mu} c_{\gamma} g_1^2 g_2^2 LF_{3,1,0}[\tilde{\mu}, m_2] +
                                                                                                                                                                                                 g_1^2 g_2^2 LF_{4,1,-2}[\tilde{\mu}, m_2] + \frac{3}{2} m_2 s_{\gamma} \tilde{\mu} c_{\gamma} g_1^2 g_2^2 LF_{4,1,-1}[\tilde{\mu}, m_2] -
                                                                                                                                                         \frac{3}{4} \, g_1^{\, 2} \, g_2^{\, 2} \, \mathsf{LF}_{5,1,-3} [\, \widetilde{\mu} \,, \, \mathsf{m}_2 \,] \, - \frac{3}{2} \, \mathsf{m}_2 \, \mathsf{s}_{\scriptscriptstyle Y} \, \widetilde{\mu} \, \mathsf{c}_{\scriptscriptstyle Y} \, g_1^{\, 2} \, g_2^{\, 2} \, \mathsf{LF}_{5,1,-2} [\, \widetilde{\mu} \,, \, \mathsf{m}_2 \,] \, \Big)
```