$C_{HG} \to \hbar$

$$\Big(\frac{1}{24}\sum_p c_{2\gamma}\, g_1^{\,2}\, g_3^{\,2}\, LF_{3,0}\big[m_{\tilde{d}}^{\,p}\big] - \frac{1}{24}\sum_p c_{2\gamma}\, g_1^{\,2}\, g_3^{\,2}\, LF_{4,-1}\big[m_{\tilde{d}}^{\,p}\big] - \frac{1}{4}\, g_3^{\,2}\, c_\gamma^{\,2}\, \overline{y_d}^{pr}\, y_d^{\,pr}\, LF_{3,0}\big[m_{\tilde{d}}^{\,r}\big] + \frac{1}{4}\, g_3^{\,2}$$
$$c_\gamma^{\,2}\, \overline{y_d}^{pr}\, y_d^{\,pr}\, LF_{4,-1}\big[m_{\tilde{d}}^{\,r}\big] + \frac{1}{24}\, g_3^{\,2}\, \big(-6\, c_\gamma^{\,2}\, \overline{y_d}^{pr}\, y_d^{\,pr} - 6\, s_\gamma^{\,2}\, \overline{y_u}^{pr}\, y_u^{\,pr} + \sum_p c_{2\gamma}\, g_1^{\,2}\big)\, LF_{3,0}\big[m_{\tilde{q}}^{\,p}\big] +$$
$$\frac{1}{24}\, g_3^{\,2}\, \big(6\, c_\gamma^{\,2}\, \overline{y_d}^{pr}\, y_d^{\,pr} + 6\, s_\gamma^{\,2}\, \overline{y_u}^{pr}\, y_u^{\,pr} - \sum_p c_{2\gamma}\, g_1^{\,2}\big)\, LF_{4,-1}\big[m_{\tilde{q}}^{\,p}\big] - \frac{1}{12}\sum_p c_{2\gamma}\, g_1^{\,2}\, g_3^{\,2}\, LF_{3,0}\big[m_{\tilde{u}}^{\,p}\big] +$$
$$\frac{1}{12}\sum_p c_{2\gamma}\, g_1^{\,2}\, g_3^{\,2}\, LF_{4,-1}\big[m_{\tilde{u}}^{\,p}\big] - \frac{1}{4}\, g_3^{\,2}\, s_\gamma^{\,2}\, \overline{y_u}^{pr}\, y_u^{\,pr}\, LF_{3,0}\big[m_{\tilde{u}}^{\,r}\big] + \frac{1}{4}\, g_3^{\,2}\, s_\gamma^{\,2}\, \overline{y_u}^{pr}\, y_u^{\,pr}\, LF_{4,-1}\big[m_{\tilde{u}}^{\,r}\big] -$$
$$\frac{1}{4}\, g_3^{\,2}\, \big(c_\gamma\, \overline{a_d}^{pr} - s_\gamma\, \tilde{\mu}\, \overline{y_d}^{pr}\big)\, \big(c_\gamma\, a_d^{\,pr} - s_\gamma\, \tilde{\mu}\, y_d^{\,pr}\big)\, LF_{2,2,0}\big[m_{\tilde{d}}^{\,r},\, m_{\tilde{q}}^{\,p}\big] -$$
$$\frac{1}{4}\, g_3^{\,2}\, \big(c_\gamma\, \overline{a_d}^{pr} - s_\gamma\, \tilde{\mu}\, \overline{y_d}^{pr}\big)\, \big(c_\gamma\, a_d^{\,pr} - s_\gamma\, \tilde{\mu}\, y_d^{\,pr}\big)\, LF_{3,1,0}\big[m_{\tilde{d}}^{\,r},\, m_{\tilde{q}}^{\,p}\big] +$$
$$\frac{1}{4}\, g_3^{\,2}\, \big(c_\gamma\, \overline{a_d}^{pr} - s_\gamma\, \tilde{\mu}\, \overline{y_d}^{pr}\big)\, \big(c_\gamma\, a_d^{\,pr} - s_\gamma\, \tilde{\mu}\, y_d^{\,pr}\big)\, LF_{3,2,-1}\big[m_{\tilde{d}}^{\,r},\, m_{\tilde{q}}^{\,p}\big] +$$
$$\frac{1}{4}\, g_3^{\,2}\, \big(c_\gamma\, \overline{a_d}^{pr} - s_\gamma\, \tilde{\mu}\, \overline{y_d}^{pr}\big)\, \big(c_\gamma\, a_d^{\,pr} - s_\gamma\, \tilde{\mu}\, y_d^{\,pr}\big)\, LF_{4,1,-1}\big[m_{\tilde{d}}^{\,r},\, m_{\tilde{q}}^{\,p}\big] -$$
$$\frac{1}{4}\, g_3^{\,2}\, \big(c_\gamma\, \overline{a_d}^{pr} - s_\gamma\, \tilde{\mu}\, \overline{y_d}^{pr}\big)\, \big(c_\gamma\, a_d^{\,pr} - s_\gamma\, \tilde{\mu}\, y_d^{\,pr}\big)\, LF_{3,1,0}\big[m_{\tilde{q}}^{\,p},\, m_{\tilde{d}}^{\,r}\big] +$$
$$\frac{1}{4}\, g_3^{\,2}\, \big(c_\gamma\, \overline{a_d}^{pr} - s_\gamma\, \tilde{\mu}\, \overline{y_d}^{pr}\big)\, \big(c_\gamma\, a_d^{\,pr} - s_\gamma\, \tilde{\mu}\, y_d^{\,pr}\big)\, LF_{3,2,-1}\big[m_{\tilde{q}}^{\,p},\, m_{\tilde{d}}^{\,r}\big] +$$
$$\frac{1}{4}\, g_3^{\,2}\, \big(c_\gamma\, \overline{a_d}^{pr} - s_\gamma\, \tilde{\mu}\, \overline{y_d}^{pr}\big)\, \big(c_\gamma\, a_d^{\,pr} - s_\gamma\, \tilde{\mu}\, y_d^{\,pr}\big)\, LF_{4,1,-1}\big[m_{\tilde{q}}^{\,p},\, m_{\tilde{d}}^{\,r}\big] -$$
$$\frac{1}{4}\, g_3^{\,2}\, \big(s_\gamma\, \overline{a_u}^{pr} - \tilde{\mu}\, c_\gamma\, \overline{y_u}^{pr}\big)\, \big(s_\gamma\, a_u^{\,pr} - \tilde{\mu}\, c_\gamma\, y_u^{\,pr}\big)\, LF_{2,2,0}\big[m_{\tilde{q}}^{\,p},\, m_{\tilde{u}}^{\,r}\big] -$$
$$\frac{1}{4}\, g_3^{\,2}\, \big(s_\gamma\, \overline{a_u}^{pr} - \tilde{\mu}\, c_\gamma\, \overline{y_u}^{pr}\big)\, \big(s_\gamma\, a_u^{\,pr} - \tilde{\mu}\, c_\gamma\, y_u^{\,pr}\big)\, LF_{3,1,0}\big[m_{\tilde{q}}^{\,p},\, m_{\tilde{u}}^{\,r}\big] +$$
$$\frac{1}{4}\, g_3^{\,2}\, \big(s_\gamma\, \overline{a_u}^{pr} - \tilde{\mu}\, c_\gamma\, \overline{y_u}^{pr}\big)\, \big(s_\gamma\, a_u^{\,pr} - \tilde{\mu}\, c_\gamma\, y_u^{\,pr}\big)\, LF_{3,2,-1}\big[m_{\tilde{q}}^{\,p},\, m_{\tilde{u}}^{\,r}\big] +$$
$$\frac{1}{4}\, g_3^{\,2}\, \big(s_\gamma\, \overline{a_u}^{pr} - \tilde{\mu}\, c_\gamma\, \overline{y_u}^{pr}\big)\, \big(s_\gamma\, a_u^{\,pr} - \tilde{\mu}\, c_\gamma\, y_u^{\,pr}\big)\, LF_{4,1,-1}\big[m_{\tilde{q}}^{\,p},\, m_{\tilde{u}}^{\,r}\big] -$$
$$\frac{1}{4}\, g_3^{\,2}\, \big(s_\gamma\, \overline{a_u}^{pr} - \tilde{\mu}\, c_\gamma\, \overline{y_u}^{pr}\big)\, \big(s_\gamma\, a_u^{\,pr} - \tilde{\mu}\, c_\gamma\, y_u^{\,pr}\big)\, LF_{3,1,0}\big[m_{\tilde{u}}^{\,r},\, m_{\tilde{q}}^{\,p}\big] +$$
$$\frac{1}{4}\, g_3^{\,2}\, \big(s_\gamma\, \overline{a_u}^{pr} - \tilde{\mu}\, c_\gamma\, \overline{y_u}^{pr}\big)\, \big(s_\gamma\, a_u^{\,pr} - \tilde{\mu}\, c_\gamma\, y_u^{\,pr}\big)\, LF_{3,2,-1}\big[m_{\tilde{u}}^{\,r},\, m_{\tilde{q}}^{\,p}\big] +$$
$$\frac{1}{4}\, g_3^{\,2}\, \big(s_\gamma\, \overline{a_u}^{pr} - \tilde{\mu}\, c_\gamma\, \overline{y_u}^{pr}\big)\, \big(s_\gamma\, a_u^{\,pr} - \tilde{\mu}\, c_\gamma\, y_u^{\,pr}\big)\, LF_{4,1,-1}\big[m_{\tilde{u}}^{\,r},\, m_{\tilde{q}}^{\,p}\big]\Big)$$