

$$I_4^{\{D=4-2\epsilon\}}(0, m_1^2, 0, m_1^2; t, u; 0, 0, m_2^2, m_1^2)$$

Page contributed by [R.K. Ellis](#)

This integral has been given in Eq. (6.74) of ref [1].

$$I_4^{\{D=4-2\epsilon\}}(0, m_1^2, 0, m_1^2; t, u; 0, 0, m_2^2, m_1^2) = \frac{1}{(t - m_2^2)(u - m_1^2)} \left(\frac{\mu^2}{m_1^2}\right)^\epsilon$$

$$\left[\frac{1}{2\epsilon^2} - \frac{1}{\epsilon} \left[\ln\left(\frac{m_2^2 - t}{m_2^2 - m_1^2}\right) + \ln\left(\frac{m_1^2 - u}{m_1^2}\right) \right] + \ln^2\left(\frac{m_1^2 - u}{m_1^2}\right) - \frac{\pi^2}{12} + 2 \ln\left(\frac{m_1^2 - u}{m_1^2}\right) \ln\left(\frac{m_2^2 - t}{m_2^2 - m_1^2}\right) \right.$$

$$\left. + \operatorname{Li}_2\left(1 + \frac{u - m_1^2}{m_2^2 - m_1^2}\right) - \operatorname{Li}_2\left(1 + \frac{m_2^2(u - m_1^2)}{m_1^2(m_2^2 - m_1^2)}\right) - 2 \operatorname{Li}_2\left(1 + \frac{m_2^2 - m_1^2}{t - m_2^2}\right) \right] + \mathcal{O}(\epsilon)$$

For Li_2 etc, see the file on [notation](#).

[Return to general page on boxes](#)

References

- [1] R. Höpker, Hadroproduction and decay of squarks and gluinos, (in german), DESY Internal report DESY-T-96-02, [\(Relevant excerpt\)](#)