

$$I_4^{\{D=4-2\epsilon\}}(m_2^2, 0, 0, m_1^2; s_{23}, s_{13}; 0, m_2^2, m_1^2, m_1^2)$$

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

$$\kappa = \sqrt{(s - m_1^2 - m_2^2)^2 - 4m_1^2 m_2^2}$$

$$x_s = \frac{1 - \beta}{1 + \beta}, \quad \beta = \sqrt{1 - \frac{4m_1 m_2}{(s - (m_1 - m_2)^2)}}$$

$$I_4^{\{D=4-2\epsilon\}}(0, 0, m_1^2, m_2^2; s, t; m_2^2, m_1^2, m_1^2, 0) = \frac{1}{\kappa(t - m_1^2)} \left[\ln(x_s) \left(\frac{1}{\epsilon} - 2 \ln \left(\frac{m_1^2 - t}{m_1 \mu} \right) - 2 \ln(1 - x_s^2) \right) \right. \\ \left. + \frac{\pi^2}{6} - \ln^2 \left(\frac{m_1}{m_2} \right) - \text{Li}_2(x_s^2) - 2 \text{Li}_2 \left(1 + \frac{m_1 x_s}{m_2} \right) - 2 \text{Li}_2 \left(1 + \frac{m_2 x_s}{m_1} \right) \right]$$

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

This integral has been given in Eq. (6.76) of ref [1].

[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](#))