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Erratum: Gluon-fusion Higgs production in the Standard Model Effective Field Theory

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We have found that the definition of the operator $\mathcal{O}_1$ given in equation (2.2) and the one actually used to derive our results, including the renormalisation matrix, the anomalous dimension matrix and the RGE solutions presented in the paper, differ by an overall minus sign. We have therefore recomputed our results using the definition of the operator $\mathcal{O}_1$ given in equation (2.2).

The main results of our paper, namely the cross sections presented in table 1 and the distributions shown in figures 4, 5 and 6 are however not affected, since they are defined with respect to the Born (and therefore insensitive to the sign of $\mathcal{O}_1$). Modifications are, however, induced in the sign of the $\mathcal{A}_1$ amplitude, the renormalisation matrix, the anomalous dimension matrix and the RGE solutions with respect to those presented in the paper, which should read:

- Relation between $\mathcal{A}_0$ an $\mathcal{A}_1$, equation (3.27):

$$\mathcal{A}_1^{(1)} = -\frac{1}{m_t}\,\mathcal{A}_0^{(1)}\,.$$

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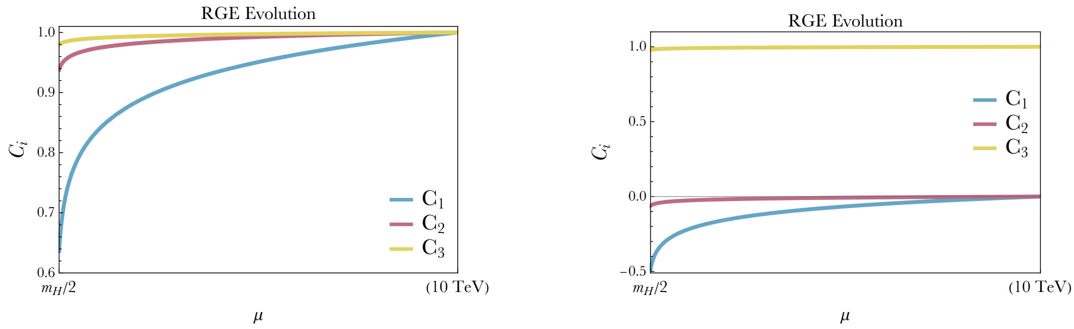

Figure 2. Renormalization group evolution of the three Wilson coefficients between 10 TeV and $m_H/2$ in two scenarios. Left: $C_1 = C_2 = C_3 = 1$ at $\mu = 10\,\text{TeV}$. Right: $C_1 = C_2 = 0$ and $C_3 = 1$ at $\mu = 10\,\text{TeV}$.

- Renormalization matrix, equation (3.20):

$$\delta Z_C^{(1)} = \begin{pmatrix} -\frac{1}{\epsilon} & 0 & \frac{8{m_t}^2}{\epsilon\, v^2} \\ 0 & 0 & z_{23} \\ 0 & 0 & \frac{1}{6\,\epsilon} \end{pmatrix}.$$

  Equation (3.19) is however correct since it only contains trivial terms in the first lign or column.

- Anomalous dimension matrix, equation (3.39):

$$\gamma = \begin{pmatrix} 0 & 0 & 0 \\ 0 & 0 & \frac{1}{8\pi^2\sqrt{2}}\frac{m_t(\mu^2)}{v} \\ 0 & 0 & 0 \end{pmatrix} + \frac{\alpha_s(\mu^2)}{\pi} \begin{pmatrix} -1 & 0 & 8\frac{m_t(\mu^2)^2}{v^2} \\ 0 & 0 & \frac{23}{32\pi^2\sqrt{2}}\frac{m_t(\mu^2)}{v} \\ 0 & 0 & \frac{1}{6} \end{pmatrix} + \mathcal{O}(\alpha_s(\mu^2)^2)\,.$$

- Solution to the RGE for C_1, first line of equation (3.40):

$$C_1(\mu^2) = C_1(Q^2) - \frac{\alpha_s(Q^2)}{\pi} \log\frac{\mu^2}{Q^2} \left(C_1(Q^2) - 8\, C_3(Q^2)\, \frac{m_t^2(Q^2)}{v^2} \right) + \mathcal{O}(\alpha_s(Q^2)^2)\,.$$

As a consequence, figures 2 and 7 have to be corrected:

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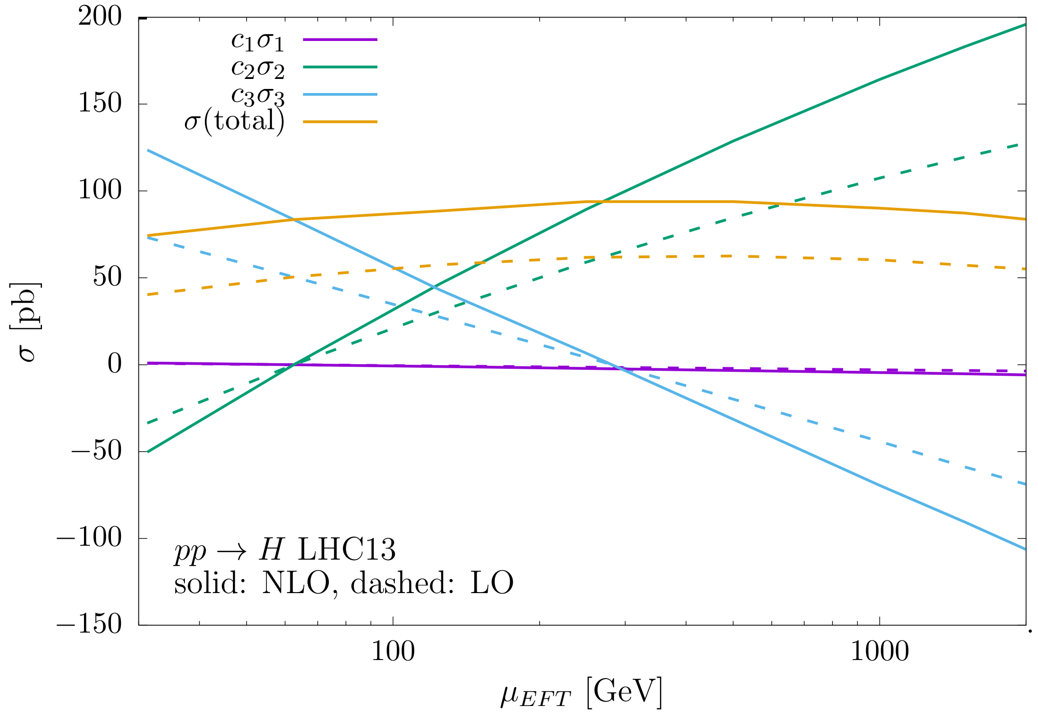

Figure 7. Contributions of the three operators to the inclusive Higgs production cross section at the LHC at 13 TeV as a function of the EFT scale. Starting from one non-zero coefficient at $\mu_{\rm EFT} = m_H/2$ we compute the EFT contributions at different scales, taking into account the running and mixing of the operators. LO and NLO predictions are shown in dashed and solid lines respectively.

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