

Two loop running effects in the Higgs gluon coupling

Tuesday 2 December 2025 10:15 (20 minutes)

In this work we extend the existing literature on two-loop renormalisation group equations (RGEs) for the dimension-six Standard Model Effective Field Theory operator involving two gluons and two Higgs bosons. This operator generates an effective coupling between the Higgs boson and gluons. In particular, we extend and complete the contributions that enter the RGEs proportionally to $g_s^2 y_{t,b}^2$.

We then examine the phenomenological impact of including two-loop running effects in Higgs physics fits at the LHC. To better probe this effect, we perform two kinds of fit. Firstly, using a bottom-up approach, we perform fits in terms of the Wilson Coefficients of the included operators to test how their bounds are modified when the running effects are included. Secondly, we specify UV models involving pairs of Vector-like Quarks (VLQs) coupled to the third-generation Standard Model quarks and we perform the Higgs Physics fits in terms of the VLQ couplings.

Will this talk be in person or remote?

In person

(Optional) If remote, what will be the difference in hours between your local time and the time at CERN (CET)?

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