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On the universal structure of Higgs amplitudes mediated by heavy particles

Recently, there was a controversy about the calculation of loop corrections to $H \rightarrow \gamma\gamma$ and $gg \rightarrow H$, which are very relevant decay and production channels for the Higgs boson at the LHC. The fact that these corrections are both IR and UV finite is not enough to perform the calculation without a proper regularization of the intermediate steps. In this talk, we apply the four-dimensional unsubtraction (FDU) approach to obtain well-defined expressions, which unambiguously lead to the proper results. Moreover, this method allows us to obtain very compact expressions which share the same functional structure independently of the particles circulating the loop.

Experimental Collaboration

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