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Cornering the SMEFT interactions of Higgs through Higgs-Photon production at the LHC

Tuesday 13 December 2022 14:00 (1 hour)

The Standard Model Effective Field Theory (SMEFT) is a useful framework to study indirect deviations, for new non-resonant physics effects at the LHC. In this talk, we will focus on the production of Higgs in association with a photon from pp collisions in the boosted regime. We will discuss the modification of the Higgs couplings to gauge bosons and fermions arising from higher dimensional operators that contribute to this process. Taking some of the admissible dimension-6 operators as illustration, we focus on some kinematic variables that can reflect the presence of such effective operators. This will bring in the identification of the kinematic regions distributed in the corners of the phase space where the SM is depleted. We will discuss the utility of multivariate analysis and jet substructure observables in facilitating the isolation of contributions from the new interactions. Finally, we conclude with the projected limits on the Wilson coefficients of the dimension-6 operators, for which they can be probed at the 3σ level in the high luminosity run of the LHC at 14 TeV.

Session

Beyond the Standard Model

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