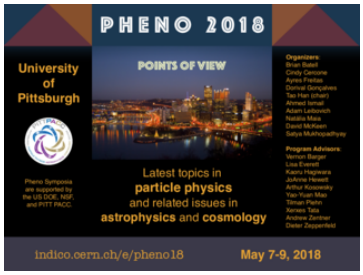

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Scale of New Physics from the Higgs observables with Effective Dimension-6 Operators

Monday 7 May 2018 17:15 (15 minutes)

No matter what the scale of new physics is, deviations from the Standard Model for the Higgs observables will indicate the existence of such a scale. We consider effective six dimensional operators, and their effects on the Higgs productions and decays to estimate this new scale. We analyze and identify the parameter space consistent with known properties of the Higgs boson using recent Run II results from ATLAS and CMS experiments corresponding to ~ 37 inverse femtobarn of data. We then calculate the t¯th productions, as well as double Higgs production at the LHC using the effective couplings and show that these can be much different than those predicted by the Standard Model, for a wide region of allowed parameters space. These predictions can be tested in the current or the future runs of the LHC. We find that the data are consistent with the existence of a new physics scale as low as 500 GeV for a significant region of parameter space of this six-dimensional couplings with these new physics effects at the LHC. We also find that for some region of the parameter space, di-Higgs production can be much larger than that predicted by the Standard Model giving rise to the prospect of its observation even in the current run II of the LHC.

Summary

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