6th IDPASC/LIP PhD Students Workshop



Contribution ID: 44

Type: PhD student talk

Probing the CP nature of the top-Higgs coupling in ATLAS

Thursday, 25 June 2020 16:45 (12 minutes)

The observation of the Higgs boson production in association with a top quark pair (ttH) by ATLAS and CMS in 2018 directly confirmed the existence of the top quark Yukawa coupling. The Standard Model (SM) predicts a CP-even structure to this coupling, but a CP-odd component can arise in models beyond the SM (BSM). Recently, ATLAS and CMS searched for such a component in analyses targetting ttH events in which the Higgs decays to 2 photons. However, the Higgs-photon coupling is loop-induced and could be affected by BSM effects.

We will probe the CP nature of the top-Higgs interaction by analyzing ttH events in the H->bb decay channel, using the full Run-2 data collected by the ATLAS experiment. I will present the analysis strategy for the measurement, the main challenges in modelling signal and background processes and the expected sensitivity for discovery or exclusion of new physics.

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