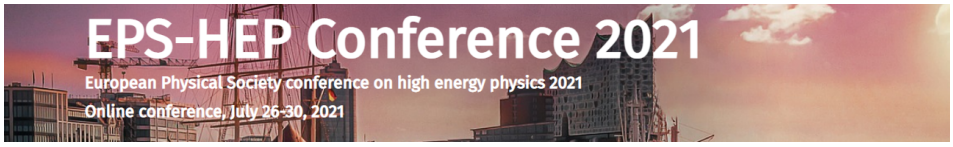

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Effective Field Theory interpretation of the combined Higgs boson measurements with the ATLAS experiment

The experimental study of the Higgs boson at the Large Hadron Collider is rapidly progressing over the past decade. The hunt for the elusive boson is now evolving to measure kinematics properties of the Higgs boson interacting with other particles. These detailed measurements provides an opportunity to study novel physical phenomena which occur at energies which are much large than those reached by particle collisions at the LHC. The Standard Model Effective Field Theory (SMEFT) lays the theoretical foundation that predicts how these signatures look like in the ATLAS detector. This sets the stage to consistently scrutinise deviation of the data with respect to Standard Model prediction. The latest combined Higgs measurements measure kinematic regions defined in the simplified template cross-section framework in the decay channels of H->\gamma\gamma, H->ZZ^*->4l, and H->b\bar{b} using the full Run-2 proton-proton collision dataset at \sqrt{s} = 13 TeV collected with the ATLAS detector in the years 2015-2018. There are a large number of SMEFT operators that affect these measurements, however many operators have similar effects on the measurement and the challenge is therefore to identify the set of directions that can be constrained. In this work, we have identified ten linear combinations of SMEFT operators that can be probed with the analyzed data.

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Collaboration / Activity

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