

Resolving Effective Couplings of the Higgs to Gluons and Tops

Wednesday, 1 February 2017 11:00 (1 hour)

Inclusive Higgs measurements at the LHC have limited resolution on the gluon fusion loops, being unable to distinguish the long-distance contributions mediated by the top quark from possible short-distance new physics effects. Using an Effective Field Theory (EFT) approach we compare several proposed methods to lift this degeneracy, including $t\bar{t}h$ and boosted, off-shell and double Higgs production, and perform detailed projections to the High-Luminosity LHC and a future hadron collider. We also point out the sensitivity of the off-shell channel to modifications of the top-Z couplings. By means of a general analysis we show that the reach is comparable to that of tree-level processes such as $t\bar{t}Z$ production. We also assess the regime of validity of the EFT, performing an explicit comparison for a simple extension of the Standard Model containing one vector-like quark.

Presenter: PAUL, Ayan (ROMA1)