

Searches for top and Higgs compositeness at the LHC

Monday 23 October 2017 11:00 (45 minutes)

A possible extension of the Standard Model that addresses the hierarchy problem in a natural way involves the existence of a new strongly-interacting sector, of which the Higgs boson would be a pseudo-Goldstone boson of a spontaneously-broken global symmetry. One particular realization of this scenario, referred to as “Composite Higgs”, predicts the existence of new fermionic resonances (referred to as vector-like quarks), which can be produced in pairs or single and have multiple decay modes, giving striking experimental signatures at the LHC. Another prediction is the existence of heavy bosonic resonances from the composite sector that would predominantly couple to third-generation quarks, leading to increased 4-top and $t\bar{t}b\bar{b}$ production at high energies. In this talk we will review the strategies and challenges, as well as the latest results, of this research program at the LHC. We will also discuss the prospects for Run 2 and future LHC runs.

Presenter: Prof. JUSTE, Aurelio (IFAE)