Contribution ID: **331** Type: **Oral Presentation**

Constraints on new hypothetical particles in the Higgs sector using LHC Run 1 and 2 data

Thursday, 7 July 2016 11:30 (20 minutes)

Abstract content
   (Max 300 words)
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With Run 2 of the LHC currently underway at a record-breaking energy of 13 TeV centre of mass energy, new physics searches have come to the fore. In particular, the ATLAS and CMS collaborations are beginning to focus more on extending the Higgs sector of the Standard Model. Previous work has shown that Run 1 data from both ATLAS and CMS hint at the existence of a new heavy scalar with a mass around 270 GeV. This work will extend this idea by introducing a full Two-Higgs Doublet Model and outlining the potential Run 2 searches which could constrain the parameters of such a model, should it exist in nature. This will be presented in the context of searches for Higgs production in association with missing energy, leptons and large jet multiplicities. Some preliminary studies related to the rates and kinematic distributions of processes of interest are presented and their implications are discussed.

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Yes

Level for award
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MSc

Main supervisor (name and email)
and his / her institution

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Session Classification: Nuclear, Particle and Radiation Physics (1)

Track Classification: Track B - Nuclear, Particle and Radiation Physics