

Exploring LHC Run 1 and 2 data using the Madala hypothesis

The Standard Model (SM) Higgs boson, with its experimental discovery in 2012, has long been an interesting particle to study with the intention of exploring new physics ideas beyond the SM (BSM). Its properties are still not well understood, and there are several features in LHC Run 1 and Run 2 data which point at the possibility of extensions to the SM Higgs sector. This work explores the *Madala hypothesis*, which is the introduction of a heavy scalar (the Madala boson) to the SM, in addition to a real scalar S and dark matter (DM) candidate χ . This hypothesis has previously been used to explain several anomalous features observe in the LHC Run 1 data. This work extends the study to Run 2 data, and shows that the particle spectrum predicted in the Madala hypothesis is indeed compatible with LHC data. Further study prospects and striking signatures for searches are presented.

I intend to submit my contribution for the proceedings

Yes

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