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Type: LHC experiments

Search for Dark Matter produced in association with a Higgs boson decaying to bb at $\sqrt{s} = 13$ TeV using 80 fb^{-1} with the ATLAS detector

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Search for events with large missing transverse momentum (MET) recoiling against a SM particle is a probe for detecting Dark Matter (DM) at the LHC. The discovery of the Higgs boson h opens a new opportunity through the h +MET signature, with $h \rightarrow bb$ being the most probable decay channel. Depending on the amount of MET in the event, the Higgs candidate is reconstructed as a system of two b -tagged small radius jets or a single large radius jet containing two b -tagged subjets. The results are interpreted in the context of a simplified model Z' -2HDM and also model independent limits on the visible cross section are provided for $h \rightarrow bb + \text{DM}$ beyond standard model processes. The analysis of data recorded by the ATLAS detector during 2015 and 2016 has already excluded a substantial region of the parameter space of the Z' -2HDM model. Over the last year, new techniques have been studied in order to overcome the current limitations due to jet merging in the boosted regime. In this context, one of the main improvement in sensitivity is the usage of Variable-Radius track jets for b -tagging. Results including data recorded in 2017, corresponding to the unprecedented amount of luminosity of 80 fb^{-1} , will be presented in this poster.

Presenter: FABIANI, Veronica (Nikhef National institute for subatomic physics (NL))

Session Classification: Posters session