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Search for Dark Matter produced in association with a Higgs Boson in proton-proton collisions at √s = 13 TeV

Monday, 11 December 2023 18:00 (20 minutes)

Chair: D. Kar/P. Mal

Abstract: Search for Dark Matter produced in association with a Higgs boson in proton–proton collisions at s = 13 TeV Ashim Roy B.N. Mandal University E-mail: ashim.roy@cern.ch On behalf of CMS collaboration Abstract A search for dark matter (DM) particles was conducted by analyzing proton-proton collision data collected by the CMS experiment at a center-of-mass energy of 13TeV at the LHC in 2016. This dataset corresponded to an integrated luminosity of 35.9 fb-1. The search was centered around events with a candidate Higgs boson and a significant amount of missing transverse momentum. To maximize the analysis's sensitivity, the investigation was carried out in five distinct Higgs boson decay channels: h → bb, h → ⊠⊠, h → t+t-, h → W+W+, and h → ZZ. The results from each of these individual channels were carefully combined to enhance the sensitivity of the analysis. However, no substantial excess beyond the expected standard model background was detected in any of the above channels. As a result, the study proceeded to establish limits on dark matter production within the framework of two simplified models.

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