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Search for dark matter produced in association with a Higgs boson decaying to pair of bottom quarks using $80\ fb^{-1}$ of proton collisions at $\sqrt{s} = 13$ TeV with ATLAS detector

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A search for dark matter production in association with a Higgs boson decaying to b-quarks is performed using pp collisions at a centre-of-mass energy of $\sqrt{s} = 13\,\mathrm{TeV}$. The dataset has an integrated luminosity of 80 $\mathrm{fb}^{-1}$and was recorded with the ATLAS detector at the Large Hadron Collider. Selected collision events comprise large missing transverse momentum and either two b-tagged small radius jets or a single large radius jet containing two b-tagged subjets. The identification of these subjects is based on a jet algorithm where the radius parameter is shrinked as the transverse momentum increases. The results are interpreted in the context of a simplified model (Z'-2HDM) which describes the interaction of dark matter and standard model particles via new heavy mediator particles. Also model independent limits on the fiducial cross-section for Higgs + missing transverse momentum production are provided.

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