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Search for dark matter in events with missing transverse momentum and a Higgs boson decaying to a photon pair in pp collisions at sqrt(s) = 13 TeV with the ATLAS detector

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We present a search for dark matter production in events with missing transverse momentum and a Higgs boson decaying to a photon pair using 139 fb^{-1} of pp collisions recorded by the ATLAS experiment at a center-of-mass energy of 13 TeV. The search considers three simplified dark matter models which include either vector or pseudo-scalar mediators and predict final states with a pair of dark matter candidates and a Higgs boson. Events are selected using a combination of missing transverse momentum cuts and a boosted decision tree (BDT) trained to separate dark matter signals from background. This talk will focus on the optimization of the BDT training and categorization procedure, resulting in a final selection which provides improved sensitivity to all considered signal models. No significant excess is observed and limits are set on various model parameters such as the mass of the dark matter candidate.

Are you are a member of the APS Division of Particles and Fields?

No

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