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Probing Dark Matter with the Higgs Boson in the diphoton final state with CMS

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A search for the associated production of dark matter with a Higgs boson which decays into two photons is presented. The search uses data from proton-proton collisions at a center-of-mass energy of 13 TeV, collected with the CMS detector at the LHC in 2016, corresponding to an integrated luminosity of 35.9 fb−1. Results are interpreted in the context of two dark matter models: a two-Higgs-doublet-Z'model where the Z'decays to a pseudoscalar and a standard model-like Higgs Boson and a baryonic Z'simplified model. A combination of these results with a similar search where the Higgs boson decays to two tau leptons is finally presented.

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