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Volume 2018, Issue 11, 1 November 2018, Article number 18Search for an exotic decay of the Higgs boson to a pair of light pseudoscalars in the final state of two muons and two τ leptons in proton - proton collisions at $\sqrt{s} = 13$ TeV (Article) [\(Open Access\)](#)Sirunyan, A.M.^a, Tumasyan, A.^a, Adam, W.^b, Ambrogi, F.^b, Asilar, E.^b, Bergauer, T.^b, Brandstetter, J.^b, Dragicevic, M.^b, Erö, J.^b, Escalante Del Valle, A.^b, Flechl, M.^b, Frühwirth, R.^{b,gu}, Ghete, V.M.^b, Hrubec, J.^b, Jeitler, M.^{b,gu}, Krammer, N.^b, Krätschmer, I.^b, Liko, D.^b, Mädlener, T.^b, Mikulec, I.^b, Rad, N.^b[View additional authors](#) \downarrow ^aYerevan Physics Institute, Yerevan, Armenia^bInstitut für Hochenergiephysik, Wien, Austria^cInstitute for Nuclear Problems, Minsk, Belarus[View additional affiliations](#) \downarrow

Abstract

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A search for exotic Higgs boson decays to light pseudoscalars in the final state of two muons and two τ leptons is performed using proton - proton collision data recorded by the CMS experiment at the LHC at a center-of-mass energy of 13 TeV in 2016, corresponding to an integrated luminosity of 35.9 fb⁻¹. Masses of the pseudoscalar boson between 15.0 and 62.5 GeV are probed, and no significant excess of data is observed above the prediction of the standard model. Upper limits are set on the branching fraction of the Higgs boson to two light pseudoscalar bosons in different types of two - Higgs -doublet models extended with a complex scalar singlet.[Figure not available: see fulltext.]. © 2018, The Author(s).

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