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Measurements of properties of the Higgs boson decaying to a W boson pair in pp collisions at root s=13 TeV

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Abstract

Measurements of the production of the standard model Higgs boson decaying to a W boson pair are reported. The W+ W- candidates are selected in events with an oppositely charged lepton pair, large missing transverse momentum, and various numbers of jets. To select Higgs bosons produced via vector boson fusion and associated production with a W or Z boson, events with two jets or three or four leptons are also selected. The event sample corresponds to an integrated luminosity of 35.9 fb⁻¹, collected in pp collisions at root s = 13 TeV by the CMS detector at the LHC during 2016. Combining all channels, the observed cross section times branching fraction is 1.28(-0.17)(+0.18) times the standard model prediction for the Higgs boson with a mass of 125.09 GeV. This is the first observation of the Higgs boson decay to W boson pairs by the CMS experiment. (c) 2019 The Author(s). Published by Elsevier B.V.

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