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Search for the associated production of the Higgs boson and a vector boson in proton-proton collisions at $\sqrt{s}=13$ TeV via Higgs boson decays to leptons

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Abstract

A search for the standard model Higgs boson produced in association with a W or a Z boson and decaying to a pair of leptons is performed. A data sample of proton-proton collisions collected at $\sqrt{s}=13$ TeV by the CMS experiment at the CERN LHC is used, corresponding to an integrated luminosity of 35.9 fb. The signal strength is measured relative to the expectation for the standard model Higgs boson, yielding $\mu = 2.5 \pm 1.4$. These results are combined with earlier CMS measurements targeting Higgs boson decays to a pair of leptons, performed with the same data set in the gluon fusion and vector boson fusion production modes. The combined signal strength is $\mu = 1.24 \pm 0.29$ (1.00 ± 0.24 expected), and the observed significance is 5.5 standard deviations (4.8 expected) for a Higgs boson mass of 125 GeV.

Keywords

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KeyWords Plus: BROKEN SYMMETRIES; GAUGE; MASSES

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