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Studies of Higgs boson production in the four-lepton final state at $\sqrt{s}=13\text{TeV}$

Studies of Higgs boson production using the $H \rightarrow ZZ \rightarrow 4l$ decay channel are performed using a data sample corresponding to an integrated luminosity of 2.8 fb^{-1} of pp collisions at a center-of-mass energy of 13 TeV collected by the CMS experiment at the LHC during 2015. The observed significance for the standard model Higgs boson with $m_H = 125.09 \text{ GeV}$ is 2.5σ , where the expected significance is 3.4σ . The model independent fiducial cross section is measured to be $\sigma_{\text{fid.}} = 2.48^{+1.48}_{-1.14}(\text{stat.} + \text{sys.}) + 0.01 - 0.04(\text{model dep.}) \text{ fb}$. In addition, a search for an additional Higgs boson is performed for a range of masses up to 1 TeV and with various widths, and no significant excess is observed. The results of this search are interpreted in the context of the two Higgs doublet model.

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