

Measurements of the Higgs boson production cross section and couplings in the W boson pair decay channel in pp collisions at a centre-of-mass energy of 13 TeV with the CMS detector

The production cross sections of the Standard Model Higgs boson decaying into a pair of W bosons have been measured in proton-proton collisions at a center-of-mass energy of 13 TeV. The analysis targets Higgs bosons produced through gluon-gluon fusion, vector boson fusion, and in association with a vector boson. Candidate events were selected based on the presence of at least two charged leptons and moderate missing transverse momentum, focusing on scenarios where at least one leptonically decaying W boson is originating from the Higgs boson. The results are presented as both inclusive and differential cross sections within the simplified template cross section framework, and include measurements of the Higgs boson's couplings to vector bosons and fermions. Data collected by the CMS detector from 2016 to 2018, corresponding to an integrated luminosity of 138 fb^{-1} , were utilized for this analysis. The signal strength modifier, defined as the ratio of the observed production rate in a specific decay channel to the Standard Model expectation, was measured and found to be consistent with the Standard Model within uncertainties.

Track type

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Author: DASH, Ganapati (Indian Institute of Technology Madras (IN))

Presenter: DASH, Ganapati (Indian Institute of Technology Madras (IN))

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