

Search for the Standard Model Higgs boson decaying to b quark with CMS experiment

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A search for the Standard Model (SM) Higgs boson decaying to bottom quarks pairs is presented. Two production channels have been analyzed: vector-boson fusion and associated production with a vector boson decaying to leptons. The search is performed on data collected with the CMS detector at LHC during 2011 and 2012, at center-of-mass energies of 7 and 8 TeV, corresponding to integrated luminosities of about 5.0 fb⁻¹ and 19.0 fb⁻¹, respectively. A 95% confidence level upper limit of 1.79 (0.89) times SM Higgs boson cross section has been observed (expected) at a Higgs boson mass of 125 GeV. An excess of events is observed above the expected background with a local significance of 2.2 standard deviations, which is consistent with the expectation from the production of the SM Higgs boson. The signal strength corresponding to this excess, relative to that of the SM Higgs boson, is 0.97 ± 0.48 .

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