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## Search for the Standard Model Higgs boson decaying into a bottom quark pair with the CMS experiment

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A search for the Standard Model (SM) Higgs boson decaying to bottom quark pairs is presented. Three different production mechanisms for the Higgs boson have been investigated: the vector boson fusion (VBF), the associated production with a W or Z boson decaying leptonically (VH) and the associated production with pair of top quarks (ttH). These searches are based on data collected with the CMS detector at LHC during 2011 and 2012, at 7 and 8 TeV centre-of-mass energy, corresponding to integrated luminosities of about 5.0 fb<sup>-1</sup> and 19.0 fb<sup>-1</sup> respectively. Based on the VBF and the VH analysis a 95% confidence level upper limit of 1.79 (0.89) times the SM Higgs boson cross section has been observed (expected) for the Higgs mass hypothesis of 125 GeV. An excess of events has been observed with a local significance of 2.2 standard deviations and a signal strength of 0.97 +/- 0.48. The result is consistent with the expectation from the production of the SM Higgs boson. Results of the search for ttH with the Higgs boson decaying in a bottom quark pair are reported as well. Both lepton + jets channel (tt → ℓ±ν qq bb, H → bb), dilepton channel (tt → ℓ+ν ℓ-νbb, H → bb) are considered. Assuming standard model Higgs boson branching fractions, a 95% C.L. upper limit on the ttH production cross section is presented.

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