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## Combination of Searches for Higgs Boson Pair Production in Proton-Proton Collisions at root s=13 TeV

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### Abstract

This Letter describes a search for Higgs boson pair production using the combined results from four final states: bb gamma gamma, bb tau tau, bbbb, and bbVV, where V represents a W or Z boson. The search is performed using data collected in 2016 by the CMS experiment from LHC proton-proton collisions at root s = 13 TeV, corresponding to an integrated luminosity of 35.9 fb<sup>-1</sup>. Limits are set on the Higgs boson pair production cross section. A 95% confidence level observed (expected) upper limit on the non-resonant production cross section is set at 22.2 (12.8) times the standard model value. A search for narrow resonances decaying to Higgs boson pairs is also performed in the mass range 250-3000 GeV. No evidence for a signal is observed, and upper limits are set on the resonance production cross section.

### Keywords

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