Search for pair production of Higgs bosons in the bbbb final state using proton-proton collisions at root s=13 TeV with the ATLAS detector

Aaboud, M., Aad, G., Abbott, B., Abdallah, J., Abeloos, B., Aben, R., ... & Navarro, L. B. (2016). Search for pair production of Higgs bosons in the b b¯ b b¯ final state using proton-proton collisions at s= 13 TeV with the ATLAS detector. Physical Review D, 94(5), 052002. Accessed 23 Apr 2021.

Abstract

A search for Higgs-boson pair production in the b¯bb¯b final state is carried out with 3.2 fb–1 of proton-proton collision data collected at √s=13 TeV with the ATLAS detector. The data are consistent with the estimated background and are used to set upper limits on the production cross section of Higgs-boson pairs times branching ratio to b¯bb¯b for both nonresonant and resonant production. In the case of resonant production of Kaluza-Klein gravitons within the Randall-Sundrum model, upper limits in the 24 to 91 fb range are obtained for masses between 600 and 3000 GeV, at the 95% confidence level. The production cross section times branching ratio for nonresonant Higgs-boson pairs is also constrained to be less than 1.22 pb, at the 95% confidence level..