

Higgs to two b's or not two b's: The measurement for a Standard Model Higgs boson, produced in association with a W or Z boson, decaying into a pair of b-quarks in pp collisions at 13 TeV with the ATLAS detector

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Following the discovery of the Higgs boson in 2012 by both the ATLAS and CMS experiments, a wealth of papers have been published concerning measurements or observations of the Higgs' decay modes. However, the most dominant decay mode, $H \rightarrow b\bar{b}$, proved to be an elusive and challenging search due to the low signal-to-background environment, and a diverse range of backgrounds arising from multiple Standard Model processes. The backgrounds include W +jets, Z +jets, and $t\bar{t}$ production amongst others. Measurements of the WH and ZH production, with the W or Z boson decaying into charged leptons (electrons or muons, including those produced from the leptonic decay of a tau lepton), in the $H \rightarrow b\bar{b}$ decay channel in pp collisions at 13 TeV, corresponding to an integrated luminosity of 139 fb^{-1} , with the ATLAS detector was performed. The production of a Higgs boson in association with a W or Z boson has been established with observed (expected) significances of 4.0 (4.1) and 5.3 (5.1) standard deviations, respectively.

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