

Search for the non-resonant production of Higgs boson pairs in the $b\bar{b}\tau^+\tau^-$ final state with the ATLAS detector

This talk will present the latest search for the non-resonant production of Higgs boson pairs in the $HH \rightarrow b\bar{b}\tau^+\tau^-$ channel. The search is performed using 140 fb^{-1} of proton-proton collisions at a centre-of-mass energy of 13 TeV recorded by the ATLAS detector at the LHC. The analysis strategy is optimized to probe anomalous values of the Higgs boson self-coupling modifier κ_λ and of the quartic $HHVV$ ($V = W, Z$) coupling modifier κ_{2V} . No significant excess above the expected background from Standard Model processes is observed. An observed (expected) upper limit $\mu_{HH} < 5.9$ (3.3) is set at 95% confidence-level on the Higgs boson pair production cross-section normalized to its Standard Model prediction. The coupling modifiers are constrained to an observed (expected) 95% confidence interval of $-3.1 < \kappa_\lambda < 9.0$ ($-2.5 < \kappa_\lambda < 9.3$) and $-0.5 < \kappa_{2V} < 2.7$ ($-0.2 < \kappa_{2V} < 2.4$), assuming all other Higgs boson couplings are fixed to the Standard Model prediction.

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