

Search for heavy resonances decaying into a W boson and a Higgs boson in final states with leptons and b-jets in 139 fb^{-1} of pp collisions at $\sqrt{s}=13\text{TeV}$ with the ATLAS detector

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This talk presents a search for a new resonance W' decaying into a W boson and a 125 GeV Higgs boson H in the $\ell^\pm \nu b\bar{b}$ final states, where $\ell = e, \mu, \text{ or } \tau$, using pp collision data at 13 TeV corresponding to an integrated luminosity of 139 fb^{-1} collected by the ATLAS detector at LHC. The search considers the one-lepton channel, where an electron, muon, or leptonically decaying tau lepton is successfully reconstructed. Both resolved and merged regimes, as well as one and two b-tag regions, are employed to reconstruct the $H \rightarrow b\bar{b}$ decay across the range of W' masses. The search is conducted by examining the reconstructed invariant mass distributions of $W' \rightarrow WH$ candidates in the mass range from 400 GeV to 5 TeV. Upper limits are placed at the 95% confidence level on the production cross-section times branching fraction of heavy W' resonances in heavy-vector-triplet models.

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