

Combination of searches for heavy spin-1 resonances with the ATLAS detector

A combination of searches for new heavy spin-1 resonances decaying into different pairings of W, Z, or Higgs bosons, as well as directly into leptons or quarks, is presented. The data sample used corresponds to 139 fb⁻¹ of proton-proton collisions at $\sqrt{s} = 13\text{TeV}$ collected during 2015–2018 with the ATLAS detector at the CERN Large Hadron Collider. Analyses selecting quark pairs (qq, bb, tt, and tb) or third-generation leptons ($\tau\nu$ and $\tau\tau$) are included in this kind of combination for the first time. A simplified model predicting a spin-1 heavy vector-boson triplet is used. Cross-section limits are set at the 95% confidence level and are compared with predictions for the benchmark model. These limits are also expressed in terms of constraints on couplings of the heavy vector-boson triplet to quarks, leptons, and the Higgs boson. The complementarity of the various analyses increases the sensitivity to new physics, and the resulting constraints are stronger than those from any individual analysis considered.

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