

# A search for heavy Higgs bosons decaying into vector bosons in same-sign two-lepton final states in $pp$ collisions at $\sqrt{s} = 13$ TeV with the ATLAS detector

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A search for heavy Higgs bosons decaying into a pair of vector bosons and produced in association with a vector boson is performed, using final states with two leptons of the same electric charge (electrons or muons), missing transverse momentum and jets. A data sample of proton-proton collisions at a centre-of-mass energy of 13 TeV recorded with the ATLAS detector at the Large Hadron Collider between 2015 and 2018 is used. The data correspond to a total integrated luminosity of  $139 \text{ fb}^{-1}$ . The observed data are in agreement with Standard Model background expectations. The results are interpreted using higher dimensional operators in an Effective Field Theory. The upper production cross-section limits at 95% confidence level are calculated as a function of the heavy Higgs boson mass and coupling strengths to vector bosons. Limits are set in the Higgs boson mass region 300 to 1500 GeV, and depend upon the assumed couplings. The highest heavy Higgs boson mass excluded with the coupling combinations explored is 900 GeV. Limits on coupling strength are also provided.

**Primary author:** XU, yue (Tsinghua University)

**Co-author:** Prof. CHEN, Xin (Tsinghua University)

**Presenter:** XU, yue (Tsinghua University)

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