

Observation of electroweak production of two jets and a Z-boson pair with the ATLAS detector

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Vector boson scattering processes are important for the current Run 2 and future runs of the Large Hadron Collider. The study of high-energy behaviours of VBS is crucial to understand the nature of the EWSB. At the LHC, the scattering of massive electroweak gauge bosons is accessible through the measurement of purely electroweak production of two jets and two gauge bosons. Among all the EW VVjj processes, ZZjj offers a clean and competitive channel to study EWSB physics. The ATLAS experiment has measured the cross sections for inclusive production of ZZ plus two jets and the observed signal strength of the EW production with 139 fb⁻¹ of pp collision data at $\sqrt{s}=13$ TeV collected during 2015-2018. Two final states, ll $\bar{l}l$ and ll $\nu\nu$, are considered. Combined these two final states, the hypothesis of no electroweak production is rejected with a statistical significance of 5.5 σ .

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