

Search for the electroweak production of supersymmetric particles in $\sqrt{s}=8$ TeV pp collisions with the ATLAS detector

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Abstract

The ATLAS experiment has performed extensive searches for the electroweak production of charginos, neutralinos, and staus. This article summarizes and extends the search for electroweak supersymmetry with new analyses targeting scenarios not covered by previously published searches. New searches use vector-boson fusion production, initial-state radiation jets, and low-momentum lepton final states, as well as multivariate analysis techniques to improve the sensitivity to scenarios with small mass splittings and low-production cross sections. Results are based on 20 fb^{-1} of proton-proton collision data at $\sqrt{s}=8$ TeV recorded with the ATLAS experiment at the Large Hadron Collider. No significant excess beyond Standard Model expectations is observed. The new and existing searches are combined and interpreted in terms of 95% confidence-level exclusion limits in simplified models, where a single production process and decay mode is assumed, as well as within phenomenological supersymmetric models..