

A search for top squarks with R-parity-violating decays to all-hadronic final states with the ATLAS detector in $\sqrt{s}=8$ TeV proton-proton collisions

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Abstract

A search for the pair production of top squarks, each with R-parity-violating decays into two Standard Model quarks, is performed using 17.4 fb^{-1} of $\sqrt{s} = 8$ TeV proton-proton collision data recorded by the ATLAS experiment at the LHC. Each top squark is assumed to decay to a b- and an s-quark, leading to four quarks in the final state. Background discrimination is achieved with the use of b-tagging and selections on the mass and substructure of large-radius jets, providing sensitivity to top squark masses as low as 100 GeV. No evidence of an excess beyond the Standard Model background prediction is observed and top squarks decaying to bs are excluded for top squark masses in the range $100 \leq m(\tilde{t}) \leq 315$ GeV at 95% confidence level.

Keywords

Hadron-Hadron scattering (experiments).