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Search for production of supersymmetric particles in final states with missing transverse momentum and multiple b-jets at s√=13~TeV proton-proton collisions with the ATLAS experiment

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A search for supersymmetry involving the pair production of gluinos decaying via third-generation squarks to the lightest neutralino ($\tilde{\chi}$ 10) is reported. It uses LHC proton-proton collision data at a center-of-mass energy s√=13 TeV, corresponding to an integrated luminosity of 36 ifb collected with the ATLAS detector in 2015 and 2016. The search is performed in events containing large missing transverse momentum and several energetic jets, at least three of which must be identified as originating from b-quarks, and are also used to form large-R jets using jet reclustering. To increase sensitivity, the sample is further divided depending on the presence or absence of electrons or muons. No excess is found above the predicted background. For $\tilde{\chi}$10 masses below approximately 200 GeV, gluino masses of less than 2.0 (1.9) TeV are excluded at the 95% CL in simplified models of the pair-production of gluinos decaying via top (bottom) squarks. An interpretation of the limits in terms of the branching ratios of the gluinos in third generation squarks is also provided. These results significantly extend the exclusion limits obtained with the 3.2 fb−1 of data collected in 2015, with the exclusion limit on the gluino mass extended by up to 250 GeV for the case of massless neutralinos.

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