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Search for supersymmetry in final states with two same-sign or three leptons and jets using 13 TeV ATLAS data

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A search for strongly produced supersymmetric particles using signatures involving multiple energetic jets and either two isolated same-sign leptons (e or μ), or at least three isolated leptons, is presented. The analysis relies on the identification of b-jets and high missing transverse momentum to achieve good sensitivity. A data sample of proton–proton collisions at $\sqrt{s} = 13$ TeV recorded with the ATLAS detector at the Large Hadron Collider in 2015 and 2016, corresponding to a total integrated luminosity of 36.1 fb^{-1} , is used for the search. No significant excess over the Standard Model prediction is observed. The results are interpreted in several simplified supersymmetric models featuring R-parity conservation or R-parity violation, extending the exclusion limits from previous searches. In models considering gluino pair production, gluino masses are excluded up to 1.87 TeV at 95% confidence level. When bottom squarks are pair-produced and decay to a chargino and a top quark, models with bottom squark masses below 700 GeV and light neutralinos are excluded at 95% confidence level.

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