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## Search for R-parity violating supersymmetry in a final state containing leptons and many jets with the ATLAS experiment

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R-parity-violating (RPV) SUSY models are well motivated theories, with fewer experimental constraints than many R-parity-conserving models, and allow for more natural supersymmetric mass spectra. This talk presents the latest result for a search for RPV SUSY in final states with at least one lepton and high number of jets, several of which may be b-jets. The analysis follows a general approach to be sensitive to a large variety of models for strong production of SUSY particles. Additionally, it introduces the use of novel machine learning techniques to reach sensitivity, for the first time at the LHC, for electroweak production of SUSY particles (including Higgsinos) with subsequent RPV prompt decays to quarks. These machine learning techniques are based on the distance correlation training and they play a key role also in the data-driven estimation of the backgrounds. The analysis sets impressive limits reaching as high as 2.4 TeV in gluino mass, 1.35 TeV in top-squark mass, and 320 (365) GeV in higgsino (wino) mass.

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