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Search for R-parity violating or long-living SUSY particles

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The proton-proton collisions at $\sqrt{s} = 13$ TeV at the LHC have increased the ATLAS sensitivity to production of strongly produced supersymmetric particles. If R-parity is not conserved, these particles may decay to jets and leptons, and lightest supersymmetric particles may decay into many leptons with or without missing transverse momentum. Several supersymmetric models also predict massive long-lived supersymmetric particles. Such particles may be detected through abnormal specific energy loss, appearing or disappearing tracks, displaced vertices, long time-of-flight or late calorimetric energy deposits. The talk presents recent results from searches of supersymmetry in resonance production, R-parity violating signatures and events with long-lived particles with the ATLAS detector using LHC Run 2 data.

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