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Searches for supersymmetry in resonance production, R-parity violating signatures and events with long-lived particles with the ATLAS detector

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An extended QCD sector beyond the minimal supersymmetric standard model or the admission of R-parity violation introduces new signatures to the search for supersymmetry at the LHC. Strongly interacting resonances may decay to jets, sleptons may decay via lepton-flavour violating processes 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 supersymmetry in resonance production, R-parity violating signatures and events with long-lived particles with the ATLAS detector.

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