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Search for B-L RPV Supersymmetry Through Stop Pair Production in Final States with 2 b-jets and 2 Leptons Using the Run 2 Data from the ATLAS Detector

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Supersymmetry is a natural solution to many phenomena left unexplained by the Standard Model, such as the hierarchy problem that arises due to quantum corrections to the Higgs boson mass. Models which allow for R-parity violation (RPV) are favored by recent lepton flavor anomalies and can provide insight into the neutrino mixing hierarchy. The direct pair production of the stop, the supersymmetric partner to the top quark, is of particular interest due its sizable production cross section at the LHC, which allows for searches at the TeV scale. We present a search for stop pair production, with each stop decaying via an RPV coupling to a b quark and a charged lepton. This final state with two oppositely-charged leptons and two b-quark-initiated jets allows for a high reconstruction efficiency. The reconstructed mass asymmetry is used to properly pair candidate jets and leptons to form stop candidates, enabling powerful background rejection. In this talk, I will discuss the current work on the *B-L* RPV stop analysis using the full Run 2 dataset collected with the ATLAS detector.

Career stage

Graduate student

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