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Search for the supersymmetric partner to the top quark in the all-hadronic channel with the ATLAS Detector.

Monday 8 April 2019 14:30 (15 minutes)

The author/presenter will outline the status of the search for Supersymmetry (SUSY) in the 3rd generation sector, particularly the SUSY partner of the top quark, using the 140.5 fb dataset collected from the ATLAS detector from LHC Run 2 (2015-2018).

This analysis is searching in the all-hadronic channel for a reconstructed final state of top-antitop pairs and Missing Energy, looking to observe R-Parity Conserving (RPC) SUSY. LHC Run 2 has profited from both increased statistics and improved understanding of the underlying objects of each collision event, and we will present the benefits this has offered for our search.

We will cover the search strategy, namely the definition of signal, control and validation regions for our background processes, the ATLAS detector configuration, key backgrounds and (if possible) new search results. The author will outline their work in particular into the study of constraining the all hadronic $t\bar{t} + Z \rightarrow 2$ neutrinos) background in an all hadronic channel using the semi-leptonic $t\bar{t} + Z \rightarrow 2$ leptons) in a trilepton channel, a significant new component to the search strategy.

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