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Trilepton SUSY signatures at ATLAS

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The trilepton signature is one of the 'golden' channels for SUSY due to its striking signature of three leptons and missing energy in the final state. The classic trilepton SUSY signature is gaugino pair production and decay via virtual Z and W bosons to three leptons, neutrinos and the LSP. The Tevatron collider at Fermilab has been looking for these events using proton-antiproton collisions at a centre of mass energy of 1.96 TeV. The D0 and CDF experiments have observed no excess of candidates of the classic SUSY trilepton signature with respect to the Standard Model prediction. The LHC will be colliding protons at seven times the energies of the Tevatron and at luminosities 100 times higher, greatly increasing the possibility of observing a trilepton SUSY signature. Trilepton signatures are incredibly important to ATLAS, despite their low statistics, since backgrounds are greatly reduced by the clean leptonic event topology, and the application of a minimal number of event selection cuts could yield a SUSY discovery signal at the LHC.

Talk, Poster, or Talk & Poster

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Author: Ms POTTER, Christina (RHUL)

Presenter: Ms POTTER, Christina (RHUL)

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