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Searching for Weakly Produced Supersymmetry at the ATLAS experiment

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This talk focuses on the search for weakly produced Supersymmetric particles in the ATLAS experiment at the LHC using events with exactly two reconstructed leptons. This analysis was first performed using the 2011 dataset and an extension based on 2012 data is underway. This talk will discuss the motivations for the search, outline the signal processes of interest and the signal regions chosen. Because of the low signal cross sections for weak production processes, high background suppression is required, and in both the 2011 and 2012 analyses most of the sensitivity is driven by signal regions based on the “Transverse mass variable”, which will be explained in the talk. In the case that no excess is observed over the Standard Model Background expectation, the results are used to exclude areas of SUSY parameter space where a statistically significant signal would have been observed.

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