

**Yesterday's signal, today's background:  
Precision studies of  $W$ +jets in a quest for Supersymmetry!**

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The TeV energy scale is a new realm in the exploration of particle physics. At these energies, where electroweak symmetry breaking occurs, a plethora of theoretical models predicting 'new physics' exists. Many of these theories such as Supersymmetry, predict the abundance of new heavy particles with masses of a few TeV. The Large Hadron Collider (LHC) at CERN is the highest energy collider in the world with the unique ability to probe this unexplored energy region. With the LHC fully operational, we are in the enviable position to start the search for new physics. In this talk I will discuss recent searches for new physics at the TeV energy scale with the ATLAS detector. In doing so, I will focus on how precision studies of well-known Standard Model particles such as the  $W$  boson in association with jets are critical building blocks for searches for physics beyond the Standard Model.