

Searches for Supersymmetric BSM particles via Strong Production at ATLAS

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SuperSymmetry (SUSY) is a popular framework for the development of theoretical models of physics beyond the standard model, which have the potential to address unresolved questions in particle physics, such as the hierarchy problem, dark matter candidates and more. The key predicted feature of SUSY is the existence of superpartner particles, where each SM particle has a superpartner with higher mass and the opposite spin properties, that is to say every SM boson's superpartner is fermionic and vice-versa. The ATLAS detector, situated at CERN, measures proton-proton collisions from the Large Hadron Collider, and is a source of experimental collision event data in which it is possible to search for the signatures of SUSY particles. ATLAS has performed multiple analyses for both Electroweak and Strong produced SUSY. Strong production of super-quarks (squarks) and super-gluons (gluinos) has the advantage of larger cross-sections, and generally involves the pair production of these particles in R-parity conserving models at the LHC.

In this talk I will present the general strategies and challenges of Strong production SUSY searches, and mention the novel tools and techniques that have been developed to enhance these searches. I will touch on past searches and future prospects for the upcoming LHC data taking.