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Searches for electroweak production of supersymmetric gauginos and sleptons at LHC

Supersymmetry is one of the most searched-for extensions of the Standard Model. In its minimal realization, the Minimal Supersymmetric Standard Model, it predicts a new bosonic (fermionic) partner for each fundamental standard Model fermion (boson), as well as an additional Higgs doublet. The sector of sparticles with only electroweak interactions contains charginos, neutralinos, sleptons, and sneutrinos. Charginos and neutralinos are the mass eigenstates formed by linear superpositions of the superpartners of the charged and neutral Higgs bosons and electroweak gauge bosons. In R-parity conserving models, sparticles can only be produced in pairs and the lightest supersymmetric particle is stable. This is typically the lightest neutralino and can provide a natural candidate for dark matter. When produced in the decay of heavier SUSY particles, a neutralino LSP would escape detection, leading to an amount of missing transverse momentum significantly larger than for SM processes, a canonical signature that can be exploited to extract SUSY signals. In this poster, a set of recent searches for the electroweak production of charginos, neutralinos, sleptons, and gluinos decaying to final states with at least four leptons will be presented. These searches rely on proton-proton collision data delivered by the Large Hadron Collider at a center-of-mass energy of $\sqrt{s} = 13$ TeV, collected and reconstructed with the ATLAS detector.

Parallel Session

Supersymmetry: Models, Phenomenology and Experimental Results

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