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MSSM: muon $g-2$, dark matter and cosmology

Abstract

Supersymmetry (SUSY) still remains one of the best candidates for beyond-standard-model physics. Because of our ignorance of the origin of electroweak and supersymmetry breaking, the Minimal Supersymmetric Standard Model (MSSM) is particularly favorable for model-independent collider studies. For this reason, one of the main focusses is on the Higgs sector of the theory, which is intimately connected with the mechanism of SUSY breaking. As well as its contributions to low-energy observables, SUSY can also have interesting consequences for dark matter - even at the cosmological scale. We study the potential for minimal supersymmetry and extensions as an explanation for the muon $g-2$ anomaly, thermally-produced dark matter in the early universe and other phenomena in light of recent data. We also consider prospects for SUSY electroweakino searches at proposed 100 TeV collider energies.

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