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Prospects for SUSY discovery in light of LHC Run 2 results

Thursday 26 July 2018 17:00 (20 minutes)

We present the current perspectives for SUSY at the LHC in Run 2 and beyond, and at future colliders, in a phenomenological Minimal Supersymmetric Standard Model with eleven parameters (pMSSM11) and in the subGUT-CMSSM, where the input scale, M_{in} , at which the soft SUSY breaking terms are universal is treated as an additional free parameter in the sampling instead of being assumed to be the GUT scale.

Our study includes the most important present limits on SUSY coming from searches at Runs 1 and 2 of the LHC, as well as compatibility with the observed Higgs signal and the constraints coming from precision data and flavor physics. Cosmological data and direct searches for dark matter are also taken into account. Particular attention has been given to the impact of the constraint muon anomalous magnetic moment constraint in determining the allowed mass range for the neutralino, which impacts the typical signatures of sparticle production at the LHC. We have found that the prospects for a discovery of strongly interacting sparticles at the LHC remain good, with a rich phenomenology

of possible signatures, especially in the pMSSM11. Electroweakino production will, on the other hand, be more efficiently probed at future lepton colliders.

This contribution is based on Eur.Phys.J. C78 (2018) no.2, 158 and Eur.Phys.J. C78 (2018) no.3, 256. It will be presented by one of the members of the collaboration.

Parallel Session

Supersymmetry: Models, Phenomenology and Experimental Results

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