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# Prospects for SUSY dark matter in light of LHC Run 2 results

*Thursday, 26 July 2018 18:00 (20 minutes)*

We present the current perspectives for supersymmetric Dark Matter, in light of current and future collider and direct detection experiments, in a phenomenological Minimal Supersymmetric Standard Model scenarios with eleven parameters (pMSSM11) and in the subGUT-CMSSM, in which 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 limits on SUSY coming from searches at runs 1 and 2 of the LHC, as well as the 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 the muon anomalous magnetic moment constraint in determining the allowed mass range and nature of the neutralino and, in turn, how this impacts the phenomenology of DM in current and future
direct detection experiments. We have found that the preferred nature of the neutralino in the pMSSM11 can vary from being a bino-like LSP, with a mass of O(100 GeV) to a Higgsino-like LSP
with a mass of O(1 TeV). In the subGUT-CMSSM the neutralino is preferred to be either bino- or Higgsino-like, in both cases with a mass of O(1 TeV). Future DM direct-detection experiments will be able to probe significantly the parameter spaces of both scenarios, in a complementary way to collider searches.

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

Dark Matter, Astroparticle Physics

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