Contribution ID: **579** Type: **Poster**

Is the light neutralino thermal dark matter in the MSSM ruled out?

Thursday 15 December 2022 14:00 (1 hour)

We explore the parameter space of the phenomenological Minimal Supersymmetric Standard Model (pMSSM) with a light neutralino thermal dark matter (having mass less than half the SM Higgs boson mass) for both positive and negative values of the higgsino mass parameter (μ) that is consistent with current collider and astrophysical constraints. Our investigation shows that the recent experimental results from the LHC as well as from direct detection searches for dark matter by the LUX-ZEPLIN collaboration basically rule out the $\mu>0$ scenario while only allowing a very narrow region with light electroweakinos in the $\mu<0$ scenario. These are well within the reach of the Run-3 of LHC and dedicated efforts to probe this region should be pursued.

Session

Beyond the Standard Model

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Session Classification: Poster - 3