Portoroz 2015: Particle Phenomenology From the Early Universe to High Energy Colliders



Contribution ID: 38 Type: Planary Talk

Light Sparticles from a light Singlet in Gauge Mediation

Wednesday 8 April 2015 14:53 (23 minutes)

I will discuss a simple and predictive model that combines the NMSSM and Gauge Mediation. Originally proposed by Delgado, Giudice and Slavich, we have re-analyzed this model and found new interesting regions in the parameter space with a light singlet state that mixes with the SM-like Higgs at 125 GeV. This mixing is small enough to evade LEP and LHC constraints, but large enough to give a substantial contribution to the tree-level Higgs mass. This allows to reduce the required mass scale of supersymmetric particles, making them accessible at the early phase of LHC Run II. Essentially only a single parameter is left undetermined that controls the gravitino phenomenology and can lead to novel collider signatures.

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Session Classification: SUSY