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Precision unification and the scale of supersymmetry

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We study the implications of precise gauge coupling unification on supersymmetric particle masses. We argue that precise unification favors the superpartner masses that are in the range of several TeV and well beyond. We demonstrate this in the minimal supersymmetric theory with a common sparticle mass threshold, and two simple high-scale scenarios: minimal supergravity and minimal anomaly-mediated supersymmetry. We also identify candidate models with a Higgsino or a wino dark matter candidate. Finally, the analysis shows unambiguously that unless one takes foggy naturalness notions too seriously, the lack of direct superpartner discoveries at the LHC has not diminished the viability of supersymmetric unified theories in general nor even precision unification in particular.

Mini Symposia (Invited Talks Only)

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