SUSY07



Contribution ID: 186

Type: Parallel Talk

Phenomenology of sub-GUT Supersymmetry Breaking

Friday 27 July 2007 16:50 (20 minutes)

We study models in which supersymmetry breaking appears at an intermediate scale, M_{in}, below the GUT scale. We assume that the soft supersymmetry-breaking parameters of the MSSM are universal at M_{in}, and study the morphology of the constraints from cosmology and collider experiments on the allowed regions of parameter space as M_{in} is reduced from the GUT scale. We present separate analyses of the (m_{1/2},m_0) planes for tan(beta)=10 and tan(beta)=50, as well as a discussion of non-zero trilinear couplings, A_0. We demand that the lightest neutralino be the LSP, and that the relic neutralino density not conflict with measurements by WMAP and other observations. At moderate values of M_{in}, we find that the allowed regions of the (m_{1/2},m_0) plane are squeezed by the requirements of electroweak symmetry breaking and that the lightest neutralino be the LSP, whereas the constraint on the relic density is less severe. At very low M_{in}, the electroweak vacuum conditions become the dominant constraint, and a secondary source of astrophysical cold dark matter would be necessary to explain the measured relic density for nearly all values of the soft SUSY-breaking parameters and tan(beta).

Author: SANDICK, Pearl (University of Minnesota)
Co-authors: ELLIS, John (CERN); OLIVE, Keith (University of Minnesota)
Presenter: SANDICK, Pearl (University of Minnesota)
Session Classification: Cosmology 4

Track Classification: Cosmology and Astrophysics