Department of Theoretical Physics

Free Meson Seminar

Speaker	:	C.S. Aulakh (Panjab University)
Topic	:	Sneutrino vevs : Key to Susy Unification and Cosmology
Day, Date & Time	:	Thursday, March 21, 2013 at 2:30 p.m.
Place	:	AG 69

Abstract

Due to the intimate connection between R-parity and B-L symmetry, the question of whether sneutrino vevs do or do not obtain, and keep, an expectation value plays a key role in differentiating Supersymmetric unified models and their cosmology. We showed that sneutrino vevs must vanish in renormalizable models that incorporate the Seesaw mechanism. Then R-parity is preserved to low energies so that the LSP is stable and thus an ideal dark matter candidate. Such LR Supersymmetric Seesaw models unify within 126-plet Higgs containing (and thus 'unstrung') Susy SO(10) GUTs that fit all known fermion data without invoking non-renormalizable operators. Fermion fits in terms of GUT parameters lead to distinctive predictions regarding sfermion spectra such as the prediction of a large A0 parameter and normal s-hierarchy. On the other hand, sneutrino type odd B-L vevs are generic to the plethora of 'stringy' SO(10) models that utilize 16-plet Higgs vevs and singlets and violate R-parity maximally. Such models utilize 'composite 126-plets' and non-renormalizable operators to fit the fermion phenomenology. Recently an early epoch of sneutrino vevs has been identified as enabling primordial Supersymmetric inflection based on the NLH flat direction of the MSSM.

(Nilmani Mathur)