Area Seminar

Title	Vacuum Stability constraints on the minimal singlet TeV Seesaw Model
Date and Time	13/12/2012 16:00:00
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Area	Theoretical Physics
Venue	Room No. 469
Abstract	We consider the minimal singlet seesaw model in which two gauge singlet right handed neutrinos with opposite lepton numbers are added to the Standard Model. In this model, the smallness of the neutrino masses is explained by tiny lepton number violating coupling betweenone of the singlets with the standard left-handed neutrinos. This allows one to have the the right handed neutrino mass at the TeV scale as well as appreciable mixing between the light and heavy states. This model is fully reconstructible in terms of the neutrino oscillation parameters apart from the overall coupling strengths. In this paper we show that the overall coupling strength 'y_nu' for the Dirac type coupling between the left handed neutrino and one of the singlets can be restricted by consideration of the stability bounds on the Higgs potential. Incorporating this bound, the overall coupling strength of the lepton number violating coupling can also be constrained from neutrino oscillation data. In this model the lepton flavour violating decays of charged leptons can be appreciable which can also put constraint on 'y_nu' for right-handed neutrinos at TeV scale. We discuss the combined constraints on 'y_nu' for right-handed neutrinos near TeV scale from the process mu -> e gamma and from the consideration of vacuum stability constraints on the Higgs self coupling. We also briefly discuss the implications for neutrinoless double beta decay and possible signatures of the model that can be expected at colliders.