Area Seminar

Title	Neutrinoless Double Beta Decay and Heavy Sterile
Date and Time	18/08/2011 16:00:00
Speaker	Dr. Manimala Mitra INFN, Laboratori Nazionali del Gran Sasso, Assergi (AQ)
Area	Theoretical Physics
Venue	Room No. 469
Abstract	The experimental rate of neutrinoless double beta decay can be saturated by the exchange of sterile neutrino states, heavier than 200 MeV. This possibility has been analyzed in the context of the Type I seesaw model, performing also exploratory investigations of the implications for heavy neutrino mass spectra, rare decays of mesons, neutrino-decay search, LHC and as well as lepton flavor violation. To obtain saturating contribution from sterile neutrino states, the light- neutrino masses has to be more suppressed than the naive seesaw expectation. We have classified the cases when this condition holds true in the minimal version of the seesaw model, showing its compatibility with neutrinoless double beta rate being dominated by heavy neutrinos and with the allowed light neutrino mass spectra. The absence of excessive fine-tunings and the radiative stability of light neutrino mass matrices provides an upper bound on the heavy neutrino masses of about 10 GeV. We have extended our analysis to the Extended seesaw scenario, where the light and the heavy sterile neutrino contributions are completely decoupled, allowing the sterile neutrinos to saturate the present experimental bound on neutrinoless double beta decay.