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Seminar of the theory group of APC

Mardi 20 Juin 2017, 14 :00
APC, 483 A - Malevitch
Domaines : hep-th

Titre : *Revisiting supernova neutrino phenomenology with non-standard neutrino self-interactions*

Orateur : **Manibrata Sen (Tata Institute of Fundamental Research, Mumbai)**

Résumé : *Neutrino self-interactions are known to lead to non-linear collective flavor oscillations in a core-collapse supernova. In this talk, I will point out new possible effects of non-standard self-interactions (NSSI) of neutrinos on flavor conversions in a two-flavor framework. I will show that, for a single-energy neutrino-antineutrino ensemble, a flavor instability is generated even in normal hierarchy for large enough NSSI. Using a toy model for the neutrino spectra, I will demonstrate that flavor-preserving NSSI lead to pinching of spectral swaps, while flavor- violating NSSI cause swaps to develop away from a spectral crossing or even in the absence of a spectral crossing. Consequently, NSSI could give rise to collective oscillations and spectral splits even during neutronization burst, for both hierarchies.*