



Séminaire du Laboratoire de l'Accélérateur Linéaire

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Mardi 13 Décembre 2011 à 11 :00

Neutrinoless double beta decay search using ¹³⁶Xe : The NEXT experiment

Neutrinos are one of the least understood of the known fundamental particles in the Standard Model of particle physics, though they are really abundant in the universe. Neutrino oscillation experiments have shown that they have finite rest mass, but their absolute mass scale is still unknown. The observation of neutrinoless double beta decay could elucidate the nature of these particles (Dirac or Majorana), but this observation depends of what effective neutrino mass region could be explored. Next generation of experiments aims to explore the inverted hierarchy, which corresponds to an effective neutrino mass up to 50 meV. The aim of the NEXT collaboration is to build a 100 kg high pressure Xe gas TPC (HPGXe) enriched in ¹³⁶Xe for the search of neutrinoless double beta decay in the new LSC (Canfranc Underground Laboratory) in the Spanish Pyrenees starting the data taking in 2014 the latest. The high pressure TPC offers an excellent energy resolution and a background rejection power provided by the topological information of the electron tracks obtained by a photosensor array detecting the electroluminescence signal. The collaboration also has R&D projects considering the use of a conventional gain TPC, based on a Micromegas plane, that would simultaneously measure tracking and energy. A general view of the experimental setup as well as works carried out and obtained results using the different prototypes of the collaboration will be presented.

Auditorium Pierre Lehmann du LAL - Bât. 200, Orsay

Thé et café seront servis 1/4 h avant le séminaire

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