

CENTRE D'ETUDES NUCLÉAIRES DE
BORDEAUX-GRADIGNAN

Vendredi 11 Mars 2016

à

11H

Un café sera servi à partir de 10h45

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CEA Saclay

Pulse shape studies and latest results of the Double Chooz experiment, and status of the STEREO experiment

A leading contribution to the measurement of the θ_{13} neutrino oscillation parameter is given by reactor neutrino experiments, one of which is Double Chooz. In such experiments, reactor $\bar{\nu}_e$ are detected via inverse beta decay.

Some of the Double Chooz background components, like cosmic muons that stop and decay in the detector, or fast spallation neutrons producing multiple recoil protons, can be characterized by means of the distortion produced in the event global light profile, i.e. the pulse shape. Pulse shapes are also used to identify the formation of ortho-positronium, an electron-positron bound state which could be used for a β^+/β^- separation.

Double Chooz was the first reactor neutrino experiment to observe a spectral distortion in the 5 MeV region of antineutrino spectrum. Such distortion can be due to the beta-to- $\bar{\nu}_e$ conversion, which may also account for the so-called reactor neutrino anomaly. This scenario, as well as the possible presence of additional neutrino families, are investigated by the STEREO experiment. The installation of the STEREO detector is currently taking place, and the data taking will start in spring 2016.

Salle des Séminaires du CENBG

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