



Séminaire du Laboratoire de l'Accélérateur Linéaire

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APC - Paris

Mardi 17 Janvier 2012 à 11 :00

The Search for θ_{13} : First Results from Double Chooz

Neutrino oscillation has been clearly established via the study of solar, atmospheric, reactor and beam neutrinos. Combination of these results requires the existence of (at least) three-neutrino mixing. Great progress has been made in measuring the mixing angles (θ_{12} , θ_{23}) and the two mass squared differences. However, the mixing angle θ_{13} , the mass hierarchy and the δ_{cp} phase are still currently unknown. A measurement of θ_{13} , as well as completing the knowledge of the mixing angles, is crucial for future experiments since its size has a great bearing on the possibility to observe CP violation in the leptonic sector.

The Double Chooz experiment is the first of the next wave of reactor experiments searching for a non- vanishing value of the mixing angle θ_{13} . The experiment consists of two detectors : one near, to effectively measure the neutrino spectrum and flux from the reactor, and one far, to observe any neutrino disappearance. The experiment is currently in its first phase, running with the far detector only whilst the near detector and laboratory are under construction. Preliminary results from 100 days of running were presented in November 2011, showing hints of oscillation with $\sin^2(2\theta_{13}) = 0.085 + 0.029(\text{stat}) + 0.042(\text{syst})$.

The Double Chooz concept will be presented, the detector design and construction status discussed. Data from the first phase will be presented, including the most pertinent backgrounds and sources of systematic uncertainties.

Salle 101 du LAL - Bât. 200, Orsay

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



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