

Mercredi 15 juin 11h00

CEA-Saclay Bât 141, salle André Berthelot

A search for anomalous neutrino disappearance and oscillatory phenomena at the CERN-PS

CARLO RUBBIA

The present proposal describes an experimental search of sterile neutrinos beyond the Standard Model with the CERN-PS 19.2 GeV beam and the innovative technology of imaging in ultra-pure cryogenic liquid Argon. The core of the experiment will be the now operational ICARUS T600, the largest LAr-TPC ever built, with a size of about 600 t of imaging mass.

The proposal is based on two strictly identical LAr-TPC detectors observing the electron-neutrino signal in the "Far" and "Near" positions, the first of about 150 tons at 127 m from the proton target, the second one of about 600 tons placed 850 m away. This project will exploit the ICARUS T600 - now running in the underground experiment CNGS2 with neutrinos from the CERN-SPS - moved from GranSasso to the CERN "Far" position. An additional (1/4) of the T600 detector (T150) will be constructed and located in the "Near" position. Any difference of the event distributions at the locations of the two detectors might be attributed to the possible existence of ν oscillations, presumably due to a additional neutrino with a mixing angle $\sin^2 2\theta_{new}$ and a larger mass difference Δm_{new}^2 . The LSND/Miniboone anomalies and the reactor antineutrino anomaly will be explored with both ν and $\bar{\nu}$ focussed beams.

A total LAr mass of 750 ton and a reasonable utilization of the CERN- PS with the refurbished TT7 beam line will offer remarkable discovery potentialities, collecting a very large number of unbiased events both in the neutrino and antineutrino channels, largely adequate to settle definitely the origin of the many indications behind the ν -related anomalies.

Le café sera servi 10 minutes avant.

NB : La présentation d'une pièce d'identité est exigée à l'entrée du centre. Tous les auditeurs extérieurs sont priés de prévenir à l'avance Emilie Chanclin, tél. 01 69 08 23 50, e-mail : emilie.chanclin@cea.fr. (U.E. : délai de 24 h, hors U.E. : délai de 4 jours).