



SÉMINAIRE DE PHYSIQUE CORPUSCULAIRE

- SUJET:** **The Baby MIND detector: reducing wrong-sign backgrounds in anti-neutrino beam mode on the T2K beamline**
- PAR:** **Dr Etam NOAH MESSOMO**
University of Geneva, DPNC
- DATE:** Mercredi 5 octobre 2016, 11h15
- LIEU:** Science III, Auditoire 1S081
Boulevard d'Yvoy, 1211 Genève 4

RÉSUMÉ:

The Baby MIND project led by the neutrino group at Geneva University is planning to install a muon spectrometer at the WAGASCI T59 experiment at J-Parc in Japan next summer 2017. Baby MIND will contribute to a better understanding of the ratio of neutrino charged current cross-sections between water and hydrocarbon on the T2K beamline. It will significantly reduce the wrong-sign background especially in anti-neutrino beam mode by reaching charge identification efficiencies of $> 97\%$ for secondary muons with momenta > 450 MeV/c from neutrino interactions occurring in the WAGASCI neutrino targets.

The Baby MIND consists of magnet modules interleaved with plastic scintillators for a total mass of 70t. To address limitations at low momenta < 500 MeV/c from multiple scattering in the iron inherent to this type of detector, a topology that increases angular resolution in the first few detector planes was adopted. We find a significant improvement in charge ID efficiencies down to 300 MeV/c over established designs. I will review the design and construction of the Baby MIND detector with an emphasis on custom components such as the magnet and readout electronics, highlighting how design features lead to the projected detector efficiencies.

INFORMATION : <http://dpnc.unige.ch/seminaire/annonce.html>

ORGANISATEURS: Sergio.Gonzalez@unige.ch & Domenico.Dellavolpe@unige.ch