

## **COLLOQUIUM - HAWKING AUDITORIUM**

**3: 45 pm Monday March 2013**

**Prof. Michel Gonin**

**Universite' Polytechnique, Paris, France**

### **Neutrino oscillation results from the T2K experiment**

The T2K experiment is a long-baseline from Tokai to Kamioka neutrino oscillation experiment. Its main goal is to observe neutrino quantum oscillations in order to measure the last lepton sector mixing angle  $\theta_{13}$  by observing  $\nu_e$  appearance in a  $\nu_\mu$  beam. It also aims to make a precision measurement of the known oscillation parameters,  $\Delta m_{23}^2$  and  $\sin^2 2\theta_{23}$ , via  $\nu_\mu$  disappearance studies. Other goals of the experiment include various neutrino cross section measurements and sterile neutrino searches. The experiment uses an intense proton beam generated by the J-PARC accelerator in Tokai, Japan, and is composed of a neutrino beamline, a near detector complex, and a far detector (Super-Kamiokande) located 295 km away from J-PARC. This talk will describe the experiment, its current status and prospects.

## **SEMINAR – M102**

**3:45 pm Tuesday 26 March 2013**

**Prof. Michel Gonin**

**Universite' Polytechnique, Paris, France**

### **Probes to explore the dynamics of nuclear matter**

The complete understanding of the theory of nuclear matter, from low to high densities, is essential for nuclear and astrophysics. The experimental results collected over the last 25 years regarding the production of elementary particles, light particles and fragments will be reviewed. The variation of the nuclear binding energy with temperature and nucleonic density gives the opportunity to produce new states of matter in laboratories with the use heavy ion reactions. Indeed, numerous theoretical models have predicted the existence of clustering matter, neutron matter, multifragmentation of hot nuclei, gases of nucleons and liquid of deconfined quarks and gluons. I will conclude with general remarks and perspectives for future experiments.

