SÉMINAIRE DE PHYSIQUE CORPUSCULAIRE

SUJET: Status and physics potential of the JUNO anti-neutrino experiment

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RÉSUMÉ:

The Jiangmen Underground Neutrino Observatory (JUNO) is an underground 20 kton liquid scintillator detector being built in the south of China and expected to start data taking in 2020.

JUNO has a physics programme focused on neutrino properties using electron anti-neutrinos emitted from two nuclear power plants at a baseline of about 53 km. Its primary aim is to determine the neutrino mass ordering from the antineutrino oscillation pattern, using the peculiar signature of Inverse Beta Decay. With an unprecedented relative energy resolution of 3% at 1 MeV, JUNO will determine the mass ordering with a statistical significance of 3-4 sigma within six years of running. In addition, it will also be able to measure the oscillation parameters involved in reactor neutrino oscillations at a medium baseline to an accuracy better than 1%. To this end, an ambitious experimental programme is in place to develop and optimize the scintillator composition and photomultiplier features, together with a redundant calibration system. Capitalizing from this, JUNO will also study neutrinos from the sun and the earth and from supernova explosions, as well as provide a large acceptance for the search for proton decay.

In this seminar, I will describe the various experimental challenges and the identified solutions in the design of the JUNO detector. JUNO’s physics potential in selected topics of neutrino physics will also be described, comparing its expected reach to competing experiments.

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