Contribution ID: **976** Type: **Parallel Talk**

Status and perspectives of JUNO experiment

Thursday, July 6, 2017 6:00 PM (15 minutes)

Precise measurements of the θ_{13} neutrino oscillation parameter by the Daya Bay, RENO and Double Chooz experiments have opened the path to the determination of the neutrino mass hierarchy. Indeed whether the ν_3 neutrino mass eigenstate is heavier or lighter than the ν_1 and ν_2 mass eigenstates is one of the remaining undetermined fundamental aspects of the Standard Model in the lepton sector. Mass hierarchy determination would have an impact in the quest of the neutrino nature (Dirac or Majorana mass terms) towards the formulation of a theory of flavor. In addition to providing an important input to future experiments and other fields like cosmology, the determination of the mass hierarchy would represent a major step forward towards the understanding of the origin and nature of neutrino masses.
The Jiangmen Underground Neutrino Observatory (JUNO) is a large liquid scintillator neutrino detector under construction in the south of China. Thanks to the large 20˜kton active mass and unprecedented energy resolution (3% at 1 MeV) it will allow to determine the neutrino mass hierarchy with good sensitivity and to precisely measure the neutrino mixing parameters, θ_{12}, Δm^2_{21} and Δm^2_{ee} with < 1% precision. Moreover, a large liquid scintillator detector will allow to explore physics beyond mass hierarchy determination and provide fundamental results on many topics in astroparticle physics, like supernova burst and diffuse supernova neutrinos, solar neutrinos, atmospheric neutrinos, geo-neutrinos, nucleon decay, indirect dark matter searches and a number of additional exotic searches. The talk will review the status of the experiment and give highlights on the physics reach.

Experimental Collaboration

Juno collaboration

Primary author: GIAZ, Agnese

Presenter: GIAZ, Agnese

Session Classification: Neutrino physics

Track Classification: Neutrino Physics