Contribution ID: **453** Type: **Plenary talk (30 min + 10 min questions)**

The JUNO experiment: status and prospects

Wednesday, 13 July 2022 12:40 (35 minutes)

Jiangmen Underground Neutrino Observatory is an experiment under construction in China. A spherical detector of 35 m in diameter filled with 20 kt of liquid scintillator and equipped with more than 17'612 (25'600) large (small) photomultipliers will provide immense statistics, high energy resolution (σ=3% at 1 MeV) and low energy threshold (0.2 MeV) making the physics program broad.
The primary goal is determination of the neutrino mass ordering and precision measurement of the neutrino oscillation parameters via observation of more than 100'000 reactor electron antineutrinos from Yangjiang and Taishan nuclear power plants. The experiment will also observe high statistics of the solar neutrinos from pp,^{7}Be and ^{8}B. The geo- neutrinos will be measured with uncertainty of 5%. JUNO will also be able to observe atmospheric neutrinos in sub-GeV and GeV region, diffuse supernovae neutrino background with significance of 3σ in 10 years and will be able to see the neutrinos from the core collapse supernova.
The experiment will have competitive sensitivity to the nucleon decay and the cold dark matter annihilation in the Sun.

In addition to the JUNO detector the JUNO experiment will be equipped with two satellite detectors: TAO and OSIRIS. The TAO will measure the antineutrino spectrum from the Taishan nuclear power plant with energy resolution of σ=2% at 1 MeV and statistical uncertainty of 1%. It will be able to test short baseline neutrino oscillation up to the masses of 8 eV^2. A new project Serappis aims to use the modified OSIRIS detector to measure the solar pp neutrinos with energy resolution of σ=2.5% and precision of few percents.

The talk will cover the status of the experiment and will provide the latest estimation of its sensitivity.

The speaker is a student or young scientist

No

Section

1. Neutrino physics and nuclear astrophysics

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