
Contribution ID: **6** Type: **Oral presentation**

# The physics prospects and current status of JUNO

*Thursday 12 October 2023 14:30 (30 minutes)*

The Jiangmen Underground Neutrino Observatory (JUNO) is located in Jiangmen, Guangdong, China, with an overburden of about 700 meters. The baseline for measuring the reactor antineutrinos of two nuclear power plants is 53 km. The central detector composes of 20 kton liquid scintillator, a 35.4 m diameter acrylics sphere, a 40.1 m diameter stainless steel latticed shell, and an independent double calorimetry system. This system consists of 17,612 20-inch large PMTs (LPMTs) and 25,600 3-inch small photomultiplier tubes (SPMTs), providing a total photo-coverage of 78%.
The primary goal of JUNO experiment is to determine the neutrino mass hierarchy by measuring the fine structure of the oscillation spectrum with a significance of 3˜4 σ in 6 years of data taking. Additionally, the experiment aims to precisely measure the mixing parameters, θ_12 , Δm_12 and Δm_eeˆ2.

To achieve this, a high energy resolution of 3% at 1 MeV is required, which necessitates high optical coverage, large area PMT with high quantum efficiency, high transparency liquid scintillator (LS), and low backgrounds. In addition to these goals, the experiment will also look for geo-neutrinos, solar-neutrinos, atmospheric neutrinos, supernova neutrinos and neutrinos from dark matter annihilations. This talk will present the physics prospects, detectors, and the current status of JUNO.

## Is this abstract from experiment?

Yes

## Name of experiment and experimental site

Jiangmen Underground Neutrino Observatory (JUNO) is located in Jiangmen, Guangdong, China

## Is the speaker for that presentation defined?

Yes

## Details

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## Internet talk

No

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**Session Classification:** Parallel Session 1

**Track Classification:** High Energy Particle Physics