



Contribution ID: 229

Type: **Parallel Contributed Talk**

JUNO Detector Design & Status

Monday, 22 February 2021 18:10 (20 minutes)

The Jiangmen Underground Neutrino Observatory (JUNO) is a next-generation liquid scintillator reactor neutrino experiment being built in the Guangdong province in China. JUNO is a multi-purpose experiment with a wide range of applications in neutrino physics, ranging from a mass-ordering determination to solar, geo, and atmospheric neutrino measurements, to detecting supernovae. Moreover JUNO will measure oscillation parameters with a precision of less than one percent. The over 50-meter wide experimental hall, which was recently successfully dug out, stands under more than 700 m of granite overburden. It contains a 35.4-meter diameter acrylic vessel containing 20 ktonne of LAB-based liquid scintillator, making it the largest liquid scintillator container in the world. The spherical detector is submerged in a water pool shielding doubling as a water cherenkov detector which, along with a top tracker above it, serves to precisely reconstruct and veto muon events. Surrounding the vessel are 17612 20" PMTs and 25600 3" PMTs, optimised towards JUNO's main goal: a 3-4 sigma significance on the neutrino mass-ordering within the first six years of data-taking, which is expected to start in 2022. This talk presents the detector design and status of JUNO.

Collaboration name

JUNO

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Session Classification: New Facilities

Track Classification: Neutrino Telescopes and Multimessenger