

JUNO Detector Design and Status

The Jiangmen Underground Neutrino Observatory (JUNO) is a next generation multipurpose liquid scintillator being built in China. It will address a wide range of topics in neutrino physics: the determination of the neutrino mass ordering and the sub-percent measurement of three oscillation parameters from reactor neutrino oscillations, detection of solar, atmospheric and supernova neutrinos as well as the search for physics beyond the Standard Model. The JUNO detector design is optimised towards the determination of the neutrino mass ordering by reaching an unprecedented energy resolution and a low background. The over 50-meter wide experimental hall, which was recently successfully dug out, is located under about 700 m of granite overburden. The center of the instrument consists of a 35.4-meter diameter acrylic vessel containing 22 kt of LAB-based liquid scintillator, making it the largest liquid scintillator detector 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 atmospheric muons. Surrounding the vessel are 17612 20" photomultiplier tubes (PMTs) and 25600 3" PMTs, which will collect the light induced by neutrinos interacting in the detector. This talk presents the detector design and construction status of JUNO, which is expected to start taking data in 2023.

Working group

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