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JUNO detector design and status

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The Jiangmen Underground Neutrino Observatory (JUNO) is the state-of-the-art liquid-scintillator-based neutrino physics experiment, which is under construction in South China. Thanks to the 20 ktons of ultra-pure liquid scintillator (LS), JUNO will be able to perform innovative and groundbreaking measurements like the determination of neutrino mass ordering (NMO). The experiment has been constructed in a 700m underground laboratory, located about 52 km from both the Taishan and Yangjiang nuclear power plants. The JUNO central detector will be equipped with 17,612 20-inch photomultiplier tubes (PMTs) and 25,600 3-inch PMTs. JUNO CD energy resolution is expected to be better than 3% at 1 MeV and to have an absolute energy scale uncertainty better than 1% over the whole reactor antineutrino energy range. In addition, the JUNO experiment also has a satellite detector, the Taishan Antineutrino Observatory, to precisely measure the reactor antineutrino energy spectrum. Beyond NMO, JUNO will measure the three neutrino oscillation parameters with a sub-percent precision. Moreover, the JUNO experiment is also expected to have important physics reach with solar neutrinos, supernova neutrinos, geoneutrinos, atmospheric neutrinos, and searches for physics beyond the Standard Model such as nucleon decay. The detector construction is expected to be completed in 2023. In this talk, I will present the detector design and the installation status of the different JUNO subsystems.

Submitted on behalf of a Collaboration?

Yes

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