

Status and Prospects of Jiangmen Underground Neutrino Observatory

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On behalf of the JUNO collaboration

The Jiangmen Underground Neutrino Observatory (JUNO) is a next generation multi-purpose liquid-scintillator neutrino experiment under construction in South China. Exploiting the anti-neutrinos produced by the nearby nuclear power plants, JUNO will be able to study the neutrino mass hierarchy, one of the open key questions in neutrino physics. The JUNO detector structure consists of a large acrylic sphere (34.5 m diameter), containing almost 20 kton of ultra pure linear alkylbenzene with proper additives. The light produced by the scintillator will be seen by about 18,000 large photomultiplier tubes (PMT)(20") and about 25,000 small PMTs (3"). The described central detector will be placed inside an instrumented water pool that will act both as a Cherenkov muon veto and as a shield against environmental radiation coming from the rock. A key ingredient for the measurement of the neutrino mass hierarchy is an excellent and challenging energy resolution of the central detector: 3% at 1 MeV or better is required. Beyond mass hierarchy and precision determination of the three active neutrino oscillation parameters, JUNO can give access to valuable data on many topics in physics, like supernova burst and diffuse supernova neutrinos, solar neutrinos, atmospheric and geo-neutrinos, nucleon decay, indirect dark matter searches and a number of additional exotic searches. During the presentation, the status of the design, construction and the JUNO prospects on physics will be reported.

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