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JUNO's Sensitivity to the Neutrino Mass Ordering

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The Jiangmen Underground Neutrino Observatory (JUNO) is a 20 kt liquid scintillator detector equipped with around 17,000 20-inch PMTs as well as 25,000 3-inch PMTs located 700 meters underground in southern China. It features a broad physics program with a primary goal of determining the neutrino mass ordering to 3σ in about 6 years. With an unprecedented energy resolution of $3\%/\sqrt{(MeV)}$, it will measure the spectrum of antineutrinos emitted from two nuclear power plants located 53 km from the detector. For the success of JUNO's neutrino mass ordering determination and its oscillation parameter precision measurement program, a precise knowledge of the emitted reactor neutrino spectrum is crucial. Therefore, a satellite detector with 2.8 tons of gadolinium-doped liquid scintillator will be constructed in a distance of 30 m from one of the reactor cores to provide a precise measurement of the unoscillated spectrum with an energy resolution of less than $2\%/\sqrt{(MeV)}$.
This contribution will present studies on the sensitivity of the JUNO detector to determine the neutrino mass ordering in combination with its satellite detector TAO.

Submitted on behalf of a Collaboration?

Yes

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