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Neutrino Oscillation Physics in JUNO

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The Jiangmen Underground Neutrino Observatory (JUNO) is a 20 kton liquid scintillator detector that will study reactor antineutrinos emitted from two nuclear power plants in the south of China at a baseline of about 53 km. Thanks to its 2 photon detection systems (18000 20"PMTs and 25600 3"PMTs), JUNO will achieve an unprecedented 3% energy resolution at 1 MeV with an energy scale calibration uncertainty of 1%. Such a powerful detector capability will resolve, for the first time, the interference pattern between the solar and atmospheric oscillation modes. Therefore, the primary physics goals of JUNO include the determination of the neutrino mass ordering at a 3-sigma confidence level and the measurement of three neutrino oscillation parameters, $\sin^2 \theta_{12}$, Δm^2_{21} and Δm^2_{32}, with sub-percent precision. This talk will cover the JUNO expected sensitivity in terms of neutrino oscillation physics, showing the impact of JUNO future results within the global neutrino framework.

Working group

WG1

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