

The Quest for Neutrino Mass Ordering

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Neutrino mass is currently the only sign of new physics beyond the Standard Model (SM) of particle physics. Unfortunately, due to the challenges in measuring the three absolute neutrino masses, we currently only know the two mass-squared differences manifested in neutrino oscillation data. The mass ordering is very likely to be the first experimental handle we could have on physics related to neutrino mass. A concrete experimental measurement could provide invaluable clues to the fundamental questions in particle physics. In this talk, we will give a general review on neutrino physics, the discovery of neutrino oscillation and its recent experimental progresses, and explain the different experimental efforts of measuring neutrino mass ordering. We will then focus more on the only reactor neutrino oscillation experiment resolving neutrino mass ordering: the Jiangmen Underground Neutrino Observatory (JUNO), which takes the advantage of the powerful nuclear reactors in Guangdong Province of China. We will explain its design, recent progresses and its physics opportunities.

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