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Earlier Resolution of Neutrino Mass Ordering?

We hereby present the study in arXiv:2008.11280 (under publication) where we demonstrate that the combined sensitivity of JUNO with NOvA and T2K experiments has the potential to yield the first fully resolved ($\geq 5\sigma$) measurement of neutrino Mass Ordering (MO) tightly linked to the JUNO schedule. Due to the absence of any a priori MO prediction and given its intrinsic binary outcome we highlight the benefits of having such an independent resolved measurement in the light of the remarkable MO resolution ability of the next generation long baseline neutrino beams experiments, such as DUNE. We motivate the opportunity of exploiting this MO experimental framework to scrutinise the standard neutrino oscillation model, thus, opening for unique discovery potential, should unexpected discrepancies manifest. Phenomenologically, the deepest insight relies on the articulation of MO resolved measurements via at least the two possible methodologies matter effects and purely vacuum oscillations. Thus, we describe the feasible path through which JUNO vacuum MO measurement may yield full resolution in combination to the disappearance channel of next generation long baseline neutrino beams experiments.

Primary author: Dr HAN, Yang (Sun Yat-sen University)

Co-authors: CABRERA, Anatael (CNRS/IN2P3 - APC & LNCA Laboratories (France)); NUNOKAWA, Hiroshi (Department of Physics, Pontificia Universidade Catolica do Rio de Janeiro)

Presenter: Dr HAN, Yang (Sun Yat-sen University)

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