



UNIVERSITY OF MIAMI
COLLEGE of
ARTS & SCIENCES

Miami Physics Conference 2023

Date: Dec 13-19, 2023
Location: LagoMar Resort
Affiliation: Tokyo Metropolitan University

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Sensitivity of Future Long Baseline Experiments and Octant Degeneracy

Abstract

In future neutrino long baseline experiments, such as T2HK and DUNE, it is anticipated that the mass ordering, the octant of θ_{23} , and the CP phase δ will be determined. In the first half of this presentation (based on arXiv:2210.09103), I will describe how the uncertainty in the Earth's density affects the precision of δ . In the second half (based on arXiv:2308.15071), I will explain that long baseline experiments, like T2HKK and ESS ν SB, which primarily probe the second oscillation maximum, may not possess sufficient sensitivity to resolve the octant degeneracy of θ_{23} using the plot of appearance oscillation probabilities in the $(\sin^2 2\theta_{13}, 1/\sin^2\theta_{23})$ -plane.