

NuFact 2024 - The 25th International Workshop on Neutrinos from Accelerators

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DUNE long-baseline oscillation physics sensitivity

The Deep Underground Neutrino Experiment (DUNE) is a next generation, long-baseline neutrino oscillation experiment which will utilize a high-intensity ν_μ and $\bar{\nu}_\mu$ beam, sampled twice, over a 1285 km baseline, to make discovery-level measurements of neutrino mixing. The unoscillated neutrino flux, which peaks at about 2.5 GeV, will be constrained with the near detector complex at Fermilab, and the effect of neutrino mixing will be observed by the DUNE far detectors at the Sanford Underground Research Facility. The far detectors will ultimately comprise four liquid argon detector modules, each containing a total active target mass of 17 kt. This talk will describe DUNE's long-baseline physics sensitivity, and underlines the central role of the near detector complex in achieving precision oscillation parameter measurements, resolving the mass hierarchy and searching for CP-violation.

Working Group

WG 1: Neutrino Oscillation Physics

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