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Neutrino oscillation physics of the DUNE experiment

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The DUNE experiment is a next-generation, long-baseline neutrino oscillation experiment currently being constructed at Fermilab and SURF. Its primary scientific goals are the definitive determination of the neutrino mass ordering, the definitive observation of charge-parity symmetry violation (CPV) for most of the true values of the charge-parity violating phase, δ_{CP} , and precise measurement of oscillation parameters, particularly δ_{CP} , $\sin^2 2\theta_{13}$, and the octant of θ_{23} . These measurements will help guide theory in understanding if there are new symmetries in the neutrino sector and whether there is a relationship between the generational structure of quarks and leptons. Observation of CPV in neutrinos would be an important step in understanding the origin of the baryon asymmetry of the universe. In this talk, we will review DUNE's potential for neutrino oscillation.

Primary author: WU, Wenjie (University of California, Irvine)

Presenter: WU, Wenjie (University of California, Irvine)

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