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Sensitivity of the DUNE Experiment to CP Violation and to physics beyond the SM

Thursday, 6 July 2017 15:00 (15 minutes)

The Deep Underground Neutrino Experiment (DUNE) is a long-baseline neutrino oscillation experiment with primary physics goals of determining the neutrino mass hierarchy and measuring δ_{CP} with sufficient sensitivity to discover CP violation in neutrino oscillation. CP violation sensitivity in DUNE requires careful understanding of systematic uncertainty, with contributions expected from uncertainties in the neutrino flux, neutrino interactions, and detector effects. In this presentation, we will describe the expected sensitivity of DUNE to long-baseline neutrino oscillation parameters, how various aspects of the experimental design contribute to that sensitivity, and the planned strategy for constraining systematic uncertainty in these measurements.

The detector-beam configuration also provides an excellent opportunity to study physics beyond standard neutrino oscillations. DUNE will be able to search for or constrain a wide variety of physics phenomena beyond the Standard Model, such as, light sterile neutrinos, nonstandard neutrino interactions, large extra-dimensions, heavy neutrinos, lepton flavor violation, and low mass dark matter. In this talk, we will present preliminary DUNE sensitivities to physics beyond the Standard Model and discuss the potential of DUNE in understanding these phenomena.

Experimental Collaboration

DUNE

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