

The DUNE 2x2 Demonstrator physics prospects and plans with neutrino data

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The Deep Underground Neutrino Experiment (DUNE) is a next-generation long-baseline neutrino oscillation experiment that will feature liquid argon time projection chamber technology for its near and far detectors. The liquid argon near detector (ND-LAr) is designed to handle the high intensity expected from the Long-Baseline Neutrino Facility (LBNF) beam using optically-separated TPC volumes, a pixel-based 3D charge readout, and scintillation light readout to identify the dozens of neutrino interactions per beam spill. The 2x2 Demonstrator is a prototype for ND-LAr to test the multi-TPC design placed in the NuMI beam at Fermilab using four modules and repurposed MINERvA tracking planes up and downstream of the LAr volume. In addition to demonstrating the detector technology, the 2x2 Demonstrator will perform measurements of neutrino interactions on argon relevant for the DUNE physics program and serve as a proving ground for measurements using the full ND-LAr detector. Neutrino interaction measurements are an important input to the oscillation analysis for constraining the systematic uncertainties and achieving DUNE's goals of measuring delta-CP. This talk will discuss the capabilities of the 2x2 Demonstrator and the planned physics program.

Working Group

WG 2: Neutrino Scattering Physics

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