

Beyond the Standard Model Physics Prospects at Deep Underground Neutrino Experiment

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The Deep Underground Neutrino Experiment (DUNE) is an international project for neutrino physics and proton-decay searches, currently in the design and planning stages. Once built, DUNE will consist of two detectors exposed to the world's most intense neutrino beam. The near detector will record neutrino interactions near the beginning of the beamline, at Fermilab. The other, much larger, detector, comprising four 10-kton liquid argon time projection chambers (TPCs), will be installed at a depth of 1.5 km at the Sanford Underground Research Facility in South Dakota, about 1300 km away from the neutrino source.

The unique combination of the high-intensity neutrino beam with DUNE's high-resolution near detector system and massive LArTPC far detector enables a variety of probes of BSM physics, either novel or with unprecedented sensitivity, from the potential discovery of new particles (sterile neutrinos or dark matter), to precision tests of beyond the three-flavour mixing paradigm, Non-standard Neutrino Interactions, Heavy Neutral Leptons, or the detailed study of rare processes (e.g. neutrino trident production). The talk will review these physics topics and discuss the prospects for their discovery at the DUNE experiment.

Working group

WG5

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