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Science and Status of the Deep Underground Neutrino Experiment (DUNE)

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The Deep Underground Neutrino Experiment (DUNE) has a broad physics program, which includes measuring the CP violating phase, determining the neutrino mass hierarchy and performing precision tests of the three-flavor paradigm in long-baseline neutrino oscillations by means of making measurements of neutrino oscillation parameters. Other science goals are the detection of neutrinos from core-collapse supernovae and a search for nucleon decay.

The experiment will employ a high-power broadband neutrino beam from Fermilab, which will pass through a high precision near detector and be directed towards the 1300 km distant Sanford Underground Research Facility (SURF) in Lead, South Dakota. The underground laboratory will house four liquid argon (LAr) time projection chambers, each with a fiducial mass of 10 kt of LAr.

We present an overview of the DUNE experiment, its status including that of two large scale LAr prototypes at CERN, and the experiment's physics potential.

Collaboration name

DUNE

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