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## The Deep Underground Neutrino Experiment: a new era in precision neutrino physics

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The Deep Underground Neutrino Experiment (DUNE) is a next-generation international experiment that will redefine our understanding of neutrino physics. The combination of a powerful wide-band neutrino beam complemented by a high-performance and movable near detector complex in Fermilab and a far detector with massive Liquid Argon Time Projection Chambers located 1,300 km deep at the Sanford Underground Research Facility (SURF), will allow DUNE not only to determine the neutrino mass ordering and measure potential CP violation in the lepton sector, but also to test the completeness of the three-flavour paradigm itself. DUNE's broad energy coverage and long baseline will give access to all oscillation parameters, providing unprecedented sensitivity to matter effects and potential observations of deviations from standard oscillation physics, such as non-standard interactions, sterile neutrinos, or CPT violation. DUNE will also explore a rich landscape of astrophysical and beyond-Standard-Model phenomena, from supernova neutrinos to dark sector signatures. While the demonstrators at CERN and Fermilab continue delivering physics results, most of the detector components are already in production, as the first cryostat is planned to be installed next year in the recently completed SURF caverns.

### Abstract

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