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The Deep Underground Neutrino Experiment

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The Deep Underground Neutrino Experiment (DUNE) is a next-generation long baseline neutrino experiment for studying neutrino properties with accelerator, atmospheric, and astrophysical sources. The primary physics goals of the DUNE experiment are to determine the neutrino mass ordering, search for new source of CP violation, test the unitarity of the neutrino mass and mixing matrix, search for proton decays, detect supernova neutrinos, measure solar neutrinos, and search for physics beyond the Standard Model (BSM). The DUNE experiment together with the Long-baseline Neutrino Facility consists of four massive 17-kt liquid argon time projection chamber (LArTPC) far detectors, a capable near detector complex, and a powerful accelerator muon neutrino beam. The liquid argon prototype detectors at CERN (ProtoDUNE) are a test-bed for DUNE's far detectors, which have operated for over 3 years, to inform the construction and operation of the first two and possibly subsequent DUNE far detector LArTPC modules. Here we introduce the DUNE and ProtoDUNE experiments and physics goals as well as discussing recent progress and results.

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