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***Deep Underground Neutrino Experiment***

Abstract:

The Deep Underground Neutrino Experiment (DUNE) is a new generation of long baseline neutrino oscillation experiment. Its main goal is to determine the neutrino mass hierarchy and the phase violating CP invariance. The DUNE physics program also includes the detection of astrophysical neutrinos and the search for phenomena outside the standard model, such as proton decays. DUNE will consist of a near detector complex located at Fermilab, a few hundred meters downstream of the neutrino production site, and several 17-kton Liquid Argon Time Projection Chamber (LArTPC) far detector modules to be built at the Sanford Underground Research Facility (SURF), approximately 1.5 km underground and 1300 km away from the near detector. The detectors will be exposed to a broadband proton-generated neutrino beam of 1.2 MW in the first phase with a planned increase to 2.4 MW in the next phase. Two prototypes of the FD technology, the 700-ton LArTPC ProtoDUNE, have been operating at CERN for more than 2 years and have recently been optimized for new data acquisition in 2024-2025. This talk will present the scientific programme and recent progress of DUNE and its various prototypes. Finally, the Czech participation in the project will be discussed.