



**Laboratório de Instrumentação e
Física Experimental de Partículas**

LIP Seminar

Thursday, 17 December, 11h30

The Goals and Status of the DUNE Experiment

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(LIP)

The Deep Underground Neutrino Experiment (DUNE) is a next-generation long-baseline neutrino experiment. DUNE consists of an intense neutrino beam fired a distance of 1300 km from the Fermi National Accelerator Laboratory to the 40,000 ton Liquid Argon DUNE detector, located deep underground in the Homestake mine in South Dakota.

The main goals of this experiment are a comprehensive investigation of neutrino oscillations to test CP violation in the lepton sector, determining the ordering of the neutrino masses, and testing the three-neutrino paradigm. The experiment will perform a broad set of neutrino scattering measurements with the near detector and exploit the large, high-resolution, underground far detector for non-accelerator physics topics including atmospheric neutrino measurements, searches for nucleon decay, and measurement of astrophysical neutrinos especially those from a core-collapse supernova. The use of the LAr-TPC technology at such a large scale motivated an intense program of detector instrumentation R&D, as well as the establishment of a prototyping program - ProtoDUNE - deployed at CERN, that is currently preparing for its second beam run. The neutrino physics group at LIP is strongly involved in the calibration program of DUNE, participating currently in the development of the calibration systems to be deployed in ProtoDUNE.

In this talk, the physics objectives and status of the DUNE experiment will be discussed, along with its ProtoDUNE program, with a focus on the activities being carried by the LIP neutrino physics group.

Location: Videoconference - Zoom

<https://indico.lip.pt/event/844/>

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