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## The DUNE Near Detector

*Thursday, 7 July 2022 12:45 (15 minutes)*

DUNE will be a next-generation experiment aiming to provide precision measurements of the neutrino oscillation parameters. It will detect neutrinos generated in the LBNF beamline at Fermilab, using a Near Detector (ND) situated near the beam target where the neutrinos originate and a Far Detector (FD) located 1300 km away in South Dakota. A comparison of the spectra of neutrinos measured at the FD and the ND will allow for the extraction of oscillation probabilities from which the oscillation parameters can be inferred. The specific role of the ND will be to serve as the experiment's control: it will establish the no oscillation null hypothesis, measure and monitor the beam, constrain systematic uncertainties, and provide essential measurements of the neutrino interactions to improve models. The ND complex will include three primary detector components: a liquid argon TPC called ND-LAr, a high-pressure gas TPC called ND-GAr and an on-axis beam monitor called SAND. The three detectors will serve important individual and overlapping functions, with ND-LAr and ND-GAr also able to move transverse to the beam's axis via the DUNE-PRISM program. The overall mission of the ND, as well as the three sub-detectors' unique capabilities and physics programs will be discussed during this talk, including the Beyond Standard Model physics searches that can be undertaken with the detectors at the near site.

### In-person participation

Yes

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