

A Highly Granular Calorimeter System for the DUNE Near Detector

Tuesday, 26 May 2020 14:36 (18 minutes)

The DUNE experiment requires a highly capable near detector system to achieve its ambitious physics goals. One of the subsystems of the near detector is the Multi-Purpose Detector (MPD), which will consist of a high pressure gaseous Argon TPC surrounded by an electromagnetic calorimeter, embedded in a magnetic field. The calorimeter complements the tracking capabilities of the TPC with photon and neutron reconstruction to enable a precise reconstruction of the final states of neutrino interactions in the detector volume. The calorimeter will use highly granular active elements consisting of plastic scintillators and SiPMs, which provide sub-ns timing capabilities. This enables directional reconstruction of electromagnetic showers crucial for π^0 localization, high neutron sensitivity and energy measurement via time of flight and particle identification. The presentation gives an overview over the evolving design of the DUNE MPD calorimeter and will discuss the expected performance.

Funding information

Primary author: SIMON, Frank (Max-Planck-Institut fuer Physik)

Presenter: SIMON, Frank (Max-Planck-Institut fuer Physik)

Session Classification: Experiments: Calorimeters

Track Classification: Experiments