

Abstract Submitted
for the APR21 Meeting of
The American Physical Society

Study of Energy Resolution of ProtoDUNE-SP In Calorimetric Measurements of Electromagnetic Showers¹ EWERTON CHAGAS, UNICAMP-Univ de Campinas, DUNE COLLABORATION — The Deep Underground Neutrino Experiment (DUNE) is a next-generation long-baseline neutrino experiment. Among the goals of the experiment are measurements of CP violation and neutrino mass hierarchy using a high power neutrino beam produced at Fermilab. The ProtoDUNE-SP is a prototype of the DUNE far detector, located at the CERN Neutrino Platform. ProtoDUNE-SP comprises a single-phase Liquid-Argon Time Projection Chamber (LArTPC) and a Photon Detector System (PDS). In DUNE, calorimetry of electromagnetic showers (EMS) is a key element in the analysis to separate signal from the background, in electron neutrino interactions with a shower in the final state. Many of the processes observed in ProtoDUNE-SP involve EMS events, so it is crucial to have a good understanding of them. In this talk we discuss the correlation between the electron beam energy and the responses from both the LArTPC and the PDS. We also show the status of the current work in ProtoDUNE-SP regarding the determination of the achievable resolution in the energy measurement of EMS. Perspectives on the enhancements in calorimetry using the combination of charge and light are also presented.

¹Ewerton on behalf of the DUNE Collaboration

Ewerton Chagas
UNICAMP-Univ de Campinas

Date submitted: 19 Jan 2021

Electronic form version 1.4