

Abstract Submitted
for the APR21 Meeting of
The American Physical Society

Neutron interaction length measurement in the ProtoDUNE Single-Phase experiment¹ DAVID RIVERA, University of Pennsylvania, DUNE COLLABORATION² — Understanding the hadronic energy resolution will be critical for performing neutrino oscillation analyses with the Deep Underground Neutrino Experiment (DUNE). The uncertainty on the hadronic energy resolution can be subdivided into primary and secondary components, where the primary component corresponds to uncertainties from hadrons produced at the neutrino vertex and the secondary component corresponds to uncertainties from subsequent interactions of primary-component hadrons in the liquid argon volume. A large fraction of the uncertainties is driven by neutrons, which can transport energy away from their origin and can sometimes go undetected. The ProtoDUNE Single-Phase (SP) experiment at CERN captured interactions of charged particles with known incident momenta, in liquid argon, for the purpose of measuring cross sections at relevant energies for DUNE. ProtoDUNE-SP, therefore, provides a way to probe the secondary hadronic component of neutrino interactions in DUNE. This talk presents preliminary results and methods for measuring the interaction length for neutrons produced by charged hadrons in ProtoDUNE-SP data taken during the 2018 beam run.

¹This work is supported by the DOE Office of HEP (DE-FG02-95ER40893), FNAL, and the University Research Association.

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Date submitted: 08 Jan 2021

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