

Cross Section Measurement of Pion Absorption in ProtoDUNE Single Phase Detector at CERN

Thursday 9 September 2021 16:00 (20 minutes)

Abstract: The ProtoDUNE-SP detector is a single-phase liquid argon time projection chamber with an active volume of $7.2 \times 6.0 \times 6.97 \text{ m}^3$. The ProtoDUNE-SP detector also serves as a prototype for the first far detector module of the Deep Underground Neutrino Experiment (DUNE). A charged particle beam was specifically built to deliver multiple particles including charged pions, kaons, protons, muons and electrons with momenta in the range 0.3 GeV/c to 7 GeV/c. The ProtoDUNE-SP detector also serves as a prototype for the first far detector module of the Deep Underground Neutrino Experiment. We present algorithms for particle identification (protons, pions, and showers) and cross section measurement of pion absorption in the protoDUNE pion beam events with a slicing method. This is the first measurement of pion absorption with pion momenta greater than 350 MeV.

Working group

WG2

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