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Performance of the protoDUNE-SP liquid argon detector from a particle test-beam

Tuesday, August 6, 2019 5:00 PM (12 minutes)

Summary

The protoDUNE-SP detector is located at CERN's neutrino platform facility and serves as a prototype to validate the technology for the huge liquid argon detectors for DUNE. With a total mass of 770 tons, it is the largest monolithic liquid argon single-phase time projection chamber in the world. ProtoDUNE-SP was exposed to a variety of test-beam particles (electrons, pions, kaons, and protons) last autumn collecting data in a broad range of momenta, from 0.3 - 7 GeV/c. With the experience gained during the construction and operation of the detector, some preliminary results regarding the performance of protoDUNE-SP will be discussed. In particular, the measurements of the energy depositions from test-beam and cosmic particles and the treatment of space-charge effect, caused by the electric field distortions from the slow ion signal produced by a large number of cosmic ray particles entering the detector, will be presented.

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