

New Perspectives 2020



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LArIAT In 12+3 Minutes

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Liquid Argon Time Projection Chambers (LArTPCs) are the neutrino detectors of choice for novel oscillation experiments such as SBND, MicroBooNE, ICARUS, and DUNE because of their tracking, calorimetry, and particle identification capabilities. The Liquid Argon in a Testbeam (LArIAT) experiment was designed to measure new physical quantities as well as calibrate LArTPCs to the different particle species and interaction processes present in a neutrino experiment. LArIAT ran in a beam of charged particles (electrons, muons, pions, kaons, and protons) from 2015 to 2017 in Fermilab's Test Beam Facility. Studies in LArIAT will produce novel physics results, including the first total hadronic cross section of kaons and pions in liquid argon and the behavior of antiprotons in argon, as well as new methods, such as using charge and light for the calorimetry of low-energy electrons. LArIAT continues to provide a deeper understanding of LArTPC technology and thus prepares us for the new horizons of DUNE.

Summary

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Primary author: KING, Matthew (Yale University)

Presenter: KING, Matthew (Yale University)

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