

Abstract Submitted  
for the SES15 Meeting of  
The American Physical Society

**Time Projection Chamber Calibration in the LArIAT Experiment**<sup>1</sup> KEVIN NELSON, William and Mary College, LARIAT (FNAL T-1034) COLLABORATION — The observation of neutrino oscillations proves that neutrinos have mass and has allowed experiments to study and measure components of the neutrino mixing matrix. A broad future experimental program seeks to expand on those measurements by testing the Standard Model and searching for charge parity violation. That program will utilize a new detector technology, the liquid argon time projection chamber (LArTPC), that is capable of imaging neutrino interactions with very high resolution. As part of the research and development effort we studied the performance and calibration of a LArTPC exposed to a charged particle testbeam at Fermilab in summer 2015. We have filtered the dataset to obtain a sample of events in which a single minimum ionizing particle traversed the TPC. These events were then reconstructed with hit finding and tracking algorithms. We will report on our studies of the energy scale, drift time, wire to wire calibration constants, and other detector performance metrics. The calibrations derived from the minimum ionizing tracks will be used in future analyses, including those of hadron interactions, electromagnetic shower reconstruction and electron vs. photon discrimination.

<sup>1</sup>This work was supported by NSF award 1205844

Kevin Nelson  
William and Mary College

Date submitted: 15 Oct 2015

Electronic form version 1.4