

Using Multiple Coulomb Scattering to Measure Muon Momentum in the MicroBooNE Experiment

Thursday, 8 June 2017 18:00 (2 hours)

MicroBooNE is a Fermilab-based experiment that uses a Liquid Argon Time Projection Chamber (LArTPC) to investigate the excess of low energy events observed by MiniBooNE, study neutrino-argon cross-sections, and perform R&D for future LArTPC devices. Multiple Coulomb scattering has been shown to be a promising means of determining muon momentum in a LArTPC, and allows MicroBooNE to study higher energy, often uncontained, events from both the Booster and NuMI neutrino beams. The accuracy of momentum determination from multiple Coulomb scattering is within 5-10% for contained muons for both simulation and data, and under 15% for simulated exiting muons. This technique may also offer an applicable means for track direction determination, particle identification, and constraining beam K^+ production. I will discuss the status and performance of using the multiple Coulomb scattering technique on both simulation and data in MicroBooNE.

Summary

This poster presentation will primarily discuss the use of multiple Coulomb scattering for determining muon momentum, but will also cover the status of using MCS for other purposes.

Primary author: ABRATENKO, Polina (University of Michigan)

Presenter: ABRATENKO, Polina (University of Michigan)

Session Classification: Young Scientist Poster Session