Contribution ID: **217** Type: **Poster**

Pion Production Measurements with Advanced Decay Electron Reconstruction at MINERvA

MINERvA is a neutrino-nucleus cross-section experiment with a segmented detector that provides a resolution fine enough to support new techniques that probe the nuclear environments. Previous charged pion analyses on MINERvA have required a pion track in the event selection. However, recent developments show promise of identifying low energy pions (20 MeV - 100 MeV) in an extended phase space that includes high-angle pions. Decay electron spatial kinematics are used to obtain charged pion observables such as kinetic energy and angle. These new techniques yield high purity decay electron reconstruction and single charged pion event selection. This poster will present the technique and its application to improve signal and background identification in low momentum transfer bins with the goal of conducting a semi-inclusive low recoil analysis for charged pion production.

Mini-abstract

Exploration of new pion phase space using decay electron reconstruction in MINERvA.

Experiment/Collaboration

MINERvA Experiment

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Session Classification: Poster Session 2