

Charged Pion Production Cross-Sections for Charged Current Muon Neutrino Interactions on Argon in MicroBooNE

Accurate neutrino interaction models are crucial for reducing experimental uncertainties and require target-specific cross-section measurements. Understanding neutrino-argon interactions with final-state pions is vital for current and future argon-based neutrino experiments such as the Deep Underground Neutrino Experiment, where these reaction channels will play a dominant role. MicroBooNE, a liquid argon time projection chamber situated in the Booster Neutrino Beam at Fermilab, has recorded the largest collection of neutrino-argon interactions to date. This poster presents progress towards MicroBooNE's first measurement of total and single-differential cross-sections for charged current muon neutrino interactions producing a single charged pion final state. The analysis aims to have more than an order of magnitude increase in statistics compared to existing results and produce the first differential measurement of the cross-section with respect to pion momentum.

Working Group

WG 2: Neutrino Scattering Physics

Primary author: Mr DETJE, Jan Philip (University of Cambridge)

Presenter: Mr DETJE, Jan Philip (University of Cambridge)

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