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Measurement of Reconstructed Charged Particle Multiplicities of Neutrino Interactions in MicroBooNE

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In this talk, we present a comparison of the observed charged particle multiplicity distributions in the MicroBooNE liquid argon time projection chamber from neutrino interactions in a restricted final state phase space to predictions of this distribution from several GENIE models. The measurement uses a data sample consisting of neutrino interactions with a final state muon candidate fully contained within the MicroBooNE detector. These data were collected in 2015-2016 with the Fermilab Booster Neutrino Beam (BNB), which has an average neutrino energy of 800 MeV, using an exposure corresponding to 5×10^{19} protons-on-target. The analysis employs fully automatic event selection and charged particle track reconstruction and uses a data-driven technique to determine the contribution to each multiplicity bin from neutrino interactions and cosmic-induced backgrounds. The restricted phase space employed makes the measurement most sensitive to the higher-energy charged particles expected from primary neutrino-argon collisions and less sensitive to lower energy protons expected to be produced in final state interactions of collision products with the target argon nucleus.

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