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Measurement of the Electron-Neutrino Charged-Current Inclusive Cross-Section on Argon in MicroBooNE

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Electron-neutrino appearance is a crucial channel for searches of sterile neutrinos in short-baseline experiments and measurements of Charge-Parity (CP) violation in long-baseline oscillation experiments. The precise knowledge of the electron neutrino cross section will, therefore, play a key role in reducing the uncertainties of these future experiments. There are only a handful of electron neutrino cross section measurements in the hundred MeV to GeV range and only one on argon. Therefore, there is a need for new, high statistics measurements of this quantity. MicroBooNE is a Liquid Argon Time Projection Chamber (LArTPC) located at Fermilab which simultaneously receives a flux of neutrinos from the on-axis Booster Neutrino Beam (BNB) beam and off-axis Neutrinos at the Main Injector (NuMI) beam. While MicroBooNE uses BNB data for short baseline sterile oscillation searches, data from the NuMI beam provide an excellent opportunity to simultaneously measure the electron-neutrino cross section, thanks to its higher electron-neutrino flux component. This talk will cover the current status of inclusive charged-current electron neutrino cross-section measurement on argon in MicroBooNE using the NuMI beam.

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