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Extraction of the Inclusive Muon Neutrino Charged Current Cross Section at MicroBooNE using Wiener SVD Unfolding

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The MicroBooNE detector is a Liquid Argon Time Projection Chamber (LArTPC) located along the Booster Neutrino Beam (BNB) at Fermilab. One of its key physics goals is the measurement of neutrino-Argon interaction cross sections. Due to the detector's fully active volume as well as its capability for high-efficiency event reconstruction, MicroBooNE is well suited to utilize the Wiener-SVD unfolding method to generate nominal neutrino flux-averaged cross section measurements. This approach relies on a minimal set of assumptions to measure the inclusive charged current muon neutrino-Argon cross section as a function of truth kinematic variables. This allows easy comparison with measurements from other experiments and predictions from various models, and enables a new round of cross section measurements for MicroBooNE.

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