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Extraction of the Inclusive Muon Neutrino Charged Current Cross Section at MicroBooNE

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The MicroBooNE detector has an active mass of 85 tons of liquid argon and is located along the Booster Neutrino Beam (BNB) at Fermilab. It has a rich physics program including the search for a low-energy excess observed at MiniBooNE and measurements of neutrino-Argon interaction cross sections. In this talk, we present a procedure, based on the Wiener-SVD unfolding method, to extract the nominal neutrino flux-averaged total and differential cross sections of the inclusive muon neutrino charged-current interaction on argon. This procedure relies on a minimal set of assumptions while maximizing the power in comparing data results with predictions from theory and event generators. Taking advantage of the power of a Liquid Argon Time Projection Chamber (LArTPC) and the Wire-Cell tomographic event reconstruction paradigm, this procedure enables a new round of cross section measurements at MicroBooNE.

Collaboration name

MicroBooNE

Primary author: GU, Wenqiang (Brookhaven National Laboratory)

Presenter: GU, Wenqiang (Brookhaven National Laboratory)

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