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First measurement of $\nu\mu$ - ^{40}Ar CCQE-like differential cross sections using the MicroBooNE detector

Current and future generation neutrino oscillation experiments aim towards a high-precision measurement of the oscillation parameters and that requires an unprecedented understanding of neutrino-nucleus scattering. Charged-current quasielastic-like (CCQE-like) scattering is the process in which the neutrino produces a charged lepton and a single proton in the final state without any additional particles. These interactions are of great importance to both current and upcoming accelerator-based neutrino experiments, including DUNE. MicroBooNE is the first liquid argon time projection chamber (LArTPC) commissioned as part of the Short Baseline Neutrino (SBN) program at Fermilab and its excellent particle reconstruction capabilities allow the detection of neutrino interactions using exclusive final states, such as CCQE-like ones. This poster will present the first measurement of exclusive $\nu\mu$ - ^{40}Ar CCQE-like total and differential cross sections using single proton knock-out interactions recorded by the MicroBooNE LArTPC detector with 4π acceptance.

Mini-abstract

First measurement of $\nu\mu$ - ^{40}Ar CCQE-like differential cross sections using the MicroBooNE detector

Experiment/Collaboration

MicroBooNE

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