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Progress towards the extraction of exclusive ν μ - 40 Ar cross sections with a single proton using the MicroBooNE LArTPC detector

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Next generation neutrino oscillation experiments aim towards high-precision extraction of oscillation parameters, which in turn requires an unprecedented understanding of neutrino-nucleus interactions. Neutrino processes producing a charged lepton and a single intact nucleon in the final state can offer an important window into the dynamics of neutrino interactions with direct importance for accelerator–based oscillation measurements. 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 detailed study of neutrino interactions. This poster will present the latest progress towards the first measurement of the total and differential cross–sections for exclusive ν μ - 40 Ar interactions with a single proton final state using data from the MicroBooNE LArTPC detector.

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