

New Perspectives



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Measuring the Neutral Current Neutral Pion Cross Section on Argon in MicroBooNE

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MicroBooNE, a short-baseline neutrino experiment, sits on-axis in the Booster Neutrino Beamline at Fermilab where it is exposed to neutrinos with $\langle E_\nu \rangle \sim 0.8$ GeV. Since this energy range is highly relevant to the Short Baseline Neutrino and Deep Underground Neutrino Experiment programs, cross sections measured by MicroBooNE will have implications on their searches for neutrino oscillation and charge-parity violation measurements. Additionally, MicroBooNE's use of liquid argon time projection chamber technology makes it well-suited to precisely measure a wide range of final states, including those produced by neutral current (NC) interactions. NC π^0 interactions in particular are a significant background in searches for Beyond the Standard Model (BSM) e^+e^- production and are an irreducible background to rare neutrino scattering processes such as NC Δ radiative decay and NC coherent single-photon production at low energies. Therefore, understanding the rate of NC π^0 production will improve the modeling of this background channel, reducing uncertainties in measuring BSM signatures and single-photon production processes. In this talk, I will report the highest-statistics measurement to date of the neutral current (NC) π^0 production cross section for neutrino-argon interactions.

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