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## Toward a differential measurement of the electron neutrino CC1eNp cross section in MicroBooNE

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MicroBooNE, the longest running liquid argon time projection chamber (LArTPC), is the first of several detectors in Fermilab's leading-edge LArTPC program working toward stringent measurements of neutrino oscillation parameters. At energy scales relevant to accelerator-based experiments, charged current (CC) interactions producing an electron and at least one proton (1eNp) in the final state are a dominant contribution to  $\nu_e$  event rates. To date, no experimental verification of the CC1eNp cross section on argon currently exists, though such a measurement is crucial for next-generation LArTPCs to reach discovery precision in the  $\nu_e$  appearance channel. While MicroBooNE's primary physics analyses utilize the on-axis Booster Neutrino Beam, a significant neutrino flux is also received from a higher energy, off-axis beam called NuMI. The greater  $\nu_e$  to  $\nu_\mu$  ratio of the NuMI beam provides a unique opportunity for MicroBooNE to perform world-leading measurements of  $\nu_e$  cross sections. This work presents a selection of NuMI events as progress toward the first differential measurement of CC1eNp interactions in argon, demonstrating our ability to successfully measure & reconstruct electron neutrinos in MicroBooNE.

### Summary

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