

Neutrino Electron Scattering for Flux Constraint on SBND

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Neutrino electron elastic scattering is a process with a precisely known cross-section that provides a standard candle for improving our knowledge about the neutrino flux in accelerator-based neutrino beams. This process also has a distinct experimental signature leveraging the kinematics of the scattering process that allows us to directly measure these events. The Short Baseline Neutrino Detector (SBND) is a liquid argon time projection chamber (LArTPC) detector situated along the Booster Neutrino Beam (BNB) at Fermilab. One of the dominant systematic uncertainty for the experiment is the neutrino flux, which arises from uncertainties in hadronic processes in the creation of the BNB. We demonstrate that by measuring these events we can constrain the normalization uncertainty on the neutrino flux.

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