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Charged-pion Cross-section Measurements in the NOvA Near Detector

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The NuMI Off-Axis ν_e Appearance experiment (NOvA) is designed to study neutrinos and their interaction properties with matter. NOvA is a long-baseline neutrino oscillation experiment consisting of the Near Detector at Fermi National Accelerator and Far Detector in Ash River, Minnesota aiming to determine the neutrino mass hierarchy, and constrain the charge-parity violation phase. In addition to oscillation measurements, the NOvA Near Detector samples are ideal for measuring neutrino-neucleus interaction cross sections, which are important for constraining uncertainties in oscillation analyses.

Here, we present the status of an analysis that will use data from the NuMI beam peaked at 1.8GeV of neutrino energy to measure the cross-section of $\nu_\mu + N \rightarrow \mu + N\pi + X$ as a function of muon and leading-pion kinematics, where $N\pi$ is any number of charged pions, and X represents any particles in the final state.

Poster prize

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