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CHARGED-PION CROSS-SECTION MEASUREMENT1FROM NOvA

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The NuMI Off-Axis Appearance ν_e (NOvA) experiment is designed to study neutrinos and their interaction properties with matter. NOvA is a long-baseline neutrino oscillation experiment consisting of a Near Detector at Fermilab and a Far Detector in Ash River, Minnesota. Its primary goals are to determine the neutrino mass hierarchy and constrain the charge-parity (CP) violation phase. In addition to oscillation measurements, the NOvA Near Detector provides an ideal sample for measuring neutrino-nucleus interaction cross sections, which are crucial for reducing uncertainties in oscillation analyses. This analysis aims to minimize systematic uncertainties. Here, we present the status of an analysis that uses data from the NuMI beam, which peaks at 1.8 GeV in neutrino energy, to measure the cross section of the interaction $_\mu + N \to \mu^\pm + \pi^\pm + nX$ as a function of muon and leading-pion kinematics, where $\pi^\pm$ represents any number of charged pions, and nX denotes any particles in the final state. This analysis is sensitive to both deep inelastic scattering and resonance processes.

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