

New Perspectives



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Status of MRE Study for Neutrino-Electron Elastic Scattering in the NOvA Near Detector

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NOvA is a long-baseline accelerator neutrino experiment at Fermilab that aims at precision neutrino oscillation analyses and cross-section measurements. Large uncertainties on the absolute neutrino flux affect both of these measurements. Measuring neutrino-electron elastic scattering provides an in-situ constraint on the absolute neutrino flux. In this analysis the signal is a single, very forward-going electron shower with $E_e \theta_e^2$ peaking around zero. After the electron selection, the primary background for this analysis is the beam ν_e charged current events (ν_e CC). Muon removed electron-added (MRE) events are constructed from ν_μ CC interactions by removing the primary muon track and simulating an electron in its place. It helps us to understand the consequence of hadronic shower mismodelling on ν_e selection. This talk presents an overview of on-going MRE studies and a plan for how this sample can be used to provide a data-driven constrain on the ν_e CC backgrounds present in the ν -e analysis.

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