

Status of the muon neutrino charged-current mesonless cross section measurement in the NOvA near detector

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NOvA is a long-baseline accelerator neutrino experiment at Fermilab whose physics goals include precision neutrino oscillation as well as cross-section measurements. We present the status of the measurement of a muon neutrino charged-current cross section with zero mesons in the final state at the NOvA near detector. This measurement is being made with respect to the kinematics of the final state muon. The chosen interaction channel is especially sensitive to quasielastic and meson exchange current interactions and aims to provide experimental constraints for the development of models of neutrino interactions. It will also provide a handle for constraining cross section systematic uncertainties in oscillation analyses in current and future experiments. For particle identification, we use a convolutional neural network (CNN) trained on individual particles simulated in the NOvA near detector that allows us to select the desired signal while reducing the potential bias from neutrino interaction modeling. Charged pion background constraining is further improved via Michel electron tagging.

Poster prize

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