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

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We present the status of the measurement of muon neutrino charged-current cross section with zero mesons in the final state in the NOvA near detector. NOvA is a long-baseline accelerator neutrino experiment at Fermilab whose physics goals include precision neutrino oscillation as well as cross section measurements. The present work aims to produce differential cross section measurements with respect to the final state particle kinematics in charged-current interactions with no mesons in the final state. This channel is especially sensitive to quasielastic and MEC interactions and will provide a handle for constraining the cross section systematic uncertainties in oscillation analyses in current and future experiments. We explore using convolutional visual network (CVN)-based particle identifiers trained on single particles simulated in the NOvA near detector to select the desired signal while reducing the potential bias from neutrino interaction modeling.

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