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Current Analysis Status for the Inclusive Neutral Current π0 Production Cross section Measurement with the NOvA Near Detector

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NOvA (NuMI Off-axis νe Appearance) experiment is designed to study long-baseline neutrino oscillations using two detectors, the Near Detector (ND) at Fermilab and the Far Detector (FD) at a distance 810 km in Northern Minnesota. NOvA looks for the νe appearance at the FD using a narrow band νμ beam peaked at 2 GeV in energy. Neutral Current (NC) interactions with a π0 in the final state represents the main background in the νe appearance measurement. The π0 decay into two photons can fake the νe appearance signal either due to merging of two photon showers or one of the two photons escaping the detection. Therefore, a complete understanding of νμ induced NC interactions with π0 in the final state is very important. It will also help in reducing the background uncertainties for current and future long-baseline neutrino oscillation experiments. We will present the current status of the analysis related to the inclusive NC π0 production cross section measurement with the NOvA ND.

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