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Measurement of Neutral Current Coherent Pi^0 Production In The NOvA Near Detector

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The NOvA experiment is a long-baseline neutrino oscillation experiment designed to measure electron neutrino appearance in a muon neutrino beam. It consists of two finely segmented, liquid scintillator detectors at 14 mrad off-axis in the NuMI beam. The NOvA Near Detector, located at Fermilab, provides an excellent opportunity to study neutrino-nucleus interactions which are important for the neutrino oscillation measurements. This talk will present one of the first such measurements from the NOvA Near Detector: neutral current coherent- Pi^0 production. Neutrinos can coherently interact with the target nucleus via neutral current exchange and produce a single, forward Pi^0 , which is a background to the NuE appearance measurement. This analysis measures the coherent- Pi^0 kinematics and cross-section and compares it to the model predictions. A data-driven method is developed to constrain the neutral current resonance and deep-inelastic pi^0 productions which are background to this analysis.

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