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Neutrino Induced Neutral Current Coherent π^0 Production in The NOvA Near Detector

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The NOvA experiment is a long-baseline neutrino oscillation experiment designed to measure the rate of electron neutrinos 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 neutrino oscillation measurements. This presentation will present one of the first such measurements from NOvA: neutrino-induced coherent- π^0 production. Neutrinos can coherently interact with the target nucleus via neutral current exchange and produce a single, forward π^0 , which makes background to the ν_e appearance measurement. The analysis measures the coherent- π^0 kinematics and cross-section and compares to model predictions, and also provides a data constraint on π^0 production in the neutral current resonance and deep-inelastic interaction.

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