

Abstract Submitted
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A Search for Neutrino Induced NC Coherent π^0 Production in the MINOS Near Detector DANIEL CHERDACK, Tufts University, MINOS COLLABORATION — The production of single, highly forward π^0 mesons by neutral current (NC) coherent neutrino-nucleus interactions ($\nu_\mu + N \rightarrow \nu_\mu + N + \pi^0$) is of current interest as a process amenable to phenomenological description, and as a potential background for long base-line $\nu_\mu \rightarrow \nu_e$ oscillation searches. The high-statistic sample of neutrino interactions recorded by the MINOS Near Detector (ND), a coarse-grained iron-scintillator tracking calorimeter, in the $E_\nu = 2\text{-}30$ GeV range provide an opportunity to measure the cross-section of this coherent reaction on a relatively high-A nucleus. A major challenge to this measurement is the isolation of forward-going electromagnetic (EM) showers produced by the relatively rare NC coherent process from the abundance of incoherently produced EM showers. These backgrounds result from single π^0 dominated NC resonance and DIS events and by quasi-elastic-like charged-current scattering of electron neutrinos. The methods for event selection, error estimation, and signal extraction will be presented.

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