

Abstract Submitted
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Measurement of Neutrino-Induced Coherent Pion Production and the Diffractive Background in MINERvA ALICIA GOMEZ, University of Rochester, MINERVA COLLABORATION — Neutrino-induced coherent charged pion production is a unique neutrino-nucleus scattering process in which a muon and pion are produced while the nucleus is left in its ground state. The MINERvA experiment has made a model-independent differential cross section measurement of this process on carbon by selecting events with a muon and a pion, no evidence of nuclear break-up, and small momentum transfer to the nucleus $|t|$. A similar process which is a background to the measurement on carbon is diffractive pion production off the free protons in MINERvA's scintillator. This process is not modeled in the neutrino event generator GENIE. At low $|t|$ these events have a similar final state to the aforementioned process. A study to quantify this diffractive event contribution to the background is done by emulating these diffractive events by reweighting all other GENIE-generated background events to the predicted $|t|$ distribution of diffractive events, and then scaling to the diffractive cross section.

Alicia Gomez
University of Rochester

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