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Neutrons from CCQE-like Antineutrino Interactions in MINERvA's Various Nuclear Targets

The MINERvA collaboration has demonstrated both an ability to detect neutrons from GeV-scale antineutrino interactions, and entangled deficiencies in the modeling of their production and detection. These deficiencies present problems for oscillation experiments as misunderstanding the neutron content in the final state will bias energy estimators which assume a particular final state (e.g. CCQE-like) or rely on calorimetric information. This poster describes a cross section analysis to further the study of GeV-scale neutron production. The analysis studies the neutron production in CCQE-like interactions across MINERvA's range of nuclear targets: carbon, iron, water, and lead. It will provide insight into the effect of the nuclear environment on neutron production and subsequent detection in antineutrino CCQE-like interactions, across a broad range of nuclei.

Primary author: LAST, David

Presenter: LAST, David

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