

Poster: Neutrons from Antineutrino Interactions in MINERvA

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Neutron production by antineutrino interactions is an important source of uncertainty for long baseline oscillation experiments. Neutrons are a source of missing energy for calorimetry-based oscillation experiments, and an extra neutron from an antineutrino CCQE-like interaction can be evidence of a 2p2h interaction. Both problems bias oscillation measurements' energy estimators, yet few experiments have studied neutron production by GeV antineutrinos.

The MINERvA collaboration demonstrated its detector's neutron detection capability in 2016 and observed discrepancies in neutron production rate that persist into MINERvA's medium energy data and across target nuclei. This poster describes an antineutrino multi-neutron production cross section analysis that will provide a detector- and model-independent measure of any discrepancies in neutron production rate. The multi-neutron sample is predicted to be particularly sensitive to 2p2h and FSI effects.

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