

Title: MINERvA measurements of Neutrino Interactions in the GeV Regime

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Abstract:

MINERvA, or Main INjector ExpeRiment for  $\nu$ -A, at Fermilab is an experiment dedicated to the study of neutrino-nucleus interactions in the GeV regime. Its goal is to illustrate the interplay between hadronic and nuclear physics and measure intranuclear dynamics that are crucial for the present and future neutrino oscillation measurements. As the analysis of the Low-Energy data—the  $\nu_\mu/\bar{\nu}_\mu$  beam flux peaks at about 3 GeV with most of the rate between 1-6 GeV—has come to a conclusion, nuclear effects are shown to be a complex phenomenon which challenges many of the popular theoretical descriptions. Recently, MINERvA has completed its physics run with the Medium-Energy (flux peak at 6 GeV) beam. The experiment received a total of  $12 \times 10^{20}$  protons on target in both neutrino and antineutrino mode running, which allow for a new level of statistical precision in neutrino interaction measurements, both in comparisons of interaction channels on a range of nuclei and in expansion to kinematic phase space that has not been accessible in previous data sets. In this talk, I will highlight MINERvA's Low-Energy results and discuss in detail the current Medium-Energy analysis strategy and perspective.