Abstract Submitted
for the NWS18 Meeting of
The American Physical Society

Quasi-elastic-like anti-neutrino production at MINERvA HEIDI SCHELLMAN, Oregon State University, MINERVA COLLABORATION — Next-generation neutrino oscillation experiments, such as DUNE and Hyper-Kamiokande, hope to measure charge-parity (CP) violation in the lepton sector. In order to do this, they must dramatically reduce their current levels of uncertainty, particularly those due to neutrino-nucleus interaction models. As CP violation is a measure of the difference between the oscillation properties of neutrinos and antineutrinos, data about how the less-studied antineutrinos interact is especially valuable. We present the MINERvA experiment's first double-differential scattering cross sections for antineutrinos on scintillator, in the few-GeV range relevant to experiments such as DUNE and NovA. We also present total antineutrino-scintillator quasi-elastic cross sections as a function of energy, which we compare to measurements from previous experiments. As well as being useful to help reduce oscillation experiments' uncertainty, our data can also be used to study the prevalence of various correlation and final-state interaction effects within the nucleus. We compare to models produced by different model generators, and are able to draw first conclusions about the predictions of these models.

Heidi Schellman
Oregon State Univ

Date submitted: 18 Apr 2018 Electronic form version 1.4