

Abstract Submitted
for the DNP17 Meeting of
The American Physical Society

Coincidence ($e, e'p$) Scattering on ^{40}Ar and ^{48}Ti to Aid Precision Neutrino Oscillation Experiments¹ DAN ABRAMS, University of Virginia, E12-14-012 COLLABORATION² — Neutrino oscillations are an active area of research, with experiments such as DUNE (Deep Underground Neutrino Experiment). DUNE will make use of large liquid argon detectors to perform a precision measurement of the CP violating phase. Hence, an understanding of the argon nuclear ground state and its response to (anti-)neutrino interactions is of paramount importance. Information about the nuclear ground state is encapsulated in the spectral function, $S(k, E)$, the joint probability of removing a nucleon of momentum $k = |\mathbf{k}|$ from the ground state leaving the residual (A-1) system with excitation energy E. E12-14-012 at Jefferson Lab ran in early 2017 and has measured the argon spectral function through coincidence ($e, e'p$) scattering on ^{40}Ar and ^{48}Ti . The results of E12-14-012 are important to both the neutrino and nuclear physics communities. A direct measurement of the coincidence ($e, e'p$) cross section from ^{40}Ar and ^{48}Ti will provide valuable information about the argon nucleus, as well as the experimental input necessary to constrain theoretical models used to calculate $S(k, E)$, paving the way for reliable estimates of the neutrino cross sections. Data from E12-14-012 is currently being analyzed at UVA and Va. Tech.

¹Supported in part by the Department of Energy Grant No: DE-FG02-96ER40950

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Date submitted: 30 Jun 2017

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