

Abstract Submitted  
for the DNP15 Meeting of  
The American Physical Society

**The spectral function of  $^{40}\text{Ar}$  through the  $(e, e'p)$  reaction** DONAL DAY, University of Virginia, E12-14-012 COLLABORATION — Accelerator based neutrino-oscillation measurements, where neutrinos interact predominantly with nucleons bound in nuclei, demand an accurate description of the cross sections. Nuclear effects play a decisive role and are considered one of the main sources of systematic uncertainties. An effort is underway to develop theoretical models capable of a fully quantitative description of the neutrino-nucleus cross sections. An approach based on many body theory has proven successful in explaining electron-nucleus cross sections. The application of this approach to the analysis of neutrino interactions will require accurate models of the spectral functions for the nuclei in neutrino detectors. Of paramount importance is  $^{40}\text{Ar}$ , to be used in the Deep Underground Neutrino Experiment (DUNE, formerly LBNE). A  $^{40}\text{Ar}(e, e'p)$  experiment which will prove indispensable for the construction of the argon spectral function has been approved at Jefferson Lab. The  $(e, e'p)$  data, in addition, will advance theoretical developments, including the description of final-state interactions, unavoidable in neutrino experiments. The motivation, goals, experimental details and plans for the execution of this measurement will be discussed.

Donal Day  
University of Virginia

Date submitted: 25 Jun 2015

Electronic form version 1.4