Abstract Submitted
for the DNP17 Meeting of
The American Physical Society

Neutron cross section measurements for ^{12}C between 0.5 and 8 MeV[1] A.P.D. RAMIREZ, M.T. MCELLISTREM, S. MUKHOPADHYAY, E.E. PETERS, S.W. YATES, University of Kentucky, S.F. HICKS, E.C. DERDEYN, E.M. LYONS, T.J. MORIN, University of Dallas, J.R. VANHOY, US Naval Academy — Elastic and inelastic neutron scattering experiments on ^{12}C between 0.5 and 8 MeV are in progress at the University of Kentucky Accelerator Laboratory. Both (n,n$'$) angular distributions and (n,n$'\gamma$) excitation functions are measured. Neutron elastic scattering cross sections on ^{12}C are rather well known over a wide energy range but there is great interest in reducing uncertainties even further. Angular distributions provide additional information which guides refinements of resonance parameters. Preliminary measurements suggested that at a few incident energies, the forward-angle elastic differential cross sections may be larger than indicated in the analysis of 1970s data - the multiple scattering (MS) effect is much larger and the MS yield may not have been distinguishable from background in time-of-flight spectra from that era. Few measurements of inelastic scattering exist and reported values from 4.8 to 6.4 MeV can be significantly different from each other and from the data evaluations. A status report on ^{12}C measurements will be given, highlighting the (n,n) measurements.

[1]Research is supported by USDOE-NNSA-SSAP: NA0002931, USDOE-NEUP: NU-12-KY-UK-0201-05, NSF: PHY-1606890, and the Donald A. Cowan Physics Institute at the University of Dallas.

Jeffrey Vanhoy
US Naval Academy

Date submitted: 30 Jun 2017 Electronic form version 1.4