

Abstract Submitted  
for the DNP13 Meeting of  
The American Physical Society

**Neutron scattering studies of  $^{54,56}\text{Fe}$  with monoenergetic neutrons**<sup>1</sup> S.F. HICKS, B.M. COMBS, S.L. HENDERSON, L.C. SIDWELL, Dept. of Physics, Univ. of Dallas, Irving, TX 75062, J.R. VANHOY, E. GARZA, J. STEVES, Dept. of Physics, U.S. Naval Academy, Annapolis, Maryland 21402 USA, A. CHAKRABORTY, B.P. CRIDER, F.M. PRADOS-ESTEVEZ, A. KUMAR, M.T. MCELLISTREM, E.E. PETERS, T.J. ROSS, S.W. YATES, Depts. of Chemistry and Physics & Astronomy, Univ. of Kentucky, Lexington, Kentucky 40506-0055 USA — Neutron scattering data for Fe are important for the development of next generation fission reactors, since Fe is an important structural material in all proposed reactor designs, as well as in existing reactors. How neutrons interact with Fe has an important impact on fuel performance during irradiations and the overall efficiency of fission reactors. While differential scattering cross sections have been previously measured at several incident neutron energies in the fast neutron region, questions remain regarding the uncertainties for existing cross sections and for neutron inelastic scattering. Elastic and inelastic differential scattering cross sections have been measured on  $^{54,56}\text{Fe}$  at the University of Kentucky Accelerator Laboratory in the fast neutron energy region between 1.7 and 4 MeV. Results from our measurements and comparisons to model calculations will be presented.

<sup>1</sup>This material is based on work supported by the Department of Energy under grant NEUP: NU-12-KY-UK-0201-05 and by the Cowan Physics Fund at the Univ. of Dallas.

S. F. Hicks  
Dept. of Physics, Univ. of Dallas, Irving, TX 75062

Date submitted: 23 Jun 2013

Electronic form version 1.4