Abstract Submitted
for the TSF14 Meeting of
The American Physical Society

^{56}Fe Inelastic Neutron Scattering Cross Sections Deduced from γ-Ray Production Cross Sections THADDEUS HOWARD, S.F. HICKS, University of Dallas, M.T. MCELLISTREM, University of Kentucky, J.R. VANHOY, U.S. Naval Academy, A.J. FRENCH, S.L. HENDERSON, R.L. PECHA, University of Dallas, E.E. PETERS, T.J. ROSS, University of Kentucky, Z.C. SANTONIL, L.C. SIDWELL, University of Dallas, B.K. THOMPSON, U.S. Naval Academy, S.W. YATES, University of Kentucky — Inelastic neutron scattering cross sections have been deduced from γ-ray production cross sections for ^{56}Fe. Measurements were made at the University of Kentucky Accelerator Laboratory using the neutron production and detection facilities located there. A natural iron sample (91.72% isotopic abundance of ^{56}Fe) was bombarded with a nearly mono-energetic incident neutron beam with energies in a range from 1.5-4.7 MeV. Gamma-ray excitation functions were determined for each observed γ ray in this energy range; from these, branching ratios and γ-ray production cross sections were determined and neutron scattering cross sections deduced. Gamma-ray excitation functions were also measured for ^{27}Al, ^{48}Ti, and ^{51}V to investigate using the deduced neutron scattering cross sections as standards to normalize absolutely the ^{56}Fe cross sections. Cross sections determined in this work are compared to evaluated data from the National Nuclear Data Center.

Thaddeus Howard
University of Dallas

Date submitted: 24 Sep 2014 Electronic form version 1.4