Abstract Submitted for the DNP10 Meeting of The American Physical Society

Measurement of the NP Elastic Cross Section by Neutron Transmission BRIAN DAUB, Massacusetts Institute of Technology, MICHAEL KO-VASH, University of Kentucky, VLADIMIR HENZL, Massachusetts Institue of Technology, KHAYRULLO SHONIYOZOV, University of Kentucky — There are very few previous measurements of the cross section for neutron-proton elastic scattering at energies between 200 and 500 keV. To improve this situation, we used a pulsed proton beam from the Van de Graaff accelerator at the University of Kentucky to produce 200-800 keV neutrons via the ⁷Li(p,n)⁷Be reaction. We determined the total n-p elastic cross section by measuring the transmission of the neutron beam in samples of CH₂ and carbon, using a BC501 liquid scintillator. The cross section obtained by taking ratios between normalized sample-in and sample-out yields is independent of both detector efficiency and dead time.

> Brian Daub Massacusetts Institute of Technology

Date submitted: 29 Jun 2010

Electronic form version 1.4