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Response of BC418 Plastic Scintillator to Low Energy Protons B.H. DAUB, V. HENZL¹, Massachusetts Institute of Technology, M.A. KOVASH, University of Kentucky, J.L. MATTHEWS, Massachusetts Institute of Technology, Z.W. MILLER, K. SHONIYOZOV, H. YANG, University of Kentucky — The response of fast plastic scintillators is unknown for proton energies below approximately 300 keV. The response of BC418 plastic scintillator to protons from 100 keV to 3.6 MeV was measured using elastic scattering of neutrons at the University of Kentucky and at the Los Alamos Neutron Science Center. At Kentucky, protons of precise energies from a Van de Graaff accelerator impinged on a thin LiF target to produce neutrons in narrow energy bands. At Los Alamos, neutrons were produced from a tungsten spallation source and their energies determined by time of flight. In both experiments a coincidence was detected between the recoiling proton in the plastic scintillator and the elastically scattered neutron in a liquid scintillator. The energy of the recoil proton is determined by the elastic scattering kinematics, with the scattered neutron energy precisely determined by time of flight. The results are compared with previous measurements of the response of similar plastic scintillators in the energy region where they overlap.

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