

Abstract Submitted
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Three-nucleon forces in neutron-deuteron elastic and inelastic scattering¹ J.L. MATTHEWS, M. CHTANGEEV, W.A. FRANKLIN, MIT, T. AKDOGAN, E. ERTAN, Bogazici University, M.A. KOVASH, U. Kentucky, M. YULY, Houghton College — The sensitivity to three-nucleon forces (3NF) of nucleon-deuteron elastic scattering at large center-of-mass angles is by now well known. Previous p-d experiments (differential cross sections and spin observables) have tended to agree better with calculations that include 3NF, although at energies 200 MeV and above both p-d and n-d cross sections exceed theoretical predictions. We have undertaken a measurement of the dependence on incident neutron energy of the differential cross section for n-d elastic scattering and will report data in the range 130-250 MeV. The sensitivity of the inelastic process $d(N,Nnp)$ to 3NF is not as clear from the calculations; effects are seen to be generally small and to depend strongly on kinematics and on the form of the 3NF used. The theoretical inelastic cross sections in quasi-free kinematics exhibit almost no sensitivity to 3NF, but are not able to reproduce the only data available ($d(p,np)p$ at 200 MeV) in the intermediate energy region. To investigate this problem and to motivate further theoretical work, we have undertaken a measurement of the energy dependence of the $d(n,np)n$ cross section in the incident energy range 100-400 MeV.

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