

Abstract Submitted  
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**Neutron-Helium-3 Analyzing Power at 2.26, 3.14, 4.05, and 5.54 MeV**<sup>1</sup> J.H. ESTERLINE, A.S. CROWELL, C.R. HOWELL, A. HUTCHESON, M.R. KISER, R.A. MACRI, S. TAJIMA, W. TORNOW, Duke University & TUNL, B.J. CROWE, N.C. Central University & TUNL, R.S. PEDRONI, N.C. A&T State University & TUNL, G.J. WEISEL, Penn State Altoona & TUNL — In continuation of an ongoing study of analyzing powers in the four-nucleon system, chosen for its sensitivity both to nucleon-nucleon phase shifts and possibly to new three-nucleon forces relevant to solving the three-nucleon analyzing power puzzle, we have measured analyzing powers for neutron-helium-3 scattering at Triangle Universities Nuclear Laboratory (TUNL) at neutron energies of 2.26, 3.14, 4.05, and 5.54 MeV, over a wide angular distribution for each energy. Neutrons were obtained using the source reactions  $T(p,n)^3\text{He}$  and  $D(d,n)^3\text{He}$ , for the lower energies (2.26 and 3.14 MeV) and higher energies (4.05 and 5.54 MeV), respectively; resulting neutron polarizations were between 0.3 and 0.5. Statistical uncertainties in the analyzing power were found in preliminary analysis to be less than 0.03 at the cross section minima, corresponding to values of analyzing powers in excess of 0.6. The data are compared to rigorous calculations based on the Yakubovsky equations, with which they are in marked disagreement, and existing proton-triton data corrected for the Coulomb barrier.

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