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Proton – ^3He Elastic Scattering at Low Energies¹ B. M. FISHER², C. R. BRUNE³, H. J. KARWOWSKI, D. S. LEONARD⁴, E. J. LUDWIG, University of North Carolina at Chapel Hill and Triangle Universities Nuclear Laboratory, T. C. BLACK, University of North Carolina at Wilmington, M. VIVIANI, A. KIEVSKY, S. ROSATI, INFN Pisa and University of Pisa — We present new accurate measurements of the differential cross section $\sigma(\theta)$ and the proton analyzing power A_y for proton- ^3He elastic scattering at various energies. The $\sigma(\theta)$ distributions have been measured at $E_p = 0.99, 1.59, 2.24, 3.11,$ and 4.02 MeV. Full angular distributions of $A_y(\theta)$ have been measured at $E_p = 1.60, 2.25, 3.13,$ and 4.05 MeV. This set of high-precision data is compared to four-body variational calculations employing realistic nucleon-nucleon (NN) and three-nucleon ($3N$) interactions. For the unpolarized cross section the agreement between the theoretical calculation and experimental data is good when a realistic $3N$ potential is included. However, the comparison between the calculated and measured proton analyzing powers reveals discrepancies of approximately 50% at the maximum of each distribution.

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