Quantum Monte Carlo Calculations of Nucleon-Nucleus Scattering[1] R.B. WIRINGA, KENNETH M. NOLLETT, STEVEN C. PIEPER, I. BRIDA, Argonne National Laboratory —

We report recent quantum Monte Carlo (variational and Green's function) calculations of elastic nucleon-nucleus scattering. We are adding the cases of proton-^{4}He, neutron-^{3}H and proton-^{3}He scattering to a previous GFMC study of neutron-^{4}He scattering [1]. To do this requires generalizing our methods to include long-range Coulomb forces and to treat coupled channels. The two four-body cases can be compared to other accurate four-body calculational methods such as the AGS equations and hyperspherical harmonic expansions. We will present results for the Argonne v_{18} interaction alone and with Urbana and Illinois three-nucleon potentials.

[1] K.M. Nollett, S. C. Pieper, R.B. Wiringa, J. Carlson, and G.M. Hale, Phys. Rev. Lett. 99, 022502 (2007)

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