

Abstract Submitted
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Microscopic folding potentials based on NCSM nonlocal densities for elastic proton scattering off light nuclei¹ MATTHEW BURROWS, CHARLOTTE ELSTER, GABRIELA POPA, Ohio University, STEPHEN WEPPNER, Eckerd College, KRISTINA LAUNEY, Louisiana State University, PIETER MARIS, Iowa State University, ANDREAS NOGGA, Forschungszentrum Jlich Institute for Nuclear Physics — A microscopic effective (optical) potential for describing elastic scattering of protons (neutrons) from nuclei can be formulated consistently using multiple scattering theory and the spectator expansion. In first order the use of the nucleon-nucleon t-matrix accounts for the short range interaction between the projectile and a target nucleon, and the non-local one-body density matrix describes the nucleus. Here we employ translationally invariant non-local one-body densities derived from NCSM calculations ² in constructing the effective proton-nucleus interaction and will show elastic scattering observables for the closed shell nuclei ⁴He and ¹⁶O for laboratory kinetic energies for 200 MeV and below. We also explore the observables for the open-shell nucleus ¹²C.

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²M.Burrows, Ch. Elster, G. Popa, K.D. Launey, A. Nogga, P. Maris, arXiv:1711.07080

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