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Ab initio **NCSM One-Body Densities as Input to Effective Potentials for Nucleon-Nucleus Elastic Scattering**[1] MATTHEW BURROWS, CHARLOTTE ELSTER, GABRIELA POPA, Ohio University, KRISTINA LAUNEY, Louisiana State University, PIETER MARIS, Iowa State University, STEPHEN WEPPNER, Eckerd College — Effective interactions ('optical potentials') are needed as input to nuclear reaction calculations. Deriving them *ab initio* is a current topic of interest. In a multiple scattering expansion for nucleon-nucleus elastic scattering the lowest order term requires integrating over nonlocal, translationally invariant one-body densities and off-shell nucleon-nucleon (NN) scattering amplitudes. The one-body densities contain a scalar and a vector part when taking into account the spin of the nucleons in the nucleus. However, up to now only the scalar density has been employed when calculating the first order effective potential. In this talk, proton-nucleus elastic scattering observables calculated with effective *ab initio* folding potentials based on NCSM scalar and vector one-body densities together with NN amplitudes derived from the same NN interaction will be shown. We will focus on elastic scattering off light nuclei (up to ^{16}O) in the energy regime between 100 and 200 MeV laboratory kinetic energy.

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