

Abstract Submitted
for the DNP20 Meeting of
The American Physical Society

Spin structure of light nuclei related to nucleon-nucleus elastic scattering¹ ROBERT BAKER, MATTHEW BURROWS, CHARLOTTE ELSTER, GABRIELA POPA, Ohio University, KRISTINA LAUNEY, Louisiana State University, PIETER MARIS, Iowa State University, STEPHEN WEPPNER, Eckerd College — We discuss recent work related to the calculation of *ab initio* microscopic effective interactions for elastic nucleon-nucleus scattering. In the framework of the spectator expansion of the multiple scattering series, we can construct a leading-order consistent effective interaction that includes information about the spin of the struck nucleon. Using one-body densities from the no-core shell model, we are able to examine the spin structure of the target 0^+ nucleus and investigate the effects of the underlying shell structure on the resulting effective interaction as well as physical observables. With a focus on differences along isotopic chains, we present results for light nuclei and discuss the relevant physics.

¹This work was supported in part by the U.S. DoE (DE-FG02-93ER40756 and DE-SC0018223) and by the U.S. NSF (OIA-1738287 and PHY-1913728). Computational resources provided by Blue Waters (supported by U.S. NSF OCI-0725070 and ACI-1238993, and the state of Illinois), LSU HPC (www.hpc.lsu.edu), and the National Energy Research Scientific Computing Center (NERSC), a U.S. DoE Office of Science User Facility operated under Contract No. DE-AC02-05CH11231.

Robert Baker
Ohio University

Date submitted: 26 Jun 2020

Electronic form version 1.4