Abstract Submitted
for the DNP20 Meeting of
The American Physical Society

Exploring short-range correlation effects with quantum Monte Carlo[1] DIEGO LONARDONI, FRIB-MSU and LANL — Quantum Monte Carlo (QMC) techniques provide a versatile and systematic approach to nuclear systems. Recent advances allow one to perform calculations from light to medium-mass nuclei for a variety of nuclear Hamiltonians, including those constructed using phenomenological potentials and local interactions derived from chiral effective field theory. The fully correlated nature of the many-body wave functions employed in QMC methods allows one to properly asses the short-distance and high-momentum behavior of calculated nuclear properties. In this talk, I will present recent QMC results for nuclei from 2H to 40Ca, that enable one to explore short-range correlation (SRC) effects, such as the many-body factorization of the nuclear wave function and the position-momentum equivalence of SRCs, and to connect to the experimental information extracted from electron scattering.

[1]This work was supported by the U.S. Department of Energy, Office of Science, Office of Nuclear Physics, under the FRIB Theory Alliance award DE-SC0013617, and by the NUCLEI SciDAC program.

Diego Lonardoni
FRIB-MSU and LANL

Date submitted: 24 Jun 2020 Electronic form version 1.4