

Optical potential and knockout reactions

This presentation will show results of nucleon scattering and knockout reactions on medium-mass nuclei making use of optical potentials derived consistently from ab-initio Self Consistent Green Function (SCGF) with saturating Chiral Effective Field Theory (χ -EFT) interaction.

The properties of this self-energy will be discussed in the context of elastic scattering on Ni, Ca and O isotopes, and comparing the low-energy scattering experimental cross sections and angular distributions. It will be shown that it is possible to reproduce key low energy scattering observables in medium mass nuclei from “first principles” consistently.

Possible expansion of this approach to effective density functionals and heavy nuclei will be discussed.

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