

## **Microscopic optical potential obtained from energy-density-functional approach for nucleon-nucleus elastic scattering**

Nucleon-nucleus (NA) optical potentials are microscopically generated from a fully self-consistent framework of the particle-vibration coupling (PVC), in which the nucleon-nucleon (NN) effective interaction of the Skyrme type is consistently used to describe the Hartree-Fock (HF) mean-field, the small amplitude collective motions of the target, and the particle-collective states coupling. For the first time, a systematic calculation of low-energy NA elastic scattering off a series of doubly closed-shell nuclei is carried out without ad hoc adjusted parameters. Angular distributions obtained using the present optical potentials are in good agreement with the experimental data. This will be a major step forward in the applications of the Skyrme energy-density-functional theory to build up the global microscopic optical potentials, which are expected to be a powerful tool for the study of unstable (exotic) nuclei at low incident nucleon energies.

### **Summary**

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