

独立行政法人理化学研究所 仁科加速器研究センター 第147回 RIBF核物理セミナー RIKEN Nishina Center for Accelerator Based Science The 147<sup>th</sup> RIBF Nuclear Physics Seminar

Nucleon density distributions extracted from proton elastic scattering at intermediate energies

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Nuclear density distributions are fundamental properties of nuclei, and they are indispensable to describe nuclear reaction or structure models. But now, we have just the information about charge distributions of stable nuclei determined from well-known electron elastic scattering. On the other hand, nucleon density, particularly, neutron density distributions are still much less certain for several decades. In recent years, the difference between proton and neutron density distributions have been found to have a significant role on nuclear theory because of the discoveries of exotic phenomena, such as skin, halo structures, and shell evolutions, from experimental studies of unstable nuclei. For example, the precise information of the neutron skin thicknesses are expected to strongly constrain the nuclear matter EOS with isospin asymmetry, which is one of the most important issues for astrophysics as well as nuclear physics. I will introduce our recent works of the neutron density distributions and the neutron skin thicknesses for stable nuclei deduced from proton elastic scattering and will also talk about the status of ESPRI project.

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