

Neutron deficient exotic nuclei and the Physics of the "proton rich side" of the nuclear chart



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Selective sensitivity of proton scattering to densities on the nuclear surface

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Microscopic descriptions of nucleon scattering from nuclei depend on the matter distribution of their neutron and proton constituents. Additionally, the different behaviour of density-dependent effective interactions in the pp and pn channels offer a selective mechanism by which proton probes couple to the proton and neutron densities of the nucleus. Recent formal studies of the optical model potential have demonstrated the surface contributions to the optical potential depend on the gradient of the density-dependent effective interaction, and that proton probes couple strongly to the neutron than to the proton density. These properties poses limits the sensitivity of proton scattering to the matter distribution of proton-rich nuclei. We illustrate these findings with selected applications.

Summary

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