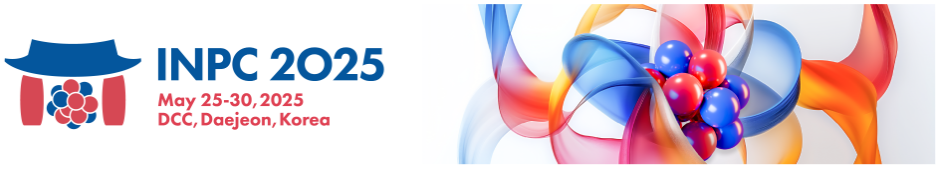

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Nuclear radii in deformed relativistic Hartree-Bogoliubov theory in continuum

Thursday, 29 May 2025 17:50 (15 minutes)

The study of exotic nuclei is one of the most fascinating frontiers in nuclear physics. Nuclear radii, including charge radius and neutron root-mean-square (rms) radius, are important properties for atomic nuclei, offering critical insights into the structure of exotic nuclei. In this work, based on the deformed relativistic Hartree-Bogoliubov theory in continuum (DRHBc), the charge radii for even-Z nuclei with $8 \leq Z \leq 120$ are systematically investigated. The role of nuclear deformation is thoroughly analyzed, underscoring the necessity of microscopic and self-consistent approaches for precise charge radius descriptions. Furthermore, the neutron rms radii for even-Z nuclei are also studied systematically based on the DRHBc theory. By combining these findings with neutron separation energies, potential neutron halos and their underlying microscopic structures are explored.

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