

Shape coexistence and shape evolution in neutron-rich $A \simeq 100$ nuclei

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The structure of neutron-rich nuclei in the $A \sim 100$ mass region relevant for the astrophysical r-process manifests drastic changes in some isotopic chains and often sudden variations of particular nuclear properties have been identified. For a realistic description of the evolution in structure with increasing spin, energy, and isospin determined by shape coexistence and mixing beyond-mean-field approaches are required.

Our recent studies represent an attempt to the self-consistent description of the shape coexistence phenomena in neutron-rich $A \sim 100$ nuclei (1,2,3) within the complex Excited Vampir variational model with symmetry projection before variation using a realistic effective interaction based on the Bonn A potential in a large model space. The triple shape coexistence and the shape evolution in the $N=58$ Sr and Zr isotopes, the shape evolution in a chain of Zr nuclei, as well as the Gamow-Teller beta-decay properties of neutron-rich Zr nuclei will be presented.

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2. A. Petrovici, K.W. Schmid, A. Faessler, Prog. Part. Nucl. Phys. 66, 287 (2011).
3. A. Petrovici, Phys. Rev. C85, 034337 (2012).

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