

A Shift from Phase Transitions to the Coexistence of Nuclear Shapes

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A model [1], resulting from a numerical solution of the Bohr-Mottelson Hamiltonian [2] in a basis of Bessel functions of the first kind, proved to be very appropriate to describe the shift from the critical point of a shape phase transition to the shape coexistence and mixing in nuclei [3,4]. The model was developed and applied, up to present, to describe such phenomena between an approximately spherical shape and well-deformed ones as prolate [1,3,5], γ -unstable [7–9] and γ -rigid triaxial [4], respectively. Additionally, the model can describe a shape evolution in relation to the increase of the total angular momentum, as well as unusually low $B(E2)$ electromagnetic transition ratios.

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