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Microscopic description of shape transitions and shape coexistence in Hg isotopes

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Abstract

A microscopic analysis of characteristic signatures of nuclear ground-state shape transitions and coexisting nuclear shapes in neutron deficient even-even Hg isotopes is presented using a five-dimensional collective Hamiltonian (5DCH) based on covariant density-functional theory. The triaxial deformation energy surfaces suggest coexisting configurations in ^{190}Hg, γ-soft potential energy surfaces in $^{192-198}$Hg and a more spherical structure in ^{200}Hg. The corresponding 5DCH model calculations confirm the structural evolution in this region and suggest more increased collectivity than what can be deduced from the data.

References

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