Shape Evolution and Shape Coexistence in Even-Even Mo Isotopic Chain

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The phenomena of shape evolution and shape coexistence within the Molybdenum isotopic chain are investigated using the covariant density functional theory with the parameterizations DDME2 and DD-PC1. Furthermore, various ground state properties of this chain are investigated, including binding energy, two-neutron separation energy, charge radii, and two-neutron shell gap. A robust agreement is observed when comparing with the available experimental data. The ground state deformation of Mo isotopes evolves smoothly and correlates with the continuous and gradual changes observed in the physical properties. A noticeable phenomenon of shape coexistence can be observed in certain isotopes, marked by the simultaneous existence of both a triaxial and an oblate axial minimum. A pronounced and well-defined shell closure is prominently evident at the neutron magic number $N = 82$.