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Nuclear high-K isomers viewed in extended deformation space
HONGLIANG LIU, Texas A&M University-Commerce, FURONG XU, Peking University, CARLOS BERTULANI, Texas A&M University - Commerce — Multi-quasiparticle high-K isomers in heavy and superheavy nuclei are studied by configuration-constrained potential-energy-surface calculations extended to include reflection asymmetry or high order deformation. Actinide nuclei are found to be good candidates for the formation of high-K isomers in the second well of the potential-energy surface. The calculations with reflection asymmetry explain the inhibition of isomeric fission as being mainly attributed to the increased height of the fission barrier. Remarkable effects of high order deformation on ^{254}No high-K isomers are found using calculations with β_6 deformation. The high order deformation leads to increased binding energies and enhanced deformed shell gaps at $N = 152$ and $Z = 100$. The inclusion of β_6 deformation significantly improves the description of the very heavy high-K isomers.

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