Fission Barriers of Compound Superheavy Nuclei
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The dependence of fission barriers on the excitation energy of the compound nucleus impacts the survival probability of superheavy nuclei synthesized in heavy-ion fusion reactions. In this work [1,2], we investigate the isentropic fission barriers by means of the self-consistent nuclear density functional theory. The relationship between isothermal and isentropic descriptions is demonstrated. Calculations have been carried out for $^{264}\text{Fm}$, $^{272}\text{Ds}$, $^{278}\text{Cp}$, $^{292}\text{114}$, and $^{312}\text{124}$. For nuclei around $^{278}\text{Cp}$ produced in “cold fusion” reactions, we predict a more rapid decrease of fission barriers with excitation energy as compared to the nuclei around $^{292}\text{114}$ synthesized in “hot fusion” experiments. This is explained in terms of the difference between the ground-state and saddle-point temperatures.


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