

Fission barriers in multi-dimensional constraint covariant density functional theories

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I will talk about the multi-dimensional potential energy surfaces and fission barriers of heavy and superheavy nuclei from covariant density functional theories (CDFT). With recently developed multi-dimensional constraint CDFTs [1-4], we are able to explore the importance of various shape degrees of freedom simultaneously along the fission path. For example, we found that aside from the octupole deformation, the triaxiality also plays an important role upon the second fission barriers: Both the outer and the inner barriers are lowered by the triaxial deformation compared with axially symmetric results [2]. With many important shape degrees of freedom included in these CDFTs, one may predict more accurately the ground state and saddle point properties for superheavy nuclei. I will also mention some other topics including the Y_{32} correlations and tetrahedral symmetry in atomic nuclei from the multi-dimensional constraint CDFTs [3].

References

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