Mass and charge distributions in fission with the dinuclear system model

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Abstract

Spontaneous and induced fission processes of heavy nuclei are analyzed within the improved scission-point model [1]. The fissile nucleus at scission is treated as a system of two interacting fragments in touch. Statistical equilibrium is assumed at the moment of separation of the fission fragments. Probabilities of formation of various scission configurations are calculated in the frame of the dinuclear system model [2]. Using this approach the mass and charge distributions of fission fragments are calculated. The model is capable to describe the evolution of the shape of mass/charge distribution with neutron number of fissioning isotopes and excitation energy. The results of the calculations are compared with the available experimental data.

References

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