

## DECAY TIME CHARACTERISTICS OF HEAVY EXCITED NUCLEI

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Analysis of the time characteristics of the decay of heavy fissionable excited nuclei in the framework of the double-humped fission barrier model and statistical theory of nuclear reaction revealed that the quasistationary states in the second potential well have influence upon decay law and yield of decay products [1]. The present contribution is a review of the series of the experimental and theoretical investigations of the decay time characteristics and statistical, dynamical and statical properties of the strongly deformed states in the second potential well of the excited heavy nuclei. The mean decay times in the fission channel of the Pa, U, Np and Pu isotopes excited to a few MeV above the fission barrier have been measured by the blocking technique [2, 3]. The fission lifetime values for the investigated nuclei are in the range from  $10^{-16}$  sec to  $10^{-17}$  sec at excitation energies from 6 MeV to 12 MeV respectively. The lifetimes of the excited states in the second potential well -  $\tau_2$  were extracted from the experimental data. It was demonstrated that  $\tau_2$  is the considerable part of the total decay time in the fission channel. The observed values  $\tau_2$  contain information on the level density in the second potential well and parameters of the fission barriers. It was shown, that the level densities in the second potential well are considerable more than the level densities in the first well at the same internal excitation energy. The nature of this distinction is a consequence of violation of axial and reflection symmetry of the nuclear shape in the excited states of the second potential well. The decay law of the nuclei with two classes of excited states is discussed.

### References

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