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Decay of the spontaneous fission isomers in the Coulomb field of third nucleus

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Spontaneous ternary decay of the 252Cf was observed in series of experiments carried out in Flerov Lab. of Nuclear Reactions, JINR [1-3]. In those experiments, the existence of a new type of ternary decay in the reaction 235U(n□*h*,f) and 252Cf(sf), namely collinear cluster tri-partition (CCT), was reported. It is also observed that spontaneous fission products with the mass number around 120-130 goes into secondary fission channel when they interact with the foil (Al, Cu, Pt).
In this work, we develop a model for calculation of decay half-lives of spontaneous fission isomers, formed in spontaneous ternary fission of 252Cf, in the Coulomb field of foil nucleus. Our model is based on the TNS model, developed for description of ternary decay process of heavy nuclei [4]. The spontaneous fission isomers are treated as a dinuclear system, formed during the ternary decay of 252Cf. The results of calculations show us that the decay half-life of dinuclear system strongly effected by collective excitations caused by Coulomb field of foil nucleus.

Literature

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