PROPERTIES OF HEAVY AND SUPER-HEAVY NUCLEI WITH N = 149, 151, AND 153

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Experimental spectroscopic data on nuclear structure of heavy and super-heavy nuclei still require adequate theoretical descriptions. The work is devoted to the description of quasi-neutron structure of odd isotones in chain with $N = 149$, 151, and 153: ^{243,245,247}Pu, ^{245,247,249}Cm, ^{247,249,251}Cf, ^{249,251,253}Fm, ^{251,253,255}No, and ^{253,255,257}Rf. The nuclei in question were presented by the combination of a valent neutron and a solid deformed even-even core in order to take the Coriolis interaction into account [1]. Minimization of potential surface with respect to collective parameters was carried out states in the frame of two center shell model (TCSHM) [2]. Deformations of the ground states and corresponding low lying quasi-neutron states were calculated. The blocking effect was taken into account. Transition probabilities and lifetimes for low lying quasi-neutron states were estimated and compared with experimental data. According to the experimental data some levels in nuclei from the considered isotonic chains reveal an isomeric behavior [3] with a large half-life from μs to sec [4]. This behavior was analyzed in our calculations. Particular attention was payed to the sensitivity of obtained results on model parameters.

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