

European Physical Journal A 2014 vol.50 N6, pages 1-8

Level densities of heaviest nuclei

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Abstract

The intrinsic level densities of superheavy nuclei in the α -decay chains of 296,298,300120 are calculated using the single-particle spectra obtained with the modified two-center shell model. The role of the shell and pairing effects on the level density as well as their quenching with excitation energy are studied. The extracted level density parameter is expressed as a function of mass number, ground-state shell correction, and excitation energy. The results are compared with the phenomenological values of level density parameters used to calculate the survival of excited heavy nuclei. © 2014 SIF, Springer-Verlag Berlin Heidelberg.

<http://dx.doi.org/10.1140/epja/i2014-14097-6>
