FISSION BARRIERS IN ACTINIDE REGION WITHIN THE FAYANS ENERGY-DENSITY FUNCTIONAL

Borzov I.N.[1,2], Tolokonnikov S.V.[1,3]
[1] *National Research Centre "Kurchatov Institute", 123182, Moscow, Russia;* [2] *Bogolubov Laboratory of Theoretical Physics, Joint Institute of Nuclear Research, 141980, Dubna, Russia;* [3] *Moscow Institute of Physics and Technology, Dolgoprudny, Russia*
E-mail: Borzov_IN@nrcki.ru, ibor48@mail.ru

The modified Fayans Density Functional FANDF0_a with a strong effective tensor interaction is applied to the fission barriers in the actinide region. The influence of the octupole degree of freedom was studied in [1]. It is shown that with these new provisions in effect, the second barrier mostly turns to be lower than the first one. This generic feature has an impact on the competition between the fission and neutron capture which has an impact on the astrophysical r-process nucleosynthesis.

Supported by the Russian Scientific Foundation under the Grant 16-12-10161.

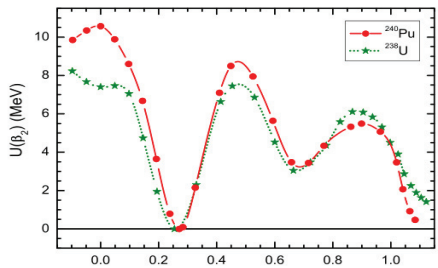

Fig. 1. The fission barriers for ^{240}Pu and ^{238}U calculated with the Fayans density functional FANDF0_a.

1. S.V.Tolokonnikov, I.N.Borzov, Yu.S.Lutostansky, E.E.Saperstein // JETP. Lett. 2018. V.107. P.94.