STUDY OF THE INTERACTION MECHANISM OF FAST NEUTRONS WITH BARIUM NUCLEI

I.A.Korzh, N.T.Sklyar, T.I.Yakovenko

Scientific Center "Institute for Nuclear Research",
Nat. Acad. Sci. of Ukraine
(47, Nauky Prosp., Kyiv 03028, Ukraine)

Our data and data of other authors on the total, integral, and differential elastic and inelastic cross sections of neutron scattering in the 0.5 – 15 MeV energy range are analyzed for barium nuclei of the natural isotope composition as well as for ^{136,138}Ba isotopes. The optical statistical approach based on the optical model, coupled channel method, and modern versions of the statistical model is used. A possibility of an adequate description of all experimental data in frames of this approach, even if the averaged values of optical parameters are used, is shown, which allows us to evaluate the contributions of the direct and compound mechanisms of fast neutron scattering by the studied nuclei.