INFLUENCE OF MULTIPLET STATE MIXING IN THE ^{27}Al NUCLEUS ON NEUTRON SCATTERING CROSS-SECTIONS

I.O. Korzh, M.T. Sklyar, A.D. Foursat

Institute for Nuclear Research,
Nat. Acad. of Sci. of Ukraine
(*47, Nauky Ave., Kyiv 03680, Ukraine;*
e-mail: sklyar@kinr.kiev.ua)

S u m m a r y

A comparative analysis of experimental data on the total and neutron scattering cross-sections by ^{27}Al nuclei in the energy range 0.2–2.5 MeV has been carried out, and the applicability of the optical-statistical approach and the excited-core model for their description has been studied. The results of theoretical analysis of experimental data were used to study the contributions of the direct mechanism and the mechanism of scattering through a compound nucleus to the elastic and inelastic scatterings of neutrons by ^{27}Al nuclei in the energy range concerned.