ENERGY DEPENDENCE OF FISSION FRAGMENT ANGULAR ANISOTROPY IN SLOW NEUTRON INDUCED FISSION OF ^{235}U ALIGNED TARCET

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New experimental data on angular anisotropy of fission fragments in s-wave neutron induced fission of ^{235}U aligned target were analyzed together with spin-separated total fission and total neutron cross sections using multilevel many-channel approach and taking into account an interference between resonances with different spins. Fission channels with J^{π} K numbers 3^- 0, 3^- 1, 3^- 2, 4^- 2 and 4^-2 were included in calculations and good fit to all data was achieved. The obtained resonance parameters are different from the published ones. The problem of unambiguous choice of the parameter set is discussed.

CALCULATION OF THE PROMPT FISSION NEUTRON SPECTRA ON THE BASIS OF NEW SYSTEMATIC OF THE EXPERIMENTAL DATA

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New systematic of the prompt fission neutron spectra based on the available experimental data was developed. The basement of the systematic was well grounded. The empirical finding allow us to increase the accuracy of spectra calculation in the fission neutron spectra emitted by the ^{232}Th, ^{233}U, ^{235}U, ^{238}U, ^{237}Np, ^{239}Pu and ^{252}Cf nuclei were estimated. They were used to calculate the spectra in the incident energy range from thermal point to 5 MeV. It was shown that the average neutron energy for ^{235}U induced fission may be calculated with the accuracy ~1%.

LARGE-SCALE CALCULATIONS OF THE GROUND STATE AND β-DECAY PROPERTIES FOR ASTROPHYSICAL APPLICATIONS

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An approximation to the exact self-consistent model of the ground state and β-decay properties of neutron-rich nuclides is outlined. The results of large-scale calculations of the β-decay rates for about 700 spherical and slightly deformed nuclides of relevance to the r-process are discussed. The new predictions are compared with the empirical models and the exact self-consistent results.