

ACTINIDES ^{237}Np , ^{241}Am , ^{239}Pu IN THE NEUTRON FIELD OF «QUINTA» SETUP

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The experiments were carried out within the framework of the project “Energy and Transmutation of RAW” and aimed at solving the problem of the transmutation of actinides – neptunium, americium, and plutonium. These elements, among the other fifteen actinides, are artificially formed in the reactor, as a by-product, that actively absorbs neutrons.

The aim of this paper is to compare the cross sections for the capture and fission reactions at different radii of the «Quinta» setup and to determine their ratio [1] for the residual nuclei in the ^{237}Np (Fig. 1), ^{241}Am and ^{239}Pu targets in the neutron field [2, 3] at different radii ($R_{\text{max}} \sim 150$ mm) of the uranium (^{238}U) assembly «Quinta» irradiated by protons with the energy of 660 MeV, 2 GeV/d, 4 GeV/d, 8 GeV/d, 8 GeV/d, 8 GeV/d, 4 GeV/d, 8 GeV/d.

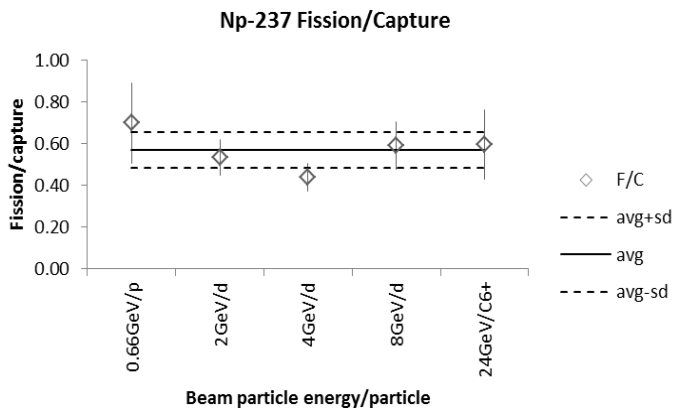


Fig. 1. Np-237 fission to capture ratio for each experiment [1].

There are two channels for the interaction of actinides with neutrons - fission and capture [1].

The activity of the formed products is determined by registration of the gamma radiation by germanium detectors [3].

In the report, the experimental results are compared with the calculations for different neutron energies.

1. S.Kilim *et al.* // *Nucleonica*. 2018. V.63 (1). P.17.
2. S.Kilim *et al.* // XXIII International Baldin Seminar. Russia. Dubna. 2015. P.15.
3. A.A.Smirnov, V.I.Stegailov *et al.* // «Nucleus-2015». St.-Petersburg. P.257.