



Contribution ID: 43

Type: Poster

FAST NEUTRON FISSION OF ^{236}Pu NUCLEUS

Tuesday, 9 July 2024 17:49 (1 minute)

Plutonium isotopes are produced in nuclear reactors by neutron-induced fission of $^{235,238}\text{U}$ nuclei and by (n,2n), (γ ,n) processes of Neptunium isotopes. Among the Plutonium isotopes, ^{236}Pu nucleus is a trace element of interest for studies of the environmental impact of fuel cycles. Development of new type of fast neutron nuclear reactions destined for scientific researches based on ^{237}Np fuel, implies the analysis of the influence of different fission products such as ^{236}Pu .

Fission variables of fast neutron-induced of ^{236}Pu nucleus like cross-sections, fission fragment mass and charge distributions, emitted neutron spectra, isotope production of interest for applications in medicine, electronics and nuclear technology was investigated. The contribution of different reaction mechanisms to fission and production of ^{236}Pu were examined. In the incident and emergent fission channels level density and Wood-Saxon potential parameters were extracted.

Experimental data from the literature were compared with theoretical evaluations of fission observables. It is necessary to note that in the case of fast neutron-induced fission of ^{236}Pu nucleus there are very few experimental data regarding fission observables and therefore their evaluation is of great importance for both fundamental and applicative researches.

References

- [1] G. Audi, O. Bersillon, J. Blanchot, A. H. Wapstra, Nucl. Phys. A, v. 729, issue 1, p. 3-128 (2003)
- [2] F.G. Kondeev, M. Wang, W.J. Huang, S. Naimi, G. Audi, Chinese Physics C, v. 45, No. 3 030001 (2021)
- [3] H. Yamana, T. Yamamoto, K. Kobayashi, T. Mitsugashira, H. Moriyama, Journal of Nuclear Science and Technology, v. 38, No. 10, p. 859-865 (2001)
- [4] C. Oprea, M. Ayaz Ahmad, I. A. Oprea, J. Hassan Baker, N. Amrani, International Journal of Scientific and Engineering Research, vol. 1, p. 83-92 (2020)
- [5] E. P. Shabalin, V. L. Aksenov, G. G. Komyshev, A. D. Rogov, Preprint JINR Dubna, P-13-2017, p. 1-18 (2017)

Primary author: OPREA, Cristiana (ANCS Romania, National Department of Education Bihor)

Presenter: OPREA, Cristiana (ANCS Romania, National Department of Education Bihor)

Session Classification: Poster Session

Track Classification: Nuclear Fission