

Simulation of 14 MeV neutron scattering on titanium, chromium and iron nuclei

Thursday, October 15, 2020 6:35 PM (20 minutes)

In connection with the modern development of technologies in nuclear energy, the important task is to substantially refine the experimental data on fast neutron scattering. The high cost of nuclear facilities leads to the need for an accurate model description of the processes of neutrons interaction with atomic nuclei. As important components of structural materials, titanium, chromium and iron isotopes have priority in the list of studied nuclei [1,2,3].

The TANGRA collaboration is studying inelastic scattering reactions of 14 MeV neutrons [4]. Our previous work was devoted to studying the reaction $^{52}\text{Cr}(n, n')$ [5]. New data are obtained on the cross sections of γ -quanta emission in reactions $(n, X\gamma)$, where $X = n, 2n, \alpha$, on ^{48}Ti and ^{56}Fe . We present the results of modeling neutron scattering using the program code TALYS 1.9 and compare new experimental data and simulations with the results of other experiments.

References

1. *R.Beyer, et al*, Nucl. Phys. A, 927 (2014) 41-52
2. *A.Olachel, et al*, Phys. Rev. C 96 (2017) 014621
3. *L.C.Mihailescu, et al*, Nucl. Phys. A 786 (2007) 1-23
4. *I.N. Ruskov, et al*, Phys. Procedia. 64, (2015) 163
5. *D.N. Grozdanov, et al*, Phys. At. Nucl. 83, 3 (2020) *in print*

Author: DASHKOV, Ilya (M.V.Lomonosov Moscow State University)

Co-authors: FEDOROV, Nikita (JINR); GROZDANOV, Dimitar; KOPATCH, Yu.N. (Joint Institute for Nuclear Research (JINR), Dubna, Russia.); RUSKOV, I.N. (Institute for Nuclear Research and Nuclear Energy (INRNE), Bulgarian Academy of Sciences (BAS), Sofia, Bulgaria.); SKOY, V.R. (Joint Institute for Nuclear Research (JINR), Dubna, Russia.); TRETYAKOVA, T. Yu (Skobeltsyn Institute of Nuclear Physics (SINP), MSU, Moscow, Russia.); DABYLOVA, S. (Joint Institute for Nuclear Research (JINR), Dubna, Russia); L.N.Gumilyov Eurasian National University, Nur-Sultan, Kazakhstan); HRAMCO, C. (Joint Institute for Nuclear Research (JINR), Dubna, Russia; Institute of Chemistry, Chisinau, Republic of Moldova); MARZHOKHOV, Ruslan (Joint Institute for Nuclear Research, Dubna, Russia); GUNDORIN, N.A. (Joint Institute for Nuclear Research, Dubna, Russia); ALIEV, F.A. (Joint Institute for Nuclear Research, Dubna, Russia)

Presenter: DASHKOV, Ilya (M.V.Lomonosov Moscow State University)

Session Classification: Poster session 2 (part 3)

Track Classification: Section 2. Experimental and theoretical studies of nuclear reactions.