

Ukrainian Nuclear Data Centre Progress Report, 2017/18
Summary of Nuclear Data Studies by Staff of the Ukrainian Nuclear Data Centre
O. Gritzay

Technical Meeting on the
International Network of Nuclear Reaction Data Centres
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Web: <http://ukrndc.kinr.kiev.ua/>
e-mail: ogritzay@kinr.kiev.ua, ogritzay@ukr.net

Ukrainian Nuclear Data Centre (UkrNDC) is subdivision within the Neutron Physics Laboratory in the Institute for Nuclear Research of the National Academy of Sciences of Ukraine. UkrNDC has 3 permanent researchers.

Compilation

We continue collection and compilation of experimental neutron, charged particle and photonuclear data. Number of the new/renew EXFOR's entries sent to the NDS IAEA by UkrNDC is the following:

- for neutron data – 3 entries (32242 ÷ 32244);
- for charged particle data – 7 entries (D5132 ÷ D5138);
- for photonuclear data – 11 entries (G4057 ÷ G4059, G4013, G4022, G4024, G4039 ÷ G4043).

We realize review of compilation scope in home journals and scientific issues:

- Nuclear Physics and Atomic Energy;
- Ukrainian Journal of Physics;
- Problems of Atomic Science and Technology, Series Nuclear Physics Investigations;
- Uzhhorod University Scientific Herald. Series Physics;
- Bulletin of Taras Shevchenko National University of Kyiv Series: Physics & Mathematics;
- East European Journal of Physics.

Collaboration

We continue our collaboration with the Nuclear Physics Department of Taras Shevchenko National University of Kyiv.

- The teaching course “*Nuclear Data for Science and Technology and modern computer codes for nuclear data processing*” (38 hours) has been lectured in 2017 for the fifth-course students of NPD KNU. This course includes the following items: ENDF/B libraries, EXROR system, ENSDF library, the use of the PREPRO code in work with the ENDF libraries, the introduction to NJOY code system, the Network of Nuclear Reaction Data Centers and the use of the on-line services.

We continue our collaboration with the Power Systems Physics Department of the Physics and Technology Institute of National Technical University of Ukraine "Kyiv Polytechnic Institute".

- The teaching course “*Nuclear and Thermonuclear Power*” (48 hours) is lectured in 2017 for fourth-year students of this department.

Customer Services

- During 2016-2017 the data for user’s requests were prepared and adapted (from ENDF, ENSDF and EXFOR libraries) for our institute researchers and for ones from other institutes. The organizations, whose requests on nuclear data have arrived and were executed in the accounting period:
 1. Department of Nuclear Physics of the Institute for Nuclear Research of NASU.
 2. Uzhgorod Institute of Electron Physics of NASU.
 3. Research Nuclear Reactor Department.
- The UkrNDC site is operating. Ukrainian customers, especially students and those physicists, who wish to prepare the point-wise and multi-group cross sections self-dependently, but do not have a good experience in it, use this site very often. Address of the UkrNDC site: <http://ukrndc.kinr.kiev.ua>.
New version: http://ukrndc.kinr.kiev.ua/!!!site_ukrndc/index_ukr.html.

Experimental and Computational Activity

A method of experimental determination of the quantity of hydrogen in hydrides using the filtered neutron beams was developed. This method has been demonstrated on titanium hydride (calculation and measurement).

Determination of the total neutron cross section for natural hafnium on the filtered neutron beam with energy 2, 54, 59, and 145 keV was done.

A method of experimental determination of the resonance parameters from a set of the average total neutron cross sections, received at the shifted neutron lines, was developed. This method has been demonstrated on the chromium-52 measurements.