Center of Nuclear Physical Data (CNPD), RFNC-VNIIEF

Technical paper for the NRDC Meeting, September 22-25, 2008
Obninsk, Russia

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Compilation activity

Within the period under report four transmission files TRANS (F029, F030, F031, F032) were prepared and included into the EXFOR data library (99 new and 9 corrected entries).

Scanning of home journals "Yadernaya Fizika", "Izvestiya Academii Nauk" was continued.

CNPD members take part in the works on development of a Reference Database for Ion Beam Analysis. This year 346 files including the sets of experimental data on charged particle interaction with nuclei up to A=50 were introduced into the library.

EXFOR - Editor software

The works on software development (EXFOR-Editor) for processing and introduction of experimental data to the EXFOR library were continued. A new version of the program 1.4 was released. A possibility of introducing the whole Subentry to the Exfor library is available in the current version.

Input of information basing on the Keywords DECAY-DATA, FLAG, HALF-LIFE, HISTORY, MONITOR was implemented.

A window of graphic data presentation was updated. The change was made both in the EXFOR-Editor code and in the program for working with data tables – EXFOR-Table. The following possibilities are now available for graphic data processing:

- graphic zoom:
- presenting the current plot values when clicking a mouse on a chosen point of a curve;
- presenting the statistical information for each curve;
- printing a plot and its import to a separate file of graphic format.

Within the present software a program code for creation of the Exfor file pattern (EXFOR-Dummy) was developed. This pattern may be used in future for data input to the CINDA library.

Database development

The development of the library of evaluated and experimental data on charged particle interaction with light nuclei SaBa was continued. In terms of the newly arisen experimental data new evaluated data sets have been obtained for the following reactions:

$Li^6 + t -> Li^7 + d$
$Li^7 + t -> Li^9 + p$
$Li^7 + d -> Be^8 + n$
$Li^7 + t -> Be^9 + n$
$Li^7 + p -> 2He^4$
$He^3 + He^3 -> He^4 + 2p$

A procedure of comparison of evaluated data presented in SaBa with those from the ENDF/B7 library was implemented.

A report containing information on all the changes in the SaBa library undertaken within the last period will be presented at the Fifth Eurasian Conference "Nuclear Science and its Application" in October this year in Turkey.

Model Calculations

Using the EMPIRE 2.19 program code the calculations for some reactions on neutron interaction with nuclei were carried out. To present data in a graphic form there was developed a program code RsltEmpire under Windows operating system. This code provides a possibility of presenting calculation results separately for different processes.

Publications

Abramovich S.N., Karpeshin F.F., LaRana G., Vardachi E., Brondi A., Moro R., Serov V.I., *Resonances in alpha-nuclei interaction*, J. Phys. G: Nucl. Part. Phys. 2007, V. 34, P. 587.

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Abramovich S.N., Kolesov V.F., Intyapina E.V., Shmarov A.E., *Calculation methodology of hypothetical isomeric gamma reactors by the example of $^{178m2}Hf$.*, Vopr. At. Nauk. F. Reak, 2, 2007, P.59-86.

Abramovich S.N., Generalov L.N., Vinogradov Yu.I., *Measurement of Excitation Function $^7Li(t,p)^9Li$ Reaction by Registration of Delayed Neutron*, Book of Abstracts, 58 International Meeting on Nuclear Spectroscopy and Nuclear Structure, Moscow, 2008, P.142.

Lazarev L.M. *Theory of the threshold phenomena and spectroscopy of the light nuclei*, Sarov, RFNC-VNIIEF, 2007, 98.

Burtebaev N.T., Burtebaeva D.T., Abramovich S.N., Zvenigorodskij A.G., Zherebtsov V.A., Taova S.M., *Development of the library of evaluated and experimental data SaBa. Input of data on differential cross sections of nuclear reactions*. (to be submitted to the 5-th Eurasian Conference "Nuclear Science and its Application", October 14-17, 2008, Turkey).