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

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Compilation activity

Within the period under report three transmission files TRANS.F036, TRANS.F037 and PRELIM.F038 were prepared for the EXFOR data library. As usual much attention was paid to the work on error correction in EXFOR library. PRELIM.F038 contained 13 corrected entries. 65 new entries were prepared.

Scanning of home journals "Yadernaya Fizika", "Izvestiya Academii Nauk" was continued. Articles from old issues of «Physical Review» and «Nuclear Physics» were also reviewed.

CNPD members take part in the works on development of a Reference Database for Ion Beam Analysis (IBANDL). During the last period 258 files including the sets of experimental data on charged particle interaction with nuclei were introduced into the library.

Software

EXFOR-Editor

As a whole creation of EXFOR – Editor program has been completed. At present its rework and further development is being continued.

Many changes have been made owing to the results of testing and all-round discussion of its functioning during the workshop on EXFOR – Editor software study that took place in May last year.

A lot of corrections and improvements were made according to the comments of the workshop participants.

Speaking about EXFOR – Editor further development it is necessary to note that JANIS Trans Checker code (designed by our French colleagues) was successfully embedded to the program. Inclusion of this module to EXFOR – Editor will make it possible to improve essentially the efficiency of checking the input information on nuclear reactions.

Workshop on experimental data compilation which took place in Rajasthan University, India, last November was a remarkable event for us relatively to further development and popularization of EXFOR – Editor. More than 50 participants (students and scientists) from different universities and laboratories of India took part in this workshop.

The last version of EXFOR – Editor was presented to the participants. Within the framework of the workshop practical courses on EXFOR – Editor and digitizing program study were organized. The participants had an opportunity to prepare their own compilations using the articles containing experimental data.

Optical Model calculations

In our center the works on designing the program code on the basis of optical model for the analysis of elastic scattering cross sections of neutrons, protons, deuterons and alpha particles are being performed. Some years ago we tried to use the SCAT program for this purpose, but some mistakes were found in it and we were forced to refuse its application.

Our program is aimed at description of experimental data of elastic scattering differential cross section basing on the optical model for optical potential parameters searching.

This program will provide performing cross section calculations for elastic processes using both the optical potential parameters taken from the library and the parameters set immediately by users as well.

Resonance Module

Last year much attention was paid to adaptation of the Resonance Module program included to the latest version of the EMPIRE code (cross section calculation using different nuclear models). This code allows performing neutron cross section evaluation in the resonance region. Unfortunately the version available for us was very raw and a lot of efforts were needed to run the program.

Program NuclGuide

The works on the development of the "Nuclide Reference Book" electronic version (authors - T.V. Golashvili, V.P. Chechev and A.A. Lbov) have been completed. The designed software is a modern reference system providing users with the data on nuclear structure. Information for each isotope is presented in a convenient tabular form. Data search and retrieve according to the user's request is provided.

CNPD webpage

Last year we prepared and presented in the Internet an English version of the webpage of the Center of Nuclear Physics Data Center: en-cnpd.vniief.ru. Brief description of the center, information about the last developments and references on nuclear data libraries are given. This page is accessible through the English website of All-Russia Research Institute of Experimental Physics.