



International Atomic Energy Agency

INDC(CUB)-001/G

INDC

INTERNATIONAL NUCLEAR DATA COMMITTEE

PROGRESS REPORT FOR CUBA
FOR THE PERIOD 1987/88

June 1989

IAEA NUCLEAR DATA SECTION, WAGRAMERSTRASSE 5, A-1400 VIENNA

PROGRESS REPORT FOR CUBA
FOR THE PERIOD 1987/88

June 1989

Reproduced by the IAEA in Austria
June 1989

89-02559

NUCLEAR DATA COMPILATION

D.Gandarias, M.A.Medina

Instituto Superior de Ciencias y Tecnologia Nucleares (ISCTN)

A new work in nuclear data compilation is taken place at the ISCTN.

The compilation of experimental neutron cross-section data is performed on a personal computer. Assigned EXFOR accession-number is starting with 32 100.

The EXFOR compilation work is co-ordinated with IAEA Nuclear Data Section under the research contract N^o 5445/RB.

NUCLEAR DATA PROCESSING

V.Castilla, W.Korin, A.M.de la Vega, A.Lima

Centro de Calculo de la Sean

In this Center, experimental nuclear data (EXFOR) and evaluated data (ENDF/B) received from IAEA Nuclear Data Section are processing.

A set of programmes were developed to change the output format of the calculated nuclear data into EXFOR format. This work allows to have the experimental data received from the IAEA and the data calculated in homeland in a unique data base.

Preliminary results of this work were presented in the International Conference on the Use of Computation in Nuclear Research, Dubna, USSR, 1988. To be published in a preprint JINR, Dubna.

NUCLEAR DATA CALCULATIONS USING THE EXCITON MODEL

R.Capote, R.Lopez, V.Osorio, E.Herrera

Instituto Superior de Ciencias y Tecnologia Nucleares (ISCTN)

Emission spectra and excitation function calculation of neutron induced reaction (up to 30 mev) on $50 < A < 100$ nuclides.

-Was developed the programme PCROSS, wich is able to calculate emission spectra and excitation functions using equilibrium, pre-equilibrium models and the multiparticle emission. This programme includes the more recently advances obtained in the partial density description, as well as in the exciton model.

for further development in this field, a research contract with IAEA Nuclear Data Section was agreed.

-Within the frame of level density, a new set of fenomenological parameters was obtained.

Results were presented in:

International Conference on Neutron Physics, 14-18 Sept. 1987, Kiev, USSR, Vol.2, pag.107.

XVII International Symposium on Nuclear Physics (Nuclear Reactions). Gaussig, 9-13 Nov. 1988, pag.48.

Workshop on Applied Nuclear Theory, 5 Feb.-18 March 1988, ICTP, Trieste, Italy.

2

-Study of the matrix element $\langle M \rangle$ in the Exciton Model around 14 MeV. The limits of the parametrization were identified and the relation between the different phenomenological formulations of level densities used in the calculations was studied.

To be published in Nucleus.

-Comparative study of existing formulations for two-component level density parameters. For magic and far from magic nuclides, the level density parameters were fixed.

THEORITICAL DESCRIPTION OF NEUTRON INELASTIC SCTTERING

R.Cabezas, R.Pedrosa

Instituto Superior de Ciencias y Tecnologia Nucleares(ISCTN)

-Influence of nonaxial hexadecapolar deformation of ¹⁸⁶W, ¹⁵²Sm and ^{164,166,168,170}Er in the inelastic cross-section calculation with neutrons between 1-3 MeV.

-Neutron Inelastic scattering in the energy region $E_n=1-8\text{MeV}$ on $48 < A < 94$ nuclei. The influence of anharmonic effects and the dinamic deformation in the cross-section calculations.

-Development of a semi-microscopic point of view for the neutron cross-section calculations within a frame of a 'folding' potential built-up from trasition densities obtained by the nuclear cuasiparticle-phonon model and M3Y type nucleon-nucleon eeffective potential.

Results are published in:

Izvestija A.N. SSSR, Ser. Fiz., T.51, pag.1031, 1987.

Preprint JINR, P4-87-700, Dubna, 1987.

R.Cabezas, Ph.D. thesis, Dubna 1987, 130 pag.

Nucleus, N 5, pag.3, 1988.

INFLUENCE OF THE NUCLEAR POTENTIAL DYNAMIC DEFORMATION IN
CROSS-SECTIONS FOR COMPOUND REACTIONS

R.Cabezas, J.Lubian, J.Tomas, G.Mico

Instituto Superior de Ciencias y Tecnologia Nucleares (ISCTN)

-Compilation and analysis of neutron elastic and inelastic scattering angular distribution on Fe, Cr, Ni, and Ti.

-Optical potential parameters for description of experimental data by nuclear models taken into account the optical potential deformation and the direct and compound reaction models.

This work is performed under IAEA research contract
N° 5431/RB.

DEVELOPMENT OF FACILITIES FOR NUCLEAR DATA MEASUREMENTS

P.Sarria, L.Desdin, J.Manrique, C.Sandin,

O.Fernandez,D.Gonzalez

Changes in the experimental configuration of 14 MeV neutron generator are under performance for nuclear data measurements.

In the near future will be possible to measure:

-Fission cross-sections induced by 2.6 MeV neutrons, using associated particle method.

-Differential neutron cross-sections, using time of flight spectroscopy.

This work is supported by IAEA project CUB/1/005.