



Progress report on the CDFE photonuclear data activity for 2021/2022.

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Progress report for the Technical Meeting of the International Network of Nuclear Reaction Data Centres, 14 to 17 June 2022.

The report contains the short review of the Centre for Photonuclear Experiments Data (Centr Danykh Fotoyadernykh Eksperimentov - CDFE) of the Russia Lomonosov Moscow State University Skobel'syn Institute of Nuclear Physics main results obtained for the period of time from the Technical Meeting of the International Network of Nuclear Reaction Data Centres at the IAEA's Headquarters in Vienna, Austria, from 4 to 7 May 2021. The new photonuclear data compilations, old data corrections, and the results of analysis and evaluation of photonuclear data obtained in various experiments are presented.

EXFOR Compilation

7 new CDFE EXFOR **trans.m111 – m117** TRANSEs and two *prelim.m118 and prelim.m119* have been produced and transmitted to the IAEA NDS. All TRANSEs contain **128** ENTRYs, new compiled (11 ENTRYs) and old corrected (117 ENTRYs) in accordance with the contents of the NRDC Network Memos, the NDS database “Articles for compilation” (<https://www-nds.iaea.org/nrdc/alloc/>), the new EXFOR format rules and the comments and recommendations of the NRDC experts, first of all Naohiko Otsuka and Daniela Foligno.

The contents of all CDFE TRANSEs transmitted to the IAEA NDS are presented in Table.

Table

New and Old trans.m* and *prelim.m** contents

TRANS	<i>Old</i>	New	Total
m111	3	3	6
m112	23	-	23
m113	13		13
m114	1	4	5
m115	3	3	6
m116	3	1	4
m117	20		20
<i>prelim.m118</i>	24		24
<i>prelim.m119</i>	27	0	27
Common	117	11	128

Photonuclear Data Evaluation

The CDFE photonuclear data evaluation program was continued. Using the objective physical data reliability criteria new data for partial ($\gamma, 1n$), ($\gamma, 2n$), ($\gamma, 3n$) and total (γ, tot) = ($\gamma, 1n$) + ($\gamma, 2n$) + ($\gamma, 3n$) photoneutron reaction cross sections were evaluated using experimental-theoretical method for nuclei $^{58,60}\text{Ni}$, ^{197}Au , $^{206,207}\text{Pb}$.

Main publications

1. V.V.Varlamov, A.I.Davydov. Experimental and evaluated data on photodisintegration of ^{197}Au . *Physics of Atomic Nuclei*, 85, N1 (2022) 1 - 11.
2. V.V.Varlamov, A.I.Davydov, V.N.Orlin. Photodisintegration of $^{206,207,208}\text{Pb}$ nuclei: experimental and theoretical cross sections of photoneutron reaction. *Bull. Rus. Acad. Sci. Phys.*, 86, №4 (2022) 465 - 472.
3. V.V.Varlamov, A.I.Davydov, V.N.Orlin. Reliability of photonuclear experiments results for ^{58}Ni . *Yadernaya Fizika*, 85, N4 (2022) 237 - 248.
4. V.V.Varlamov, A.I.Davydov, V.N.Orlin. New evaluated data on photonuclear reactions cross sections for ^{60}Ni . *Physics of Atomic Nuclei*, 85, N5 (2022), in print.
5. V.V.Varlamov, A.I.Davydov, V.N.Orlin. The specific features of photoneutron reactions on ^{58}Ni . *Eur. Phys. J. A*, in print.

Short-term (2022/2023) Program

The main items of CDFE (2022/2023) program, main priorities and most important tasks are traditional and the following:

- continuation of new photonuclear data compilation using EXFOR format, production of new TRANSes (M120, M121, etc.);
- correction of old ENTRYs in accordance with new EXFOR coding rule changes and the NRDC Network expert's comments and recommendations;
- continuation of analysis and evaluation using objective physical criteria of total and partial photonuclear reaction cross sections obtained in various experiments.