HOKKAIDO UNIVERSITY

Nuclear Reaction Data Centre (JCPRG)
Faculty of Science, Hokkaido University

JCPRG Progress Report

May 10, 2023

Masaaki Kimura

Nuclear Reaction Data Centre (JCPRG)
Hokkaido University
JAPAN

Nuclear Reaction Data Centre (JCPRG), Hokkaido University

Nuclear Reaction Data Centre (JCPRG) is a research center for nuclear data activities in **Hokkaido University**.

The objectives of the center:

Compilation of charged-particle reaction data in Japan

Evaluation of nuclear reaction data

Collaboration with domestic and international institutes

Education of graduate school students

Nuclear Reaction Data Centre (JCPRG), Hokkaido University

JCPRG Members	
Staff	M. Kimura
Senior researchers & staff	M. Aikawa, K. Kato, H. Noto, T. Katayama
Students	T. Tada, S. Shin, S. Watanabe
Steering Committee	Horiguchi, Kimura, Hirabayashi, Arimura, Kamiyama
External Advisory Committee	Aoi (RCNP), Fukahori (JAEA), Ohnishi (YITP), Otsuka (IAEA), Sakurai (RIKEN)

Compilation Working Group	
EXFOR	S. Shin, S. Watanabe, T. Tada, A. Aikawa
NRDF	Aikawa, Katayama, Kato, Noto

EXFOR Compilation statistics in 2022

7 transmissions which include 63 new and 13 revised entries were finalized since the last NRDC meeting.

TRANS	TRANS Status	ENTRY Tot.	ENTRY New	ENTRY Rev.
E133	Final (2022/06/14)	2	0	2
E116	Final (2022/06/14)	11	11	0
E117	Final (2022/08/19)	30	29	1
E118	Final (2023/03/08)	13	13	0
E119	Final (2023/04/08)	12	2	10
J011	Final (2022/08/19)	2	2	0
K021	Final (2022/08/19)	8	6	2
Total		78	63	15

Softwares for Database Coding

Editor “HENDEL”, http://www.jcprg.org/manuals/hendel/

Digitizer “GSYS”, http://www.jcprg.org/gsys/gsys-e.html

Nuclear Data Evaluation using Machine Learning

We have initiated a study on the nuclear data evaluation using machine learning.

We have developed a system that uses machine learning to predict the optical potentials that describe nucleon-nucleus scattering.

S. Watanabe et al., J. Nucl. Sci. Tech.59, 1399 (2022).

Article

Nuclear data generation by machine learning (I) application to angular distributions for nucleon-nucleus scattering

Shoto Watanabe, Futoshi Minato, Masaaki Kimura & Nobuyuki Iwamoto

Pages 1399-1406 | Received 19 Dec 2021, Accepted 21 Mar 2022, Published online: 25 May 2022

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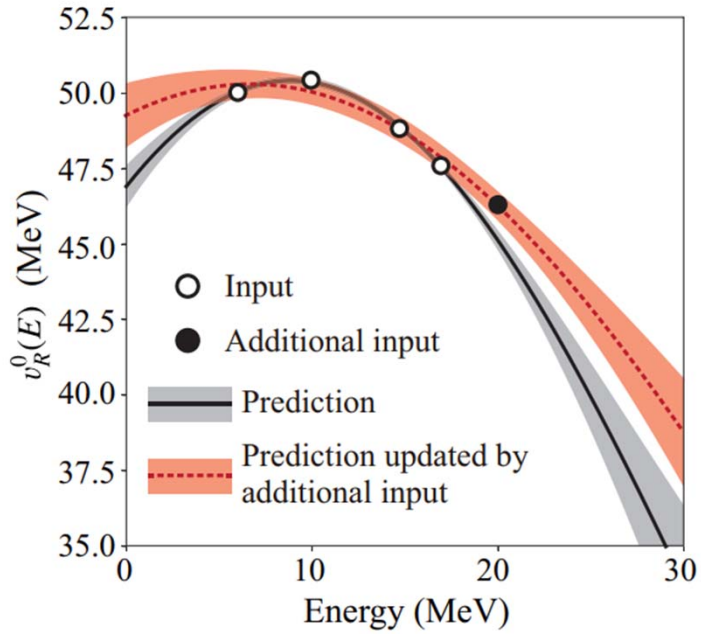

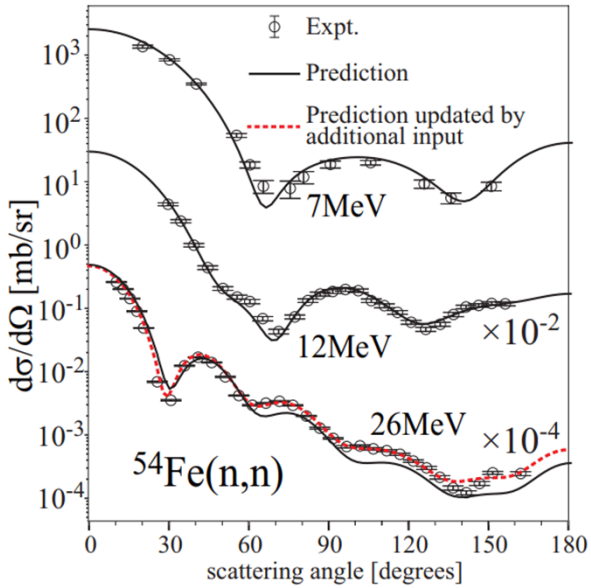

Fig. 2. Predicted and observed angular distributions of $^{54}\mathrm{Fe}(n,n)$ at the incident energies of E = 7, 12, and

Replacement of Center Director from 2023

JCPRG Members	
Staff	~~M. Kimura~~ ⇒ **K. Nomura**
Senior researchers & staff	M. Aikawa, K. Kato, H. Noto, T. Katayama
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Director of JCPRG has been replaced by S. Nomura as Kimura retired the University

Others remain the same as before.
JCPRG will continue compilations in the future.

Summary

JCPRG will continue the compilation of EXFOR as a member of NRDC

We have new center head, Prof. K. Nomura

Compilation of charged-particle reaction data in Japan

78 EXFOR entries were compiled since the last NRDC meeting.

Evaluation of nuclear reaction data

We have initiated the nuclear data evaluation using ML

Let me thank you all for your support, and
I appreciate your further support for JCPRG.