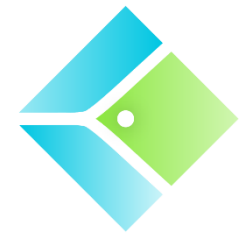




HOKKAIDO
UNIVERSITY



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

JCPRG Progress Report

May 1-4, 2018

Jagjit Singh

**Nuclear Reaction Data Centre (JCPRG)
Hokkaido University
JAPAN**

Nuclear Reaction Data Centre (JCPRG), Hokkaido University



Nuclear Reaction Data Centre (JCPRG), Hokkaido University

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

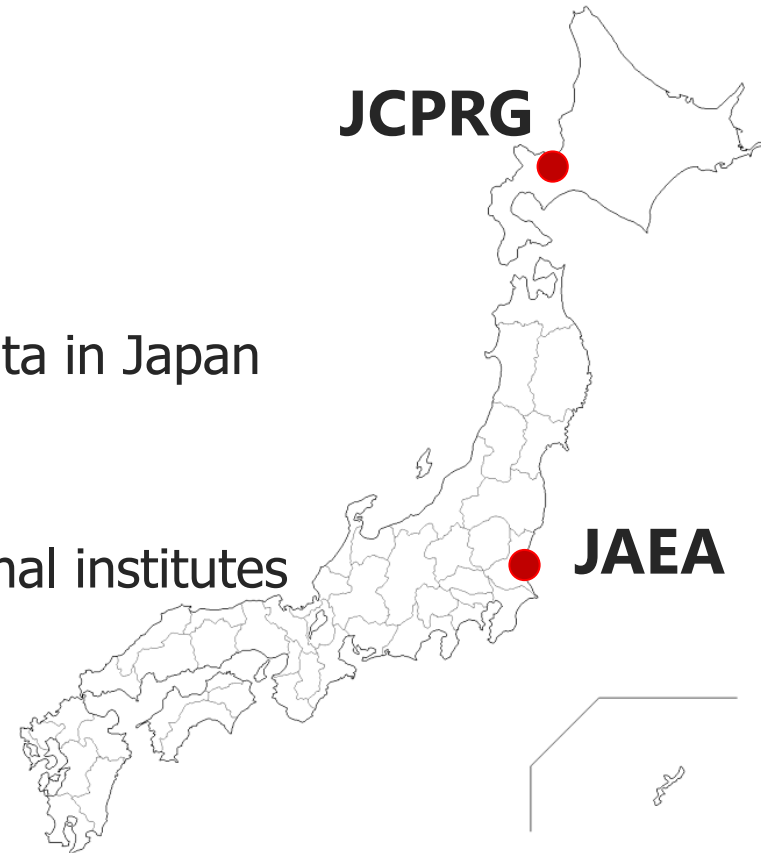
The objectives of the center:

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

We have 6+ active members

JCPRG is advised and assessed by the Committee

JCPRG Member	
Staff	M. Kimura (AP), S. Imai (A)
Postdocs	D. Ichinkhorloo, J. Singh
Senior Researchers	K. Kato, M. Fujimoto
Supporting staff	M. Aikawa, H. Noto, M. Chiba, T. Katayama
Supporting Members	M. Saito, T. Murata, T. Tada
Steering Committee	Horiguchi, Kimura, Hirabayashi, Arimura, Kamiyama
External Advisory Committee	Aoi (RCNP), Fukahori (JAEA), Ohnishi (YITP), Otsuka (IAEA), Sakurai (RIKEN)



Data Compilation at JCPRG

Two Databases are compiled at JCPRG; **EXFOR** and **NRDF**

Compilation Working Group	
EXFOR	Imai, Ichinkhorloo, Singh, Saito, Tada, Kimura
NRDF	Chiba, Katayama, Kato, Noto

EXFOR: 37 new entries

NRDF (original database developed by JCPRG): 37 new entries



EXFOR Compilation at JCPRG

EXFOR: 37 new and 18 revised entries were compiled at JCPRG since the last NRDC meeting.

TRANS	TRANS Status	ENTRY Tot.	ENTRY New	ENTRY Rev.
E108	Final(2017/05/29)	3	2	1
E109	Final (2018/01/18)	6	1	5
E110	Final (2018/01/25)	4	0	4
E111	Final (2018/02/26)	7	0	7
E112	Final (2018/04/25)	5	5	0
E113	Final (2018/04/25)	14	14	0
E114	Final (2018/04/25)	6	6	0
E115	Prelim. (2018/03/21)	9	9	0
J010	Final (2017/06/30)	1	0	1
Total		55	37	18



Evaluation (Theoretical Studies- Theme1)

Analysis of neutron-induced reactions of light nuclei based of a microscopic nuclear reaction model (CDCC). - **D. Ichinkhorloo**

Ichinkhorloo et al., Phys. Rev. C93, 064612 (2016).

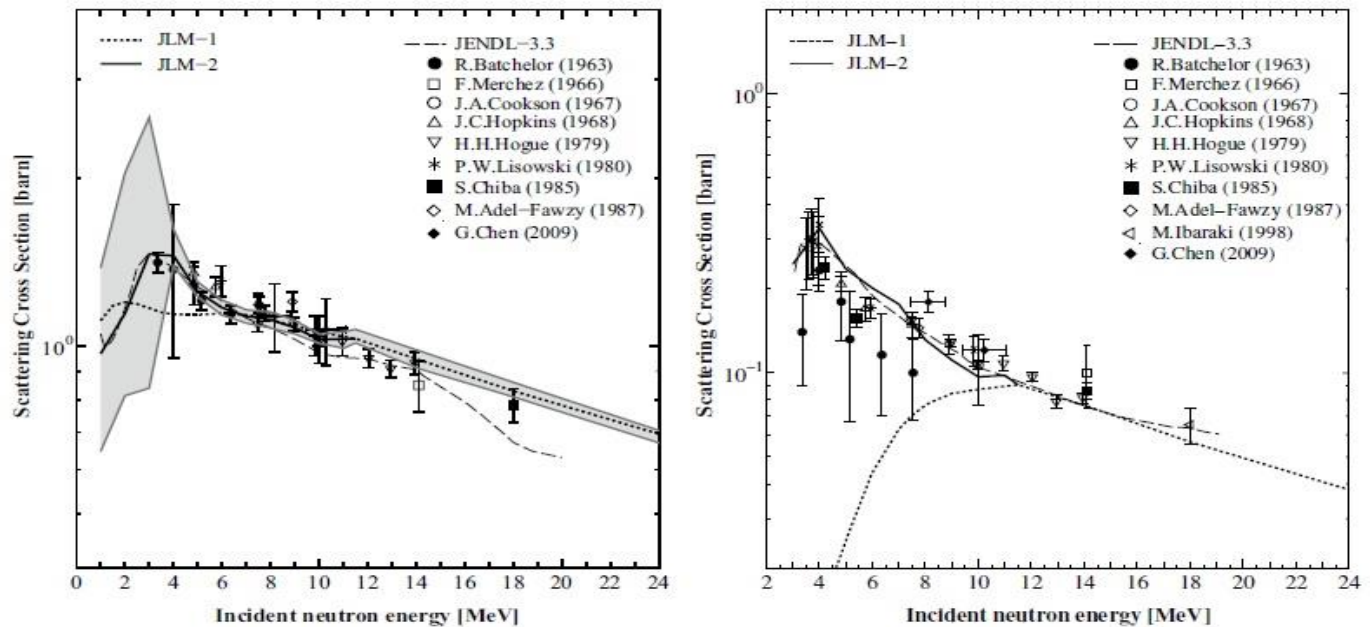
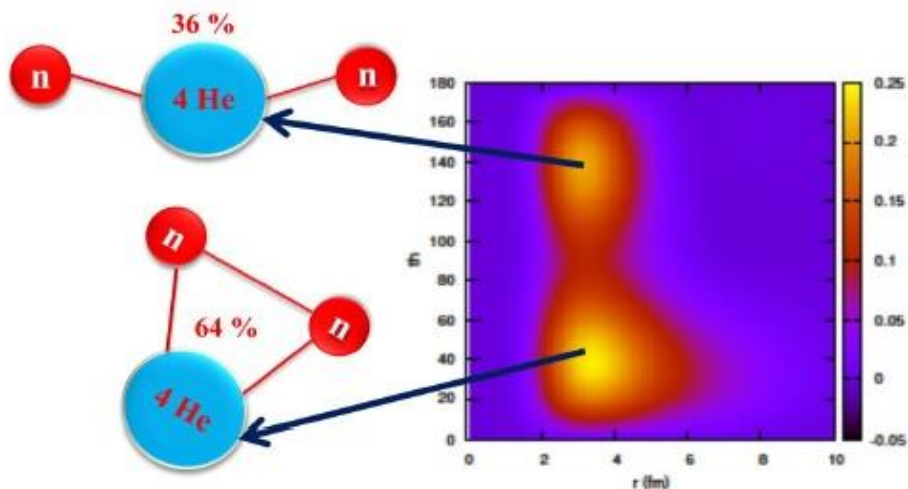


Figure 2: The integrated (left) elastic cross sections of the $n+{}^6\text{Li}$ scattering, (Right) inelastic $n+{}^6\text{Li}$ scattering cross sections, for the excited 3^+ state at the excitation energy of 2.18 MeV of ${}^6\text{Li}$ in comparison with the evaluated data and experimental data.

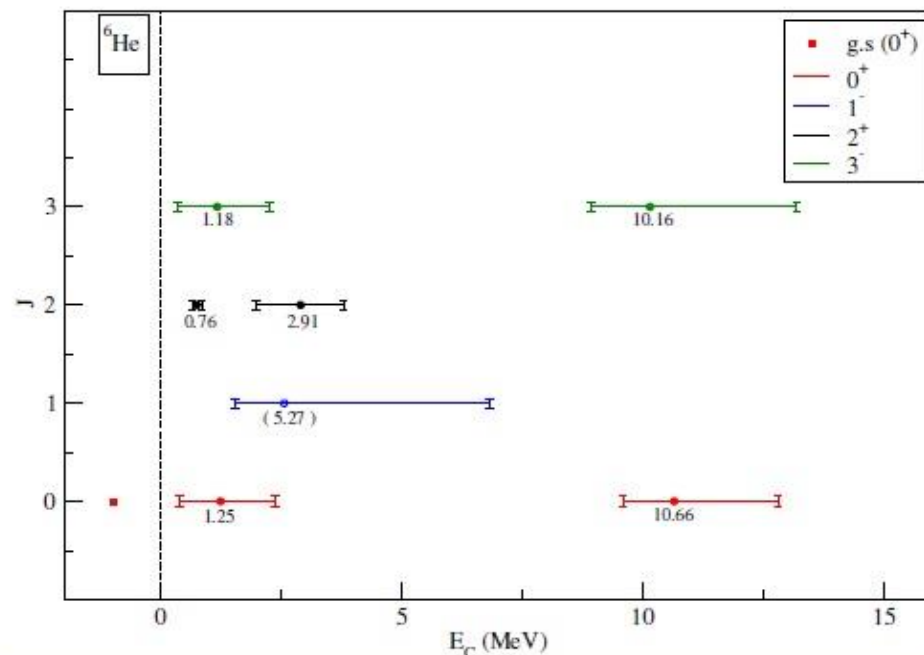


Evaluation (Theoretical Studies- Theme2)

Structure of dripline and beyond dripline systems- Jagjit Singh



Two-particle density for ${}^6\text{He}$ as a function of $r_1 = r_2 = r$ and angle between the valence neutrons θ_{12} .



Schematic representation of the spectrum of ${}^6\text{He}$ predicted by our simple model.

LF, RC, JS and AV, Phys. Rev. C 90, 064301 (2014).
 J Singh, LF, Acta Physica Polonica B 47, No. 3, 833 (2016).
 J Singh, LF, AV and RC, Eur. Phys. J. A, 52, 209 (2016).



Software for Database Coding

Editor "HENDEL", <http://www.jcprg.org/manuals/hendel/>

Digitizer "GSYS", <http://www.jcprg.org/gsys/gsys-e.html>

Data Retrieval System

NRDF: <http://www.jcprg.org/nrdf/>

NRDF/A: <http://www.jcprg.org/nrdfa/>

EXFOR/ENDF <http://www.jcprg.org/exfor/>



International and Domestic collaboration

IAEA and NRDC

CA-NRDB: Nuclear Physics, Nuclear Technology

RIKEN: Transmutation, Medicine

JAEA: Transmutation, Medicine

ATOMKI: Medicine

Experiments were performed at ATOMKI and RIKEN.

Theoretical calculation will be performed
in collaboration with JAEA.

Evaluation: Structure of drip-line and beyond drip line nuclei

PADOVA: continuum excitations of weakly bound nuclei

YORK: Role of different pairing interactions.



Summary

JCPRG is a data center at Hokkaido University, Japan, which aims;

Compilation of charged-particle reaction data in Japan
37 EXFOR and NRDF new entries in 2017

Evaluation of nuclear reaction data

Analysis of neutron-induced reactions of light nuclei and structure of n-rich dripline nuclei.

Collaboration with domestic and international institutes
IAEA, NRDC, RIKEN, JAEA, ATOMKI,...

Education of graduate school students

T. Tada (D1) will visit IAEA for internship in this fiscal year.

