



# Message from theory

Nuclear Data activity  
Summer school

Takaharu Otsuka, Tokyo

# *Nuclear Reaction Data File (NRDF) for Charged-Particle Reactions in Hokkaido University Nuclear Reaction Data Centre*

*K. Kato*

*Nuclear Reaction Data Centre*

*Hokkaido University*

*Sapporo*

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





# International Cooperation

Networks coordinated by IAEA:



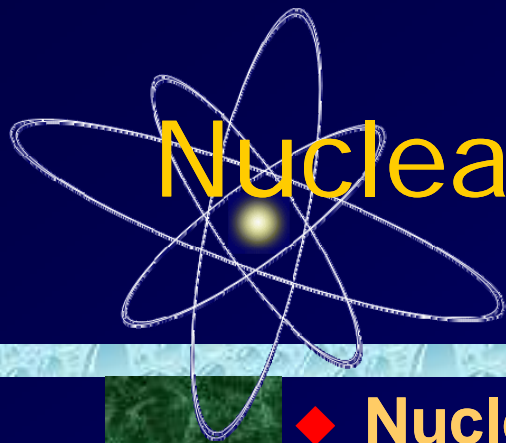
◆ Nuclear **Reaction** Data Centre Network

Compilation (**EXFOR** and **CINDA**) and evaluation for nuclear reaction data (13 centres)

[International Network of Nuclear Reaction Data Centres.htm](#)

◆ Nuclear **Structure** Data Centre Network

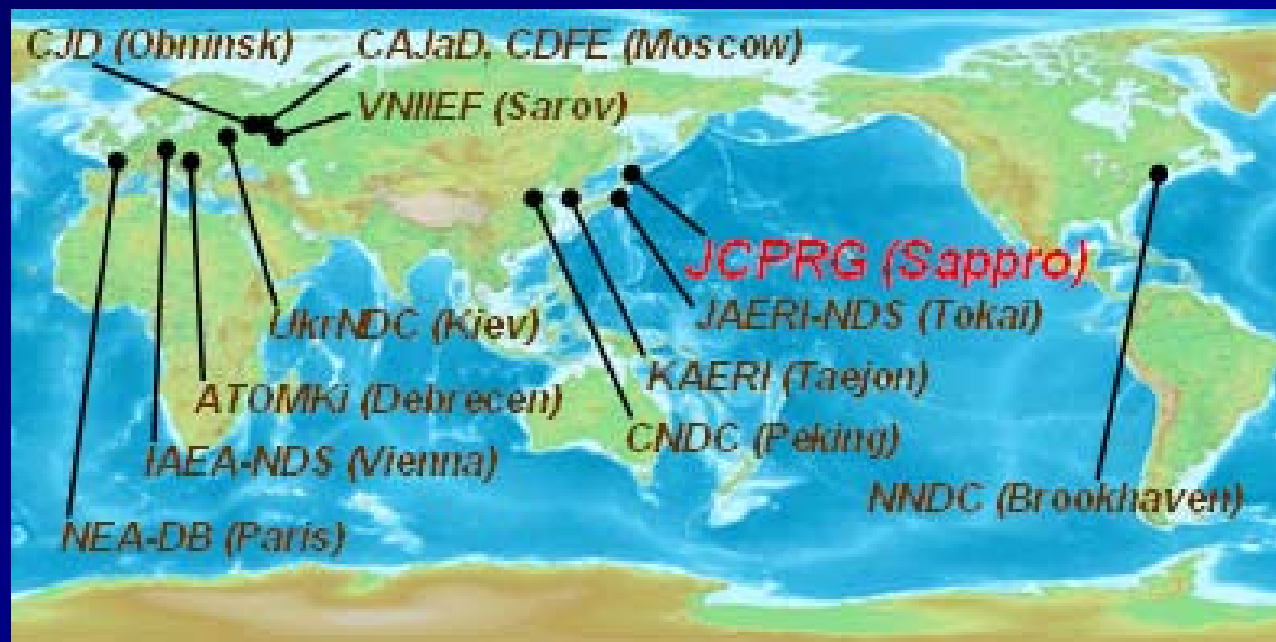
Evaluation for nuclear structure data **ENSDF** (16 centres)



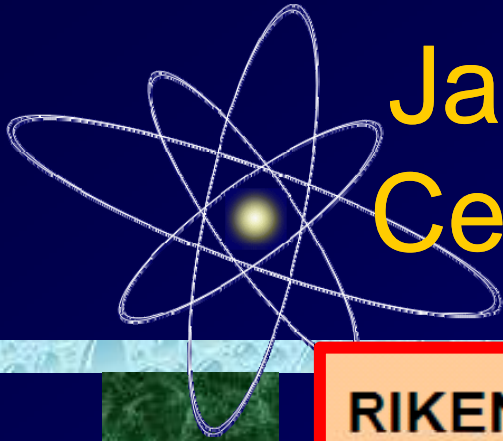
# Nuclear Data Centre Networks

## ◆ Nuclear Reaction Data Centers (13)

NNDC (Brookhaven), NEA-DB (Paris), NDS (IAEA), CJD (Obninsk), JCPRG (Sapporo), JAEA-NDC (Tokai), ATOMKI (Debrecen), **CIAE (Beijing)**, **KAERI –NDEL (Taejon)**, CAJaD (Moscow), CDFE (Moscow), NPDC (Sarov), UkrNDC (Kiev)

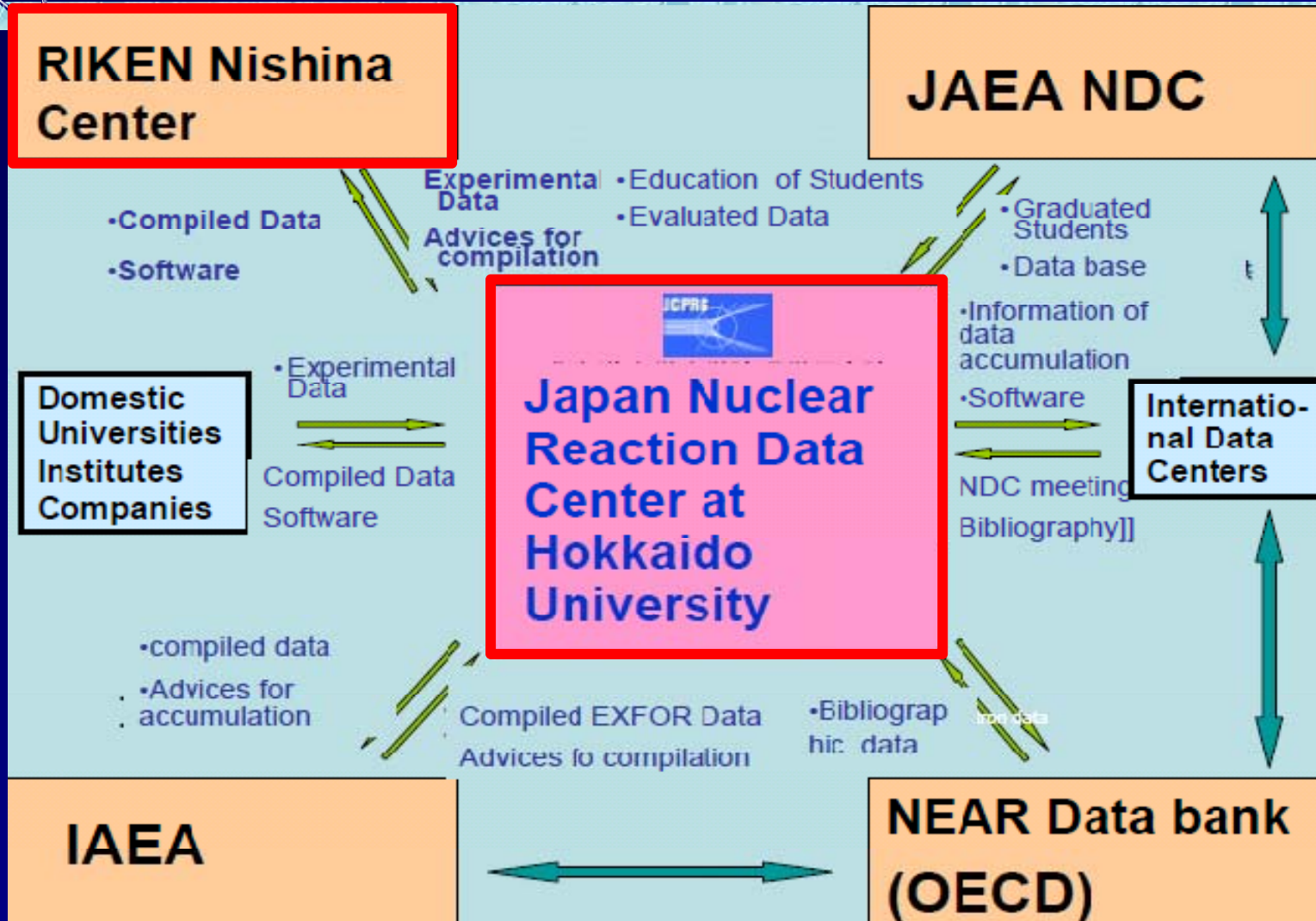






# Japan Nuclear Reaction Data Center at Hokkaido University

From April 1, 2007





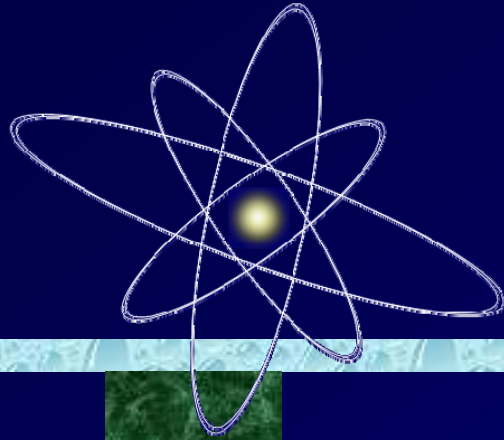
# Asian Nuclear Experiment Facilities:

## China

- ◆ China Institute of Atomic Energy, DNP, Beijing  
Beijing Tandem Acc. Lab.
- ◆ Chinese Academy of Sciences, IMP, Lanzhou  
HIRFL
- ◆ Chinese Academy of Sciences, SIAP, Shanghai  
SLEGS (in planning)

## India

- ◆ New Delhi University Grants Commission of India,  
New Delhi Inter-University Accelerator Center
- ◆ Variable Energy Cyclotron Center, Kolkata  
VECC



# Asian Nuclear Experiment Facilities:

## Korea

- ◆ Korea Institute of Geoscience and Mineral Resources, Daejeon  
Ion Beam Application Group (Tandems)
- ◆ National Cancer Centre, Goyang  
Center for Application Group (Cyclotron)
- ◆ National Centre for Inter-Universities Research Facility, Seoul  
Electrost. Ion Acc./AMS Fac. (Tandem)



## Collaboration among Asian Countries for Nuclear Reaction Database

- ◆ Compilation of data from their own countries
- ◆ Training and/or workshop of compilation
- ◆ JCPRG and IAEA-NDS can offer compiler software for data compilation (free of charge)





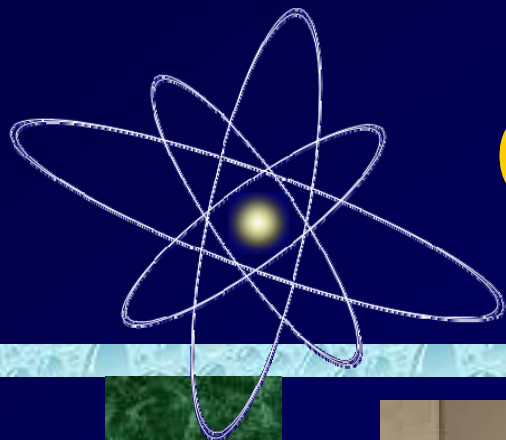
## Summary

1) Nuclear data needed recently in many branches:

Nuclear data of **minor-actinide region**, **light nuclei for fusion reactors** and for **LFP** for transmutation of nuclear wastes.

Nuclear data of **neutron-rich nuclei in astrophysical nuclear reactions**

- 2) We compile (JCPRG) the **data from RIBF in RIKEN** and store them in the database EXFOR.
- 3) International collaboration in evaluated database of **astrophysical nuclear reactions**
- 4) **Collaboration among Asian Countries for Nuclear Reaction Database**



# CNS Summer School

*from 2009 School*

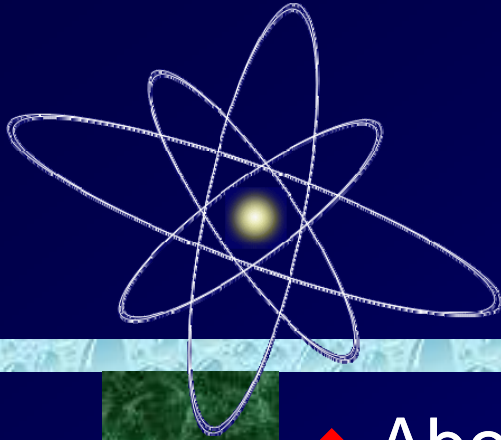
*lecture scene  
(Koshiba Hall, U. Tokyo)*





# History

- ◆ Held every summer since 2002
- ◆ 3-4 lecturers from outside Japan giving 4 courses
- ◆ 5-6 lecturers from inside Japan giving 1-2 courses (seminar type)
- ◆ Supported by JSPS through its core-to-core program EFES since 2008
- ◆ Special fund from School of Science, Univ. Tokyo for inviting students from Asian countries



# Students from Asia

- ◆ About 20 students from Asian countries
- ◆ Among them, 10 from China  
jointly supported by China and Japan\*
- ◆ Some students supported by Japan\*
- ◆ Some others supported by their own countries
- ◆ \* Int. program of School of Science, U. Tokyo



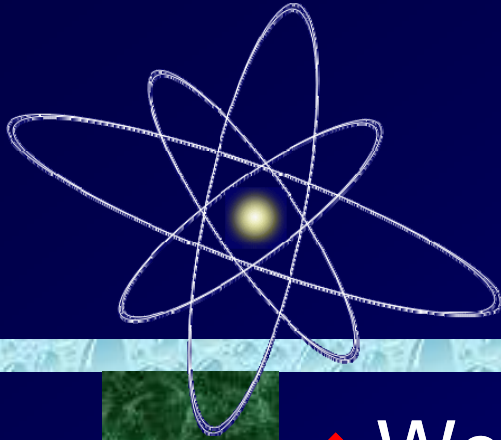


## Participants of 2009 school

### ◆ Nationality

Japan	67
China	10
Republic of Korea	4
Germany	3
United States	2
Vietnam	2
France	1
Uzbekistan	1
<b>Total</b>	<b>90</b>





# Future

- ◆ We will continue this effort
- ◆ With support from ANPhA  
advise, announcement, supports to  
students from their own countries
- ◆ More students are welcome

[http://www.cns.s.u-tokyo.ac.jp/index.php?Events/  
CNSEFES/](http://www.cns.s.u-tokyo.ac.jp/index.php?Events/CNSEFES/)