



# International Atomic Energy Agency

The 4th DAE-BRNS Theme Meeting on  
**EXFOR Compilation of Nuclear Data**  
Department of Physics, Panjab University, Chandigarh, India  
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## Short Remarks

**Naohiko OTSUKA**

**Nuclear Data Section**

**Department of Nuclear Sciences and Applications**



# EXFOR Compilation

## What did you do for creation of an EXFOR entry?

- Identification of articles for your EXFOR compilation.
- Allocation of an EXFOR entry number to the article;
- Extraction of key information for BIB section (bibliography, facility, detector, method);
- Define each data set by REACTION code;
- Preparation of numerical data (digitization if original data are not available);
- Checking by ZCHEX (checking code), proof-read by authors;
- Submission to IAEA-NDS



# Our Achievement

**Our Achievement should be evaluated by**

- **Quality of entries**
- **Number of entries**

$$**A = Q \times N**$$

***should be evaluated.***

# Quality of Entry

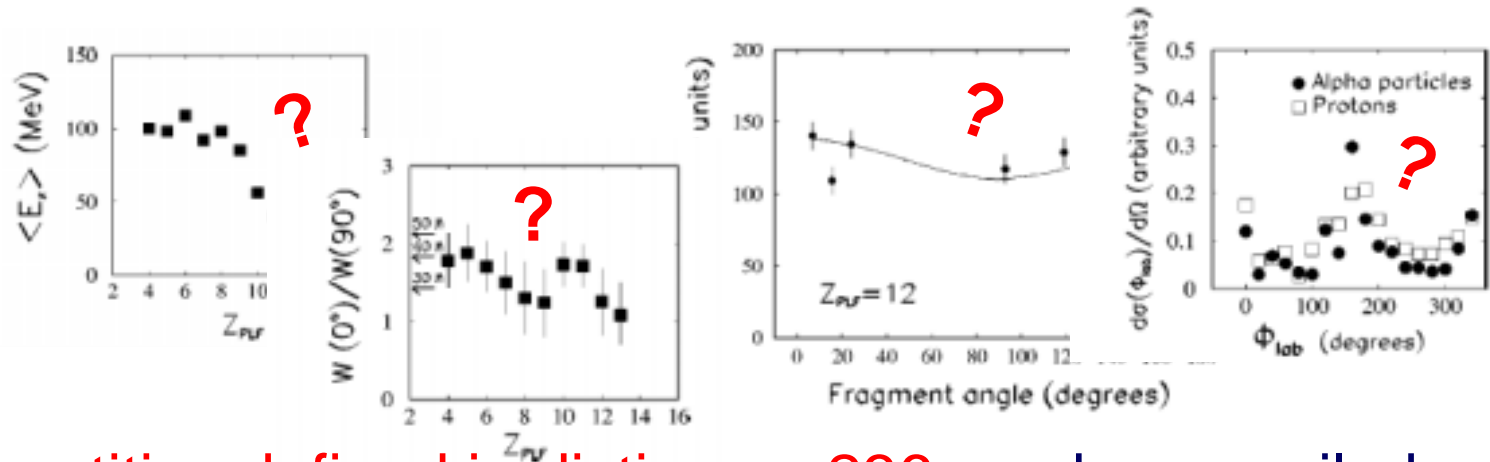
## Search of similar entries in the EXFOR library

- If you can find similar data in the EXFOR library, **existing entries** might improve your compilation.
- This search process is also for **exclusion of duplication** in the EXFOR library.
- See Svetlana's demonstration (later).



# Quality of Entry (cont)

## Selection of data sets relevant to EXFOR



- Only quantities defined in dictionary 236 can be compiled. (But it is impossible to remember 1000 quantity codes...)
- Tips: If the unit is undefined in dictionary 25, the data set can be excluded.
- I am happy to select data sets for your compilation.

# Quality of Entry (cont)

## Selection of right REACTION code

,DA: angular distribution

,DA,,RTH:

ang. dist. *relative to Rutherford scattering ang. dist.*

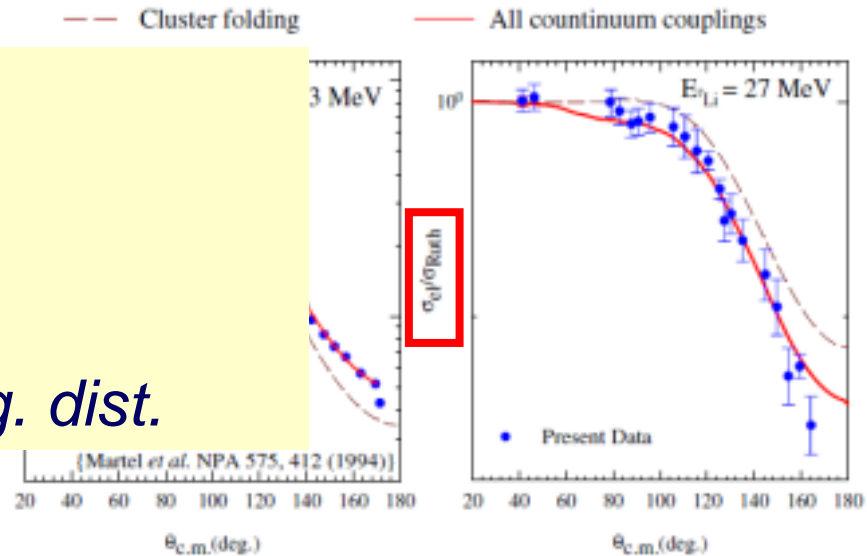


Figure 1. Elastic angular distribution for  ${}^7\text{Li} + {}^{208}\text{Pb}$  system at  $E=27$  and  $33\text{MeV}$ . The dashed and continuous lines represent the results without and with coupling, respectively.

- See **LEXFOR** for definitions of quantities defined in EXFOR.
- I am happy to **find an appropriate code for you.**

# Quality of Entry (cont)

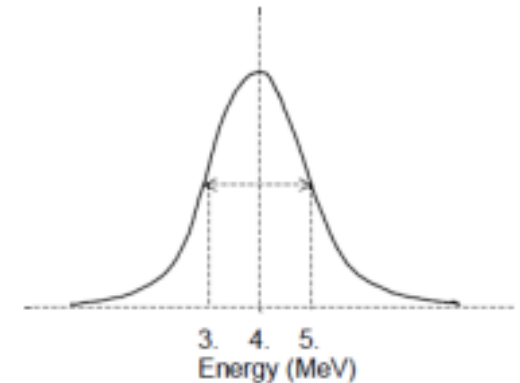
## Selection of keywords and coded information

*Example:*

Use **CYCLO** (cyclotron) rather than **ACCEL** (accelerator) when a cyclotron was used.



Use **EN-RSL** (energy resolution) rather than **EN-ERR** (energy error) if authors gives a width of beam energy resolution.



# Quality of Entry (cont)

## Extraction of essential information from free text

*Example:*

**METHOD (ACTIV)** Irradiated for 1000-2000 sec, cooled for 20-2000 sec, and measured for 200-2000 sec.

$$\sigma_{(n,\gamma)} = \frac{A\lambda \exp(\lambda t_2)}{N_0(\phi G)_{av.} \varepsilon \theta K [1 - \exp(-\lambda t_1)] [1 - \exp(-\lambda t_3)]}$$

# Quality of Entry (cont)

## Elimination of all error messages from ZCHEX

```
ENTRY 03018
**  Illegal code field
    DETECTOR    (HPGE) Hyperpure Ge detector
                ^^^^
**  Illegal code in                               field 4
    REACTION    (80-HG-196 (N,2N) 79-HG-195,,SIG)
                ^^^^^^^^^^
**  Missing independent variable                 NUCLIDE
```

E

80

- Check EXFOR **Formats** Manual. Discuss with your friends.
- I am happy to **assist elimination of error messages.**

# Quality of Entry (cont)

## Communication with authors

- Send your entry to the author after compilation for approval. (If approved, add **(APRVD)** under STATUS.
- Get unpublished but useful information from authors.

### *Example*

- **Definition and derivation** of quantities given (important for heavy-ion induced reaction data)
- Type of **uncertainty** (e.g., pure statistical?)
- **Normalization** condition

# Quality of Entry (cont)

## Quality of numerical data

- Try to receive numerical data from authors.
- Data from authors must be carefully preserved in your entry (“21.0” should not be changed to “21.”).
- Printed tabulated data must be carefully copied. (Don’t trust “copy and paste”.)
- Try to extract **high quality image file for digitization**. After digitization, compare digitized values with original figures (See my demonstration.)

# How many entries we made?

Projectile	Total	Submitted	Ongoing
Neutron (3)	2	2	0
CP (D)	52	23	29
Photon (G)	2	1	1

- Very **productive** workshop!  
(Some participants worked through midnight!)
- **Quality** of each entry will be evaluated in Vienna.



# After Workshop....

- **Deadline** of submission of entry is the **end of April**.
- All reservation of articles not compiled in EXFOR will be **cancelled on 1 May**, and They will be available for compilation by other compilers.
- I will check each entry, and communicate with you.
- You will be notified when your entry is available through the IAEA-NDS web page.
- Send me any question about nuclear data service by e-mail.



# Acknowledgement

- Dr. S. Ganesan, Dr. A. Saxena and Dr. B.R. Behera and all committee members for organizing the meeting.
- Members of Panjab University for hosting this Workshop (facilities, transportation, Indian food, tea, excursion etc.)
- ***All participants for your contribution to the EXFOR entry creation!***

