



International Atomic Energy Agency

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Nuclear Reaction Data and its Compilation for EXFOR Database

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EXFOR Entry Checking Tools

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Why we have to follow format and dictionary?

EXFOR files are read not only by humans but also computer codes. Must be *computer readable*.

```
ENTRY      D6339001  20190805  20191010  20191009  D122
SUBENT     D6339001  20190805  20191010  20191009  D122
BIB        9      19
TITLE      Neutron emission in 19F-induced reactions
AUTHOR     (J.Acharya, S.Mukherjee, A.Chatterjee, N.L.Singh,
            K.Ramachandran, P.C.Rout, K.Mahata, V.Desai,
            E.T.Mirgule, S.V.Suryanarayana, B.K.Nayak, A.Saxena,
            G.F.Steyn)
INSTITUTE  (3INDBDA, 3INDTRM, 3SAFITH)
FACILITY   { # (3INDBDA M.S. University of Baroda, Baroda, India
            #, 3INDTRM Bhabha Atomic Research Centre, Trombay, Mumbai, India
            #, 3SAFITH) iThemba LABS, Somerset West, South Africa, Rep.
            (VDGT, 3INDTRM) Pelletron-LINAC, BARC-TIFR.
REFERENCE  { # (VDGT Tandem van de Graaff
            #, 3INDTRM) Bhabha Atomic Research Centre, Trombay, Mumbai, India
            (J, PR/C, 97, 034607, 2018)
            # (J, PR/C, 97, 034607, 2018) Jour: Physical Review, Part C, Nuclear Physics, Vol.97, p.034607 (2018), USA
            #+ #URL=http://dx.doi.org/10.1103/PhysRevC.97.034607
            #+ #NSR=2018AC05 #DOI=10.1103/PhysRevC.97.034607
            #+ #Title=Neutron emission in 19F-induced reactions
            #+ #Authors=Ja.Acharya, S.Mukherjee, A.Chatterjee, N.L.Singh, K.Ramachandran, P.C.Rout, K.Mahata, V.D.
SAMPLE     All the targets (51V, 89Y and 181Ta) were rolled from
            spectroscopic grade material to thicknesses in the
            range 1.5-1.8 mg/cm2.
DETECTOR   (SCIN) Fourteen liquid scintillator neutron detectors
            (NE213) were used to cover the angular range 25 to 143
```

Annotation added
by a computer
program
(X4+ output)



Two Checking Programs – JANIS and ZCHEX

1. JANIS Trans Checker

- Developed by OECD Nuclear Energy Agency.
- Written in Java.
- Strict and accurate checking for formatting and codes.
- No physics checking.

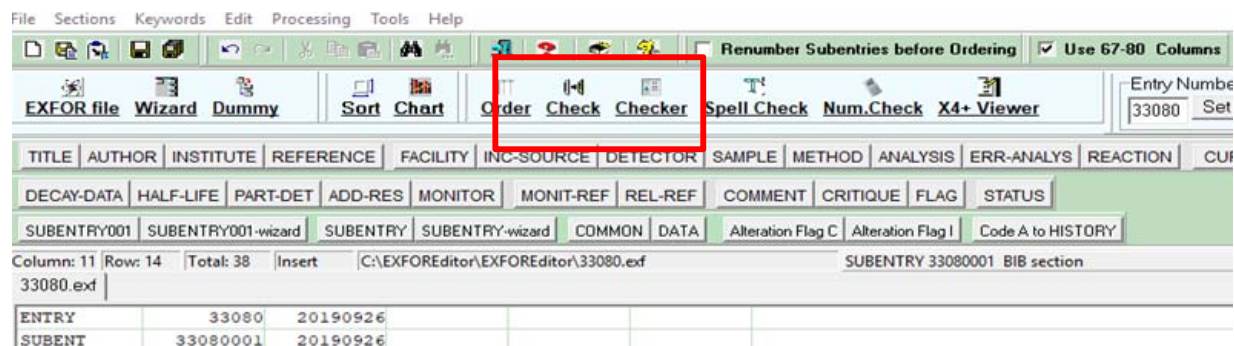
2. (Z)CHEX

- Initially developed by US National Nuclear Data Center.
- Now maintained by IAEA Nuclear Data Section.
- Written in Fortran.
- Physics checking in addition to formatting and code.
- Sometimes gives a false alarm....



How to run JANIS and ZCHEX?

- Push “Check” (CHEX) and “Checker” (JANIS) on the EXFOR editor.



or

- Upload your EXFOR draft to the “EXFOR Compilation Tool” (<http://www.jcprg.org/exfor/tool/>).



What does the checking tool complain?

- It is not always easy to understand the error message.

Example: “*Nonmonotonic data field*”.

These two data lines must be swapped to keep the incident energy (EN) in increasing order.

EN	DATA	DATA-ERR
MEV	MB	MB
13.73	15.6	1.5
14.07	17.	1.6
14.68	20.4	1.7
14.42	18.6	1.6
14.77	22.	1.7

- Don't hesitate to ask me when you cannot understand the meaning of an error message!



Submit an error-free entry!

- Eliminate all error messages from your entry before its submission to Dr. Vidya (vidyathakur@yahoo.com).
- If the error message is not understandable, please resolve it with Dr. Vidya or me before submission.



Exercise

- Download EXFOR file “Entry of the Common article for checking and correction” from
<https://nds.iaea.org/nrdc/india/ws2023/>
- Check the EXFOR file with ZCHEX and JANIS. Repeat correction and checking until all messages disappear (Visit the Common article and Format Manual to solve some errors.)
- Open “List of corrections” on the website if you cannot eliminate some error messages.

