

# **Validation of datasets in preliminary transmission by plotting on JANIS**

**EXFOR Workshop**

**Daniela Foligno**

NEA / Data Bank / Nuclear Data Services

**16 December 2022**

The NEA Data Bank Review Process includes:

1. Bibliography checks
2. TRANS checker
3. JANIS checks
4. Text clarity

```
1  ===== BIB checks =====  
2  
3  
4  ===== TRANS checker =====  
5  
6  
7  ===== JANIS checks =====  
8  
9  
10 ===== Text clarity =====  
11  
12
```

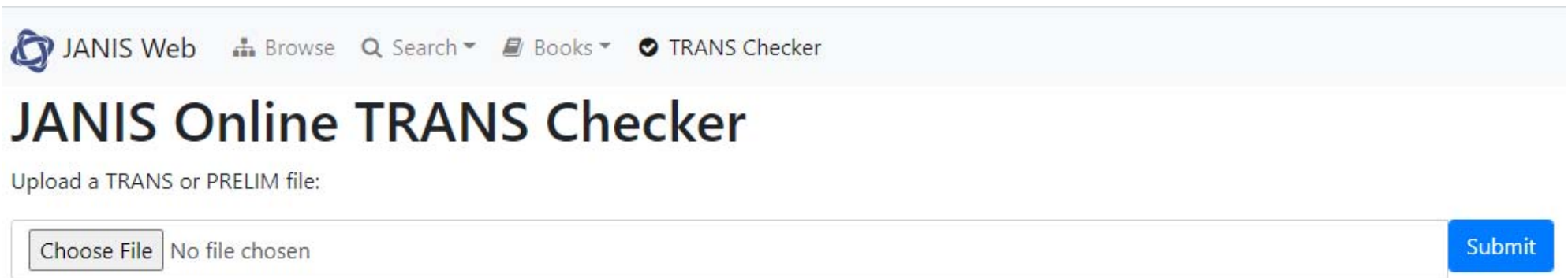
## Manuel Bossant performs the bibliography checks

```
1  ===== BIB checks =====
2
3  11850.001  REFERENCE  ARI 18  279
4  TITLE: 2.8-MeV (d,d) neutrons => 2.8-MeV (D, d) neutrons
5
6  10633.001  REFERENCE  NP/A    275 325
7  TITLE: append ' optical potential'
8
9  13135.001  REFERENCE  NP/A    493 267
10 AUTHOR: swap 2nd and 3rd author
11
12 13188.001  REFERENCE  NP/A    519 487
13 AUTHOR: swap 2nd and 3rd author
14
15 10528.001  REFERENCE  PL/B    58  293
16 TITLE: Effects => Effect
17
18 10732.001  REFERENCE  PR/C    17  508
19 AUTHOR: S.Grimes => S.M.Grimes
20 AUTHOR: R.Haight => R.C.Haight
21 AUTHOR: J.Anderson => J.D.Anderson
22
23 10805.001  REFERENCE  PR/C    29 2188
24 TITLE: 242Am(m) fission cross section
25
```



Keep in mind that we do not work simultaneously

<https://www.oecd-nea.org/janisweb/trans-checker>



The screenshot shows the top navigation bar of the JANIS Web application. It includes the JANIS Web logo, a 'Browse' button with a folder icon, a 'Search' button with a magnifying glass icon, a 'Books' button with a book icon, and a 'TRANS Checker' button with a checkmark icon. Below the navigation bar is the main heading 'JANIS Online TRANS Checker'. Underneath the heading is the instruction 'Upload a TRANS or PRELIM file:'. A file upload area contains a 'Choose File' button, the text 'No file chosen', and a blue 'Submit' button.

Very easy to use:

- Choose File
- Submit

<https://www.oecd-nea.org/janisweb/trans-checker>

JANIS Web 👤 Browse 🔍 Search 📖 Books 👤 TRANS Checker

## JANIS Online TRANS Checker

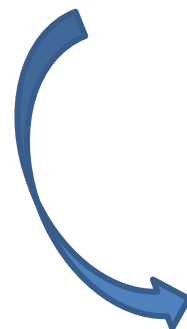
prelim.4208.txt

1 error(s)

1 warning(s)

Message	Detail (line number)
40422.003 EXFOR_Exception <b>Unknown quantity</b>	<b>PAR/CUM,FY (line 619)</b>
41752.001 [INSTITUTE] : <b>Unknown Institute</b>	<b>4RUSDBU (line 4619)</b>

[Check another file](#)



```

4  ===== TRANS checker =====
5  1 error(s)
6  1 warning(s)
7  |   Message Detail (line number)
8  40422.003  EXFOR_Exception
9  Unknown quantity   PAR/CUM,FY (line 619)
10 41752.001  [INSTITUTE] : Unknown Institute 4RUSDBU (line 4619)
  
```

I use the editor spelling checks. Misspelled words are highlighted and easy to identify

REACTION	(62-SM-147(N,0),,J)	40405	2	3
FLAG	(1.) Spin value determined <u>indefinitely</u>	40405	2	4
STATUS	(TABLE) Table 2 of R, <u>JINR-P3-6092</u> ,1971	40405	2	5
	Resonances 94.9 and 108.4 eV are given in Table 2	40405	2	6
	without spin J value.	40405	2	7
	( <u>SPSDD,40098002</u> ) Newer publication at 1972	40405	2	8
HISTORY	(20220722S) Restored from trans.4033 of 1978 year	40405	2	9
ENDBIB	7 0	40405	2	10
<u>NOCOMMON</u>	0 0	40405	2	11



15	===== Text clarity =====
16	40405 1 23 <u>superceded</u> --> superseded
17	40405 2 4 <u>indefinitely</u> --> indefinitely
18	40405 3 4 <u>indefinitely</u> --> indefinitely
19	40405 9 9 <u>superceded</u> --> superseded
20	40405 10 7 <u>superceded</u> --> superseded

[https://www.oecd-nea.org/jcms/pl\\_39910/janis](https://www.oecd-nea.org/jcms/pl_39910/janis)

## JANIS

Databases Nuclear data

JANIS NEA - Nuclear properties - Nubase 2016 - Basic properties

File Database Search Chart Help

**HALF-LIFE**

T < 1ms

1ms <= T < 1s

1s <= T < 2min

2min <= T < 1h

1h <= T < 1d

1d <= T < 1y

1y <= T < 10y

10y <= T

No parity filter

**Nuclide / Compound**

- Rn213n
- Rn213p
- Rn214
- Rn214m
- Rn215
- Rn216
- Rn217
- Rn218
- Rn219
- Rn220
- Rn221
- Rn222
- Rn223

**Databases**

- J 0359/RDFF/2019
- Base/RDFF-II
- DVD Image
- H2-TENDL\_4.0
- H2-TENDL\_4.1
- Localhost:9080
- NEA
  - Nuclear properties
    - Nubase 1997
    - Nubase 2003
    - Nubase 2012
    - Nubase 2016
  - Basic properties

Radon/Rn N: 135 Z: 86 A: 221 40 pixels 55M of 273IM

JANIS screenshot

- What is JANIS?
- Content of the NEA database
- Screenshots
- Help pages
- What's new in 4.1 (Sept 2020)

▶ **Launch JANIS 4.1**

Java Web Start

🌐 **JANIS Web**

Online version, no Java required

⬇ **Downloads**

Software, Manual, DVD 4.0 ISO


📖 **JANIS Books**

Experimental and evaluated cross-sections

The screenshot shows the JANIS software interface. At the top left, the 'File' menu item in the menu bar is highlighted with a red box. The main window contains a large blue plot area with a grid. A yellow box highlights a specific region within the plot. On the left side, there is a sidebar with a 'Databases' section containing a checked box for 'NEA'. The status bar at the bottom indicates 'Carbon/C', 'N: 19', 'Z: 6', 'A: 25', '138 pixels', and '122M of 910M'.

File → Open → Select File



 TEMP EXFOR



File Tools Selected Help

Node	Settings	Display
TEMP		
Radioactive data / EXFOR / Fission yields data / Cf252 / (.F)ELEM/MASS		
Incident neutron data / EXFOR		



TEMP EXFOR

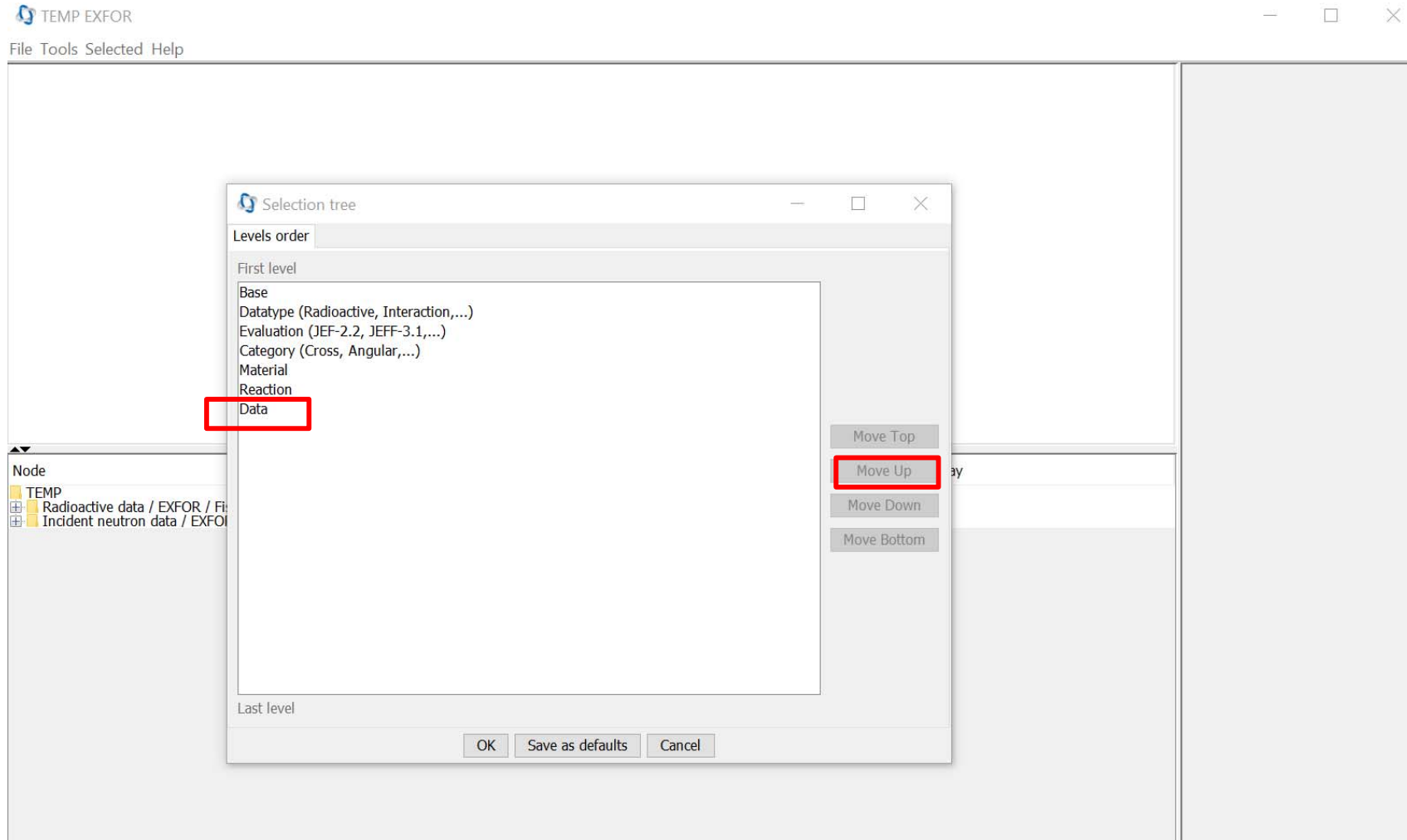


File Tools Selected Help

Node	Settings	Display
TEMP		
Radioactive data / EXFOR / Fission yields data / Cf252 / (.F)ELEM/MASS		
Incident neutron data / EXFOR		

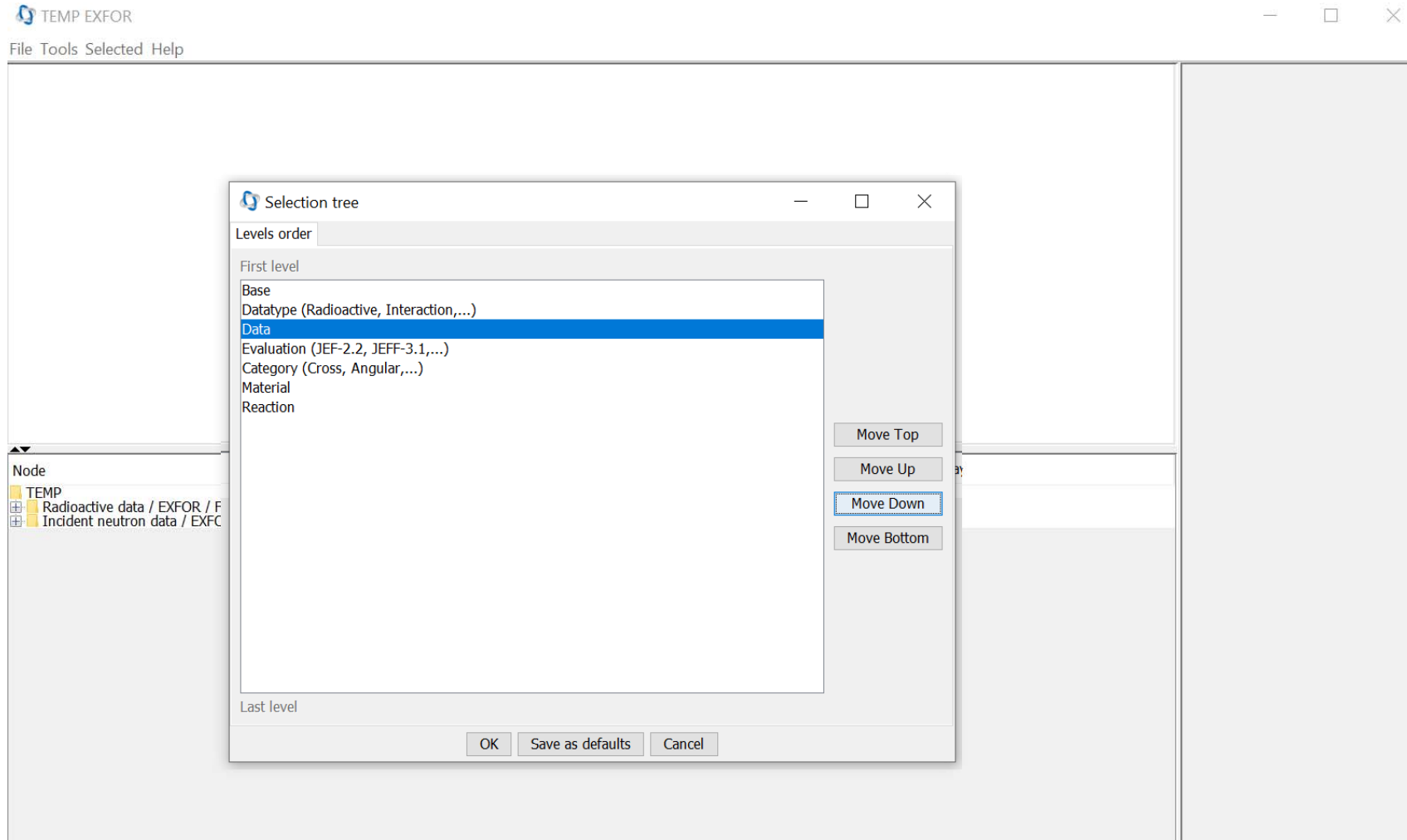
Right click → Settings





Click on Data → Move Up (4 times)



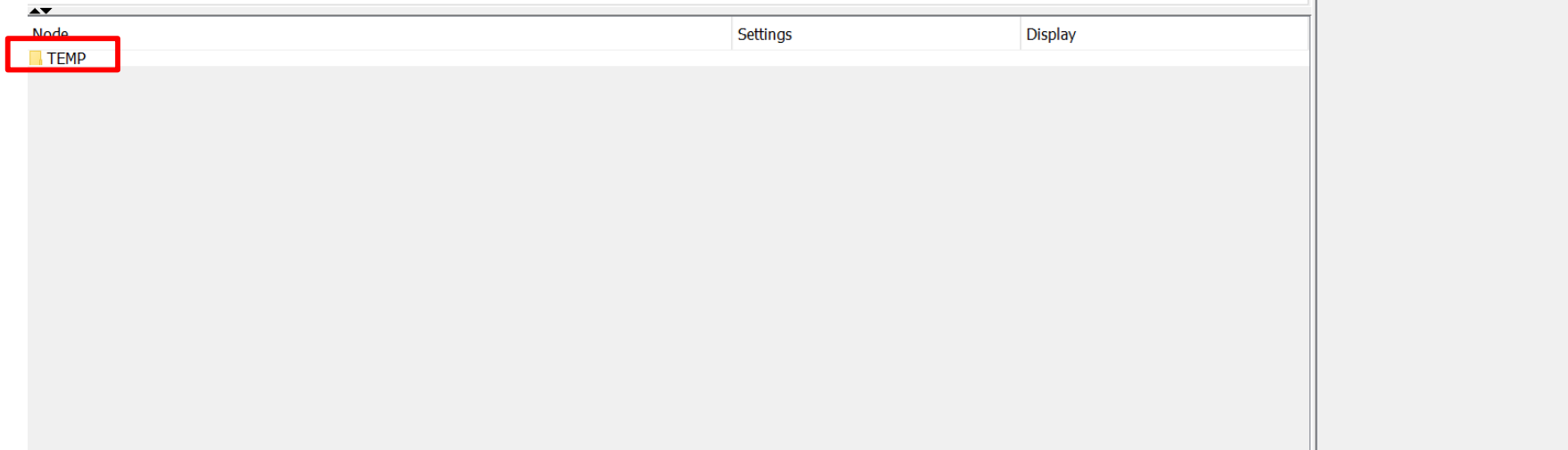


The data is sorted in this order



TEMP EXFOR

File Tools Selected Help



The screenshot shows a software window titled 'TEMP EXFOR' with a menu bar containing 'File', 'Tools', 'Selected', and 'Help'. The main area is a tree view with columns for 'Node', 'Settings', and 'Display'. A single node labeled 'TEMP' is visible and highlighted with a red rectangular box.

“Shift + 8” opens all the folders/subfolders



TEMP EXFOR

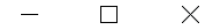
File Tools Selected Help

Node	Settings	Display
TEMP		
Radioactive data		
• 14286.004, 2010, D.L.Bleuel+ (29 pts) / EXFOR / Fission yields data / Cf252 / (.F)ELEM/MAS		P   T   t   I
• 14286.005, 2010, D.L.Bleuel+ (29 pts) / EXFOR / Fission yields data / Cf252 / (.F)ELEM/MAS		P   T   t   I
Incident neutron data		
• 10037.067, 1971, P.Boschung+ (20 pts) / EXFOR / Partial differential data with respect to angle		P   T   t   I
• 10145.022, 1970, W.D.Lu+ (1 pt) / EXFOR / Cross sections / Ru96 / (.X)43-TC-95-M		P   T   t   I
• 10145.023, 1970, W.D.Lu+ (1 pt) / EXFOR / Cross sections / Ru96 / (.X)43-TC-95-G		P   T   t   I
10214.026, 1970, J.K.Temperlev+ (1 pt) / EXFOR / Cross sections		
• Ru101 / (.P)43-TC-101		P   T   t   I
• Ru102 / (.X)43-TC-101		P   T   t   I
10214.028, 1970, J.K.Temperlev+ (1 pt) / EXFOR / Cross sections		
• Pd105 / (.P)45-RH-105		P   T   t   I
• Pd106 / (.X)45-RH-105		P   T   t   I
• 10325.004, 1973, A.B.Smith+ (481 pts) / EXFOR / Partial differential data with respect to angle		P   T   t   I
• 10362.004, 1973, S.A.Elbakr+ (6 pts) / EXFOR / Partial cross section data / Sm154 / (.INL)6;		P   T   t   I
• 10362.005, 1973, S.A.Elbakr+ (5 pts) / EXFOR / Partial cross section data / Sm154 / (.INL)6;		P   T   t   I
• 10362.013, 1973, S.A.Elbakr+ (4 pts) / EXFOR / Partial cross section data / Sm154 / (.INL)6;		P   T   t   I
• 10366.004, 1976, M.D.Semon+ (20800 pts) / EXFOR / Cross sections / Np237 / (.SCT)93-NF		P   T   t   I
• 10528.004, 1975, C.Laqrane+ (21 pts) / EXFOR / Partial differential data with respect to angle		P   T   t   I
• 10528.005, 1975, C.Laqrane+ (11 pts) / EXFOR / Partial differential data with respect to angle		P   T   t   I
• 10633.011, 1976, J.C.Ferrer+ (29 pts) / EXFOR / Partial differential data with respect to angle		P   T   t   I
• 10633.016, 1976, J.C.Ferrer+ (26 pts) / EXFOR / Partial differential data with respect to angle		P   T   t   I
• 10732.017, 1978, S.Grimes+ (69 pts) / EXFOR / Partial differential data with respect to angle		P   T   t   I
• 10732.018, 1978, S.Grimes+ (45 pts) / EXFOR / Partial differential data with respect to angle		P   T   t   I
• 10765.007, 1974, H.S.Camarda (1 pt) / EXFOR / Resonance parameters / InNat / (.EL)		P   T   t   I
• 10805.004.1, 1978, J.C.Browne+ (1 pt) / EXFOR / Resonance parameters / Am242m / (.O)		P   T   t   I
• 10805.004.2, 1978, J.C.Browne+ (1 pt) / EXFOR / Resonance parameters / Am242m / (.EL)		P   T   t   I
• 11748.020, 1963, B.Keisch (1 pt) / EXFOR / Cross sections / Eu151 / (.G)63-EU-152-M1/G+M		P   T   t   I
• 11748.022, 1963, B.Keisch (1 pt) / EXFOR / Cross sections / Ir191 / (.G)77-IR-192-M1		P   T   t   I

“Shift + 8” opens all the folders/subfolders



TEMP EXFOR



File Tools Selected Help

Node	Settings	Display
TEMP		
Radioactive data		
14286.004, 2010, D.L.Bleuel+ (29 pts) / EXFOR / Fission yields data / Cf252 / (,F)ELEM/MAS	<input type="checkbox"/> P <input type="checkbox"/> T <input type="checkbox"/> t <input type="checkbox"/> I	
14286.005, 2010, D.L.Bleuel+ (29 pts) / EXFOR / Fission yields data / Cf252 / (,F)ELEM/MAS	<input type="checkbox"/> P <input type="checkbox"/> T <input type="checkbox"/> t <input type="checkbox"/> I	
Incident neutron data		
10037.067, 1971, P.Boschung+ (20 pts) / EXFOR / Partial differential data with respect to an	<input type="checkbox"/> P <input type="checkbox"/> T <input type="checkbox"/> t <input type="checkbox"/> I	
10145.022, 1970, W.D.Lu+ (1 pt) / EXFOR / Cross sections / Ru96 / (,X)43-TC-95-M	<input type="checkbox"/> P <input type="checkbox"/> T <input type="checkbox"/> t <input type="checkbox"/> I	
10145.023, 1970, W.D.Lu+ (1 pt) / EXFOR / Cross sections / Ru96 / (,X)43-TC-95-G	<input type="checkbox"/> P <input type="checkbox"/> T <input type="checkbox"/> t <input type="checkbox"/> I	
10214.026, 1970, J.K.Temperlev+ (1 pt) / EXFOR / Cross sections		
Ru101 / (,P)43-TC-101	<input type="checkbox"/> P <input type="checkbox"/> T <input type="checkbox"/> t <input type="checkbox"/> I	
Ru102 / (,X)43-TC-101	<input type="checkbox"/> P <input type="checkbox"/> T <input type="checkbox"/> t <input type="checkbox"/> I	
10214.028, 1970, J.K.Temperlev+ (1 pt) / EXFOR / Cross sections		
Pd105 / (,P)45-RH-105	<input type="checkbox"/> P <input type="checkbox"/> T <input type="checkbox"/> t <input type="checkbox"/> I	
Pd106 / (,X)45-RH-105	<input type="checkbox"/> P <input type="checkbox"/> T <input type="checkbox"/> t <input type="checkbox"/> I	
10325.004, 1973, A.B.Smith+ (481 pts) / EXFOR / Partial differential data with respect to anc	<input type="checkbox"/> P <input type="checkbox"/> T <input type="checkbox"/> t <input type="checkbox"/> I	
10362.004, 1973, S.A.Elbakr+ (6 pts) / EXFOR / Partial cross section data / Sm154 / (,INL)6,	<input type="checkbox"/> P <input type="checkbox"/> T <input type="checkbox"/> t <input type="checkbox"/> I	
10362.005, 1973, S.A.Elbakr+ (5 pts) / EXFOR / Partial cross section data / Sm154 / (,INL)6,	<input type="checkbox"/> P <input type="checkbox"/> T <input type="checkbox"/> t <input type="checkbox"/> I	
10362.013, 1973, S.A.Elbakr+ (4 pts) / EXFOR / Partial cross section data / Sm154 / (,INL)6,	<input type="checkbox"/> P <input type="checkbox"/> T <input type="checkbox"/> t <input type="checkbox"/> I	
10366.004, 1976, M.D.Semon+ (20800 pts) / EXFOR / Cross sections / Np237 / (,SCT)93-NF	<input type="checkbox"/> P <input type="checkbox"/> T <input type="checkbox"/> t <input type="checkbox"/> I	
10528.004, 1975, C.Lacranqe+ (21 pts) / EXFOR / Partial differential data with respect to anc	<input type="checkbox"/> P <input type="checkbox"/> T <input type="checkbox"/> t <input type="checkbox"/> I	
10528.005, 1975, C.Lacranqe+ (11 pts) / EXFOR / Partial differential data with respect to anc	<input type="checkbox"/> P <input type="checkbox"/> T <input type="checkbox"/> t <input type="checkbox"/> I	
10633.011, 1976, J.C.Ferrer+ (29 pts) / EXFOR / Partial differential data with respect to angl	<input type="checkbox"/> P <input type="checkbox"/> T <input type="checkbox"/> t <input type="checkbox"/> I	
10633.016, 1976, J.C.Ferrer+ (26 pts) / EXFOR / Partial differential data with respect to angl	<input type="checkbox"/> P <input type="checkbox"/> T <input type="checkbox"/> t <input type="checkbox"/> I	
10732.017, 1978, S.Grimes+ (69 pts) / EXFOR / Partial differential data with respect to angle	<input type="checkbox"/> P <input type="checkbox"/> T <input type="checkbox"/> t <input type="checkbox"/> I	
10732.018, 1978, S.Grimes+ (45 pts) / EXFOR / Partial differential data with respect to angle	<input type="checkbox"/> P <input type="checkbox"/> T <input type="checkbox"/> t <input type="checkbox"/> I	
10765.007, 1974, H.S.Camarda (1 pt) / EXFOR / Resonance parameters / InNat / (,EL)	<input type="checkbox"/> P <input type="checkbox"/> T <input type="checkbox"/> t <input type="checkbox"/> I	
10805.004.1, 1978, J.C.Browne+ (1 pt) / EXFOR / Resonance parameters / Am242m / (,O)	<input type="checkbox"/> P <input type="checkbox"/> T <input type="checkbox"/> t <input type="checkbox"/> I	
10805.004.2, 1978, J.C.Browne+ (1 pt) / EXFOR / Resonance parameters / Am242m / (,EL)	<input type="checkbox"/> P <input type="checkbox"/> T <input type="checkbox"/> t <input type="checkbox"/> I	
11748.020, 1963, B.Keisch (1 pt) / EXFOR / Cross sections / Eu151 / (,G)63-EU-152-M1/G+N	<input type="checkbox"/> P <input type="checkbox"/> T <input type="checkbox"/> t <input type="checkbox"/> I	
11748.022, 1963, B.Keisch (1 pt) / EXFOR / Cross sections / Eu151 / (,G)77-IB-102-M1	<input type="checkbox"/> P <input type="checkbox"/> T <input type="checkbox"/> t <input type="checkbox"/> I	

“Ctrl + A” selects all the items

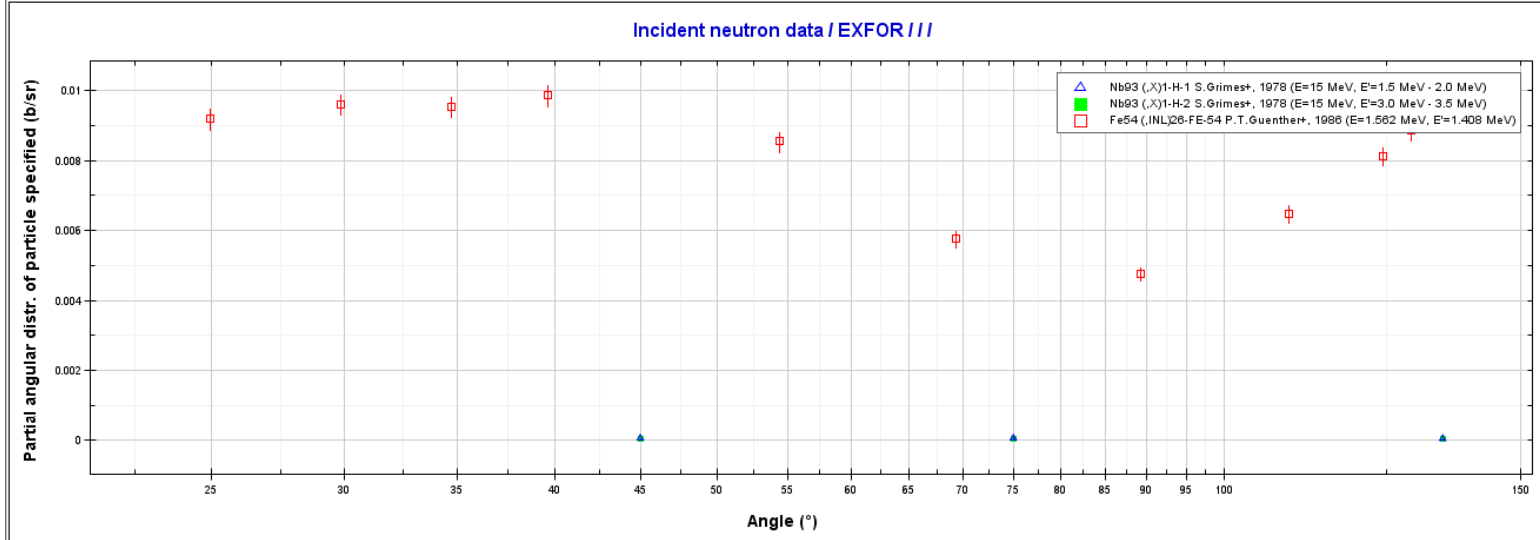
Helpful  
Tips

TEMP EXFOR



File Tools Selected Help

- 10633.016 11748.022 10528.004 13188.003 13104.005 10528.005 11748.020 13104.008 10805.004.1 13104.004
- 14469.003 13104.006 13135.002 10805.004.2 13131.005 13131.004 12399.002 14286.005 10362.005



Xmin= 21.172669165 °  
 Xmax= 152.546850601 °  
 Ymin= -9.816E-4 b/sr  
 Ymax= 0.0108456 b/sr

More...

Move Zoom

X : Angle

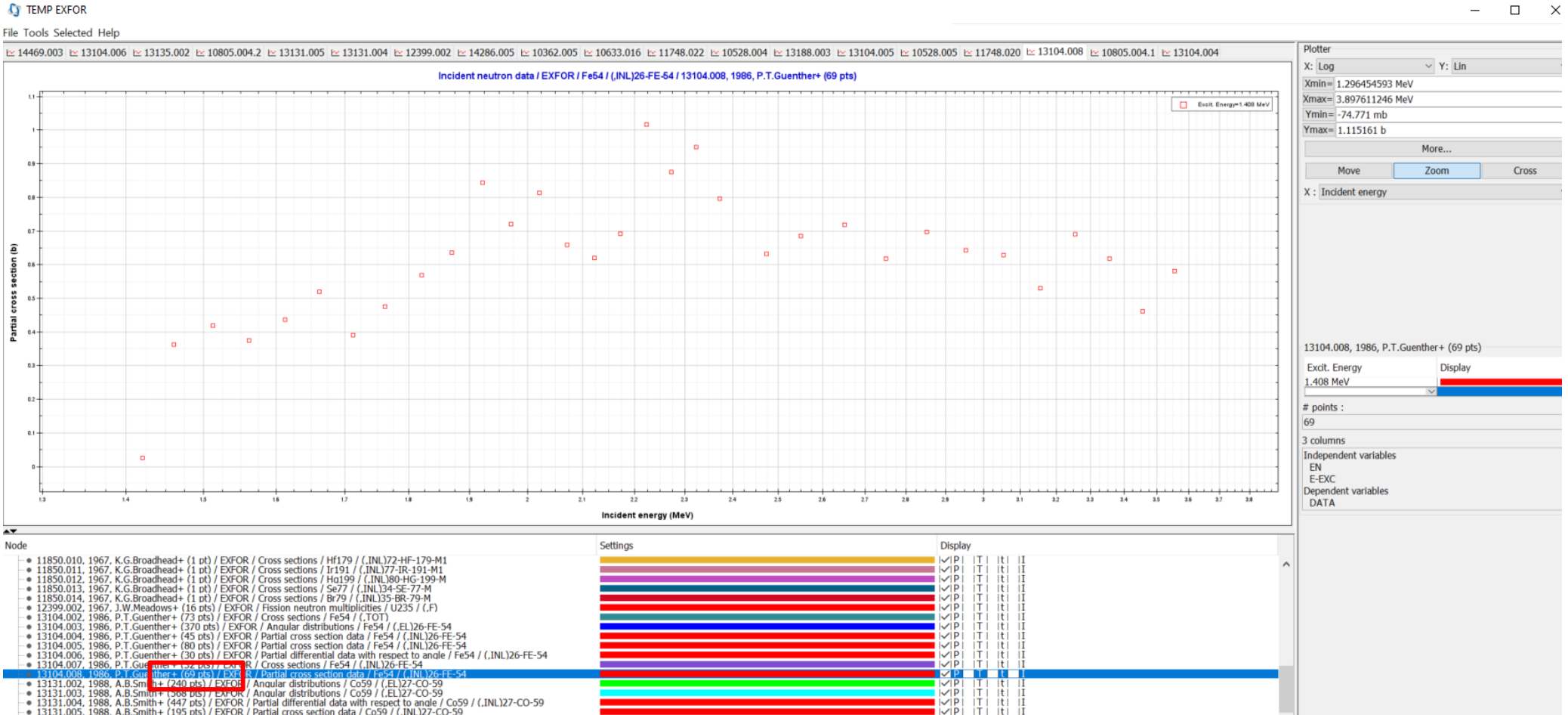
Node	Settings	Display
TEMP		
Radioactive data		
14286.004, 2010, D.L.Bleuel+ (29 pts) / EXFOR / Fission yields data / Cf252 / (F)ELEM/MAS		<input checked="" type="checkbox"/> P <input type="checkbox"/> T <input type="checkbox"/> t <input type="checkbox"/> I
14286.005, 2010, D.L.Bleuel+ (29 pts) / EXFOR / Fission yields data / Cf252 / (F)ELEM/MAS		<input checked="" type="checkbox"/> P <input type="checkbox"/> T <input type="checkbox"/> t <input type="checkbox"/> I
Incident neutron data		
10037.067, 1971, P.Boschung+ (20 pts) / EXFOR / Partial differential data with respect to an		<input checked="" type="checkbox"/> P <input type="checkbox"/> T <input type="checkbox"/> t <input type="checkbox"/> I
10145.022, 1970, W.D.Lu+ (1 pt) / EXFOR / Cross sections / Ru96 / (X)43-TC-95-M		<input checked="" type="checkbox"/> P <input type="checkbox"/> T <input type="checkbox"/> t <input type="checkbox"/> I
10145.023, 1970, W.D.Lu+ (1 pt) / EXFOR / Cross sections / Ru96 / (X)43-TC-95-G		<input checked="" type="checkbox"/> P <input type="checkbox"/> T <input type="checkbox"/> t <input type="checkbox"/> I
10214.026, 1970, J.K.Temperlev+ (1 pt) / EXFOR / Cross sections		
Ru101 / (P)43-TC-101		<input checked="" type="checkbox"/> P <input type="checkbox"/> T <input type="checkbox"/> t <input type="checkbox"/> I
Ru102 / (X)43-TC-101		<input checked="" type="checkbox"/> P <input type="checkbox"/> T <input type="checkbox"/> t <input type="checkbox"/> I
10214.028, 1970, J.K.Temperlev+ (1 pt) / EXFOR / Cross sections		
Pd105 / (P)45-RH-105		<input checked="" type="checkbox"/> P <input type="checkbox"/> T <input type="checkbox"/> t <input type="checkbox"/> I
Pd106 / (X)45-RH-105		<input checked="" type="checkbox"/> P <input type="checkbox"/> T <input type="checkbox"/> t <input type="checkbox"/> I
10325.004, 1973, A.B.Smith+ (481 pts) / EXFOR / Partial differential data with respect to an		<input checked="" type="checkbox"/> P <input type="checkbox"/> T <input type="checkbox"/> t <input type="checkbox"/> I
10362.004, 1973, S.A.Elbakr+ (6 pts) / EXFOR / Partial cross section data / Sm154 / (JNL)6		<input checked="" type="checkbox"/> P <input type="checkbox"/> T <input type="checkbox"/> t <input type="checkbox"/> I
10362.005, 1973, S.A.Elbakr+ (5 pts) / EXFOR / Partial cross section data / Sm154 / (JNL)6		<input checked="" type="checkbox"/> P <input type="checkbox"/> T <input type="checkbox"/> t <input type="checkbox"/> I
10362.013, 1973, S.A.Elbakr+ (4 pts) / EXFOR / Partial cross section data / Sm154 / (JNL)6		<input checked="" type="checkbox"/> P <input type="checkbox"/> T <input type="checkbox"/> t <input type="checkbox"/> I
10366.004, 1976, M.D.Semon+ (20800 pts) / EXFOR / Cross sections / Np237 / (SCT)93-NF		<input checked="" type="checkbox"/> P <input type="checkbox"/> T <input type="checkbox"/> t <input type="checkbox"/> I
10528.004, 1975, C.Laqrance+ (21 pts) / EXFOR / Partial differential data with respect to an		<input checked="" type="checkbox"/> P <input type="checkbox"/> T <input type="checkbox"/> t <input type="checkbox"/> I



“Ctrl + A”, then “P” selects all the items and plots them

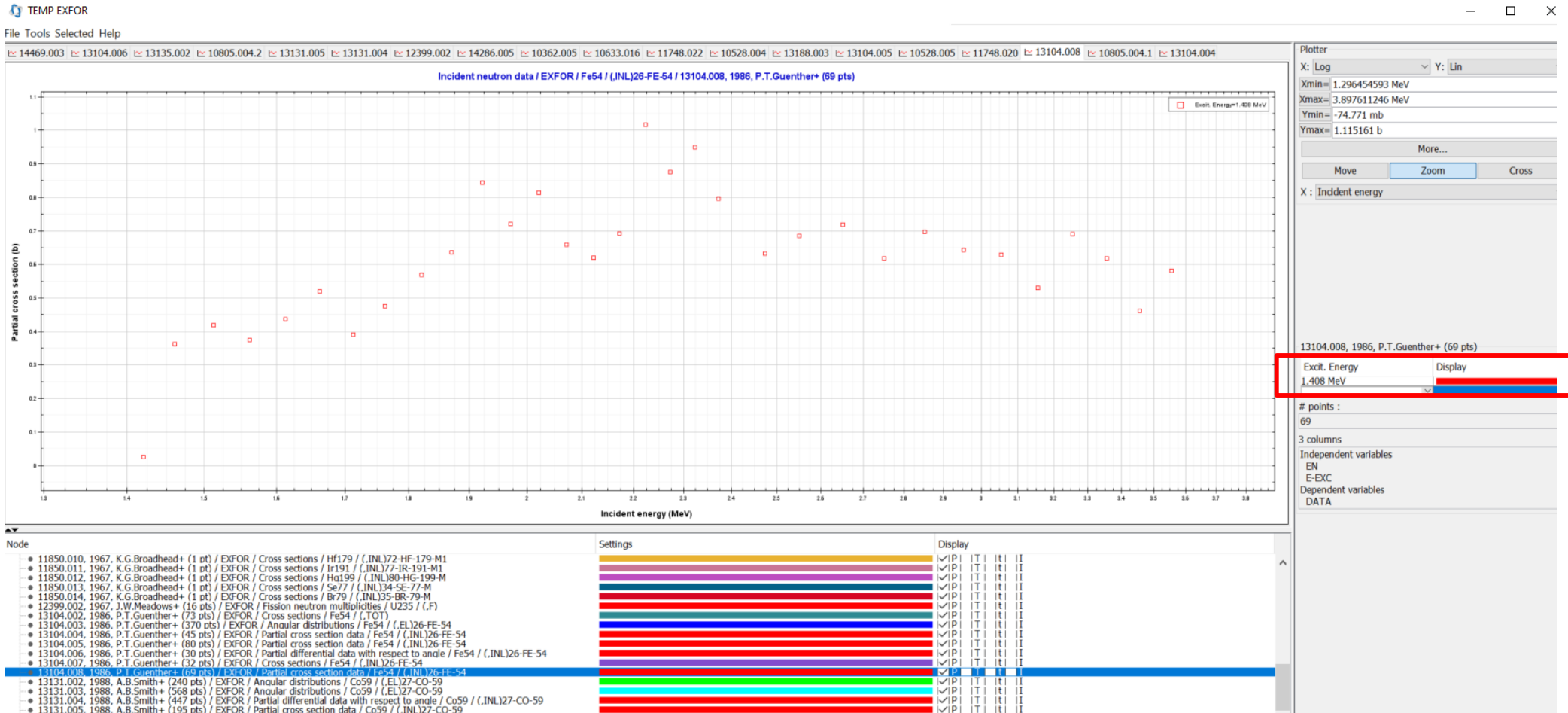


## Sometimes, not all the data is plotted at once



Of the 69 pts, only 32 are shown

## You can plot the remaining data by clicking on the other energies

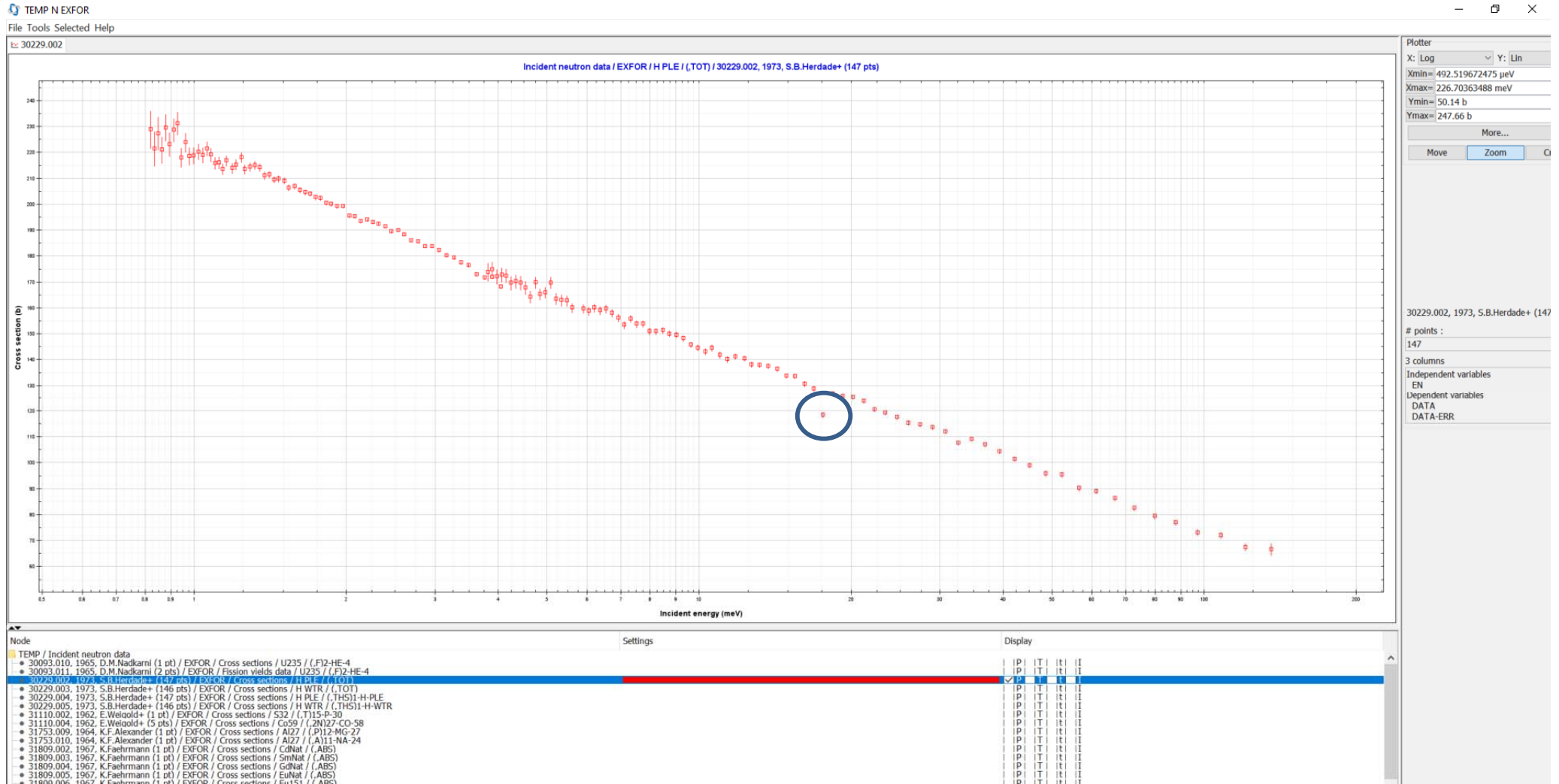


1.408 MeV, 2.538 MeV, 2.561 MeV, 2.950 MeV, 2.959 MeV, 3.166 MeV

Once all the data points of the subentry are plotted, you can see if the data makes sense

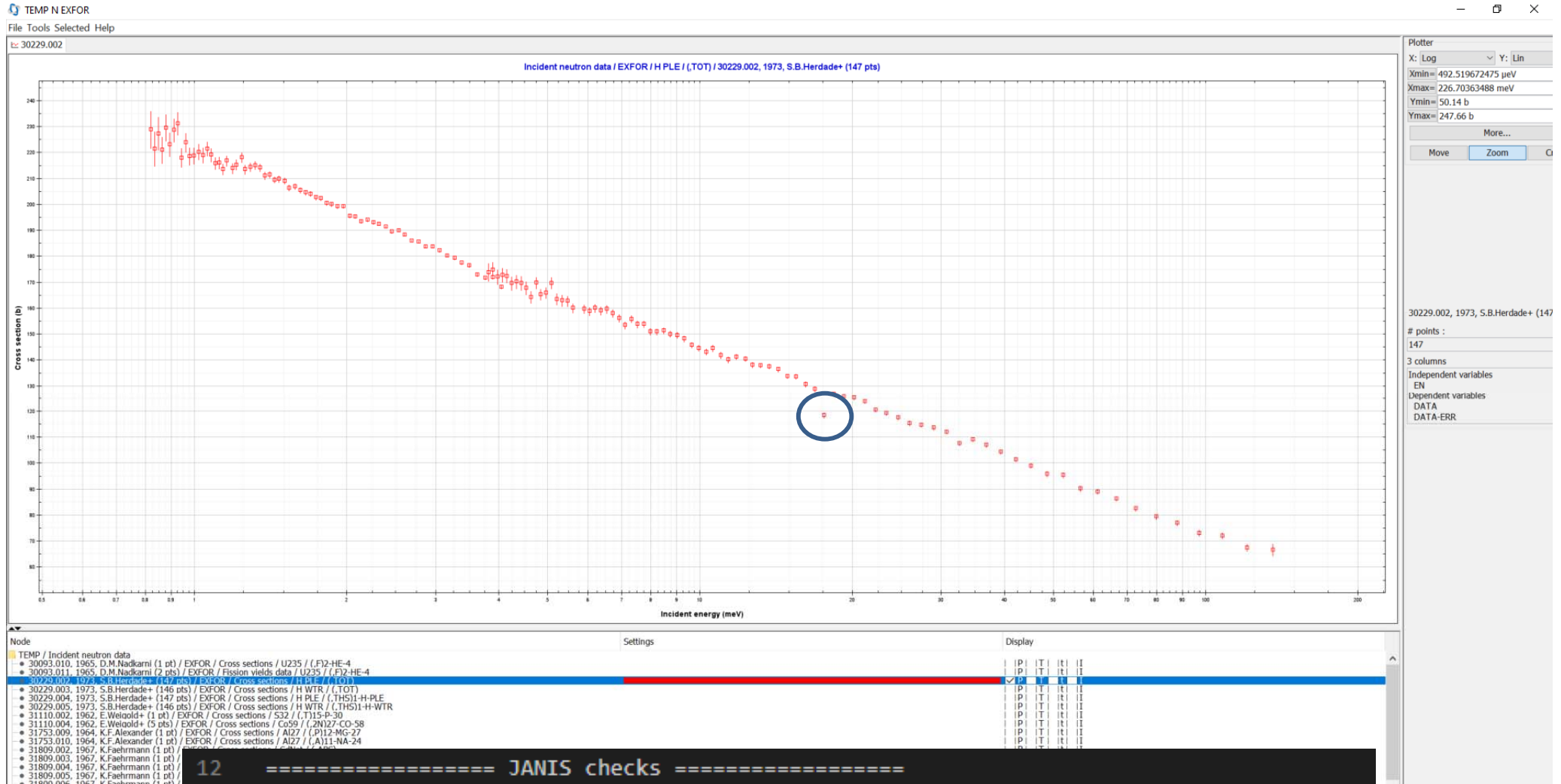


## Prelim.3204, Entry 30229, Subentry 002

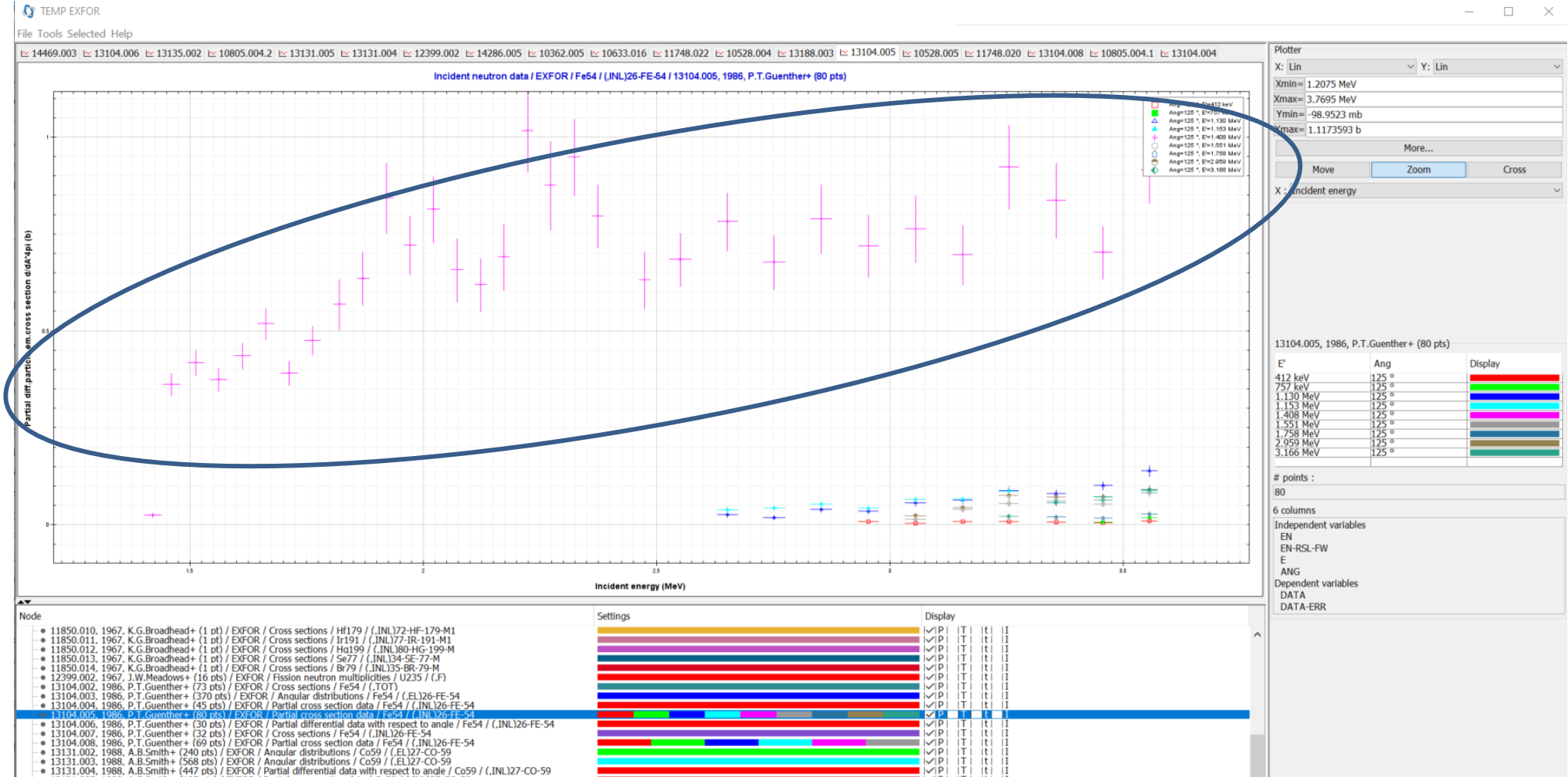


Sometimes, detecting outliers is fast and straightforward

## Prelim.3204, Entry 30229, Subentry 002

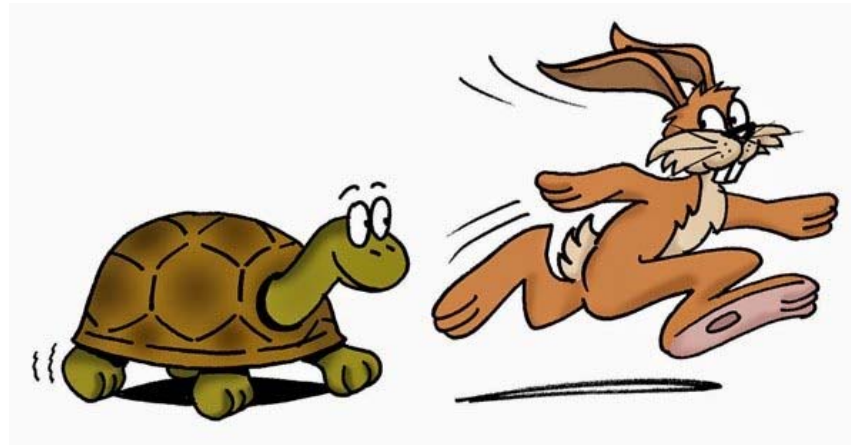


## Prelim.1500, Entry 13104, Subentry 005



Sometimes, it takes longer to plot all the data

The time required to review a preliminary tape can go from 5 minutes to hours depending on the file, to which we need to add Manuel's bibliography checks (we don't work simultaneously)

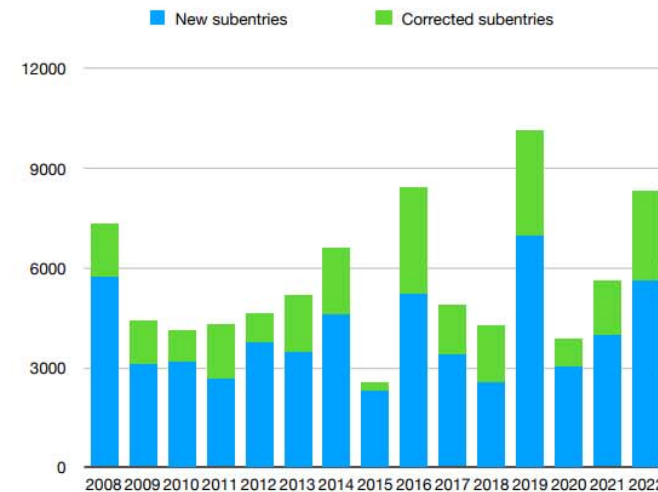
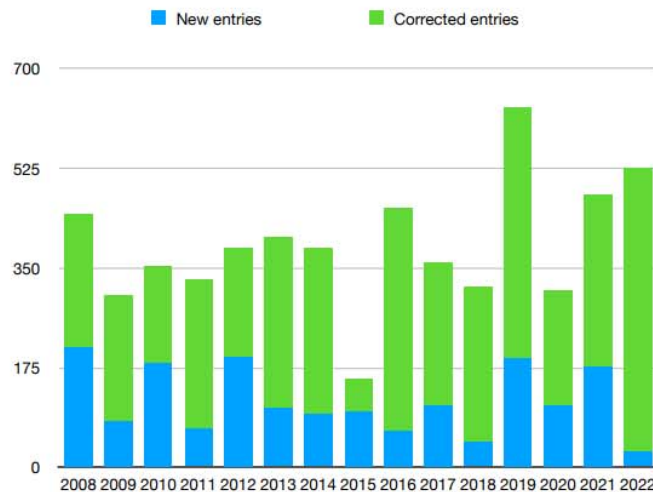


The DB responsibility is to review, with such level of detail, tapes from area 0 and area 2 (**19** in 2021 and **14** in 2022)



Tabella 1

Year	Entries	New entries	Corrected entries	Subentries	New subentries	Corrected subentries
2008	446	211	235	7350	5723	1627
2009	302	83	219	4432	3090	1342
2010	355	185	170	4135	3213	922
2011	332	67	265	4293	2680	1613
2012	384	196	188	4674	3799	875
2013	404	104	300	5187	3485	1702
2014	386	93	293	6617	4597	2020
2015	155	98	57	2560	2339	221
2016	455	66	389	8451	5223	3228
2017	360	111	249	4897	3397	1500
2018	316	45	271	4260	2566	1694
2019	632	192	440	10140	7004	3136
2020	310	110	200	3889	3029	860
2021	479	178	301	5635	3994	1641
2022	526	27	499	8327	5630	2697





In addition to that, since I started taking care of EXFOR at the DB, I reviewed, on average, **78 preliminary tapes per year!**



1. The checks I perform are pretty straightforward and can be done by the reviewer of each specific area
2. I can help you learning the NEA review process
3. I will keep reviewing files from area 0 and area 2 (**detailed review**)
4. I will review files from other centers according to the priorities I have (**faster review**)

**BUT**

5. If I do not send my feedbacks on time, feel free to publish the files as trans



