

Light EXFOR and NSR Web Editors: concept and status of development

V.Zerkin, IAEA-NDS, 02-June-2016

The project “Light EXFOR Web Editor” started as research project in 2014. The idea of the project is to extend Web presentation of an EXFOR files as interactive tree (X4±) by editing features. The Editor is functioning on the server side requiring only a Web browser on the user’s side. Although it is a Web-Application; it could also be used without Internet. The concept provides platform independent solution and allows re-using existing software from EXFOR Web retrieval system. This project was supported by [1] as “Pilot” project, possibly as an alternative of existing EXFOR Editors.

The project “Light ENSDF Web Editor” started in 2015. It was supported as one of the options of ENSDF editors [2]. The project has the same concept and shares number of codes. ENSDF file is presented as hierarchical document - interactive tree (graph) with possibility to open/collapse branches and with commands associated with the nodes. User can remove/add/edit nodes, call checking and utility codes, do other useful operations. The Editor is called from MyEnsdf Web tool for ENSDF evaluators.

Both systems are using the common layout, similar editing style implemented via pop-up windows, sequence of actions, and Help-input system common with Help system of EXFOR web retrieval system (see Appendix-1 illustrating the process of editing of INSTITUTE code in EXFOR and Appendix-2 illustrating the data editing of Gamma Record in ENSDF file). Both projects are far from the end, but basic infrastructure is mostly implemented. ENSDF editor is now under more intensive development – test version is expected in this year, then it will be further developed on the basis of users’ needs in cooperation with ENSDF experts.

References:

1. Workshop on The Experimental Nuclear Reaction Data Database, IAEA Headquarters, Vienna, Austria, 6-10 October 2014, INDC(NDS)-0672, p32, <https://www-nds.iaea.org/publications/indc/indc-nds-0672.pdf>
2. 2nd Technical Meeting, Improvement of Analysis Codes for Nuclear Structure and Decay Data Evaluations, Summary Report INDC(NDS)-0696, p.18, <https://www-nds.iaea.org/publications/indc/indc-nds-0696.pdf>

The screenshot displays the EXFOR-iTree application interface. The main window shows a hierarchical tree of EXFOR data fields. The 'Tools' menu is open, showing options like ZCHEX, ORDER, X4TOC4, X4Tool, and X4Upload. The 'INSTITUTE' field is selected, showing its value: '(3CPRAEP) #China Inst. of Atomic Energy, Beijing, China, People's Rep.'. A red arrow labeled '1' points to the 'INSTITUTE' field in the tree. Another red arrow labeled '2' points to the 'Free text' field in the 'Light EXFOR Editor' window. A third red arrow labeled '3' points to the 'X4/Servlet: Help Institute' window. A fourth red arrow labeled '4' points to the 'REACTION' field in the tree.

The 'Light EXFOR Editor' window shows the following fields:

- Pointer: 1
- Code[s]: 3CPRAEP * China Inst. of Atomic Energy, Beijing, China, People's Rep.
- Free text: This is free

The 'X4/Servlet: Help Institute' window shows a list of institutes:

EXFOR. Institute

Clear field

Add code to the field

- 1 [1CANALA](#) Univ. of Alberta, Edmonton, Alberta
- 2 [1CANBUO](#) Bishop University, Lennoxville, Quebec
- 3 [1CANCAN](#) Canada
- 4 [1CANCPN](#) A.E.C.L. Commercial Products, Ottawa, Ontario
- 5 [1CANCRC](#) A.E.C.L., Chalk River, Ontario
- 6 [1CANCRU](#) Carleton University, Ottawa, Ontario
- 7 [1CANGUE](#) Univ. of Guelph, Guelph, Ontario
- 8 [1CANKOU](#) Queen's University, Kingston, Ontario
- 9 [1CANLUO](#) Laval University, Sainte-Foy, Quebec
- 10 [1CANMCG](#) McGill University, Montreal, Quebec
- 11 [1CANMCM](#) McMaster University, Hamilton, Ontario
- 12 [1CANMGV](#) Sir George Williams Univ., Montreal, Quebec
- 13 [1CANMNA](#) Univ. of Manitoba, Cyclotron Lab., Winnipeg, Mani
- 14 [1CANMON](#) Univ. of Montreal, Montreal, Quebec
- 15 [1CANMPT](#) Ecole Polytechnique de Montreal, Quebec
- 16 [1CANMRC](#) National Research Council, Montreal Lab., Quebec
- 17 [1CANOTC](#) National Research Council, Ottawa, Ontario
- 18 [1CANOTU](#) Univ. of Ottawa, Ottawa, Ontario
- 19 [1CANPIN](#) A.E.C.L., Whiteshell Nuc.Res.Establ., Pinawa, Mani
- 20 [1CANOU](#) Queen's Univ., Kingston, Ontario
- 21 [1CANSAS](#) Univ. of Saskatchewan, Saskatoon, Saskatchewan
- 22 [1CANSFU](#) Simon Fraser University, Burnaby, B.C.
- 23 [1CANTHF](#) Tri University Meson Facility, Vancouver, B.C.
- 24 [1CANTOR](#) Univ. of Toronto, Toronto, Ontario
- 25 [1CANUBC](#) Univ. of British Columbia, Vancouver, B.C.
- 26 [1CANUWO](#) Univ. of Western Ontario, London, Ontario
- 27 [1USAABD](#) U.S. Army Aberdeen Res.+ Develop.Center, Aberdeen
- 28 [1USAACC](#) Exxon Nuclear Idaho Co., ID
- 29 [1USADEC](#) U.S. Atomic Energy Commission, Washington, DC
- 30 [1USAFT](#) Air Force Inst. Technology, Wright-Patterson AFB,
- 31 [1USAAPW](#) Air Force Weapons Lab., Kirkland AFB, Albuquerque

The 'Data' table at the bottom of the EXFOR-iTree window is as follows:

EN	EN-ERR	DAT
MEV	MEV	MB
11.4	0.8	
12.2	0.2	
12.8	0.3	
13.7	0.2	
14.3	0.3	
14.6	0.3	
14.8	0.3	
16.1	0.5	
17.2	0.5	
18.0	0.4	

Page generated: 2016/06/02, 18:24:51 by X4sShowX4pp
Project: "Multi-platform EXFOR-CINDA-ENDF", V.Zerkin, IA

File Edit View Tools Help About

ENSDF file ENS4

MASS 184

Nuclide 184

Database 84HG EC DECAY1 # Lines:359 Records:54

Records 71/ HIST

Records C /1/ GComm nRecords=8

Records P /2/ Parent

Records N /2/ Norm

Records EN /2/ PNorm

Records G /3/ UnplacedRadiation-G nRecords=12

Records L /4/ Level nRecords=20

Level #1/20 "0.0 5+" Lines:2 Comments:1

Level #2/20 "68.46 2+" Lines:2 Comments:1 Radiations:1

Level #3/20 "71.87 2+,3+" Radiations:1

Level #4/20 "86.50 (2,3)+" Radiations:1

Level #5/20 "129.13 (1,2)+" Radiations:4

Data Lines:1

Energy=129.13(±.08)keV Spin and parity:Jπ=(1,2)+

Comments:0

Radiations:4

EC #1/4 Lines:2

Gamma #2/4 "42.7" Lines:4 Comments:1

Edit record Edit data Remove record

Gamma #3/4 "57.3" Lines:5 Comments:1

Data Lines:3

Energy=57.3(±.07)keV

init.Level:L4:Energy=129.13(±.08)keV Jπ=(1,2)+ final.Level:L2:Energy=71.87(±.09)keV

Jπ=2+,3+ [E4-E3=57.26; E4-E2=57.26; E4-E1=57.26; E4-E0=57.26; E3-E2=-0.04±0.2σ]

71.83±0.21541

γ:57.3±0.12

Init:129.13±0.08

Final:71.87±0.09

70 71 72 73

128 129 130

Relative photon intensity:RI=4

Multipolarity of transition:M=

Mixing Ratio:MR≈1.2

Total conversion coeff:CC≈40.9

#LC AP 30.7

#MC AP 7.91

#NC+ AP 2.26

#NC AP 1.94

#OC AP 0.312

#PC AP 0.00181

Comments:1

Gamma #4/4 "60.6" Lines:5 Comments:1

Level #6/20 "146.50 4+" Lines:5 Comments:1 Radiations:2

Level #7/20 "228.40 3-" Lines:5 Comments:1 Radiations:1

Level #8/20 "242.87 (E3)+" Lines:5 Comments:1 Radiations:1

Level #9/20 "254.26 2-" Lines:7 Comments:1 Radiations:1

Level #10/20 "301.86 (1,-2,-3-)" Lines:7 Comments:1 Radiations:1

Level #11/20 "306.90 (1)+" Lines:7 Comments:1 Radiations:1

Level #12/20 "320.50 2+" Lines:7 Comments:1 Radiations:1

Level #13/20 "331.40 1+,2+" Lines:7 Comments:1 Radiations:1

Tree-path

Edit Gamma Line...

Initial Gamma Record (interpreted)

Initial Level: Energy=129.13(±.08)keV Spin and parity:Jπ=(1,2)+

Dataset: "184AU" Operation: "Edit data" "Gamma" Energy=57.3. (keV)

Standard One-Card Record Data

quantity/op.	value ± uncertainty
Energy (keV) E	57.3 2 DE
Relative photon intensity RI	4 2 DRI
Multipolarity of transition M	E2+M1
Mixing ratio, δ MR AP	1.2 DMR
Total conversion coeff CC AP	40.9 DCC
Relative total transition intensity TI	DTI
Comment Flag	
Coincidence C	
Uncertain placement in the level scheme Q	

Continuation Records

quantity/op.	value [± err.] [op2. value]	reference	initial-text
1) LC	AP 30.7		LC AP 30.7
2) MC	AP 7.91		MC AP 7.91
3) NC+	AP 2.26		NC+ AP 2.26
4) NC	AP 1.94		NC AP 1.94
5) OC	AP 0.312		OC AP 0.312
EC	AP 0.00181		PC AP 0.00181

Add data to continuation records: [+] [-]

[Save] ENSDF format: [↓] [↑] [Reset]

184AUS G 57.3 2 4 2E2+M1 1.2 AP 40.9 AP

184AUS G LC AP 30.7#MC AP 7.91#NC+ AP 2.26

184AUS G NC AP 1.94#OC AP 0.312#PC AP 0.00181

ENSDF Web Editor. HELP/INPUT
 Editing Gamma record.
 Continuation records: quantity #3

Select quantity

1) BE1,BE2,...	Reduced electric transition probability (downward) given in units of $e^2 \times (\text{barns})^L$, where $L=1,2,\dots$
2) BE1W,BE2W,...	Reduced electric transition probability (downward) given in single-particle (Weisskopf) units
3) BM1,BM2,...	Reduced magnetic transition probability (downward) given in units of $\mu_N^2 \times (\text{barns})^{L-1}$, where $L=1,2,\dots$
4) BM1W,BM2W,...	Reduced magnetic transition probability (downward) given in single-particle (Weisskopf) units
5) CE	Total conversion electron intensity
6) CEK,CEL,...	Conversion-electron (ce) intensity for K, L, ...
7) CEL1,...	L_1, \dots conversion
8) ECC	Measured total conversion coefficient