NEA Data Bank Progress Report 2021-2022

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NEA
Nuclear Energy Agency

OECD

Outline

- **NEA Data Bank**

- **EXFOR**

- **NEA GitLab page**

- **JEFF Meetings**

- **JEFF Library**

- **Other activities**

Nuclear Energy Agency

NEA Data Bank

- **Michael Fleming** is the new Head of the Data Bank

- The Data Bank staff works in two main areas: Computer Programme Services (CPS), and Nuclear Data Services (NDS). The newly hired, **Andrew Holcomb**, joined the Data Bank one week ago

- Since September 2021, NEA staff resumed in-person work while keeping the flexibility of occasional teleworking

EXFOR

- Update and maintain the EXFOR database for data coming from DB countries
  - Neutron-induced data (Area 2)
  - Gamma- and charged-particle induced data (Area O)

- RO: **Daniela Foligno** with two IT support:
  - **Nicholas Soppera**
  - **Manuel Bossant**

- Revise old entries, compile new articles

- Review the transmissions coming from other centres

- Propose MEMOS allowing the EXFOR format to include new quantities

- Priority is new measurements and those indicated by requests

NEA DB transmissions

- NEA DB in-house statistics

Table 1: Summary of the NEA DB transmissions to EXFOR over the years 2008-present. Data marked with a (*) includes transmissions listed as preliminary as of the drafting of this report.

| Year	Transmissions	Nb. of Trans.	Entries	Subentries
2022	o084-o089*, 2303-2311*	15*	436*	2833*
2021	o079-o083, 2291-2302	17	430	2549
2020	o073-o078, 2283-2290	14	310	1430
2019	o065-o072, 2268-2282	23	632	4675
2018	o062-o064, 2260-2267	11	316	2099
2017	o059-o061, 2252-2259	11	360	2420
2016	o055-o058, 2243-2251	13	455	3944
2015	o053-o054, 2241-2242	4	155	1264
2014	o051-o052, 2236-2240	7	386	3246
2013	o050, 2231-2235	6	404	2558
2012	o046-o049, 2227-2230	8	384	2218
2011	o040-o045, 2222-2226	11	565	3295
2010	o040-o042, 2214-2222	12	355	2027
2009	o038-o039, 2204-2213	12	303	2222
2008	o034-o037, 2190-2203	18	450	3397

NEA DB transmissions

Table 2: Detailed summary of the NEA DB transmissions to EXFOR since 2021, including both new and updated (sub)entries. Tranmissions listed as preliminary as of the drafting of this report are marked with a (*).

Year	Transmission	Entries	Subentries		Year	Transmission	Entries	Subentries
2022	2311*	19	213		2021	2302	25	159
	2310*	59	195			2301	24	107
	2309*	60	216			2300	11	55
	2308*	8	29			2299	20	95
	2307	29	112			2298	10	36
	2306	58	296			2297	12	93
	2305	25	360			2296	62	311
	2304	14	142			2295	25	145
	2303	15	132			2294	35	294
	2293	10	61			2293	10	61
	2292	8	54			2292	8	54
	2291	47	286			2291	47	286
	o089*	18	108			o083	16	57
	o088*	32	181			o082	4	24
	o087*	41	437			o081	61	505
	o086*	40	344			o080	10	43
	o085	3	14			o079	50	222
	o084	15	53					

NEA DB transmissions

- About **400 entries per year**
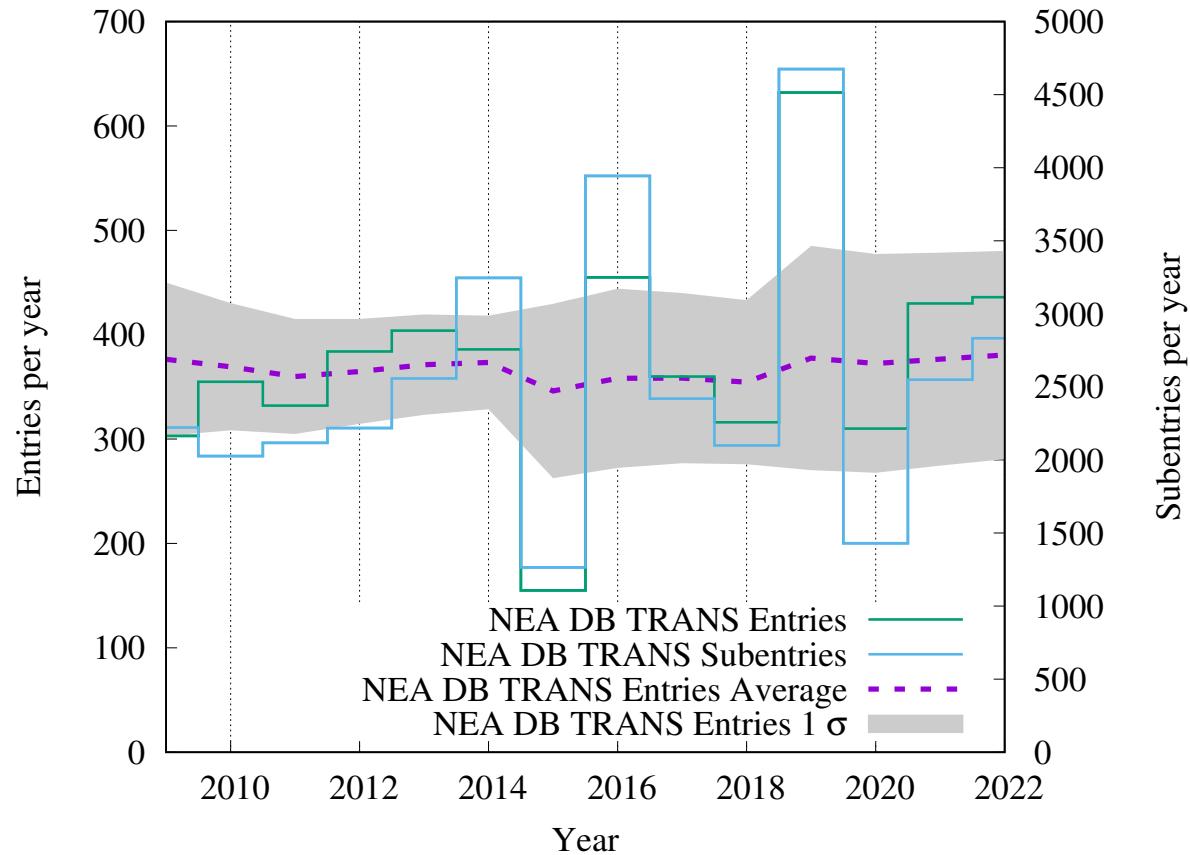
CP-N Memos

- **3 MEMOS** proposed since the last meeting

Memo CP-N

OECD NEA Data Bank (NEA-DB)

disc:for discussion; m:to be in manual; M:added into manual; l:to be in error list; L:added into error list; a:to be in article list; A:added into article list; wd: withdrawn

No.	Type	kb	Date	Subject	Dict.	Remark
0171	pdf	57	2022-01-24	Dict. 24 (Data Headings): KT-DUM-NRM		-
0170	pdf	58	2021-12-17	Dict. 236 (Quantities): SEC/PR,NU and PRE,DA,FF,RSD		-
0169	pdf	58	2021-05-31	Dict. 207 (Books): NEUT.D.BKL	9124	-
0168	pdf	58	2021-04-20	Dict. 236 (Quantities): TRS,POL/DA/DA/DE,*/*/*+*,ANA	9124	-
0167	pdf	59	2021-03-08	Dict. 236 (Quantities): ISP/SEC,KE and ISP/PR/FRG,NU	9124	-
0166	pdf	57	2021-02-01	Dict. 24 (Data headings): TKE-ERR-D	9124	-
0165	pdf	58	2020-01-14	Dict. 236: DI,SIG,,SFC	9124	-
0164	pdf	58	2020-01-11	Dict. 236 (Quantities): PRE/PR/FRG,NU	9124	-
0163	pdf	60	2020-01-11	Dict. 236 (Quantities): PRV,AKE,*F; PRV,AKE,LF+HF; PRV,FY/DE,LF+HF;PRV,KE	9124	-
0162rev	pdf	64	2021-01-08	Dictionary 236(Quantities) PAR,DA,*,RAB	9124	-
0162	pdf	52	2020-12-14	(Superseded by Memo CP-N/0162(Rev.))	-	-
0161	pdf	53	2020-12-09	Dict. 5: JPS/CP, Dict. 24: KT-DUM-ERR, and Dict. 236: ,ALF,,TTA	9124	-
0160	pdf	112	2020-10-28	Dictionary 236 (Quantities): PR,DA/DE,N - obsolete	9123	-
0159	pdf	69	2020-08-24	NEANDC(OR)-140 references	-	L
0158	pdf	54	2020-07-31	Dictionary 236 (Quantities): (SEC),ZP	9123	-
0157	pdf	54	2020-07-30	Dictionary 236 (Quantities): ISP/IND,FY	9123	-
0156	pdf	345	2020-06-23	New WPEC Subgroup 50	-	-
0155	pdf	54	2020-05-26	Dictionary 236 (Quantities): E-EXC-RES	9122	-
0154	pdf	54	2020-04-15	Dictionary 236 (Quantities): CHG,SIG	wd	-

NEA DB GitLab page

- Validated GitLab page in support of EXFOR activities

Nb of ongoing prelims

Step in the review process

Prelim name

Person responsible of the step

Deadline

NEA DB GitLab page

- Easier communication, version control
- NEA DB can support cross-NRDC work on GitLab for EXFOR, if desirable

JEFF Meetings

1. Experiments
2. Fission Observables
3. Decay Data
4. Thermal Scattering Law
5. Processing
6. Depletion
7. Machine Learning
8. Evaluation Methods
9. Theory
10. Benchmarking
11. ND Uncertainties
12. Fusion
13. JEFF-4 Status

Since November 2021:

- Speakers identified by the Chairs + voluntary contributions
- A **dozen** technical sessions
- Presentations available at the end of the session
- Project deliverables and plan of action within records

Statistics

* Excluding the Co-ordination Group

Date	Type	Number of sessions*	Number of presentations	Number of registrants
April 2020	Virtual	3	11	21
November 2020	Virtual	3	24	78
April 2021	Virtual	3	19	89
November 2021	**Hybrid**	**11 + JEFF-4 Status**	**60**	**137**
April 2022	**Hybrid**	**12 + JEFF-4 Status**	**66**	**116**

Dedicated Sessions

Dedicated sessions = Informal **Working Groups**

- The Chairs are responsible for the advancement of the project and for the definition of the deliverables
- Technical meetings are organized independently of the ND Week

DONE

1. Random files for uncertainty   23 Feb 2022
2. Special purpose libraries (e.g. activation)   8 Mar 2022
3. 'Big 3' and JEFF-4 roadmaping   22 Mar 2022
4. Processing pipeline   31 May 2022

FUTURE **PLANNED**

5. Fission yields and covariances   16 Jun 2022
6. Validation framework   22 Jun 2022
7. Comparison of REFIT-SAMMY-CONRAD   TBD
8. General-purpose Covariances   TBD
9. Dedicated iron evaluations   TBD
10. Hackaton   TBD

Co-ordination Group

As the technical discussions occur during the respective sessions, The CG can focus on the **strategic development of the project**

Actions and decisions are clearly stated in the **summary record**:

JEFF Library

- JEFF-4T0 was released in November 2020

1. O-16
2. Tc-99
3. Rh-103
4. Ag-107,109
5. Eu-151,153-155
6. Gd-155-158,160
7. Lu-173,175,176
8. W-180,182-184,186
9. U-235
10. Pu-238-240,242
11. Am-241

JEFF Library

- JEFF-4T1 was released in March 2021

1. O-16
2. Fe-56
3. Tc-99
4. Rh-103
5. Ag-107,109
6. Xe-135
7. Cs-133
8. Pm-148m
9. Eu-151,153-155
10. Lu-173,175,176

11. Ta-181
12. U-236
13. Np-237
14. Pu-240,242
15. Am-243
16. TSL-HinH2O
17. TSL-UO2
18. TSL-PuO2

JEFF Library

- JEFF-4T2 is foreseen for April 2023

  1. Na-23
  2. I-127,129
  3. U-233,235,238
  4. Np-237
  5. Pu-238,239
  6. FY U-235th
  7. FY Pu-239th ?
  8. Random Files

- JEFF-4.0 is foreseen for 2024

JANIS-4.1 (September 2020)

- First release after **7 years**

- New functionalities:
  - drag & drop files over JANIS window
  - display covariances (MF31, MF40)
  - visualization improvements
  - …

- Improved functionalities:
  - shorter paths to EXFOR data
  - plot zoom with mouse wheel
  - …

- Plan is to implement new interface for JANIS-reading tools and process data within GitLab for JANIS
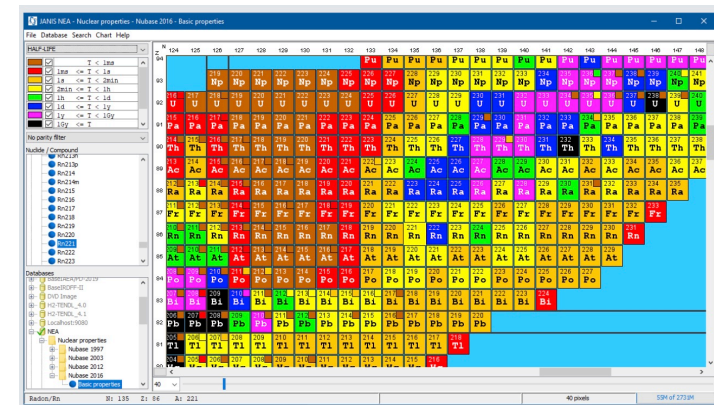
WPEC (NSC)
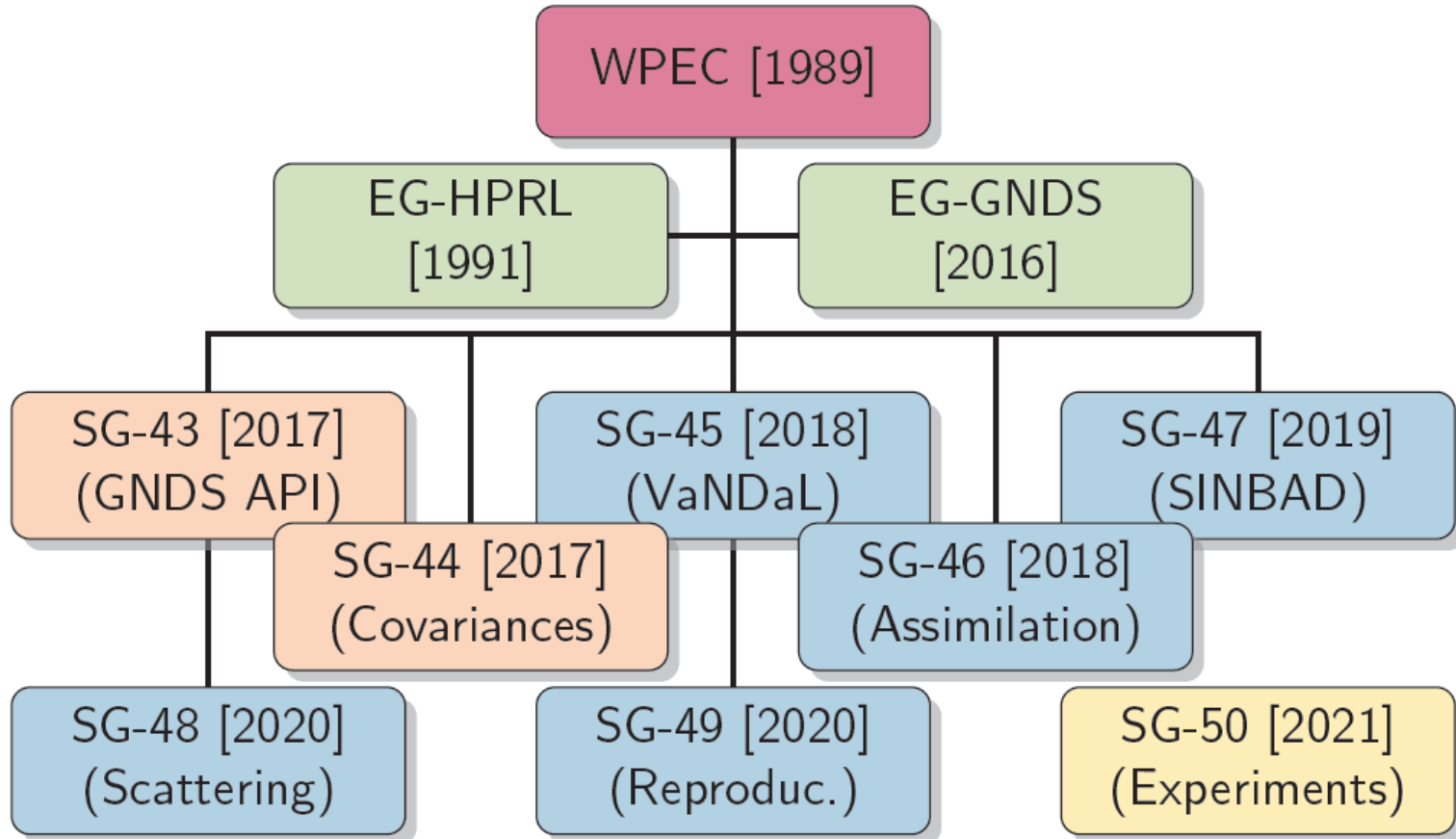
WPEC (NSC)

EG-GNDS: Generalized Nuclear Data Structure

Obj: To create and maintain a modern international standard for the storage of nuclear data

C [1989]

EG-GNDS [2016]

SG48: Thermal Scattering

Obj: To advance the state-of-the-art in thermal scattering evaluated data, processing and validation

SG-48 [2020] (Scattering)

SG-49 (Repr...)

WPEC (NSC)

SG49: Reproducibility

Obj: Enable reproducibility in evaluation by documenting the processes and developing tools to store knowledge

SG50: Experimental Database

Obj: To develop derived databases from EXFOR that incorporate unofficial corrections and evaluator judgement
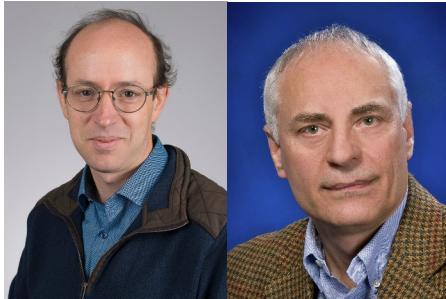
SG-48 [2020]
(Scattering)

SG-49 [2020]
(Reproduc.)

SG-50 [2021]
(Experiments)

Thank you for your attention