

Data Management in CoNDERC

Ludmila MARIAN, Scientific Data Manager, Nuclear Data Section, IAEA

10.10.2022 - TM on CoNDERC

Compilation of Nuclear Data Experiments for Radiation Characterisation (CoNDERC)

The purpose of the CoNDERC project is to transfer into technology the experimental integral radiation information that can be used as part of the Validation and Verification processes of nuclear model and code systems, and to provide various schema to perform the V&V. Under the auspices of the IAEA Nuclear Data Section, individuals and institutions are assembling several of databases and code infrastructures based on their own V&V activities mainly associated with inventory, activation-transmutation, source term and radiation shielding R&D.

Decay Heat

Fusion Events

Fission Events

V&V Protocol

Spectra

Photonuclear

Pencil Beam

NG-24M RR

Effective RR

Shielding

Aspis

CIAE

FNS

NIST

Oktavian

Pulsed

Replica

Tiara

Beyond Keff

MCNP

TRIPOLI

OpenMC

Experiments

Thermal Resonance

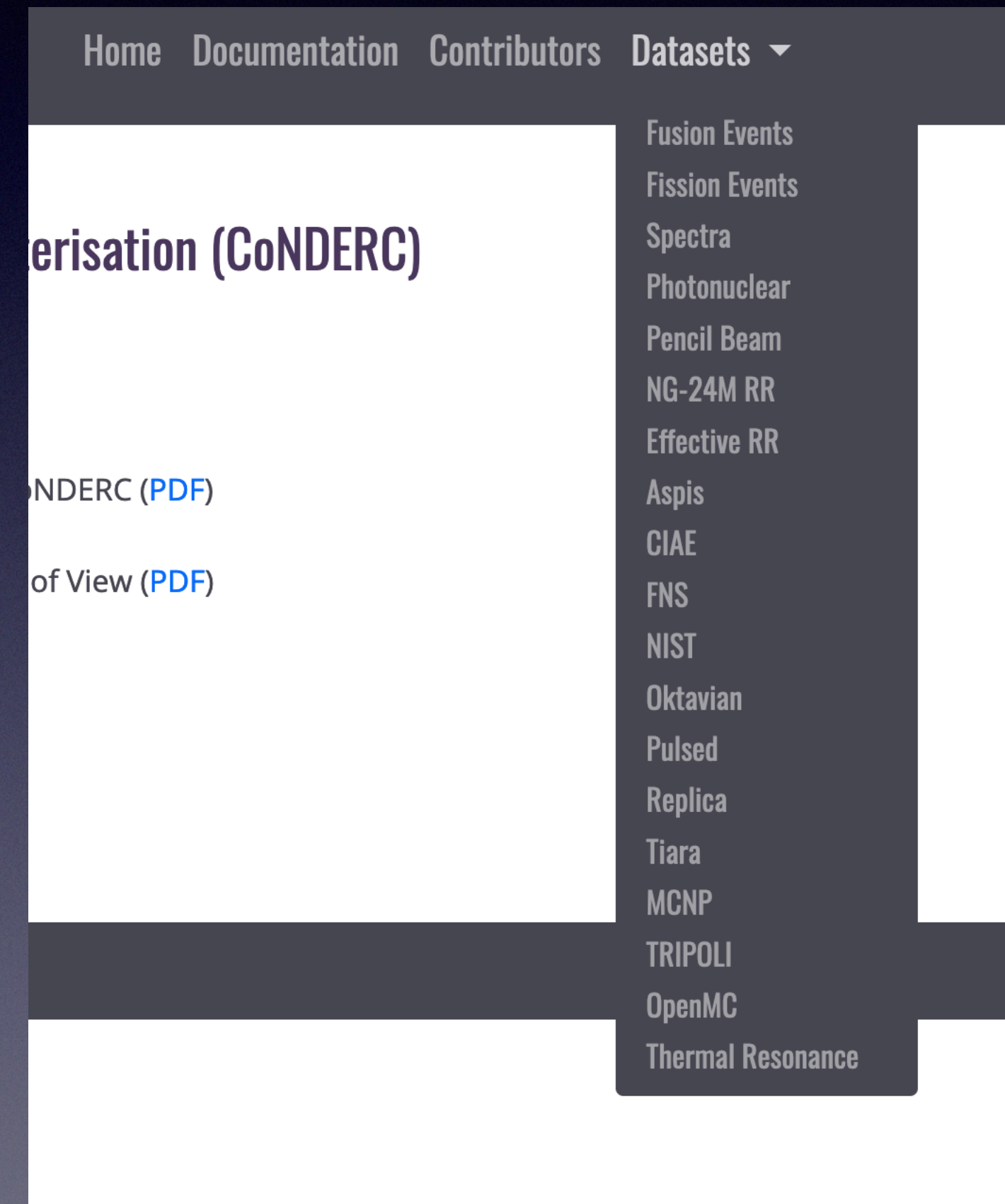
Baghdad Atlas [↗](#)

Current CoNDERC Website

- Written in Python (Django);
- Using Numpy and Plotly;
- Source code on GitHub (private for now);

Data Dissemination

- Currently: **19 datasets** (2 work in progress);
- Website built as a framework -> low effort to **add new datasets**;




Data Dissemination

Tripoli

The primary purpose of the International Criticality Safety Benchmark Evaluation Project ([ICSBEP](#)), the International Reactor Physics Experiment Evaluation Project ([IRPhEP](#)) and the Research Reactor Benchmarking Database: Facility Specification and Experimental Data [Technical Reports Series No. 480](#) is to compile critical and subcritical benchmark experiment data into a standardised format that allows criticality safety analysts to robustly use the experimental data to validate simulation tools and cross-section libraries. However, in addition to criticality some benchmark evaluations also contain spectral indices and measured reaction rate data; another class of experimental data that can provide additional qualification of the underlying nuclear data and simulation tools. The aim of this work is to highlight the availability of such information and to illustrate to the technical community the need for a significantly greater number of active neutron histories when running Monte Carlo jobs to compare calculation and experiment.

Documentation

- R.E. Macfarlane et al. "A Code Comparison Study for the Bigten Critical Assembly" ([resource](#))
- J.-Ch. Sublet "Critical Assemblies Benchmarking With the Monte Carlo Code TRIPOLI" ([resource](#))
- A. C. (Skip) Kahler (2019) [ICSBEP, IRPhEP beyond Keff](#), (2020) [ICSBEP, IRPhEP beyond Keff](#), (2020-1) [ICSBEP, IRPhEP, TRS 480 beyond Keff](#), (2021) [Reaction rates & ASPIS](#)
- C. Jouanne (2019) [ICSBEP's beyond Keff](#), (2020) [ICSBEP's beyond Keff](#), (2021) [ICSBEP's beyond Keff](#)
- P. Romano (2022) [ICSBEP's beyond Keff](#)
- D. Mancusi [Python tool to convert MCNP geometries into TRIPOLI-4 geometries](#)

Download all data 
[244.2 MB, 522 files]

or

[Access individual data sets](#)

Description

Documentation

Data access

data.zip
(data + doc)

Individual
access

Individual Data Access (1) - Fusion

Access individual material data sets

H																		He
Li	Be											B	C	N	O	F		Ne
Na	Mg											Al	Si	P	S	Cl		Ar
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br		Kr
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I		Xe
Cs	Ba		Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At		Rn
Fr	Ra		Rf	Db	Sg	Bh	Hs	Mt	Ds	Rg	Cn	Nh	Fl	Mc	Lv	Ts		Og
		La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu		
		Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr		

SS304 SS316 In600 NiCr

Individual Data Access (1)

Fusion

- Dynamic plots built based on the available data files;
- Direct download for each data file or plot;
- *Download all files (.zip)* for each element (dynamically built);
- Timestamped data;

Dataset of FNS Fusion Decay-Heat Benchmark

Iron (Fe) $Z = 26$
Form: Metallic Foil

Year 2000, 5min Irradiation | Year 1996, 7hour Irradiation | Year 1996, 5min Irradiation

FNS-2000 5min Irradiation - Fe - TENDL-2017

FNS-2000 5min Irradiation - Fe - TENDL-2017

FNS-2000 5min Irradiation - Fe - TENDL-2017

FNS-00 5 Min. Irradiation - Fe

Files

Experimental data

- 1996exp_5min.exp
- 1996exp_5min_fluxes
- 1996exp_7hour.exp
- 1996exp_7hour_fluxes
- 2000exp_5min.exp
- 2000exp_5min_fluxes

FISPACT I/O

- TENDL-2017_1996exp_5min.gra
- TENDL-2017_1996exp_5min.i
- TENDL-2017_1996exp_5min.nuclides
- TENDL-2017_1996exp_5min.out
- TENDL-2017_1996exp_5min_files
- TENDL-2017_1996exp_7hour.gra
- TENDL-2017_1996exp_7hour.i
- TENDL-2017_1996exp_7hour.nuclides
- TENDL-2017_1996exp_7hour.out
- TENDL-2017_1996exp_7hour_files
- TENDL-2017_2000exp_5min.gra
- TENDL-2017_2000exp_5min.i
- TENDL-2017_2000exp_5min.nuclides
- TENDL-2017_2000exp_5min.out
- TENDL-2017_2000exp_5min_files

FISPACT Plots

- TENDL-2017_1996exp_7hour.pdf
- TENDL-2017_1996exp_7hour_fractions.pdf
- TENDL-2017_2000exp_5min.pdf
- TENDL-2017_2000exp_5min_fractions.pdf
- total_1996exp_5min.pdf
- total_1996exp_7hour.pdf
- total_2000exp_5min.pdf

Last updated: 2020-11-23 12:44:08
*The files highlighted are used to generate the plots on this page.

Fe.zip

Individual Data Access (2) - Spectra

Show entries Search:

Order	Name	Group	Particle	arb_flux.txt	figure.png	Description
1	acrr-cdpoly-640	640	n	ACRR-CdPoly	ACRR-CdPoly	SNL MCNP
2	acrr-ff-cc-32cl-640	640	n	ACRR-FF-CC-32CI	ACRR-FF-CC-32CI	SNL MCNP
3	acrr-lb44-640	640	n	ACRR-LB44	ACRR-LB44	SNL MCNP
4	acrr-plg-640	640	n	ACRR-PLG	ACRR-PLG	SNL MCNP
5	fbr-6in-leakage-640	640	n	FBR-6in-leakage	FBR-6in-leakage	SNL MCNP
6	frec-ii-ff-640	640	n	FREC-II-FF	FREC-II-FF	SNL MCNP
7	spr-iii-cc-640	640	n	SPR-III-CC	SPR-III-CC	SNL MCNP
8	lr0-void-640	640	n	LR-0-Void	LR-0-Void	Rez MCNP
9	lr0-naf-640	640	n	LR-0-NaF	LR-0-NaF	Rez MCNP
10	lr0-as2o3-640	640	n	LR-0-As2O3	LR-0-As2O3	Rez MCNP

Showing 1 to 10 of 122 entries Previous **1** 2 3 4 5 ... 13 Next

Individual

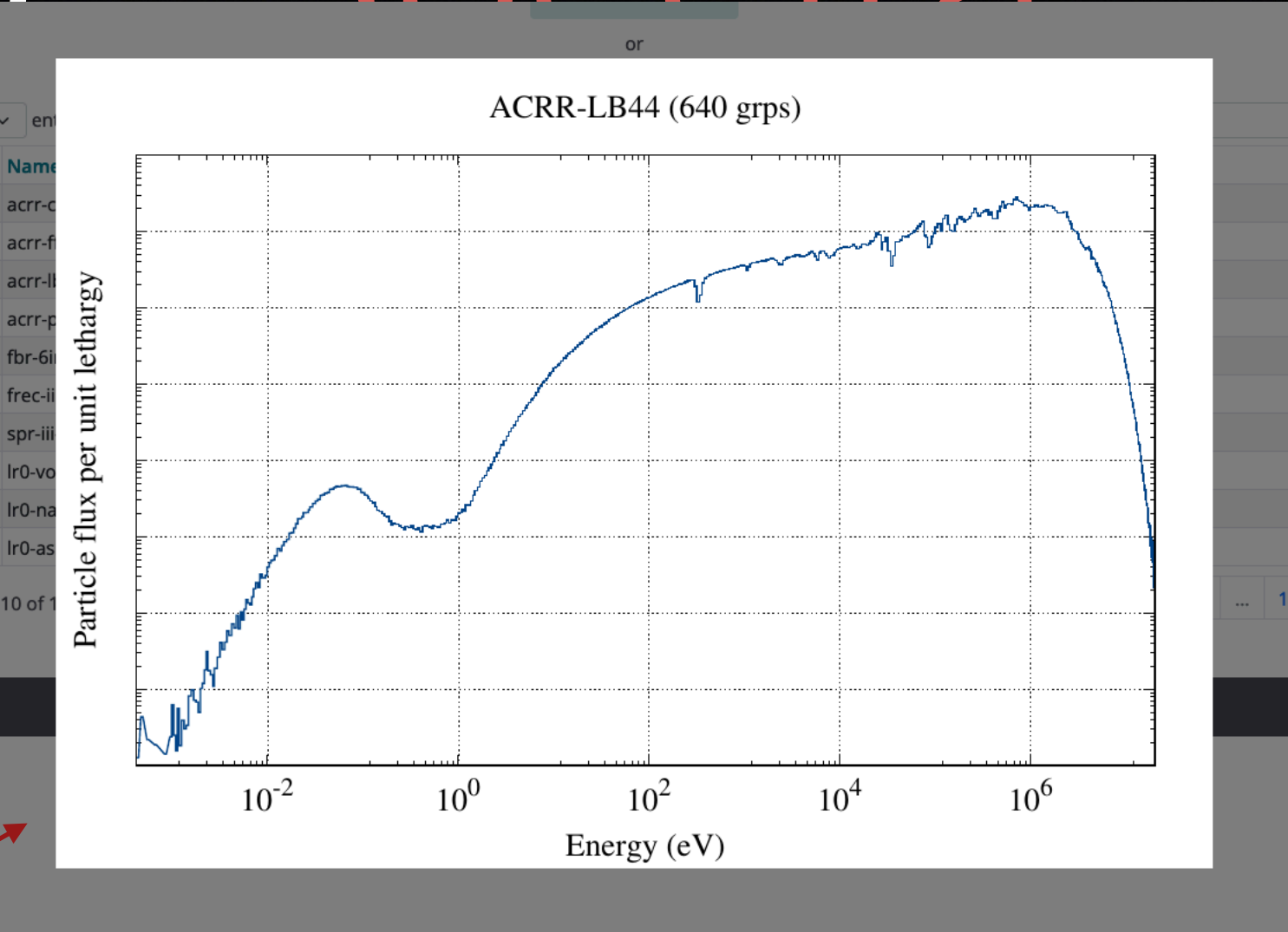
Access (2) - Spectra

GROUP	UPPER	LOWER	LETHARGY	DATA	DATA/LETHARGY
1	2.0000E+07	1.9900E+07	5.0125E-03	1.4153E-14	2.8235E-12
2	1.9900E+07	1.9800E+07	5.0378E-03	8.1511E-15	1.6180E-12
3	1.9800E+07	1.9700E+07	5.0633E-03	1.9107E-14	3.7736E-12
4	1.9700E+07	1.9600E+07	5.0891E-03	1.2712E-14	2.4979E-12
5	1.9600E+07	1.9500E+07	5.1151E-03	2.3096E-14	4.5153E-12
6	1.9500E+07	1.9400E+07	5.1414E-03	1.4552E-14	2.8304E-12
7	1.9400E+07	1.9300E+07	5.1680E-03	3.1660E-14	6.1262E-12
8	1.9300E+07	1.9200E+07	5.1948E-03	1.6331E-14	3.1437E-12
9	1.9200E+07	1.9100E+07	5.2219E-03	1.1286E-14	2.1613E-12
10	1.9100E+07	1.9000E+07	5.2494E-03	4.4992E-14	8.5710E-12
11	1.9000E+07	1.8900E+07	5.2771E-03	3.7434E-14	7.0937E-12
12	1.8900E+07	1.8800E+07	5.3051E-03	3.2145E-14	6.0593E-12
13	1.8800E+07	1.8700E+07	5.3333E-03	2.5083E-14	4.7031E-12
14	1.8700E+07	1.8600E+07	5.3619E-03	2.7889E-14	5.2013E-12
15	1.8600E+07	1.8500E+07	5.3908E-03	2.8979E-14	5.3756E-12
16	1.8500E+07	1.8400E+07	5.4201E-03	4.0408E-14	7.4553E-12
17	1.8400E+07	1.8300E+07	5.4496E-03	5.1173E-14	9.3902E-12
18	1.8300E+07	1.8200E+07	5.4795E-03	5.0216E-14	9.1644E-12
19	1.8200E+07	1.8100E+07	5.5097E-03	3.7678E-14	6.8385E-12
20	1.8100E+07	1.8000E+07	5.5402E-03	5.6661E-14	1.0227E-11
21	1.8000E+07	1.7900E+07	5.5710E-03	6.9270E-14	1.2434E-11
22	1.7900E+07	1.7800E+07	5.6023E-03	7.8075E-14	1.3936E-11
23	1.7800E+07	1.7700E+07	5.6338E-03	4.2545E-14	7.5517E-12
24	1.7700E+07	1.7600E+07	5.6657E-03	5.2832E-14	9.3248E-12
25	1.7600E+07	1.7500E+07	5.6980E-03	8.4845E-14	1.4890E-11
26	1.7500E+07	1.7400E+07	5.7307E-03	7.4550E-14	1.3009E-11
27	1.7400E+07	1.7300E+07	5.7637E-03	8.7753E-14	1.5225E-11
28	1.7300E+07	1.7200E+07	5.7971E-03	8.3664E-14	1.4432E-11
29	1.7200E+07	1.7100E+07	5.8309E-03	1.1078E-13	1.8999E-11
30	1.7100E+07	1.7000E+07	5.8651E-03	8.8693E-14	1.5122E-11
31	1.7000E+07	1.6900E+07	5.8997E-03	1.3850E-13	2.3476E-11
32	1.6900E+07	1.6800E+07	5.9347E-03	1.3498E-13	2.2744E-11
33	1.6800E+07	1.6700E+07	5.9702E-03	1.4307E-13	2.3964E-11
34	1.6700E+07	1.6600E+07	6.0060E-03	1.3150E-13	2.1895E-11
35	1.6600E+07	1.6500E+07	6.0423E-03	1.6410E-13	2.7158E-11
36	1.6500E+07	1.6400E+07	6.0790E-03	1.5864E-13	2.6096E-11
37	1.6400E+07	1.6300E+07	6.1162E-03	1.7312E-13	2.8305E-11
38	1.6300E+07	1.6200E+07	6.1539E-03	1.8327E-13	2.9781E-11
39	1.6200E+07	1.6100E+07	6.1920E-03	1.8938E-13	3.0585E-11
40	1.6100E+07	1.6000E+07	6.2305E-03	2.0245E-13	3.2493E-11
41	1.6000E+07	1.5900E+07	6.2696E-03	2.5904E-13	4.1317E-11
42	1.5900E+07	1.5800E+07	6.3092E-03	2.3983E-13	3.8013E-11
43	1.5800E+07	1.5700E+07	6.3492E-03	2.3007E-13	3.6236E-11

Show 10

Order	Name
1	acrr-plg-640
2	fbr-6in-leakage-640
3	frec-ii-ff-640
4	spr-iii-cc-640
5	lr0-void-640
6	lr0-naf-640
7	lr0-as2o3-640

arb_flux.txt	figure.png
ACRR-CdPoly	ACRR-CdPoly
ACRR-FF-CC-32CI	ACRR-FF-CC-32CI
ACRR-LB44	ACRR-LB44



Showing 1 to 10 of 122 entries

Previous 1 2 3 4 5 ... 13 Next

Individual Data Access (3)

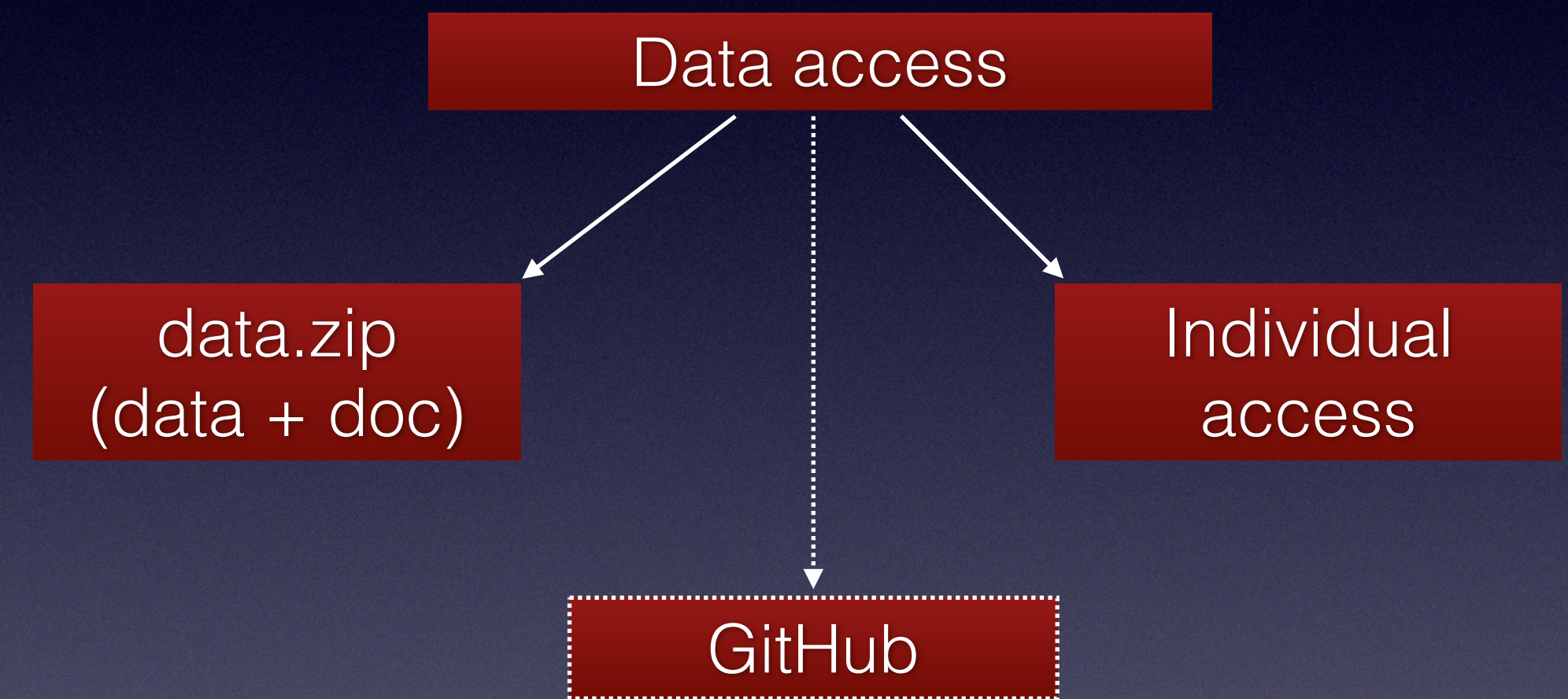
Access individual data sets

outputs_flux	
outputs_tendl2019	
pmf2_jez240.res	356.7 KB
pmf1_jezpu.res	1.6 MB
hmf28_flat25.res	1.3 MB
hmf1_godiva.res	628.4 KB
imf7tzh_bten.res	832.3 KB
outputs_tendl2017	
inp	
outputs_rr	
jezpu_t4_t17.out	356.6 KB
jez240_t4_b8.out	356.8 KB
flat_t4_t19.out	356.7 KB
godi_t4_j33.out	221.0 KB
jezpu_t4_b8.out	356.6 KB
jezpu_t4_t19.out	356.6 KB
godi_t4_t17.out	220.9 KB
bten_t4_b8.out	356.9 KB
flat_t4_t17.out	356.9 KB
godi_t4_t19.out	220.7 KB
jez240_t4_t17.out	356.9 KB
flat_t4_j33.out	357.0 KB
flat_t4_b8.out	356.9 KB
bten_t4_j33.out	356.9 KB
jezpu_t4_j33.out	357.3 KB
bten_t4_t19.out	356.6 KB
godi_t4_b8.out	220.8 KB
bten_t4_t17.out	356.8 KB
jez240_t4_j33.out	357.5 KB
jez240_t4_t19.out	356.7 KB
inputs	
outputs_endfb8	
inputs_rr	
outputs_jeff33	

Last updated: 2021-01-08 17:33:52

GitHub

A 3rd possibility of accessing the data



Using GitHub - Prototype Oktavian

The screenshot shows the GitHub interface for the repository 'IAEA-NDS / Oktavian-dataset'. The repository is public and has 2 watchers, 0 forks, and 0 stars. The main content area displays a commit history table and a preview of the README.md file.

Commit	Author	Message	Date	Commits
ab98921	ludmilamarian	Create README.md	on Dec 8, 2020	2 commits
		MCNP	Initial commit of the dataset	2 years ago
		oktavian_exp	Initial commit of the dataset	2 years ago
		README.md	Create README.md	2 years ago

README.md

Oktavian-dataset

For more details on the Oktavian dataset, please check the [project webpage](#).

About
No description, website, or topics provided.

Releases
No releases published
[Create a new release](#)

Packages
No packages published
[Publish your first package](#)

Languages

- Roff 100.0%

Using GitHub - Prototype **Oktavian**

- Advantages
 - ▶ Version control;
 - ▶ **History** of changes / releases;
 - ▶ **Streamlining data publishing** (automatic hook to publish data on the CoNDERC website);
 - ▶ Avoiding sending data via e-mails and version entanglement;
 - ▶ *[Optional]* Could publish (processing) code along the data -> going towards **reproducible data/research**;

Using GitHub - one step further

- *[Optional]* Could publish **Jupyter notebooks** with examples of data processing
 - ▶ Automatically rendered on  **GitHub**;
 - ▶ Use  to run notebooks in the cloud;
 - ▶ Use  to package the notebook + dependencies.

What do users want?

Data Management in CoNDERC

Thank you!

Ludmila MARIAN, Scientific Data Manager, Nuclear Data Section, IAEA

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