

# Update on x4i



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November 2024



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# x4i, the EXFOR interface

Python “API”, or at least tools, for interactive with the EXFOR library

- Developed at LLNL, open sourced in 2011
- Development stalled while BNL figured out whether I could work on the code
- In the meantime, code forked: <https://github.com/afedynitch/x4i3>
- But now I can work on it, so I did!
- Also, I have a lot of people to thank!

# There are no big visible change, but there are a lot of behind-the-scenes things

- **Update with latest IAEA offerings**
  - Now pull from one of 4 master file solutions (I am unsure what one will be the official one)
  - Update to latest EXFOR Dict, in JSON (Thank you Naohiko!)
- **Project layout, installation modernized** (Thank you Julia!)
  - Now is pip-friendly!
  - Unit tests now running using GitHub Actions (Thank you Julia and Anatoli!)
- **Indexing of EXFOR parallelized**, for 5-10x speedup (Thank you Anatoli!)

# There are no big visible change, but there are a lot of behind-the-scenes things (cont.)

- **Redid DATA and COMMON section processing**

- Now use pandas dataframes, leading to substantial code simplifications, speedups and stability improvements. This also enables trivial CSV output
- Use pint and pint-pandas to manage units, leading to even more simplifications, speedups and stability improvements
- Use tabulate for table formatting.

EN (MeV)	EN-ERR (MeV)	DATA (mb)	DATA-ERR (mb)
6.49	0.085	24	63
7.01	0.08	49	50
7.52	0.075	54	58
8.03	0.075	177	70
8.54	0.07	275	54
9.04	0.065	249	41
9.55	0.065	354	56
10.06	0.06	415	39
10.56	0.06	411	70
11.07	0.055	356	79
11.57	0.055	418	49
12.08	0.055	455	76
12.58	0.05	318	132
13.09	0.05	588	148

# What's next

- Read the docs integration (needs improved documentation though)
- Implement EXFOR checking
- Pypy
- More column transformers for more datatypes used in ENDF preparation and checking
- I don't like EXFOR-JSON output for DATA and COMMON since they make more sense as CSV
- Unfork x4i3?