



Progress Report of
Nuclear Data Center of Japan Atomic Energy Agency
for April 2016 – March 2018

Osamu IWAMOTO
Japan Atomic Energy Agency

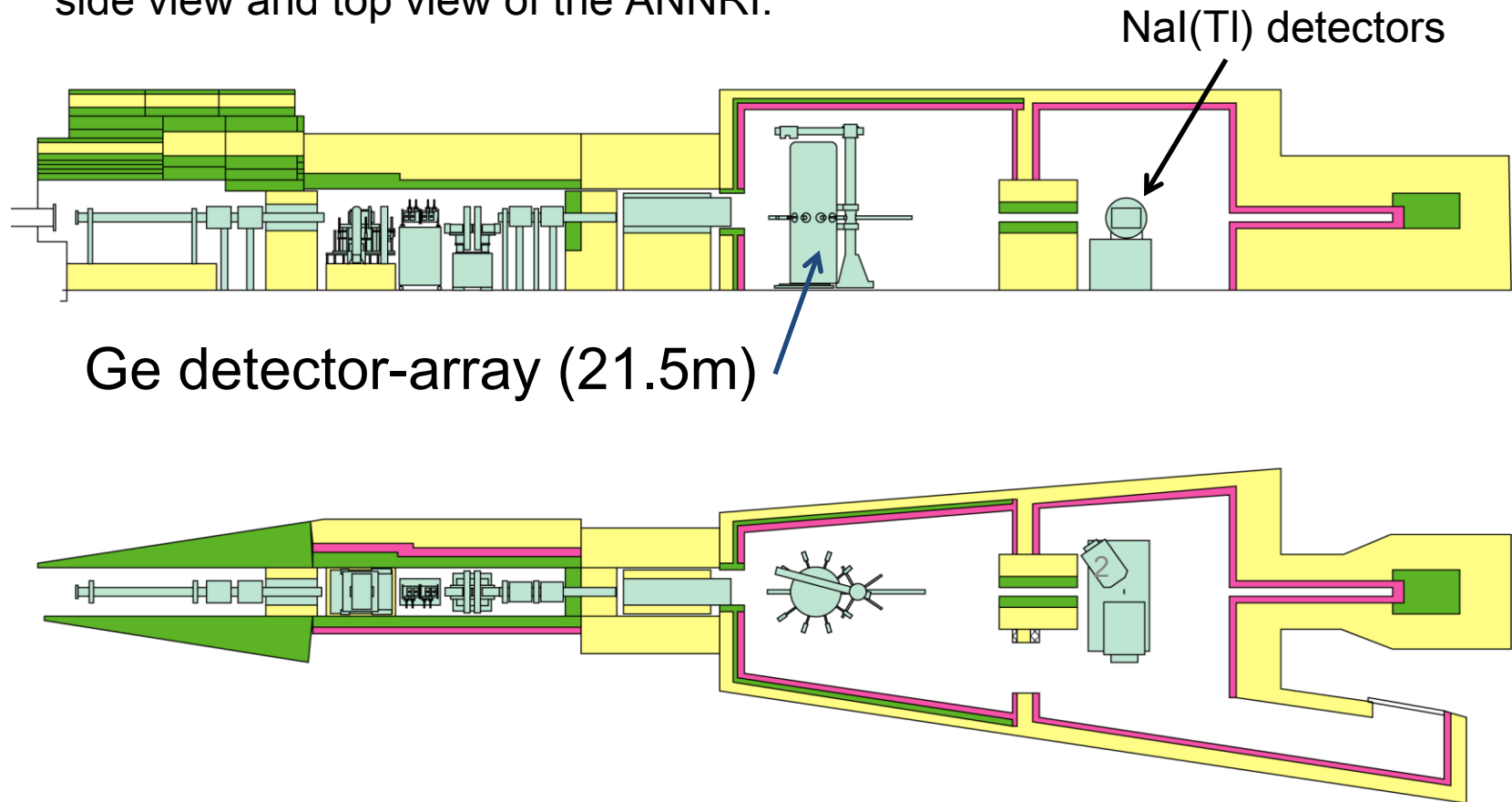
JAEA/NDC

- JAEA/NDC consists of 14 staffs.
 - 8 regular staffs, 2 advisors, 3 postdocs and 1 secretaries as of April 17, 2018.
- Experiments
 - Neutron capture and total cross sections were measured with ANNRI in MLF at J-PARC.
 - (n,g) Sn, Cs, Gd, Eu and Am isotopes
 - (n,tot) Am-241, 243
- Evaluation: two special purpose files were released.
 - JENDL/AD-2017
 - JENDL/PD-2016

Nuclear data measurements TOF facility, ANNRI @J-PARC MLF

(Accurate Neutron-Nucleus Reaction measurement Instrument)

side view and top view of the ANNRI.

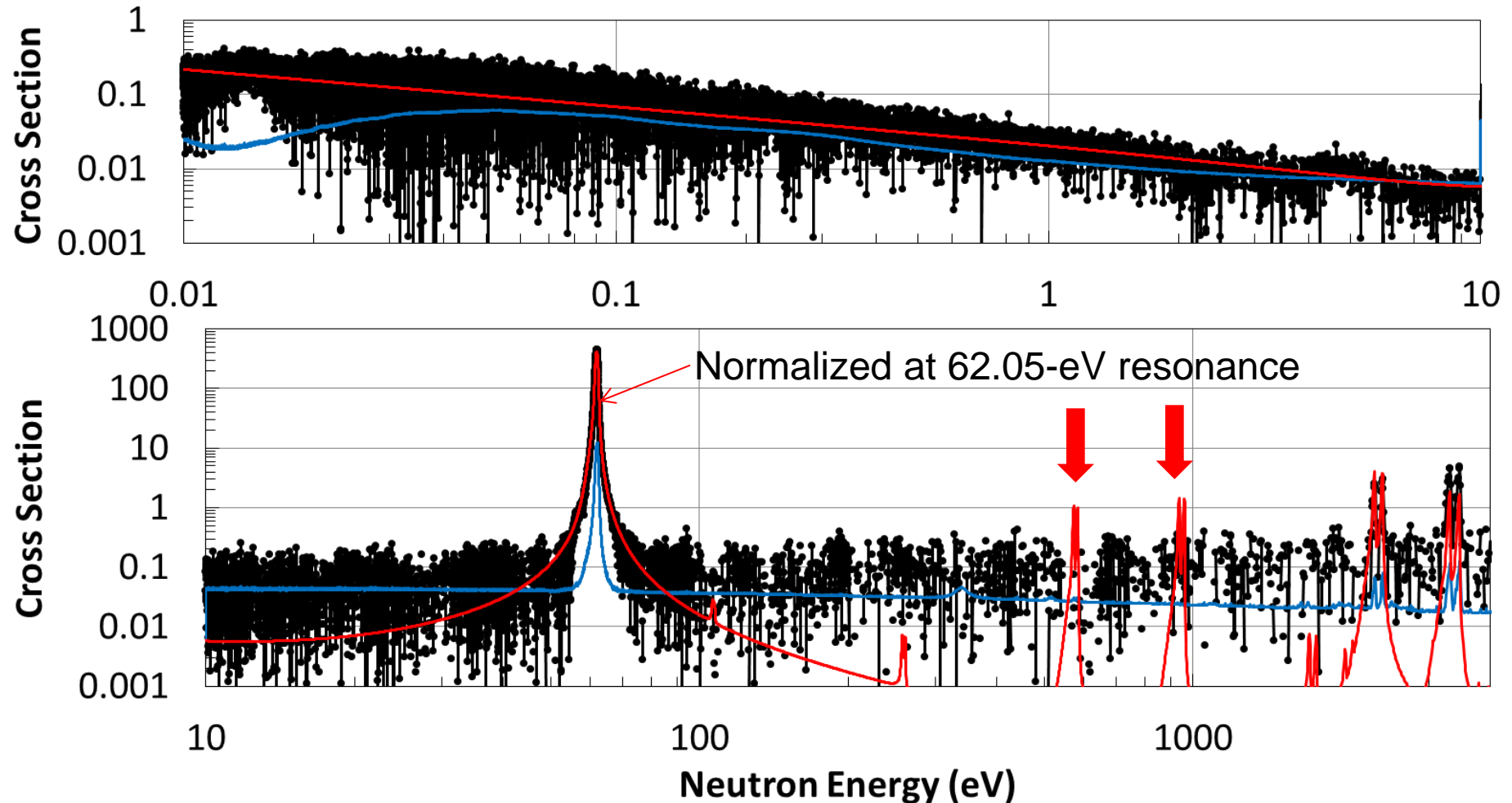


$\sim^{124}\text{Sn}\sim$

—●— Sn124 Sample

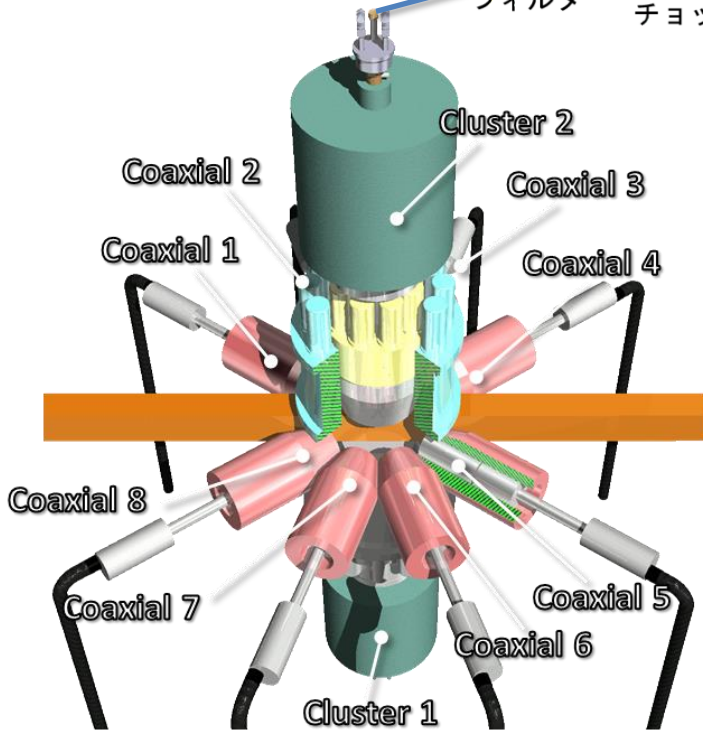
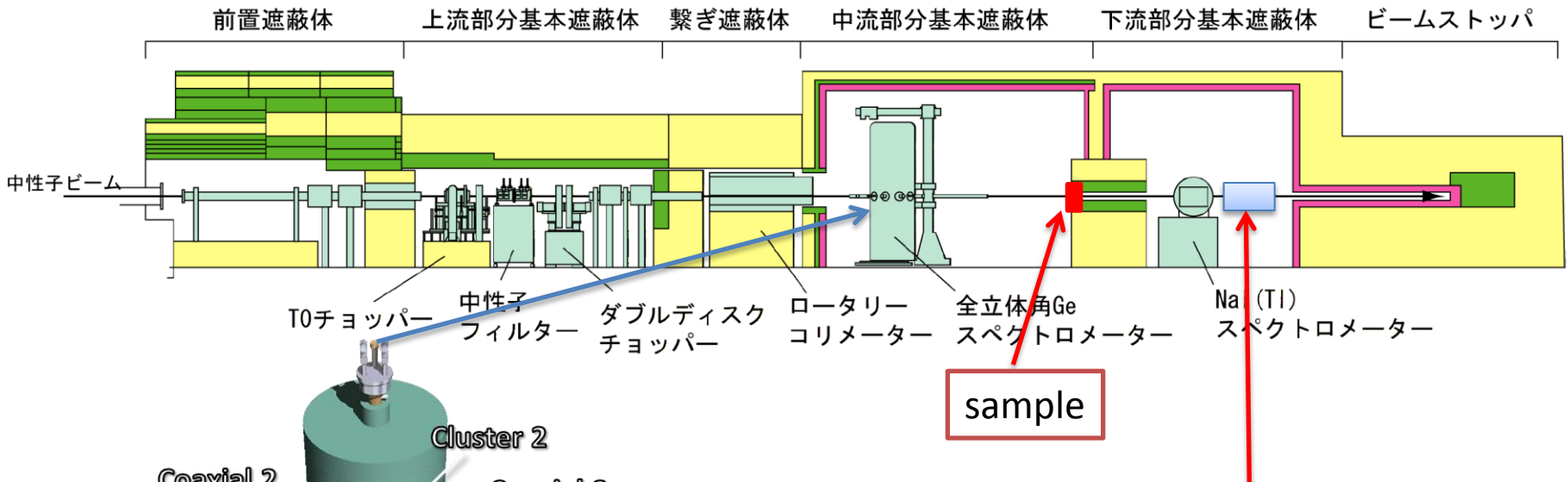
— Error

— JENDL (Broadened, with Impurities)



➔ The 579- and 950-eV resonances were not observed. These resonances were reported by V.Adamchuk and Fuketa, and are listed in both JENDL-4.0 and ENDF/B VII.1.

ANNRI total cross section measurements

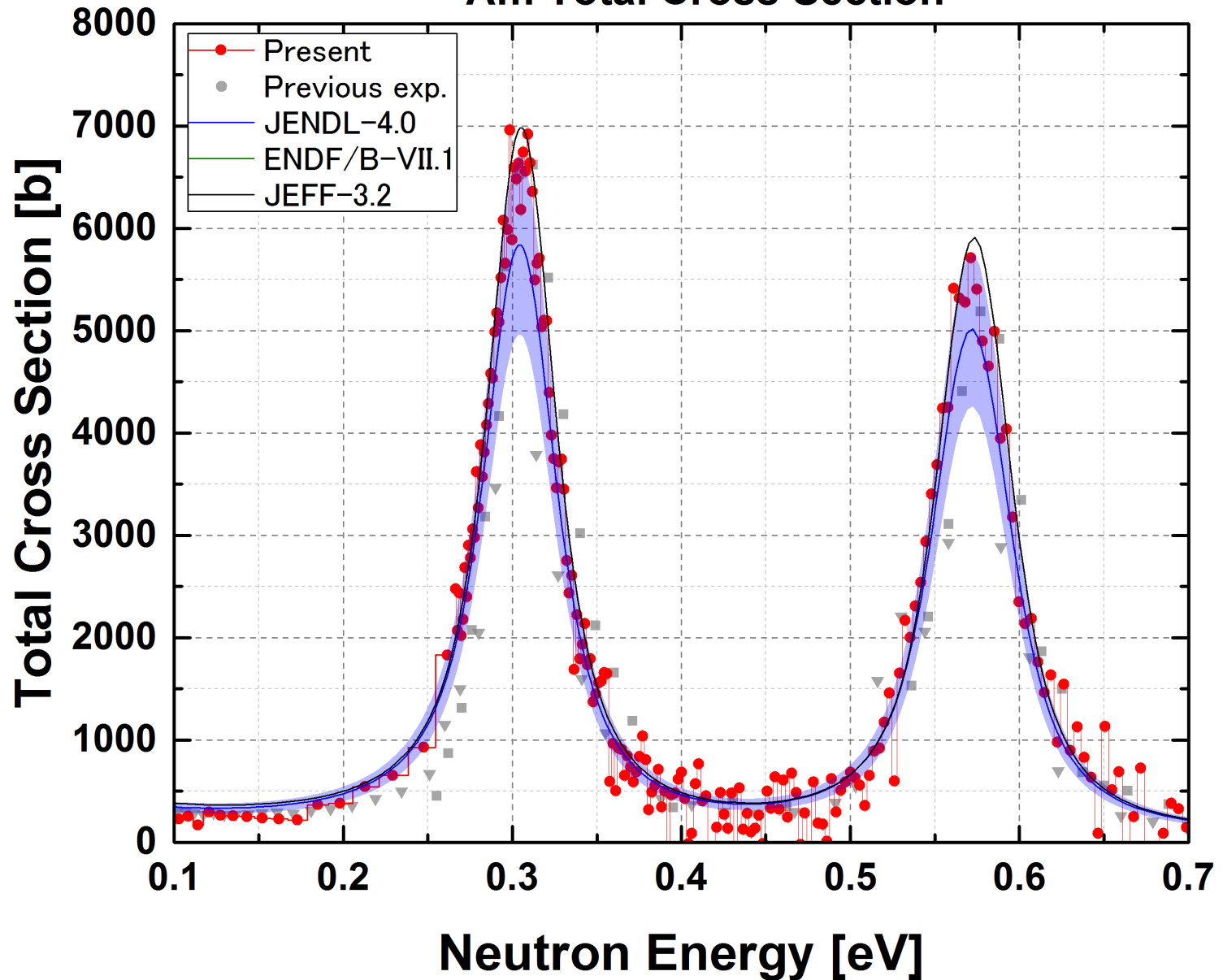


GS-20 ^6Li -glass detector (neutron)

GS-30 ^7Li -glass detector (gamma-ray BG)

Total cross section measurements

^{241}Am Total Cross Section



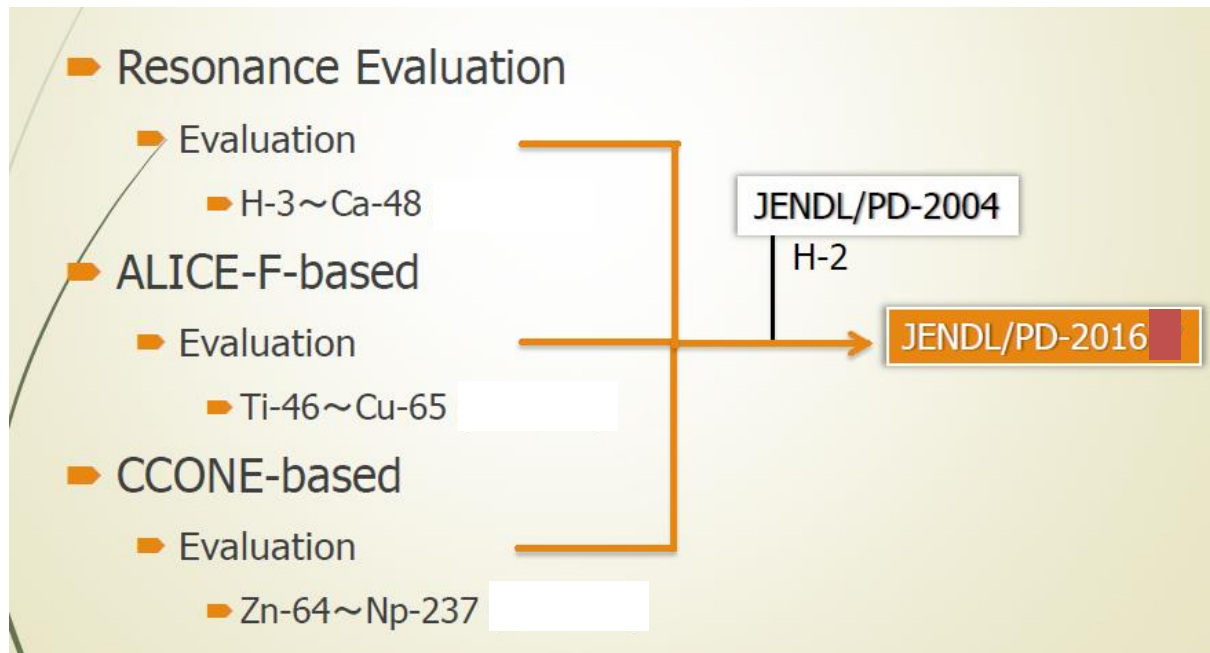
JENDL Special purpose file

- JENDL/PD-2016
 - Photon-induced reaction data in energy range from threshold to 140 MeV.
- JENDL/AD-2017
 - Activation Cross-section File for Decommissioning of LWRs

JENDL/PD-2016

Photonuclear data

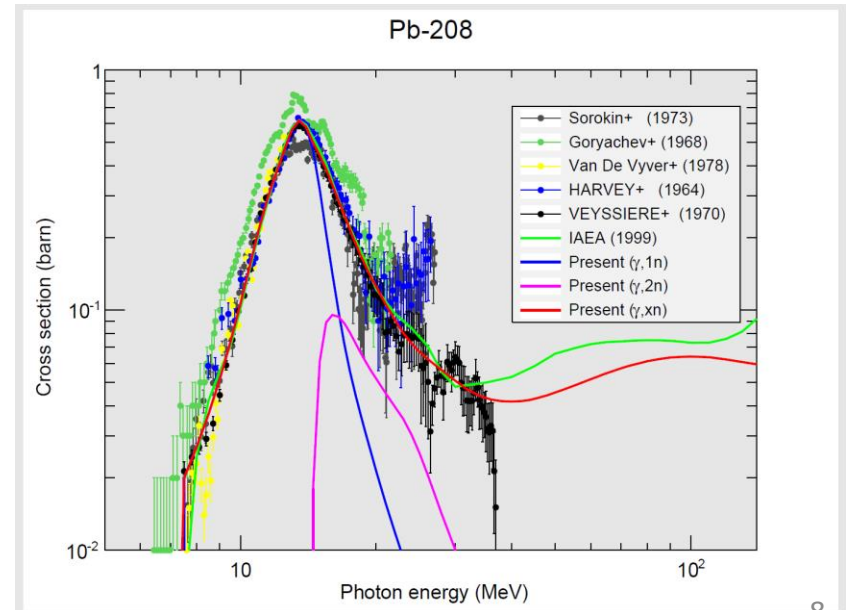
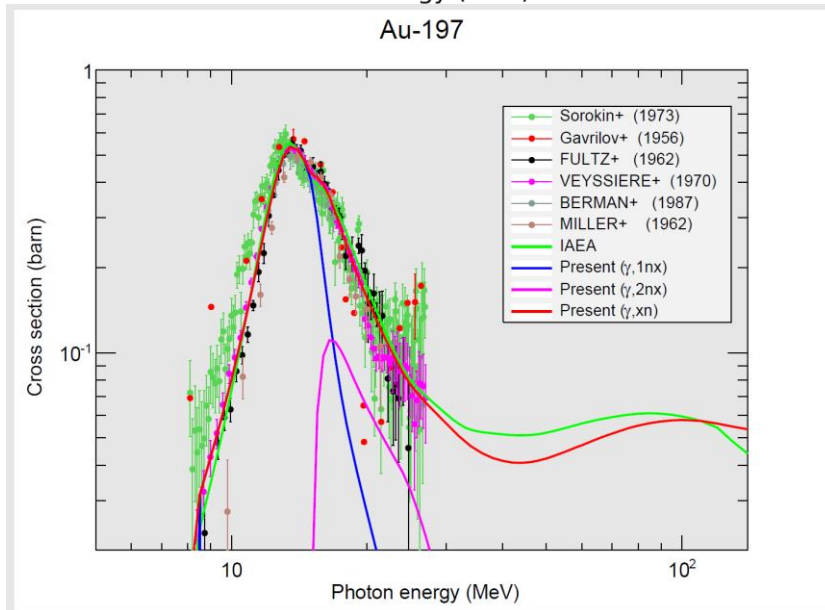
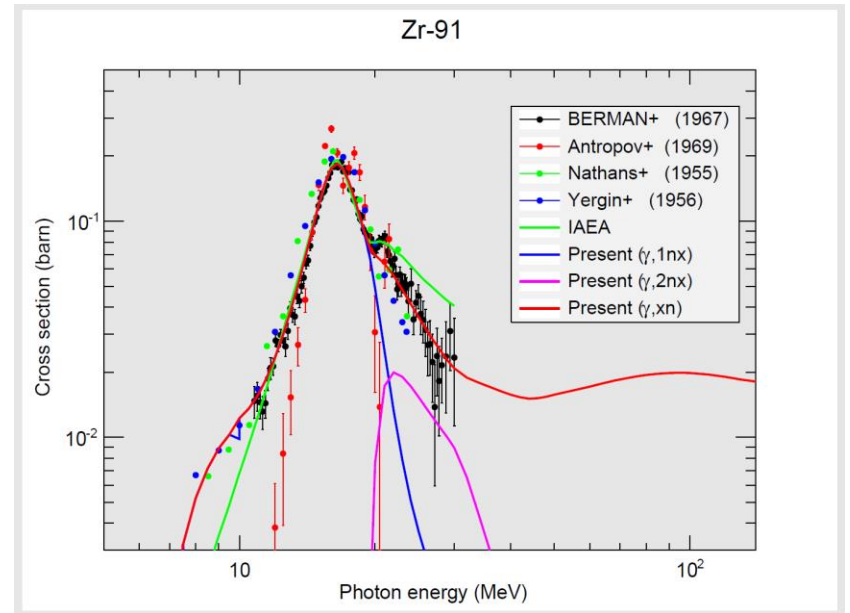
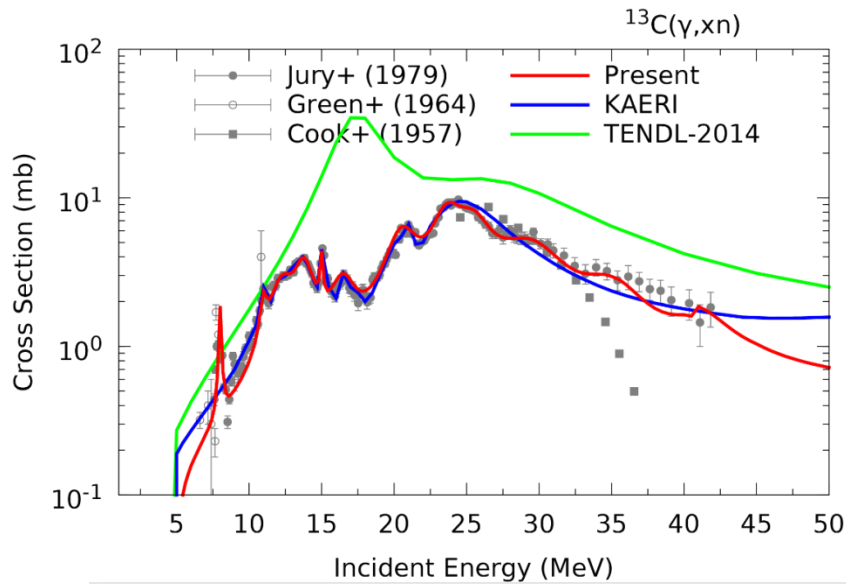
Previous version JENDL/PD-2004: photon-induced reaction data of 68 nuclides for energies upto 140 MeV.



JENDL/PD-2016 consists of

- standard version: 181 nuclides,
- extended version: 2681 nuclides.

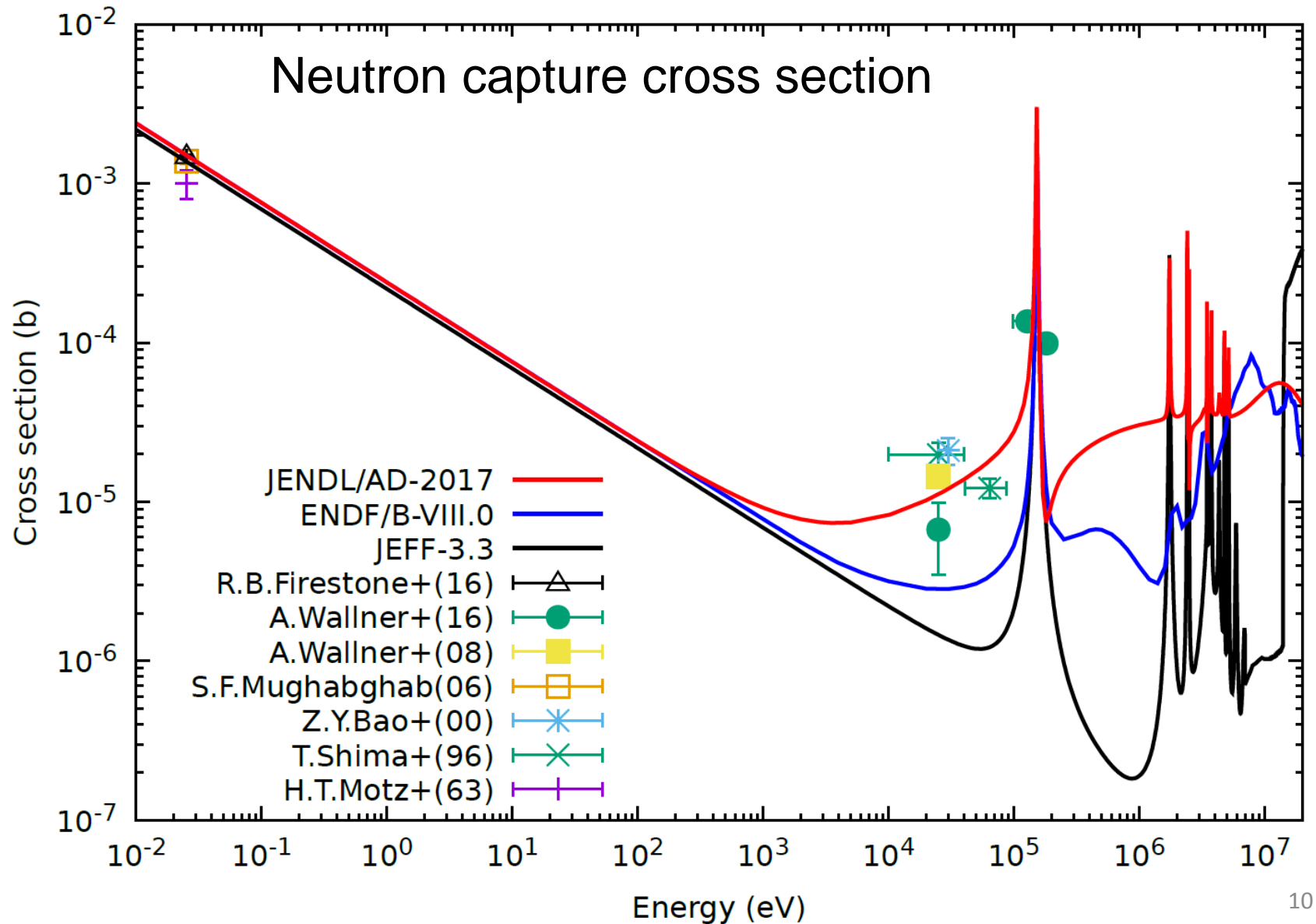
JENDL/PD-2017 Photonuclear reaction cross sections



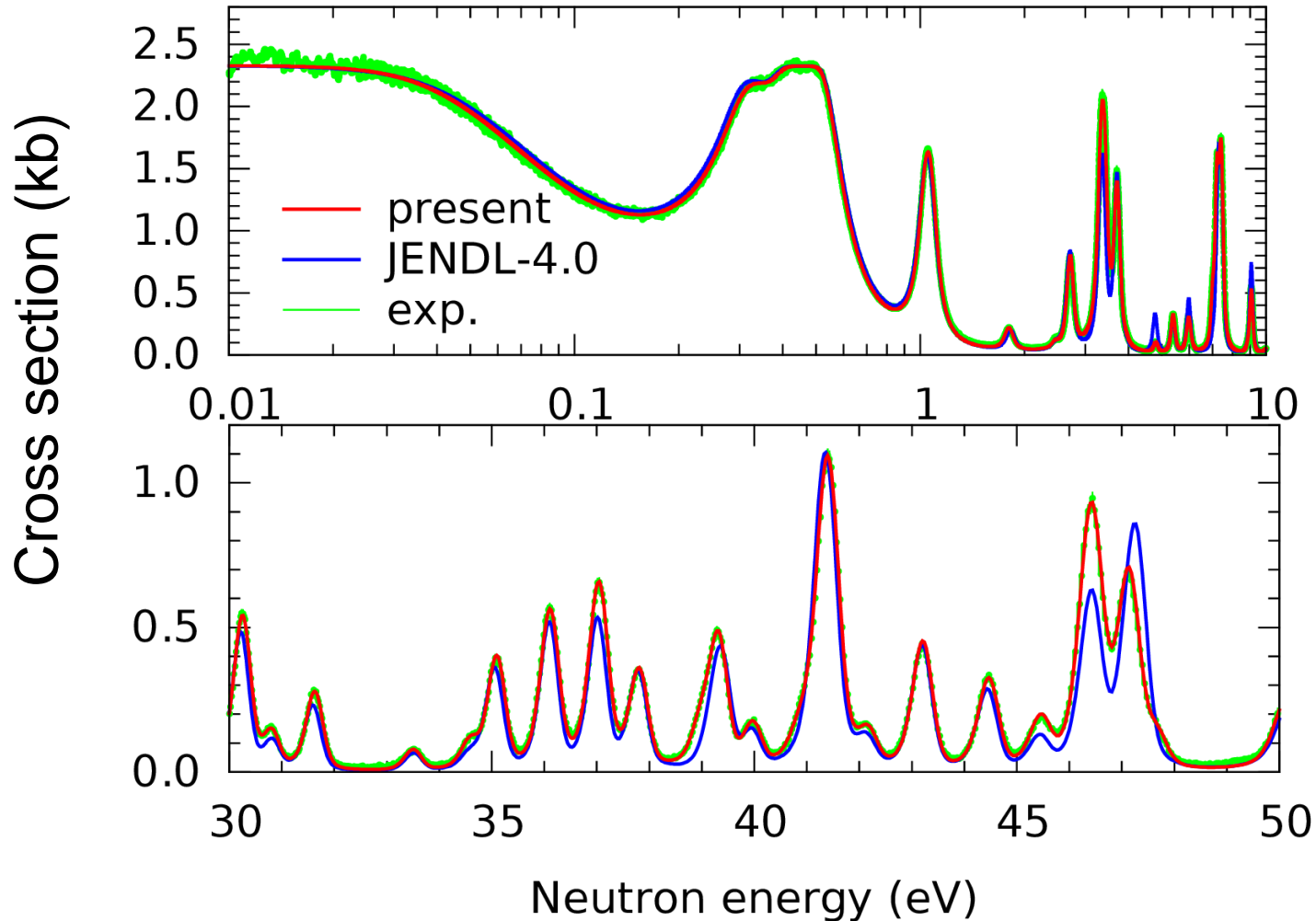
JENDL/AD-2017

- Activation Cross Section File for Nuclear Decommissioning (radioactive inventory evaluation)
- 311 nuclides to produce nuclides which are important for dose and clearance evaluations.
- Up to 20 MeV
- Includes data of JENDL-4.0 and many new evaluation more than 200 nuclei

New evaluation for C-13



Eu evaluation with measurement of J-PARC ANNRI $^{151}\text{Eu}(n,\gamma)^{152}\text{Eu}$



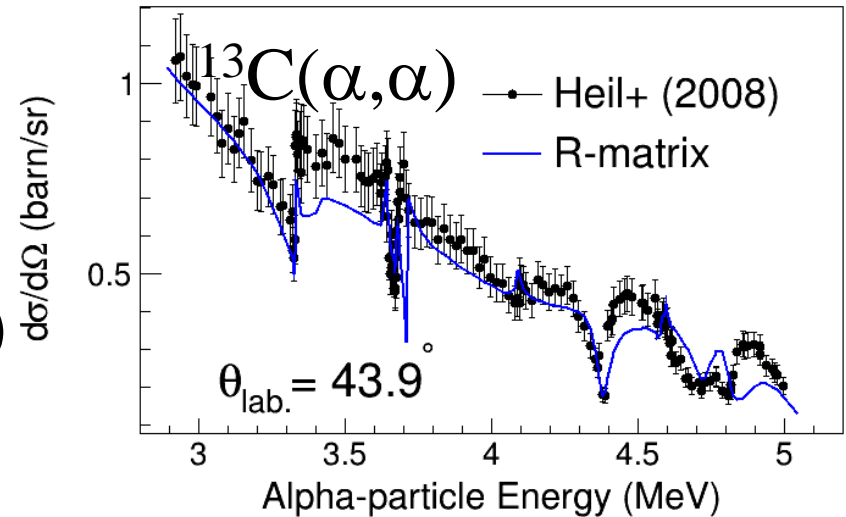
Development of JENDL-5

- Improve reliability and completeness for various applications
- Revise data of light nuclei, structural material, FP, actinide
- Include all stable isotopes
- More covariance data
- Add isomer production for activation
- New R-matrix code, AMUR
- Evaluation with new J-PARC data (mainly for MA)
- New simultaneous evaluation of fission cross section for major actinide
- New thermal neutron scattering law
- To be released by FY2021 (format GND?)

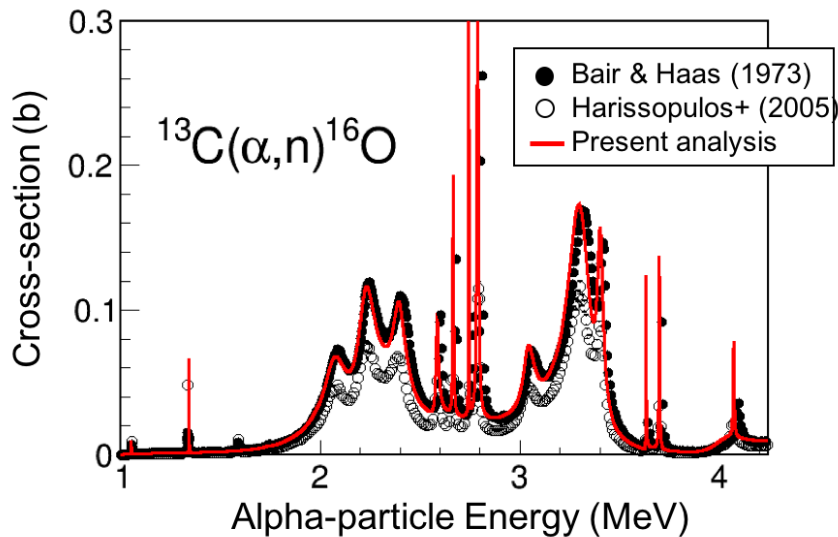
Evaluation of light nuclei

Status of the R-matrix code AMUR

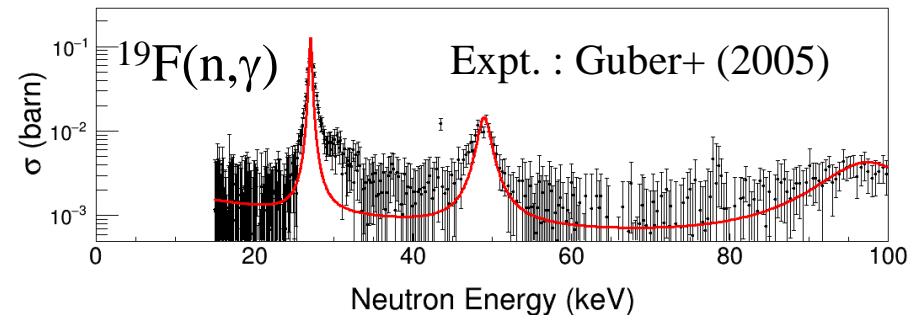
- 1) n & charged-particle inc.
- 2) Capture cross-sections
- 3) Correction to calculation (resolution, Doppler, norm.)
- 4) Cov. with KALMAN method



1) Differential C.S. of $^{13}\text{C}(\alpha, \alpha)$

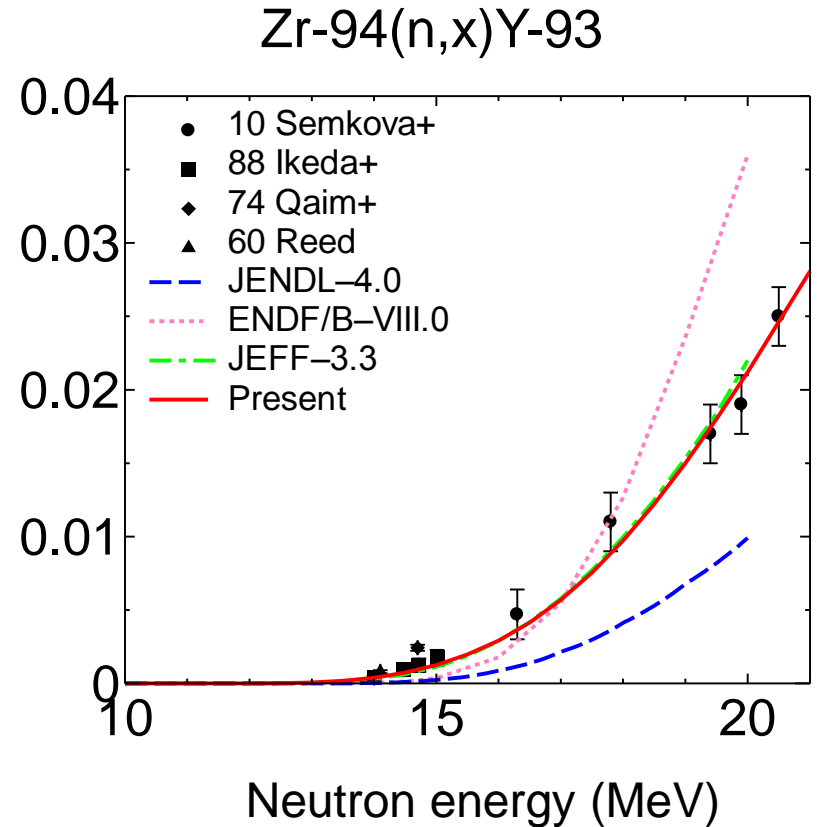
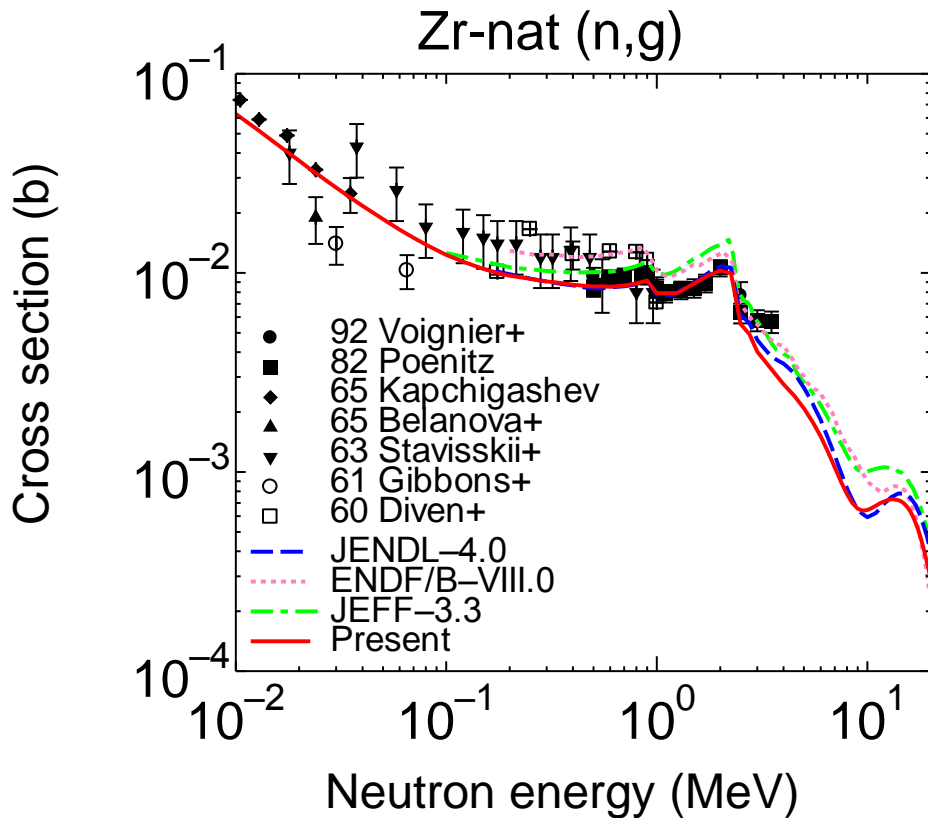


3) Unitarity-constraint analysis with free-normalization.



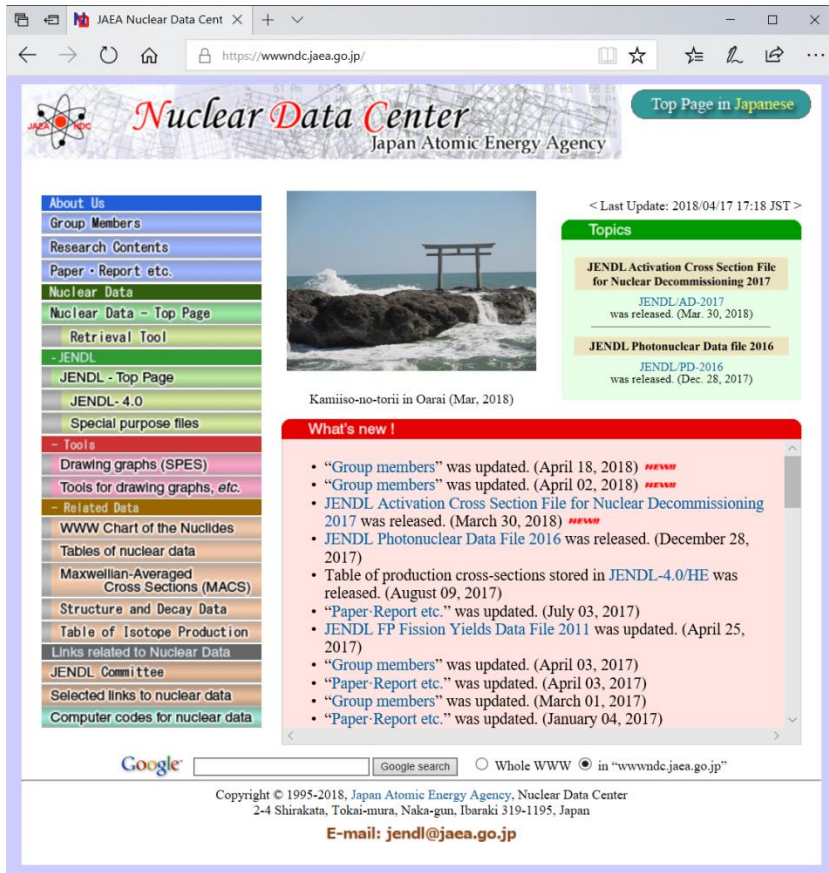
2) Capture cross-sections with Reich-Moore approximation

Evaluation of Zr isotopes



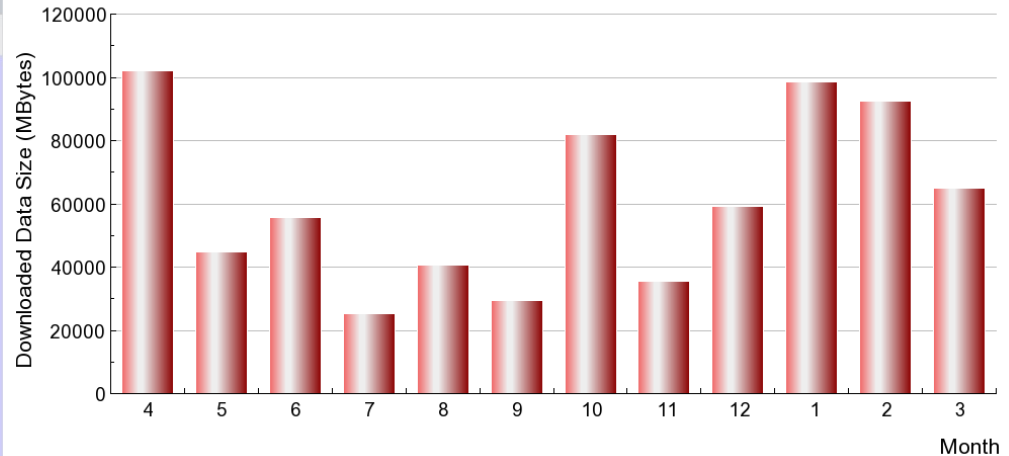
Data service by web

wwwndc.jaea.go.jp

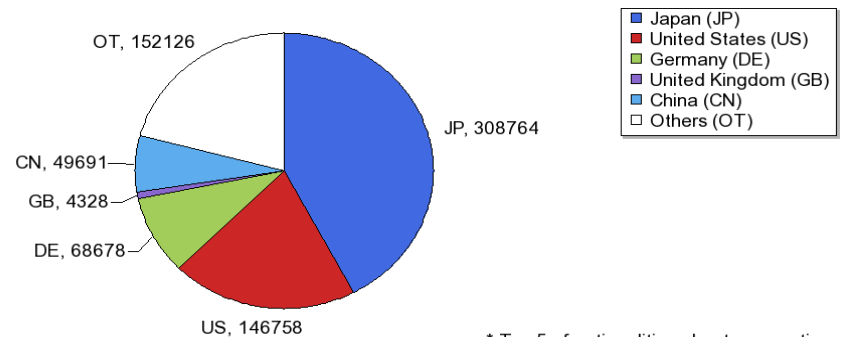


Downloaded data size in FY 2017
(20 - 100 GB/month)

Downloaded Data Size (MBytes) [2017/04/01 - 2018/03/31]



Downloaded Data Size (MBytes) (Top 5) [2017/04/01 - 2018/03/31]



* Top 5 of nationalities about access times