Progress Report of
Nuclear Data Center of Japan Atomic Energy Agency
for April 2013 – March 2014

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Japan Atomic Energy Agency

JNDC (chaired by N. Yamano, Univ. of Fukui)

Subcommittee on Nuclear Data (H. Harada, JAEA)
- High Energy Nuclear Data Evaluation WG (S. Kunieda, JAEA)
- ENSDF Group (H. Iimura, JAEA)
- Japanese Nuclear Data Management Network (Y. Watanabe, Kyushu Univ.)
- Advisory Subcommittee on Development of JENDL(G. Chiba, Hokkaido Univ.), closed in March 2014.

Subcommittee on Reactor Constants (N. Yamano, Univ. of Fukui)
- Reactor Integral Test WG (G. Chiba, Hokkaido Univ.)
- Shielding Integral Test WG (C. Konno, JAEA)
- WG on Evaluation of Nuclide Generation and Decay Heat (K. Okumura, JAEA)
- Covariance Utilization WG (T. Iwasaki, Tohoku Univ.)

JENDL-4.0 Updated Files

http://wwwndc.jaea.go.jp/jendl/j40/update/

- 13 files were updated in 2013.

- Main update:

  - neutron spectra: K-36, Hg-196, 202, 204, Ra-224,225
    Strange dips were found on the kerma factors

  - RRP in MF32: U-234, Np-237, Pu-238, 242
     Inconsistencies of RRP between MF2 and MF32 were found.

neutron spectra

JENDL-4.0u
Japan Atomic Energy Agency JAEA

K-36, Hg-196, 202, 204, Ra-224,225

Problem

A strange dip was found on the kerma factors calculated with the kinematic limit. This occurred by energy imbalance for the (n,2n) and (n,3n) reactions.

Action

The neutron spectra were modified near the threshold energies.
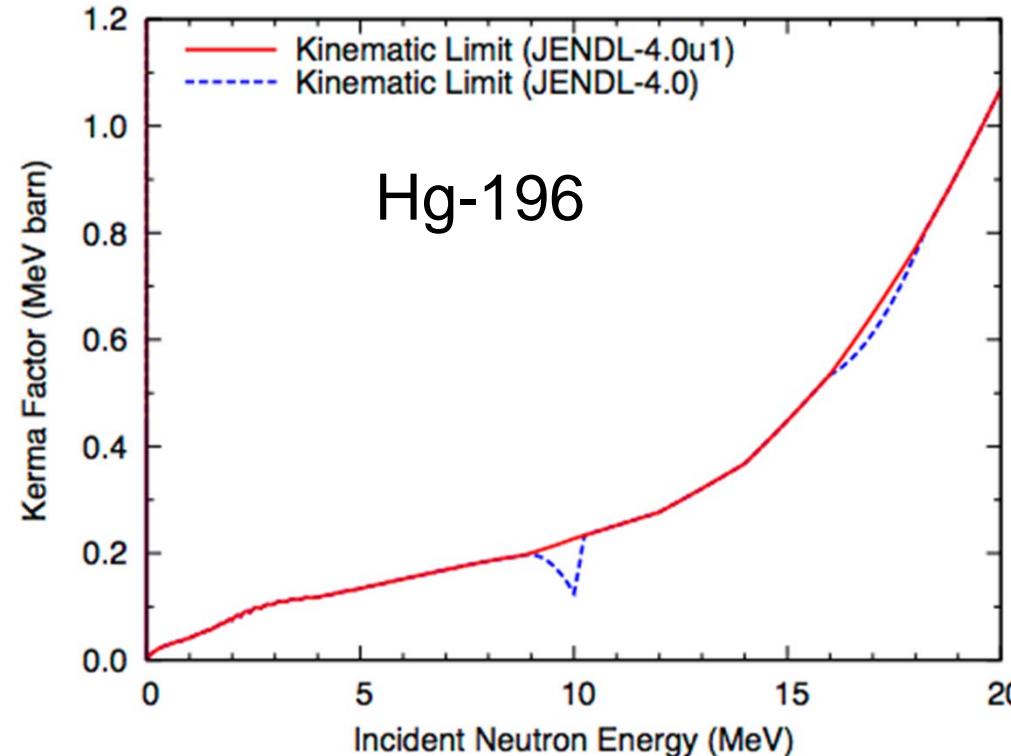
Evaluation of neutron nuclear data

- The data which are not updated in JENDL-4.0 are continuously considered to be revised, especially for FP region nuclides.

- The statistical model code CCONE was used to calculate fast-neutron cross sections.

➢ F. Minato, "Evaluation of neutron nuclear data of praseodymium-141 and -143", *J. Nucl. Sci. Technol.*,50 (9), 873 (2013).
➢ K. Shibata, "Evaluation of neutron nuclear data on antimony isotopes", *J. Nucl. Sci. Technol.* **51**, 425 (2014).
➢ K. Shibata, "Evaluation of neutron nuclear data on ruthenium isotopes", *J. Nucl. Sci. Technol.* **50**, 1177 (2013).

Evaluation of neutron nuclear data for Pr isotopes

Pr-141 total

Pr-141 capture-γ spectrum

Pr-141 (n,2n)
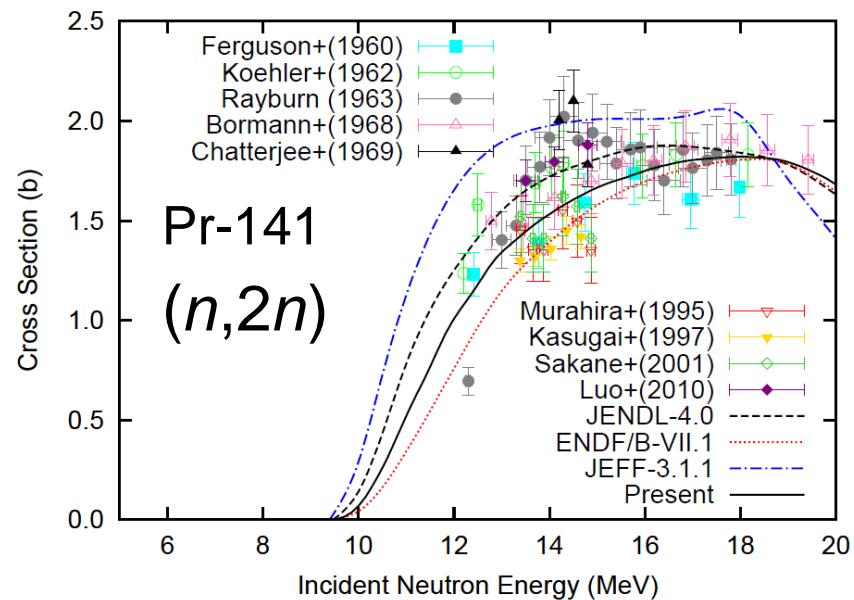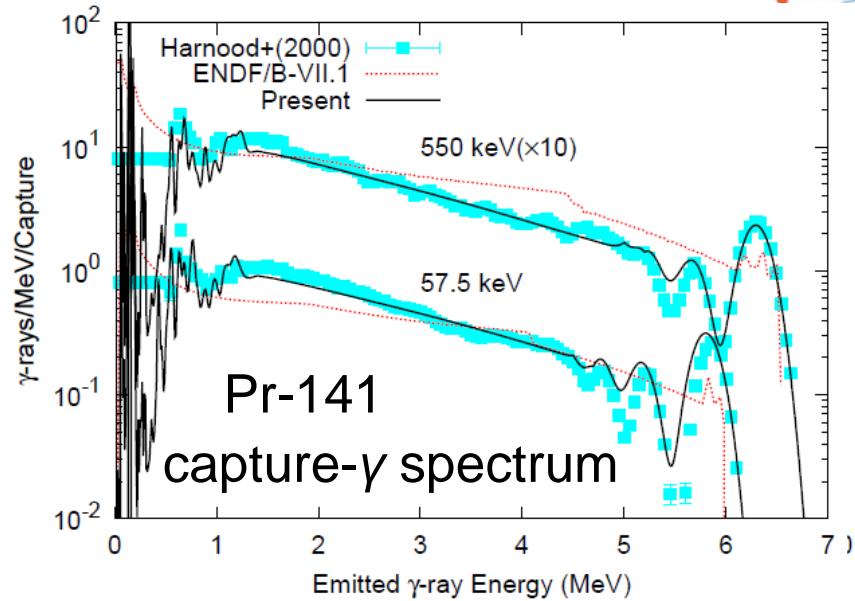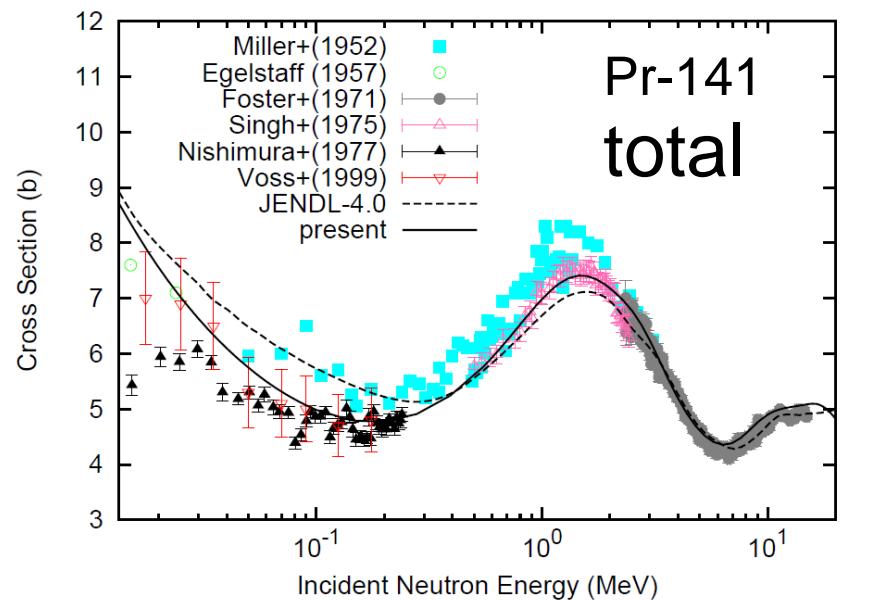
F. Minato, J. Nucl. Sci. Technol., 50 (9), 873 (2013).

Evaluation of High Energy Nuclear Data

- Optical model analysis for neutrons and protons

  - DOMP + RRM-CC (OPTMAN ver. 10)
  - Isospin-dependent analysis
  - ^{6,7}Li, ^{9}Be and ^{10,11}B, …

- Evaluation for neutron and residual production c.s.

  - CCONE-0.9.2.0

  - IAS direct (p,n) cross-sections with OPTMAN

  - DWBA for inelastic scattering c.s.

  - Improved Iwamoto-Harada model (Kunieda-2012)

^{93}Nb(p,x), Residual Production CS
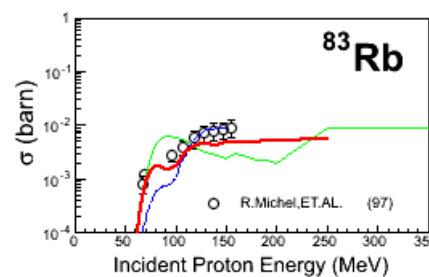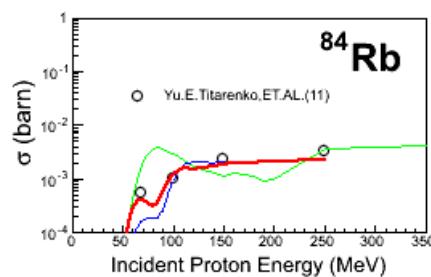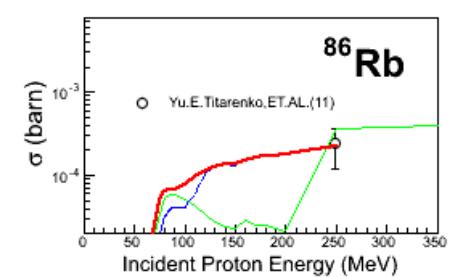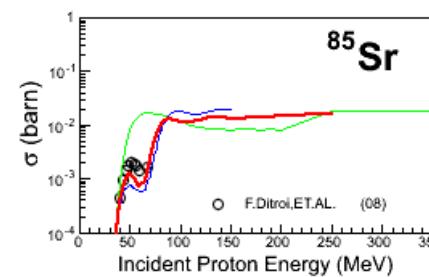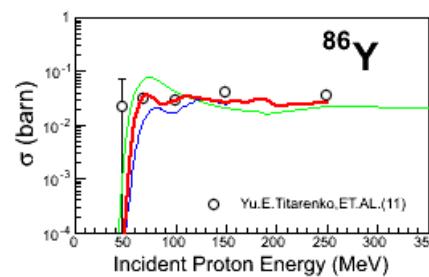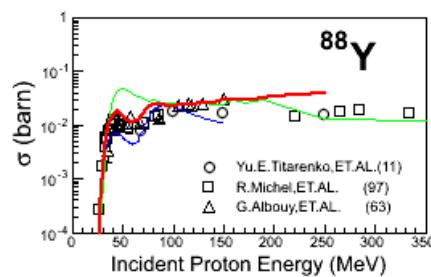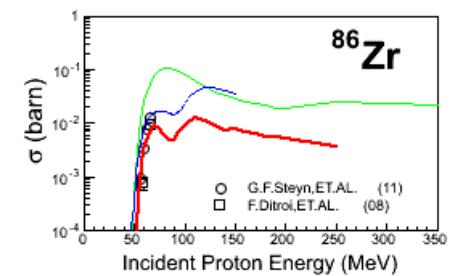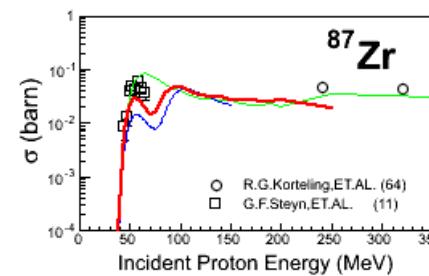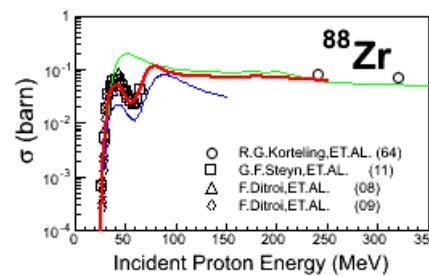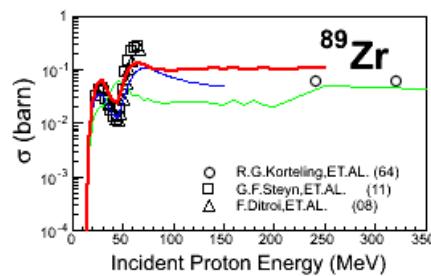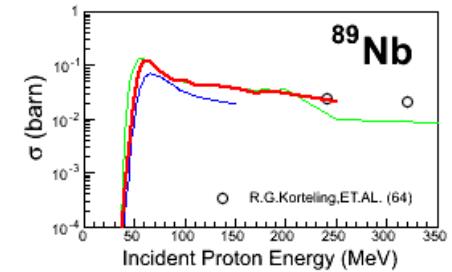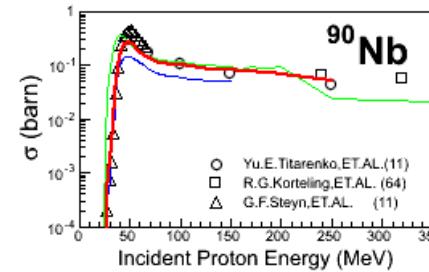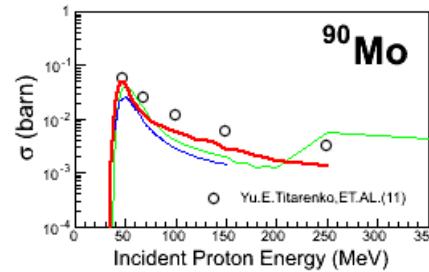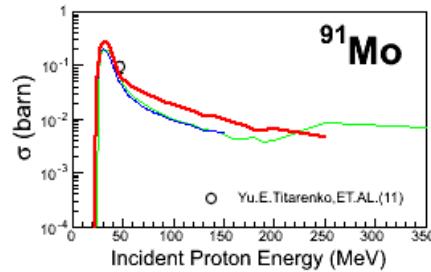
ENDF/B-VII.1
JENDL/HE-2007
CCONE

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Activation file

- neutron activation cross sections for the decommissioning of LWRs.

- about 300 target nuclei

- new evaluation, JENDL-4.0, JENDL/A-96

- Evaluated files for the 246 isotopes from H to Hf have been created.

Activation cross section for Ir-191, 193

Data service by web

Dowin loaded data size in period of April 2013 to February 2014.
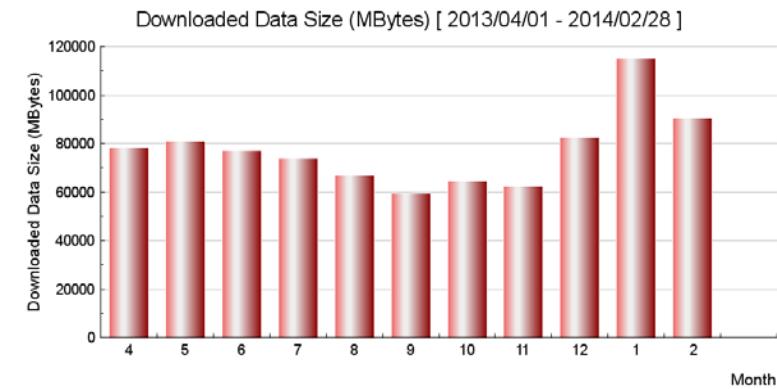
Dowonloaded data by countries.
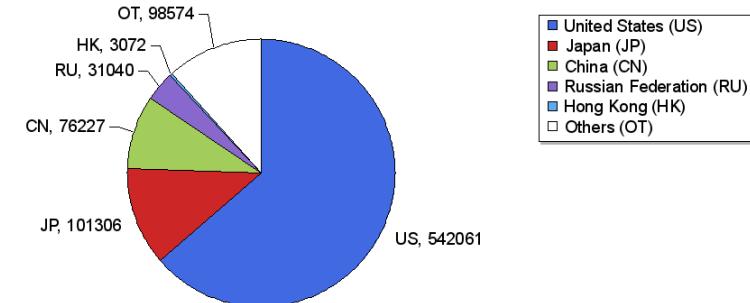
* Top 5 of nationalities about access times

Tools for drawing graphs, *etc*.

- [SPES (Search and Plot Executive System)](#) EXFOR data base and ENDF formatted data

- [Plotting Tool for ENDF (Evaluated Nuclear Data File)](#) Generating a cross section graph of JENDL-3.2, -3.3 and -4.0

- [Graph of Fission Product Yields](#)

- [View of Average Resonance Cross Section (VARCS)](#) (July 5, 2013) Average cross sections are plotted on a graph.

- [Search for Resolved Resonances](#) (July 5, 2013) This tool is to retrieve information on resolved resonances
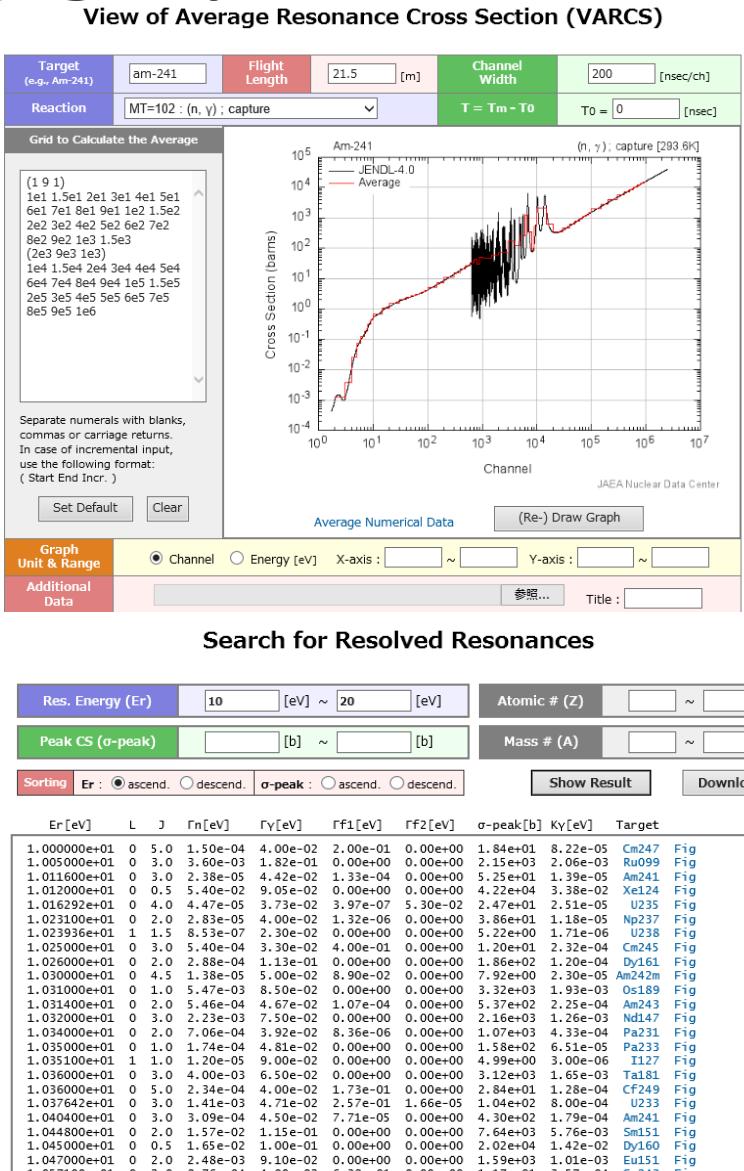
WWW Chart of the Nuclides 2010(JavaScript-β)

- New version of "WWW Chart of the Nuclides" which utilizes JavaScript is under development.
- improve operability and visualization
  slide in all directions by dragging, zoomed in/out by wheel rolling with a mouse like some web maps