Application of modified REFIT code for J-PARC/MLF to evaluation of neutron capture cross section on ^{155,157}Gd

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Gadolinium is important as a neutron-abs. material in thermal reactor

-- Contents –

1. Modified REFIT code for J-PARC/MLF.
2. Analysis of capture cross section of ^{155,157}Gd measured by J-PARC/MLF/ANNRI by modified REFIT.
3. Comparisons between obtained results and other libraries.

Present study includes the result of "Research and Development for accuracy improvement of neutron nuclear data on minor actinides" entrusted to the Japan Atomic Energy Agency by the Ministry of Education, Culture, Sports, Science and Technology of Japan (MEXT).

Modified REFIT code for J-PARC/MLF.

Difficulties for evaluation of neutron data measured by ANNRI at J-PARC/MLF

1. **Double-bunch structure of pulsed neutron beam**
2. **Energy resolution function for J-PARC/MLF**

Modified REFIT code developed by Hokkaido Univ.

H. Hasemi et al., Nucl. Instrum. Methods A 773(2015) 137.

REFIT

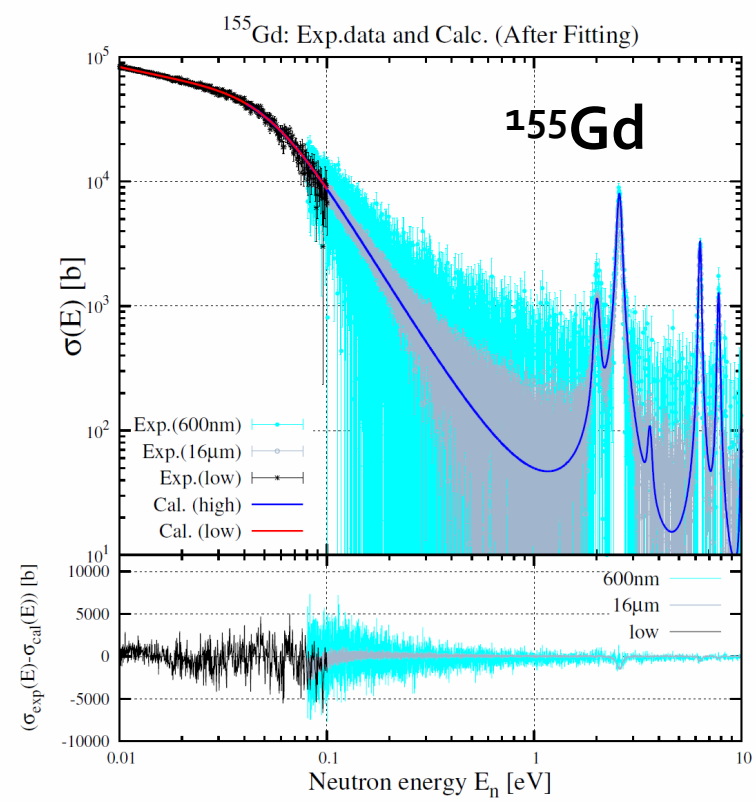
Energy resolution function for J-PARC/MLF

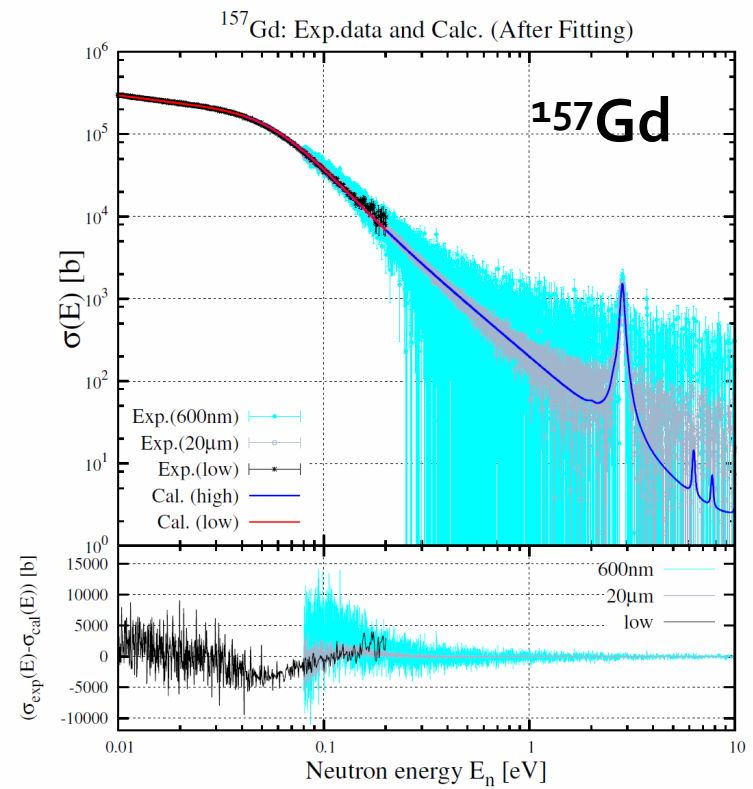
K. Kino et al., Nucl. Instrum. Methods Phys. Res.,Sect. A736,66(2014).

Pulse shape of double-bunch

Analysis of capture cross section of ^{155,157}Gd measured by J-PARC/MLF/ANNRI by modified REFIT

Negative resonance is necessary !





- ✓ Absolute capture cross section with high accuracy for low-energy ($E\downarrow n$ < 0.1 eV) measured by Kimura et al. (submitted to JNST)
- ✓ Relative cross section for higher energy.

Comparisons between obtained results and other libraries (JENDL-4.0, JEFF-3.2, ENDF).