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[P07] Problem on gammas emitted in capture reaction of TENDL-2019 and JEFF-3.3

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We reported that energy distribution data for secondary gammas from the capture reaction of a lot of nuclei in TENDL-2017 had no high-energy gamma peaks, which other nuclear libraries have, at the IAEA FENDL meeting in 2018 [1, 2]. It caused drastically small damage energy production cross sections at incident neutron energies below a few keV. In the process of JENDL development we examined whether the latest TENDL, TENDL-2019, and other latest nuclear data libraries had this issue or not. As a result, we found that a lot of nuclei in TENDL-2019 still had no high-energy gamma peaks in secondary gamma spectra from the capture reaction and several nuclei in JEFF-3.3 also have, while other nuclear data libraries such as JENDL-4.0 and ENDF/B-VIII.0 had those peaks. This problem causes not only drastically small damage energy production cross sections for radiation damage calculations at incident neutron energies below a few keV but also smaller gamma productions in shielding calculations. The problematic energy distribution data for secondary gammas in TENDL-2019 and JEFF-3.3 should be revised.

References
[1] L. Packer and A. Trkov, "FENDL Library for Fusion Neutronics Calculations", Summary Report from the Consultants'Meeting IAEA Headquarters 15-18 October 2018, p.11, INDC(NDS)-0769.
[2] C. Konno, "New comments on data below 20 MeV in FENDL-3.1d", https://www-nds.iaea.org/index-meeting-crp/CM-FENDL-2018/docs/Konno_FENDL_r7_2017.pdf

Primary authors: Dr KONNO, Chikara (Japan Atomic Energy Agency); KWON, Saerom (National Institutes for Quantum Science and Technology)

Presenter: Dr KONNO, Chikara (Japan Atomic Energy Agency)

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