Abstract Submitted
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New Decay Data Sub-library for Calculation of Nuclear Reactors Antineutrino Spectra[1] ALEJANDRO SONZOGNI, ELIZABETH MCCUTCHAN, TIMOTHY JOHNSON, National Nuclear Data Center, Brookhaven National Laboratory, Upton, NY 11973-5000 — The ENDF/B-VII.1 decay data sub-library contains up-to-date decay properties for all known nuclides and can be used in a wide variety of applications such as decay heat, delayed nu-bar and astrophysics. We have recently completed an upgrade to the ENDF/B-VII.1 decay data sub-library in order to better calculate antineutrino spectra from fission of actinide nuclides. This sub-library has been used to identify the main contributors to the antineutrino spectra as well as to derive a systematic behavior of the energy integrated spectra similar to that of the beta-delayed neutron multiplicities. The main improvements have been the use of the TAGS data from Algora et al and Greenwood et al, as well as some of the single beta spectrum data from Rudstam et al to obtain beta minus level feedings. Additionally, we have calculated the antineutrino spectra for neutron energies higher than thermal, needed for highly-enriched uranium cores, such as the HFIR in ORNL that will be used in the PROSPECT experiment. These calculations are relevant since the high precision beta spectra which are used in many antineutrino calculations were measured at thermal energies. The impact of the fission yield data on these calculations will be discussed.

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