



Contribution ID: 4

Type: Poster

Accuracy Evaluation of the Available Fission Yields in the ENDF/B-VII.1, ENDF/B-VIII.0 and JEFF 3.3 data libraries

Tuesday 9 July 2024 17:30 (1 minute)

The presentation presents a part of the work carried out in the research contract No. 24284 titled “accuracy evaluation of available fission yield data and updating” under the umbrella of the Coordinated Research Project (CRP): “updating fission yield data for applications” organized by the International Atomic Energy Agency (IAEA). One of the main objectives of this project is to evaluate the accuracy of the available fission yield data by simulation of a series of benchmarks in the areas of nuclear reactors calculations.

In this research, the latest ENDF/B-VIII.0 and JEFF3.3 data libraries that released on 2018 and 2017, respectively, as well as the ENDF/B-VII.1 data library were tested on two research reactors (ETRR-2 and OPAL) using two different classes of computational codes: MCNPX V2.7.0 and WIMS-5B/CITVAP codes. Since the reactor criticality calculations are very sensitive to the data library accuracy, criticality benchmarks were selected in the work for the evaluation of these data libraries.

The Results showed that MCNPX V2.7.0 computational code is more accurate than WIMS-5B/CITVAP codes in the multi-cycles core calculations. Criticality calculations of multi-cycles core based on ENDF/B-VII.1, ENDF/B-VIII.0, or JEFF 3.3 data libraries gave good agreements with the measurements. ENDF/B-VIII.0 library resulted in higher accuracy than the other two data libraries. Considerable differences in the concentrations of Xe-135 and Sm-149 (the dominant generated poisons) were resulted from the three data libraries. ENDF/B-VIII.0 gave higher concentrations of the two poisons than the other two Data libraries while ENDF/B-VII.1 resulted in higher concentrations of the two poisons than that of JEFF 3.3.

Primary authors: MOHAMED, Nader (Egyptian Atomic Energy Authority, ETRR-1, Cairo, Egypt); Dr EL-SAIED, Mohamed (Reactors Department, Egyptian Atomic Energy Authority, Cairo, Egypt)

Presenter: MOHAMED, Nader (Egyptian Atomic Energy Authority, ETRR-1, Cairo, Egypt)

Session Classification: Poster Session

Track Classification: Nuclear data evaluation