

Nuclear Data Needs for Fast Reactors

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In the current fast reactor design studies, the following safety margins have been considered: 0.4%dk/k for criticality, 7.5% for sodium voided reactivity and Doppler reactivity (1sigma). These are realized using both the differential data (nuclear data) and the integral data (reactor physics experimental data). Before discussing about reduction of these safety margins, we should validate 1) that the covariance of nuclear data are properly evaluated, and 2) that the uncertainties of reactor calculation methods are properly evaluated.

Several benchmark calculations have been carried out with the latest evaluated nuclear data files, JENDL-3.3, JEFF-3.1 and ENDF/B-VII. ENDF/B-VII predicts well the neutronics parameters of fast reactors in comparison with JEFF-3.1 and JENDL-3.3. These results may be beneficial for the development of JENDL-4.