Development of Thermal Inelastic Scattering Covariance Data Capabilities with Demonstration of Light Water Evaluation

PI: Brian Kiedrowski (Univ. of Michigan)

Collaborators: Won Sik Yang (Univ. of Michigan), Vladimir Sobes (ORNL)

Program: MS-NE-2: Nuclear Data Needs for Nuclear Energy Applications

ABSTRACT:

The proposed work will produce a format for covariance data for inelastic thermal neutron scattering data for moderators, which does not currently exist in the ENDF format. To demonstrate the viability of this new format, an evaluation of the covariance data for thermal scattering in light water in this format will be produced, along with the capabilities to generate the files and test their efficacy. The evaluation will be proposed for inclusion within the ENDF nuclear data library. A capability for calculating sensitivity coefficients using multigroup methods to the fundamental physics parameters governing light-water scattering will be developed to facilitate identifying nuclear data needs related to thermal scattering.