

## Improvements to Fission Modeling and Evaluations Using Delayed Gamma Ray Modeling with FIER

Several recent forums have highlighted the need for a new fission product yield (FPY) evaluation for a wide variety of applied nuclear science and engineering applications. However, since most measurements of FPYs are made through the observation of decay radiations, any new FPY evaluation requires an integral validation which convolves both FPY and the relevant decay data. FIER is a software package that was recently developed to analytically predict delayed gamma-ray spectra following neutron-induced fission with propagated uncertainties. In previous work, FIER was used to assess the accuracy of nuclear data listed in the Evaluated Nuclear Data File (ENDF) through comparison to experimentally measured delayed gamma ray spectra following  $^{235}\text{U}(n,f)$  using the GODIVA critical assembly. Using a minimization routine, fission yields were varied until the discrepancy was resolved, highlighting the utility of FIER as an integral validation for both fission product yields and decay data. Additionally, current work on developing FIER's delayed neutron prediction capabilities is presented. This work will extend FIER's application space and enhance FIER's potential utility for validating a new FPY evaluation.

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