

Processing of Neutron Cross Section Covariances Using PUFF-IV and NJOY-99 Codes



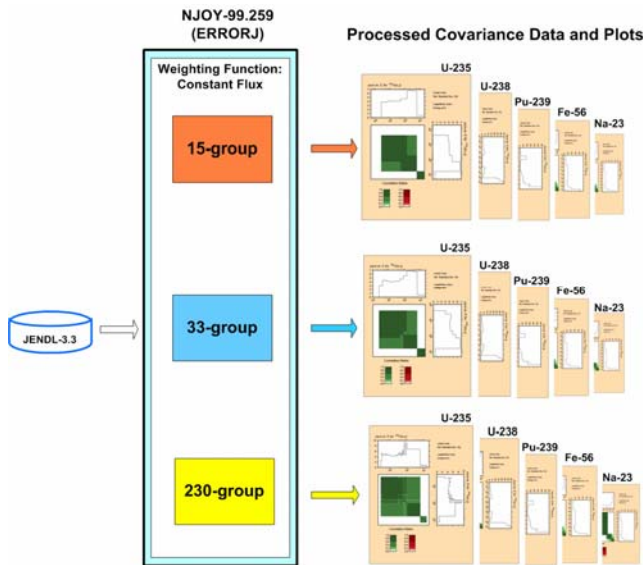
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Covariances for GNEP

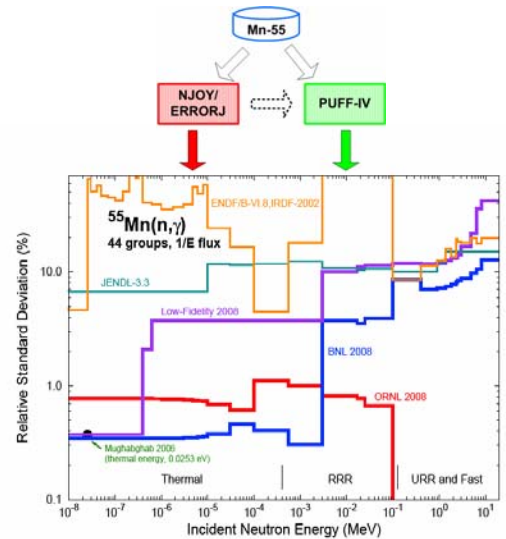
The NNDC provided processed covariances to DOE's **Global Nuclear Energy Partnership (GNEP)** program. Multi group-averaged covariance matrices of ^{56}Fe , ^{23}Na , ^{239}Pu , ^{235}U and ^{238}U from JENDL-3.3 were generated on NNDC's 64-bit Linux cluster using the NJOY-99.259/ERRORJ code. In the processing, the constant weighting function and the 15-, 33- and 230-group energy structures were used.



Covariances for NCSP

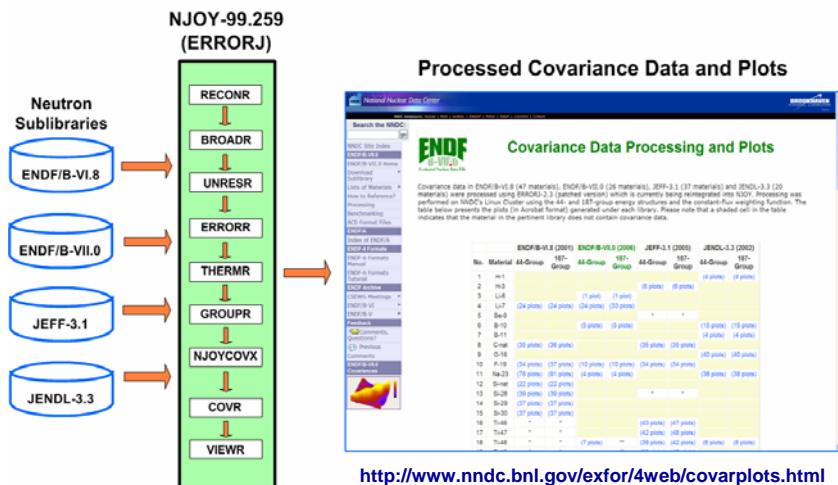
As the US nuclear data clearinghouse, the NNDC verified the processability of new covariance data evaluations generated by the collaboration of LANL and ORNL under the auspices of DOE's **Nuclear Criticality Safety Program (NCSP)**.

New covariances of ^{239}Pu , ^{233}U , ^{235}U , ^{238}U and ^{55}Mn in the capture and fission reaction channels were processed using NJOY-99.259/ERRORJ (LANL) and PUFF-IV 1.0.4.(ORNL).



Recent covariance data evaluation and processing efforts have been focused on Mn-55.

Covariances Web Page



The NNDC covariances Web page provides a static covariance data visualization interface for the four major data libraries: ENDF/B-VI.8 (47 materials), ENDF/B-VII.0 (26 materials), JEFF-3.1 (37 materials) and JENDL-3.3 (20 materials). It serves as a precursor to the dynamic visualization capabilities to be provided within the Sigma ENDF plotting and retrieval application.

Future Directions

The NNDC envisions to pursue the following future activities:

- ◆ Continue to provide GNEP applications with high-quality processed covariances for pertinent nuclear reactor materials.
- ◆ Continue to collaborate with other NCSP participants to ensure the accuracy, completeness and processability of new covariance data evaluations
- ◆ Continue to collaborate with the developers of PUFF-IV and NJOY-99 in the testing and use of new capabilities in these codes
- ◆ Provide dynamic covariance data visualization capabilities to end-users through the Sigma ENDF plotting and retrieval application shown below

