

SG39 kick-off meeting – 28-29 November 2013

Issues and actions

- 1- Compensations in current adjustments (e.g. MI example: case of Pu-239 chi, Na-23 inel, U-238 inel and Pu-239 inel). Need of integral experiments able to discriminate effects, see below (point 7) for a few suggestions. Analysis of current adjustments trends can also help (see point 6 below). Also covariance data as complete and reliable as possible (item for discussion with CIELO evaluators)
- 2- U-235 adjustments: enough experiments accounted for? More experiments needed to improve high energy range: suggestions?
All
- 3- Energy range of interest: at present 5 MeV-500 eV range fairly well covered. Need for epithermal spectra (not easy choice among existing experiments: TI? PROTEUS- HCLWRs? MH)
- 4- The delayed neutron issue: role of integral B_{eff} measurements? Need to look into BERENICE experiments and ANL experiments (accuracy, relevance etc.) Action IK, EI, MI (for deadline see point 7 below). If B_{eff} experiment could be in the adjustment, need for related nuclear data covariance.
- 5- Secondary neutron distribution adjustment: need sensitivity and covariance data
- 6- As for already existing adjustments (JAEA, CEA, INL, PSI, IRSN...), it is proposed to compare adjusted cross sections of the five isotopes (Pu-239, U-235, U-238, Fe-56 and Na-23) in 33 groups, using SG33 format (CS-J, MI, GP, SP, TI, EI, ED). “A priori/a posteriori” uncertainties to be reported too. Possible comparison with standards. This comparison and associated analysis could be the basis for an interim report to CIELO by May 2014. Two hypotheses: a) discuss results and iterate by email, b) make discussion in May 2014. In that case meeting with CIELO in November 2014.

7- Specific integral measurements can be required in order to avoid as much as possible compensation effects and provide valuable information on separated effects:

- Single isotope (e.g. sample irradiation effects for capture and (n, 2n) cross-sections). However few exp. available
- Neutron propagation experiments for elastic/inelastic cross sections (e.g. ASPIS iron propagation experiment: IK will report on it)
- “Flat” adjoint flux experiments (to separate inelastic from absorption cross sections). The STEK experiments have been documented in a JAEA report (that will be circulated). Also: reanalysis at Petten. ED, EI, MI, MS will look into them to see if they could be useful for the present purposes. Any other experiment of this type available?
- U-238 sphere neutron transmission experiments (TI for Obninsk experiments? CDS-J, GP?) Others?

A summary to be compiled by next meeting (May 2014) on all these experiments with preliminary documents to be circulated ahead of that date for comments. Action: GP, MS, MI, EI, TI, CDS-J, IK, SP, MH,

8- P_n scattering anisotropy to be carefully accounted for (IK and FLATTOP case analysis). In this frame, new full MC methods have been developed and should be compared e. g. on the same FLATTOP experiment (EI action)

9- Methodology issues:

- Adjusted central values acceptability: if it stays in ~ 1 sigma of original uncertainty.
- Adjustment in low sensitivity energy regions: acceptable if correlations in energy do require them.
- Experiment “rejection”: better use the different criteria for giving “warnings”. Criteria to be summarized by GP.
- Use of a posteriori covariance data: if feedback to designers, both adjusted data and a posteriori covariance; if feedback to evaluators, only trends will be given. Also: method to avoid generation of not previously existing cross correlations (TI, EI make example for SG33 adjustment)

- Prepare list of priority missing covariance data types and list of “suspect” low values (file dependent) (MI). Provide this to CIELO.
- Nuclear parameter adjustment: first attempts promising. However not yet consensus. Needs some further discussion and iteration with evaluators.

Summary of methodology issues to be prepared as future deliverable (GP, CSD-J, EI, MI, and MS). Further discussion at next meeting (May 2014)