New Subgroup Proposal: "Methods and approaches to provide feedback from nuclear and covariance data adjustment for improvement of nuclear data files"

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Background

- **Subgroup 33 has succeeded in providing a deeper understanding of nuclear data adjustment methods and of their application:**
  - the statistical adjustments methodologies in use worldwide are essentially equivalent and can provide a powerful tool for nuclear data improvement if used in appropriate manner
  - the associated sensitivity analysis requires careful use of existing methods
  - the choice of specific integral experiments of different types is of high relevance to avoid as much as possible compensating effects in the adjustments
  - the covariance data used, both for nuclear data and integral experiments, play a crucial role for the adjustments

Background

- **The role for cross section adjustment is more and more perceived as that of providing useful feedback to evaluators and differential measurement experimentalists in order to improve the knowledge of neutron cross sections to be used in a wider range of applications.**
- **This new role for cross section adjustment requires tackling and solving a new series of issues:**
  - definition of criteria to assess the reliability and robustness of an adjustment
  - requisites to assure the quantitative validity of the covariance data
  - criteria to alert for inconsistency between differential and integral data

Background

- **new series of issues (cont.):**
  - definition of consistent approaches to use both adjusted data and a-posteriori covariance data to improve quantitatively nuclear data files
  - methods and conditions to generalize the results of an adjustment for extrapolation of the results of an adjustment to a different range of applications
  - guidelines to enlarge the experimental data base in order to meet needs that were identified by the cross section adjustment

Proposal

- **WPEC can offer the ideal frame for an international activity aiming to a common set of practices and methods to improve nuclear data files.**
- **Title:** Methods and approaches to provide feedback from nuclear and covariance data adjustment for improvement of nuclear data files
- **Subgroup Coordinators:** G. Palmiotti, M. Salvatores
- **Subgroup Monitors:** R. McKnight, M. Ishikawa
- **Subgroup Participants:**
  - The data projects will identify appropriate participants from their community. There is the need of an enlarged participation (i.e. with a wider participation of evaluators, nuclear data experimentalists, reactor core designers)

Proposal

- **Definition of the project and of proposed activities**
  - Mandate for this new WPEC subgroup is to provide criteria and practical approaches to use effectively the results of sensitivity analyses and cross section adjustments for feedback to evaluators and differential measurement experimentalists in order to improve the knowledge of neutron cross sections, uncertainties, and correlations to be used in a wide range of applications.
- **Relevance to Evaluated Data Files**
  - This activity is of particular relevance to the foreseen objective to improve future data files using synergies from different nuclear data projects (e.g. providing specific feedback to CIELO initiative).
  - Communication with other NSC data related activities should continue (in particular as previously done within Subgroup 33 for the case of UACSA)

Proposal

- **Working method**
  - Review issues and summarize findings on methodologies used to provide feedback to evaluated data files (e.g. reactor physics experiment accuracies, adjustment methodologies etc.).
  - Select and define test cases for application. Test cases should be selected among existing or ongoing international projects for large scale adjustments. The type of data that should be made available (in principle adjustment results, sensitivity coefficients, integral experiment information) will be defined on a case by case basis.
  - Based on obtained results, recommend a general methodology and practices for providing feedback to evaluators both on nuclear data and on associated covariance data, based on specific examples.
  - Actual feedback will be provided to evaluation projects (e.g. CIELO initiative) on the specific examples indicated in the previous point.

Proposal

- **Time-Schedule and Deliverables**

  It is anticipated that the experts of this SG could complete and document the indicated activities within 3 years:

  - May-June 2013: Review and approval of subgroup proposal by WPEC and NSC
  - May-June 2013: Initiate subgroup activities
  - Fall 2013: Actual kick-off workshop/meeting
  - November, 2014: Draft report of subgroup activities on methodologies and preliminary results of test cases analysis
  - November, 2015: Preliminary feedback to evaluation projects
  - June 2016: Final report