NUCLEAR ENERGY AGENCY
NUCLEAR SCIENCE COMMITTEE

Working Party on International Nuclear Data Evaluation Co-operation (WPEC)

WPEC Subgroup 44 Meeting

SUMMARY RECORD

27 November 2018

OECD-NEA, Boulogne-Billancourt 92100, France

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Organisation for Economic Co-operation and Development
Nuclear Energy Agency
WPEC Subgroup 44 Meeting
OECD-NEA, Boulogne-Billancourt 92100, France

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Contents

1   Welcome and practicalities

The chair, **Cyrille de Saint-Jean**, opened the joint session with SG-46. He welcomed the participants (see Appendix A) and the NEA Secretariat, **Michael Fleming**.

2   Adoption of the agenda and approval of summary records

The proposed agenda (see Appendix B) was adopted at the opening of the session.

3   Review of actions

There were no actions from the previous meeting to review.

The chair discussed the original intention of the SG44 to identify cases for covariance evaluation and perform group benchmark studies on those cases. Four examples were identified during the SG meetings, but none of these generated active benchmark activities.

4   Presentations

4.1   JEFF-3.3 covariance application to ICSBEP using SANDY and NDaST, L. Fiorito

Providing reliable estimates of the nuclear data contribution to the uncertainty of well-known integral benchmarks is fundamental to the validation and verification process for a nuclear data library.

The Nuclear Energy Agency has produced and maintains the NDaST sensitivity tool, which integrates the DICE sensitivities and nuclear data covariances. This system has been used to rigorously and efficiently provide direct feedback to evaluators and streamline validation.

For its future evolution and to identify high-priority development areas, NDaST is continuously compared against state-of-the-art codes that use different uncertainty propagation methodologies.

In this work, NDaST was compared to the nuclear data sampling code SANDY for several ICSBEP criticality benchmarks using the JEFF-3.3 evaluated data. Despite excellent overall agreement for cross sections and fission neutron multiplcities, discrepancies due to processed covariance descriptions for angular distributions and prompt fission neutron spectra have identified areas where co-ordinated development of nuclear data covariance descriptions should be prioritised.

4.2   Inconsistent data and uncertainties, H. Sjöstrand

The resulting uncertainties from an evaluation are heavily affected by the interpretation of the experimental data [1]. Often, this interpretation is not fully reported in connection to the evaluation, which complicates the assessment and intercomparison of resulting uncertainties. In addition, inconsistent experimental data jeopardize the statistical consistency of ND evaluations.

Recently, an empirical Bayesian approach has been developed to deal with inconsistent experimental data [2]. This presentation outlined the advantages of treating experimental data in a transparent and consistent manner, with an emphasis on the treatment of inconsistent data.

(1) Helgesson P., Neudecker D., Sjöstrand H., Grosskopf M., Smith D., Capote R.; "Assessment of Novel Techniques for Nuclear Data Evaluation"; Conference: 16th International Symposium of Reactor Dosimetry (ISRD16); (2017)

(2) G. Schnabel, Fitting and Analysis Technique for Inconsistent Nuclear Data, Proc. of MC2017, 2017

4.3   The progress of n+U-238 evaluation at CNDC, Haicheng Wu

Evaluating cross sections measured by the absolute methods and assessing covariance for each data set is an important step before doing simultaneous evaluation. The current evaluation procedure of CENDL was shown in the presentation. For U-238(n,f) cross section evaluation, 5 experimental data sets were recommended for the further simutaneuous evaluation at first. Then covariance matrices were constructed for each selected experimental data set by using the ASEU method. After that, a covariance matrix for the U-238(n,f) cross sections between 0.5 to 20MeV was generated based on the covariance matrices for the selected experimental data. Finally, the new evaluated covariance matrix was compared with the current standard evaluation to check if the evaluation results are reseasonable.

5   Any other business

None

6   Data and place of the next meeting

The next WPEC Subgroup 44 Meeting will take place during **the week of 24-28 June 2019** at the **OECD-NEA, Boulogne-Billancourt 92100, France**.

7   Actions

No new actions were agreed

A   Participants

List of participants in the **WPEC Subgroup 44 Meeting** held at **OECD-NEA, Boulogne-Billancourt 92100, France** on **27 November 2018**, organised by represented country or international organisation.

Given name	Name	Country	
Nasri	AMINE	FRANCE	
Marilena	AVRIGEANU	ROMANIA	
Vlad	AVRIGEANU	ROMANIA	
Thibault	CORDIER	FRANCE	
Cyrille	DE SAINT JEAN	FRANCE	Chair
Pierre	DOSSANTOS-UZARRALDE	FRANCE	
Luca	FIORITO	FRANCE	
Michael	FLEMING	FRANCE	Secretary
Mark	GILBERT	UNITED KINGDOM	
Stephane	HILAIRE	FRANCE	
Mathieu	HURSIN	SWITZERLAND	
Raphaelle	ICHOU	FRANCE	
Clément	JEANNESSON	FRANCE	
Gregoire	KESSEDJIAN	FRANCE	
Stefan	KOPECKY	BELGIUM	
Nicolas	LECLAIRE	FRANCE	
Helmut	LEEB	AUSTRIA	
Ping	LIU	CHINA	
Henrik	SJÖSTRAND	SWEDEN	
Haicheng	WU	CHINA	

B Agenda

OECD Nuclear Energy Agency
WPEC Subgroup 44 Meeting, 27 November 2018

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Room BB-10

AGENDA

Start	End	Topic	Presenter	Country
16:00	16:10	Introduction to Joint 44/46 session	Cyrille DE SAINT JEAN	France
16:10	16:30	JEFF-3.3 covariance application to ICSBEP using SANDY and NDaST	Luca FIORITO	OECD-NEA
16:30	16:50	Inconsistent data and unceratainties	Henrik SJÖSTRAND	Sweden
16:50	17:10	The progress of n+U-238 evaluation at CNDC	Haicheng WU	China
17:10	18:00	Discussion	All	