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Abstract. It is widely accepted that the current status of neutronics calculations for fast reactor design is such that present uncertainties on nuclear data should still be significantly reduced, in order to get full benefit from advances in modeling and simulation. Only a parallel effort in advanced simulation, in high accuracy validation experiments and in nuclear data improvement will provide designers with more general and well validated calculation tools to meet tight design target accuracies to further improve safety and economics. The present paper presents very recent results related to nuclear data uncertainty impact assessment, as a new step in the frame of an international activity, sponsored by OECD-NEA.

1. Introduction

The first and most significant recent initiative aiming to a systematic nuclear data uncertainty impact assessment, was taken by the Working Party on Evaluation Cooperation (WPEC) of the OECD Nuclear Energy Agency Nuclear Science Committee when it established a Subgroup (called 26) to develop a systematic approach to define data needs for advanced reactor systems and to make a comprehensive study of such needs for Generation-IV (Gen-IV) reactors. The subgroup was established at the end of 2005, and a final report has been published in 2008 [1]. A comprehensive sensitivity and uncertainty study was performed to evaluate the impact of neutron cross-section uncertainty on the most significant integral parameters related to the core and fuel cycle of a wide range of innovative systems, even beyond the Gen-IV range of systems. In particular, results have been obtained for the Advanced Breeder Reactor (ABR), the Sodium-cooled Fast Reactor (SFR), the European Fast Reactor (EFR), the Gas-cooled Fast Reactor (GFR) and the Lead-cooled Fast Reactor (LFR), the Accelerator Driven Minor Actinide Burner (ADMAB). These systems correspond to current studies within the Generation-IV initiative, the Advanced Fuel Cycle Initiative (AFCI), and the advanced fuel cycle and Partitioning/Transmutation studies in Japan and Europe.

2. Sensitivity and uncertainty analysis

In order to perform the analysis, state-of-the-art sensitivity and uncertainty methods had been used based on the ERANOS code system [2].

The integral parameter uncertainties were initially calculated using covariance data developed in a joint effort of several laboratories contributing to the Subgroup activity. This set of covariance matrices was referred to as BOLNA [3].

The calculated integral parameter uncertainties, resulting from the initially assessed uncertainties on nuclear data of the BOLNA set, were found rather acceptable for the early phases of design feasibility studies. In fact, the uncertainty on keff was found to be less than 2% for all systems (with the exception of the Accelerator Driven System, ADS) and reactivity coefficient uncertainties below 20%. Power distributions uncertainties are also relatively small, except, once more, in the case of the ADS.

However, later conceptual and design optimization phases of selected reactor and fuel cycle concepts will need improved data and methods, in order to reduce margins, both for economical and safety reasons. For this purpose, a compilation of preliminary "Design Target Accuracies" has been put together and a target accuracy assessment has been performed to provide an indicative quantitative evaluation of nuclear data improvement requirements by isotope, nuclear reaction and energy range, in order to meet the Design target accuracies, as compiled in the present study. First priorities were formulated on the basis of common needs for fast reactors and, separately, thermal systems. These priority items (see Table I) have been included in the High Priority Request List (HPRL) of the OECD-NEA DataBank.

Table I. Summary of Highest Priority Target Accuracies for Fast Reactors from Subgroup 26

		Energy Range	Current (BOLNA) Accuracy (%)	Target Accuracy (%)
U238	σ_{inel}	6.07 ÷ 0.498 MeV	10 ÷ 20	2 ÷ 3
	σ_{capt}	24.8 ÷ 2.04 keV	3 ÷ 9	1.5 ÷ 2
Pu241	σ_{fiss}	1.35MeV ÷ 454 eV	8 ÷ 20	2 ÷ 3 (SFR,GFR,LFR) 5 ÷ 8 (ABTR, EFR)
Pu239	σ_{capt}	498 ÷ 2.04 keV	7 ÷ 15	4 ÷ 7
Pu240	σ_{fiss}	1.35 ÷ 0.498 MeV	6	1.5 ÷ 2
	ν	1.35 ÷ 0.498 MeV	4	1 ÷ 3
Pu242	σ_{fiss}	2.23 ÷ 0.498 MeV	19 ÷ 21	3 ÷ 5
Pu238	σ_{fiss}	1.35 ÷ 0.183 MeV	17	3 ÷ 5
Am242m	σ_{fiss}	1.35MeV ÷ 67.4keV	17	3 ÷ 4
Am241	σ_{fiss}	6.07 ÷ 2.23 MeV	12	3
Cm244	σ_{fiss}	1.35 ÷ 0.498 MeV	50	5
Cm245	σ_{fiss}	183 ÷ 67.4 keV	47	7
Fe56	σ_{inel}	2.23 ÷ 0.498 MeV	16 ÷ 25	3 ÷ 6
Na23	σ_{inel}	1.35 ÷ 0.498 MeV	28	4 ÷ 10
Pb206	σ_{inel}	2.23 ÷ 1.35 MeV	14	3
Pb207	σ_{inel}	1.35 ÷ 0.498 MeV	11	3
Si28	σ_{inel}	6.07 ÷ 1.35 MeV	14 ÷ 50	3 ÷ 6
	σ_{capt}	19.6 ÷ 6.07 MeV	53	6

3. New covariance data for improved uncertainty analysis

Very recently, an effort lead by BNL [4] has produced an improved version of the initial covariance data (here called AFCI 1.2) with an energy group structure of 33 groups (instead of 15), and revised uncertainties have been calculated on the wide range of Fast Reactor systems considered above. While the 15 groups energy structure was intended to cover all the energy spectrum, so that also a VHTR reactor and a high burn up PWR was included in the Subgroup 26 study, the 33 group energy structure is devoted to specifically cover the fast reactor energy range. Typical results obtained with AFCI 1.2 and comparisons with previous data obtained with the BOLNA data are given in Tables II-XIII.

Table II. ADMAB-EOC: keff Uncertainty (%) using AFCI 1.2

ISOTOPE	CAPTURE	ELASTIC	NU	INELASTIC	FISSION	SUM
PU238	0.04	0.00	0.14	0.03	1.29	1.29
CM245	0.01	0.00	0.12	0.01	1.12	1.13
CM244	0.64	0.00	0.56	0.07	0.72	1.12
AM241	0.60	0.00	0.30	0.19	0.83	1.08
PU241	0.08	0.00	0.03	0.01	0.95	0.95
CM242	0.05	0.00	0.08	0.03	0.68	0.68
AM243	0.30	0.00	0.09	0.24	0.40	0.56
NP237	0.18	0.00	0.06	0.18	0.35	0.44
BI209	0.06	0.05	0.00	0.30	0.00	0.31
PU240	0.13	0.00	0.16	0.02	0.15	0.26
AM242M	0.02	0.00	0.02	0.01	0.24	0.24
N15	0.01	0.22	0.00	0.01	0.00	0.22
PU242	0.07	0.00	0.04	0.03	0.19	0.21
PB206	0.02	0.01	0.00	0.19	0.00	0.19
PU239	0.08	0.01	0.07	0.08	0.11	0.18
SUM	0.98	0.24	0.70	0.55	2.42	2.77

Table III. ADMAB-EOC: keff Uncertainty Difference (%) between AFCI1.2 and BOLNA (major contributions)

ISOTOPE	CAPTURE	ELASTIC	NU	INELASTIC	FISSION	SUM
CM244	0.45	0.00	0.17	0.02	-1.38	-1.03
PU238	0.00	0.00	-0.18	0.02	0.79	0.70
FE56	0.05	-0.01	0.00	-0.69	0.00	-0.63
CM242	0.04	0.00	0.03	0.02	0.44	0.44
BI209	0.06	0.05	0.00	0.30	0.00	0.31
AM241	0.22	0.00	0.15	-0.05	0.11	0.22
N15	0.01	0.22	0.00	0.01	0.00	0.22
SUM	0.45	0.19	0.12	-0.39	-0.33	-0.24

Table IV. ABR-Metal-EOC: keff Uncertainty (%) using AFCI 1.2

ISOTOPE	CAPTURE	ELASTIC	NU	INELASTIC	FISSION	SUM
U238	0.18	0.17	0.14	0.97	0.04	1.01
PU241	0.07	0.00	0.02	0.00	0.66	0.67
PU238	0.02	0.00	0.06	0.01	0.56	0.56
PU240	0.29	0.01	0.30	0.02	0.27	0.50
PU239	0.16	0.03	0.12	0.08	0.20	0.30
PU242	0.09	0.00	0.04	0.02	0.19	0.21
CM245	0.00	0.00	0.02	0.00	0.21	0.21
FE56	0.15	0.12	0.00	0.03	0.00	0.20
NA23	0.00	0.07	0.00	0.08	0.00	0.11
CM244	0.07	0.00	0.05	0.00	0.06	0.11
AM241	0.05	0.00	0.02	0.01	0.04	0.07
CM242	0.01	0.00	0.01	0.00	0.06	0.06
FE54	0.05	0.03	0.00	0.01	0.00	0.06
AM242M	0.00	0.00	0.00	0.00	0.04	0.04
AM243	0.03	0.00	0.01	0.01	0.03	0.04
SUM	0.44	0.23	0.37	0.98	0.98	1.52

Table V. ABR-Metal-EOC: keff Uncertainty Difference (%) between AFCI1.2 and BOLNA (major contributions)

ISOTOPE	CAPTURE	ELASTIC	NU	INELASTIC	FISSION	SUM
PU238	0.00	0.00	-0.08	0.01	0.34	0.31
FE56	0.07	0.07	0.00	-0.28	0.00	-0.13
NA23	-0.02	0.03	0.00	-0.11	0.00	-0.09
SUM	0.03	0.03	-0.01	-0.03	0.16	0.09

Table VI. SFR: keff Uncertainty (%)

ISOTOPE	CAPTURE	ELASTIC	NU	INELASTIC	FISSION	TOTAL
PU238	0.06	0.00	0.16	0.02	1.31	1.32
PU241	0.13	0.00	0.03	0.01	0.99	1.00
PU240	0.47	0.01	0.44	0.03	0.39	0.76
AM242M	0.09	0.00	0.05	0.02	0.65	0.66
PU242	0.20	0.00	0.08	0.03	0.38	0.44
CM245	0.01	0.00	0.05	0.00	0.42	0.42
FE56	0.20	0.20	0.00	0.04	0.00	0.29
CM244	0.18	0.00	0.11	0.01	0.14	0.25
U238	0.05	0.04	0.03	0.23	0.01	0.24
PU239	0.13	0.02	0.08	0.06	0.13	0.21
AM241	0.10	0.00	0.04	0.01	0.09	0.14
NA23	0.01	0.02	0.00	0.11	0.00	0.11
CM242	0.01	0.00	0.01	0.00	0.11	0.11
AM243	0.06	0.00	0.01	0.02	0.06	0.09
FE54	0.07	0.05	0.00	0.01	0.00	0.08
TOTAL	0.64	0.21	0.51	0.27	1.91	2.11

Table VII. SFR: keff Uncertainty Difference (%) between AFCI1.2 and BOLNA (major contributions)

ISOTOPE	CAPTURE	ELASTIC	NU	INELASTIC	FISSION	TOTAL
PU238	0.00	0.00	-0.20	0.01	0.77	0.67
FE56	0.09	0.10	0.00	-0.41	0.00	-0.19
NA23	-0.01	0.01	0.00	-0.15	0.00	-0.15
CM244	0.12	0.00	0.03	0.00	-0.24	-0.15
B10	-0.14	-0.01	0.00	0.00	0.00	-0.14
PU240	0.16	0.00	0.01	0.02	0.03	0.11
TOTAL	0.18	0.10	-0.08	-0.29	0.37	0.30

Table VIII. EFR: keff Uncertainty (%)

ISOTOPE	CAPTURE	ELASTIC	NU	INELASTIC	FISSION	SUM
U238	0.25	0.16	0.13	0.89	0.03	0.95
PU240	0.33	0.00	0.28	0.02	0.26	0.51
PU241	0.05	0.00	0.01	0.00	0.40	0.40
PU239	0.25	0.02	0.15	0.08	0.20	0.37
PU238	0.02	0.00	0.04	0.01	0.34	0.34
PU242	0.06	0.00	0.02	0.01	0.08	0.11
NI58	0.10	0.00	0.00	0.02	0.00	0.11
FE56	0.10	0.02	0.00	0.02	0.00	0.10
O16	0.01	0.09	0.00	0.00	0.00	0.09
NA23	0.00	0.05	0.00	0.07	0.00	0.09
AM241	0.06	0.00	0.02	0.01	0.04	0.07
CM245	0.00	0.00	0.01	0.00	0.06	0.06
CM244	0.04	0.00	0.02	0.00	0.02	0.05
FE54	0.03	0.00	0.00	0.01	0.00	0.03
AM242M	0.00	0.00	0.00	0.00	0.03	0.03
SUM	0.52	0.20	0.35	0.90	0.63	1.28

Table IX. EFR: keff Uncertainty Difference (%) between AFCI1.2 and BOLNA (major contributions)

ISOTOPE	CAPTURE	ELASTIC	NU	INELASTIC	FISSION	SUM
PU238	0.00	0.00	-0.06	0.00	0.21	0.18
O16	-0.25	0.04	0.00	-0.03	0.00	-0.17
FE56	0.04	0.00	0.00	-0.16	0.00	-0.09
PU240	0.08	0.00	0.00	0.01	0.04	0.07
SUM	-0.06	0.01	0.01	0.00	0.10	0.02

Table X. GFR: keff Uncertainty (%)

ISOTOPE	CAPTURE	ELASTIC	NU	INELASTIC	FISSION	SUM
U238	0.29	0.14	0.16	1.50	0.04	1.54
PU241	0.08	0.00	0.03	0.01	0.80	0.80
PU238	0.03	0.00	0.06	0.01	0.54	0.54
AM241	0.26	0.00	0.09	0.03	0.26	0.38
PU240	0.20	0.00	0.20	0.02	0.21	0.36
PU239	0.22	0.01	0.13	0.07	0.15	0.30
PU242	0.15	0.00	0.05	0.03	0.22	0.27
SI28	0.11	0.08	0.00	0.04	0.00	0.14
CM245	0.00	0.00	0.02	0.00	0.13	0.13
CM244	0.08	0.00	0.04	0.00	0.05	0.10
CGRA	0.00	0.05	0.00	0.07	0.00	0.09
AM243	0.05	0.00	0.01	0.02	0.04	0.07
NP237	0.04	0.00	0.01	0.02	0.05	0.07
ZR92	0.03	0.04	0.00	0.01	0.00	0.05
ZR91	0.04	0.03	0.00	0.00	0.00	0.05
SUM	0.54	0.18	0.31	1.51	1.07	1.96

Table XI. GFR: keff Uncertainty Difference (%) between AFCI1.2 and BOLNA (major contributions)

ISOTOPE	CAPTURE	ELASTIC	NU	INELASTIC	FISSION	SUM
PU238	0.00	0.00	-0.09	0.01	0.33	0.29
CGRA	-0.01	-0.26	0.00	0.02	0.00	-0.23
SI28	0.11	0.08	0.00	0.04	0.00	0.14
SUM	-0.04	-0.16	-0.01	0.07	0.11	0.08

Table XII. LFR: keff Uncertainty (%)

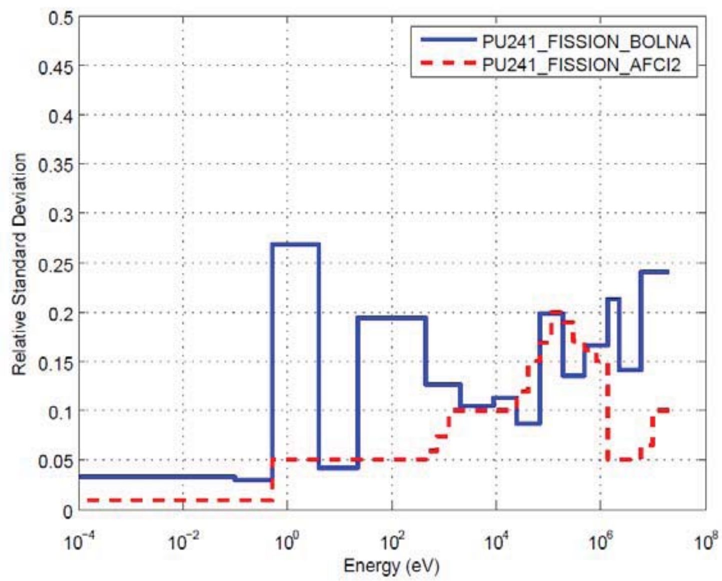
ISOTOPE	CAPTURE	ELASTIC	NU	INELASTIC	FISSION	SUM
PU238	0.04	0.00	0.10	0.01	0.93	0.93
U238	0.17	0.08	0.10	0.81	0.03	0.84
PU240	0.40	0.00	0.38	0.06	0.32	0.64
PU241	0.07	0.00	0.02	0.01	0.61	0.61
PB206	0.08	0.03	0.00	0.33	0.00	0.34
PU239	0.17	0.01	0.12	0.11	0.20	0.31
PB208	0.10	0.22	0.00	0.06	0.00	0.25
CM245	0.00	0.00	0.02	0.00	0.23	0.23
PU242	0.10	0.00	0.04	0.02	0.18	0.21
PB207	0.09	0.03	0.00	0.10	0.00	0.14
FE56	0.11	0.05	0.00	0.02	0.00	0.12
AM241	0.08	0.00	0.02	0.02	0.06	0.11
CM244	0.07	0.00	0.04	0.01	0.05	0.09
AM242M	0.01	0.00	0.00	0.00	0.06	0.06
ZR92	0.04	0.03	0.00	0.03	0.00	0.06
SUM	0.54	0.25	0.43	0.90	1.21	1.68

Table XIII. LFR: keff Uncertainty Difference (%) between AFCI1.2 and BOLNA (major contributions)

ISOTOPE	CAPTURE	ELASTIC	NU	INELASTIC	FISSION	SUM
PU238	0.00	0.00	-0.13	0.01	0.58	0.52
B10	-0.27	-0.02	0.00	0.00	0.00	-0.27
PB206	-0.03	0.01	0.00	0.18	0.00	0.16
FE56	0.06	0.03	0.00	-0.22	0.00	-0.12
PB208	0.06	0.09	0.00	0.02	0.00	0.11
PU240	0.15	0.00	0.01	0.03	0.01	0.10
SUM	0.01	0.10	-0.03	0.04	0.37	0.28

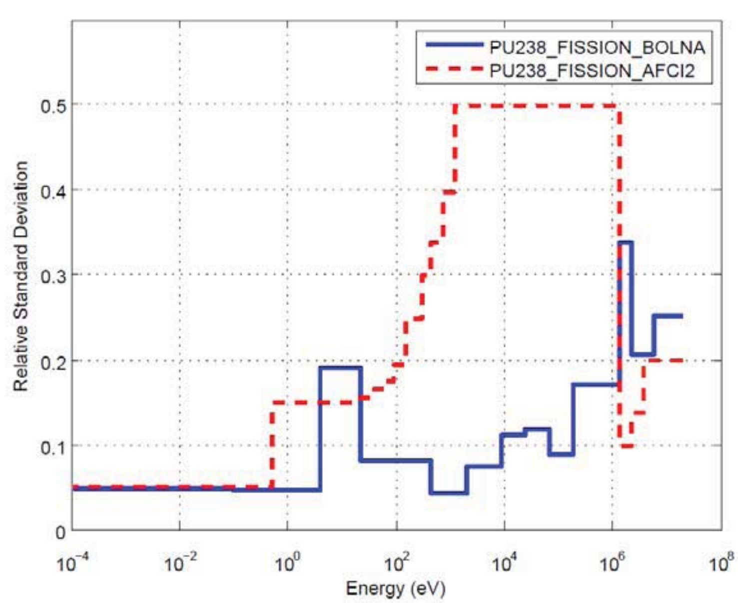
The overall uncertainties obtained with AFCI 1.2 confirm the order of magnitude of integral parameters uncertainties originally observed with BOLNA. The role of the uncertainty on U-238 inelastic cross section is confirmed, as it is the role of the Pu-241 fission cross section uncertainty, despite some significant variation between the uncertainties values in AFCI 1.2 with respect to BOLNA (see figure 1). In fact the Pu-241 fission uncertainty stays approximately the same between ~1MeV and ~1 keV and differs between the two covariance data libraries very strongly only above and below those energy values.

Figure 1. Relative Standard Deviation of Pu241 Fission Cross-sections in BOLNA and AFCI 1.2



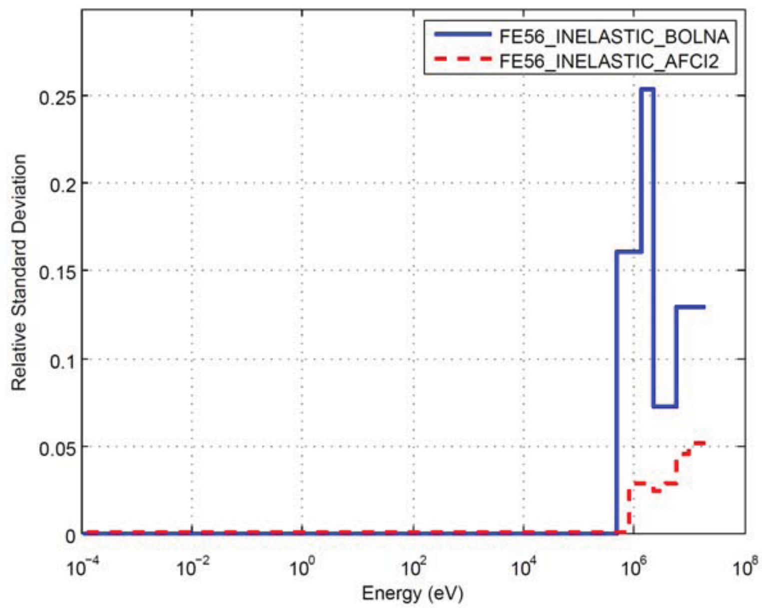
The major contributions to the difference between the two covariance data sets are the Pu-238 fission cross section uncertainty (much higher uncertainty values in AFCI 1.2, see figure 2) and the inelastic cross section of Fe-56 (much smaller in AFCI 1.2, see Figure 3). These are certainly issues that need further analysis.

Figure 2. Relative Standard Deviation of Pu238 Fission Cross-sections in BOLNA and AFCI 1.2



The AFCI 1.2 uncertainty data for Pu-238 are based on a comparative analysis done by Maslov, as indicated in Ref. 4. He compared evaluations in major data libraries and considered his own results and experimental data. Estimated uncertainties are based on difference with ENDF/B VII.0.

Figure 3. Relative Standard Deviation of Fe56 Inelastic Scattering Cross-sections in BOLNA and AFCI 1.2



As for minor actinides, their uncertainties continue to play an important role when the MA content in the core fuel is high (i.e. ADMAB and SFR). However, the AFCI 1.2 values confirm the previous analysis with BOLNA in the case of Cm-245 (see Figure 4, where fission cross section uncertainties are compared) and Am-241, but give a lower uncertainty associated to the fission of Cm-244 (see figure 5, relative to the fission cross section uncertainties in both covariance data sets).

Figure 4. Relative Standard Deviation of Cm245 Fission Cross-sections in BOLNA and AFCI 1.2

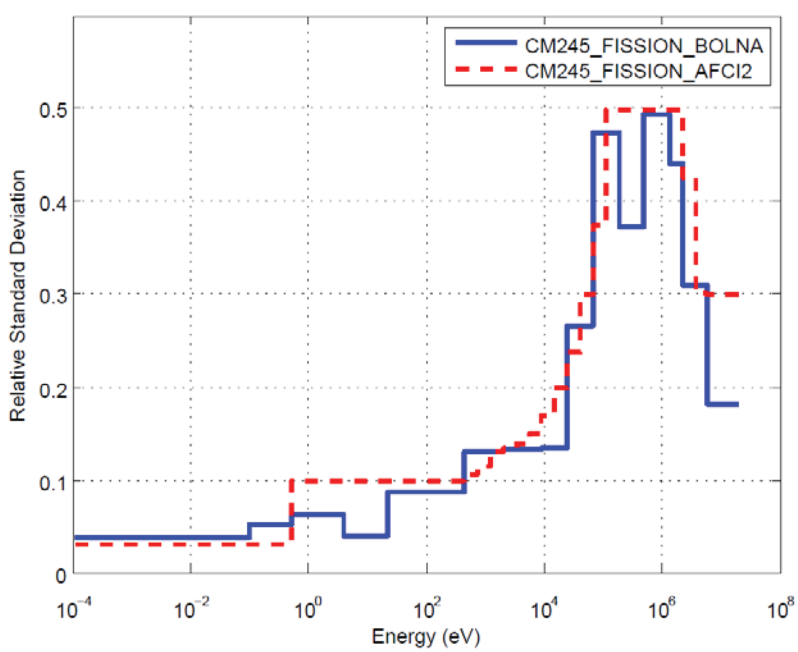
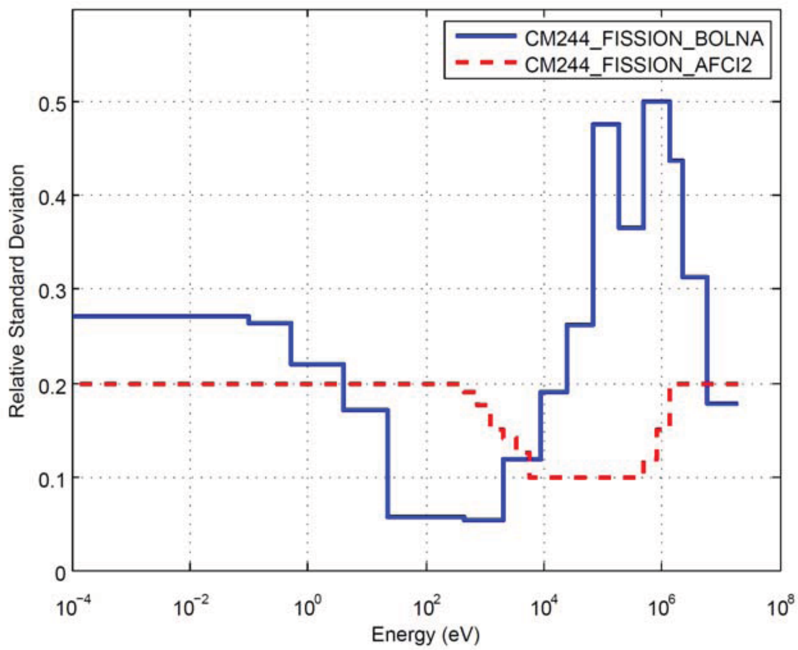
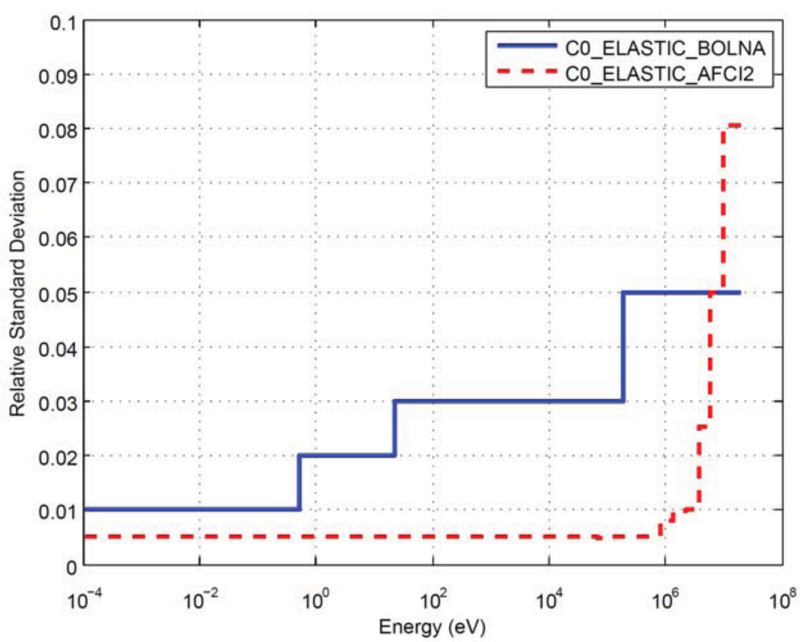


Figure 5. Relative Standard Deviation of Cm244 Fission Cross-sections in BOLNA and AFCI 1.2



Finally in the case of GFR it is interesting to point out the impact of the strong uncertainty reduction in AFCI 1.2 of the C elastic cross section (see figure 6 for the corresponding uncertainties comparison in AFCI 1.2 and BOLNA). The AFCI 1.2 uncertainty values are a LANL estimate. In the energy range 1 keV – 1.8 MeV, the C elastic cross section is a standard, and the latest evaluation gives uncertainties in the range ~0.5-0.9%.

Figure 6. Relative Standard Deviation of C Elastic Scattering Cross-sections in BOLNA and AFCI 1.2



As for the other parameters considered in the study of Subgroup 26 and reported in [1], the only significant new effect is related to the very high uncertainty of the Pu-238 fission cross section in AFCI 1.2. In fact an uncertainty of ~9% is observed in the case of the Na void coefficient in the SFR system, see table XIV.

Table XIV. SFR: Coolant-voided Reactivity Uncertainty (%) by Isotope (Full AFCI 1.2 Correlation Data)

ISOTOPE	CAPTURE	ELASTIC	NU	INELASTIC	FISSION	SUM
PU238	0.67	0.04	0.36	0.17	8.78	8.82
NA23	0.35	1.02	0.00	4.82	0.00	4.94
FE56	1.43	4.46	0.00	0.39	0.00	4.70
PU241	0.59	0.04	0.14	0.20	3.98	4.04
PU240	1.27	0.11	2.46	0.49	2.46	3.74
PU242	2.37	0.04	0.60	0.20	2.20	3.29
AM242M	0.71	0.02	0.26	0.21	2.45	2.57
CM244	1.99	0.02	0.76	0.08	0.77	2.27
PU239	1.13	0.34	1.07	0.65	0.91	1.94
U238	0.76	0.60	0.10	1.57	0.02	1.85
CM245	0.05	0.00	0.26	0.03	1.05	1.09
AM241	0.78	0.02	0.19	0.20	0.44	0.94
FE54	0.33	0.85	0.00	0.06	0.00	0.91
AM243	0.64	0.02	0.05	0.26	0.25	0.74
NP237	0.64	0.01	0.05	0.20	0.24	0.72
SUM	4.27	4.81	2.91	5.20	10.63	13.78

Finally, the new AFCI 1.2 covariance data set has some cross correlations between cross sections for a few isotopes and reactions (see Table XV). Their effect is very small at present. However, the generalization of this type of data in future versions of the covariance data sets will improve their quality and reliability.

Table XV. List of Isotopes with Cross-Reaction Correlations in AFCI 1.2

B10	ELASTIC x INELASTIC	GD155	ELASTIC x CAPTURE	U233	ELASTIC x N->2N
B10	INELASTIC x CAPTURE	GD157	ELASTIC x CAPTURE	U233	ELASTIC x FISSION
B11	ELASTIC x INELASTIC	GD160	ELASTIC x CAPTURE	U233	ELASTIC x CAPTURE
B11	ELASTIC x N->2N	H2	ELASTIC x N->2N	U233	FISSION x CAPTURE
B11	ELASTIC x CAPTURE	LI7	ELASTIC x INELASTIC	U235	ELASTIC x INELASTIC
BE9	ELASTIC x N->2N	MN55	ELASTIC x INELASTIC	U235	ELASTIC x N->2N
BE9	ELASTIC x CAPTURE	MN55	ELASTIC x N->2N	U235	ELASTIC x FISSION
C12	ELASTIC x INELASTIC	MN55	ELASTIC x CAPTURE	U235	ELASTIC x CAPTURE
C12	INELASTIC x CAPTURE	N15	ELASTIC x INELASTIC	U235	FISSION x CAPTURE
CM246	ELASTIC x INELASTIC	N15	ELASTIC x N->2N	U238	ELASTIC x INELASTIC
CM246	ELASTIC x N->2N	N15	ELASTIC x CAPTURE	U238	ELASTIC x N->2N
CM246	ELASTIC x FISSION	NA23	ELASTIC x CAPTURE	U238	ELASTIC x FISSION
CM246	ELASTIC x CAPTURE	NI58	ELASTIC x CAPTURE	U238	ELASTIC x CAPTURE
CR52	ELASTIC x CAPTURE	O16	ELASTIC x INELASTIC	U238	FISSION x CAPTURE
CR53	ELASTIC x CAPTURE	O16	INELASTIC x N->2N	ZR90	ELASTIC x INELASTIC
F19	ELASTIC x INELASTIC	O16	INELASTIC x CAPTURE	ZR90	ELASTIC x N->2N
F19	ELASTIC x N->2N	PU239	ELASTIC x INELASTIC	ZR90	ELASTIC x CAPTURE
F19	INELASTIC x N->2N	PU239	ELASTIC x N->2N		
F19	ELASTIC x CAPTURE	PU239	ELASTIC x FISSION		
FE56	ELASTIC x INELASTIC	PU239	ELASTIC x CAPTURE		
FE56	ELASTIC x N->2N	PU239	FISSION x CAPTURE		
FE56	INELASTIC x N->2N	TH232	ELASTIC x FISSION		
FE56	ELASTIC x CAPTURE	TH232	ELASTIC x CAPTURE		
FE56	INELASTIC x CAPTURE	TH232	FISSION x CAPTURE		
FE56	N->2N x CAPTURE	U233	ELASTIC x INELASTIC		

4. Conclusions and perspectives

The results of the present investigation indicate that a careful analysis is still needed in order to define the most appropriate and effective strategy for data uncertainty reduction. It seems that, besides a further consolidation of the present covariance data libraries, a strategy of combined use of integral and differential measurements should be further pursued in order to meet future requirements. Efforts in this direction are underway (see e.g. Ref. 5) and a new Subgroup has been established by the WPEC of the NEA-NSC in order to evaluate and compare different approaches in the field of the so-called "statistical data adjustment" or "data assimilation" methods The program of this new Subgroup (called "33"), is to inter-compare the statistical data adjustments performed simultaneously in different laboratories, starting from the same set of integral data and different cross section data sets. As for covariance data, the proposed exercise will have a first phase when all participants will use the same covariance data and a second phase when different covariance data sets will be used. The objective of the exercise is to verify at what extent a convergence of the adjusted data sets will be obtained. This type of outcome will greatly improve the perception of reliability of the adjusted data sets, in particular with respect to their respective domain of applicability. Moreover, the impact of different covariance data will be evaluated and the significance of having a set of data consistent with the original cross secton libraries will be assessed.

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