

# Adjustment of U, Pu and Fe cross-sections based on k-eff, $\beta$ -eff and shielding benchmark experiments

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## INPUT

- Relative cross sections covariance matrix  $V_{\sigma}$ .
- Vector of ratios  $C/E$  for integral parameters.
- Relative covariance matrix of experimental values  $V_E$ .
- Sensitivity matrix  $S$ .

## OUTPUT

- Vector of relative adjustment of cross sections.
- New values  $C/E$ .
- Matrix of adjusted relative covariances.

- Covariances for cross sections of\*  $^{56}\text{Fe}$ ,  $^{235,238}\text{U}$ ,  $^{239-242}\text{Pu}$ :

Library \ MF	33								35
	1	2	4	18	102	452	455	456	18
JENDL 4.0	x								
ENDF/B-VII.1					x			x	
COMMARA 2.0					x			x	
SCALE 6									x

\*: cross-material correlations only for U & Pu total fission

- Sensitivities,  $E$ , and  $V_E$ :

$\beta$ -eff & k-eff	Shielding
Flattop-PU	IRON88-AI27na-A7
SNEAK-7A	IRON88-Au197ng-A7/A11/A14
SNEAK-7B	IRON88-In115nn-A7/A11
	IRON88-Rh93nn-A7/A14
	IRON88-S32np-A7/A12/A14

- Covariances for cross sections of\*  $^{56}\text{Fe}$ ,  $^{235,238}\text{U}$ ,  $^{239-242}\text{Pu}$ :

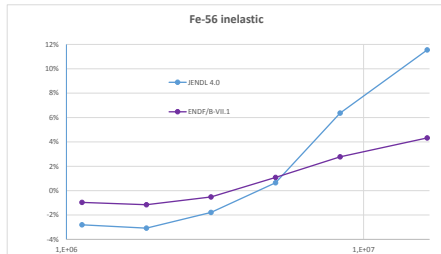
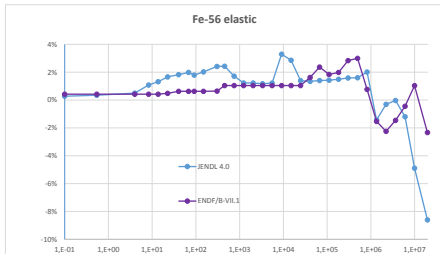
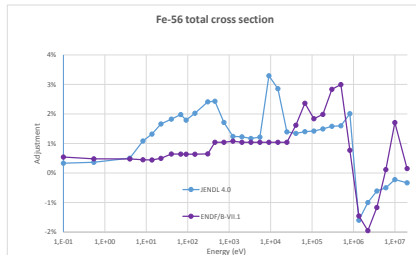
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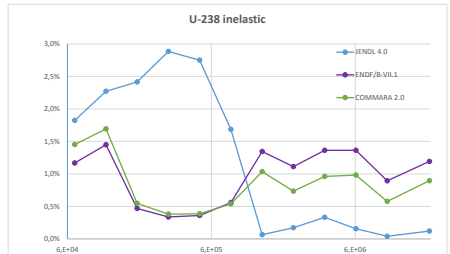
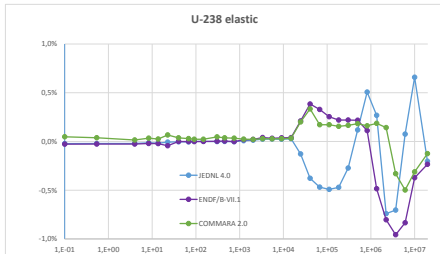
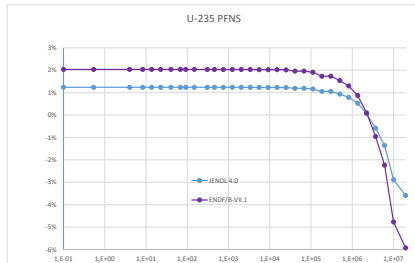
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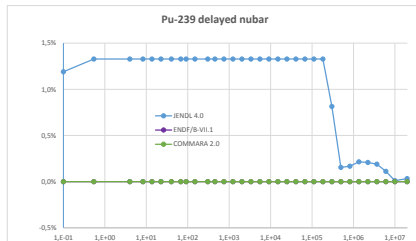
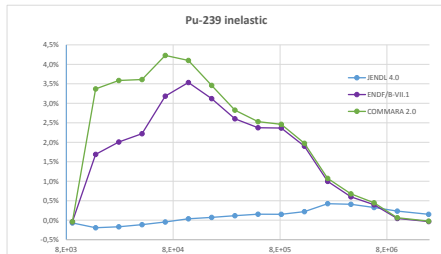
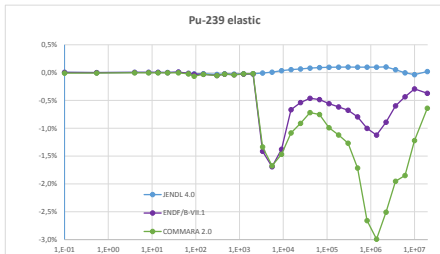
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$\beta$ -eff & k-eff	Shielding
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	IRON88-Rh93nn-A7/A14
	IRON88-S32np-A7/A12/A14

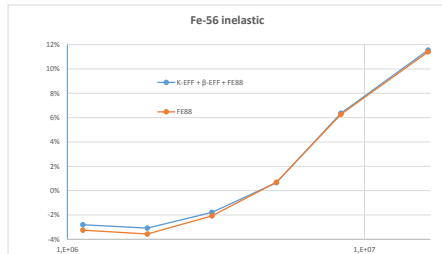
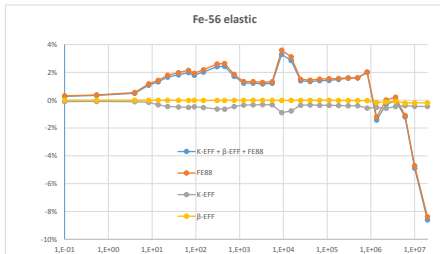
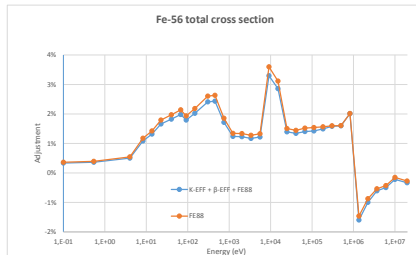
# Results: different covariances



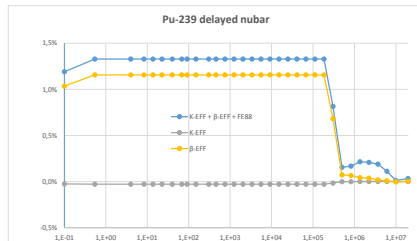
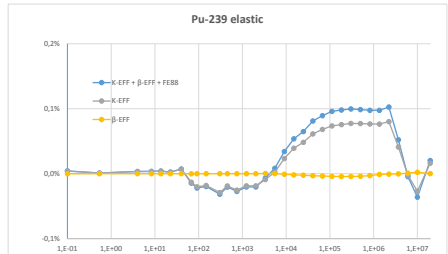
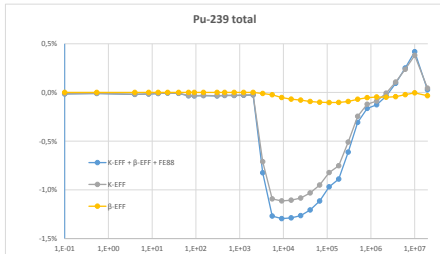


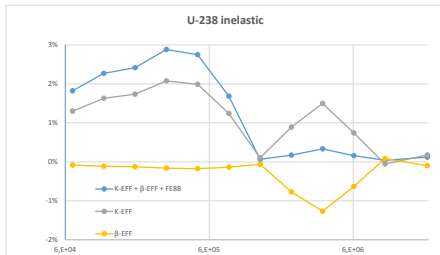
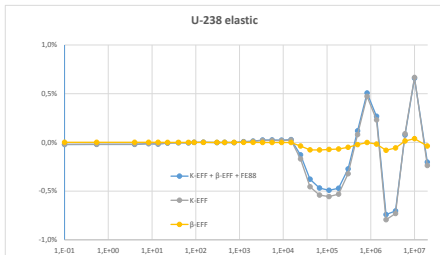
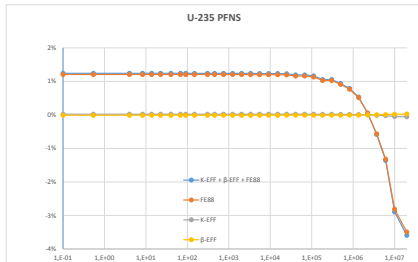


# Results: different benchmarks

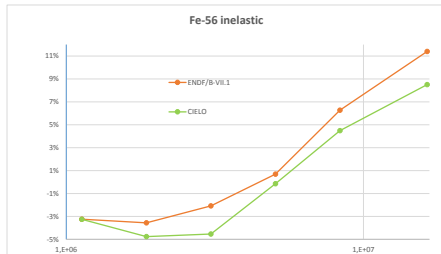
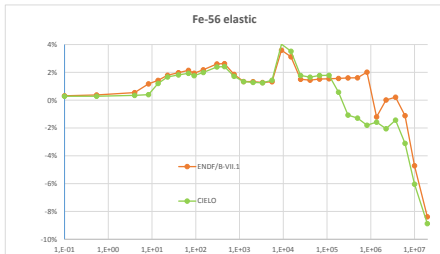
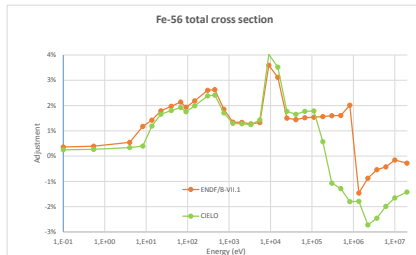




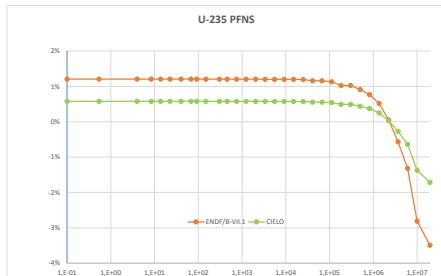
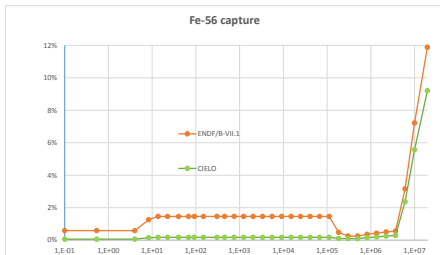




# Results: different C/E



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# New values of C/E

Parameter	Old value	JENDL 4.0	ENDF/B-VII.1
Flattop $\beta$ -eff	0.998	0.9995	0.9961
Flattop k-eff	1.000079	0.9994	0.9992
SNEAK-7A $\beta$ -eff	0.9433	0.9496	0.9426
SNEAK-7A k-eff	1.00549	1.0013	0.992
SNEAK-7B $\beta$ -eff	1.0149	1.0218	1.0014
SNEAK-7B k-eff	1.0042565	0.9993	1.0143
Reaction rate Au-A7	1.007	0.9878	0.9995
Reaction rate Au-A11	1.024	0.9925	0.9968
Reaction rate Au-A14	1.051	1.0116	1.0123
Reaction rate Rh-A7	1.054	1.0641	1.0644
Reaction rate Rh-A14	1.099	1.05	1.0419
Reaction rate In-A7	0.974	1.0316	1.0209
Reaction rate In-A11	0.968	0.9939	0.9991
Reaction rate S-A7	0.979	1.0015	0.9817
Reaction rate S-A12	0.939	1.0116	1.0026
Reaction rate S-A14	0.916	1.0079	1.0079
Reaction rate Al-A7	1.351	1.0319	1.039