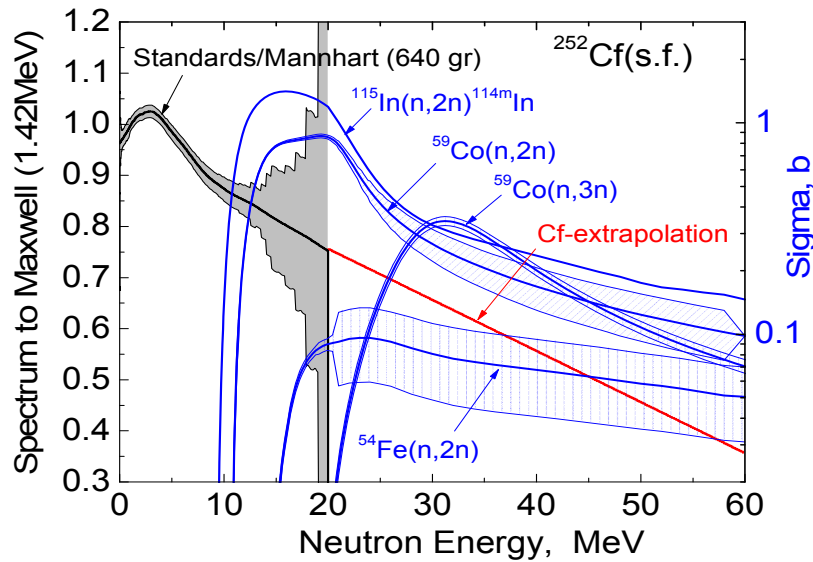


Comparison of the Cf-252 spectrum (Standards) averaged cross sections calculated by MCNP5 and RR_UNC employing IRDFF v.1-03

Large differences (>5%) for the high threshold reactions are caused by the different representation of Cf-252 spectrum above 20 MeV in the Monte Carlo (extrapolated above 20 MeV) and RR_UNC (cut out at 20 MeV) calculations
Such comparison just helps to see which reactions are sensitive to the Cf-252 neutrons with energies above 20 MeV



NN	Target					MCNP5 (> 20 MeV)			RR_UNC (< 20 MeV)		Ratio MCNP5/RR_UNC
	Isotope	MAT	ZAID	MT (ACE file)	Reaction	E (50%) MeV	SPA b	Statist Uncert	E (50%) MeV	SPA mb	
1	6-Li-6	325	3006	105	(n,α) H-3		3.2120E-01	0.0001	0.661	3.2134E+02	1.000
2	5-B-00	500	5000	102	(n,γ)		8.1859E-06	0.0002	0.398	8.1805E-03	1.001
3				103	(n,p)		2.1249E-03	0.0001	3.099	2.1243E+00	1.000
4				106	(n,He3)		9.2994E-12	0.0002	19.291	3.9341E-15	2363803.665
5				107	(n,xα)		8.8946E-02	0.0001	0.903	8.8899E+01	1.001
6	5-B-10	525	5010	107	(n,xα)		4.0917E-01	0.0001	0.901	4.4638E+02	0.917
7				800	(n,α0) Li-7		1.8214E-01	0.0001	1.856	1.8457E+02	0.987
8				801	(n,α1) Li-7		2.2703E-01	0.0001	0.436	2.6181E+02	0.867
9	9-F-19	925	9019	16	(n,2n) F-18		1.6341E-05	0.0001	14.042	1.6266E-02	1.005
10	11-Na-23	1125	11023	16	(n,2n) Na-22		8.7656E-06	0.0001	15.403	8.6137E-03	1.018
11				102	(n,γ) Na-24		2.7160E-04	0.0004	0.962	2.7147E-01	1.000
12	12-Mg-24	1225	12024	103	(n,p) Na-24		2.1034E-03	0.0001	8.260	2.1027E+00	1.000
13	13-Al-27	1325	13027	103	(n,p) Mg-27		4.7474E-03	0.0001	5.843	4.7459E+00	1.000
14				107	(n,xα) Na-24		1.0175E-03	0.0001	8.668	1.0172E+00	1.000
15	15-P-31	1525	15031	103	(n,p) Si-31		3.0659E-02	0.0001	3.969	3.0653E+01	1.000
16	16-S-32	1625	16032	103	(n,p) P-32		7.4044E-02	0.0001	4.074	7.4027E+01	1.000
17	21-Sc-45	2125	21045	102	(n,γ) Sc-46		4.9071E-03	0.0001	0.567	4.9038E+00	1.001
18	22-Ti-46	2225	22046	16	(n,2n) Ti-45		1.2589E-05	0.0001	16.026	1.2181E-02	1.034
19				103	(n,p) Sc-46		1.3822E-02	0.0001	6.081	1.3818E+01	1.000
20	22-Ti-47	2228	22047	103	(n,p) Sc-47		1.9541E-02	0.0001	3.817	1.9537E+01	1.000
21				10005	(n,x) Sc-46		1.9817E-05	0.0001	14.932	1.9412E-02	1.021
22	22-Ti-48	2231	22048	103	(n,p) Sc-48		4.2668E-04	0.0001	8.353	4.2654E-01	1.000
23				10005	(n,x) Sc-47		4.6467E-06	0.0001	15.885	4.3501E-03	1.068
24	22-Ti-49	2234	22049	10005	(n,x) Sc-48		2.8211E-06	0.0001	15.960	2.6445E-03	1.067
25	23-V-51	2328	23051	107	(n,xα) Sc-48		3.8578E-05	0.0001	9.975	3.8568E-02	1.000
26	24-Cr-52	2431	24052	16	(n,2n) Cr-51		9.7632E-05	0.0001	14.706	9.7029E-02	1.006
27	25-Mn-55	2525	25055	16	(n,2n) Mn-54		4.1627E-04	0.0001	13.089	4.1584E-01	1.001
28				102	(n,γ) Mn-56		2.8094E-03	0.0001	0.750	2.8076E+00	1.001
29	26-Fe-54	2625	26054	16	(n,2n) Fe-53		3.6653E-06	0.0001	16.484	3.4993E-03	1.047
30				103	(n,p) Mn-54		8.6508E-02	0.0001	4.439	8.6489E+01	1.000
31				107	(n,xα) Cr-51		1.1123E-03	0.0001	7.430	1.1120E+00	1.000
32	26-Fe-56	2631	26056	103	(n,p) Mn-56		1.4637E-03	0.0001	7.579	1.4632E+00	1.000
33	26-Fe-58	2637	26058	102	(n,γ) Fe-59		2.0138E-03	0.0002	0.734	2.0128E+00	1.000

NN	Target					MCNP5 (> 20 MeV)			RR_UNC (< 20 MeV)		Ratio MCNP5/RR_UNC
	Isotope	MAT	Z AID	MT (ACE file)	Reaction	E (50%) MeV	SPA b	Statist Uncert	E (50%) MeV	SPA mb	
34	27-Co-59	2725	27059	16	(n,2n)Co-58		4.0796E-04	0.0001	13.089	4.0768E-01	1.001
35				17	(n,3n)Co-57		9.7804E-08	0.0002	19.830	3.3945E-06	28.813
36				102	(n,γ)Co-60		4.8632E-03	0.0001	0.903	4.8606E+00	1.001
37				103	(n,p)Fe-59		1.7142E-03	0.0001	5.943	1.7137E+00	1.000
38				107	(n,xα)Mn-56		2.2113E-04	0.0001	8.372	2.2107E-01	1.000
39	28-Ni-58	27825	28058	16	(n,2n)Ni-57		8.6490E-06	0.0001	14.955	8.5407E-03	1.013
40				103	(n,p)Co-58		1.1737E-01	0.0001	4.203	1.1735E+02	1.000
41	28-Ni-60	2831	28060	103	(n,p)Co-60		2.8009E-03	0.0001	7.055	2.7999E+00	1.000
42	29-Cu-63	2925	29063	16	(n,2n)Cu-62		1.9881E-04	0.0001	13.835	1.9832E-01	1.002
43				102	(n,γ)Cu-64		1.0407E-02	0.0001	0.964	1.0401E+01	1.001
44				107	(n,α)Co-60		6.9300E-04	0.0001	7.274	6.9277E-01	1.000
45	29-Cu-65	2931	29065	16	(n,2n)Cu-64		6.5386E-04	0.0001	12.680	6.5381E-01	1.000
46	30-Zn-64	3025	30064	103	(n,p)Cu-64		4.2683E-02	0.0001	4.168	4.2675E+01	1.000
47	30-Zn-67	3034	30067	103	(n,p)Cu-67		1.1056E-03	0.0001	4.709	1.1053E+00	1.000
48	33-As-75	3325	33075	16	(n,2n)As-74		6.2073E-04	0.0001	12.914	6.2042E-01	1.001
49	39-Y-89	3925	39089	16	(n,2n)Y-88		3.4610E-04	0.0001	13.897	3.4526E-01	1.002
50	40-Zr-90	4025	40090	16	(n,2n)Zr-89		2.1804E-04	0.0001	14.414	2.1696E-01	1.005
51	41-Nb-93	4125	41093	102	(n,γ)Nb-94		2.4206E-02	0.0001	0.652	2.4190E+01	1.001
52				11004	(n,n')Nb-93m		1.4606E-01	0.0001	2.686	1.4601E+02	1.000
53				11016	(n,2n)Nb-92m		7.9031E-04	0.0001	11.329	7.9042E-01	1.000
54				10102	(n,γ)Nb-94g		6.0450E-03	0.0001	0.652	6.0411E+00	1.001
55				11102	(n,γ)Nb-94m		0.0000E+00	0.0000	0.652	1.8149E+01	0.000
56	42-Mo-92	4225	42092	11103	(n,p)Nb-92m		7.8290E-03	0.0001	5.392	7.8269E+00	1.000
57	45-Rh-103	4525	45103	11004	(n,n')Rh-103m		7.2456E-01	0.0001	2.380	7.2432E+02	1.000
58	47-Ag-109	4731	47109	12102	(n,γ)Ag-110m		9.3444E-03	0.0001	0.734	9.3388E+00	1.001
59	48-Cd-0	4800	48000	102	(n,γ)		6.1975E-02	0.0001	0.993	6.1941E+01	1.001
60				103	(n,p)		5.1278E-05	0.0001	7.247	5.1209E-02	1.001
61				104	(n,d)		4.2681E-07	0.0001	15.616	3.9698E-04	1.075
62				105	(n,α)		3.5980E-08	0.0001	16.522	2.8237E-05	1.274
63				106	(n,He3)		2.5861E-10	0.0001	18.829	2.6202E-08	9.870
64	107	(n,xα)		8.9945E-05	0.0001	4.966	8.9919E-02	1.000			
65	49-In-113	4925	49113	11004	(n,n')In-113m		1.5803E-01	0.0001	2.731	1.5798E+02	1.000
66	49-In-115	4931	49115	102	(n,γ)In-115		1.5318E-01	0.0001	1.102	1.5310E+02	1.001
67				11004	(n,n')In-115m		1.9052E-01	0.0001	2.674	1.9047E+02	1.000
68				11016	(n,2n)In-114m		1.6312E-03	0.0001	11.809	1.6312E+00	1.000
69				10102	(n,γ)In-116g		2.9551E-02	0.0001	1.044	2.9535E+01	1.001
70				12102	(n,γ)In-116m		0.0000E+00	0.0000	1.116	1.2356E+02	0.000
71	53-I-127	5325	53127	16	(n,2n)I-126		2.1044E-03	0.0001	11.581	2.1048E+00	1.000
72	57-La-139	5728	57139	102	(n,γ)La-140		6.6332E-03	0.0001	1.293	6.6300E+00	1.000
73	59-Pr-141	5925	59141	16	(n,2n)Pr-140		1.9880E-03	0.0001	11.846	1.9879E+00	1.000
74	64-Gd-0	6400	64000	102	(n,γ)		9.1587E-02	0.0001	0.798	9.1533E+01	1.001
75	69-Tm-169	6925	69169	16	(n,2n)Tm-168		6.2608E-03	0.0001	10.401	6.2610E+00	1.000
76				17	(n,3n)Tm-167		1.4743E-05	0.0001	18.055	1.1756E-02	1.254
77	73-Ta-181	7328	73181	102	(n,γ)Ta-182		8.3417E-02	0.0001	0.818	8.3368E+01	1.001
78	74-W-186	7443	74186	102	(n,γ)W-187		3.2787E-02	0.0001	1.023	3.2769E+01	1.001
79	79-Au-197	7925	79197	16	(n,2n)Au-196		5.5247E-03	0.0001	10.543	5.5254E+00	1.000
80				102	(n,γ)Au-198		7.4821E-02	0.0001	0.724	7.4777E+01	1.001
81	80-Hg-199	8034	80199	11004	(n,n')Hg-199m		2.9608E-01	0.0001	3.100	2.9601E+02	1.000
82	82-Pb-204	8225	82204	11004	(n,n')Pb-204m		2.0384E-02	0.0001	5.042	2.0379E+01	1.000
83	83-Bi-209	8325	83209	17	(n,3n)Bi-207		1.9057E-05	0.0001	17.779	1.5583E-02	1.223
84	90-Th-232	9040	90232	18	(n,f)		7.9111E-02	0.0001	3.005	7.9090E+01	1.000
85				102	(n,γ)		9.1277E-02	0.0001	0.910	9.1225E+01	1.001
86	92-U-235	9228	92235	18	(n,f)		1.2249E+00	0.0001	1.706	1.2243E+03	1.000
87				102	(n,γ)		9.0513E-02	0.0001	0.735	9.0458E+01	1.001
88	92-U-238	9237	92238	16	(n,2n)		2.0593E-02	0.0001	8.276	2.0584E+01	1.000
89				18	(n,f)		3.1823E-01	0.0001	2.780	3.1814E+02	1.000
90				102	(n,γ)		6.7592E-02	0.0001	0.919	6.7553E+01	1.001
91	93-Np-237	9346	93237	18	(n,f)		1.3594E+00	0.0001	2.054	1.3590E+03	1.000
92	94-Pu-239	9437	94239	18	(n,f)		1.7962E+00	0.0001	1.778	1.7955E+03	1.000
93	95-Am-241	9543	95241	18	(n,f)		1.3966E+00	0.0001	2.228	1.3962E+03	1.000