Test of Beryllium Reflector Thickness

Core : 2.472 kg Pu

MMF007 #	Be thickness	R8	New XS	Mod XS
1	20.00 cm	1.00554(40)	1.00788(41)	.99838
2	16.20	1.00923(40)	1.01183(41)	1.00239
3	8.67	1.00587(37)	1.00943(36)	1.00075
4	5.60	1.00387(35)	1.00754(35)	1.00093
5	2.74	1.00123(33)	1.00432(33)	.99913
6	1.36	.99751(33)	1.00194(34)	.99860

newBe
1.00109(39)
1.00537(38)
1.00261(37)
1.00223(33)
1.00046(33)
.99966(33)

Reducing the Be elastic cross section by 4% above 100 keV (with corresponding change in the total) removes the bias with reflector thickness.

Test of Beryllium Reflector Thickness (cont)

Core: 3.217 kg Pu

MMF007 #	Be thickness	R8	New XS	Mod Be	NewBe
7	17.26 cm	1.00867(39)	1.01029(39)	1.00073	1.00312(39)
8	13.17	1.00645(37)	1.00887(37)	.99977	1.00211(39)
9	10.78	1.00566(37)	1.00860(36)	.99986	1.00208(38)
10	6.10	1.00492(35)	1.00718(34)	1.00028	1,00202(34)
11	3.88	1.00179(34)	1.00538(34)	.99999	1.00062(33)
12	1.77	1.00086(34)	1.00276(31)	1.00035	1.00135(33)
13	1.77	.99805	1.00172(32)	1.00037	.99987(32)

Here again results are good with the reduced elastic cross section (4% reduction above 100 keV)

Test of Beryllium Reflector Thickness (cont)

Core: HEU

HMF058 #	Be thickness	New XS	Mod Be	newBe
1	20.269 cm	1.00868(38)	.99700	1.00121(38)
2	9.271	1.00739(37)	.99769	.99821(36)
3	5.436	1.00532(34)	.99652	.99562(34)
4	3.264	1.00337(31)	.99687	.99822(33)
5	2.223	1.00163(32)	.99652	.99742(31)

Reduction of 4% in elastic cross section above 100 keV removes thickness bias but leaves k_eff low. Could this be because these experiments used the subcritical source-multiplication method?