

FREYA Report after Berkeley visit

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1 Spontaneous fission of Cf252

1.1 Factorial moments of Cf252

Table 1: Neutrons, first four factorial moments, from spontaneous fission of Cf252

Moment	Value
1	3.74896
2	12.0088
3	32.1299
4	69.7771

1.2 Examine the dependence of $\bar{\nu}$, $\bar{\nu}_1$, $\bar{\nu}_2$ and \bar{N}_γ on dTKE, x and cs

Table 2: The dependence of $\bar{\nu}$, $\bar{\nu}_1$, $\bar{\nu}_2$ and \bar{N}_γ on dTKE, when x=1.27 is held constant

Variable	dTKE = 0.01	dTKE = 0.32	dTKE=0.52 (default)	dTKE= 1.00	dTKE= 1.52
$\bar{\nu}$	3.80868	3.77398	3.74896	3.68827	3.62737
$\bar{\nu}_1$	2.20929	2.18963	2.17103	2.14226	2.10651
$\bar{\nu}_2$	1.59939	1.58435	1.57793	1.54601	1.52086
\bar{N}_γ	7.70655	7.67067	7.68255	7.66869	7.65534

Table 3: The dependence of $\bar{\nu}$, $\bar{\nu}_1$, $\bar{\nu}_2$ and \bar{N}_γ on x, when dTKE=0.52 is held constant

Variable	x = 0.80	x = 1.00	x = 1.27 (default)	x = 1.30	x = 1.40
$\bar{\nu}$	3.74887	3.77249	3.74896	3.74645	3.71148
$\bar{\nu}_1$	1.34564	1.70729	2.17103	2.22821	2.38825
$\bar{\nu}_2$	2.40323	2.0652	1.57793	1.51824	1.32323
\bar{N}_γ	7.63944	7.65454	7.68255	7.69108	7.70245

Table 4: The dependence of \bar{N}_γ on cs

	cs=0.77	cs= 0.82	cs=0.87 (default)	cs= 0.97	cs= 1.07
\bar{N}_γ	7.4015	7.53367	7.68255	7.95058	8.23856

2 Thermal neutron induced fission of U235

Table 5: Neutrons, first four factorial moments, from thermal neutron-induced fission of U235

Moment	Value
1	2.42969
2	4.66928
3	6.7716
4	7.01856

3 Neutron induced fission of Pu239

Table 6: Neutrons, first four factorial moments. From neutron-induced fission of Pu239, with $E_n = 0.1$ MeV

Moment	ν	ν_0	ν_1	ν_2
1	2.89026	0	1.62009	1.27017
2	6.7476	0	1.75306	0.97784
3	12.2142	0	1.07502	0.40332
4	16.2727	0	0.29856	0.06936

Table 7: Neutrons, first four factorial moments. From neutron-induced fission of Pu239, with $E_n = 2.0$ MeV

Moment	ν	ν_0	ν_1	ν_2
1	3.13967	0.00338	1.74664	1.39134
2	8.12418	0	2.1249	1.24976
3	16.7641	0	1.5852	0.65838
4	26.4527	0	0.6012	0.18072

Table 8: Neutrons, first four factorial moments. From neutron-induced fission of Pu239, with $E_n = 8.0$ MeV

Moment	ν	ν_0	ν_1	ν_2
1	3.8262	0.54674	1.97688	1.57595
2	12.6219	0	2.9383	1.7681
3	35.2788	0	3.09714	1.37334
4	82.0861	0	2.2596	0.71616

Table 9: Neutrons, first four factorial moments. From neutron-induced fission of Pu239, with $E_n = 14.0$ MeV

Moment	ν	ν_0	ν_1	ν_2
1	4.49802	0.93108	2.29912	1.73344
2	18.217	0.48466	4.32362	2.2436
3	65.9636	0	6.57924	2.13492
4	212.075	0	8.1756	1.45224

Table 10: Neutrons, first four factorial moments. From neutron-induced fission of Pu239, with $E_n = 20.0$ MeV

Moment	ν	ν_0	ν_1	ν_2
1	5.04612	1.11361	2.57681	1.91351
2	23.3884	0.72198	5.61242	2.83246
3	98.8097	0.04158	10.1763	3.16566
4	377.024	0	15.2033	Moment4 2.58768