Open Research Section

The Monte Carlo Simulation Results of the Neutrino Flux above the Uranium Mine by MCNPX Code

The Neutrino Flux ($(Cm^{-2}.S^{-1})\times 10^{-10}$) per Neutrino in a Portable Neutrino Detector above Uranium Mine as a Function of Depth(10-2900m) and Thickness(100-1500m)

Thickness Depth(m)	1500	1400	1300	1200	1100	1000	900	800	700	600	500	400	300	200	100
10	203	203	202	206	202	202	199	198	197	195	190	189	177	170	163
20	190	189	188	189	187	176	170	153	152	152	151	134	132	122	118
30	163	161	155	145.1	149	148	144	145	144	138	127	126	124	97.3	94
40	146	144	142	141	140	139	136	135	135	135	123	113	100	93.3	86
50	138	135	133	125	124	123	122	122	122	114	101	98	97.7	88.5	84.2
60	126	125	123	121	120	119	118	114	112	112	95	94	84.4	65.1	62.1
70	119	117	116	110	108	107	106	106	103	103	94.9	88	77	60.4	56.3
80	107	107	105	104	104	103	102	98.6	98.5	98.2	87.5	87	70.4	59.9	55.3
90	96.8	96.5	96	94	92	91	90	89.9	89.1	88.2	84	83	58.3	55.2	54.2
100	89.2	89	88.2	89	88	87	86.8	84.9	84.9	84.9	81.1	81	53.5	51.2	52.2
200	81	79.9	79.6	81	79.5	79	77.8	77.7	77.7	76.5	76.3	76.3	31	21.1	19.03
300	46	44	42.8	42.6	42.5	42.2	40.5	38.8	38.8	38.8	38.1	38	23.7	20.6	18.3
400	35.8	35.4	35	34.9	34.8	34.6	31.3	31	31	27.6	27.3	25.2	14.5	10	9.5
500	28.8	28	27.9	27.7	27.2	27.1	22.9	22.9	22.9	22.7	20.15	20.1	11.2	7.54	7.44
600	23.2	23.1	20.7	18.5	18.1	17.4	16.4	15.2	15.2	15.2	14.92	14.9	8.48	6.85	6.35
700	18.4	17.5	17.6	17.3	17.1	13.4	12.5	12.5	12.4	12.4	12.41	12.4	6.21	5.14	4.14
800	18.1	17.9	17.4	17.1	12.5	11	10.9	10.9	10.9	10.9	10.92	10.9	5.09	4.34	4.04
900	17.2	17	15.9	15.7	12.1	10.4	10.3	9.1	9.1	8.83	8.82	6.03	4.18	2.17	1.98
1000	14.1	13.4	13	12.9	10.5	10.2	8.5	8.5	8.5	7.27	7.26	5.36	3.36	2.05	1.83
1100	10.9	11	10.6	10.3	10.2	10.1	6.01	5.82	5.82	5.82	5.76	3.89	2.5	1.85	1.69
1200	9.65	9.63	9.61	5.88	5.83	5.8	5.74	5.01	5.01	4.48	4.47	3.47	2.47	1.5	1.44
1300	7.42	6.49	6.25	5.43	5.39	4.75	4.73	4.73	4.73	3.94	3.76	2.36	2.12	1.3	1.38
1400	7.13	5.93	5.85	5.27	5.2	3.4	3.38	2.98	2.98	2.98	2.71	2.1	1.99	1.12	1.25
1500	5.55	4.95	3.62	3.44	3.39	3.32	2.91	2.91	2.91	2.83	2.21	2.01	1.96	0.83	0.71
1600	3.91	3.77	3.48	3.42	2.62	2.58	2.55	2.5	2.5	2.23	2.01	1.8	1.8	0.81	0.61
1700	3.78	3.7	3.22	3.13	2.6	2.5	2.48	2.43	2.43	1.88	1.86	1.76	1.7	0.78	0.59
1800	3.59	3.58	2.72	2.63	2.45	2.4	2.04	2.03	2.04	1.78	1.74	1.41	1.4	0.76	0.56
1900	3.33	3.24	2.48	2.41	2.4	1.98	1.94	1.74	1.74	1.74	1.35	1.35	1.2	0.66	0.55
2000	3.1	2.46	2.4	2.32	2.2	1.89	1.87	1.37	1.37	1.16	1.16	1.15	1.14	0.6	0.53
2100	2.91	2.34	2.33	2.14	1.79	1.79	1.79	1.09	1.09	1.09	0.98	0.93	0.92	0.55	0.51
2200	2.82	2.32	2.27	2.13	1.66	1.59	1.7	1.02	1.02	0.92	0.92	0.92	0.91	0.46	0.44
2300	2.41	2.31	2.24	1.63	1.63	1.54	1.29	1.01	1.01	0.89	0.89	0.89	0.86	0.43	0.41
2400	2.35	2.25	2.23	1.61	1.58	1.52	1.17	1	1	0.84	0.84	0.84	0.83	0.41	0.33
2500	2.32	2.19	1.57	1.56	1.44	1.33	0.79	0.75	0.75	0.75	0.75	0.74	0.41	0.39	0.29
2600	2.06	2.05	1.48	1.43	1.38	1.27	0.74	0.74	0.71	0.68	0.68	0.68	0.3	0.25	0.21
2700	1.88	1.48	1.43	1.35	1.29	1.17	0.69	0.63	0.63	0.63	0.63	0.63	0.21	0.19	0.17
2800	1.62	1.43	1.38	1.28	1.18	0.8	0.62	0.6	0.6	0.47	0.36	0.36	0.18	0.16	0.16
2900	1.58	1.33	1.2	1.01	0.95	0.74	0.35	0.66	0.6	0.17	0.19	0.18	0.16	0.13	0.11

The Neutrino Flux ($(Cm^{-2}.S^{-1})\times 10^{-10}$) per Neutrino in a Portable Neutrino Detector above Uranium Mine as a Function of Depth(10-2900m) and Thickness(1600-2900m)

Thickness Depth(m)	2900	2800	2700	2600	2500	2400	2300	2200	2100	2000	1900	1800	1700	1600
10	227	227	227	227	227	225.6	225	221	219	218	218	216	215	212
20	199	199	197.5	197.1	197	196	195.2	194.1	194	194	193	194	192	191
30	178	171	171	169.5	169.4	169.1	169	167.4	167	167	167	167	166	163
40	166	159	158	156.9	156.8	156.6	156.1	158.6	159	158	156	156	156	155
50	154	146	144	143.3	143	142	141.2	141	139.9	141	139	139	139	138
60	138	135	133	132.1	132	131.4	131	129	128.8	129	128	128	127	128
70	135	131	131	129.8	129.6	129.5	129.2	128	127.1	127	124	123	121	121
80	128	128	128	127.5	127.1	127.4	127	126.3	126.2	126	123	111	109	109
90	126	126	124	122.2	122	121.3	120	118.4	118.2	118	117	105	103	99
100	106	104	102	101.6	101.3	101.2	101	99.83	99.8	99.6	99.3	99.2	99	102
200	92.1	92	91	88	87.9	87	85	84.1	84	83.9	83.7	83.5	83.2	81.6
300	66.8	66.1	65	63.3	62.9	62.8	62.2	62	52.8	52.1	50	49.5	49	46.9
400	54	53.8	53.2	51.51	51.4	51.2	49.9	49.7	49.6	38.9	38.8	38.7	38.6	35.9
500	37.6	35.6	35.1	34.37	34.3	34.1	32.8	32.6	32.3	32.1	29.6	28.9	28.9	28.9
600	27.5	27.21	27.01	26.18	26.1	25.98	25.93	25.83	25.8	25.7	25.5	25	24.3	24
700	25.2	24.3	24.02	23.89	23.86	23.84	23.54	23.3	23.2	23	22.7	22.5	21.5	18.8
800	24.1	23.8	23.71	23.28	22.27	22.24	22.23	22.12	22.15	22	22.1	21.6	20.9	18.2
900	24.8	23.73	23.69	23.24	22.23	22.13	22.1	22.11	22.1	22	21.9	21.5	17.5	16.3
1000	19.2	18.1	18.04	17.25	17.2	16.99	16.93	16.89	16.87	17	16.9	16.8	16.6	16
1100	16.6	16.3	16.22	16.14	16.03	15.97	15.93	15.79	15.78	15.7	15.8	15.6	15.52	15.4
1200	10.9	10.6	10.58	10.56	10.53	10.49	10.46	10.3	9.95	9.89	9.88	9.83	9.81	9.67
1300	10.5	10.5	10.48	10.45	10.42	10.39	10.35	10.1	9.39	9.32	9.13	7.71	7.68	7.67
1400	9.4	9.3	9.25	9.19	9.18	9.16	9.1	7.59	7.58	7.53	7.47	7.35	7.32	7.23
1500	9.3	9.1	9.03	8.98	8.96	8.91	8.9	7.43	7.41	7.39	7.38	7.27	7.23	5.75
1600	7.65	7.55	7.44	7.37	7.32	7.28	7.23	7.1	6.99	6.99	6.98	6.96	6.89	4.05
1700	6.98	6.91	6.89	6.79	6.76	6.69	6.65	6.32	6.29	6.27	5.91	5.87	5.83	3.83
1800	6.22	6.19	6.17	6.14	6.03	5.98	5.98	5.93	5.91	5.89	5.88	5.86	5.73	3.59
1900	5.83	5.79	5.77	5.73	5.69	5.68	5.61	5.39	4.02	3.99	3.98	3.95	3.91	3.38
2000	5.21	5.01	4.99	4.96	4.94	4.89	4.79	4.77	3.76	3.74	3.73	3.69	3.69	3.21
2100	4.91	4.19	4.18	4.11	4.04	3.99	3.98	3.93	3.69	3.68	3.63	3.58	3.5	3.12
2200	4.02	3.98	3.97	3.97	3.96	3.94	3.93	3.98	3.63	3.59	3.58	3.53	3.45	2.9
2300	3.92	3.89	3.54	3.53	3.53	3.49	3.46	3.37	3.36	3.35	3.26	3.25	3.34	2.41
2400	3.69	3.68	3.46	3.45	3.41	3.37	3.31	3.28	3.26	3.19	2.89	2.88	2.41	2.4
2500	3.48	3.47	3.21	3.18	3.16	3.14	3.09	3.02	2.98	2.47	2.47	2.46	2.39	2.38
2600	3.38	3.36	3.12	3.11	3.01	2.99	2.98	2.97	2.96	2.99	2.99	2.95	2.36	2.3
2700	3.29	3.21	3.01	2.98	2.96	2.93	2.91	2.89	2.88	2.87	2.38	2.33	2.21	2.02
2800	3.21	3.2	2.99	2.99	2.95	2.83	2.79	2.77	2.76	2.31	2.24	2.01	1.98	1.7
2900	3.11	3.02	2.68	2.61	2.59	2.58	2.52	2.49	2.01	1.98	1.97	1.92	1.9	1.63