Table 040: Muons in Zirconium

Z	A [g/mol]	ρ [g/cm^3]	I [eV]	a	$k = m_s$	x_0	x_1	$\overline{C}$	δ_0
40 (Zr)	91.224 (2)	6.506	393.0	0.07177	3.4533	0.2957	3.4890	5.1774	0.14

T	p [MeV/c]	Ionization	Brems	Pair prod	Photonucl	Total	CSDA range [g/cm^2]
		[MeV cm^2/g]					
10.0 MeV	4.704×10^1	4.913				4.913	1.154×10^0
14.0 MeV	5.616×10^1	3.877				3.877	2.080×10^0
20.0 MeV	6.802×10^1	3.060				3.060	3.840×10^0
30.0 MeV	8.509×10^1	2.399				2.399	7.580×10^0
40.0 MeV	1.003×10^2	2.061				2.061	1.211×10^1
80.0 MeV	1.527×10^2	1.568				1.568	3.503×10^1
100. MeV	1.764×10^2	1.480				1.480	4.819×10^1
140. MeV	2.218×10^2	1.395				1.395	7.615×10^1
200. MeV	2.868×10^2	1.355				1.355	1.199×10^2
247. MeV	3.366×10^2	1.349				1.349	*Minimum ionization*
300. MeV	3.917×10^2	1.353	0.000		0.000	1.353	1.940×10^2
400. MeV	4.945×10^2	1.371	0.000		0.000	1.372	2.674×10^2
800. MeV	8.995×10^2	1.456	0.001		0.000	1.457	5.500×10^2
1.00 GeV	1.101×10^3	1.490	0.001		0.000	1.491	6.857×10^2
1.40 GeV	1.502×10^3	1.543	0.001	0.000	0.001	1.546	9.489×10^2
2.00 GeV	2.103×10^3	1.601	0.002	0.001	0.001	1.606	1.329×10^3
3.00 GeV	3.104×10^3	1.666	0.004	0.003	0.001	1.674	1.938×10^3
4.00 GeV	4.104×10^3	1.711	0.006	0.005	0.002	1.723	2.527×10^3
8.00 GeV	8.105×10^3	1.812	0.015	0.014	0.003	1.844	4.762×10^3
10.0 GeV	1.011×10^4	1.842	0.019	0.020	0.004	1.886	5.834×10^3
14.0 GeV	1.411×10^4	1.885	0.029	0.032	0.006	1.953	7.917×10^3
20.0 GeV	2.011×10^4	1.928	0.046	0.053	0.008	2.035	1.092×10^4
30.0 GeV	3.011×10^4	1.974	0.075	0.092	0.012	2.153	1.570×10^4
40.0 GeV	4.011×10^4	2.005	0.105	0.135	0.015	2.261	2.023×10^4
80.0 GeV	8.011×10^4	2.074	0.238	0.323	0.030	2.665	3.649×10^4
100. GeV	1.001×10^5	2.095	0.308	0.425	0.037	2.865	4.373×10^4
140. GeV	1.401×10^5	2.126	0.453	0.634	0.052	3.264	5.680×10^4
200. GeV	2.001×10^5	2.158	0.678	0.965	0.073	3.875	7.366×10^4
248. GeV	2.478×10^5	2.177	0.860	1.226	0.091	4.355	*Muon critical energy*
300. GeV	3.001×10^5	2.194	1.065	1.519	0.110	4.889	9.659×10^4
400. GeV	4.001×10^5	2.220	1.464	2.093	0.146	5.925	1.151×10^5
800. GeV	8.001×10^5	2.283	3.113	4.450	0.296	10.143	1.662×10^5
1.00 TeV	1.000×10^6	2.303	3.961	5.656	0.372	12.293	1.841×10^5
1.40 TeV	1.400×10^6	2.334	5.662	8.062	0.527	16.586	2.120×10^5
2.00 TeV	2.000×10^6	2.368	8.264	11.736	0.762	23.130	2.425×10^5
3.00 TeV	3.000×10^6	2.406	12.610	17.840	1.165	34.022	2.779×10^5
4.00 TeV	4.000×10^6	2.434	17.015	24.011	1.575	45.036	3.034×10^5
8.00 TeV	8.000×10^6	2.502	34.786	48.822	3.274	89.385	3.652×10^5
10.0 TeV	1.000×10^7	2.524	43.744	61.296	4.146	111.711	3.852×10^5
14.0 TeV	1.400×10^7	2.558	61.612	86.183	5.938	156.292	4.153×10^5
20.0 TeV	2.000×10^7	2.595	88.578	123.676	8.684	223.534	4.473×10^5
30.0 TeV	3.000×10^7	2.638	133.470	186.060	13.431	335.599	4.835×10^5
40.0 TeV	4.000×10^7	2.668	178.530	248.596	18.291	448.086	5.092×10^5
80.0 TeV	8.000×10^7	2.744	359.067	498.925	38.592	899.329	5.710×10^5
100. TeV	1.000×10^8	2.769	449.500	624.210	49.080	1125.560	5.908×10^5