

## Muons in LMP rock for Doug

	$\langle Z/A \rangle$	$\rho$ [g/cm <sup>3</sup> ]	$I$ [eV]	$a$	$k = m_s$	$x_0$	$x_1$	$\bar{C}$	$\delta_0$
	0.49641	2.700	145.9	0.13803	3.0000	0.2000	3.0000	3.9511	0.00
$T$	$p$ [MeV/c]	Ionization	Brems	Pair prod	Photonucl	Total	CSDA range [g/cm <sup>2</sup> ]		
10.0 MeV	$4.704 \times 10^1$	6.510				6.510	$8.548 \times 10^{-1}$		
14.0 MeV	$5.616 \times 10^1$	5.096				5.096	$1.557 \times 10^0$		
20.0 MeV	$6.802 \times 10^1$	3.993				3.993	$2.902 \times 10^0$		
30.0 MeV	$8.509 \times 10^1$	3.108				3.108	$5.779 \times 10^0$		
40.0 MeV	$1.003 \times 10^2$	2.660				2.660	$9.279 \times 10^0$		
80.0 MeV	$1.527 \times 10^2$	2.008				2.008	$2.713 \times 10^1$		
100. MeV	$1.764 \times 10^2$	1.889				1.889	$3.742 \times 10^1$		
140. MeV	$2.218 \times 10^2$	1.762				1.762	$5.945 \times 10^1$		
200. MeV	$2.868 \times 10^2$	1.692				1.692	$9.433 \times 10^1$		
298. MeV	$3.894 \times 10^2$	1.669			0.000	1.669	<i>Minimum ionization</i>		
300. MeV	$3.917 \times 10^2$	1.669			0.000	1.669	$1.540 \times 10^2$		
400. MeV	$4.945 \times 10^2$	1.678			0.000	1.679	$2.138 \times 10^2$		
800. MeV	$8.995 \times 10^2$	1.754	0.000		0.000	1.755	$4.468 \times 10^2$		
1.00 GeV	$1.101 \times 10^3$	1.788	0.000		0.000	1.788	$5.597 \times 10^2$		
1.40 GeV	$1.502 \times 10^3$	1.841	0.001	0.000	0.001	1.843	$7.799 \times 10^2$		
2.00 GeV	$2.103 \times 10^3$	1.901	0.001	0.000	0.001	1.903	$1.100 \times 10^3$		
3.00 GeV	$3.104 \times 10^3$	1.968	0.001	0.001	0.001	1.972	$1.616 \times 10^3$		
4.00 GeV	$4.104 \times 10^3$	2.015	0.002	0.002	0.002	2.021	$2.116 \times 10^3$		
8.00 GeV	$8.105 \times 10^3$	2.122	0.005	0.005	0.004	2.136	$4.035 \times 10^3$		
10.0 GeV	$1.011 \times 10^4$	2.154	0.007	0.007	0.005	2.173	$4.963 \times 10^3$		
14.0 GeV	$1.411 \times 10^4$	2.201	0.011	0.012	0.006	2.230	$6.779 \times 10^3$		
20.0 GeV	$2.011 \times 10^4$	2.247	0.017	0.019	0.009	2.292	$9.431 \times 10^3$		
30.0 GeV	$3.011 \times 10^4$	2.297	0.027	0.033	0.013	2.371	$1.372 \times 10^4$		
40.0 GeV	$4.011 \times 10^4$	2.330	0.038	0.049	0.017	2.435	$1.788 \times 10^4$		
80.0 GeV	$8.011 \times 10^4$	2.406	0.087	0.118	0.033	2.644	$3.362 \times 10^4$		
100. GeV	$1.001 \times 10^5$	2.429	0.113	0.155	0.041	2.738	$4.105 \times 10^4$		
140. GeV	$1.401 \times 10^5$	2.464	0.166	0.232	0.057	2.919	$5.519 \times 10^4$		
200. GeV	$2.001 \times 10^5$	2.501	0.249	0.353	0.081	3.185	$7.486 \times 10^4$		
300. GeV	$3.001 \times 10^5$	2.542	0.392	0.560	0.121	3.616	$1.043 \times 10^5$		
400. GeV	$4.001 \times 10^5$	2.571	0.541	0.776	0.162	4.049	$1.304 \times 10^5$		
676. GeV	$6.764 \times 10^5$	2.625	0.963	1.387	0.275	5.250	<i>Muon critical energy</i>		
800. GeV	$8.001 \times 10^5$	2.642	1.156	1.666	0.327	5.790	$2.126 \times 10^5$		
1.00 TeV	$1.000 \times 10^6$	2.665	1.473	2.124	0.410	6.672	$2.448 \times 10^5$		
1.40 TeV	$1.400 \times 10^6$	2.700	2.110	3.036	0.582	8.429	$2.980 \times 10^5$		
2.00 TeV	$2.000 \times 10^6$	2.738	3.088	4.432	0.842	11.101	$3.598 \times 10^5$		
3.00 TeV	$3.000 \times 10^6$	2.782	4.725	6.754	1.290	15.551	$4.356 \times 10^5$		
4.00 TeV	$4.000 \times 10^6$	2.813	6.388	9.105	1.745	20.051	$4.921 \times 10^5$		
8.00 TeV	$8.000 \times 10^6$	2.890	13.109	18.568	3.638	38.206	$6.342 \times 10^5$		
10.0 TeV	$1.000 \times 10^7$	2.915	16.504	23.331	4.613	47.364	$6.811 \times 10^5$		
14.0 TeV	$1.400 \times 10^7$	2.954	23.280	32.826	6.618	65.678	$7.525 \times 10^5$		
20.0 TeV	$2.000 \times 10^7$	2.995	33.520	47.140	9.697	93.353	$8.288 \times 10^5$		
30.0 TeV	$3.000 \times 10^7$	3.044	50.556	70.962	15.035	139.597	$9.158 \times 10^5$		
40.0 TeV	$4.000 \times 10^7$	3.078	67.669	94.854	20.510	186.112	$9.777 \times 10^5$		
80.0 TeV	$8.000 \times 10^7$	3.164	136.286	190.501	43.452	373.404	$1.126 \times 10^6$		
100. TeV	$1.000 \times 10^8$	3.192	170.681	238.377	55.331	467.582	$1.174 \times 10^6$		