

# Heavy Ion Beams

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	Ion	Mass (amu)	A MeV	Total Energy (MeV)	Range in Si ( $\mu\text{m}$ )	Range to Bragg Peak ( $\mu\text{m}$ )	Initial LET (vac)	Initial LET (air)	LET at Bragg Peak
15 A MeV	<sup>4</sup> He	4.003	15	60	1449	1446	0.10	0.10	1.4
	<sup>14</sup> N	14.003	15	210	422	418	1.3	1.3	6.1
	<sup>20</sup> Ne	19.992	15	300	311	302	2.5	2.6	9.0
	<sup>40</sup> Ar	39.962	15	599	231	217	7.6	7.9	13.6
	<sup>63</sup> Cu	62.930	15	944	174	151	17.1	18.0	34.0
	<sup>84</sup> Kr	83.912	15	1259	170	149	25.4	26.6	41.4
	<sup>109</sup> Ag	108.905	15	1634	149	113	40.0	42.3	59.4
	<sup>129</sup> Xe	128.905	15	1934	146	107	50.4	53.1	69.3
	<sup>141</sup> Pr	140.908	15	2114	154	99	55.8	58.4	70.8
	<sup>165</sup> Ho	164.930	15	2474	151	102	67.0	69.6	82.3
	<sup>181</sup> Ta	180.948	15	2714	159	111	72.3	74.8	87.7
<sup>197</sup> Au	196.967	15	2954	159	108	78.0	80.5	94.4	
25 A MeV	<sup>4</sup> He	4.003	24.8	99	3523	3519	0.1	0.1	1.4
	<sup>14</sup> N	14.003	24.8	347	1009	1005	0.9	0.9	6.1
	<sup>22</sup> Ne	21.991	24.8	545	804	794	1.7	1.7	9.0
	<sup>40</sup> Ar	39.962	24.8	991	499	485	5.4	5.5	13.6
	<sup>84</sup> Kr	83.912	24.8	2081	331	305	18.9	19.3	41.4
	<sup>107</sup> Ag	106.905	24.8	2651	276	240	30.7	31.6	59.4
	<sup>129</sup> Xe	128.905	24.8	3197	269	230	39.3	40.5	69.3
40 A MeV	<sup>14</sup> N	14.003	40	560	2349	2344	0.6	0.6	6.1
	<sup>20</sup> Ne	19.992	40	800	1679	1670	1.2	1.2	9.0
	<sup>40</sup> Ar	39.962	40	1598	1078	1064	3.9	3.9	13.6
	<sup>78</sup> Kr	77.920	40	3117	627	602	14.1	14.3	41.4