

$^{22}_{11}\text{Na}$ Source

For the $^{22}_{11}\text{Na}$ source, for each voltage we took 2 runs, for 60 seconds each. The energy was calculated using the formula derived above, in kilo electron volts.

Table for $^{22}_{11}\text{Na}$ Source

Magnetic Field(mT)	Voltage (V)	Current (A)	Counts(Run 1)	Counts(Run 2)	Avg. Counts	Energy (keV)
B	I	V	Counts1	Counts2	Avg Counts	
			0	12.7	0.13	0.3
59	63	61				
173	25.9	0.26	0.6	116	102	109
				201	36.9	0.38
0.9	121	122	121			
	208	39.4	0.41	1	125	121
123						
					221	42.9
0.45	1.1	138	130	134		
		197	47.7	0.5	1.2	113
130	121					
						191
51.3	0.54	1.3	114	123	118	
			179	55.6	0.58	1.4
108	104	106				
164	61.1	0.64	1.5	117	93	105
				115	69.5	0.74
1.8	66	76	71			
	67	91.9	0.9	2.1	37	40
38						
					67	95.8
0.99	2.4	49	42	45		

Plot of Energy vs Count for $^{22}_{11}\text{Na}$ Source

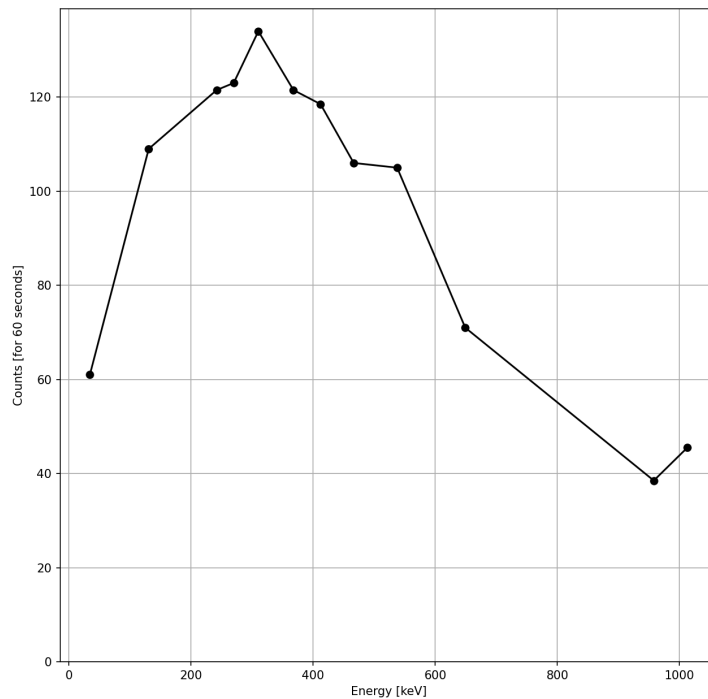


Figure 1: β -ray spectrum of $^{22}_{11}\text{Na}$

Energy corresponding to the maximum count for $^{22}_{11}\text{Na}$ source

The peak of the spectrum was observed to be at an energy of 310.36 keV with the average count of 134.

$^{90}_{38}\text{Sr}$ Source

For the $^{90}_{38}\text{Sr}$ source, we decided to take only one run for each voltage, again, for 60 seconds.

However, this time the voltage was varied at a slower rate compared to that of the $^{22}_{11}\text{Na}$ source, to make sure we have more close-by datapoints to get a better and more accurate spectrum.

Table for $^{90}_{38}\text{Sr}$ Source

Magnetic Field(mT)	Voltage (V)	Current (A)	Counts	Corrected Counts (no background)	Energy (keV)
0	0	0	109	0	4.6
0.06	0.1	216	107	5.6	0.08
0.2	230	121	7	0.1	0.2
256	147	7.9	0.12	0.3	280
171	9.4	0.14	0.3	301	192
10.8	0.16	0.4	329	220	12.2
0.18	0.4	327	218	14.2	0.2
0.4	351	242	15.1	0.22	0.5
398	289	16.7	0.24	0.5	444
335	17.9	0.26	0.6	428	319

19	0.28	0.6	471	362	20.6
0.3	0.7	488	379	22.4	0.32
0.7	563	454	24.6	0.34	0.8
609	500	25.2	0.36	0.8	643
534	27.3	0.38	0.9	666	557
28.6	0.4	0.9	698	589	30.7
0.42	1	772	663	31.9	0.44
1	796	687	33.6	0.46	1.1
826	717	34.6	0.48	1.1	830
721	36.7	0.5	1.2	951	842
38.5	0.52	1.2	1034	925	39.6
0.54	1.3	975	866	41.9	0.56
1.3	1126	1017	43.3	0.58	1.3
1126	1017	45.4	0.6	1.4	1118
1009	46.7	0.62	1.4	1256	1147
48.4	0.64	1.5	1235	1126	51.2
0.68	1.6	1353	1244	54.7	0.72
1.7	1389	1280	59	0.76	1.8
1480	1371	62.2	0.8	1.9	1500
1391	65.3	0.84	1.9	1545	1436
70.5	0.9	2.1	1580	1471	75.6
0.96	2.2	1547	1438	81.2	1.02
2.4	1528	1419	87.8	1.08	2.5
1494	1385	92.2	1.14	2.7	1530
1421	98.1	1.2	2.8	1414	1305
102.2	1.26	2.9	1373	1264	107.7
1.32	3.1	1265	1156	113.3	1.38
3.3	1138	1029	118.1	1.45	3.4
1081	972	123.4	1.5	3.5	962
853	128	1.56	3.7	869	760
132.5	1.62	3.8	781	672	137
1.68	4	748	639	142.4	1.74
4.2	744	635	149.1	1.8	4.3
561	452	151.3	1.86	4.5	508
399	155.9	1.92	4.6	508	399
161.3	2	4.8	398	289	

Plot of Energy vs Count for $^{90}_{38}\text{Sr}$ Source

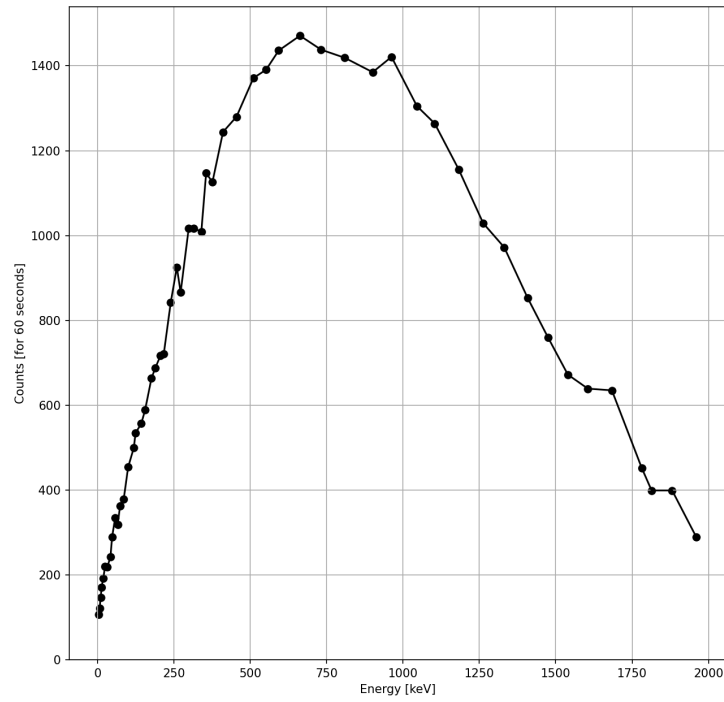


Figure 2: β -ray spectrum of $^{90}_{38}\text{Sr}$

Energy corresponding to the maximum count for $^{90}_{38}\text{Sr}$ source

The peak of the spectrum was observed to be at an energy of 662.83 keV with the average count of 1471.