Decay lab
PHYS section 11

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1 Introduction

Decay constant is where the amount of radioactive atoms decrease over a period of time. There are formulas that is associate with this matter. This experiment will be searching for the rates of decay for unstable elements that can be measured. To look for the exact time that the nucleus will decay, even though the number might be extremely large to find the rate of decay.

2 Formula

$$E = \frac{hc}{\lambda}$$

This is the formuale for calculating the energy released in one single photon. Where h is a Constance, c is the speed of light, and lambda is the wavelength.

$$A = Aoe^{-kt}$$

A is population equal to 0, A0 is where population after time period. K is exponential growth rate, and t is amount of time for half-life.

3 Experiment

Basically we are going to use a JAVA program to begin our experiment. We use this simulator on the computer to find out the possibilities of decays of certain amount of atom inside. The amount of atoms im going to use in this experiment is 10000, the rate of possible decay of A to B 0.5. And the rate of decay from B to C is 0.1

4 Data

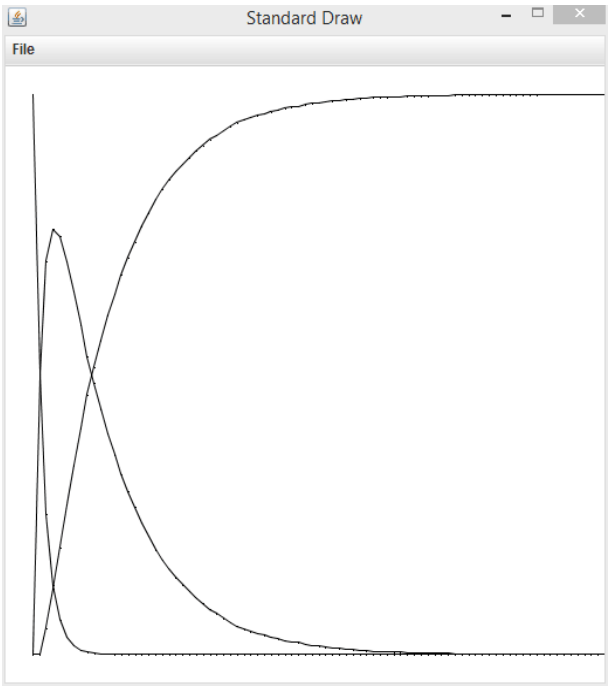

Figure 1: Bohr's picture

5 conclusion

Based on the graph, we can clearly sees the smooth line in graph of A B and C. It uses 87 steps to finish the decay, the software only uses the possibilities to calculating the steps. it is all hypothesis and possible of decay. Every time that enter the exact number will not get the same result at all. The following pages will be giving detailed tables of the decay for the plot of graph.

Step	A	B	C
0	10000	0	0
1	5047	4953	0
2	2511	7021	468
3	1240	7591	1169
4	625	7466	1909
5	314	7010	2676
6	156	6474	3370
7	78	5888	4034
8	44	5320	4636
9	20	4847	5133
10	9	4382	5609
11	7	3937	6056
12	2	3565	6433
13	1	3221	6778
14	0	2908	7092
15	0	2628	7372
16	0	2349	7651
17	0	2112	7888
18	0	1874	8126
19	0	1699	8301
20	0	1529	8471
21	0	1379	8621
22	0	1246	8754
23	0	1124	8876
24	0	1008	8992
25	0	914	9086
26	0	810	9190
27	0	731	9269
28	0	649	9351
29	0	574	9426
30	0	507	9493
31	0	455	9545
32	0	410	9590
33	0	378	9622
34	0	347	9653
35	0	314	9686

Table 1: Experimental data 1-35 steps

36	0	282	9718
37	0	248	9752
38	0	225	9775
39	0	209	9791
40	0	187	9813
41	0	166	9834
42	0	152	9848
43	0	130	9870
44	0	116	9884
45	0	107	9893
46	0	93	9907
47	0	84	9916
48	0	74	9926
49	0	67	9933
50	0	58	9942
51	0	52	9948
52	0	49	9951
53	0	43	9957
54	0	38	9962
55	0	33	9967
56	0	30	9970
57	0	28	9972
58	0	28	9972
59	0	25	9975
60	0	20	9980
61	0	16	9984
62	0	15	9985
63	0	15	9985
64	0	14	9986
65	0	11	9989
66	0	10	9990
67	0	9	9991
68	0	9	9991
69	0	9	9991
70	0	9	9991

Table 2: Experimental data 36-75

71	0	8	9992
72	0	7	9993
73	0	6	9994
74	0	5	9995
75	0	4	9996
76	0	4	9996
77	0	3	9997
78	0	3	9997
79	0	3	9997
80	0	1	9999
81	0	1	9999
82	0	1	9999
83	0	1	9999
84	0	1	9999
85	0	1	9999
86	0	1	9999
87	0	1	9999

Table 3: Experimental data 71-87