Decay Lab

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1 Introduction

Decay constant, proportionality between the size of a population of radioactive atoms and the rate at which the population decreases because of radioactive decay. Suppose N is the size of a population of radioactive atoms at a given time t, and dN is the amount by which the population decreases in time dt; then the rate of change is given by the equation dN/dt = N, where is the decay constant.

2 Materials

-Computer -Java Program

3 Formula

$$A = Aoe^{-\lambda t}$$

$$\frac{A}{Ao} = \frac{1}{2} = e^{-\lambda(T\frac{1}{2})}$$

$$ln\frac{1}{2} = -\lambda(T\frac{1}{2})$$

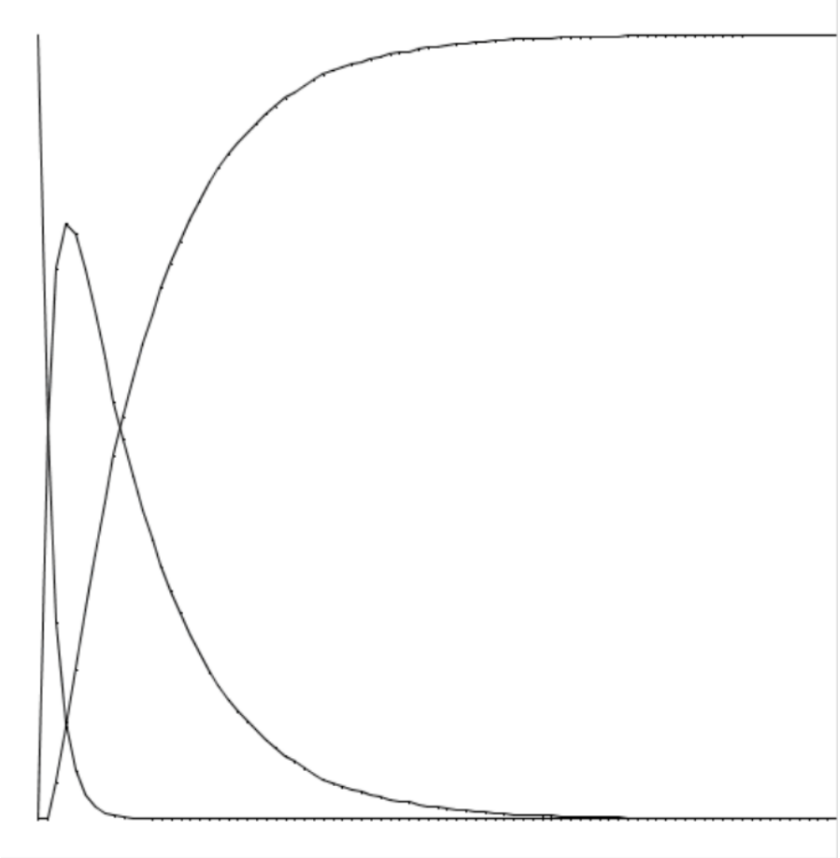
$$T\frac{1}{2} = \frac{ln(2)}{\lambda}$$

This are the Formulas that we will use to calculate the energy that is used in one single photon, the population which is equal to 0, A0 where population after time period. By using all this formulas we are able to find the half-life for our elements.

4 Simulation

We are going to use a Java program to illustrate our experiment and to get the data and a nice graph. We will use a simulation on the computer to find out the possibilities of decays of certain amount of atom inside. In this experiment, I used 10000, the possible rate of decay of A to B 0.5, and the rate of decay from B to C is 0.1

5 Data



6 Conclusion

The graph above is an exponential function and as it is shown, the decay gets lower and lower through the graph, therefore, the rate gets smaller. Origin of the atom has a huge influence on its decay rate because by emitting radiation, the initial energy of the atom decreases