

Lab report on the nuclear decay

Nguyen Ha Minh Anh

March 16, 2016

1. Objective:

The experience purpose is to give students the opportunity to know and learn about nuclear decay.

2. About nuclear decay:

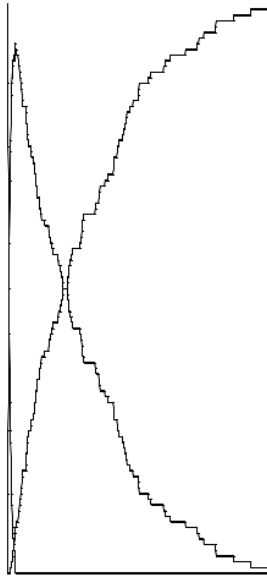
Nuclear decay or radioactive decay is the emission of energy and matter because of change in the nucleus of atom. Such unstable elements are known as radioactive element and the process is called as radioactivity.

3. Method:

Simulation was run through Java application designed by Dr. Shultz.

4. Simulation:

Java programs introduced by the teachers helped us to be able to view different decay based on specific factors. We compute the data to find the half-life and decay rate were introduced and used to obtain the data from the laboratory java. I put 100 to the original number, and I put the probability of the decay in the simulation and graphs.



5. Hypothesis:

We have the decay equation is:

$$A = A_0 \times e^{-\lambda t}$$

Therefore, due to the equation of half life, relationship between half-life period and decay constant can be derived

$$\frac{A}{A_0} = \frac{1}{2} = e^{-\frac{T}{2}}$$

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

$$\frac{T}{2} = \frac{\ln 2}{\lambda}$$

By using these formulas we are able to find the half-life for our elements. What was shown in this lab was that the probability decreases twice as the half-life decreases.

6. Conclusion:

For the exponential decay, half its life depends on the speed of decomposition in an inverse relationship. The larger the decay rate is less than half of their lives. Its value is not change with input regardless of the number of atoms initially.