**Learning Goals:** Students will be able to:

* Explain alpha decay process. (*radiation of alpha particles tunneling out of the nucleus causing a decrease in mass number).*
* Explain what half-life means in terms of single particles and larger samples. (*Alpha particles escape the nucleus in variant intervals, but the time to decay can be averaged to give an overall “half-life”- time for half of the particles to undergo decay.)*

**Background:**

My students have likely heard about nuclear decay. They are high school seniors. I have written this activity to be used with a substitute teacher near the end of the school year. They have done many PhET activities throughout the year in class and as homework.

***Alpha Decay* Introduction:**

I don’t plan to tell or show the students how to interact with the sim, but I will be watching to see if they use the graph on the Single Atom tab for sense making or if it is a distraction. If I see problems, I’ll tell students that they can ignore it. [Tips for Teachers](http://phet.colorado.edu/files/teachers-guide/alpha-decay-guide.pdf) are provided by the PhET team for this sim.

**Lesson:** My studentswill work in pairs in a computer lab. They have 95 minutes, so I will have them do my activity with Beta Decay when they finish this one.

**Post-Lesson:** I plan to write clicker questions, but have not done so yet.

**Follow-up sims:** Beta Decay, Nuclear Fission (I plan to use Chasteen’s activity <http://phet.colorado.edu/en/contributions/view/3335>) , Radioactive dating (I plan to use Bire’s activity <http://phet.colorado.edu/en/contributions/view/3534> )