Tips for controls:

General:
• Be sure to try all the different tabs at the top of the simulation.
• You can Pause the sim and then use Step to incrementally analyze.
• If you are doing a lecture demonstration, set your screen resolution to 1024x768 so the simulation will fill the screen and be seen easily.

Fission: One Nucleus Tab:
• Fire the gun to shoot a neutron at the Uranium nucleus and make it decay.
• After the Uranium nucleus decays, press Reset to start over with a new one.

Chain Reaction Tab:
• Add a containment vessel, fill it with U-235 and U-238, and fire the gun to create a chain reaction.
• Grab the edge of the containment vessel and drag it in or out to change the size.

Nuclear Reactor Tab:
• Fire neutrons to create a chain reaction. Moving the control rod adjuster out of the reactor will allow the reaction to spread more quickly.

Insights into student use / thinking:
• In interviews, we found that even students with no science background were able to figure out the basics of nuclear physics by playing with this simulation. However, students were not able to make sense of the graphs without instruction.
• In the Chain Reaction tab, students quickly learn that U-235 contributes to the chain reaction and U-238 does not. They then wonder why we bother to include U-238 in the simulation. Further instruction is needed to explain that Uranium in the real world is mostly U-238.
• Students can usually figure out what is happening in the Nuclear Reactor tab, but they may not realize that this represents a nuclear power plant unless you point it out.

Suggestions for sim use:
• For tips on using PhET sims with your students see: Guidelines for Inquiry Contributions and Using PhET Sims
• The simulations have been used successfully with homework, lectures, in-class activities, or lab activities. Use them for introduction to concepts, learning new concepts, reinforcement of concepts, as visual aids for interactive demonstrations, or with in-class clicker questions. To read more, see Teaching Physics using PhET Simulations
• For activities and lesson plans written by the PhET team and other teachers, see: Teacher Ideas & Activities