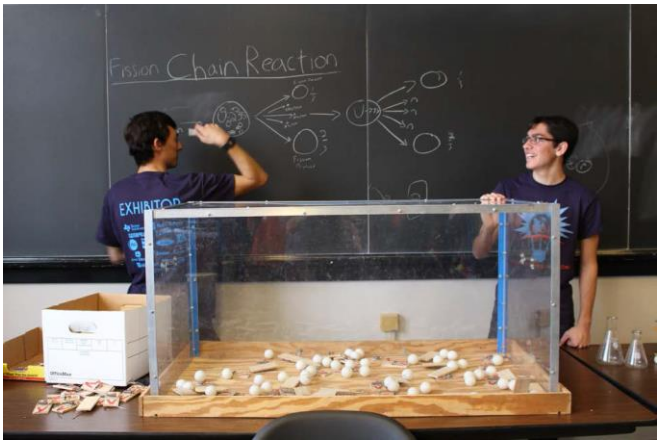
Featured Event: Fission Mousetrap "Reactor"

University of Illinois, Urbana-Champaign Student Section

This is a popular demonstration is included yearly at the UIUC Engineering Open House for children and adults of the community, and demonstrates the chain reaction of nuclear fission.

Supplies needed:

- 50-100 spring mousetraps
- 100 (or more) ping pong balls
- Tabletop or dedicated baseboard
- Acrylic, plastic, or other rigid, transparent sheet to surround the demonstration, with a hole cut as a protective case



To set up the demonstration, volunteers set and place all the mousetraps in an array on the surface, and then gently place 1-3 ping pong balls on each mousetrap (being *very careful* not to prematurely set off any traps). The plastic cover is placed over the top of the demo (to both conserve ping pong balls and protect audience members). Finally, a younger child (or any other volunteer) throws a ping pong ball into the hole in the protective case, initializing the chain reaction. This will happen very quickly! If possible, a recording of the demonstration in slow-motion is also suggested, so audience members can better see what is happening.

This process illustrates the chain reaction that occurs in nuclear fission reactors. Each mousetrap represents a U-235 nucleus. A free neutron (the ping pong ball) initializes the chain reaction by fissioning a U-235 nucleus (triggering the mousetrap). This then releases additional neutrons, which in turn go on to fission additional nuclei. This also illustrates the exponential growth nature of the chain reaction, as each nucleus can release more than one neutron and fission more than one additional nucleus!