Summary of Squiggle Meeting (Sam McKagan, Chris Malley, Wendy Adams)
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We currently have two different kinds of "squiggles" on energy level diagrams in sims:
1. Lamp squiggles – e.g. Lasers
In Lasers, the squiggles are associated with the wavelength of a monochromatic light source. The brightness of the squiggle is proportional to the brightness of the light source, the length of the squiggle is proportional to the photon energy, and the wavelength of the squiggle is proportional to the photon wavelength. The bottom of the squiggle is always at the ground state, so that the top of the squiggle points to the energy level that the lamp can excite the atom to, if it is in the ground state.
2. Transition squiggles – e.g. Discharge Lamps
In Discharge Lamps, the squiggles are associated with transitions. Whenever an atom emits a photon, a squiggle appears for a short amount of time, and then disappears. The squiggle extends from the state the atom started in to the state the atom goes to. The length of the squiggle is proportional to the photon energy, and the wavelength of the squiggle is proportional to the photon wavelength.

Suggested changes: Currently, all squiggles have arrows pointing both up and down. Lamp squiggles should only point up, and transition squiggles should only point in the direction of the transition: down for emission and up for absorption. This change has already been implemented in Models of the Hydrogen Atom.

In Models of the Hydrogen Atom, currently only transition squiggles are implemented. The original plan was to implement lamp squiggles as well, but there are several concerns about this feature:

1. Having both lamp and transition squiggles will make the energy level diagram very cluttered.
2. Having lamp squiggles start from the ground state does not make sense when the atom is actually in a higher state, especially when the atom is stuck in a state, such as 2,0,0. If students are trying to get an atom out of a higher state, it would be helpful to have a squiggle starting at the state the atom is actually in. However, making the bottom of the lamp squiggle will be a lot of work to code, and will make the clutter on the energy level diagram worse, since it will jump around a lot.
3. This feature only applies to monochromatic light, and fine-tuning the wavelength of monochromatic light to excite the atom is a very advanced activity, and not really one of the learning goals of the sim. If the students just want to see what states the atom can go into, white light is much easier to use.

Because we cannot resolve these issues at the moment, we are going to put this feature on hold for now.