BPhys450 Final Project

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Goals

The goal of this computational model is to enhance student understanding in a preclass activity for a given week. As such, it should be tailored to the learning goals of previous preclass activities. Using the current list of learning goals for week 7 magnatism in BPHYS122 as a reference, students should be able to:

- Describe similarities and differences between electric and magnetic fields

- Use a compass to identify the direction and relative magnitude of a magnetic field, and to identify the north pole of a bar magnet

- Draw and interpret magnetic field vectors and field lines: (1) in general, (2) for a bar magnet, (3) for a straight current-carrying wire, and (4) for a loop of current

- Calculate the magnetic force on (1) a charged particle moving in a magnetic field, and (2) on a current-carrying wire in a magnetic field

- Explain how a charged particle in an external magnetic field undergoes circular motion, and find the radius of that motion

- Calculate the force on a current-carrying wire in an external magnetic field (magnitude and direction)

- Evaluate the net force on a current loop in an external magnetic field

- Evaluate the net torque on a current loop in an external magnetic field

- Define the magnetic dipole moment of a current loop

For this final project I will focus on creating a preliminary active learning activity with an integrated model that addresses goals 4a, and 5. This'll be far from comprehensive, but I'll discuss how