Physics 15b PSI Week 7: Alternating Fields

This week’s PSI consists only of a challenge problem.

In the center of the room, we have set up an alternating current in a large loop of wire. Naturally, this loop generates an alternating magnetic field throughout the room. However, it is not a large current, so the magnetic field is rather weak far from the source. Your challenge is to design, construct, and test a circuit that can detect this magnetic field. Your circuit does not need to be able to measure the field strength; you just need to be able to produce evidence on your scope that you are detecting the loop’s B field. You will be told the frequency of the alternating B field.

**Materials:** You may use any or all of the following:

- oscilloscope
- function generator
- coaxial cables
- alligator connectors
- wire
- wire cutters/strippers (ask for help if you don’t know how to use these)
- cardboard
- masking tape
- aluminum foil
- pencil and paper

**What physical object can you use to detect an alternating magnetic field? How would you represent this object in a circuit diagram?**

When you think your detection circuit is ready to perform, talk to an instructor to demonstrate it.

**Explain your circuit design and how you produced evidence of the B field detection.**