A diagram of a spiral

Description automatically generated** Manual to Lab 7: PHY2049C.**

**Florida State University**

**Electromagnetic Induction**

**About labs in this class**

The labs in this class will have general instructions, and many things need to be figured out by the students. I will be answering any specific questions the students may have without completely giving away the key to the puzzle. **Answer the questions and record your measurements in your lab notebook, and then submit the notebook at the end of the activity.**

**About this lab**

In this lab, you are provided with all the tools necessary to light a lightbulb wirelessly. You have two solenoids, one, connected to a power supply, will produce a magnetic flux change in the other one (see figure 1). You are provided with two power supplies: the Universal Interface, and an old school power supply that can produce greater DC Voltage. DO NOT USE THE OLDSCHOOL POWER SUPPLY TO PRODUCE AC VOLTAGE.

**Activity 1.** Light the lightbulb via electromagnetic induction

**Question 1.** What is the current through the lightbulb? Do a theoretical estimation (you will have to estimate the magnetic field flux change through the smaller solenoid) and then measure it with the tools provided.

**Question 2.** What is the circuit diagram of this circuit you have created?

A coils of copper wire

Description automatically generated**Activity 2.** Using the Universal Interface and an AC power supply, produce a constant signal in the secondary solenoid. Draw a diagram of the situation.

**Question 3:** Estimate the current through the second solenoid and then measure it. Record the value. Show the work for your theoretical estimate.

*Figure 1: The big solenoid is the primary solenoid, the small one the secondary solenoid.*