PHYS 1220 **Spring 2018**

Lab 6: Magnetic Fields

Due Date: May 04

Background

During your interstellar voyage to Kepler-186f, one of your crew members smacks their noggin during a game of *Pokémon Go* gone horribly wrong. You quickly cobble together a simple MRI machine to assess the severity of the injury.

Challenge

Devise an apparatus that will generate magnetic fields of approximately 1.0 mT, 1.25 mT, and 1.5 mT. Compare your results to those expected from theoretical considerations.

Available materials:

multimeter & probes	rheostat	*B* field sensor
Logger Pro software	wires, voltage source, clips	Vernier high current sensor
metal slinky	ruler	tape

Technical details

Before attempting to measure a magnetic field, familiarize yourself with the equipment and software. For example, measure the current through the slinky by using both a multimeter and Ohm's Law.

Lab report considerations

Use the dataset to report both an average *error* on the *B* field and its *uncertainty*.
Your lab report must provide an example circuit diagram.
A photo of the lab setup must also be included.

Teacher signatures

Please get either Prof. Dale or a TA to sign off on your experimental plan, the pre-lab equipment practice, and the completion of the lab. These signatures will be worth 4% of the lab grade and will help to promote a successful experience.