PHY 202/182 Lab Instructor notes
Lab 6: Magnetism
Spring 2004

- **This needs to be broken up into two labs, with maybe additional sections. It covers too many topics and is too long.**
- For the compass and earth's magnetic field part, the board and wire is on the top of the shelves. The rest of the stuff is in the marked cabinet.
- For the magnetic field plotting, the boards need to be drilled so they can be held in place. Also, there is a 42 inch long angle iron which can be used to keep the wire straight.
- At the beginning of the lab:
  - Students have not had Ampère's law or Faraday's law in lecture yet. Give the right hand rule for finding the direction of the magnetic field produced by a current and Faraday's law.
  - Demonstrate how "current limiting" works on the power supplies.
  - Demonstrate how the integrators work.
- We won't be using the small magnets in this lab. The small Niobium (?) magnets are brittle. The students should handle them with care: no clanking noises.
- The voltage integrators tend to drift. There is a hole in the side of the box where you can use a small screwdriver to adjust the drift.
- For field near a straight wire, use a Tenma DMM to measure current (most DMM's have the current blocked off). The power supply is the ancient gray box. The leads should have banana plugs attached to them.
- At end of lab, put away the magnets. Also, turn off the integrators.
- For compasses, need clips better for alligators.
- The integrators has a separate "on" button. This is redundant since there is a "run" button. Also, is there a schematic for the circuit?
- Some of the smaller items needed are: 3 DMM's, 1 stopwatch, 3 ammeters, 4 current-limited power supplies, 5 small rulers.