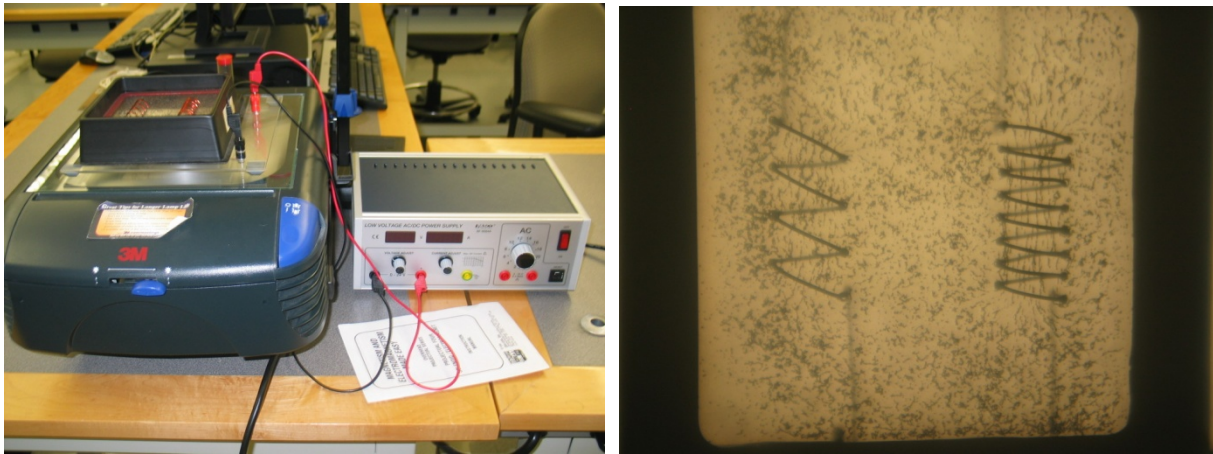


## Magnetic Field Due to a Current-Carrying Solenoid



**Purpose:** To show that a magnetic field is produced within a current-carrying solenoid and to show what the field looks like.

**Location:** Room 146; shelf M5, 10 amp power supply on E6

Place the solenoid display on the overhead projector and turn on the projector. With the power supply off, connect two banana plugs to the terminals of 10 amp power supply. Connect the black wire to the solenoid display and place the red plug on the table. With the power still off, evenly sprinkle some of the iron filings on the display. Turn the power supply on and the current dial all the way up. Connect the red banana plug to the solenoid display and give the board a few firm taps. Once the desired magnetic field lines show up, disconnect the red lead and turn the power supply off. 10 amps of current should be running through the display for no more than one minute. Lines will be easily seen in the 8 turn solenoid but less visible in the 4 turn solenoid because the magnetic field is weaker. The display also comes with various metal cores to show how they affect the magnetic field and an instruction manual with suggestions for other demonstrations.