Lab 8: Magnetic Field from Current Carrying Wires and Magnetic Force

**Challenge**
Generate a magnetic field using available materials and measure the corresponding distance \((r)\) dependence of the field for a single wire. Repeat these measurements for two wires with current running in the (a) parallel and (b) anti-parallel directions.

Now, calculate the force between the two wires for the currents you are using. Comment on how you know there is a force (and the nature of the force) and whether your observation is qualitatively consistent with your calculation. If you don’t detect a force, what would you do?

**Materials**
- multimeter & probes
- Logger Pro software
- wires & string
- circuit boards
- magnetic field sensor
- resistors
- alligator clamps
- DC power supply

**Lab Report Considerations**
Your lab report must provide an example circuit diagram, a photo of the lab setup, and relevant plots showing \(B\) as a function of \(1/r\) for the different current and wire configurations.

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*A neutron walked into a bar and asked, "How much for a drink?"

The bartender replied, "For you, no charge."*