# Lab 10: Earth's Magnetic Field

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1. Record the initial dip angle $\theta_0 = 36°$

2. Set source to 4V.

| Table 1: High-Pass Filter | | | | | | |
|---|---|---|---|---|---|---|
| Resistance | 20Ω | 40Ω | 75Ω | 150Ω | 180Ω | 200Ω |
| Current i | 0.122A | 0.0733A | 0.0442A | 21.24mA | 0.02124A | 0.01824A |
| Dip Angle $\Theta_i$ | -71° | -49° | -14° | 6° | 12° | 15° |
| Calculated $B_i$ | 1 | 2 | 3 | 4 | 5 | 6 |

3. Record the Helmholtz coil radius: R = 9.75cm → 0.0975m

4. Record the Helmholtz coil number of turns: N = 128

5. Calculations: $(B_i = \frac{8N\mu_0 I_i}{R\sqrt{125}}, \ where \ \mu_0 = 4\pi \times 10^{-7} Tm/A)$

   - Plot $tan\theta_i$ vs $B_i$ with straight line. Deduce the values of $B_V$ and $B_H$ from the graph.

     $B_V =$

     $B_H =$

     Calculate $B_E$

     Lookup value of $B_E$