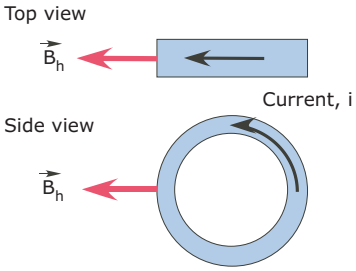
Advanced Reading Questions: Earth's Magnetic Field Lab

1. Calculate the magnetic field at the center of a coil of radius 10 cm, with 100 turns of wire, carrying a current of 0.5 A.

2. The diagram below shows a top view and a side view of a tangent galvanometer that is aligned so $\vec{B}_h$ coincides with the plane of the coil. With the current in the coil flowing in the sense shown, what is the direction of $\vec{B}_c$? What is the direction of $\vec{B}_{net}$? (Draw a diagram to illustrate your answer.)



3. If $\theta_{dip} = 60°$ and $|\vec{B}_h| = 1.0 \times 10^{-4}$ T, what is $|\vec{B}_e|$?

4. What value would you expect for θ_{dip} near the equator?