Mar 18

Get kits, two multimeters, stopwatch, resistors, and clickers

Lab: Macroscopic View of DC and RC Circuits
Password: Who You Calling Micro?

Start right away!
Get data now, turn in next week.

Next week office hours canceled. **Email me questions.**
Last midterm is in two weeks. Practice exam is on website.

For Part 2 bottom of page 3
use 100 Ω resistor for ΔV_{out}

Demo and Discussion: Magnetic Force

1. When the North end of a magnet is brought near the negatively charged rod, what will the rod do?

A. It will be attracted to the N pole of the magnet
B. It will be repelled by the N pole of the magnet
C. It will not be affected by the magnet

Charges not moving

2. When the compass is placed above the beam of electrons, will it deflect?

A. Yes
B. No

3. If the electrons are traveling in the –z direction, what is the direction of the magnetic field at a location on the +y axis?

A. +x
B. –x
C. +y
D. –y

4. If the beam were protons instead of electrons, how would the beam deflect?

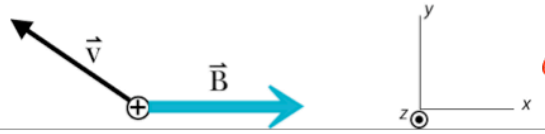
A. Same as electron beam
B. In the opposite direction as electron beam

$$\vec{F}_{mag,2} = q_2 \vec{v}_2 \times \vec{B}_1$$

Clicker Questions:

Q20.1a

What is the direction of the magnetic force on the proton?

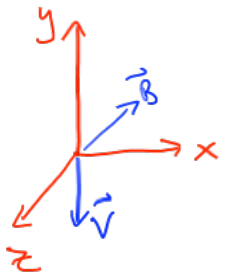


A) +x
B) –x
C) +z
D) –z
E) zero magnitude

$$\vec{F} = q\vec{v} \times \vec{B}$$

Q20.1b

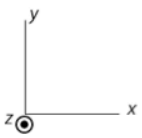
An electron is traveling in the –y direction. At its location there is a magnetic field in the –z direction. What is the direction of the magnetic force on the electron?	A) +x B) –x C) +z D) –z E) zero magnitude



Q20.2a

Direction of magnetic force on wire?

A) +y
B) –y
C) +z
D) –z
E) zero magnitude



$$\Delta \vec{F} = I \Delta \vec{\ell} \times \vec{B}$$

Q20.1c

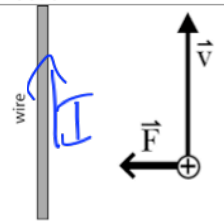
A proton traveling in the –x direction experiences a magnetic force in the –z direction. What is a possible direction of the magnetic field at the location of the proton?	A) +x B) +y C) –y D) +z E) zero magnitude

$\vec{F}$ in $-\hat{z}$

$\vec{v}$ in $-\hat{x}$

$+\hat{z} = +(+\hat{x}) \times (y)$

Q20.1d A proton moving in the +y direction experiences a magnetic force in the –x direction.



What is the direction of conventional current in the wire?

A) +y

B) –y

C) I = 0

D) Not enough information