MICHIGAN STATE UNIVERSITY

Class 10

PHY 232
Spring 2002
Prof. S. Billinge

Announcements

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Concepts

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1. RC circuits
   - Combine a capacitor (C) and resistor (R) and current in the circuit becomes time dependent
2. Magnetism
   - Dipolar force (I.e., N and S)
   - Like poles repel/unlike attract
   - Field lines go from N->S
   - Field, B, has units of Tesla ($T=Wb/m^2=10^4$ G)
   - Force acts on a *moving* charge, $F=qvB\sin\theta$

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Problem solving

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- Right hand rule for *direction* of force on moving particle
  - Fingers in direction of field
  - Thumb in direction of motion
  - Force is out of palm on +ve charge (opposite on –ve charge)

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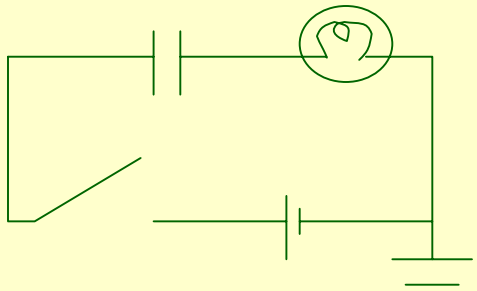
A bulb is in series with a capacitor and a battery:



on closing the switch:

1. The bulb lights initially gets dimmer and goes out
2. The bulb glows dimly and brightness increases as the capacitor charges
3. Bulb flashes on and off as capacitor charges and discharges
4. Bulb stays dark because it is on the negative side of the battery at ground potential

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You hold an electron in a strong magnetic field pointing north, then let go. The electron:

1. Starts moving to the north
2. Starts moving to the south
3. Starts moving to the East
4. Starts moving to the West
5. Stays still

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