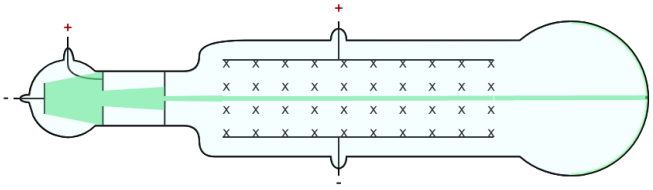
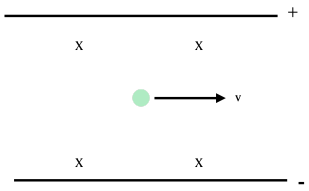
Mass and Speed of Particle

Step 1: Adjust your deflecting voltage and/or the magnetic field until you get the beam of electrons to travel undeflected through the capacitor and magnetic field. Write down the value of the voltage and the magnetic field that you used to straighten your beam. Also write down the dimensions of the deflection capacitor.



Step 2: The picture below shows a single electron as it moves through the deflecting capacitor and magnetic field. Draw in the forces and then calculate the speed it must be moving not to deflect as it passes through the capacitor. You will be entering this speed into the program before moving on to part 2.



Step 3: Now you turn off the magnetic field and then lower the deflecting voltage until the beam of electrons collides with the very edge of the deflecting capacitor. Based on the dimensions of the capacitor and the voltage required to produce this path, find the mass of these particles. Show your work in the space provided below