

Intro:

This week we'll finish our discussion of capacitors and take a quick tour of circuits.

Moving charges and special relativity will be our next topics. Next week will be essentially all relativity to prepare for the later sections of Chapter 5.

Due Friday, February 24, before class

Reading:

- Chapter 4 focus on sections 3, 7, 8, 10, and 11. Due to time constraints we will not discuss the rest of this chapter in detail - but feel free to read this material for general interest.

A look ahead:

- Moving charges in Chapter 5 of PM

A look ahead:

- Relativity!

Problems:

- (1) You shuffle across the floor picking up charge Q . As your hand approaches the door handle, this charge is concentrated in your thumb. Electrically, this looks a little like a capacitor where your finger is one plate and the door handle is the other plate. Assume that both your finger and the door handle are squares with sides of length 1.3 cm. When you get 0.4 cm away from the grounded door handle, the electric field reaches $30 \text{ kV/cm} = 3 \times 10^6 \text{ N/C}$, enough to cause a spark. Estimate the charge, Q , that you picked up from the floor. You may ignore fringing fields in the capacitor. (And thanks to Gordon for this one!)
- (2) 3.13 Image charges for the spherical case
- (3) 3.18 Assembling capacitors
- (4) 3.28 Designing a capacitor
- (5) 3.59 Computing the capacitance: Find E then V before applying the definition
- (6) 4.19