

Lab 4 (on-line): Capacitors and RC Time Constant

Challenge

Charge and discharge a capacitor and measure the time constant of a RC circuit.

Available materials:

Use this PhET simulation to carry out your virtual experiment:

https://phet.colorado.edu/sims/html/capacitor-lab-basics/latest/capacitor-lab-basics_en.html

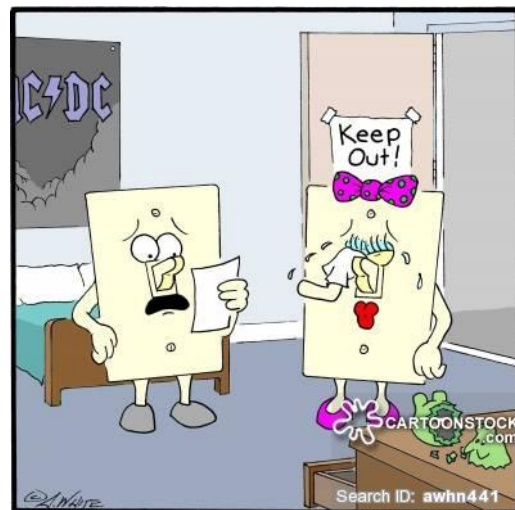
Technical details

You may need Java to run the PhET simulation. Use the voltmeter provided to make measurements. Adjust the capacitance for a better more accurate measurement of the time constant using your own stopwatch.

Lab report considerations

Before you measure the time constant, you should record the voltage on the capacitor and calculate the charge, electric field and energy stored in the capacitor. Multiple trials should be pursued. Use at least three different values of capacitance for time constant measurement. What is the resistance of the lightbulb? Use the dataset to report the uncertainty. Your lab report must provide an example circuit diagram.

A lady took her CD player into the repairman. "I am afraid you have a short circuit," he told her. She said "I don't care how much it costs, lengthen it."



"Dear Mom and Dad, I'm running away from home to join the circuits."