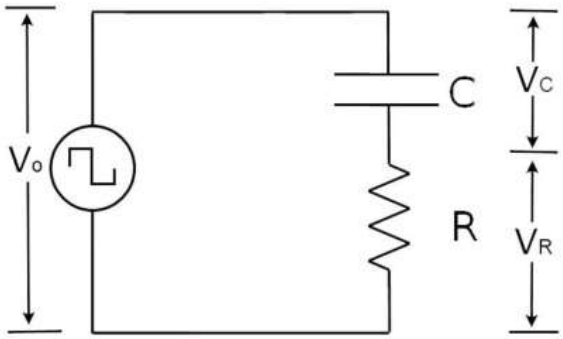
Manual to Lab 8: PHY2048C

Florida State University

Circuits III



About labs in this class

The labs in this class will have general instructions, and many things need to be figured out by the students. I will be answering any specific questions the students may have without completely giving away the key to the puzzle. **Answer the questions and record your measurements in your lab notebook and submit the notebook at the end of the activity.**

About this lab

In this lab, you are provided with tools to make an RC Circuit

Activity 1: Make a charging RC circuit, placing a resistor and a capacitor in series with a battery and a switch.

Activity 2: Measure the characteristic capacitor charge time using the oscilloscope (the Universal Interface). Plot the current over time.

Question 1: What is the characteristic time of the circuit? Does it coincide with the theoretical value (RC)? Identify sources of error for this measurement

Activity 3: Now make a circuit that allows the capacitor to discharge. **Do not short the capacitor:** place the capacitor in series with a different resistor.

Question 2: What would happen if you connected the two terminals of the charged capacitor without the resistor? Use the RC-circuit equations to answer this question. **Do not try to short-circuit the capacitor.**

Activity 2: Measure the characteristic capacitor discharge time using the oscilloscope (the Universal Interface). Plot the voltage across the capacitor over time.

Question 3: What is the characteristic time of the circuit? Does it coincide with the theoretical value (RC)? Identify sources of error for this measurement