

# MCE380: Measurements and Instrumentation Lab

Homework 2 - Spring 2010

Dr. Richter

A simple circuit was operated in class to demonstrate the concepts of active vs. reactive power and power factor. The circuit is shown in Fig. 1. A sinewave was connected to the input of the circuit. Two channels of the oscilloscope were used to capture the voltage and current between points A and G. The voltage between A and G was connected to channel 1 directly. The current was indirectly measured, reading the voltage between points B and G in channel 2. The resistor installed between B and G is  $2.158\text{ k}\Omega$ .

1. Download the oscilloscope data from the course website
2. Plot the voltage (mV) and the current (mA) on the same chart against time (ms).
3. Find the frequency and time shift. Is the current leading or lagging the voltage?
4. Find the phase shift, power factor and active power between A and G.
5. For bonus points, review electrical courses/books and find the value of the capacitor.

**Due date: April 26, 2010, in class**

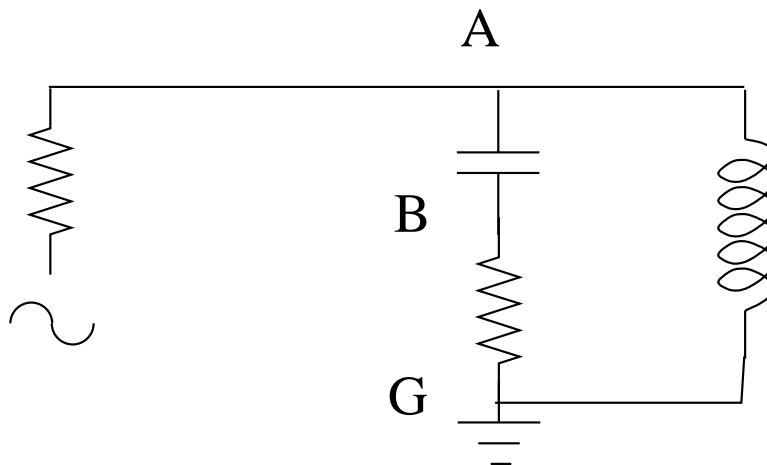


Figure 1: Circuit Schematic