

**ECE 209L - FOURIER SERIES - LAB 23**  
**STEADY STATE RESPONSES TO PERIODIC INPUTS - PART II**

FALL 2003

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**OBJECTIVE**

The objective of this lab is to build and test the second order RLC bandpass filter that that you designed in the last Investigation to pass the first harmonic of a 10KHz pulse train while "pretty much" filtering out the others.

**DESIGN**

1. Take measurements to find the frequency response  $|G(j\omega)|$  of your filter at ten representative frequencies.
2. Make use of your data in Problem (1) to calculate the magnitude of the transfer function of your filter at the chosen frequencies and then add the data points to your graph from the last Investigation of the magnitude of the transfer function
3. Describe how good a job your filter does of just passing the first harmonic of the 10KHz pulse train. Sketch a graph of  $y(t)$  to illustrate.
4. Now try tuning your filter - changing R and C by small amounts - to improve the performance of your filter. Describe the affect of your tuning. Sketch graphs of  $y(t)$  to illustrate.