Homework 8

ECE 5411 - CMOS Analog IC Design (Spring 2013)

Due on Tuesday, Apr 9, 2013.

Note: Use Cadence schematic capture, layout and Spectre simulation tools, available on the AMS servers for the homework problems.

- **Problems A1:** Understand examples 21.6-21.10 in the textbook. Do problems A21.19 and A21.20 and simulate them using Spectre. Use the provided MATLAB script (*CommonSourceFreqResp1.m*) to generate frequency and pole-zero plots to augment your understanding.
- **Problems A2:** Do problems A21.21 and A21.23. Simulate them using Spectre. Use the provided MATLAB script to generate frequency and pole-zero plots.
- **Problems A3:** Using the method used in class, show that the zero location in a common-source amplifier is given by $\omega_z = \frac{g_{m2}}{C_c}$. Similarly, derive the expression for the zero location when a zero-nulling resistor R_z is added in series with C_c . Modify the MATLAB file *CommonSource-FreqResp1*, to account for R_z and demonstrate zero-nulling and LHP zero creation with this script.