

# Problem 3

Tuesday, February 9, 2016 1:30 PM

Assume a transmission line that is grounded on one side



- What are the boundary conditions of this problem?
- Using the wave equation in the continuum limit, compute the eigenmodes and eigenfrequencies.
- Why is this called a  $\lambda/4$ -resonator?
- Compute the expressions for the voltage and current distributions from the eigenmode expansion.
- Estimate those  $V$  and  $I$  for a line such that  $Z = 50 \Omega$  and  $\omega_0 \sim 4 \text{ GHz}$  (fundamental mode)