

# Homework 6

Due April 28th 2008.

1. Discuss the wave propagation along a microstrip line consisting of two thin ( $d \ll a$ ) strips of metal of width  $a$  located in the same plane a distance  $b$  from each other. In particular, find
  - a. The fields and the energy flux of TEM mode
  - b. Impedance of the line
  - c. Find the energy spectrum of the modes in the line of finite length.
  - d. Estimate the attenuation of the wave for the  $\delta \ll d \ll a$ .
2. Consider again a microstrip line of problem 1.
  - a. What is its capacitance and inductance per unit length?
  - b. Approximate the line by a series of capacitances and inductors and compute its impedance. Compare the result with the solution of problem 1.