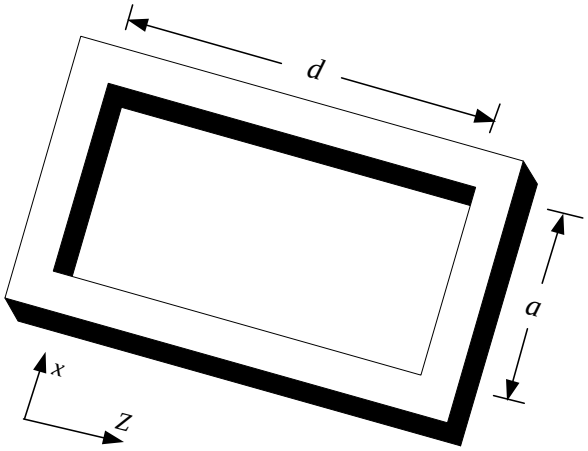
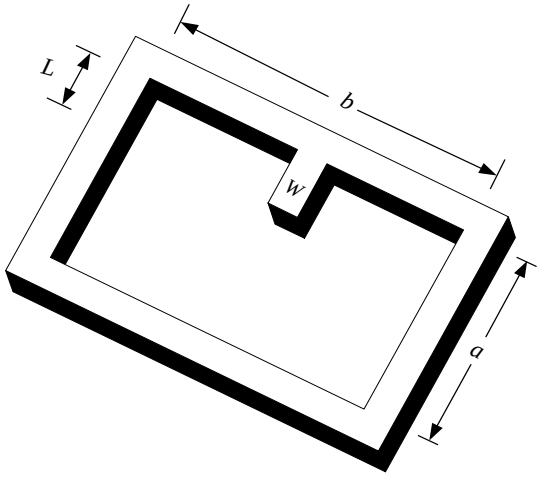
Suggestions for the First Project

1)



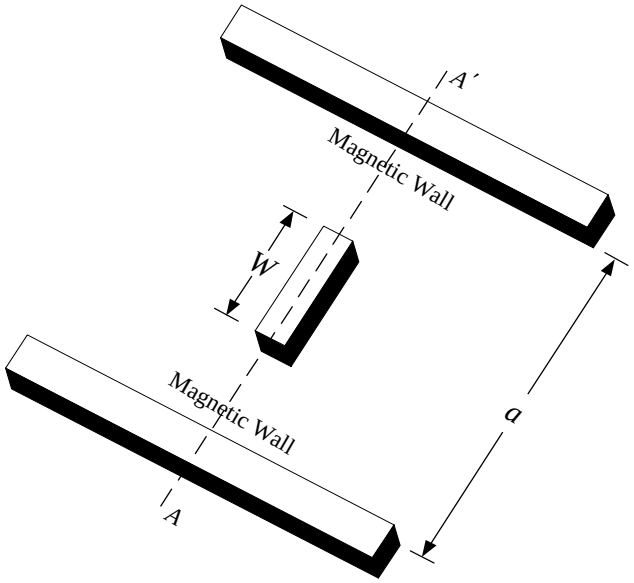
Using 2D TLM find the frequency of the dominant mode of oscillation for a rectangular cavity with length *d* and width *a*. Compare the results obtained using your code with the analytic values and with MEFiSTo-2D.

2)

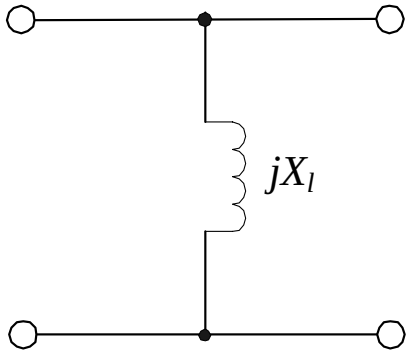


Using 2D TLM, find the frequency of the dominant resonance mode of the shown reentrant cavity. Plot the variation of the resonant frequency with the length *L*. Compare your results with that obtained using MEFiSTO-2D.

3)



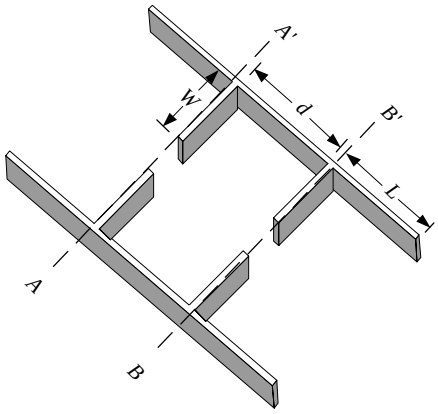
(a)



(b)

A thin metallic obstacle in a parallel plate waveguide can be represented effectively by an inductance. Using 2D TLM obtain the S parameters of the shown circuit in Figure (a) for a=0.06 m and W=0.004m over the frequency range (0.1-2.0GHz). Compare your results with that obtained using MEFiSTO-2D. (+1)

4)



Utilize 2D TLM to obtain the S parameters for the shown single resonator filter (a=0.06m, d=0.036m, W= 0.015m) over a single frequency (4.0 GHz). Compare your results with that obtained using MEFiSTO-2D. (+1)

5) Repeat problem (4) over the frequency range (3-5 GHz) by utilizing the Johns Matrix concept in constructing the ABC at the left and right ports. (+2)

6) Utilize 2D TLM to simulate a microstrip filter of your choice over a suitable frequency range (look up Pozar's book for some suggestions). Utilize the Johns Matrix concept to construct the ABC at the ports. (+2)

(7) Utilize the TLM transform in solving a system of coupled integro-differential equations in your area of research. (+2)