

**ECEn 563**  
**Numerical Methods**

Homework #4  
Due Jan. 26, 2026

1. Use the matlab function `delsq` to discretize the Laplacian operator and find the cutoff frequencies of a rectangular waveguide with dimensions  $1\text{ cm} \times 2\text{ cm}$ . Use the function `eig` to find the matrix eigenvalues. Compare the numerical results for the first 20 TM modes to the analytical mode cutoff frequencies.
2. 4.11 [Waveguide mode visualization]