

ETH master program

Module: Physical Modeling and Simulation

Project: FEM for 2-D Electromagnetic Scattering

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Description:

Starting from the available 2-D FEM solver for wave propagation problems it is necessary to solve a 2-D scattering problem with a given mesh and geometry. The expected outcome of the project:

- Theoretical description of the 2-D FEM for EM scattering analysis.
- Field computation for the plane wave excitation with the wavelength roughly equal to the size of the scattering object.
- Ez scalar field plot.
- H vector field plot.
- The corresponding Matlab code.

The scattering object in the middle is made of a perfect electric conductor (PEC) and it is surrounded by air ( $\epsilon_r = 1, \mu_r = 1$ ). If the time permits, the same problem should be solved with the scattering object made of insulating material ( $\epsilon_r = 10, \mu_r = 1$ ).

