



Module PMRF-ISSS071

Computational Electrostatics

Name of the PMRF student

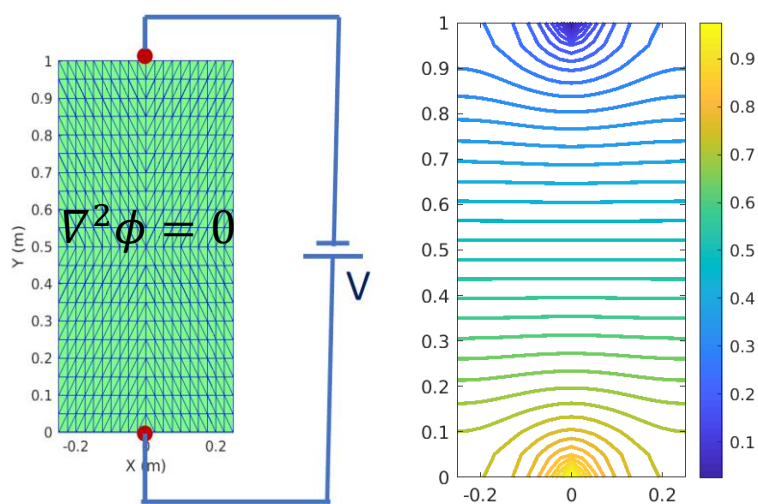
Jonnalagadda Surekha

Required background of the students taught

Undergraduate in Electrical/Electronics Engineering with some basic knowledge on MATLAB coding

Online session coordinator

Will be chosen from the list of registrants



Conducting plate Potential contours

Ref : MATLAB simulation

Details of the content of the module

This module provides a brief understanding of some of the numerical methods for solving electrostatic fields. MATLAB simulations will provide much deeper understanding of the subject.

1. Review of Electrostatics

- Coulombs Law, Gauss Law
- Dielectrics and boundary conditions
- Poisson's and Laplace's equation
- Steady conduction problem

2. Domain-based methods vs Boundary-based methods

3. Finite Difference method

- Basic theory and formulation
- Advantages and Disadvantages

4. Charge Simulation method and Surface charge simulation method

- Basic theory and formulation
- Advantages and Disadvantages

5. Finite Element method (1D only)

- Interpolation function
- Galerkin formulation

Note: This module will be in the form of lectures. MATLAB coding sessions will follow each sub-module.

Schedule of the module

Course start date: 22nd March, 2023

Course end date: 13th May, 2023 (Tentatively)

Classes on: Wednesday (6.00 – 7.30 pm)

Saturday (5.30 – 7.00 pm)

Meeting link : Will be shared later

[Link](#)

Contact email ID: issf.forum@gmail.com

Registration link:

<https://forms.gle/KhNVbVoawzHTN3379>