

# LAB 03 - ELECTRIC FIELD MAPPING

## 1 Introduction

**Objective of the lab:** Study the Equipotential lines and electric fields for combinations of conductors-insulator objects on a board.

### 1.1 Procedure: summary

Power supply = 15V

Voltmeter measures voltage by applying a tiny current. In the case of the dielectric, one can have accumulation of free charges on the dielectric but, the current cannot flow so V measured by the voltmeter is 0.

## 2 Lab format

### 1) THEORY

Definitions of equipotential lines and E-field lines. Explanations of concepts that are related to this lab.

### 2) PROCEDURE

Maximum 2 paragraphs.

### 3) EXPERIMENTAL DATA

Record the Equipotential lines and deduce the electric field lines for the board: 3, 4 and 5.

Typical graph must have Equipotential lines + electric field lines.

### 4) DATA ANALYSIS. + SOURCES OF ERROR

Questions section 4:

- 1) Describe qualitatively the principle features of your lines of constant potential for board 5 -
- 2) Where are the equipotential lines closest together and where are they farthest

apart for board 5?

3) Do any of your equipotential lines cross for board 5? Do you think it is possible for equipotential lines or surfaces to touch or cross?

4) What is the direction of the equipotential lines near the edges of the electrodes for board 5?

Questions section 5:

Sources of error

### **5) CONCLUSION**

Did you reach the objective of the lab?  
(short discussion of few lines)