

## *E&M Lab*

### *Electric Field Mapping*

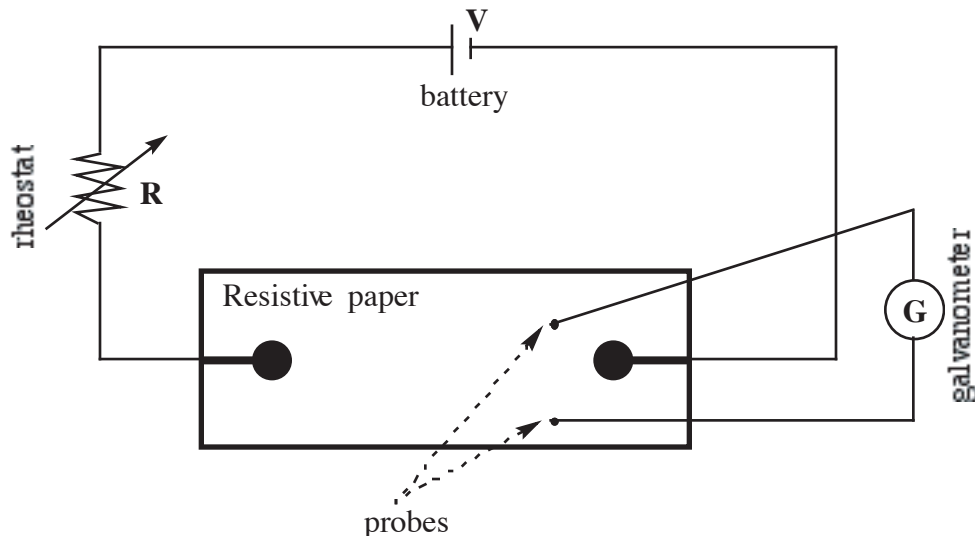
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#### 1. Objectives

- To determine equipotential lines in an electric field due to two oppositely charged conductors,
- To draw the electric lines representing the electric field.

#### 2. Material

- Galvanometer, voltmeter, 6-volt battery, probes, rheostat, and conducting papers.



#### 3. Procedure

1. Clamp one of the resistive sheet onto the plotting board. Connect the galvanometer and battery as shown in the diagram above. On a graph paper, mark the approximate positions of the positive and negative charge distributions.
2. Place one of the two probes stationary on a point on the resistive sheet. With the other probe, determine six equipotential points.
3. **WARNING:** When using an electrical meter, make a very brief contact to determine: A) if the needle moves in the proper direction, and B) that the needle will not move off-scale, damaging the meter.
4. On a graph paper, join seven equipotential points and sketch the equipotential line
5. Repeat steps 2 and 3 at least six more times. Distribute your equipotential lines so as to have a complete map of the electric potential over the resistive sheet. You should have seven (7) equipotential lines.
6. On your graph paper, draw at least 9 electric field lines. Make sure that the direction of these lines are clearly shown.

7. Repeat steps 2 and 3 with the second resistive paper which has two parallel conductors. However, in this case determine only four (4) equipotential points for each reference point and repeat only five (5) times to produce a total of 5 equipotential lines. Make sure that all points are located in the space between the two parallel conductors.
8. Draw at least four electric field lines, on your graph paper, between the two parallel conductors.

#### **4. In your logbook**

- Paste your electric field maps in your logbook. These maps must be neatly done.
- Describe the relationship between equipotential lines and electric field lines.