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**Group 1**

**Experiment 6: Field Mapping**

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**Introduction:** We studied the potential and electric field distributions in a resistive board for several set of electrodes. Using Laplace’s Equation, we hoped to solve for electric field by measuring distances between different potential differences. We used a DC Power Supply to produce the potential difference and a digital multimeter to determine the voltage between difference points on our resistive board. We attempt to find the electric field strength at points A and B, towards the top left of the resistive board.

**Equations Used:**

**Data:**

A: 22.2 V/m

B: 24.69 V/m

**Conclusion:** After going through a set of values measuring the voltage at each point and extrapolating up and down the page, we managed to come up with a graphical understanding of the potential difference equivalence lines. The appearance of these lines matched our predictions, with the 1 volt line being completely vertical, and other field lines having harsher curves as they approached the inductive parts of the board. We chose two points in between the same two lines and calculated the electric field there using Laplace’s equation. There may have been slight error due to potential inaccurate measurements, with points plotted in slightly incorrect locations and with slight tolerance in measurements. However, given the two points A and B we were able to determine the electric field at said points, and our results matched the theory and our predictions.