General Instructions

**Experiment No: 02**

**Name of the Experiment: To verify Ohm’s Law.**

**Purpose:**

• Verify that current (I) and potential difference (V) are directly proportional using a fixed resistance (R) in a simple circuit.

• Examine the relationship between current (I) and resistance (R) for a fixed potential.

**Procedure:**

**1.** Go to the ***Phet simulation*** site using the following link and open up the ***Phet*** sim entitled ***Ohm’s Law***.

[https://phet.colorado.edu/en/simulation/ohms-law](https://www.google.com/url?q=https://phet.colorado.edu/en/simulation/ohms-law&sa=D&source=editors&ust=1616395095543000&usg=AOvVaw2_2Jz6rdlWZQCNNXiCrh96)

**2.** Set the Resistance slider to ***R1*** provided in “**Necessary Values**” of the next unit below. Use the Voltage slider to adjust the potential to the values in Data Table 1 and tabulate the resulting electric currents (I) from the ***Phet*** simulation software. Keep ***R1*** constant throughout this process.

**3.** Set the Resistance slider to ***R2*** provided in “**Necessary Values**”. Use the Voltage slider to adjust the potential to the values in Data Table 2 and record the resulting electric currents (I) keeping ***R2*** constant throughout the process.

**4.** Now set the Voltage slider to ***V*** provided in “**Necessary Values**”. Use the Resistance slider to adjust the resistance to the values in Data Table 3 and tabulate the resulting currents (I). Keep ***V*** constant for all the values of resistances.

**5.** Based on your data in Data Table 1 and Table 2, draw the electric current (I) vs. potential (V) graph putting current along y-axis and voltage along x-axis. Use any software you like for plotting (specific softwares are recommended).

**You must write your ID in each of your graphs.**

**6.**List and link for the graph plotting softwares

* [https://www.desmos.com/](https://www.google.com/url?q=https://www.desmos.com/&sa=D&source=editors&ust=1616395095545000&usg=AOvVaw2CAsiIlZeiA6eaqljFt7g0)
* Link         for the “Graph” software
* [https://www.padowan.dk/download/](https://www.google.com/url?q=https://www.padowan.dk/download/&sa=D&source=editors&ust=1616395095545000&usg=AOvVaw1z3es-ni2EfI7FmkD-iooF)
* Tutorial for plotting in Desmos :[https://youtu.be/-lIUNWVKnUY](https://www.google.com/url?q=https://youtu.be/-lIUNWVKnUY&sa=D&source=editors&ust=1616395095546000&usg=AOvVaw2qJotuVhGEce9FryWUxq1Z)
* Tutorials for Graph Software:[Graph Software tutorials](https://www.google.com/url?q=https://www.youtube.com/playlist?list%3DPLWlcecaWx7bRckVJi2gxqMnC9Nrl8ig0f&sa=D&source=editors&ust=1616395095546000&usg=AOvVaw3nmdhtKEBjc8bYNJLd7mAT)

**7.**You must **download the submission form** which is a google doc. DO NOT try to edit the original document.

8.Find the slopefrom the straight line you get for both graphs. Straight line indicates the directly proportional relationship between current and voltage.

9. Calculate the resistance using the slope.

**10.** Compare these new calculated values with given ***R1*** and ***R2*** and determine the percentage of error.

**11.**Now based on your data in Data Table 3, draw the electric current (I) vs. resistance (R) graph putting current along y-axis and resistance along x-axis.

**12.**Submit your lab report using the following submission form and link, which are given into the **Lab Report Submission Form and Upload your Lab Report unit**respectively.

**Pdf file name** :**section\_id\_experiment no.**

**N. B.:**If you have any question regarding lab, you can post that into**#phy112lab\_all\_sections**slack channel, by clicking the link below:

[**https://app.slack.com/client/T01NFMYBWD6/C01P575CZ9V**](https://www.google.com/url?q=https://app.slack.com/client/T01NFMYBWD6/C01P575CZ9V&sa=D&source=editors&ust=1616395095548000&usg=AOvVaw3dInkCAZwbDMdjRYioyC-n)