Pre-Lab Report

Lab section:

Name & Surname:

Table #:

***Before the Lab** complete this page YOURSELF! Hand it in in the first 5 min. of the session PERSONALLY!*

You MUST justify your answers and show all steps. NO COPYCAT answers, or NO credits!

Please read the relevant presentation on PHYS LAB Website.

Q1. Draw the circuit for measurement of Ohm's law in this experiment. Do not forget to add rheostat! What is the function of it in the experiment?

Q2. Show dimensional analysis of resistance R explicitly! **Show your formulae / derivation below explicitly or no credits!**

(3rd Question is on the next page!)

Q3. Below you are given a set of 4 data obtained in the Ohm's Law experiment. Calculate R_i, $R_{average}$ and σ_R and find **R** (Pay attention to significant figures and units!)

V(V)	I (A)	R_i ( )	$R_i - R_{average}$ ( )	$(R_i - R_{average})^2$ ( )
1.00	0.050			
1.25	0.055			
1.35	0.060			
1.50	0.085			
$R_{average}$=			σ_R=	
$R = R_{average} \pm \sigma_R$ =				

Comment on the result for R_4, regarding $R_{average}$ and σ_R! **Show your formulae / derivation / calculations explicitly or no credits!**

#1 Measurement of Resistance - Ohm's Law

1 Lab Report

Lab section:

Name & Surname:

Table #:

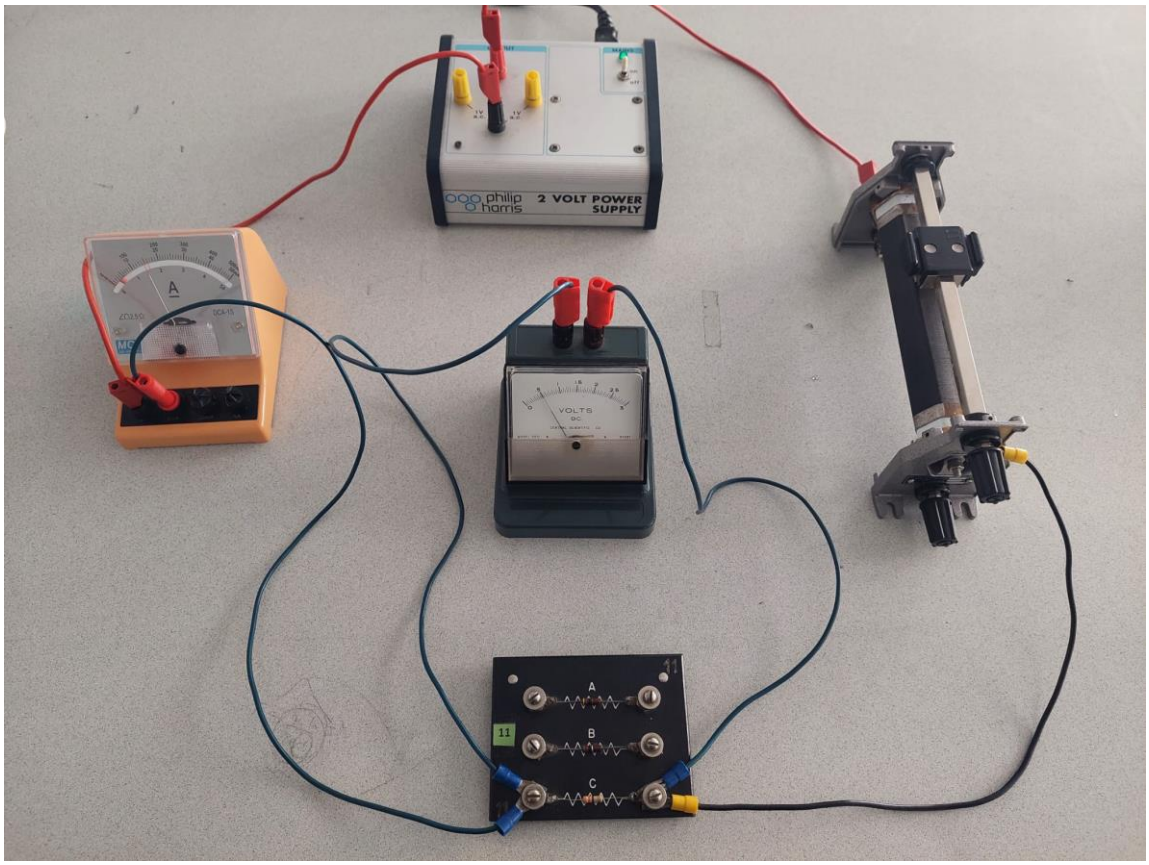
Complete this report YOURSELF except DATA taking parts! Use a pencil for plots only and a pen for the rest! **Show your work clearly, NO COPYCAT analysis allowed, or NO credits!**

OBJECTIVE : To determine the resistance of a conductor making use of Ohm's Law.

THEORY : Most conductors show ohmic character when current passes through them. There is a linear relationship between the potential difference across such a conductor and the current passing through it, where the proportionality constant R is the resistance. This is Ohm's Law.

APPARATUS : Ammeter (0.5 A), voltmeter (3 V), rheostat, 2-V power supply, resistance board, knife switch.

PROCEDURE : Construct the circuit with the 2-V DC-power supply. Vary the applied voltage with the help of the rheostat and record ten readings for the current and the corresponding voltage across the conductor. Calculate the corresponding resistance for each voltage-current pair and compute the average and the standard deviation of the resistance.



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DATA-TAKING

Unknown Resistance Number*	

# of measurements, N	*Voltage across the Resistance V ( )*	*# of Significant Figures :*	*Current in the Circuit I ( )*	*# of Significant Figures :*
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

*** Write the unknown resistance number on resistance plate and the letter corresponding the resistance you measure. Example: 4C**

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CALCULATIONS

# of measurements, N	R_i ( )	$R_{average} - R_i$ ( )	$(R_{average} - R_i)^2$ ( )
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
$\sum_{i=1}^{N}(R_i)$ =		$\sum_{i=1}^{N}(R_{average} - R_i)^2$ =	
Average of R =		**Standard Deviation of R =**	

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RESULTS

Description	Symbol	Calculation (show each step)	Result

Mean Resistance $R_{average}$ = ...

. . . . . .

Standard Deviation of the

Resistance Value σ_R = ...

. . . . . .

RESULT:

$R = R_{average} \pm \sigma_R$ = ...

Consult to the resources for this experiment from PHYS LAB Website:

PHYL201 Intro

Presentation #1

PHYL201 Lab Book