Lab- Resistance Measurement

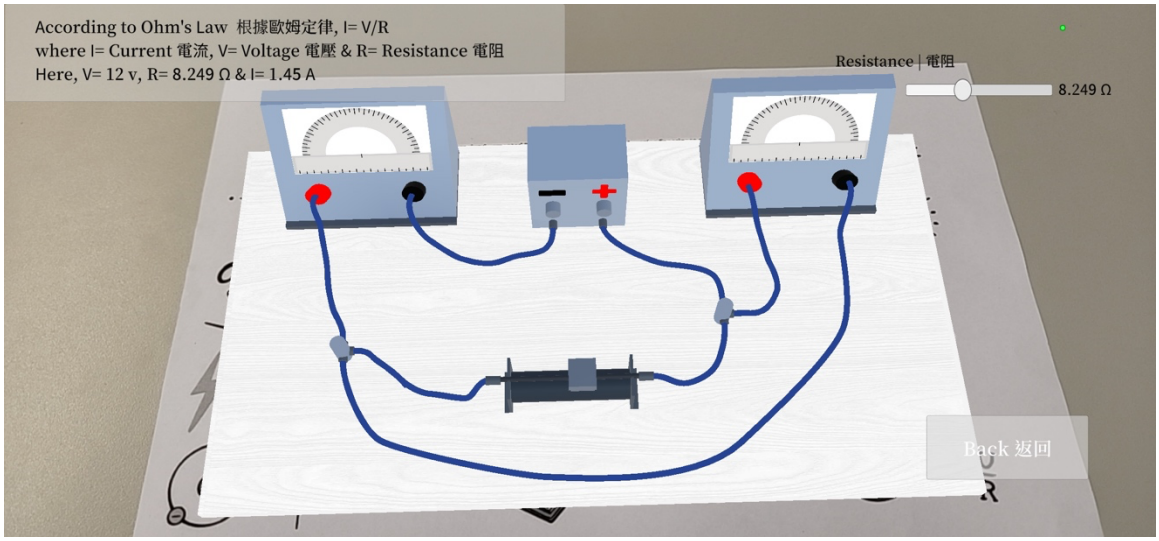
Steps to follow-

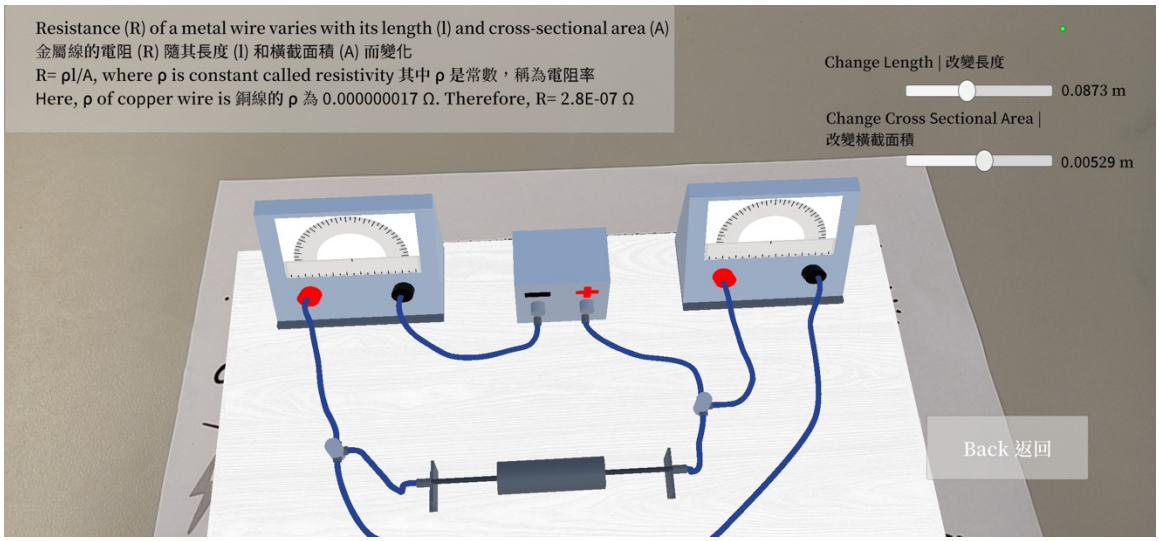
1. Press the Lab- Resistance Measurement button.
2. After that, you can select between 3 options.

   (a) Measurement of the resistance of a conductor with a voltmeter and an ammeter (Ohm's law).
   (b) Change of the resistance of a conductor with its length and cross-sectional area.
   (c) Change of the resistance of filament of a lamp with temperature.

3. The camera of the phone will open after selecting any of the option.
4. Please hold the camera on top of the image target.
5. An animated experimental setup will be visible to help visualize the concept.
6. For option (a), A circuit with ammeter, voltmeter, power source and rheostat will be visible. A slider will be available to change the value of the resistance. You can see the value of current for different value of resistance according to ohm's law.
7. For option (b), A circuit with ammeter, voltmeter, power source, and a copper wire will be visible. The length and cross-sectional area of the copper wire can be changed with the help of two sliders. The value of resistance can be observed with various values of length and cross-sectional area of the copper wire.
8. For option (c), a set up A circuit with ammeter, voltmeter, power source, light bulb and rheostat will be visible. With the help of a dropdown menu the voltage can be changed, and different resistance value can be observed.


A Comprehensive Augmented Reality App for Enhancing Learning Experience of Physics
增強物理學習體驗的「綜合擴增實境應用程式」
Measurement of the resistance of a conductor with a voltmeter & an ammeter (Ohm's law).
用電壓表和電流表測量導體的電阻（歐姆定律）
Lab - Resistance Measurement
實驗- 電阻測量
Change of the resistance of a conductor with its length and cross-sectional area
導體的電阻隨長度和橫截面積的變化
Lab - Resistance Measurement
實驗- 電阻測量
Change of the resistance of filament of a lamp with temperature
燈絲電阻隨溫度的變化
Lab - Resistance Measurement
實驗- 電阻測量
Back 返回


According to Ohm's Law 根據歐姆定律, I= V/R
where I= Current 電流, V= Voltage 電壓 & R= Resistance 電阻
Here, V= 12 v, R= 8.249 Ω & I= 1.45 A
Resistance | 電阻
8.249 Ω
Back 返回


Resistance (R) of a metal wire varies with its length (l) and cross-sectional area (A)
金屬線的電阻 (R) 隨其長度 (l) 和橫截面積 (A) 而變化
R= ρl/A, where ρ is constant called resistivity 其中 ρ 是常數，稱為電阻率
Here, ρ of copper wire is 銅線的 ρ 為 0.000000017 Ω. Therefore, R= 2.8E-07 Ω
Change Length | 改變長度
0.0873 m
Change Cross Sectional Area | 改變橫截面積
0.00529 m
Back 返回

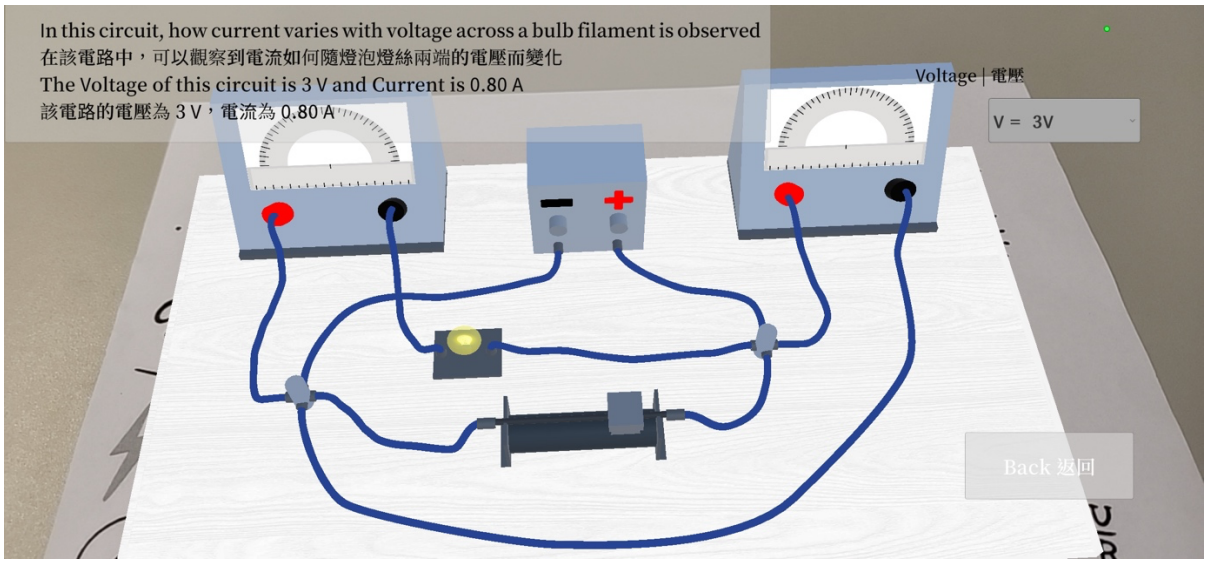


Fig. Screenshots from the topic "Lab- Resistance Measurement"

圖. "實驗-電阻測量"主題的截圖

實驗-電阻測量

步驟:

1. 按下"實驗-電阻測量"按鈕。

2. 然後您可以在 3 個選項之間進行選擇。

(a) 用電壓表和電流表測量導體的電阻（歐姆定律）。

(b) 導體的電阻隨長度和橫截面積的變化。

(c) 燈絲電阻隨溫度的變化。

3. 選擇任何選項後，手機的相機將打開。

4. 請將相機放在圖像目標的上方。

5. 動畫實驗裝置將可見，以幫助形象化概念。

6. 對於選項（a），可以看到帶有電流表、電壓表、電源和變阻器的電路。 滑塊將可用於更改電阻值。 根據歐姆定律，您可以看到不同電阻值對應的電流值。

7. 對於選項（b），可以看到帶有電流表、電壓表、電源和銅線的電路。 銅線的長度和橫截面積可以在兩個滑塊的幫助下改變。 電阻值可以通過改變銅線的長度和橫截面積來改變。

8. 對於選項（c），可以看到帶有電流表、電壓表、電源、燈泡和變阻器的電路。 借助下拉菜單，可以更改電壓，並可以觀察到不同的電阻值。