

# Ohm's Law

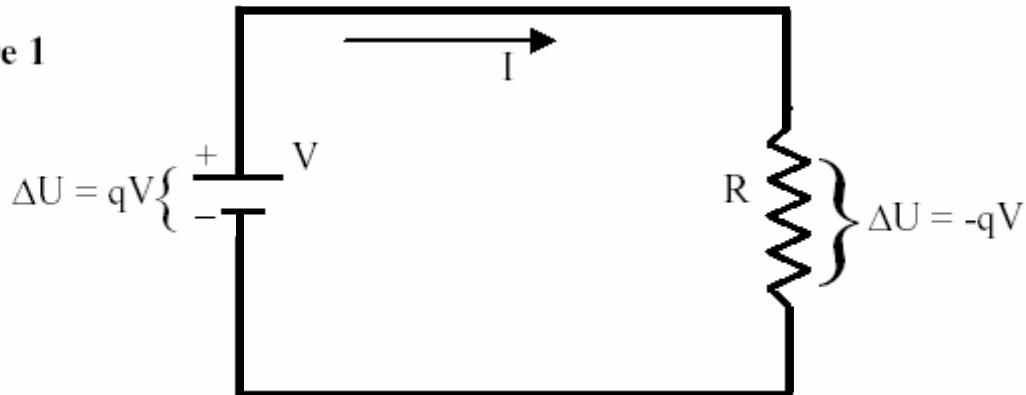
- Purpose:**
1. To verify Ohm's law by plotting voltage versus current for several known resistances.
  2. To plot the current vs voltage curve for a non-ohmic device.
  3. To determine an approximate value for the resistance of the human body.

**Equipment:** small bread board, ammeter, voltmeter, computer, printer, connecting wires and jumper leads, 6 v light bulb and socket, DC power supply, two resistances--68  $\Omega$  and 100  $\Omega$ .

## Introduction:

An electrical resistance can be defined as any material that causes electrical charge to lose energy as the charge flows through it. The change in potential across a resistance is the electrical energy per unit charge that a charge loses as it flows through the resistance. On the other hand, a charge can gain electrical energy when it passes through a power supply or battery. The circuit that is shown in Figure 1 illustrates this fact and also the fact that as an electrical charge,  $q$ , flows around the path shown it gains and loses equal amounts of electrical energy,  $\Delta U$ .

Figure 1



Ohm's law gives us a simple equation that relates the change in potential (often called voltage drop),  $V$ , across a resistance,  $R$ , to the electrical current,  $I$ , that flows through the resistance. It is written as

$$V = IR$$

where  $V$  is measured in volts,  $I$  in amperes (amps) and  $R$  in ohms ( $\Omega$ ).

**Note:** *The voltages to be used in this experiment are completely harmless to people. However, the equipment can be damaged by improper use. Therefore, do not turn on the power supply until you have completely wired the circuit and have had your instructor check the circuit.*

Figure 2

