

## PHYS107: Ohm's Law Practice

Example 1. A Potential difference of 3.0 V is applied to the ends of a copper wire 0.5 m long. What is the drift velocity of the free electrons in the wire? In copper at room temperature, the average time interval between collisions is  $\tau = 2.7 \times 10^{-14}$  s.

Example 2. A wire commonly used for electrical installations in homes is No 10 copper wire, which has a radius of 0.129 cm. What is the resistance of a piece of this wire 30 m long? What is the potential drop along this wire if it carries a current of 10 A?

Example 3. Suppose that because of a current overload, the temperature of the copper wire of Example 2 increases from 20° C to 50° C. How much does the resistance increase?