

### Answer on Question #73953-Physics-Other

A copper conductor of resistivity  $\rho = 1.72 \times 10^{-8} \Omega\text{m}$  having a current density  $J = 2.54 \times 10^6 \text{ A m}^{-2}$ . Calculate the electric field in the copper. What is the potential difference between the two points a and b, 100m apart?

#### Solution

The electric field in the copper is

$$E = \rho J = (1.72 \cdot 10^{-8})(2.54 \cdot 10^6) = 0.0437 \frac{V}{m}$$

The potential difference between the two points a and b is

$$V = Ed = 0.0437(100) = 4.37 V.$$

Answer provided by <https://www.AssignmentExpert.com>