Electromagnetism
Journal

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Contents

1 lecture 1

Ohm Law

- Forces are two types: electric forces $q\mathbf{E}$ and magnetic forces $q(\mathbf{v} \times \mathbf{B})$.

- For a given material the current density can be written as:
$$\mathbf{J} = \sigma \mathbf{F} \tag{1}$$

  where σ is the conductivity. and the equation is called the Ohm Law. if the total force is mostly made of the electric force rahter than the magnetic force the ohm law can be written:

$$\mathbf{J} = \sigma \mathbf{E} \tag{2}$$

> Excercise — How can we find σ based on the statistical behaviour of the materials?

> Callout — Every information about the material (the mass of free charges, field of the material itself, etc... is stored in σ)

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