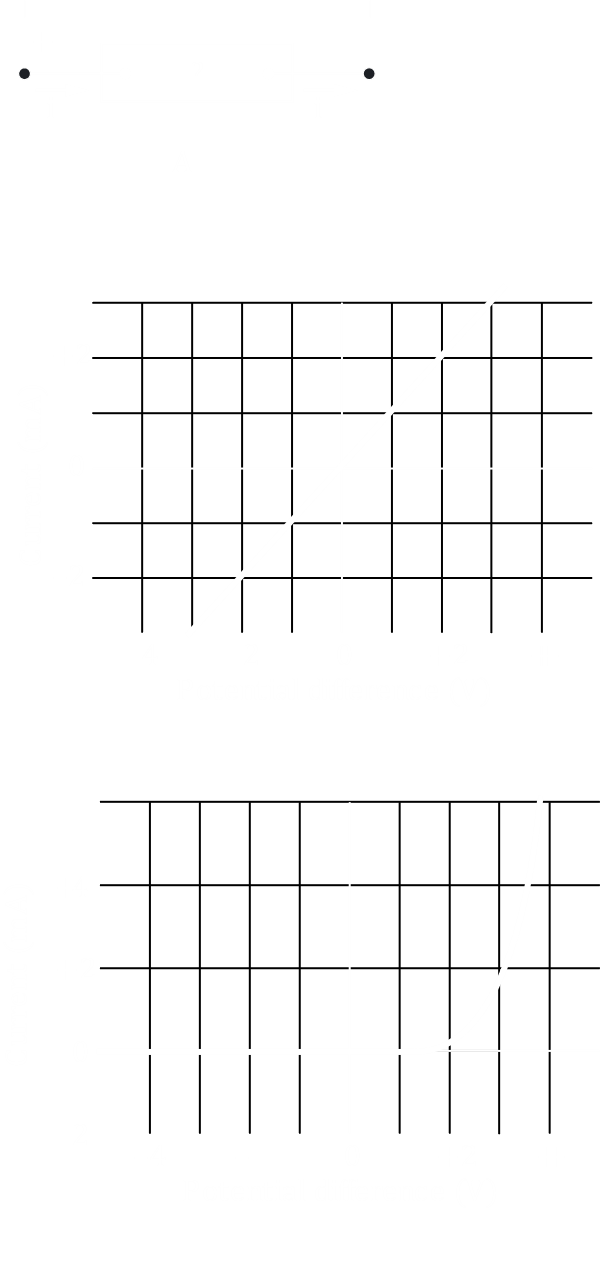
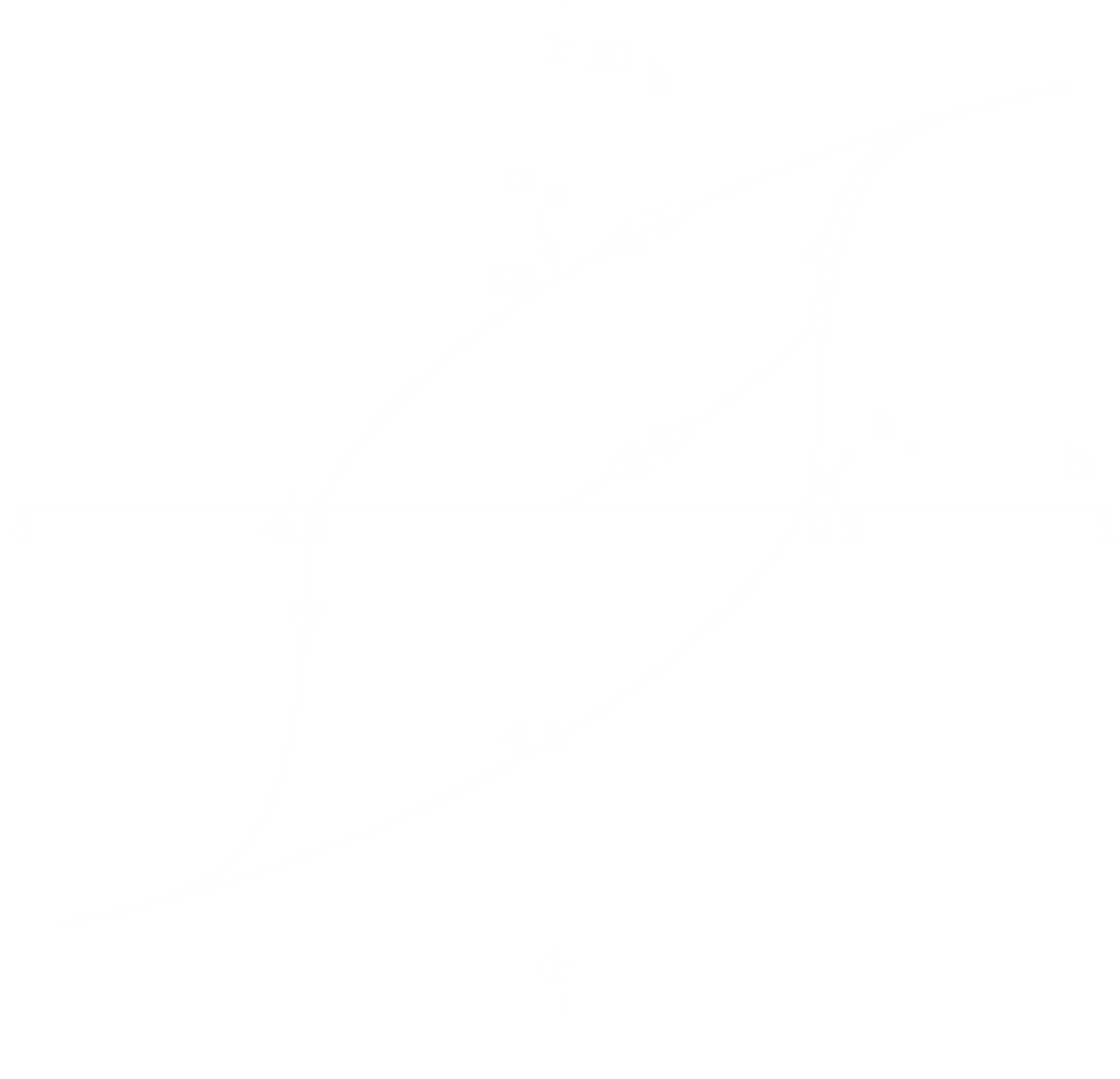
**Ohm’s Law**



In ,

Current density (vector) current (scalar) area (vector)

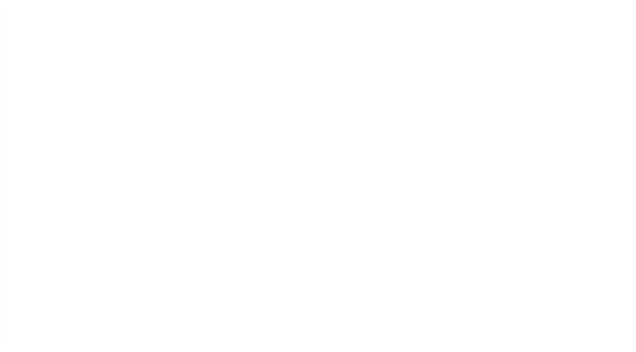


Energy

Ohmic Conductor – Follows Ohm’s Law

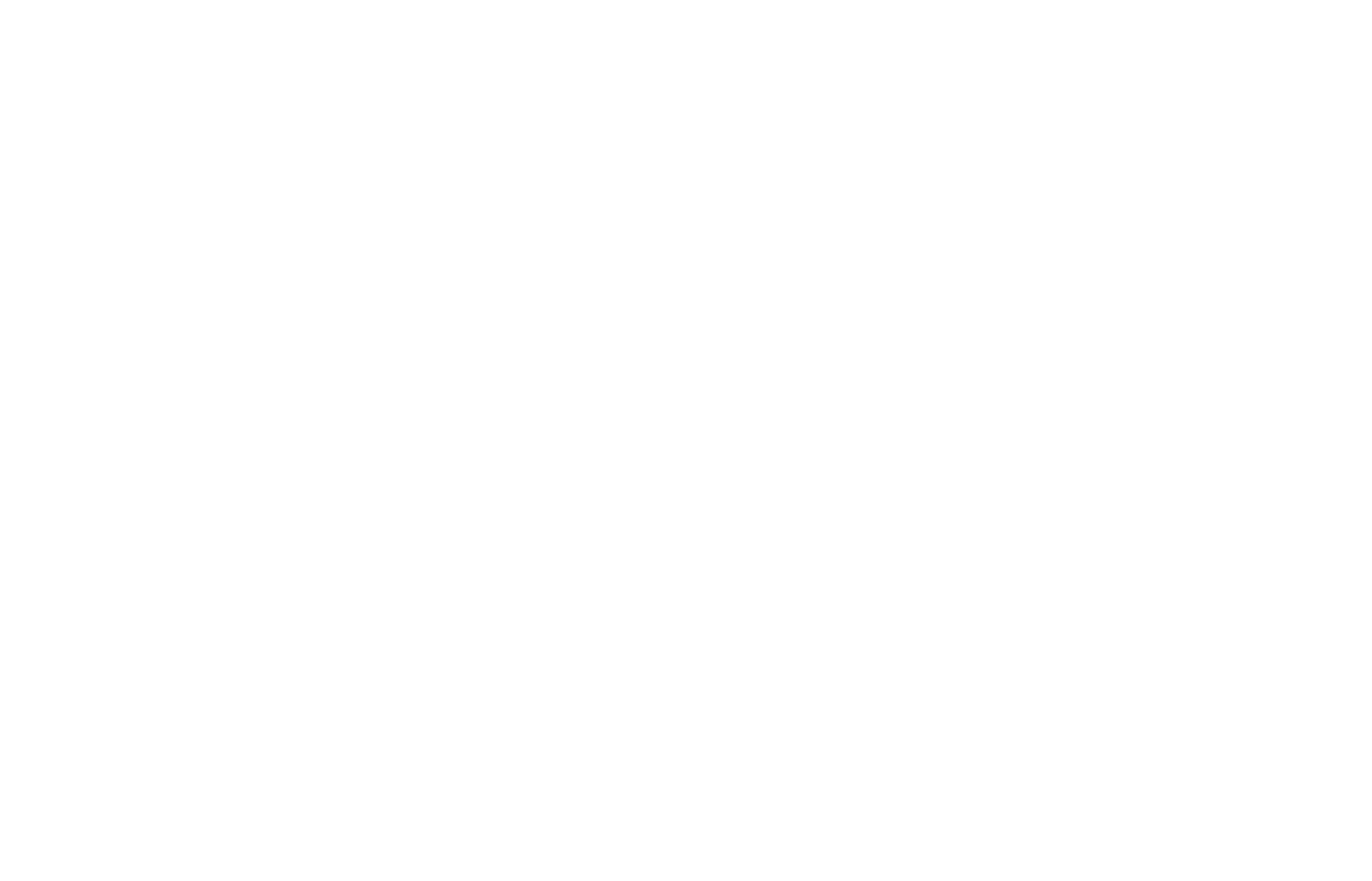
– current density

– normal (direction of electron motion)



– drift speed

– drift velocity



(macroscopic Ohm’s law)

(microscopic Ohm’s law)

resistivity independent of

The macroscopic form of Ohm's law is .

This is not the real Ohm's law. It is only used so that we can measure the value of , and .

The real Ohm's law is:

where is the electric potential and

is the resistivity of the conductor.

This cannot be measured.

where is the current and

is the cross-sectional area of the conductor.

Here, can only be scalar,

can only be vector and

can only be vector

The speed of an electron is almost equal to the speed of light.