Physics 202, Lecture 3

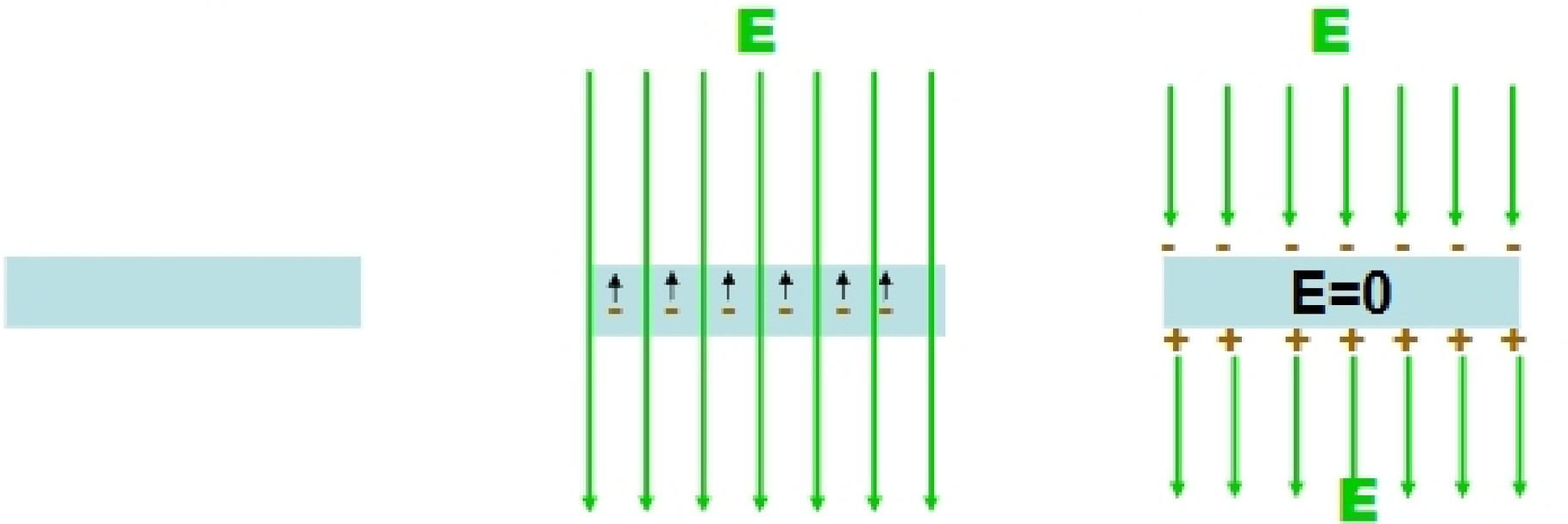
Today's Topics

- Conductors in Electrostatic Equilibrium
- Gauss's Law

Conductors And Electrostatic Equilibrium

Conductors: charges (electrons) able to move freely →
Charges redistribute when subject to E field.

Charge redistribution → electrostatic equilibrium.



Initial → transient, <10^{-16}s → equilibrium
(right after E applied)

Conductors And Electrostatic Equilibrium

1. E field is always zero inside the conductor.

2. All charges reside on the surface of conductor.

3. E field outside conductor is perpendicular to the surface, has magnitude
   (show later using Gauss's Law)

E field is also zero inside any cavity within the conductor.

The above properties are valid regardless of the shape of and the total charge on the conductor!