

9 Martie 2022

Materiale conductoare și izolatoare.

Influența câmpului electric asupra lor.

$$\vec{F} = q \vec{E}$$

$$-\text{grad } V = \vec{E}$$

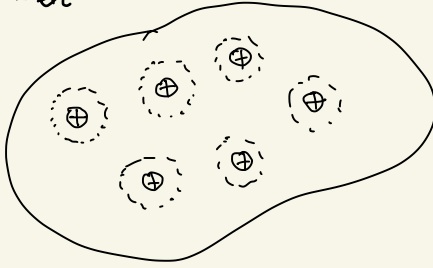
$$U_{MN} = V_M - V_N = \int_M^N \vec{E} d\vec{l}$$

$$\oint_{\Gamma} \vec{E} d\vec{l} = 0.$$

$$\oint_{\Sigma} = \frac{Q_{\text{int}}}{\epsilon_0}$$

$$\text{div } \vec{E} = \frac{\rho}{\epsilon_0}$$

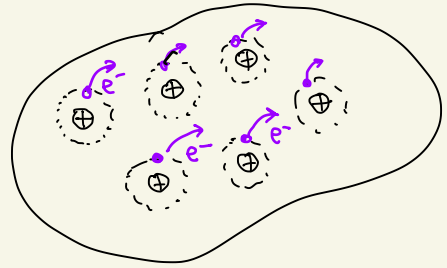
$$\vec{E}_{\text{ext}} = 0$$



Izolator

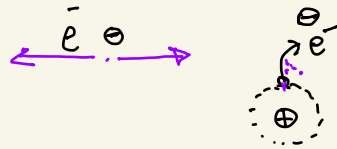
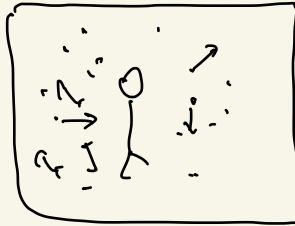
→ foarte puține particule mobile de sarcină

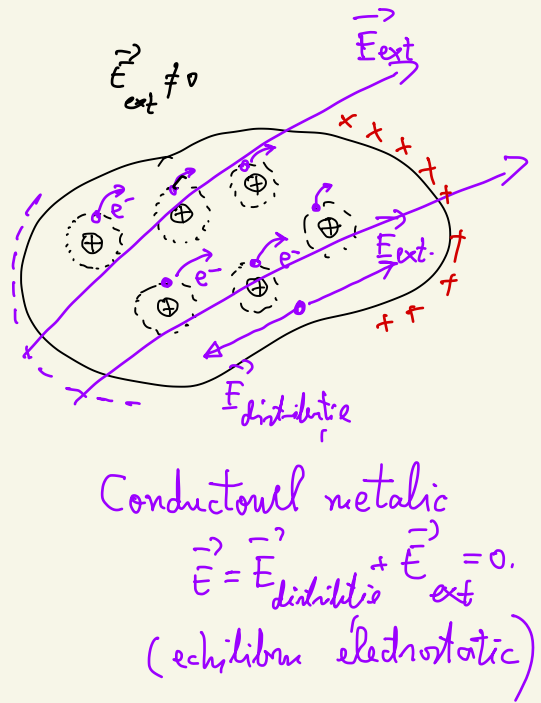
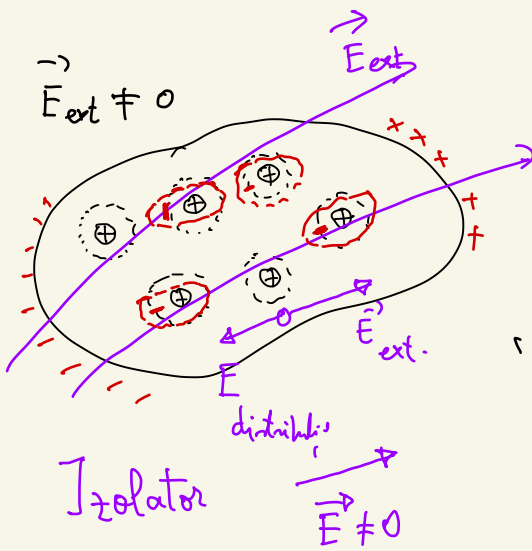
$$\vec{E}_{\text{ext}} = 0$$



Metal.

- fiecare atom oferă câte un electron liber și se creează o mare de electroni liberi care se mișcă haotic (precum moleculele unui gaz ideal)
- curentul electric net este nul.





Material supraconductoare

1911 Kamerlingh - Onnes pe mercur.

$T \approx 4K \rightarrow$ mercurul expulzează câmpul electric din interior.

