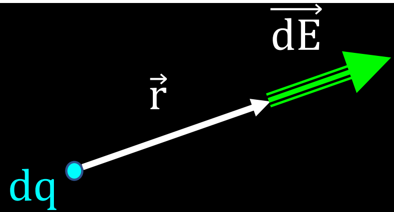
$$\overrightarrow{dE(\vec r)} = \frac{1}{4\pi\varepsilon_0}\, dq\, \frac{\hat r}{r^2}$$




$$\overrightarrow{F_{es}} = q\,\vec E$$

$$V_A - V_B = \int_A^B \vec E \cdot \vec{dl}$$

$$dV = \frac{dq}{4\pi\varepsilon_0\, r} \text{ se } V(\infty) = 0$$

$$\phi_S(\vec E) = \int_S \vec E \cdot \hat n\, dS = \frac{q_{int}}{\varepsilon_0} = \int_{\tau_S} \rho\, d\tau$$

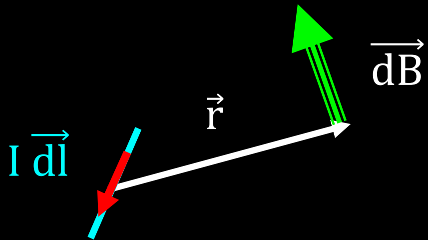
$$\phi_S(\vec B) = \int_S \vec B \cdot \hat n\, dS = 0$$

$S_{chiusa}$

$$\oint_\gamma \vec E \cdot \vec{dl} = -\frac{d\left(\int_{S_\gamma} \vec B \cdot \hat n\, dS\right)}{dt}$$

$$\oint_\gamma \vec B \cdot \vec{dl} = \mu_0 \int_{S_\gamma} \left[\vec J + \frac{d\vec E}{dt}\right] \cdot \hat n\, dS$$

$$\overrightarrow{dB(\vec r)} = \frac{\mu_0}{4\pi}\; I\,\vec{dl} \times \frac{\hat r}{r^2}$$




$$\vec{F_L} = q\,\vec v \times \vec B$$

$$\vec{dF} = I\,\vec{dl} \times \vec B$$

$$\vec p = \vec\delta\, q \qquad \vec m = I\, S\, \hat n$$

$$\vec M = \vec p \times \vec E \qquad \vec M = \vec m \times \vec B$$

$$U = -\,\vec p \cdot \vec E \qquad U = -\,\vec m \cdot \vec B$$

$$V(r,\vartheta) = \frac{p\cos\vartheta}{4\pi\varepsilon_0\, r^2}$$

$$\vec E(0,\pi) = \frac{2\vec p}{4\pi\varepsilon_0\, r^3}$$

$$\vec E(\pi/2) = \frac{-\vec p}{4\pi\varepsilon_0\, r^3}$$

$$C = \frac{Q}{\Delta V}$$

$$C_{piano} = \frac{\epsilon_0\, S}{d}$$

$$U_{sys} = \frac{1}{2}\sum_{i=1,N} q_i V(\vec{r_i})$$

$$U = \frac{1}{2} C\, \Delta V^2$$

$$u = \frac{1}{2}\varepsilon\, E^2$$

$$B_{solenoide} = \mu_0\, n\, I$$

$$\phi_S\left(\vec B\right) = L\, I$$

$$U = \frac{1}{2} L\, I^2$$

$$u = \frac{1}{2}\frac{B^2}{\mu}$$

$$\vec P = \frac{\sum \vec{p_i}}{\tau} = \varepsilon_0\, \chi_{es}\, \vec E$$

$$\sigma_p = \vec P \cdot \hat n$$

$$\vec M = \frac{\sum \vec{m_i}}{\tau} = \frac{1}{\mu}\, \chi_m\, \vec B$$

$$I = \int_S \vec{J} \cdot \hat{n}\, dS \qquad I = \frac{dq}{dt} \qquad \text{NODO: } \sum I_{entr} = \sum I_{usc} \qquad \text{MAGLIA: } \sum_{rami} f_i = \sum_{rami} R_i\, I_i$$

$$\Delta V = R\, I \qquad \vec{E} = \rho\, \vec{J} \qquad R = \rho \frac{\ell}{S} \qquad \rho(T) = \rho_0[1 + \alpha(T - T_0)]$$

$$C = \frac{Q}{\Delta V}$$

$$C_P = \sum_{i=1,N} C_i \qquad R_S = \sum_{i=1,N} R_i$$

$$\frac{1}{C_S} = \sum_{i=1,N} \frac{1}{C_i} \qquad \frac{1}{R_P} = \sum_{i=1,N} \frac{1}{R_i}$$

$$\Delta V_C(0^+) = \Delta V_C(0^-)$$

$$I_L(0^+) = I_L(0^-)$$

$$P_{erog} = f\ I$$

$$P_{diss} = R\, I^2$$

$$\tau_{RC} = RC$$

$$\tau_{RL} = \frac{L}{R}$$

$$\omega_{LC} = \frac{1}{\sqrt{LC}}$$