



INSTITUTO DE FÍSICA

uff Universidade Federal Fluminense

Física XX

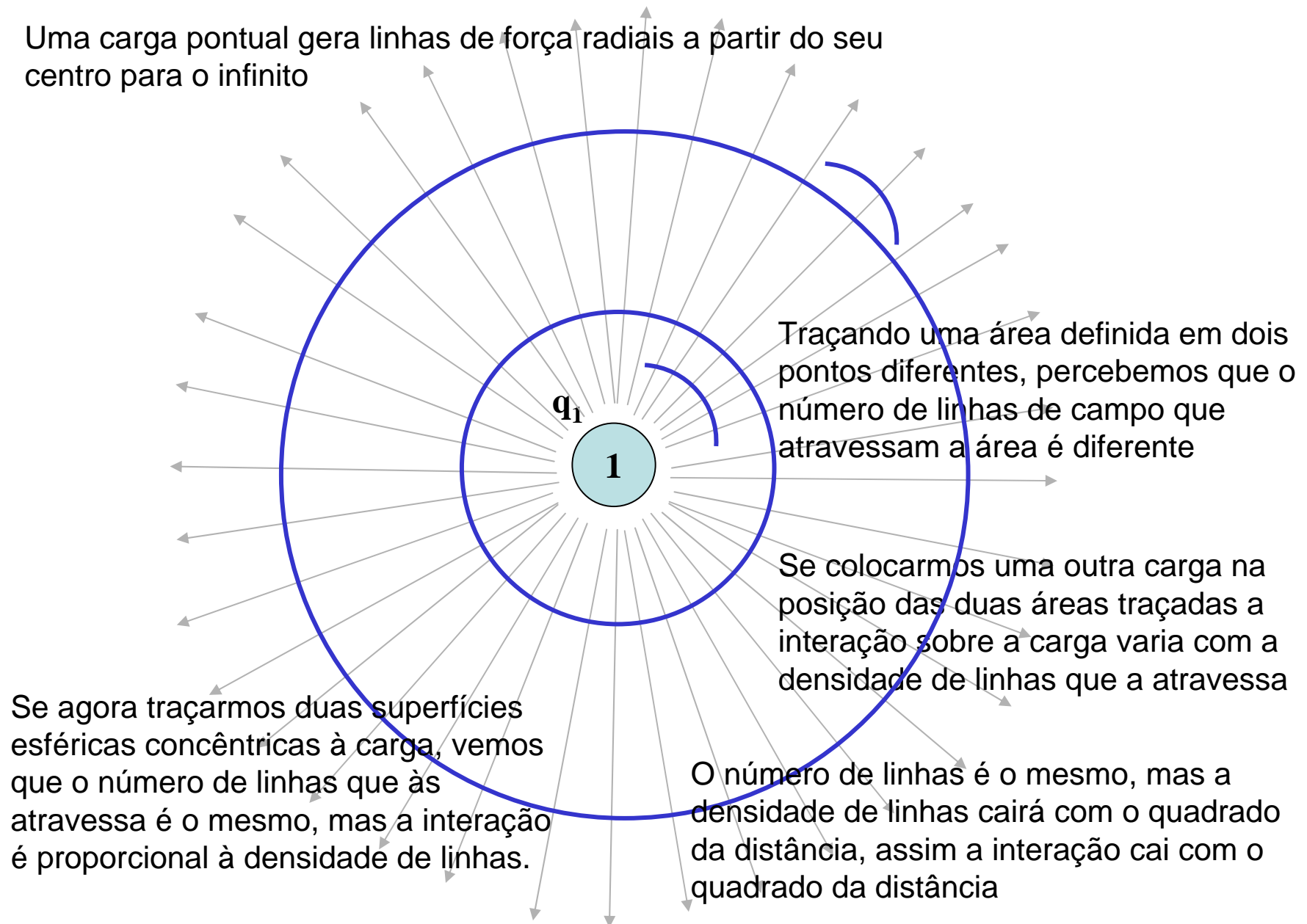
Eletrostática

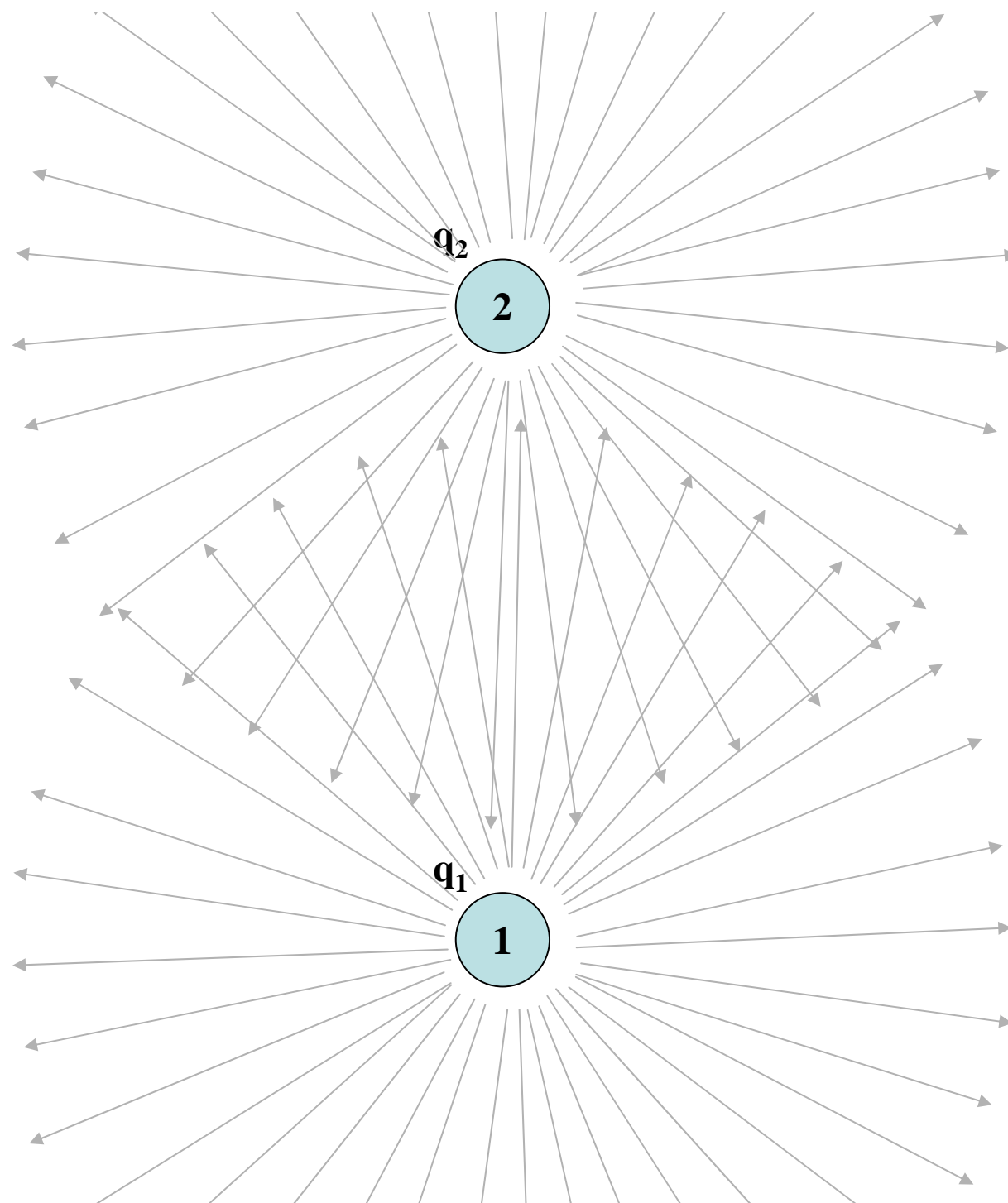
Aula anterior

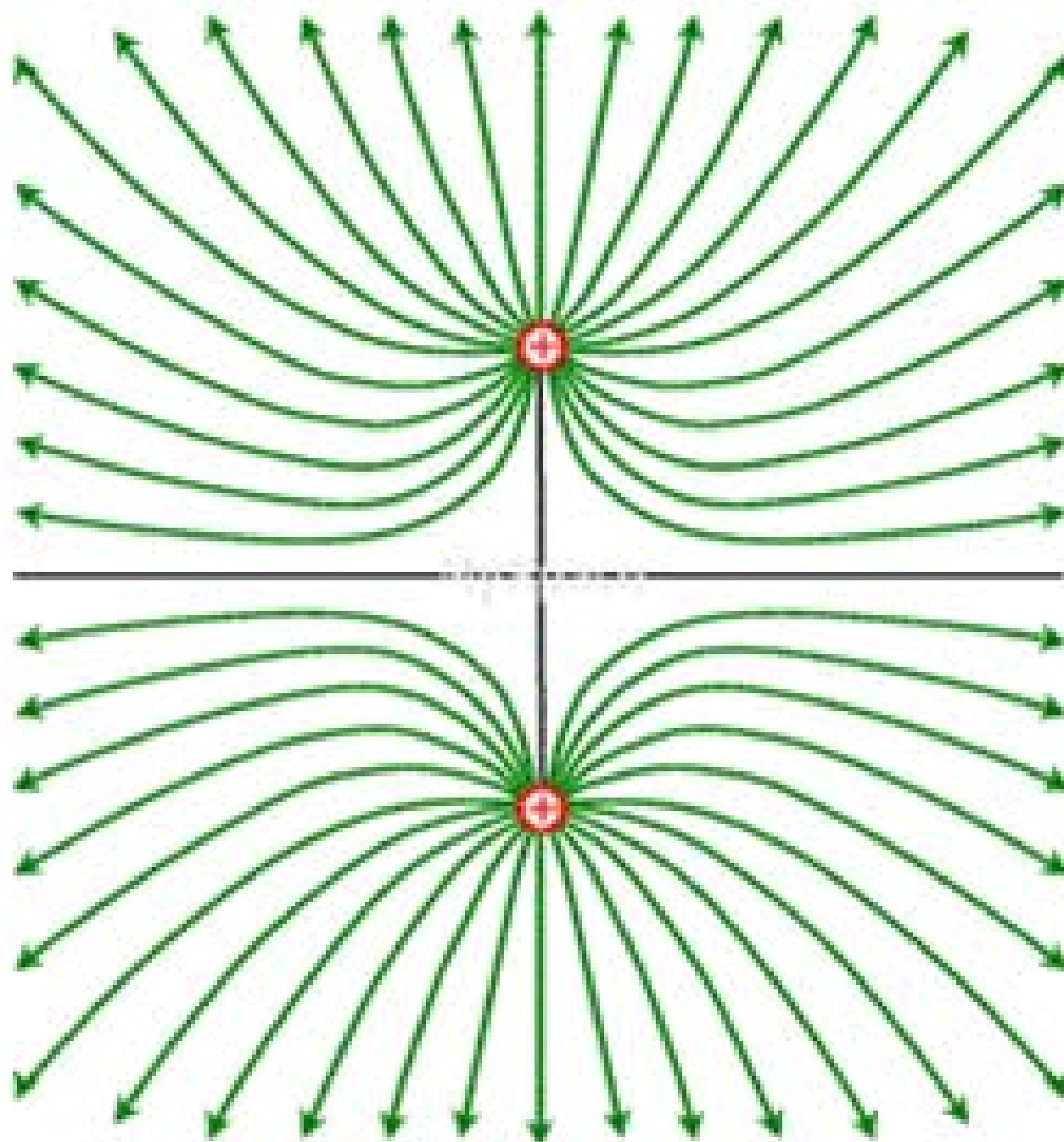
- Condutores e Isolantes.
- Como carregar os corpos condutores e isolantes.
- Lei de Coulomb.
- Princípio de superposição.
- Campo elétrico.
- Campo elétrico de cargas pontuais.
- Campo elétrico de distribuições contínuas.
- Campo elétrico ed um anel carregado homogeneamente.

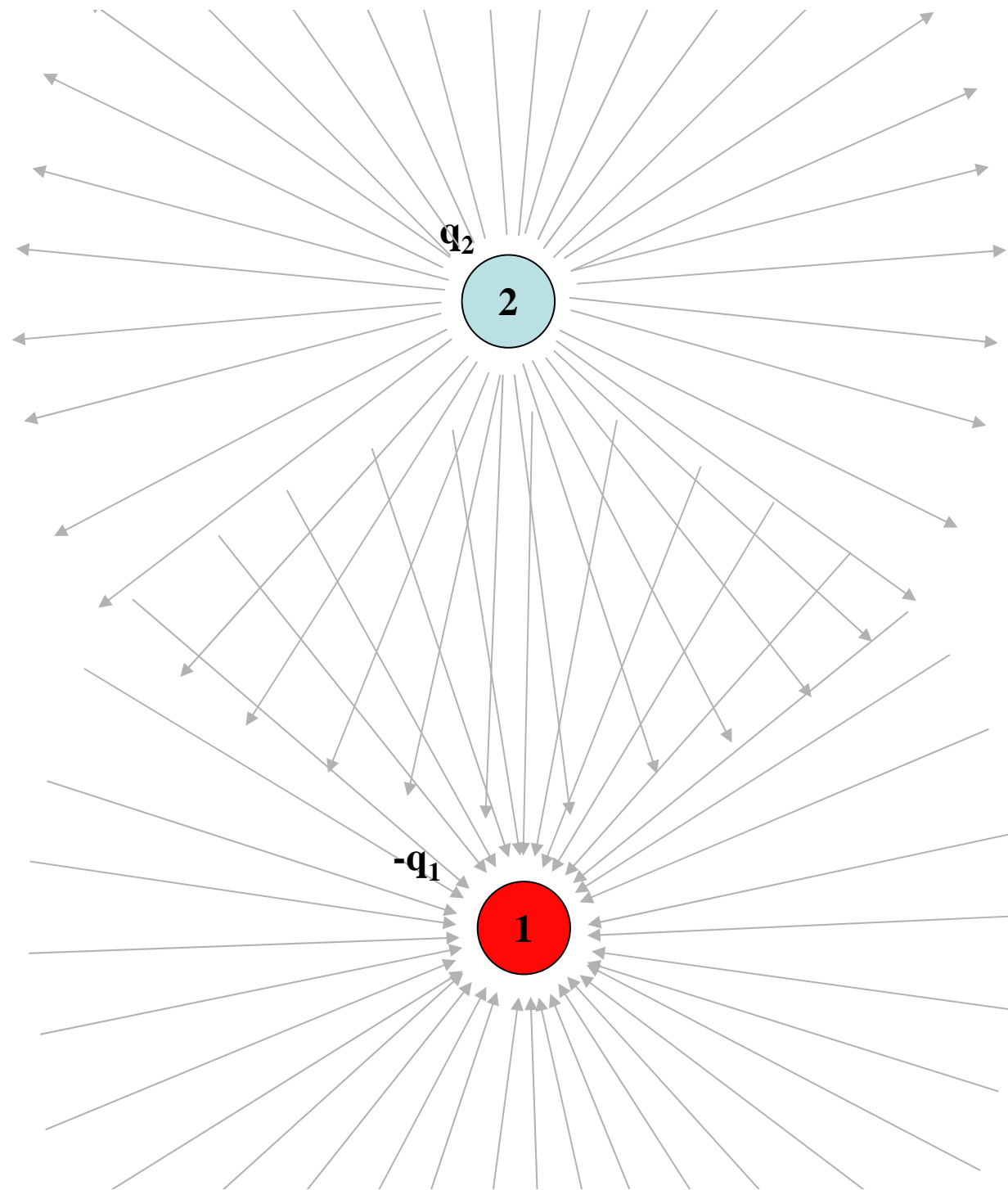
Linhas de força

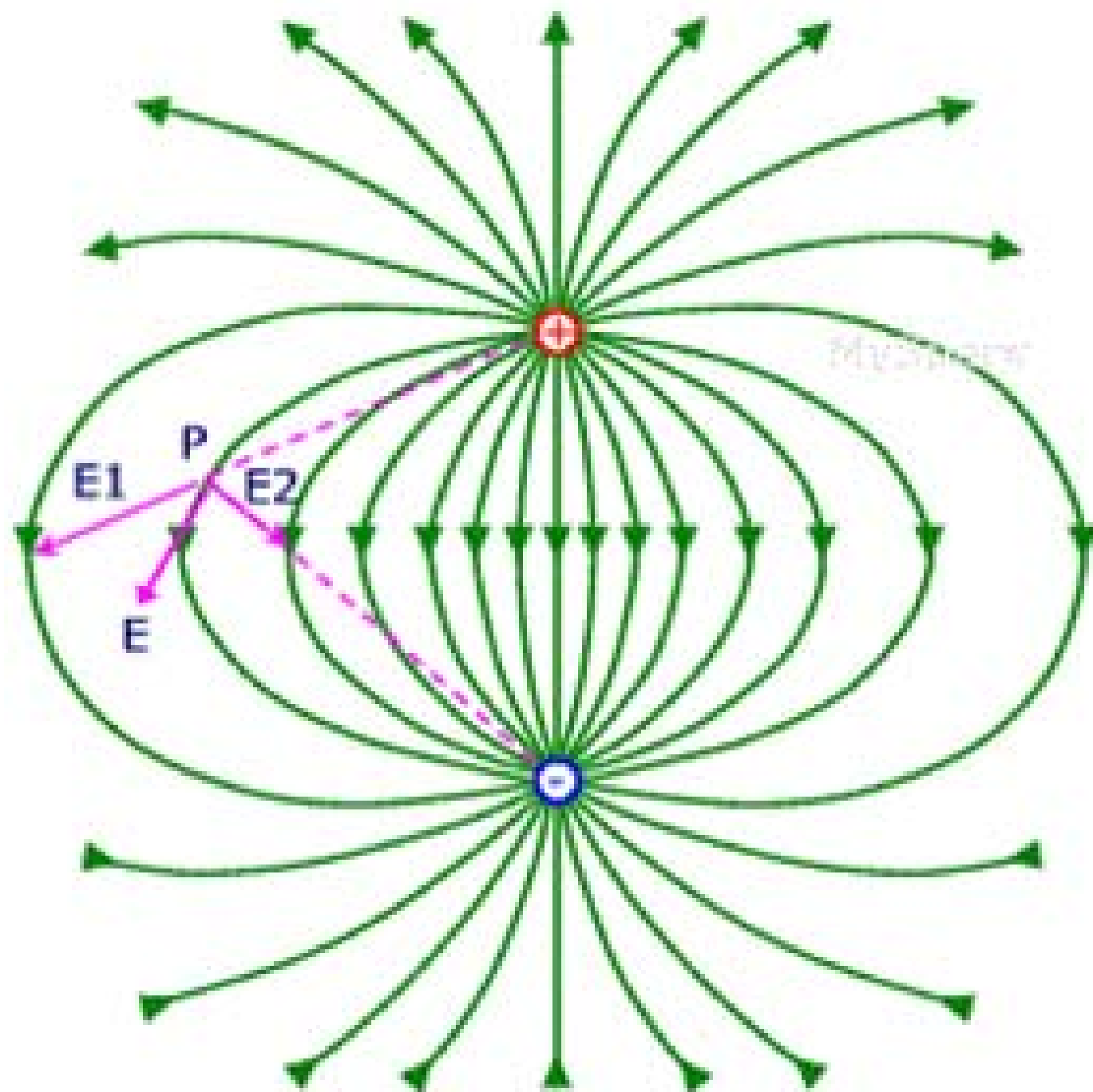
Uma carga pontual gera linhas de força radiais a partir do seu centro para o infinito



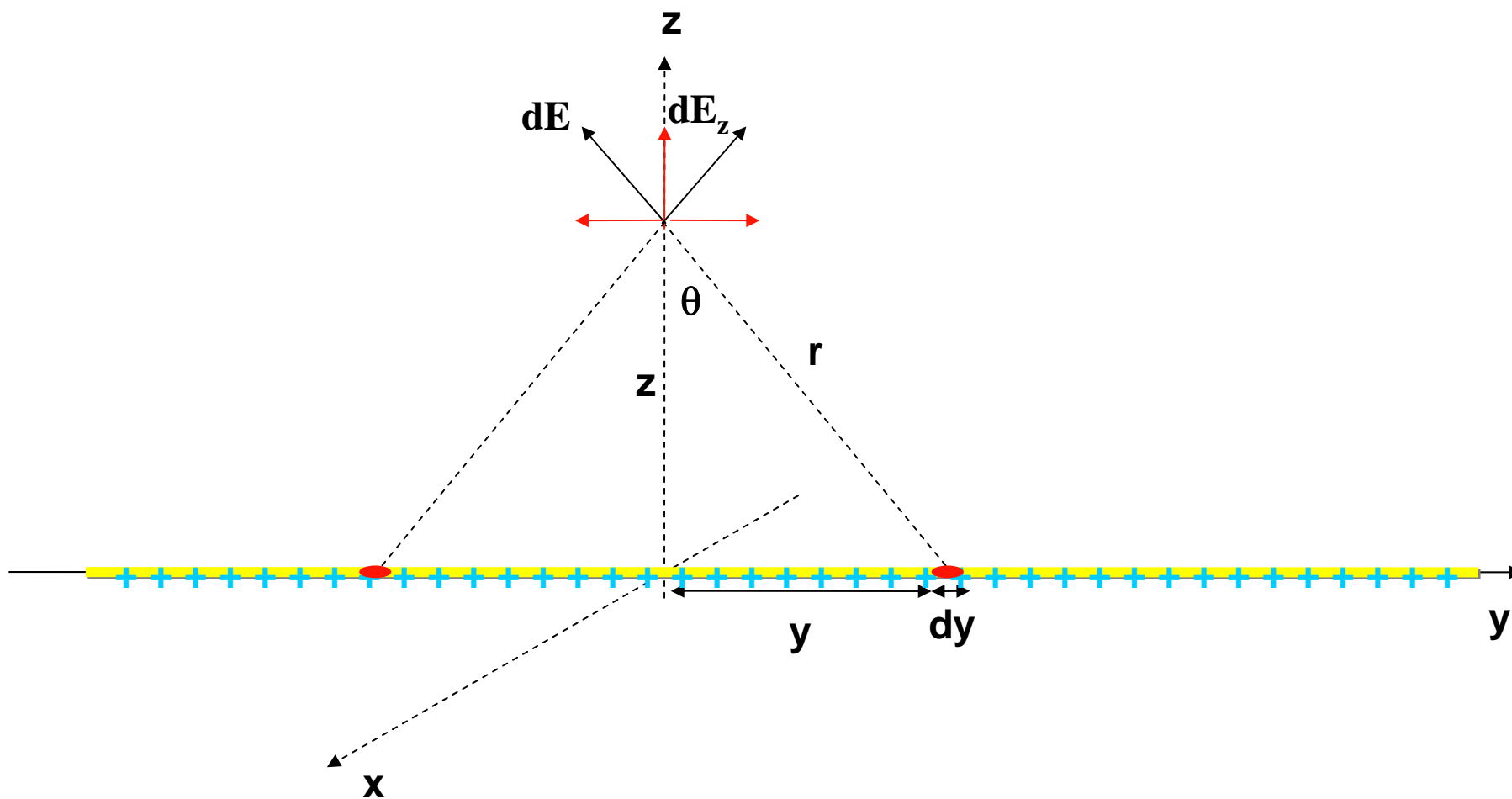


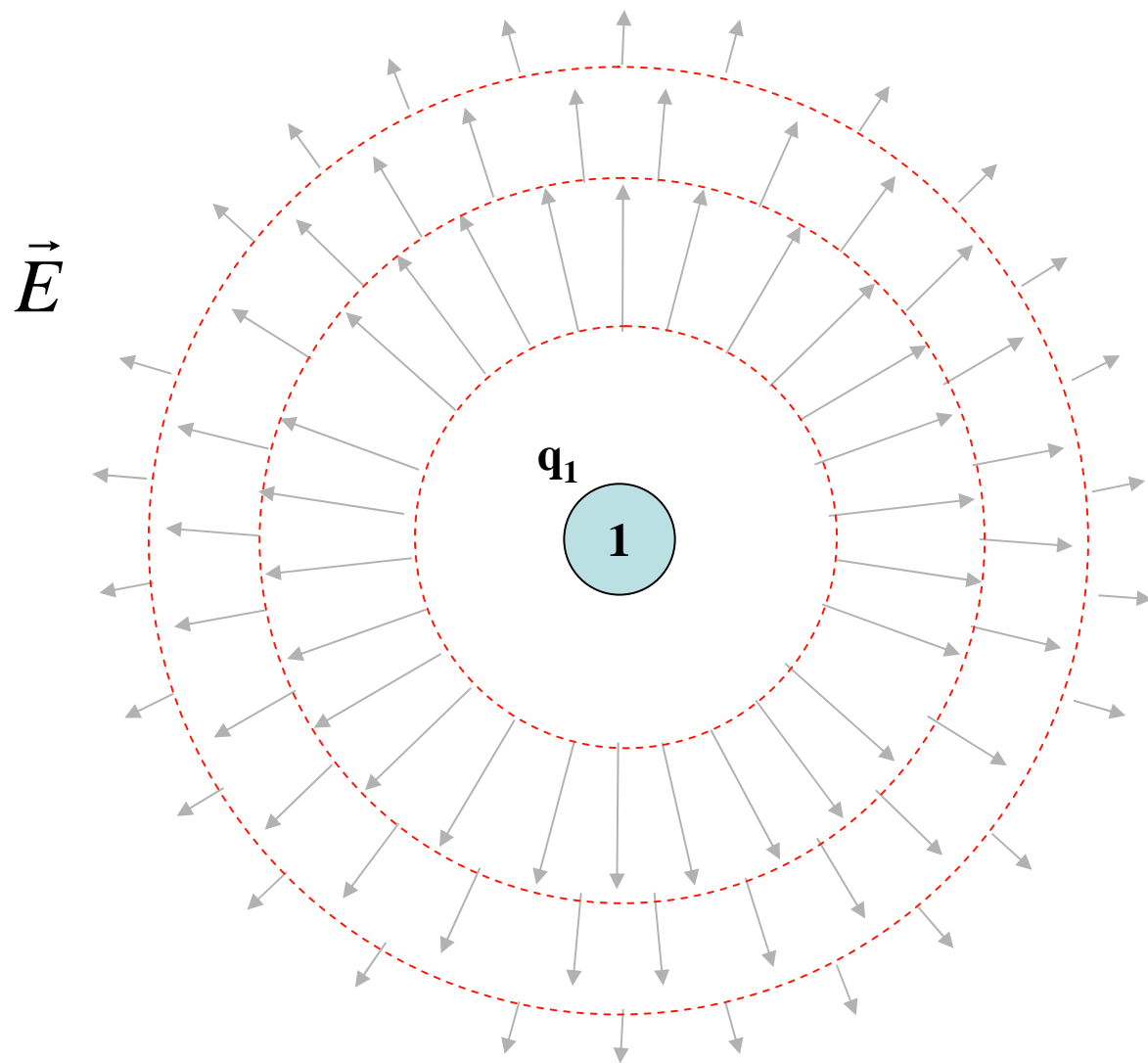


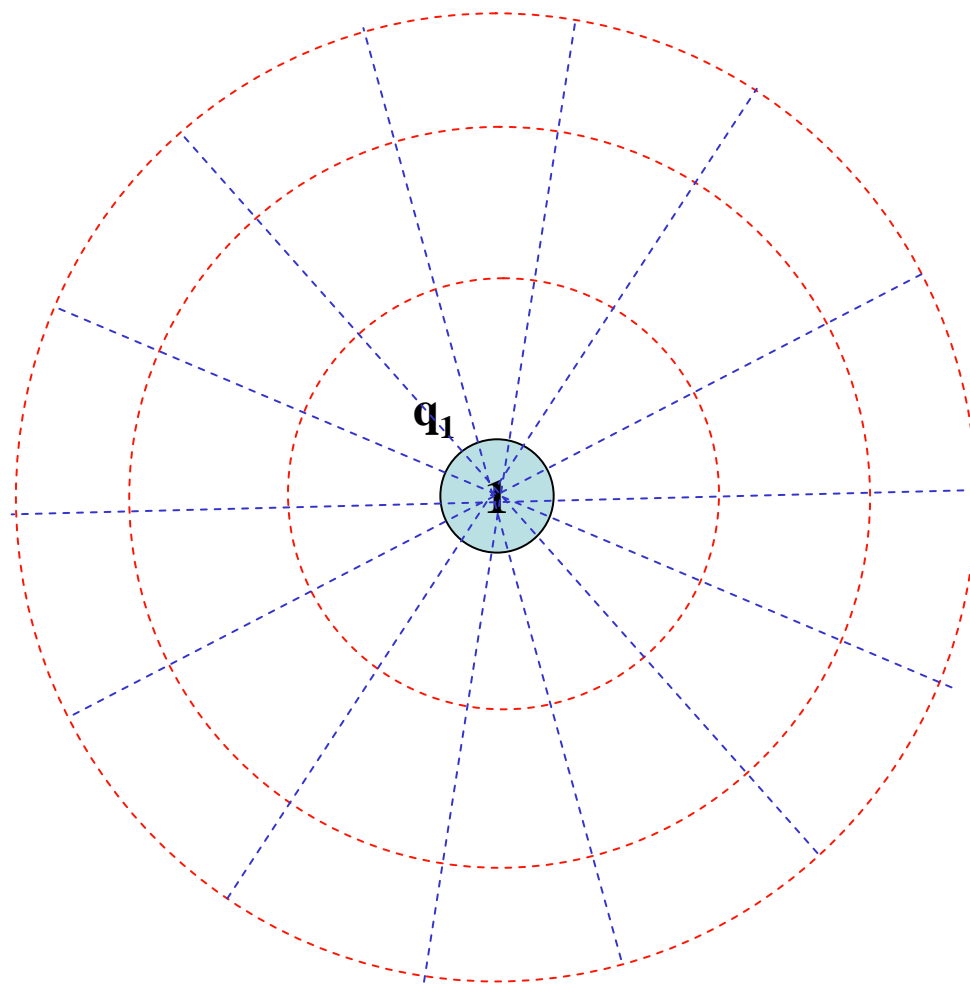


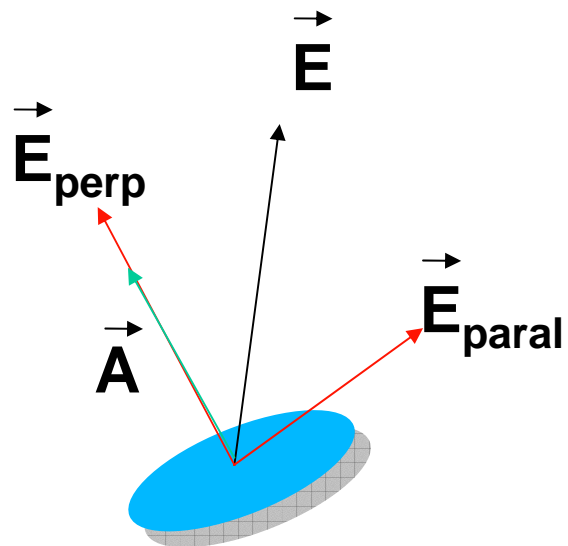
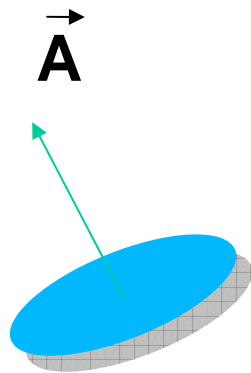


Campo elétrico de um fio fino



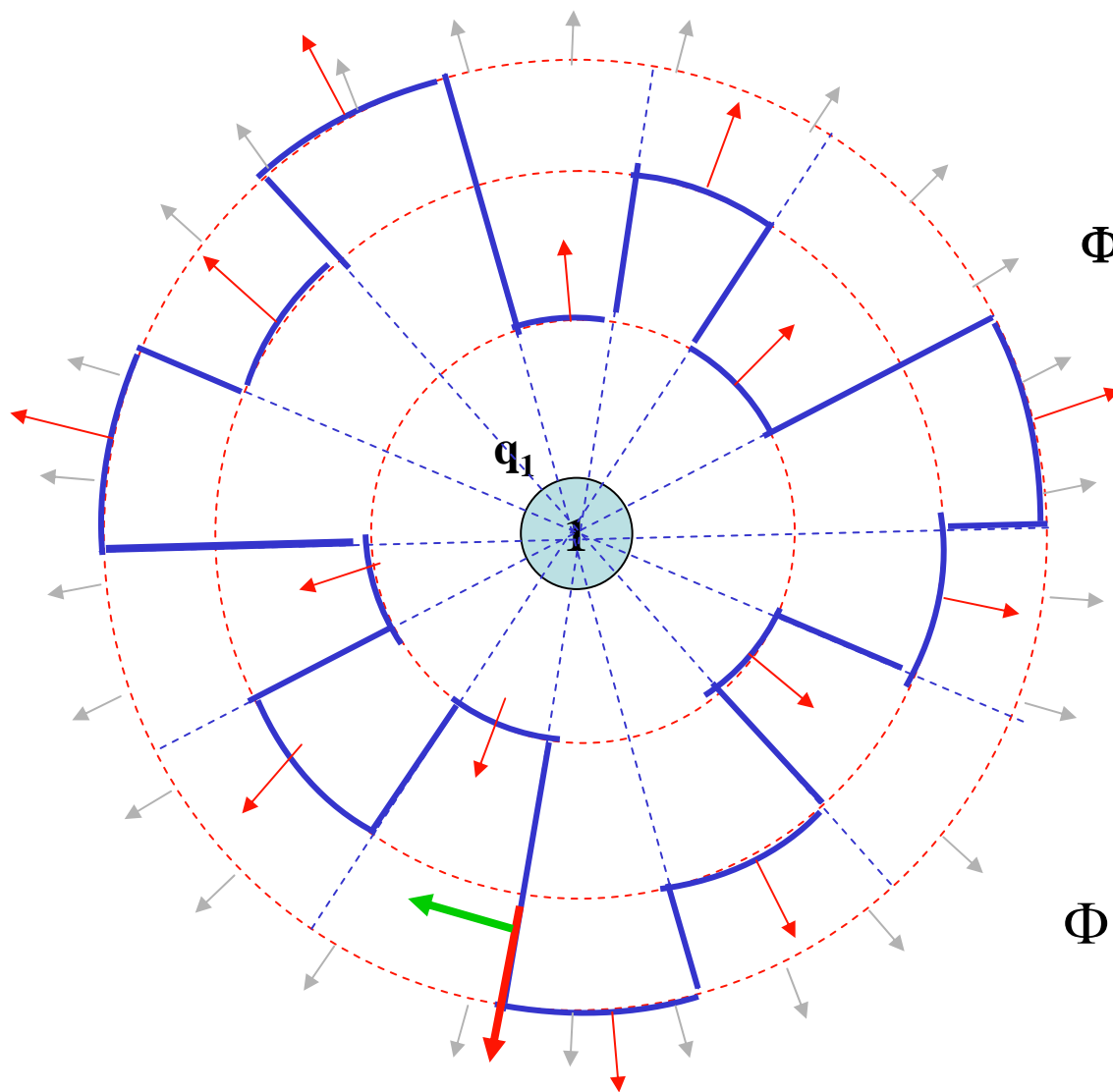






$$\Phi_E = \vec{E} \cdot \vec{A} = E_{\text{perp}} A$$

$$d\Phi_E = \vec{E} \cdot d\vec{A} = E_{\text{perp}} dA$$



$$E = \frac{1}{4\pi\epsilon_0} \frac{q_1}{r^2}$$

$$\Phi_E = \mathbf{E} \cdot \mathbf{A} = \frac{1}{4\pi\epsilon_0} \frac{q_1}{r^2} 4\pi r^2 = \frac{q_1}{\epsilon_0}$$

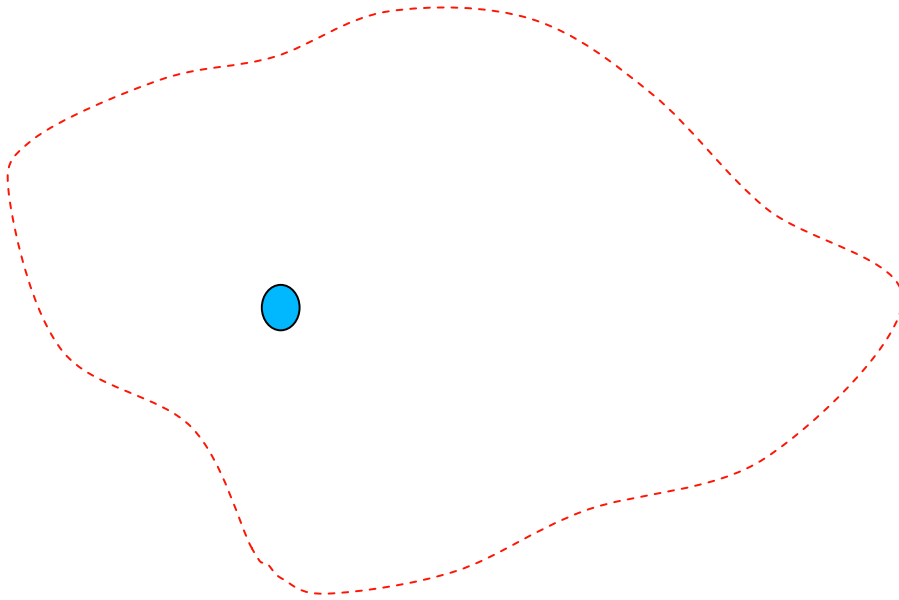
N parties iguais

$$\Phi_E = \frac{q_1}{N\epsilon_0}$$

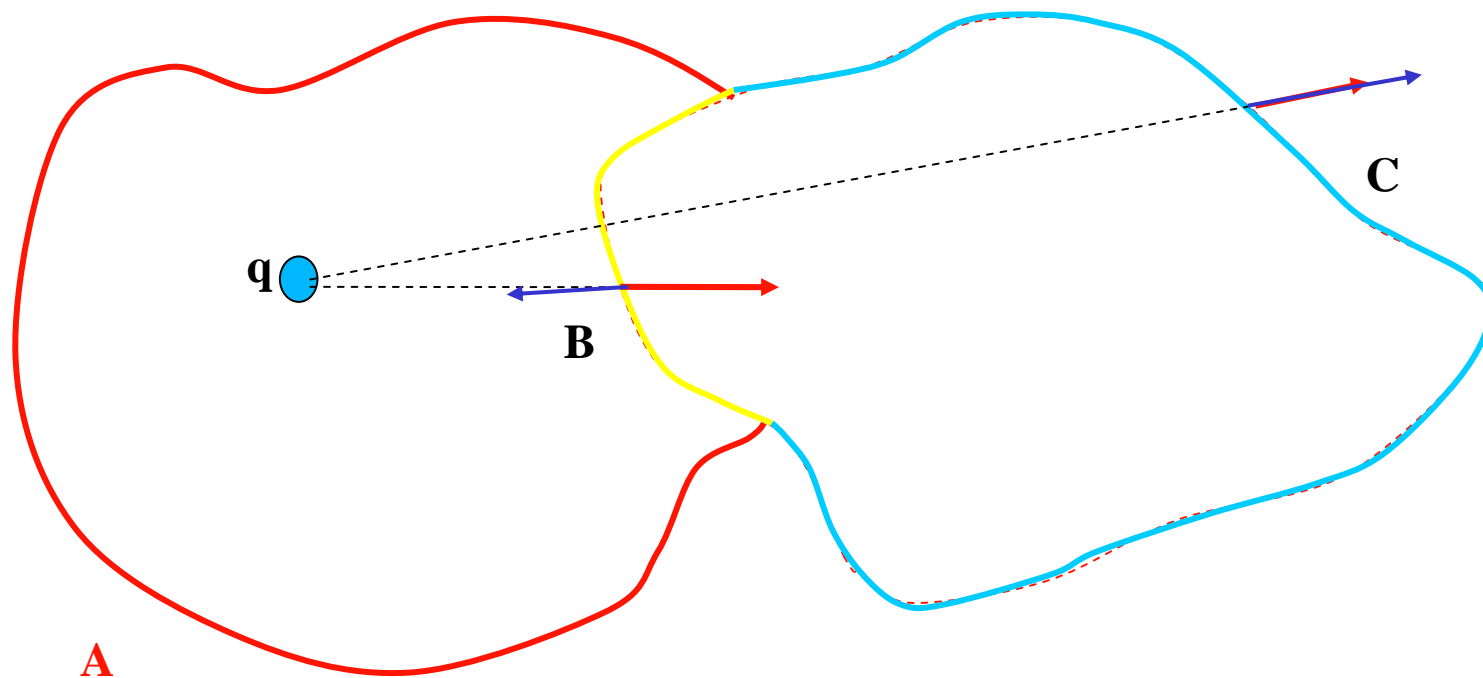
$$\Phi_{ET} = N\Phi_E \Rightarrow \Phi_{ET} = \frac{q}{\epsilon_0}$$

Lei de Gauss

Lei de Gauss



$$\Phi_E = \oint \vec{E} \cdot d\vec{A} = \frac{q}{\epsilon_0}$$



$$\Phi_A + \Phi_B = \frac{q}{\epsilon_0}$$

$$\Phi_A + \Phi_C = \frac{q}{\epsilon_0}$$

$$\Phi_B = \Phi_C$$

$$\Phi_B < 0$$

$$\Phi_B > 0$$

$$\Phi_B + \Phi_C = 0$$

Lei de Gauss

$$\Phi_E = \oint \vec{E} \cdot d\vec{A} = \frac{q_{\text{int}}}{\epsilon_0}$$

