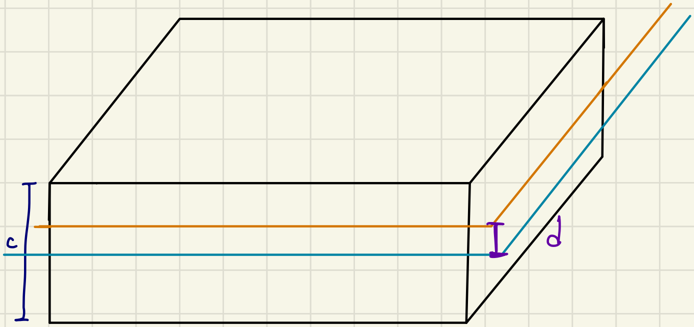
Pag 195 n 113

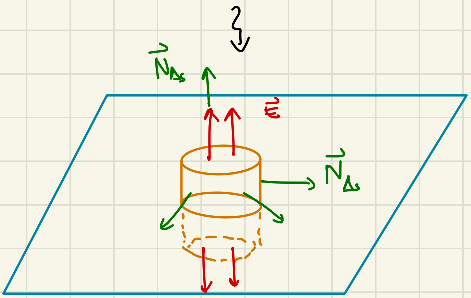


$a, b \approx \infty$

$c = 5{,}7\ cm$

$\rho = -7{,}1 \cdot 10^{-5}\ \frac{C}{m^3} = \frac{\Delta Q}{\Delta V}$

$d = 1\ cm$



Considero un cilindro messo come in figura di altezza $2d$.

Calcolo il flusso attraverso il cilindro S_c

1) Teorema di Gauss: $\Omega_{S_c}(\vec E) = \frac{\boxed{Q_{int}}}{\varepsilon_0}$ → Da calcolare

2) Definizione:

$$\Omega_{S_c}(\vec E) = \sum_{i=1}^{n} \vec E_i \cdot \vec N_{\Delta S_i} = \underbrace{\sum_{i=1}^{m} E_i \cdot N_{\Delta S_i}}_{\text{sulle sup superiori e anteriori}} + \underbrace{0}_{\text{sulle sup laterale } N_{\Delta S_i} \perp E_i}$$

$$= \underbrace{2}_{\text{superficie sopra e sotto}} \cdot E \cdot \overbrace{\pi r^2}^{\text{sup base cilindro}}$$

Impongo uguali i due flussi e ottengo $\frac{Q_{int}}{\varepsilon_0} = 2E\pi r^2$

$$E = \frac{Q_{int}}{2\varepsilon_0 \pi r^2}$$

Só de $\rho = \frac{\Delta Q}{\Delta V} \rightsquigarrow Q_{int} = \rho \cdot V_{cilindro} = \rho \cdot \pi r^2 2d$

$$E = \frac{\rho \cancel{\pi r^2} \cancel{2} d}{\cancel{2} \varepsilon_0 \cancel{\pi r^2}} = \frac{\rho d}{\varepsilon_0}$$