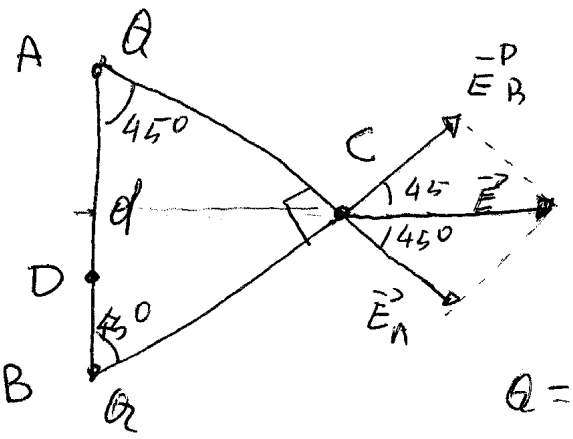
PAG. 685 N. 16 VOL. 2 - FISICA.

$d = 4013$ [cm]

$E = 1,5 \cdot 10^6 \left[\frac{N}{C}\right]$



Q = POSITIVE

$AC = BC = \frac{d}{\sqrt{2}}$ quindi

$$E_A = E_B = K_0 \frac{Q}{\left(\frac{d}{\sqrt{2}}\right)^2} = K_0 \frac{Q}{\frac{d^2}{2}} =$$

$$= \frac{2 K_0 Q}{d^2} = \frac{2 \cdot 8,99 \cdot 10^9 \left[\frac{N \cdot m^2}{C^2}\right] Q}{(40,13)^2 \cdot 10^{-4} [m^2]} =$$

$$= 0,011 \cdot 10^{13} \cdot Q \left[\frac{N}{C^2}\right] = 1,1 \cdot 10^{11} \cdot Q \left[\frac{N}{C^2}\right]$$

$$E_C = \sqrt{2 \cdot 1,21 \cdot 10^{22} Q^2}$$

$$1,5 \cdot 10^6 \left[\frac{N}{C}\right] = 1,56 \cdot 10^{11} Q \left[\frac{N}{C^2}\right]$$

$$Q = \frac{1,5 \cdot 10^6}{1,56 \cdot 10^{11}} \frac{\left[\frac{N}{C}\right]}{\left[\frac{N}{C^2}\right]} = 0,96 \cdot 10^{-5} [C] =$$

$$= 9,6 \cdot 10^{-6} [C]$$

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b) $AD = 2\,DB \quad \Rightarrow \quad DB = \frac{d}{3} = 13{,}43\ [cm]$

$$\begin{cases} AB + DB = d \\ AD = 2\,DB \end{cases}$$

$3\,DB = d \qquad DB = \frac{d}{3} = \frac{40{,}3}{3}\ [cm] =$

$= 13{,}43\ [cm]$

$AD = 2 \cdot 13{,}43 = 26{,}86\ [cm]$

$$E_D = K_0 \frac{Q}{DB^2} - K_0 \frac{Q}{DA^2} =$$

$$= K_0 Q \left(\frac{1}{DB^2} - \frac{1}{DA^2} \right) =$$

$$= 8{,}99 \cdot 10^9 \left[\frac{N\,m^2}{C^2} \right] \cdot 9{,}6 \cdot 10^{-6}\ [C] \left(\frac{1}{(13{,}43)^2 \cdot 10^{-4}} - \frac{1}{(26{,}86)^2 \cdot 10^{-4}} \right)$$

$$= 86{,}304 \cdot 10^3 \left[\frac{N\,m^2}{C} \right] \left(\underbrace{\frac{10^4}{180{,}36}}_{0{,}00555} - \underbrace{\frac{10^4}{721{,}40}}_{0{,}00014} \right) \frac{1}{[m^2]}$$

$$= 0{,}354 \cdot 10^7 \left[\frac{N}{C} \right] =$$

$$= 3{,}54 \cdot 10^6 \left[\frac{N}{C} \right]$$