Simulazione compito

1

$E = 120\ N/C$

$R_T = 6389\ km = 6{,}38 \cdot 10^6\ m$

$e = 1{,}60 \cdot 10^{-19}\ C$

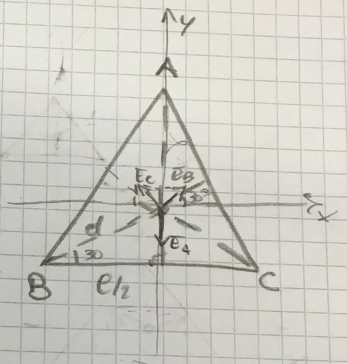
$n_A = 6{,}022 \cdot 10^{23}$

$E = k_0 \frac{q}{r^2}$

$q = \frac{E r^2}{k_0} = \frac{120\ N/C \cdot (6{,}38 \cdot 10^6\ m)^2}{8{,}99 \cdot 10^9\ N \cdot m^2/C^2} = 5{,}43 \cdot 10^5\ C$

$Quale = e \cdot n_A = 1{,}60 \cdot 10^{-19} \cdot 6{,}022 \cdot 10^{23} = 0{,}96 \cdot 10^5\ C$

2



$q_p = 1{,}602 \cdot 10^{-19}\ C$

$\ell = 0{,}01\ m$

$\vec{E}_T = \vec{E}_B + \vec{E}_A + \vec{E}_C$

$E_T = \sqrt{E_{Tx} + E_{Ty}} = 0$

$E_{Tx} = E_{Ax} + E_{Bx} - E_{Cx} = 0$

$E_{Ty} = E_{Cy} + E_{By} - E_{Ay} =$

$\ell/2 = d \cos(30°)$

$d = \frac{\ell}{2\cos(30°)} = \frac{1}{2 \cdot \frac{\sqrt{3}}{2}} =$

$d = \frac{\sqrt{3}}{3}\ cm = 0{,}57\ cm = 5{,}7 \cdot 10^{-3}\ m$

$E_B = k_0 \frac{q}{d^2} \qquad E_{By} = k_0 \frac{q}{d^2} \cdot \sin(30°)$

$E_{Cy} = k_0 \frac{q}{d^2} \cdot \sin(30°)$

$E_{Ay} = k_0 \frac{q}{d^2} = 8{,}99 \cdot 10^9\ N \cdot m^2/C^2 \cdot \frac{1{,}602 \cdot 10^{-19}\ C}{(5{,}7 \cdot 10^{-3}\ m)^2} = 1{,}89 \cdot 10^{-6}\ N/C$

$E_{By} = 8{,}99 \cdot 10^9\ N \cdot m^2/C^2 \cdot \frac{1{,}602 \cdot 10^{-19}\ C}{(5{,}7 \cdot 10^{-3}\ m)^2} \cdot \sin(30°) = 9{,}45 \cdot 10^{-7}\ N/C$

$E_{Ty} = 9{,}45 \cdot 10^{-7}\ N/C + 9{,}45 \cdot 10^{-7}\ N/C - 1{,}89 \cdot 10^{-6}\ N/C = 0$