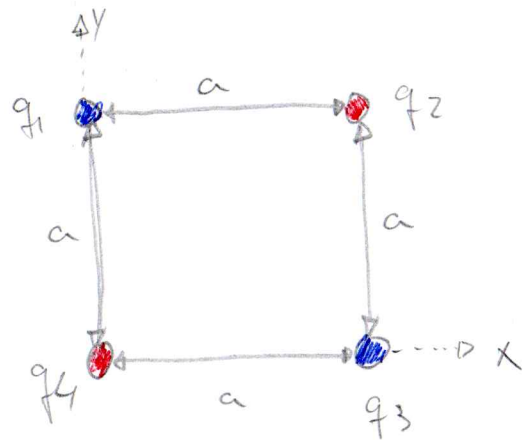


Cap. 22 Ex. 09

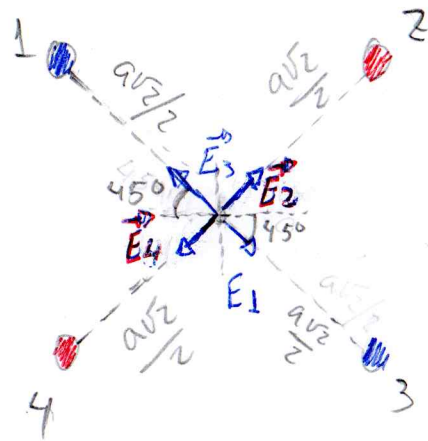


$$q_1 = -q_4 = +10 \text{ nC}$$

$$q_3 = -q_2 = +20 \text{ nC}$$

$$a = 5 \text{ cm}$$

Determinar Campo Elétrico \vec{E} no centro do quadrado.



$$\frac{\sqrt{2}}{2} = \frac{1}{\sqrt{2}}$$

$$E_{1x} = k \frac{|q_1|}{\left(\frac{a}{\sqrt{2}}\right)^2} \cdot \cos 45^\circ$$

$$E_{2x} = k \frac{|q_2|}{\left(\frac{a}{\sqrt{2}}\right)^2} \cdot \cos 45^\circ$$

$$E_{3x} = -k \frac{|q_3|}{\left(\frac{a}{\sqrt{2}}\right)^2} \cdot \cos 45^\circ$$

$$E_{4x} = -k \frac{|q_4|}{\left(\frac{a}{\sqrt{2}}\right)^2} \cdot \cos 45^\circ$$

$$E_x = 0$$

$$E_{1y} = -k \frac{|q_1|}{\left(\frac{a}{\sqrt{2}}\right)^2} \cdot \sin 45^\circ$$

$$E_{2y} = +k \frac{|q_2|}{\left(\frac{a}{\sqrt{2}}\right)^2} \cdot \sin 45^\circ$$

$$E_{3y} = +k \frac{|q_3|}{\left(\frac{a}{\sqrt{2}}\right)^2} \cdot \sin 45^\circ$$

$$E_{4y} = -k \frac{|q_4|}{\left(\frac{a}{\sqrt{2}}\right)^2} \cdot \sin 45^\circ$$

$$E_y = k \cdot \frac{\sqrt{2}}{2} \left[= q_1 + q_2 + q_3 - q_4 \right] \frac{1}{\left(\frac{a}{\sqrt{2}}\right)^2}$$

$$E_y = k \frac{\sqrt{2}}{a^2} [20 \text{ nC}] \approx 1,017 \times 10^5 \frac{\text{N}}{\text{C}}$$