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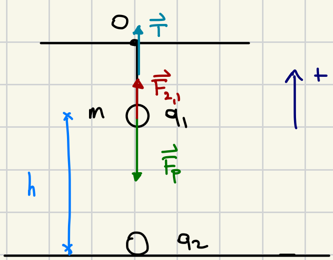


$m = 8\ mg = 8 \cdot 10^{-6}\ kg \qquad q_1 = 0{,}8 \cdot 10^{-7}\ C$

$h = 40cm = 0{,}4\ m \qquad q_2 = 1{,}1 \cdot 10^{-8}\ C$

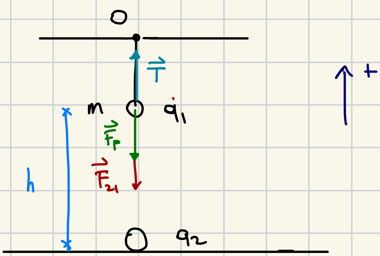
- ▷ $T_1 = ?$
- ▷ T_2 nel caso in cui q_2 negativo

▷ Dopo analisi in classe risolviamo il problema nell' Hip $F_p \geq F_{21}$

Dato che tutto è in equilibrio ottengo

$$\vec{F}_p + \vec{F}_{21} + \vec{T} = 0 \implies \text{sdr} \implies -mg + k_0 \frac{|q_1||q_2|}{h^2} + T = 0$$

$$T = mg - k_0 \frac{q_1 q_2}{h^2} \approx 2{,}9 \cdot 10^{-5}\ N$$



$$\vec{F}_p + \vec{F}_{21} + \vec{T} = 0$$

$$-mg - k_0 \frac{|q_1||q_2|}{h^2} + T = 0$$

$$T = mg + k_0 \frac{|q_1||q_2|}{h^2} \approx 13 \cdot 10^{-5}\ N$$

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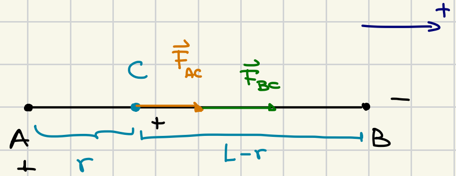

$AC = r$
$AB = L$
$q_A = Q$
$q_B = -2Q$
$q_C = q > 0$

▷ $\vec{F}_E$ su q

$$\vec{F}_E = \vec{F}_{AC} + \vec{F}_{BC}$$

$$F_E = k_0 \frac{|q_A||q_C|}{r^2} + k_0 \frac{|q_B||q_C|}{(L-r)^2} =$$

$$= k_0 \left(\frac{Q(q)}{r^2} + \frac{2Q\,q}{(L-r)^2} \right) = k_0 Q q \left(\frac{\overbrace{(L-r)^2}^{L^2+r^2-2Lr} + 2r^2}{r^2 (L-r)^2} \right)$$

$$= \frac{k_0 Q q}{r^2 (L-r)^2} \cdot (L^2 + 3r^2 - 2Lr)$$

▷ Posto $\overbrace{x = \frac{r}{L}}^{r = Lx}$, determina $f(x) = \frac{L^2}{k_0 q Q} F_E$ $\qquad \overbrace{(0 < x < 1)}^{C.E.}$

$$f(x) = \frac{L^2}{\cancel{k_0 q Q}} \cdot \frac{\cancel{k_0 Q q}}{r^2 (L-r)^2} (L^2 + 3r^2 - 2Lr)$$

$$= \frac{\cancel{L^2}}{\cancel{L^2} x^2 (L - Lx)^2} (L^2 + 3L^2x^2 - 2L^2x)$$

$$= \frac{\cancel{L^2}(1 + 3x^2 - 2x)}{\cancel{L^2}\, x^2 (1-x)^2} = \frac{3x^2 - 2x + 1}{x^2 (1-x)^2}$$