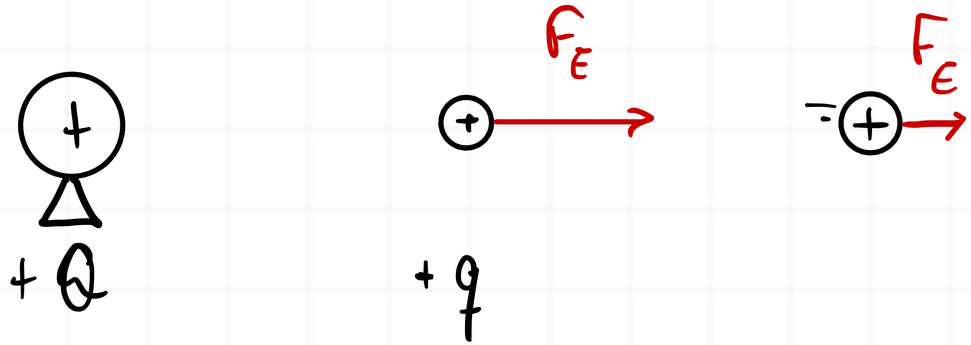
Módulo 4 Potencial Elétrico

01. Energia Potencial Elétrica (E_p)

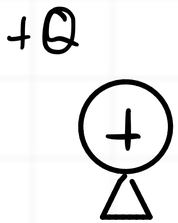


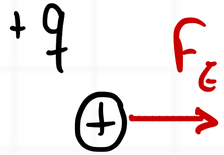
$$E_p = \frac{KQq}{d}$$

(×2 no numerador, ×2 no denominador)

$$[E_p] = J$$

OBS:

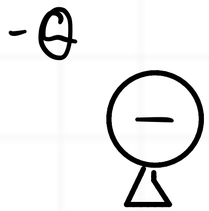


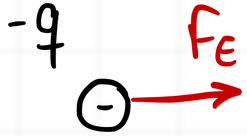


+100 J

+ 30 J

$\vec{E}_p = \frac{k\overset{+}{Q}\overset{+}{q}}{d\uparrow}$

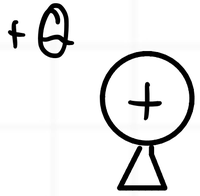


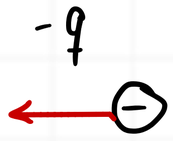


+100 J

+ 30 J

$\vec{E}_p = \frac{k\overset{-}{Q}\overset{-}{q}}{d\uparrow}$





- 100 J

- 30 J

$\vec{E}_p = \frac{k\overset{+}{Q}\overset{-}{q}}{d\downarrow}$

02. Potencial Elétrico (V)

MODO TURBO | C

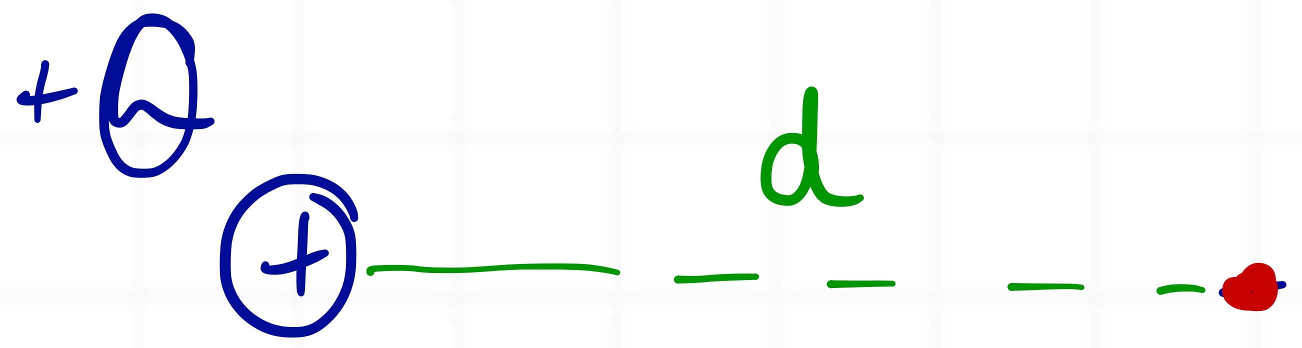
$$V = \frac{E_p}{q} \qquad [V] = J/C = V \text{ (Volt)}$$

- ✓ Para $q = 1C$ então $E_p = +100J$. $V = +100V$
- ✓ Para $q = 2C$ então $E_p = +200J$ $V = +100V$
- ✓ Para $q = 3C$ então $E_p = +300J$ $V = +100V$

$$F = q \cdot E \qquad E_p = q \cdot V$$

03. Potencial Elétrico gerado por uma carga pontual

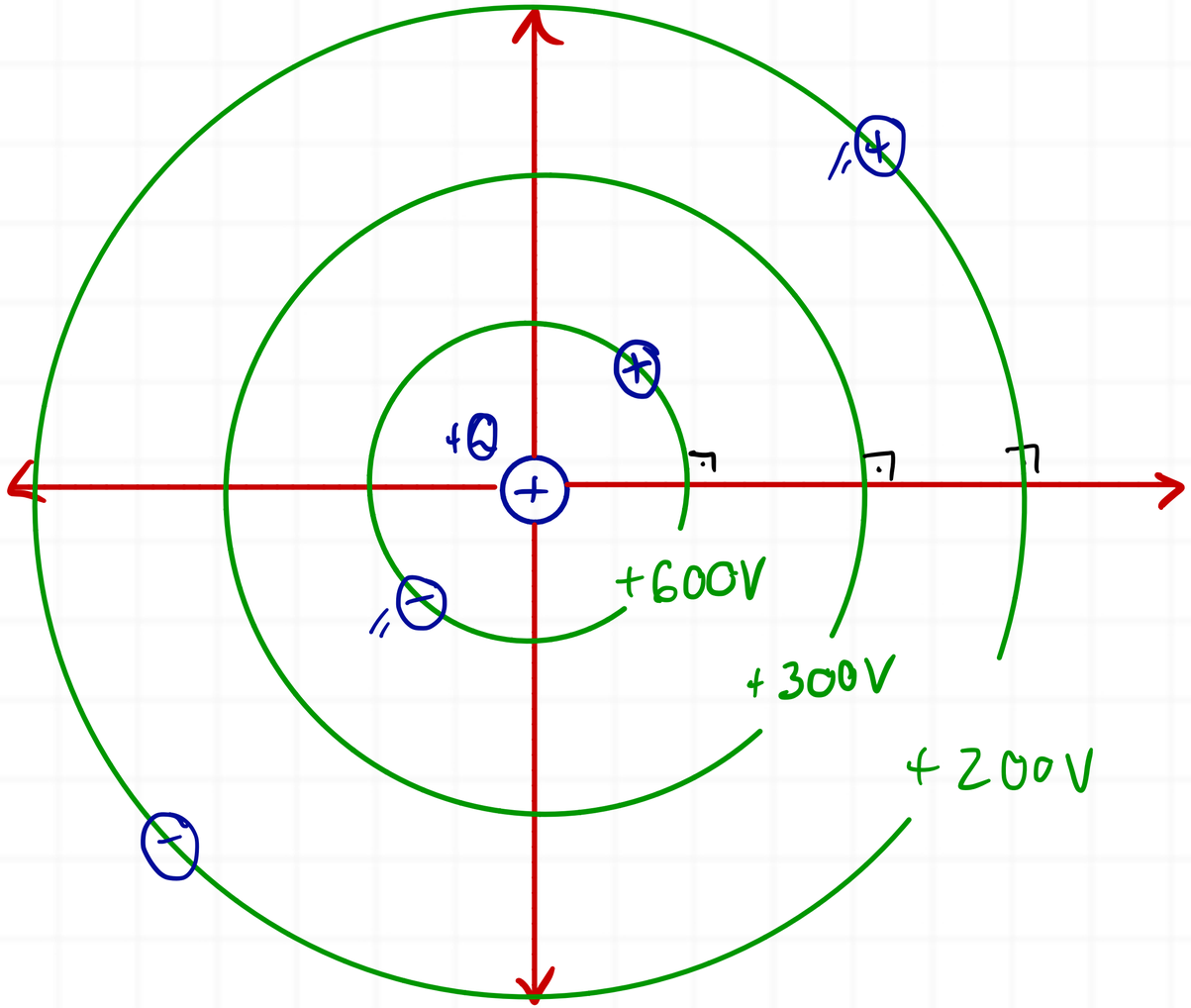
MODO TURBO | C



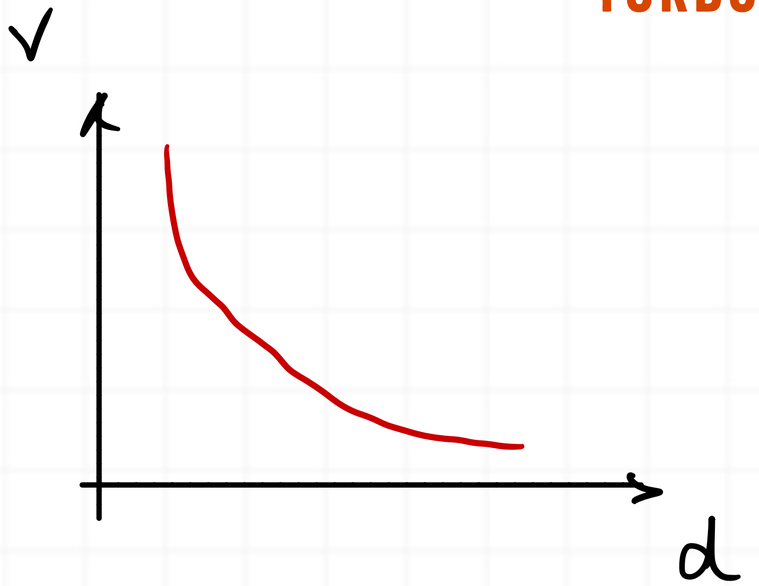
$$V = \frac{KQ}{d}$$

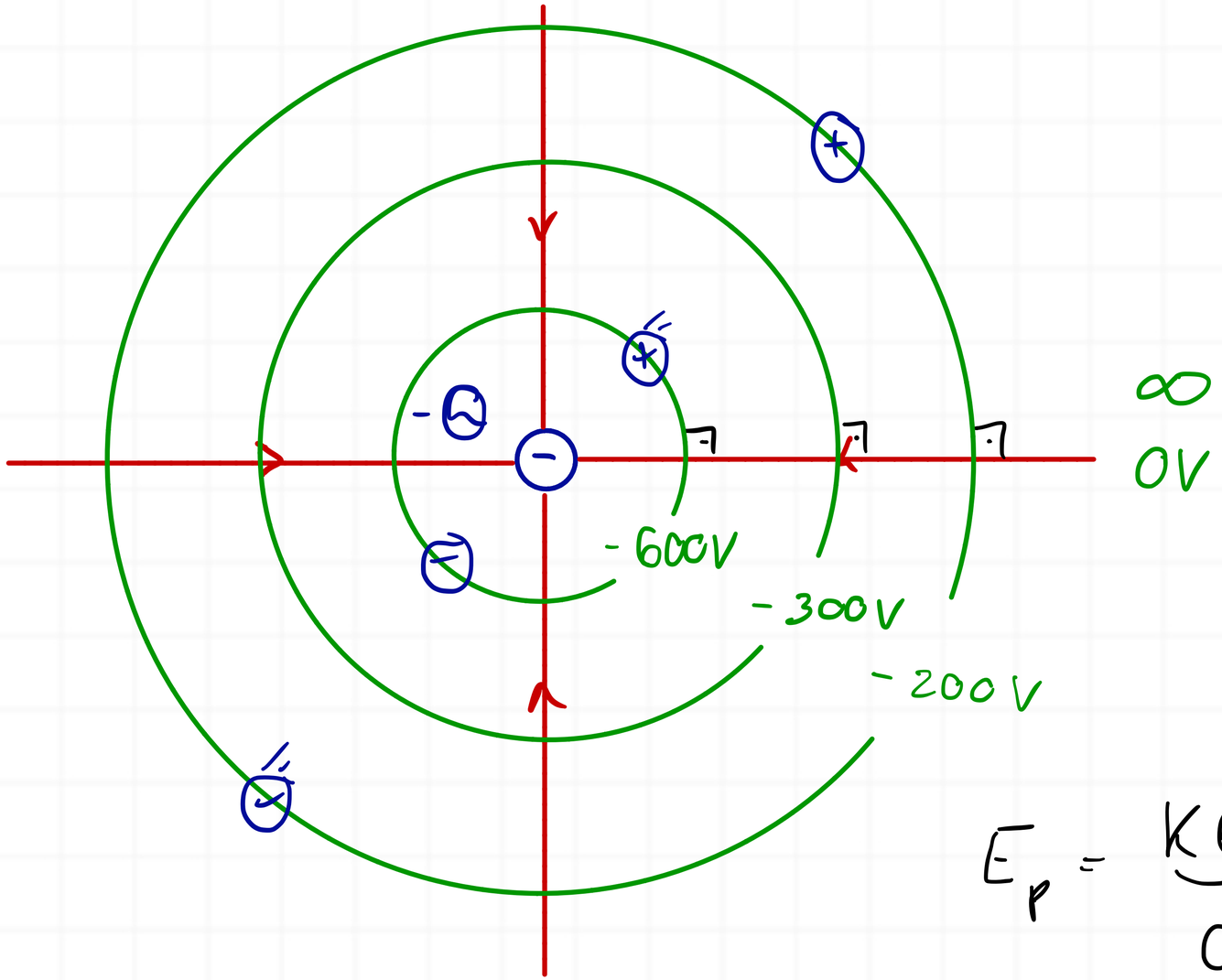
(÷2 ↓ V; d ↑ ×2)

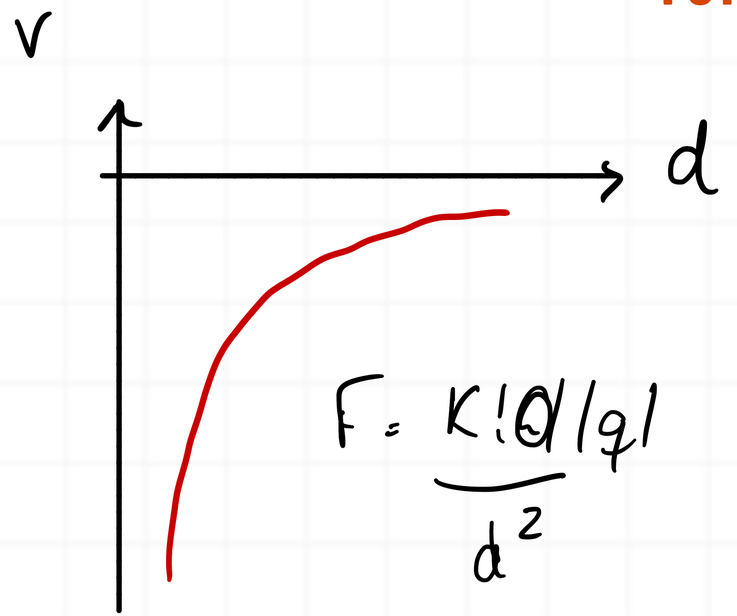
- + carga positiva V (+)
- + carga negativa V (−)



∞
0V







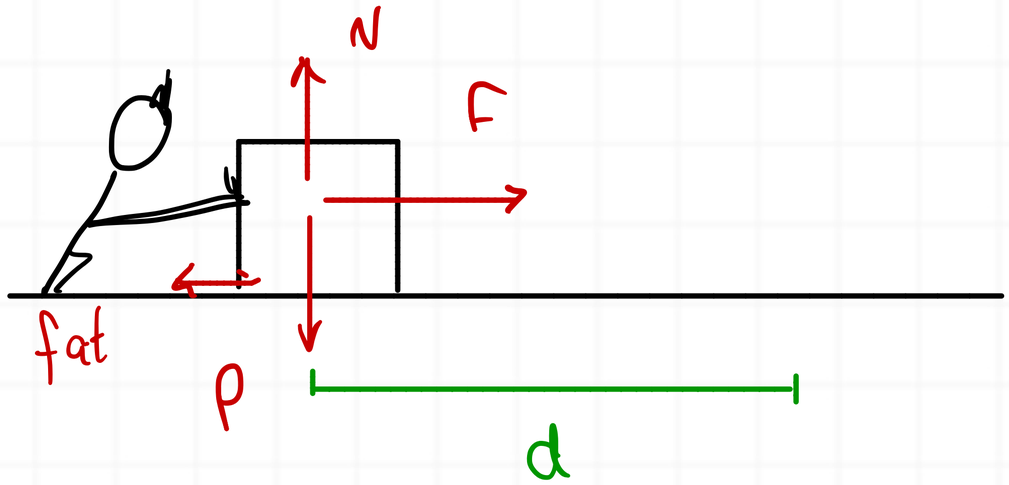
$$F = \frac{k|Q||q|}{d^2}$$

$$E = \frac{k|Q|}{d^2}$$

$$E_p = \frac{kQq}{d}$$

$$V = \frac{kQ}{d}$$

04. Trabalho de uma Força (revisão)



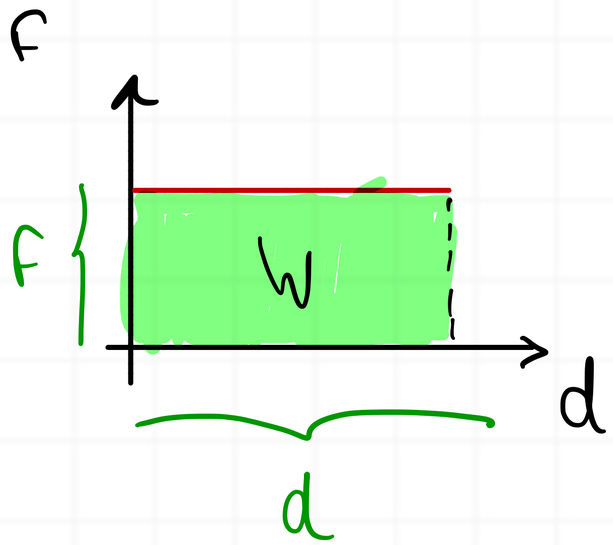
- Força Constante:

$$W = F \cdot d \cdot \cos\theta$$

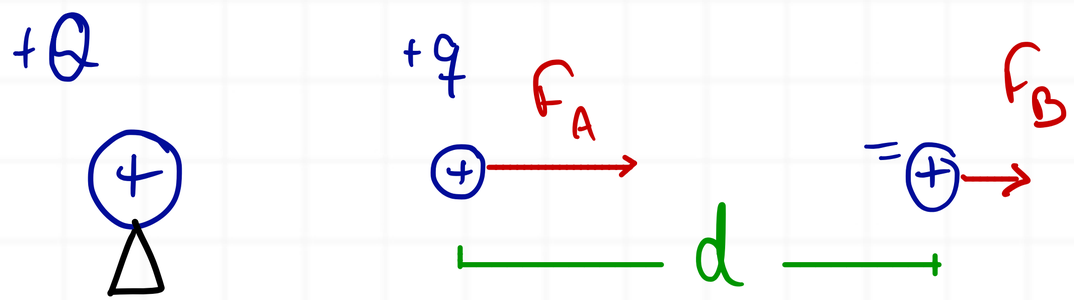
↳ Ângulo entre F e d

$[W]^{SI} = N.m = J$

- Gráfico



05. TRABALHO DA FORÇA ELÉTRICA

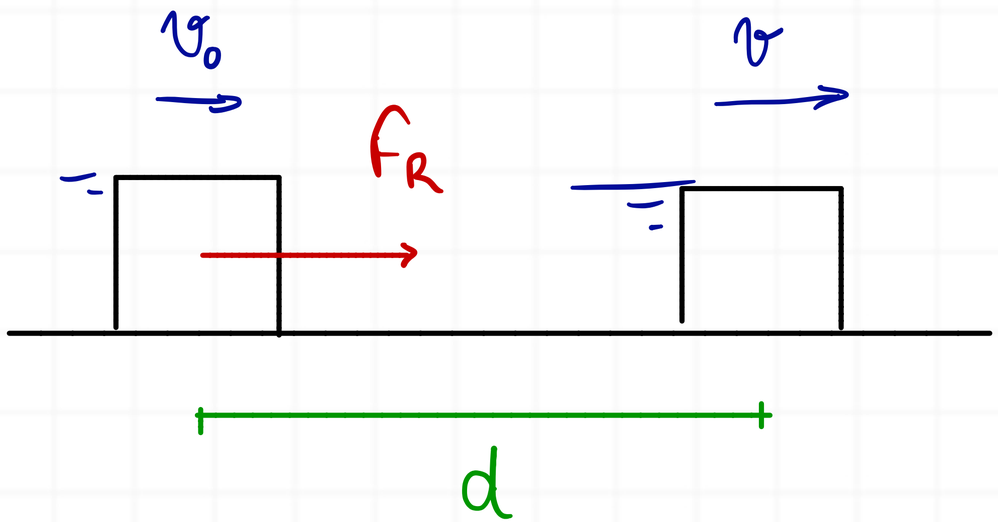


$$W = qV_A - qV_B$$

$$W = q(V_A - V_B)$$

$$\boxed{W = qV_{AB}}$$

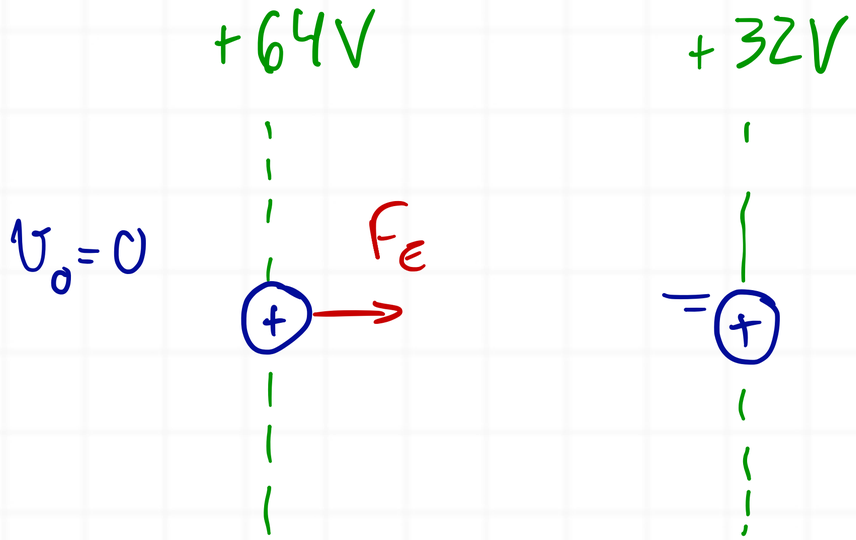
06. Teorema da Energia Cinética (Revisão)



$$W_{F_R} = \Sigma W = \Delta E_c$$

MODO TURBO | C

Ex:



$q = +1,6 \times 10^{-19} C$

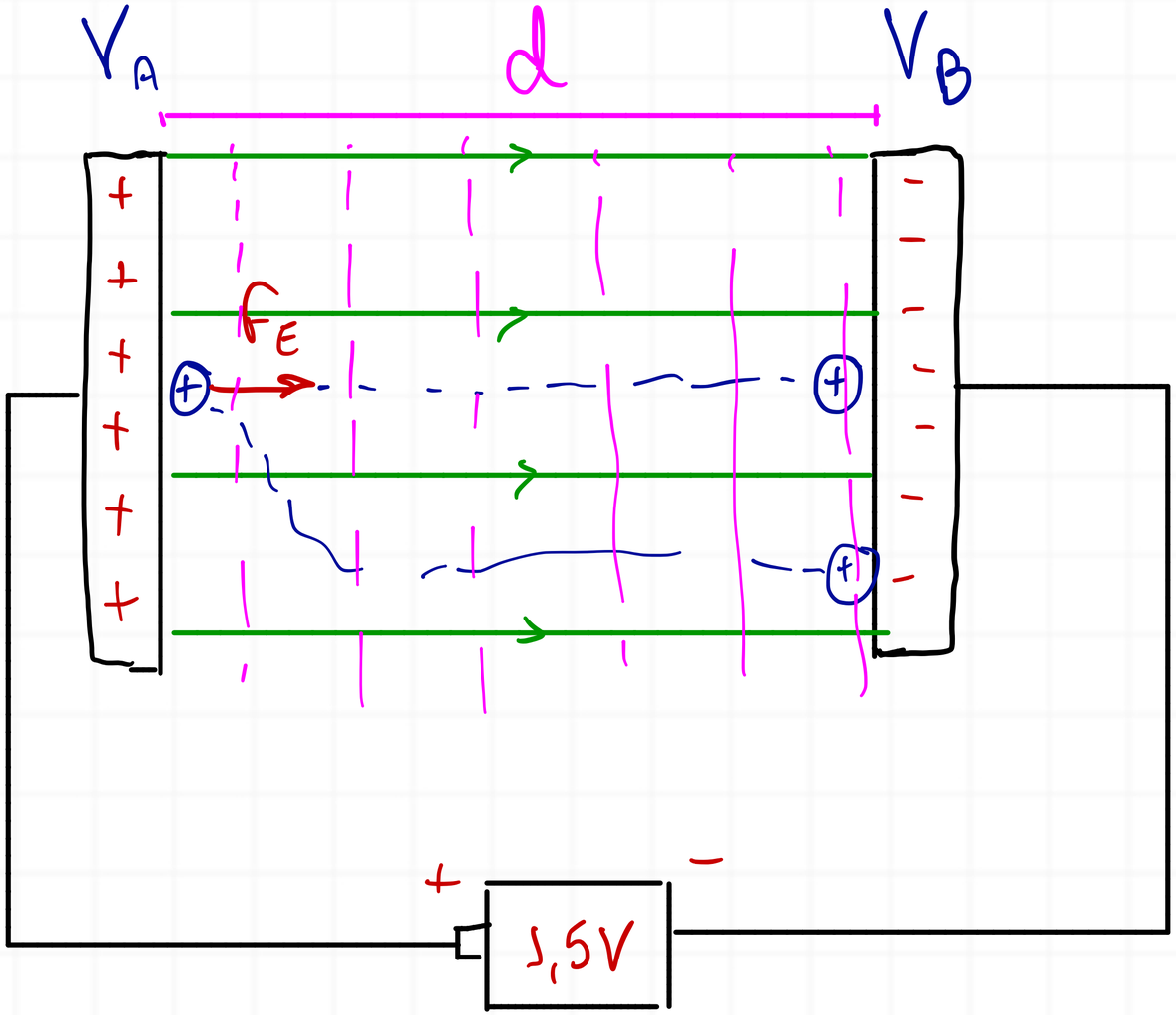
$m = 1,6 \times 10^{-27} kg$

$$W_{F_E} = \Delta E_C$$

$$q(V_A - V_B) = \frac{mv^2}{2} - \frac{mv_0^2}{2}$$

$v = 0$

07. Diferença de Potencial em C.E.U.



$$W_{F_E} = F_E \cdot d \cdot \cos 0°$$

$$q \, V_{AB} = q \, E \cdot d$$

$$\boxed{V_{AB} = E \cdot d}$$