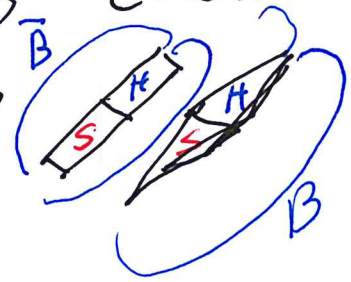
ONDE ELETTROMAGNETICHE

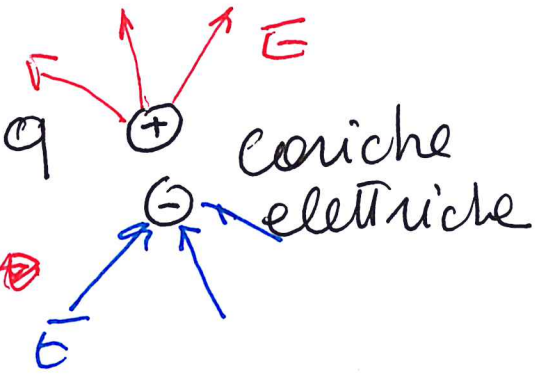
RADIAZIONI

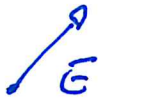
1) ELETTRO → D
2) MAGNETICO → B

Elettrico →

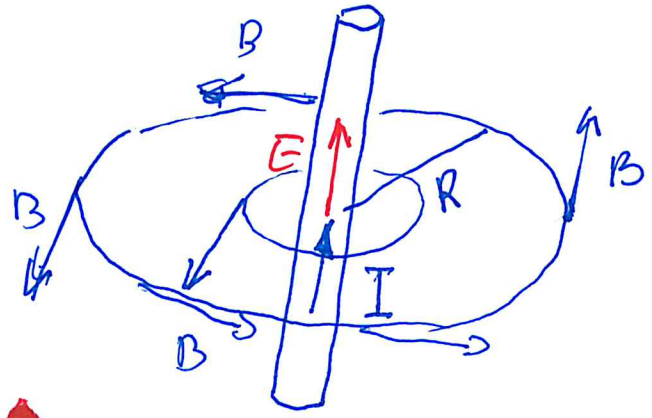


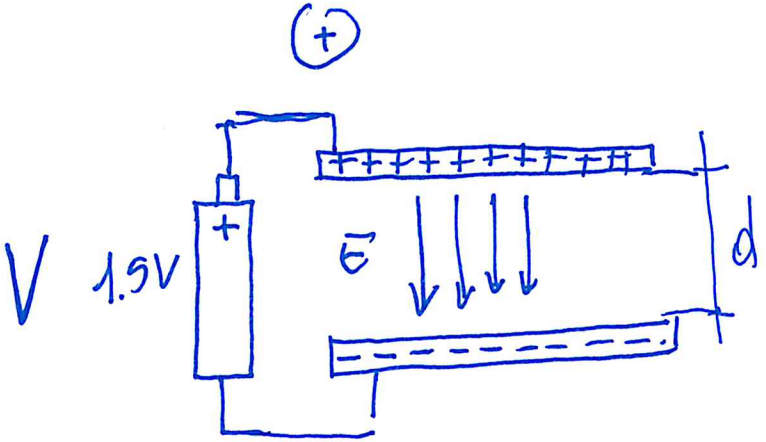
MAGNETE





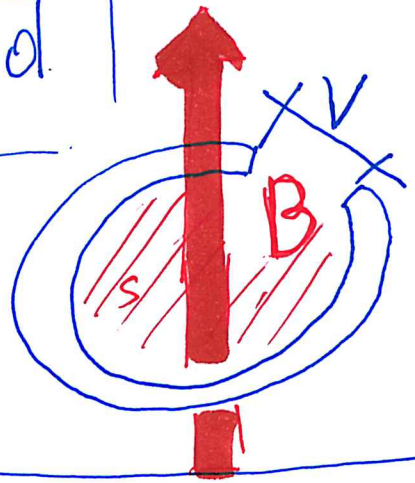
Ampere $B = \frac{\mu_0 I}{2\pi R}$





$V = Ed$

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



Faraday $\frac{d\Phi_B}{dt} = V$

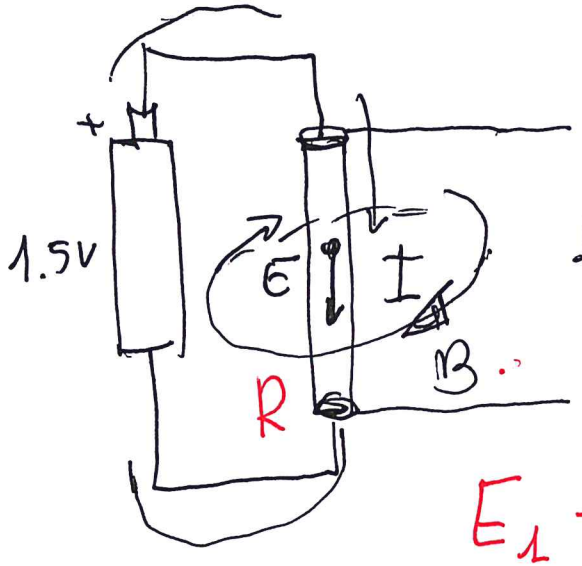
$\frac{d\Phi_B}{dt} = \frac{dB \cdot S \text{ costante}}{dt}$

$V = S \frac{d\vec{B}}{dt}$

$\Phi = \vec{B} \times \vec{S}$

$\Phi = B \cdot S$

$V = RI$ OHM

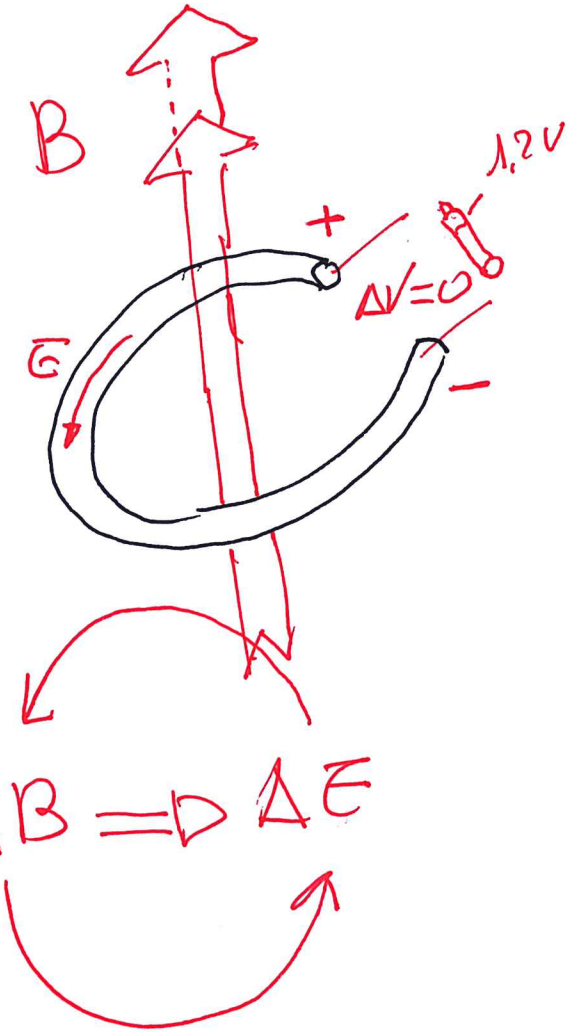


$\ell \quad \frac{V}{\ell} = \varepsilon.$

$E_1 \longrightarrow E_2 \Rightarrow \Delta E$

$I_1 \longrightarrow I_2 \longrightarrow \Delta T$

$B_1 \longrightarrow B_2 \longrightarrow \Delta B$



$\Delta B \Rightarrow \Delta E$

B costante

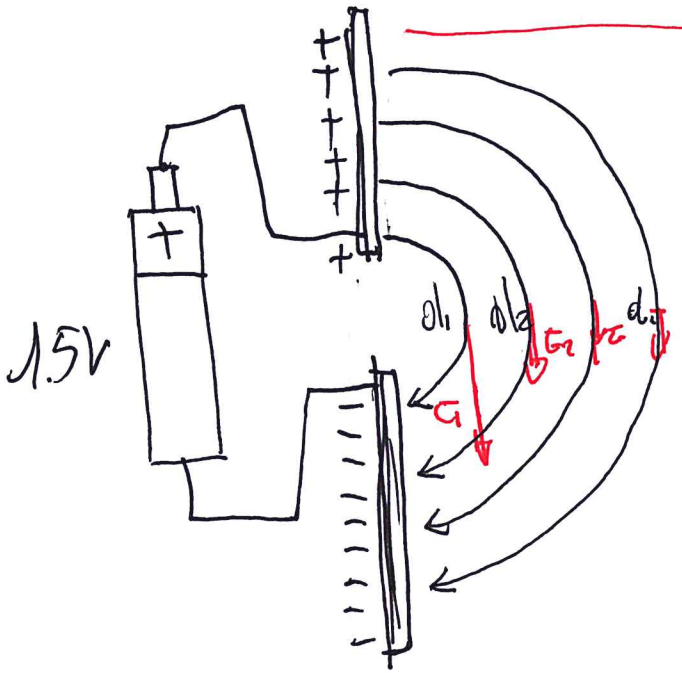
$\Delta V = 0$

ΔB

$\Delta V = S \cdot \frac{\Delta B}{\Delta T}$

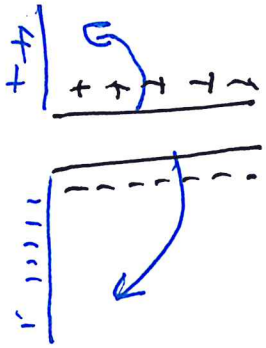
$\Delta E = \frac{\Delta V}{l}$

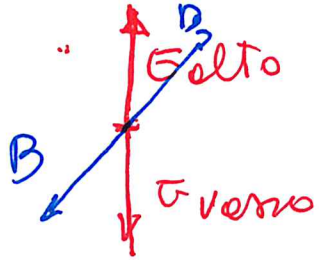
l = lunghezza dell'anello



d/c

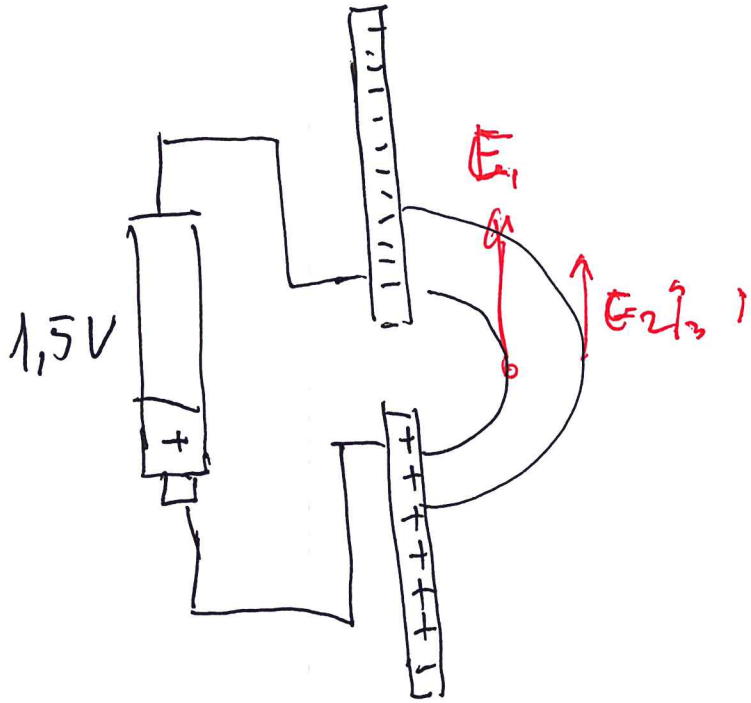
1 km





$\Delta t = 1\,s$

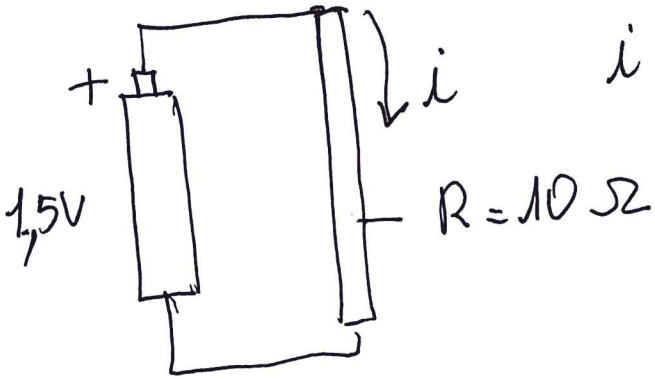
$$\frac{\Delta E}{\Delta t} = \frac{2\pi}{\Delta t} \Rightarrow \frac{\Delta B}{\Delta t}$$



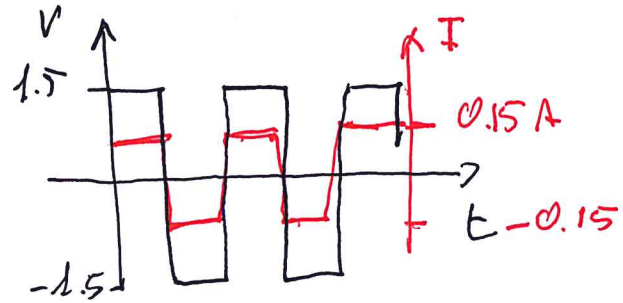
frequenza $T = 1\,s$

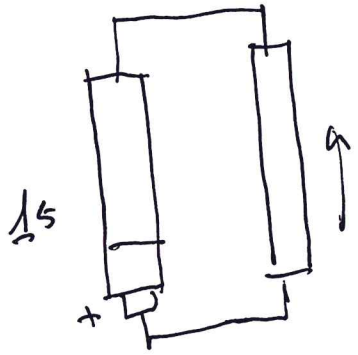
$$f = \frac{1}{T} = 1\,Hz$$

$T = 0.01\,s \Rightarrow f = \frac{1}{0.01} = 100\,Hz$

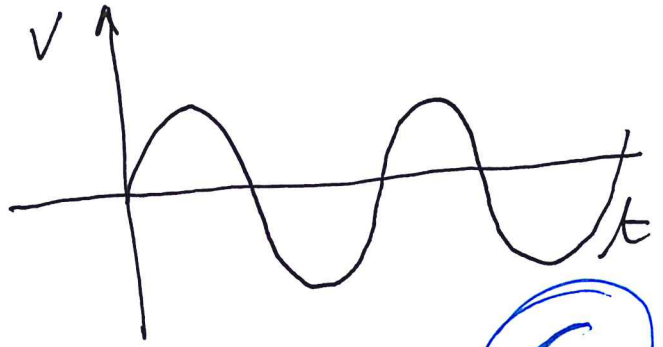


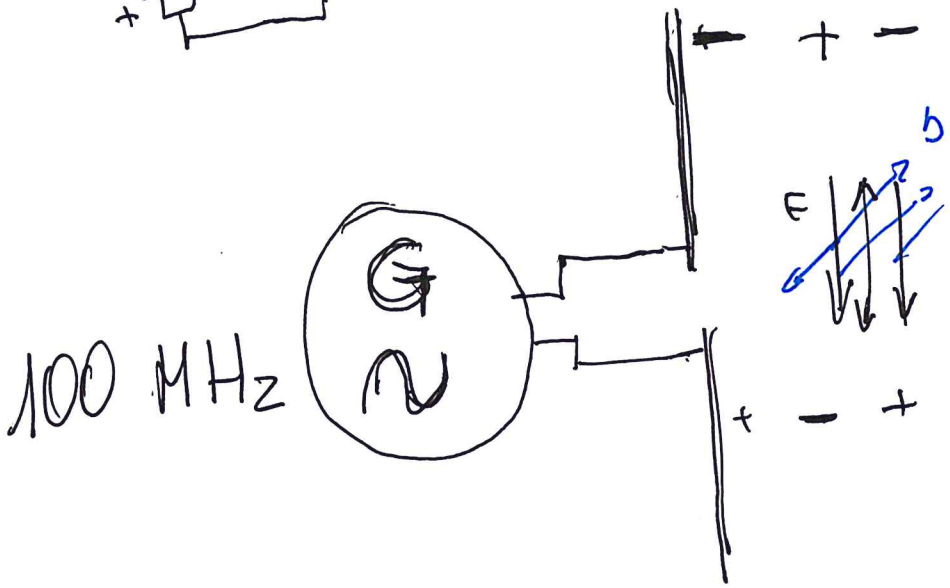
$$i = \frac{V}{R} = \frac{1.5\,V}{10\,\Omega} = 0.15\,A$$





$$I = 0.15$$

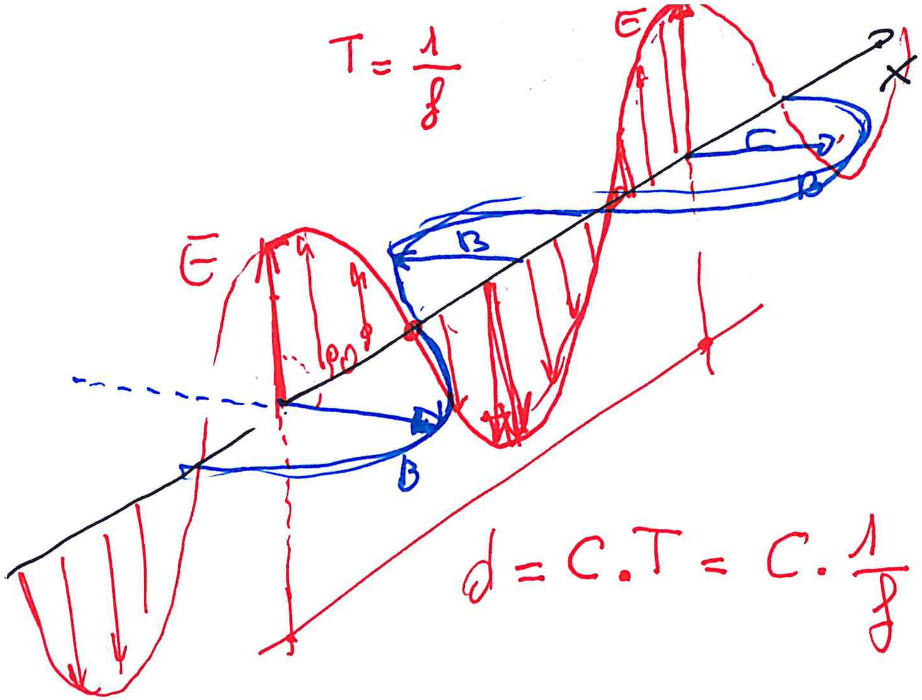




100 MHz

Антенно

$T = \frac{1}{f}$



fisso il Tempo

$d = C \cdot T = C \cdot \frac{1}{f} = \lambda$ lunghezza d'onda

G²

frequenza

f frequenza dipende dal generatore

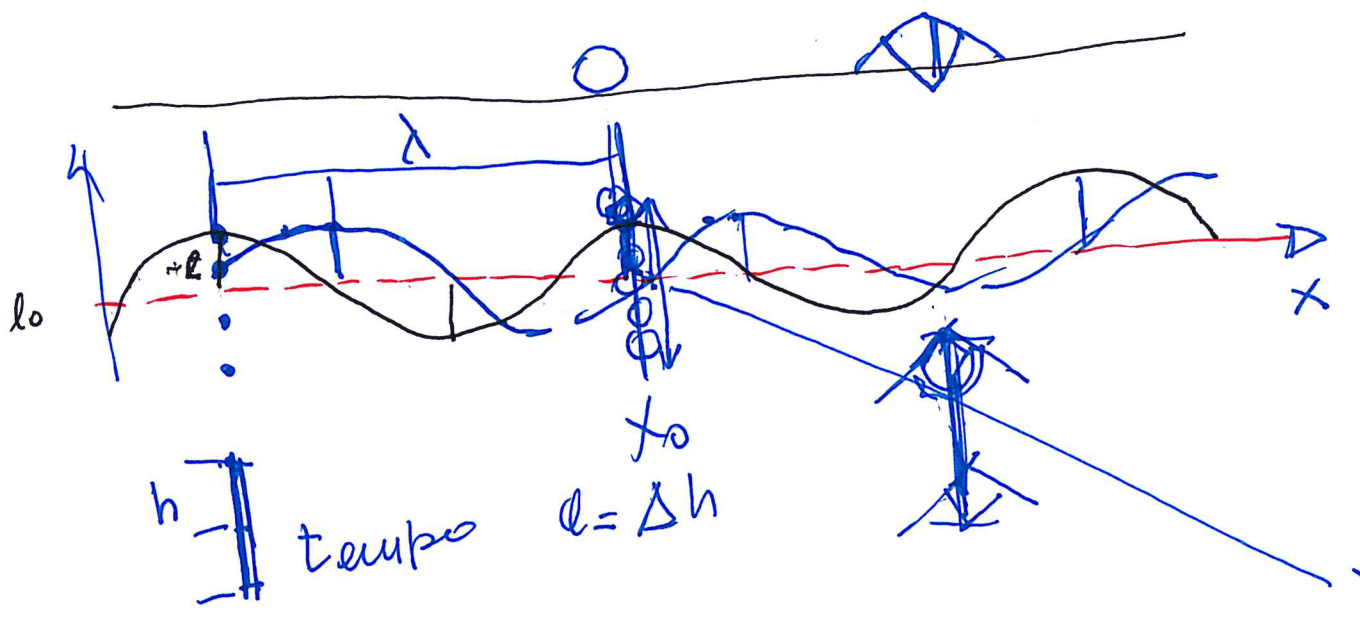
λ = mezzo dove si propaga

vuoto velocità – C

velocità della luce

$\lambda \cdot f = C$

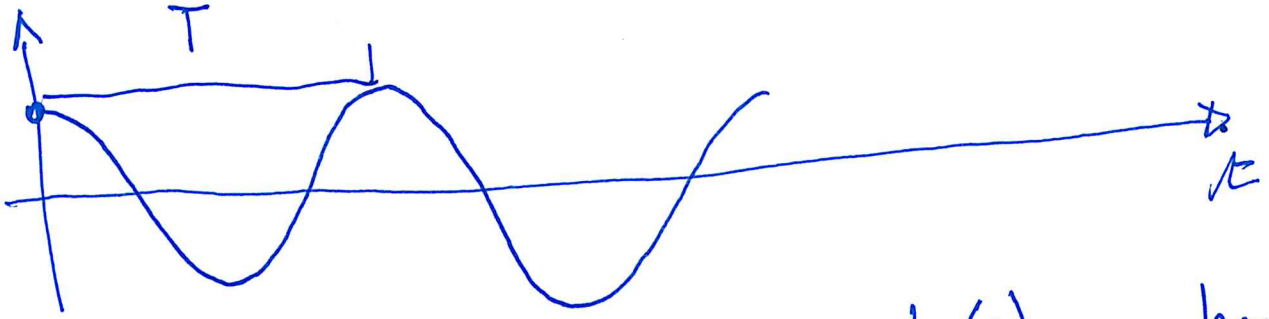
C < 300.000 km/s ; $3 \cdot 10^8$ m/s



t-fisso t_0

Δt

x_0 fisso!!

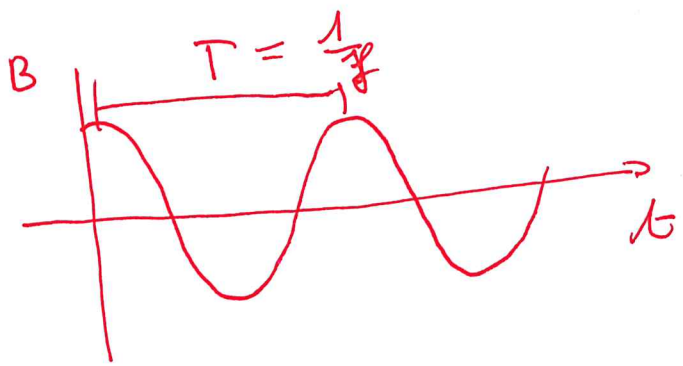


$$h(t,x) = h_0 \operatorname{sen}\left(\frac{2\pi}{T}\cdot t + \frac{2\pi}{d}\cdot x\right)$$

$$\begin{cases} h(t)_{x_0} = h_{max} \operatorname{sen}\left(\frac{2\pi}{T}\, t\right) \\ h(x)_{t_0} = h_{max} \operatorname{sen}\left(\frac{2\pi}{d}\, x\right) \end{cases}$$

$$E(x,t) = E_0 \operatorname{sen}\left(\frac{2\pi}{\lambda}\cdot x + \frac{2\pi}{T}\, t\right)$$

B_0



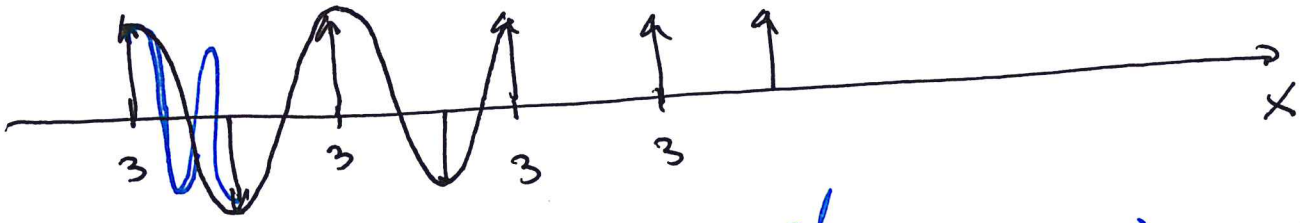
x fme

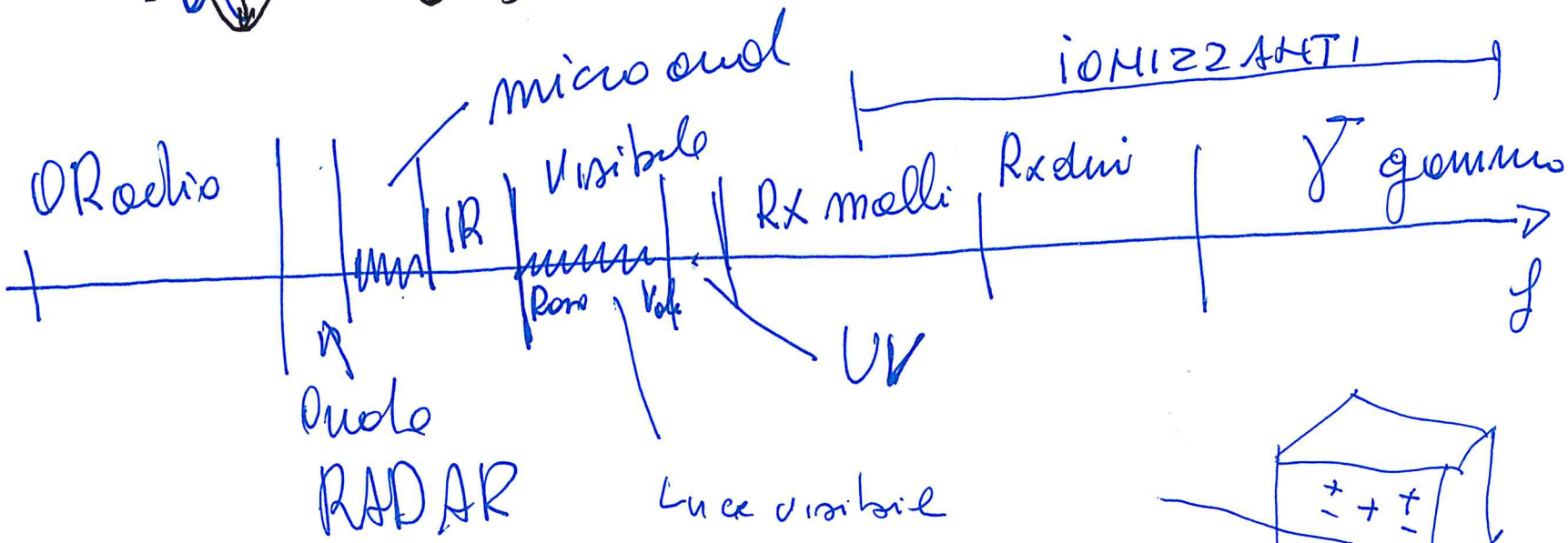
$\Delta E/\Delta T \Longrightarrow \frac{\Delta B}{\Delta T} \Longrightarrow \frac{\Delta E}{\Delta T} \Longrightarrow \Longrightarrow \Longrightarrow$

$f \Longrightarrow \lambda \qquad \lambda \cdot f = C \qquad 3.10^8\ m/s$

100 MHz $\Longrightarrow$ λ? $\qquad \lambda = \frac{C}{f} = \frac{3.10^8}{100.10^6\ Hz} = 3\ m$

$\lambda = 3\ m$


3
3
3
3
x (m


Radio
micro onde
IR
Visibile
Rx molli
Rx duri
γ gamma
IONIZZANTI
Rosso
Viola
UV
Onde RADAR
Luce visibile