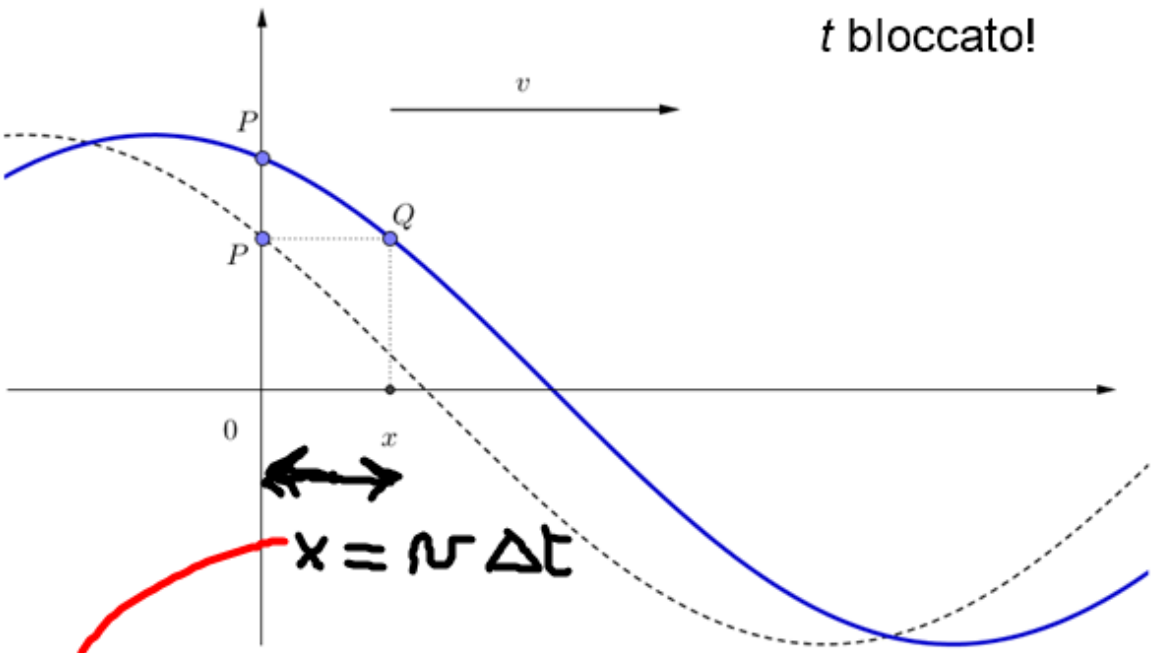
t bloccato!



$x = v\,\Delta t$

$y_P(t) = a\cos(\omega t + \varphi_{0P})$ $\quad y_Q(t) = a\cos(\omega t + \varphi_{0Q})$

$y_Q(t) = y_P(t - \Delta t)$

all'istante t Q ha la posizione che aveva P all'istante $t - \Delta t$

$\Delta t = \frac{x}{v}$

$y_Q(t) = a\cos(\omega(t - \Delta t) + \varphi_{0P}) =$

$$y_a(t) = a\cos\left(\omega\left(t - \frac{x}{v}\right) + \varphi_{0P}\right) =$$

$$= a\cos\left(\frac{2\pi\nu}{\lambda}\left(t - \frac{x}{v}\right) + \varphi_{0P}\right) =$$

$$\omega = \frac{2\pi}{T}$$

$$\nu = \frac{\lambda}{T}$$

$$T = \frac{\lambda}{v} \rightarrow \omega = \frac{2\pi v}{\lambda}$$

$$= a\cos\left(\frac{2\pi}{\lambda}(\nu t - x) + \varphi_{0P}\right) =$$

$$= a\cos\left(\frac{2\pi}{\lambda}(x - \nu t) + \varphi_0\right)$$

VALE

$\cos(-\alpha) = \cos\alpha$

$-\varphi_{0P}$

$$y = a \cos\left(\frac{2\pi}{\lambda}(x - \nu t) + \varphi_0\right)$$

EQUAZIONE GENERALE DI UN'ONDA ARMONICA IN FUNZIONE DI t E x

<u>ES.</u>

$t = 0 \rightarrow$ $y = a \cos\left(\frac{2\pi}{\lambda} x + \varphi_0\right)$ cambierà φ_0

In realtà la <u>FORMA</u> è la stessa anche per t qualsiasi

P 894 es. 11

$s = 100\ m$

$n = 14$

$$\lambda = \frac{s}{n} = \frac{100\ m}{14} = 7,14\ m$$

ES. 12

$F = 446\ Hz \qquad T = ?$

$V = 343\ m/s \qquad \lambda = ?$

$$T = \frac{1}{f} = \frac{1}{446\ Hz} = 0,00224\ s$$

$$V = \lambda\ f$$

$$2,24 \cdot 10^{-3}\ s$$

$$\lambda = \frac{V}{f} = \frac{343\ m/s}{446\ Hz} = 0,769\ m$$

N17 Pag 895

Hp

$\Delta t = 4,0\ s$

$t_0 = 0\ s$

$\lambda = 7,43\ cm$

$V = 340\ m/s$

d

$d = V \Delta t =$

$= 340\ m/s \cdot 4,0\ s =$

$= 1360\ m = 1,4 \cdot 10^3\ m$

$V = f \lambda$

$f = \frac{V}{\lambda} = \frac{340\ m/s}{7,43\ m} = 45,8\ Hz$

N 18 Pag 895

$v_1 = 18\ m/s$

$\frac{\lambda}{2} = \frac{100\ m}{2} = 50\ m$

$F_1 = 0{,}18\ Hz$

$v_2 = \lambda_1 \cdot 3F_1 = 3v_1 = 3 \cdot 18 = 54\ m/s$

$\frac{\lambda}{2} = ?$

$\lambda = \frac{v}{f} = \frac{18\ m/s}{0{,}18\ Hz} =$

$= 100\ m$

$\lambda_1 = \lambda_2$

$F_2 = 3F_1 \qquad v_2 = ?$