

# ACÚSTICA

HOJA N°

FECHA

121) PÁG. 61

$$T = 0,04s \quad V = 300 \text{ m/s}$$

$$T = \frac{2\pi}{\omega} \Rightarrow \omega = \frac{2\pi}{T} = 157,07 \frac{1}{s}$$

$$K = \frac{\omega}{V} \Rightarrow K = 0,52$$

$$Y = A \text{ Sen}(Kx - \omega t + \alpha)$$

$$Kx - \omega t + \alpha = 0$$

$$\alpha_1 = -Kx_1 + \omega t$$

$$\alpha_2 = -Kx_2 + \omega t$$

$$\alpha_1 - \alpha_2 = -Kx_1 + \omega t + Kx_2 - \omega t$$

$$\alpha_1 - \alpha_2 = K(x_2 - x_1)$$

$$\alpha' = \alpha_1 - \alpha_2 = K(8m)$$

$$\alpha' = 0,52 \cdot 8m$$

$$\boxed{\alpha' = 1,32 \pi}$$

DESDE  $\alpha$ , PERO ANTES KOVADO  
DESE TERMINADO A  $\phi$



122) PÁG. 61

$$A = 10 \text{ cm } (0,1m) ; \lambda = 3m ; V = 340 \text{ m/s} ; V_{\text{max}}?$$

$$v = A\omega \cos(\omega t + \alpha)$$

$$\lambda = VT \Rightarrow T = \frac{\lambda}{V} \Rightarrow T = 8,82 \cdot 10^{-3}$$

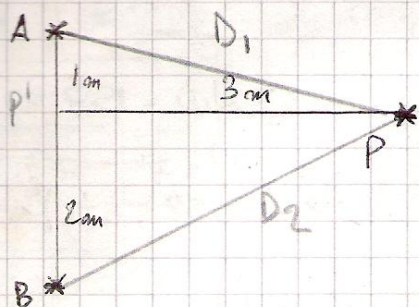
$$\omega = 0,1m \cdot 712,1 \frac{1}{s}$$

$$T = \frac{2\pi}{\omega} \Rightarrow \omega = \frac{2\pi}{T} \Rightarrow \omega = 712,1 \frac{1}{s}$$

$$\boxed{\omega = 712,1 \frac{1}{s}}$$







$$I_c = 2n\pi$$

$$I_D = (2n+1)\pi$$

$$\lambda = \frac{V}{f}$$

$$\lambda \cdot f = V$$

$$D_1 = \sqrt{(AP')^2 + (P'P)^2}$$

$$D_2 = \sqrt{(BP')^2 + (P'P)^2}$$

$$y = A \sin(kx - \omega t + \alpha)$$

$$\alpha_A = -kx_A + \omega t$$

$$\alpha_B = -kx_B + \omega t$$

$$\alpha_A - \alpha_B = -kx_A + \omega t + kx_B - \omega t$$

$$\alpha_A - \alpha_B = k(x_B - x_A)$$

• SI LA INTERFERENCIA ES CONSTRUCTIVA  $\alpha_A - \alpha_B = 2n\pi$

$$2n\pi = k(x_B - x_A) \Rightarrow 2n\pi = \frac{2\pi f}{V}(x_B - x_A) \Rightarrow n = \frac{f}{V}(x_B - x_A)$$

$$f = \frac{n \cdot V}{x_B - x_A} \rightarrow f = n \cdot \frac{340}{D_2 - D_1} \Rightarrow f = n \cdot \frac{340}{\sqrt{13} - \sqrt{10}} \text{ [Hz]}$$

Frecuencias: 767 Hz, 1534 Hz, 2301 Hz, ... Hz

• SI LA INTERFERENCIA ES DESTRUCTIVA  $\alpha_A - \alpha_B = (2n+1)\pi$

$$(2n+1)\pi = k(x_B - x_A) \Rightarrow (2n+1)\pi = \frac{2\pi f}{V}(x_B - x_A) \Rightarrow 2n+1 = \frac{2f}{V}(x_B - x_A)$$

$$\Rightarrow f = \frac{(2n+1)V}{2(x_B - x_A)} \Rightarrow f = \frac{(2n+1)V}{2(D_2 - D_1)} \Rightarrow f = \frac{(2n+1) \cdot 340}{2(\sqrt{13} - \sqrt{10})}$$

Frecuencias: 1150 Hz, 1917 Hz, ... Hz