

BEAT FREQUENCY

$$F_B = |f_1 - f_2|$$

$$|440 - 441|$$

$$f_B = 1 \text{ Hz}$$

TUNING FORK

$$F_0 = |f_1 - f_2|$$

$$f_n = \frac{nv}{2L}$$

$$\sqrt{\frac{FT}{\mu}}$$

$$f_{0,1} = f_s \left(\frac{v \pm v_o}{v \pm v_s} \right)$$

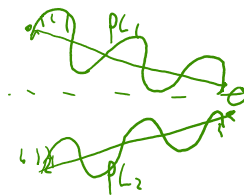
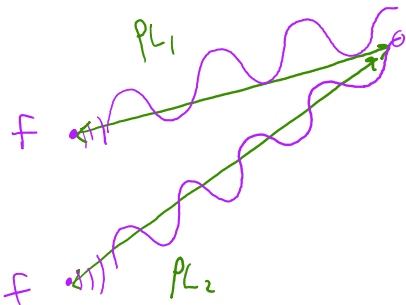
$$f_B = |f_1 - f_2|$$



$$D(x,t) = A_1 \sin(kx \pm \omega_1 t) + A_2 \sin(kx \pm \omega_2 t)$$

GENERAL INTERFERENCE

* SOURCES ARE COHERENT

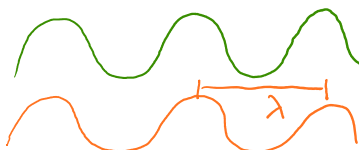


IN PHASE

$$PLD = \text{CONST.}$$

$$|PL_1 - PL_2| = m\lambda$$

$$m = 0, 1, 2, \dots$$



$$|PL_1 - PL_2| = m\lambda$$

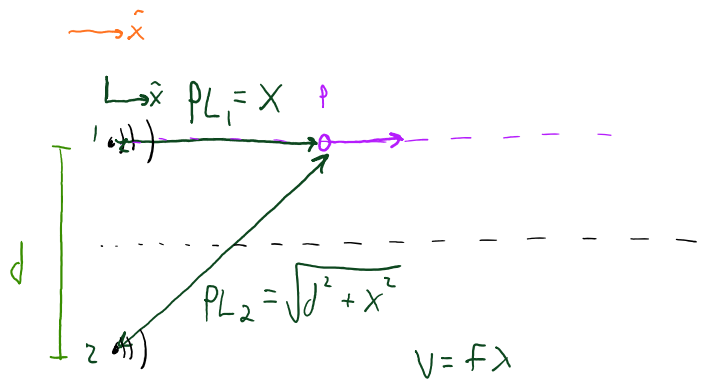
$$m = 0, 1, 2, 3, \dots$$

IN PHASE

$$|PLD| = \text{DEFST.}$$

$$|PLD| = (m + \frac{1}{2})\lambda$$

$$m = 0, 1, 2, 3, 4, \dots$$



$$|PLD| = \text{CONST.}$$

$$|PLD| = m\lambda$$

IN PHASE

$$V = f\lambda$$

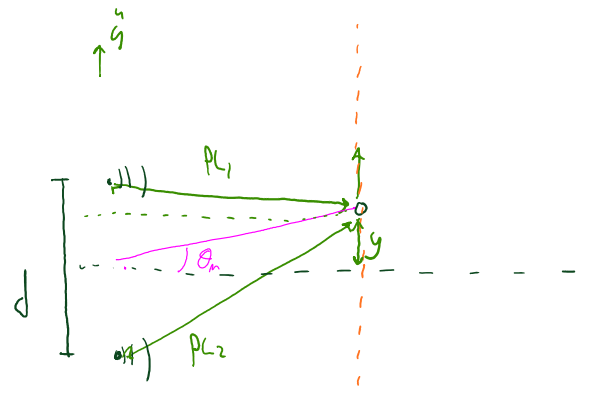
$$\frac{343}{f} = \lambda$$

$$PL_2 - PL_1 = m\lambda$$

$$\sqrt{d^2 + x^2} - x = m\lambda$$

m	x
0	
1	
2	
3	
4	
⋮	

$$x = \frac{d^2 - m^2\lambda^2}{2m\lambda}$$



$$|PLD| = \text{DEFST.}$$

$$|PLD| = (m + \frac{1}{2})\lambda$$

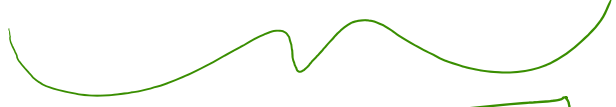
IN PHASE

$$PL_2 - PL_1 = (m + \frac{1}{2})\lambda$$



$$PL_2 - PL_1 = (m + \frac{1}{2}) \lambda$$

$$\sqrt{\left(\frac{d}{2} + y\right)^2 + L^2} - \sqrt{\left(\frac{d}{2} - y\right)^2 + L^2} = \left(m + \frac{1}{2}\right) \lambda$$



*
 IF $L \gg d$

$$d \sin \theta_m = \left(m + \frac{1}{2}\right) \lambda$$