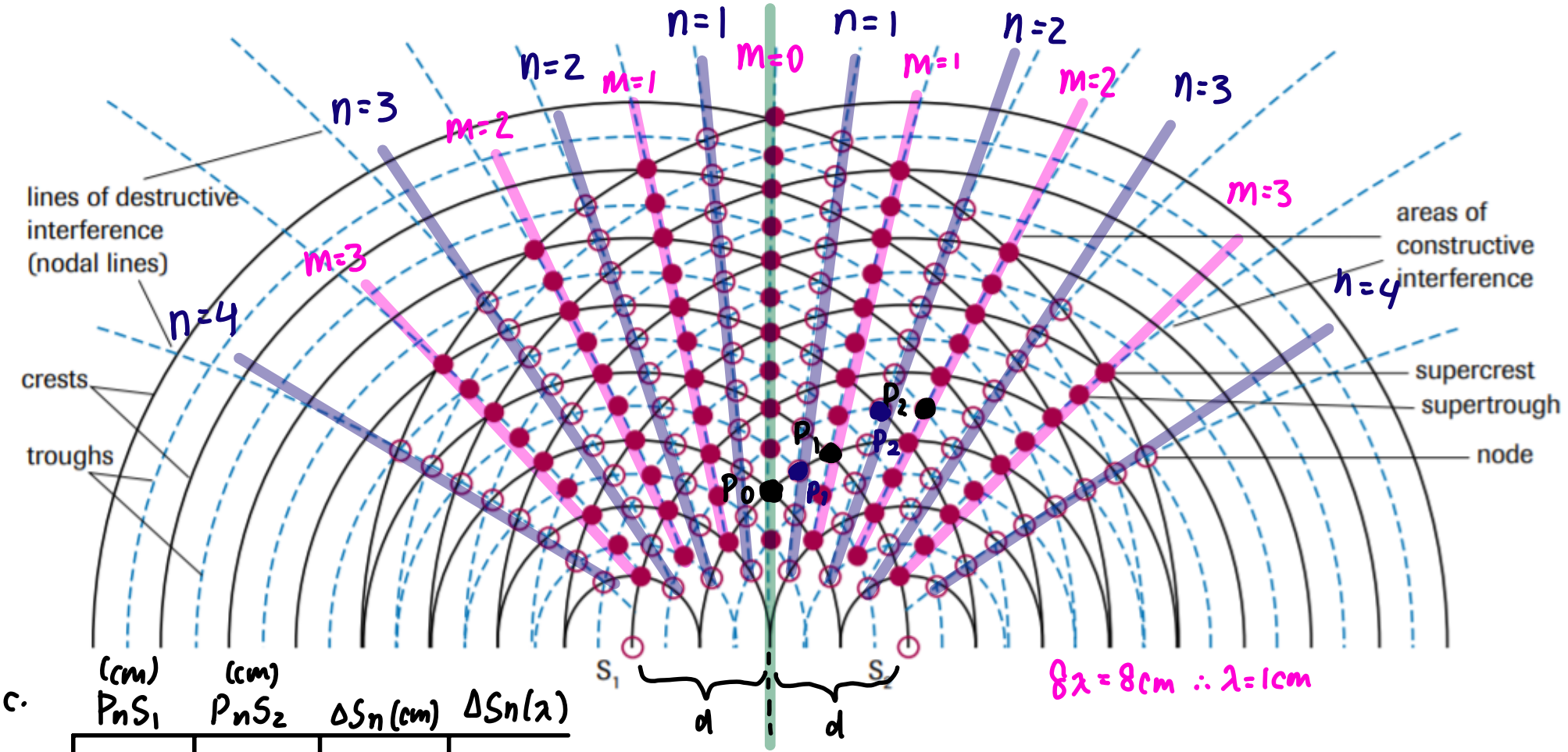


Loc.	(cm) P_nS_1	(cm) P_nS_2	ΔS_n (cm)	$\Delta S_n(\lambda)$	
m = 0	3	3	0	0λ	
m = 1	4	3	1	λ	Maxima
m = 2	3.5	2.2	2	2λ	Maxima
n = 1	3.5	3	0.5	0.5λ	Nodes
n = 2	5	3.5	1.5	1.5λ	Nodes

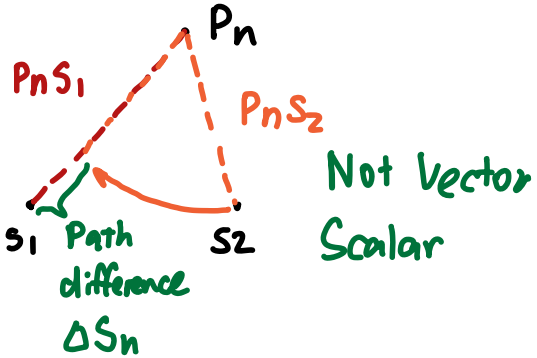
if m = 7 → $\Delta S_m = m\lambda$

$\Delta S_7 = 7\lambda$

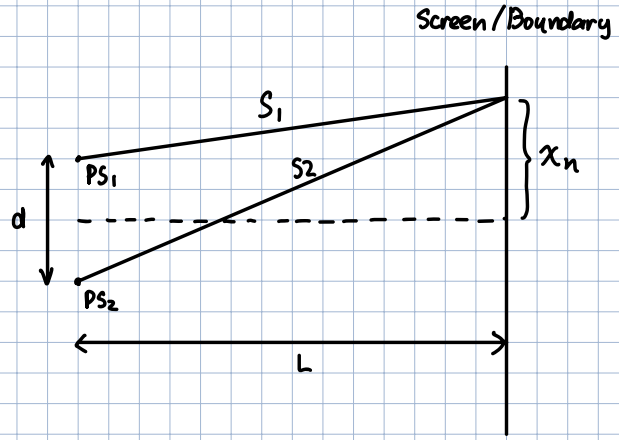
if n = 7 → $\Delta S_7 = 6.5\lambda$

$\Delta S_n = (n - \frac{1}{2})\lambda$

Typically Used



Ripple Tank



Variables:

PS = Point Source

$S_1 = P_n S_1$

d = distance between point sources

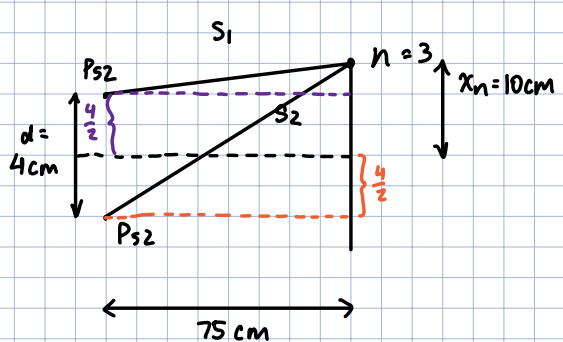
L = distance from point sources to screen.

P_n = Point on the n^{th} node

x_n = distance from central max to n^{th} node

Example 1:

A ripple tank has two point sources 4cm apart. A screen is 75 centimeters away and the 3rd node is 10cm from the central max. What is the wavelength of wave?



$\Delta S_n = (n - \frac{1}{2})\lambda$

$\Delta S_3 = 2.5\lambda = |S_1 - S_2|$

$S_1^2 = L^2 + (x_n - \frac{d}{2})^2$

$S_1 = \sqrt{75^2 + (10 - \frac{4}{2})^2}$

$S_1 = 75.43\,cm$

$S_2^2 = L^2 + (x_n + \frac{d}{2})^2$

$S_2 = \sqrt{75^2 + (10 + \frac{4}{2})^2}$

$S_2 = 75.95\,cm$???

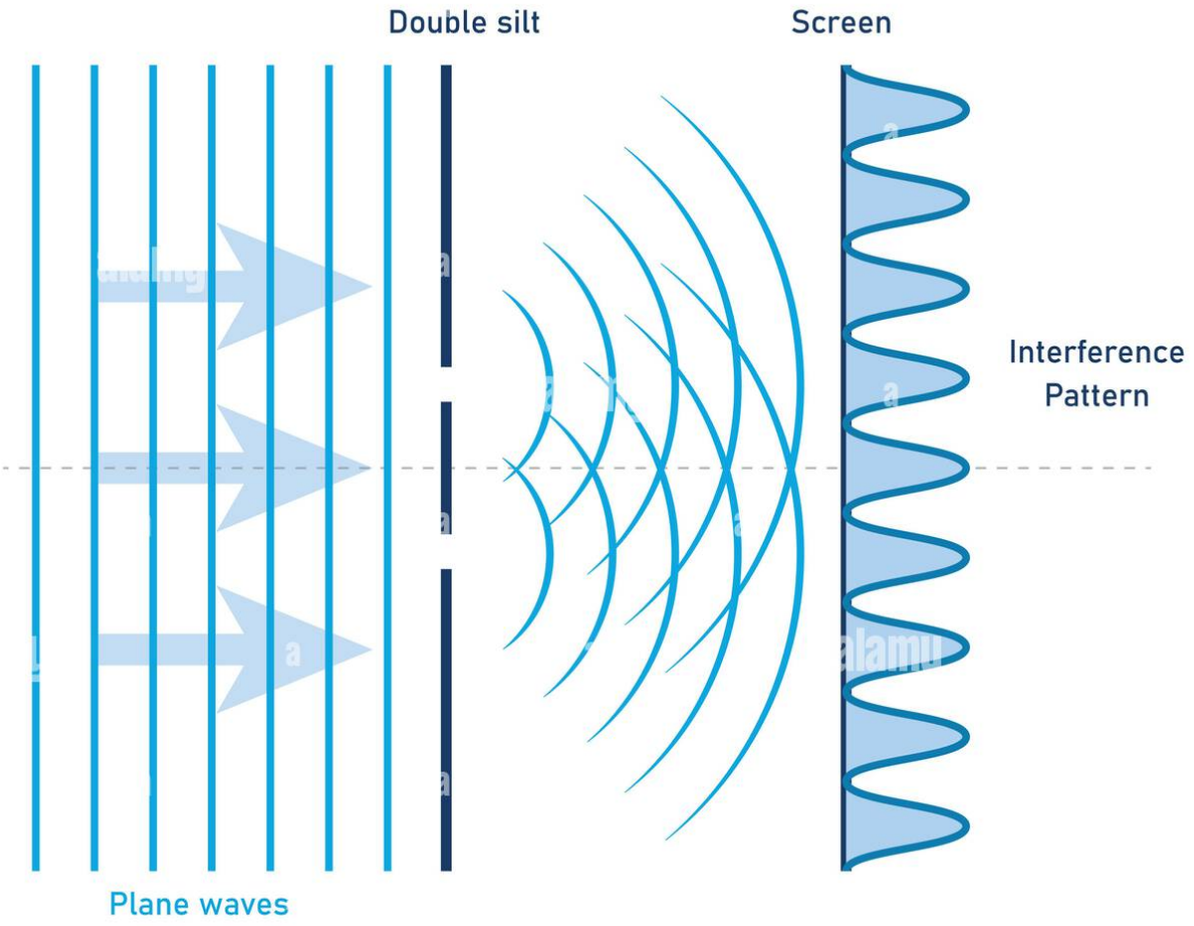
$\Delta S_3 = 2.5\lambda = |S_1 - S_2|$

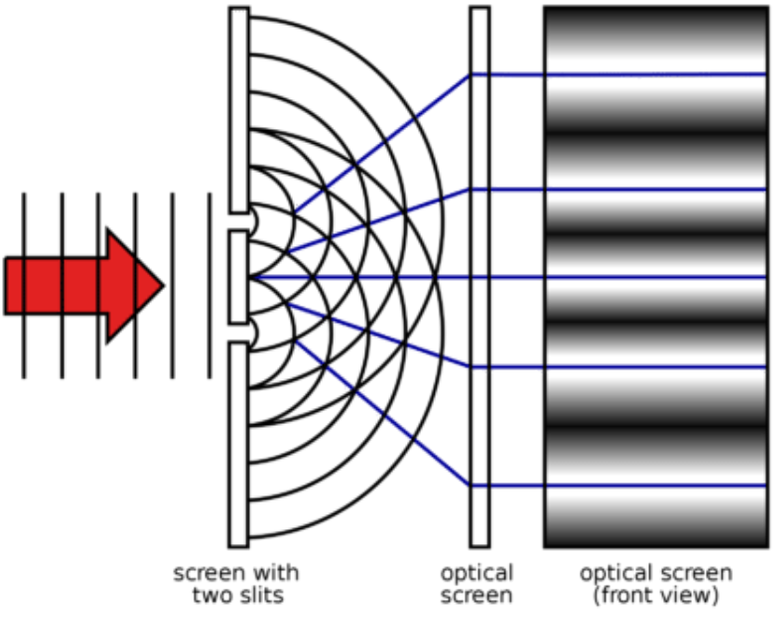
$2.5\lambda = |75.4 - 75.6|$

$2.5\lambda = 0.53$

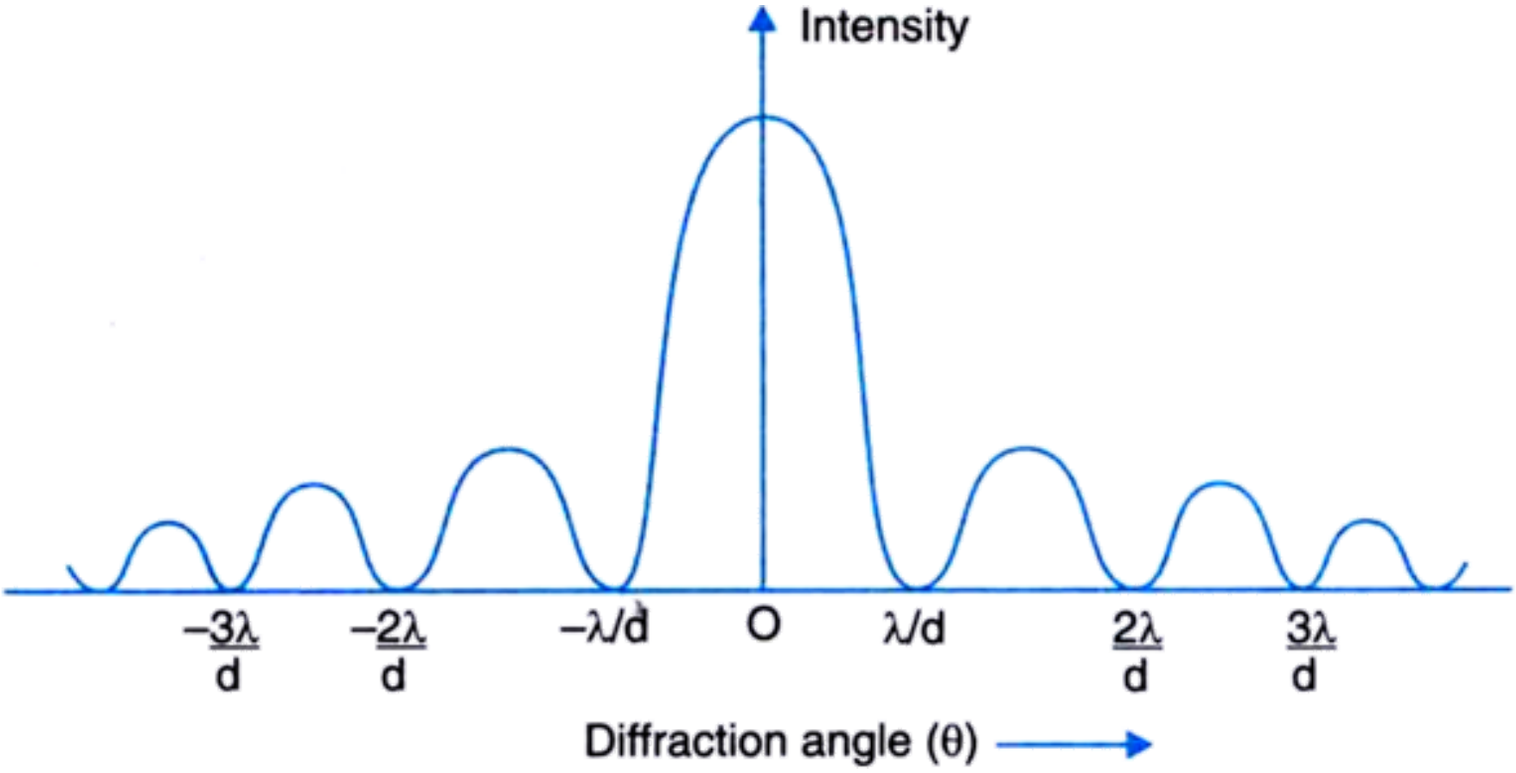
$\lambda = 0.211\,cm$

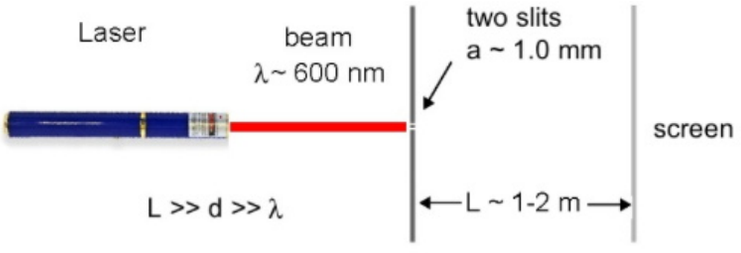
Double Slit Interference Diagrams



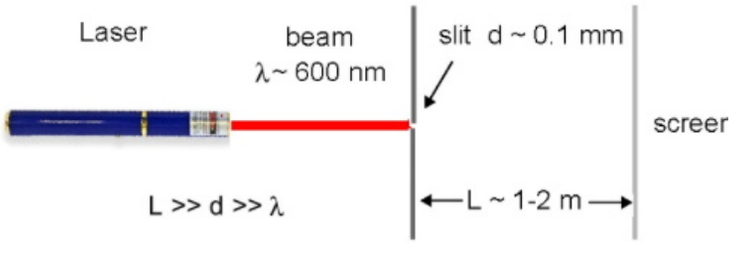


Single Slit Interference Diagrams





Interference from two narrow slits



Diffraction from one (wider) slit