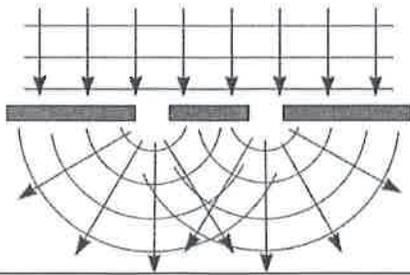


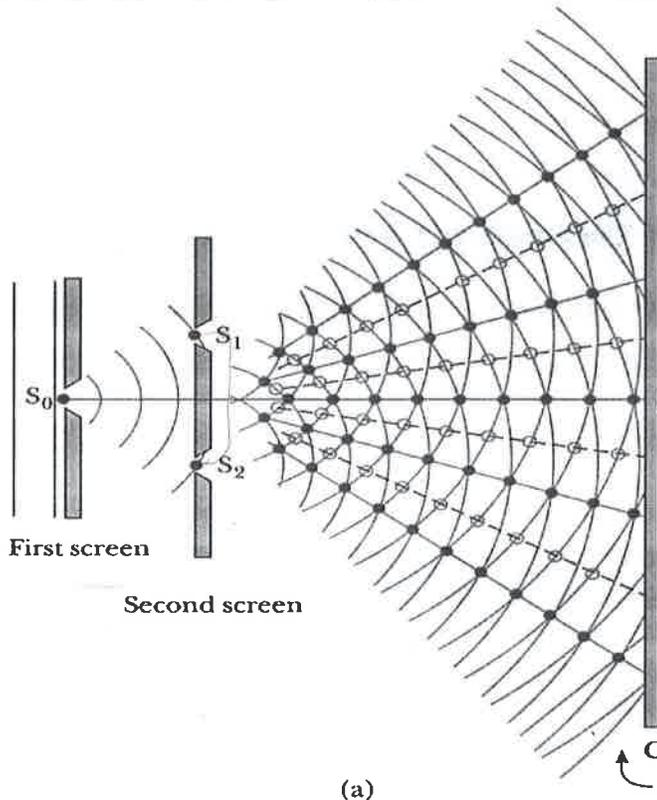
# Double Slit Diffraction and Interference



Component Waves



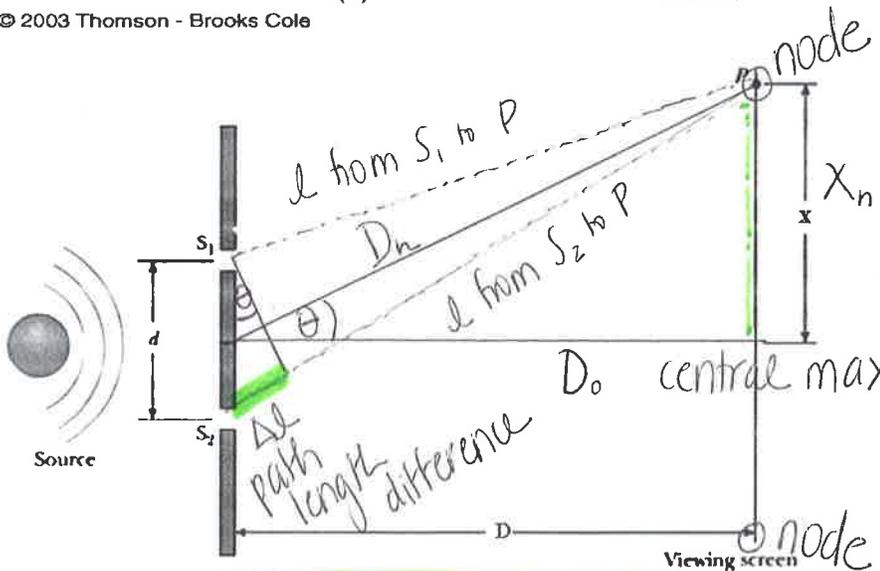
Resultant Wave



max  $n=2$  node numbers  
 min  $n=1$   $n=0, n=1, n=2, \text{ etc...}$   
 max  $n=1$  nodal lines  
 min  $n=0$  1st nodal line is where  $n=0$   
 max  $n=0$  2nd nodal line is where  $n=1$   
 min  $n=0$  → central anti-node  
 or central maximum  
 max  $n=1$   
 min  $n=1$   
 max  $n=2$

## Interference Formulas

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$\Delta l = n\lambda$  Bright Fringes:  
 constructive/anti-node

$$\sin\theta = \frac{\lambda_n}{D_n} = \frac{n\lambda}{d}$$

$\Delta l = (n + \frac{1}{2})\lambda$  Dark Fringes:  
 destructive/node

$$\sin\theta = \frac{\lambda_n}{D_n} = \frac{(n + \frac{1}{2})\lambda}{d}$$

$$\sin\theta = \frac{\lambda_n}{D_n} = \frac{\Delta l}{d}$$