$$\boxed{\Delta\phi = k\Delta x}$$

$\Delta\phi \rightarrow$ phase Difference

$\Delta x \rightarrow$ path Difference

$$\boxed{k = \frac{2\pi}{\lambda}}$$

$$\boxed{\omega = 2\pi f}$$

$$\boxed{I \propto A^2}$$

$$\boxed{I_R = I_1 + I_2 + 2\sqrt{I_1 I_2}\cos\phi}$$

$$\boxed{A_R^2 = A_1^2 + A_2^2 + 2A_1A_2\cos\phi}$$

Constructive Interference	Destructive Int
$A_R/I_R \rightarrow max$	$A_R/I_R \rightarrow min$
$\cos\phi \rightarrow max$	$\cos\phi \rightarrow min$
$\cos\phi \rightarrow +1$	$\cos\phi \rightarrow 0$
$I_R = (\sqrt{I_1} + \sqrt{I_2})^2$	$I_R = (\sqrt{I_1} - \sqrt{I_2})^2$
$A_R = (A_1 + A_2)^2$	$A_R = (A_1 - A_2)^2$
$\Delta x = 0, \lambda, 2\lambda, 3\lambda, 4\lambda \ldots n\lambda$	$\Delta x = \frac{\lambda}{2}, \frac{3\lambda}{2}, \ldots (2n-1)\frac{\lambda}{2}$
$\Delta\phi = 0, 2\pi, 4\pi \ldots 2n\pi$	$\Delta\phi = \pi, 3\pi, 5\pi, 7\pi, \ldots (2n-1)\pi$

If $I_1 = I_2 = I$ & $A_1 = A_2 = A$

$$\boxed{A_R = 2A\cos^2\frac{\phi}{2}}$$

$$\boxed{I_R = 4I\cos^2\frac{\phi}{2}}$$

Interference YDSE

1st Bright

$$\boxed{y_{1B} = \frac{D\lambda}{d}}$$

1st Dark

$$\boxed{y_{1D} = \frac{D\lambda}{2d}}$$

nth Bright

$$\boxed{y_{nB} = \frac{nD\lambda}{d}}$$

nth Dark

$$\boxed{y_{nD} = (2n-1)\frac{\lambda D}{2d}}$$

Fringe width

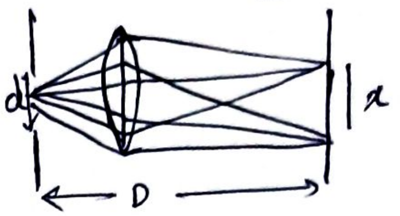
$$\boxed{\beta = \frac{D\lambda}{d}}$$

V < I < B < G < Y < O < R

Wavelength ↑ = R

Wavelength ↓ = V

Diffraction Fraunhofer wala



Cond^n for Dark:

$\Delta x = \lambda, 2\lambda, 3\lambda \ldots n\lambda$

Cond^n for Bright:

$\Delta x = \frac{3\lambda}{2}, \frac{5\lambda}{2}, \frac{7\lambda}{2} \ldots (2n+1)\frac{\lambda}{2}$

1st Bright

$$\boxed{y_{1B} = \frac{3\lambda D}{2d}}$$

2nd Bright

$$\boxed{y_{2B} = \frac{5\lambda D}{2d}}$$

1st Dark

$$\boxed{y_{1D} = \frac{D\lambda}{d}}$$

2nd Dark

$$\boxed{y_{2D} = \frac{2D\lambda}{d}}$$

Angular position

1st Bright

$$\boxed{\theta_{1B} = \frac{3\lambda}{2d}}$$

2nd Bright

$$\boxed{\theta_{2B} = \frac{5\lambda}{2d}}$$

1st Dark

$$\boxed{\theta_{1D} = \frac{\lambda}{d}}$$

2nd Dark

$$\boxed{\theta_{2D} = \frac{2\lambda}{d}}$$

$$\boxed{W_{\theta B} = \frac{\lambda}{d}} \quad \boxed{W_{\theta D} = \frac{\lambda}{d}}$$

Central θ fringe width

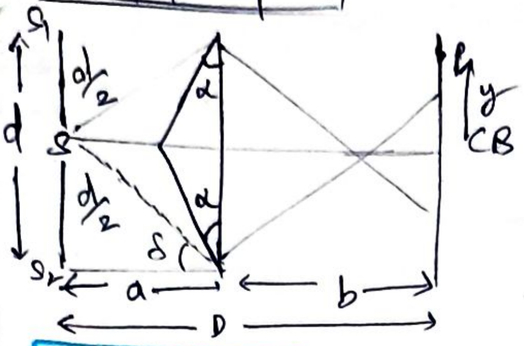
$$\boxed{W = 2\theta = \frac{2\lambda}{d}}$$

fringe width of centre

$\beta = 2y_{1D}$

$$\boxed{\beta = \frac{2D\lambda}{d}}$$

Fresnel Biprism



$$\boxed{\delta = (\mu - 1)\alpha}$$

fringe width

$$\boxed{\beta = \frac{\lambda D}{d}}$$

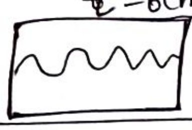
$$\boxed{d = 2a(\mu-1)\alpha}$$

Bandwidth in Biprism:

$$\boxed{X = \frac{\lambda D}{\sqrt{ab}}}$$

· Brewster's law:

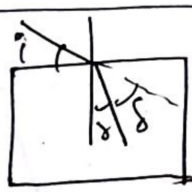
$$\boxed{\mu = \tan i_p}$$



$$\boxed{\lambda_g = \frac{\text{thickness}}{\text{No. of waves}} = \frac{6}{N}}$$

$\mu_{violet} > \mu_{yellow} > \mu_{red}$

#



$i = r + \delta$

$$\boxed{\delta = i - r}$$

1. Velocity of light in vaccum :

$$\boxed{c = \nu\lambda}$$

2. Snell's law :

$$\boxed{{}_1\mu_2 = \frac{\sin i}{\sin r} = \frac{\mu_2}{\mu_1} = \frac{C_1}{C_2} = \frac{\lambda_1}{\lambda_2}}$$

3. Velocity of light in medium

$$\boxed{V = \frac{C_a}{\mu}} \quad \text{or} \quad \boxed{\mu = \frac{C_{air}}{C_{medium}}}$$

4. Wavelength of light in medium

$$\boxed{\lambda_m = \frac{\lambda_{air}}{\mu}}$$

5. Relation Between R.I of different medium:

i. ${}_a\mu_b \times {}_b\mu_c \times {}_c\mu_a = 1$

ii. $${}_a\mu_b = \frac{1}{{}_b\mu_c \times {}_c\mu_a}$$

iii. $${}_c\mu_a = \frac{1}{{}_a\mu_c}$$

iv. ${}_a\mu_b \times {}_b\mu_c = {}_a\mu_c$

6. Wave No. $\bar{\nu} = \frac{1}{\lambda}$

7. Critical angle : $i_c = \sin^{-1}\left(\frac{1}{\mu}\right)$

Interference is Based on Conservation of Energy