

Single Slit Defraction

Huygens principle, each point on a wave front can be considered as a point source of tiny secondary wavelets that spread out in front of the wave at the same speed as the wave itself

there is a very bright double region and the surrounding regions are of decreasing size and intensity

Be able to draw single slit experiment

a or w = width of the slit

T or θ = angle from the center of the screen

Draw the wave nature of the lines

- everything is measured from the middle ($a/2$)
- when $\frac{a}{2} \sin T = \frac{\lambda}{2}$ the waves are out of phase by π
- thus the waves cancel each other out forming a minima

we can develop a formula for minima

$$\frac{W}{2} \sin \theta = n \frac{\lambda}{2}$$

$$a \sin T = n\lambda$$

$$\sin T = n \frac{\lambda}{a}$$

... missed formulas

since we know that the width h of the minima will be

$$\sin T = n \frac{\lambda}{a}$$

since T is a small angle $\sin T \approx \tan T$

$$\frac{y}{L} = \frac{\lambda}{a}$$

QUESTIONS