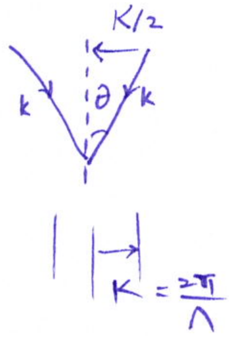
3/30/'21

⟨ Rayleigh criterion ⟩ : $\frac{\lambda}{2}$



$$2k\sin\theta = K = \frac{2\pi}{\Lambda} = \frac{4\pi\sin\theta}{\lambda}$$

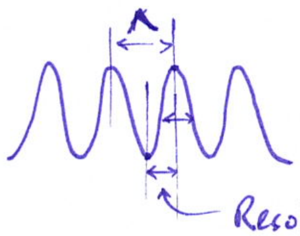
$$\therefore \frac{1}{\Lambda} = \frac{2\sin\theta}{\lambda}$$

For min Λ, $\sin\theta = 1$, $\boxed{\Lambda = \frac{\lambda}{2}}$, $\boxed{\theta = \frac{\pi}{2}}$

$$E = E_i + E_r = E_0 e^{i(kx-\omega t)}(1+e^{iKx})$$

$$I = (1+e^{iKx})(1+e^{-iKx}) = 1+1+2\cos Kx = \boxed{2(1+\cos Kx)},$$

$$K = 2k\sin\theta.$$



Resolution : $\frac{\lambda}{4}$.

⟨Technique to overcome the Rayleigh limit⟩

1. Classical method : multifrequency beam
→ reduced visibility