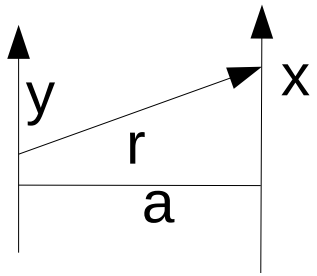


## Interference vlnění – sečtení více vln, štěrbiná:

### Aproximativní vzdálenost bod – stínítko:



$$E = \int E(r) dr = \frac{A}{r_0} \int e^{-ikr(x,y)} dr$$

$$E = \frac{A}{r_0} e^{-ika} \int e^{[-ikx/a]y} dy$$

$$\rightarrow I = E^2 = \left| \frac{A}{r} \right|^2 \dots$$

$$r = \sqrt{a^2 + (x-y)^2} = \sqrt{a^2 + x^2 - 2xy + y^2} \approx \sqrt{a^2 + x^2 - 2xy} \approx \sqrt{a^2 - 2xy}$$

$$\sqrt{1+z} = (1+z)^{1/2} \approx 1+z/2 \quad \frac{1}{1+z} \approx 1-z \quad (1+z)^n \approx 1+nz$$

$$r = a\sqrt{1-2xy/a^2} \approx a(1-xy/a^2) = a - xy/a = a - (x/a)y$$

### Difrakce na štěrbině o šířce $d$ :

$$E = \int_{-d/2}^{d/2} e^{iqy} dy = \frac{1}{iq} [e^{+iqd/2} - e^{-iqd/2}] = \frac{1}{q} 2 \sin(qd/2) = \frac{d}{\frac{qd}{2}} \sin(qd/2) = d \operatorname{sinc}(qd/2)$$

$$e^{ix} - e^{-ix} = (\cos x + i \sin x) - (\cos x - i \sin x) = 2i \sin x$$

$$e^{ix} + e^{-ix} = (\cos x + i \sin x) + (\cos x - i \sin x) = 2 \cos x$$

$$\operatorname{sinc} x \equiv \frac{\sin x}{x}$$