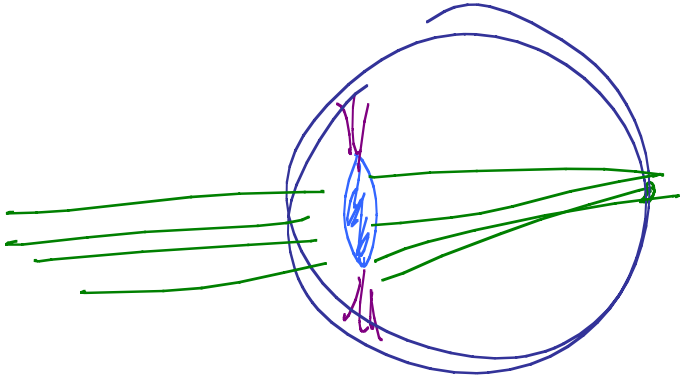
Phys 1120-4 11/21/12

Note Title 11/21/2012

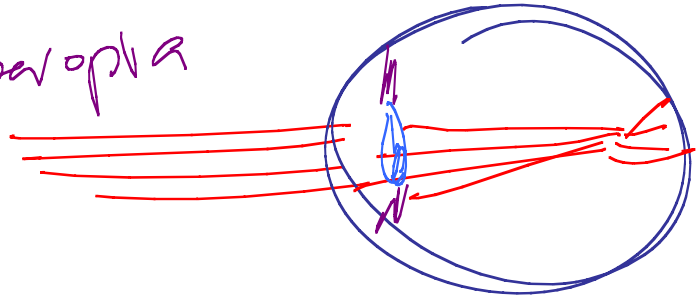
Lenses

Eye!

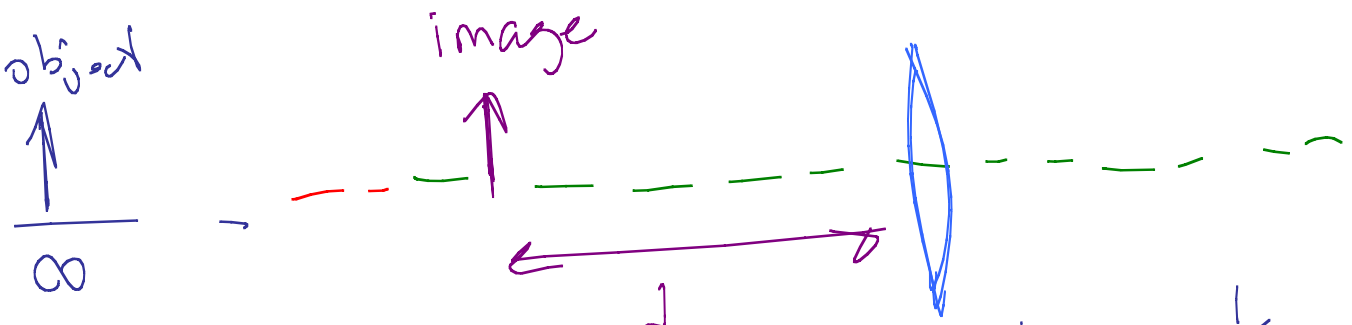


Nearsightedness

Myopia, Hyperopia



Such a person can focus objects at a distance d. (Far point)



Strategy

Take $s = \infty$ $s' = -d$ $\longrightarrow$ $\frac{1}{\infty} + \frac{1}{(-d)} = \frac{1}{f}$

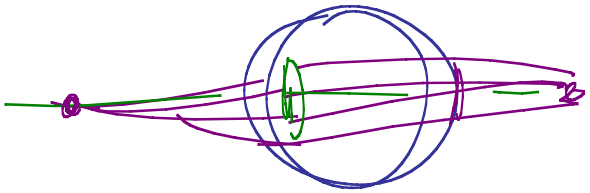
$f = -d$ Diverg

Another problem

Farsightedness

Presbyopia

Normal eyeball can't handle $s < 25$ cm



Can see things as close as d (near point)

Strategy: Object is at 25 cm

Image is at d

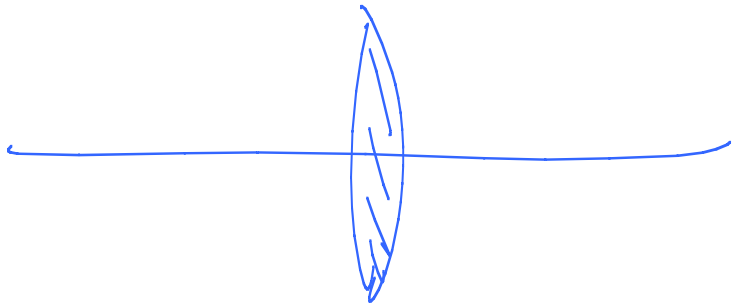
$d > 25$ cm

$$\frac{1}{25\,cm} + \frac{1}{(-d)} = \frac{1}{f}$$

$d > 25\,cm$

$f > 0$ Convex

$\frac{1}{f}$ m^{-1} = diopter

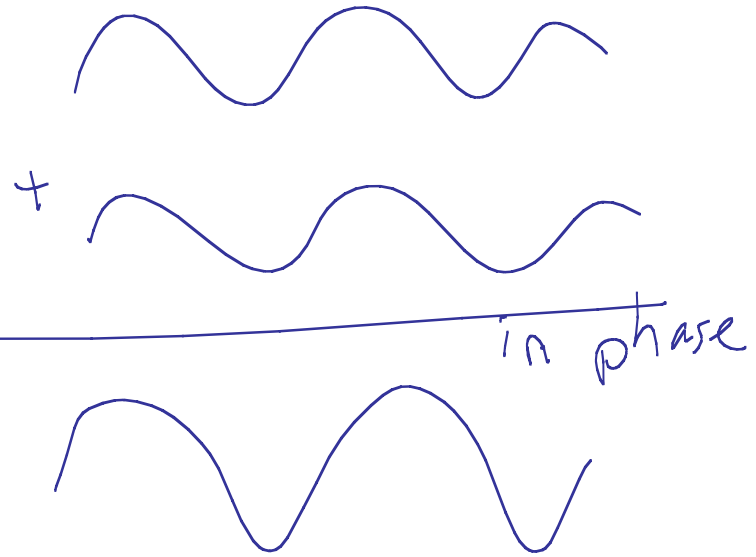


Chap 32

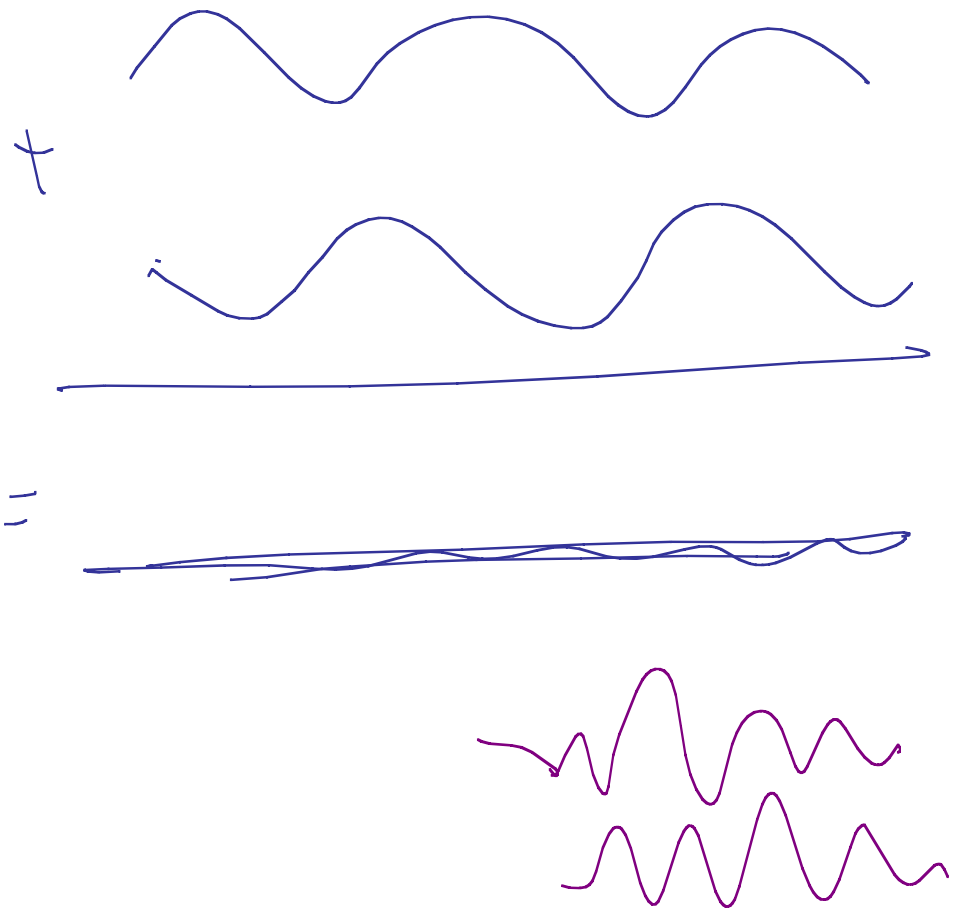
Interference & Diffraction

Wave nature of light

Recall waves from 210



Constructive interference



Destructive interference

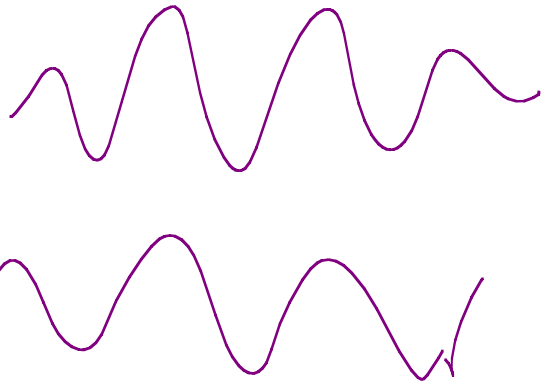
Normally light

is : Not monochromatic

Not coherent

Bits of light not in phase

Laser light is coherent



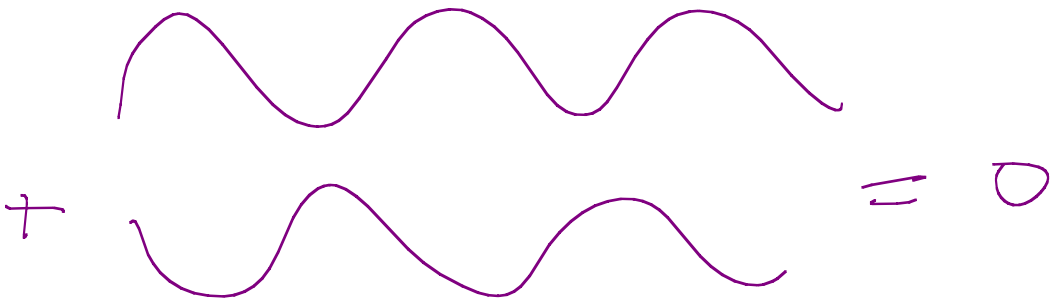
Do experiments where sometimes have const interf destruc interf.

We "hold back" part of wave, waves cancel or add

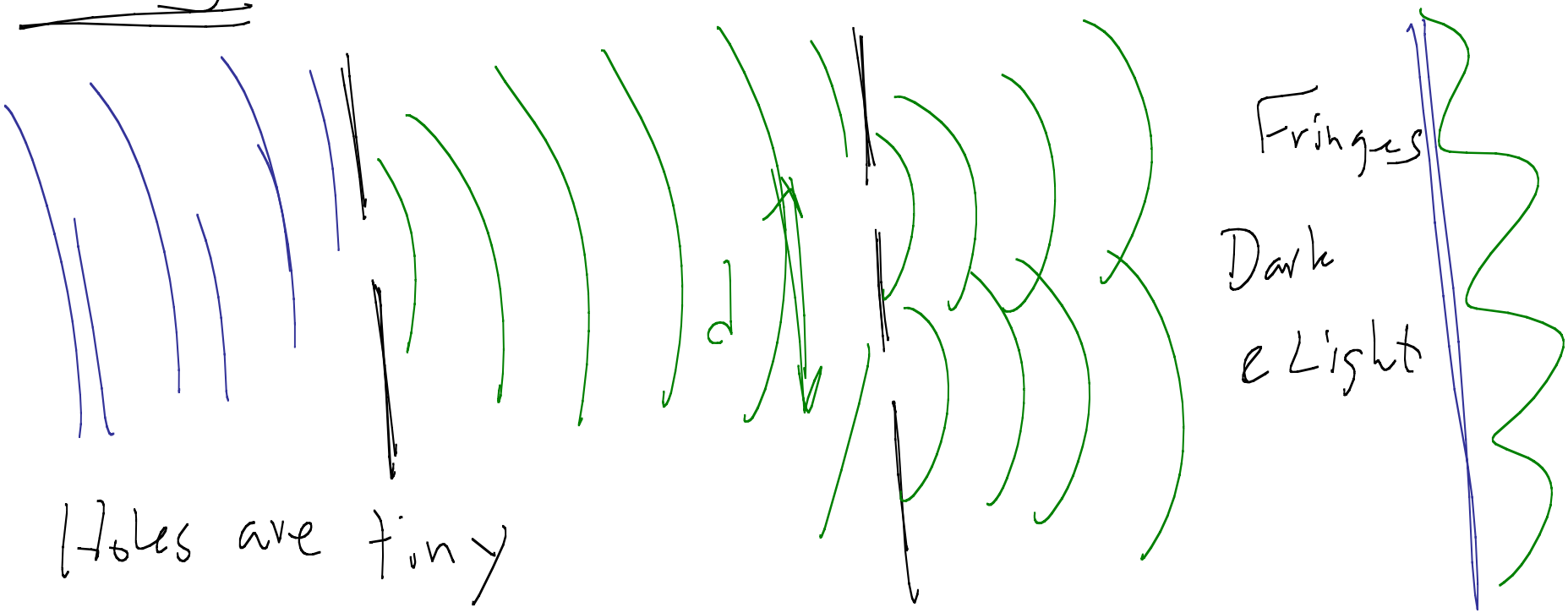
If we hold one wave back by integer # wavelengths, still in phase constructive

hold one wave back $\frac{1}{2}$, $\frac{3}{2}$ $\frac{5}{2}$

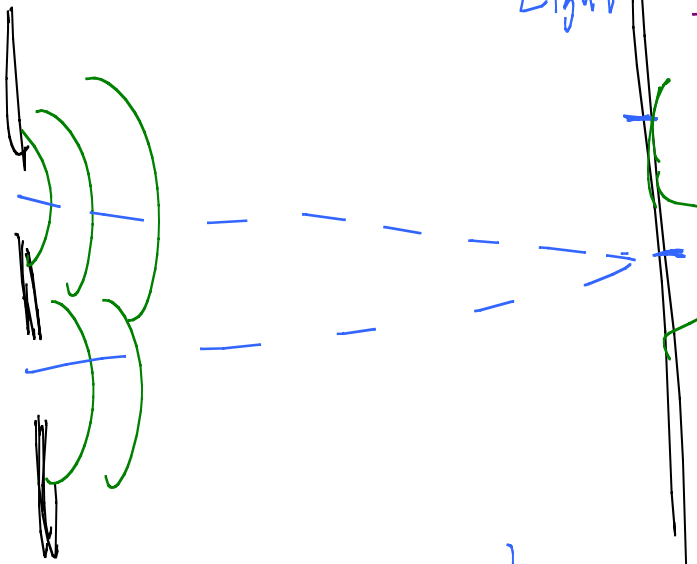
half - odd # of wavelengths, destructive



Young Double-Slit Expt ~1801



Holes are tiny



Light Waves are full λ different. Constructive

Dark

One wave is held $\frac{1}{2}\lambda$ behind other

Same phase Light

More to come...