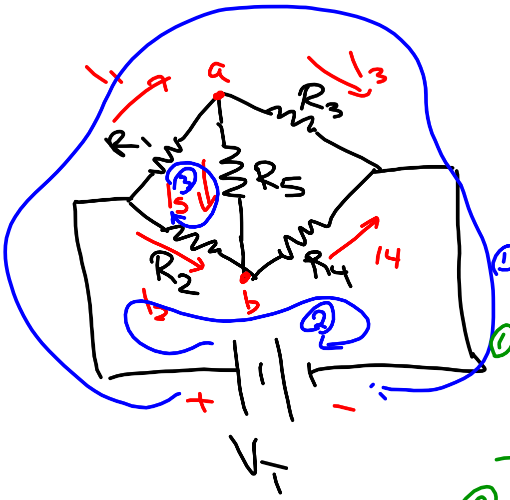


Point a

$I_1 = I_3 + I_5$

Point b

$I_2 + I_5 = I_4$

① ☺ $= V_T - V_1 - V_3$

$V_T = V_1 + V_3$

② $V_T = V_2 + V_4$

③ ☺ $= -V_1 - V_5 + V_2$

$V_2 = V_1 + V_5$

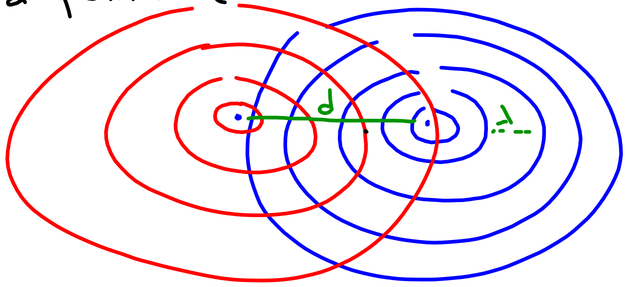
A^{-1} matrix A

$$\begin{bmatrix} 1 & 0 & -1 & 0 & -1 \\ 1 & 0 & 0 & -1 & 1 \\ R_1 & 0 & R_3 & 0 & 0 \\ 0 & R_2 & 0 & R_4 & 0 \\ R_1 & -R_2 & 0 & 0 & R_5 \end{bmatrix} \begin{bmatrix} I_1 \\ I_2 \\ I_3 \\ I_4 \\ I_5 \end{bmatrix} = \begin{bmatrix} ☺ \\ ☺ \\ V_T \\ V_T \\ ☺ \end{bmatrix}$$

$$\begin{bmatrix} I_1 \\ I_2 \\ I_3 \\ I_4 \\ I_5 \end{bmatrix} = A^{-1} \begin{bmatrix} 0 \\ 0 \\ V_T \\ V_T \\ 0 \end{bmatrix}$$

Interference

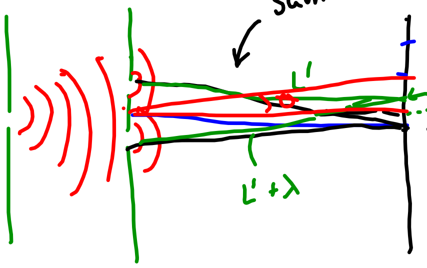
2 point (or double slit)



Young's Experiment

For light d small, θ, small

same distance, in phase



← constructive interference 1st order max

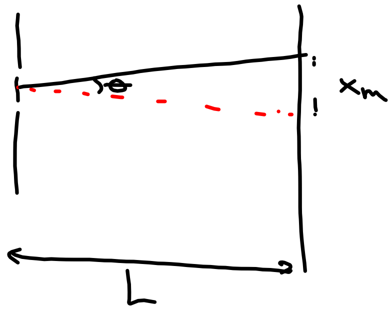
← constructive interference 0th max

laser - light amplification by stimulated emission of radiation

order of interf

$$d \sin\theta = m\lambda$$

$\sin\theta \approx \tan\theta$ for small θ



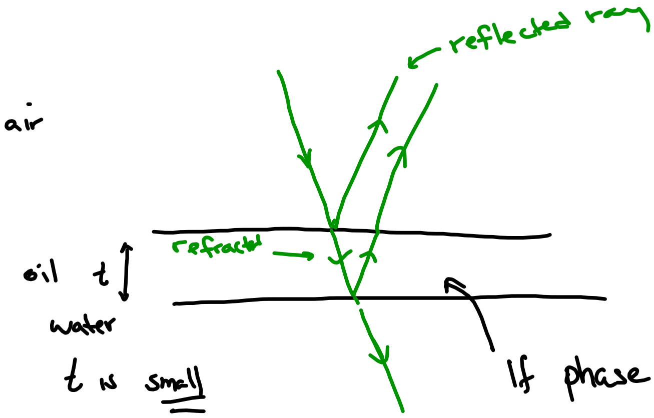
(x_1 = distance from 0 order max to 1st

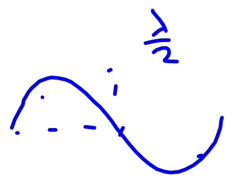
x_2 = dist from 0 order max to 2nd)

$$\sin\theta \approx \frac{x_m}{L}$$

$$d\sin\theta = m\lambda$$

$$\frac{d x_m}{L} = m\lambda$$





t is small

If phase change at both boundaries

$m\lambda = 2t$ for constructive interference

($2t$: path difference.)

For light if $n_2 > n_1$ phase change

if $n_2 < n_1$ no phase change

If only at one boundary

$m\lambda = 2t \pm \frac{\lambda}{2}$