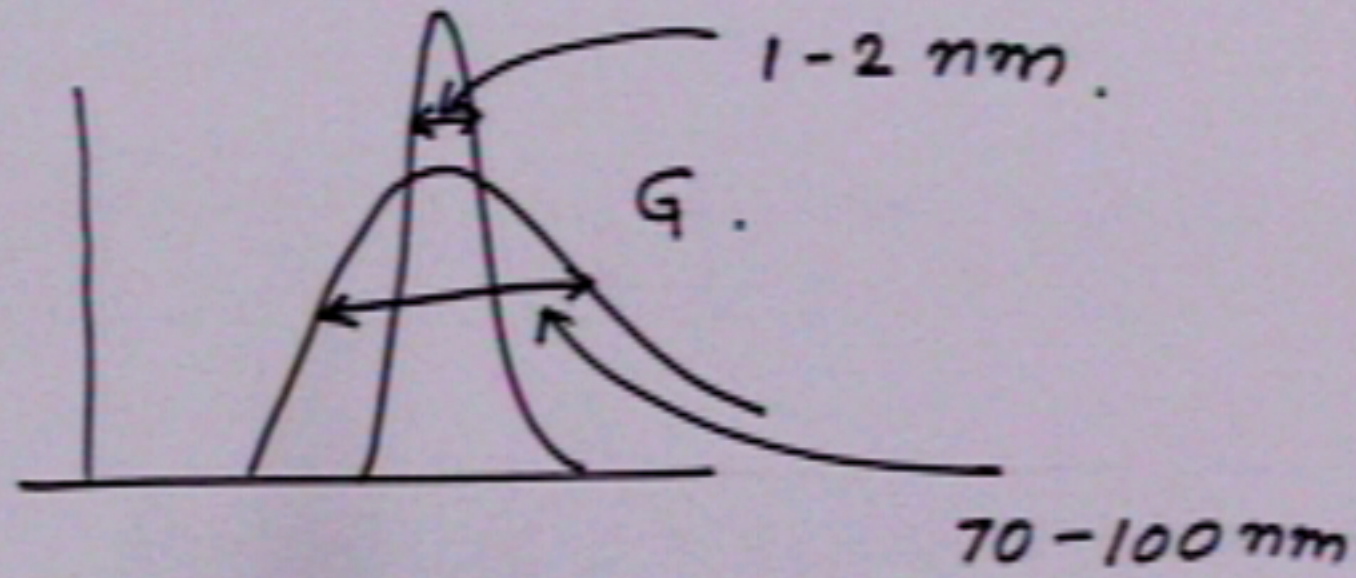
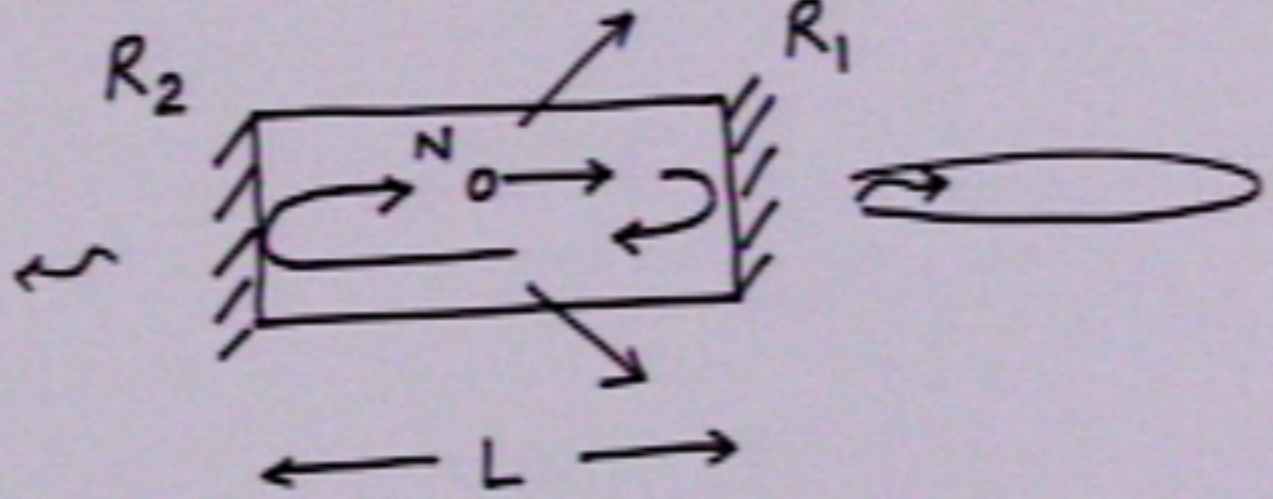

1-2 nm.
G.
70-100 nm

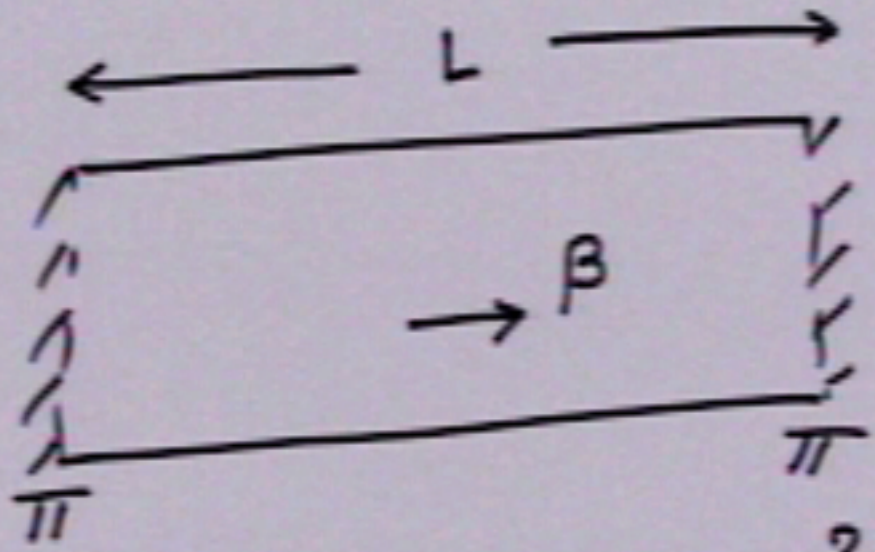
Fabry Perot cavity



Gain G, Attn const α

$$N = N\, e^{(G-\alpha)2L} \cdot R_1 R_2$$

$$R_1 R_2\, e^{(G-\alpha)2L} = 1.$$



Phase constant $\beta = \frac{2\pi}{\lambda} \cdot n_{eff}$

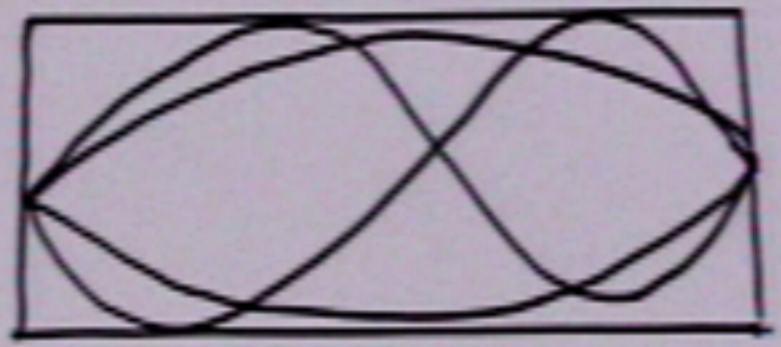
$2\pi + 2\beta L = 2m\pi$ m = integer

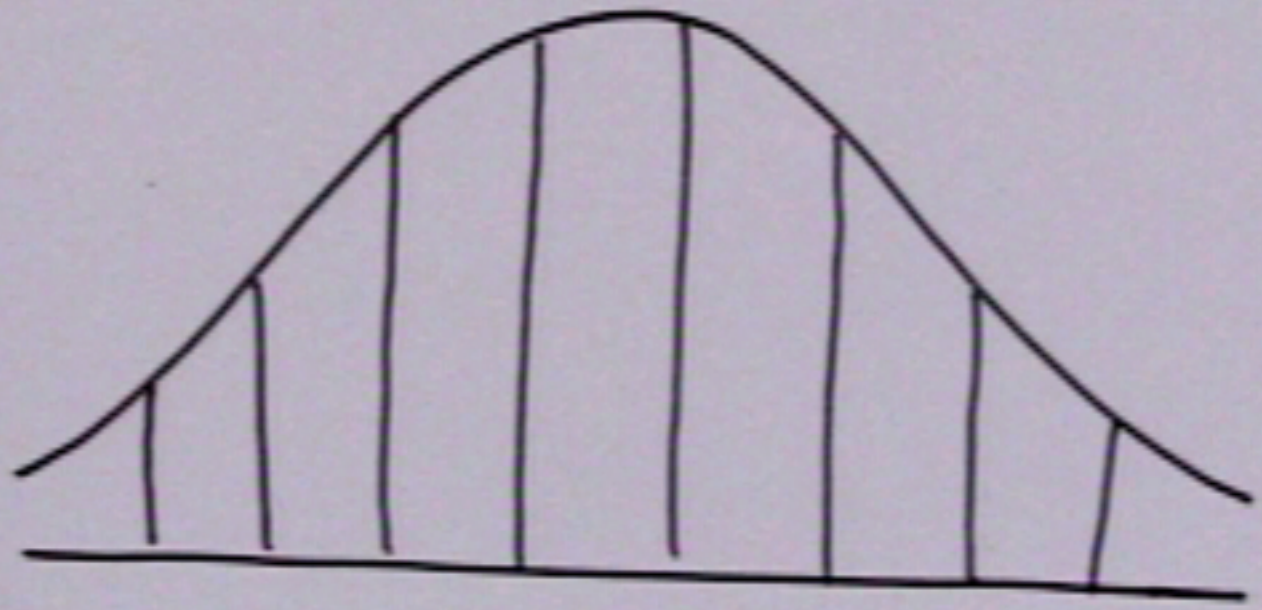
$\Rightarrow$

$$2\beta L = 2m\pi$$

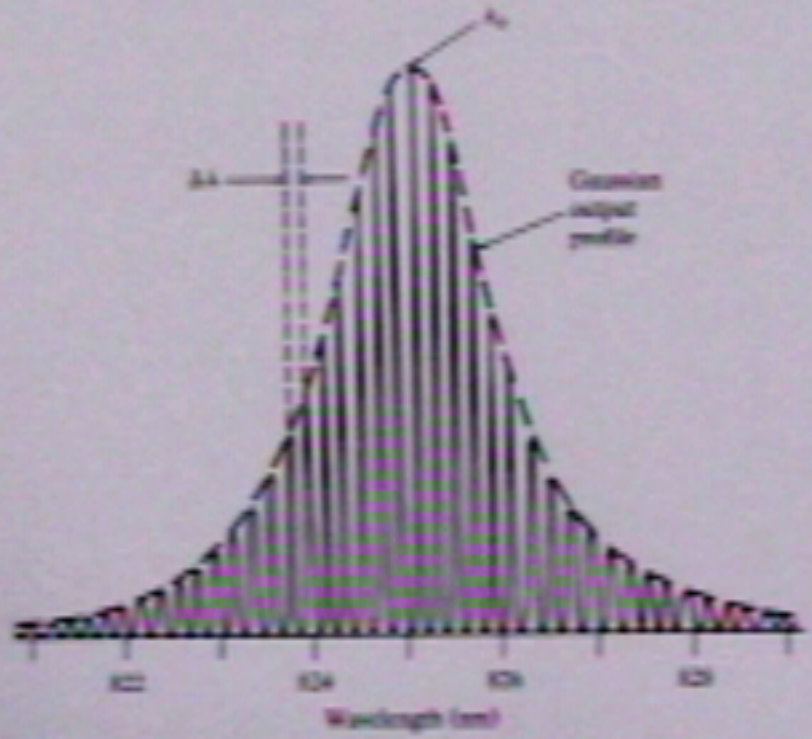
$$2 \cdot \frac{2\pi}{\lambda} \cdot n_{eff} L = 2m\pi$$

$$L = \frac{m\lambda}{2 n_{eff}}$$





Fabry-Perot laser spectrum



Gain Coefficient

$$G \propto \frac{1}{f^2}$$

$$\propto \frac{1}{\tau_{sp}}$$

$$\propto (N_2 - N_1)$$

$$\propto \frac{1}{n^2}$$