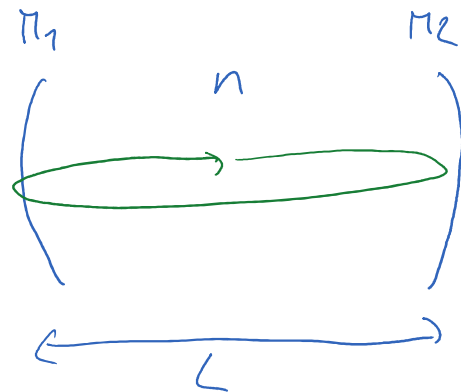


Optical Resonators Cavity

Fabry - Perot interferometer

Mittwoch, 8. Dezember 2021 16:10



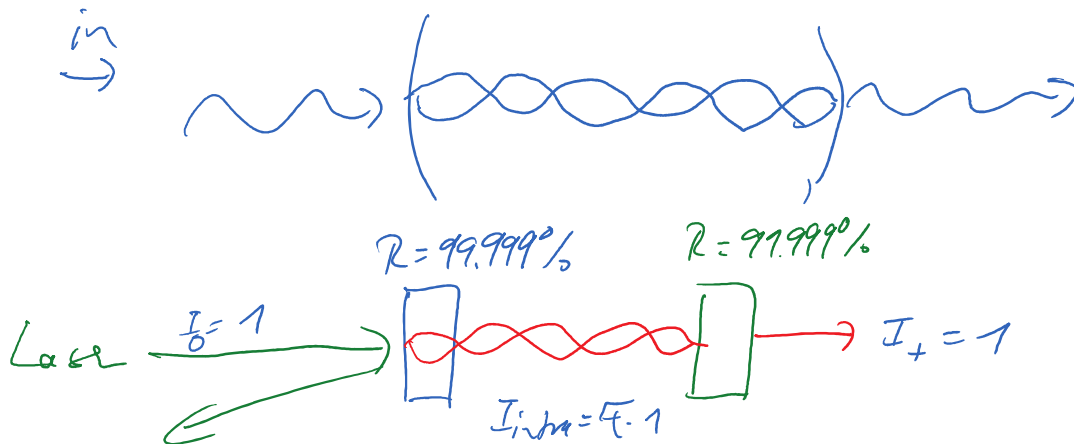
optical path length of 1 round trip = $2 \cdot n \cdot L$

resonator modes for constructive interference

separation : free spectral range

$$\Delta \nu_{FSR} = \frac{c}{2nL}$$

On resonance;

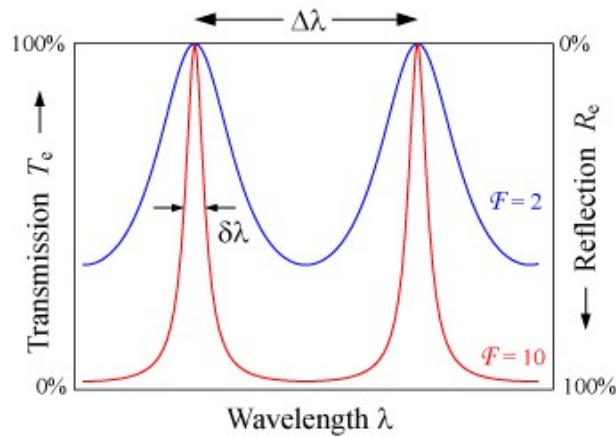


Finesse $F = \frac{\pi \sqrt{R}}{1 - R}$

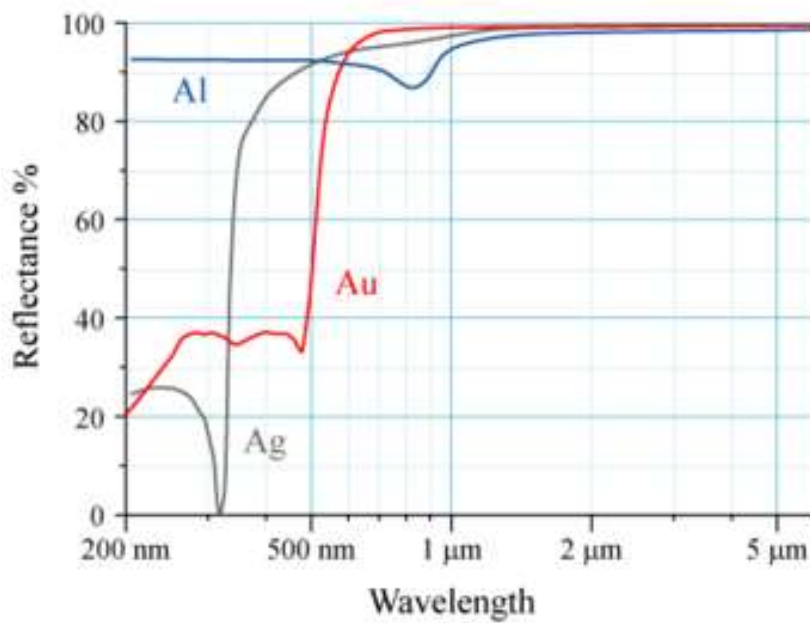
$$I_{trans} = \frac{I_{in}}{1 + \frac{4F^2}{\pi^2} \sin^2\left(\frac{\Delta\phi}{2}\right)}$$

$$\frac{\Delta\phi}{2} = \frac{2\pi}{\lambda} L \cos \alpha$$

$$\alpha = \text{AOI}$$



Mirrors

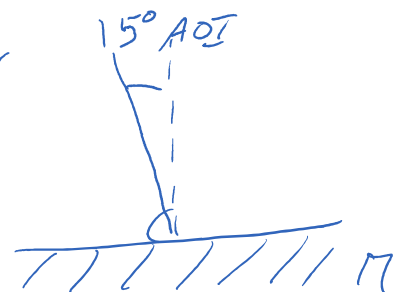


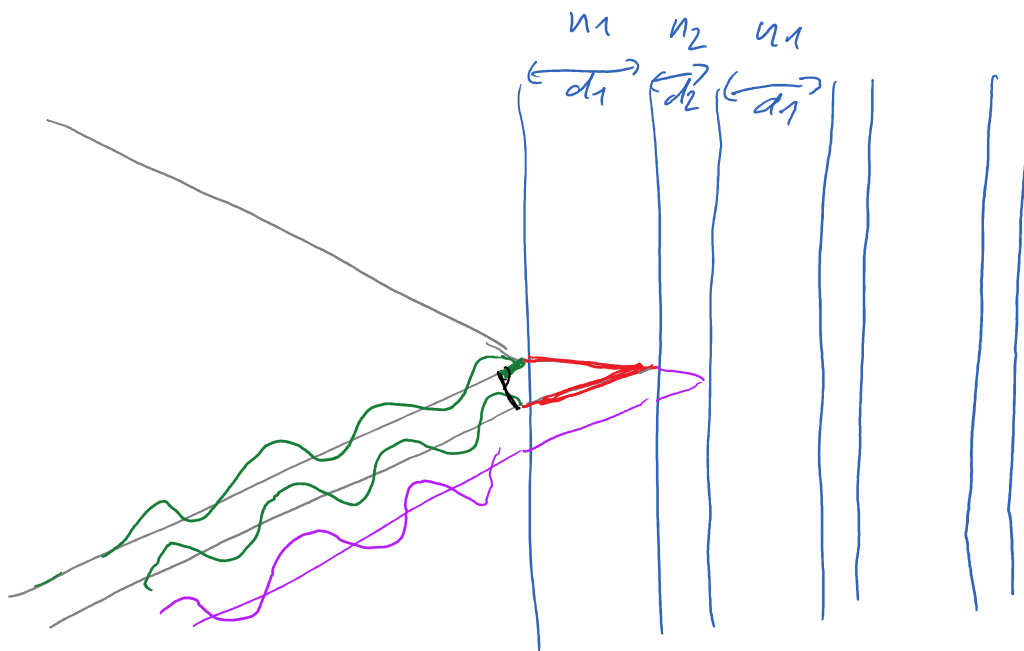
Optical coating : Multilayer dielectric stacks

mirror (HR) : $\frac{\lambda}{4}$ (for 0° AOI)

AR : $\frac{\lambda}{2}$

working principle

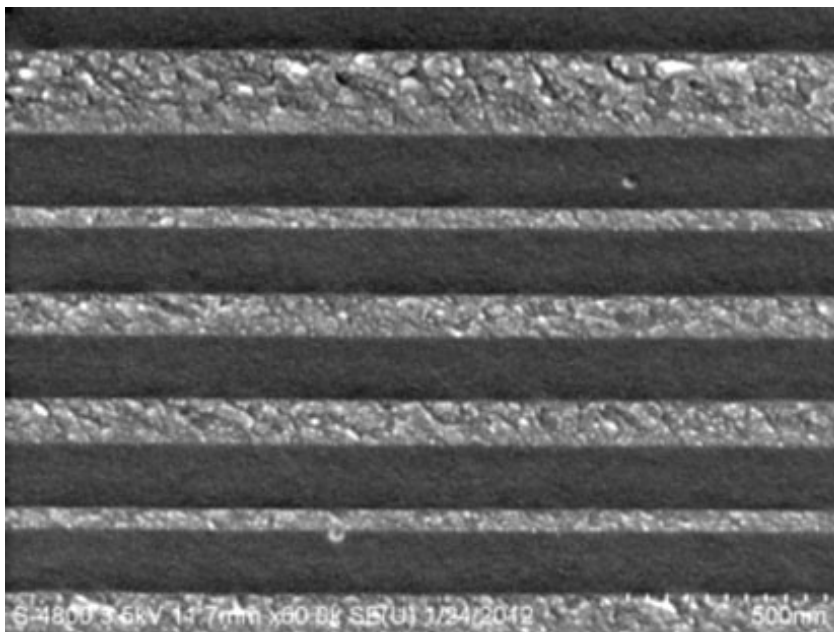


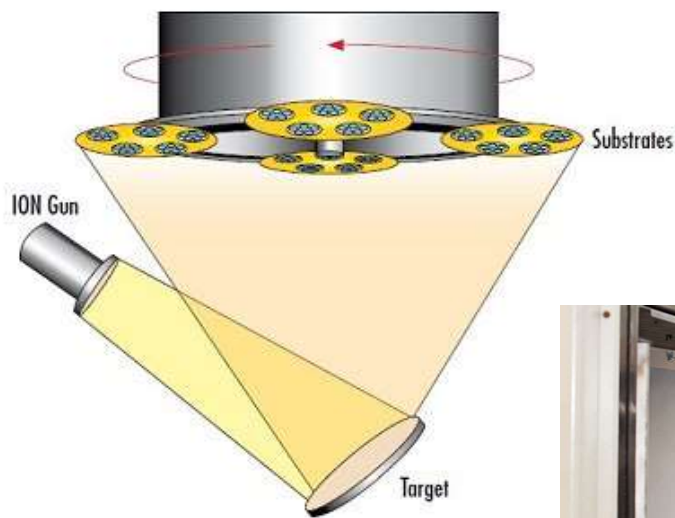
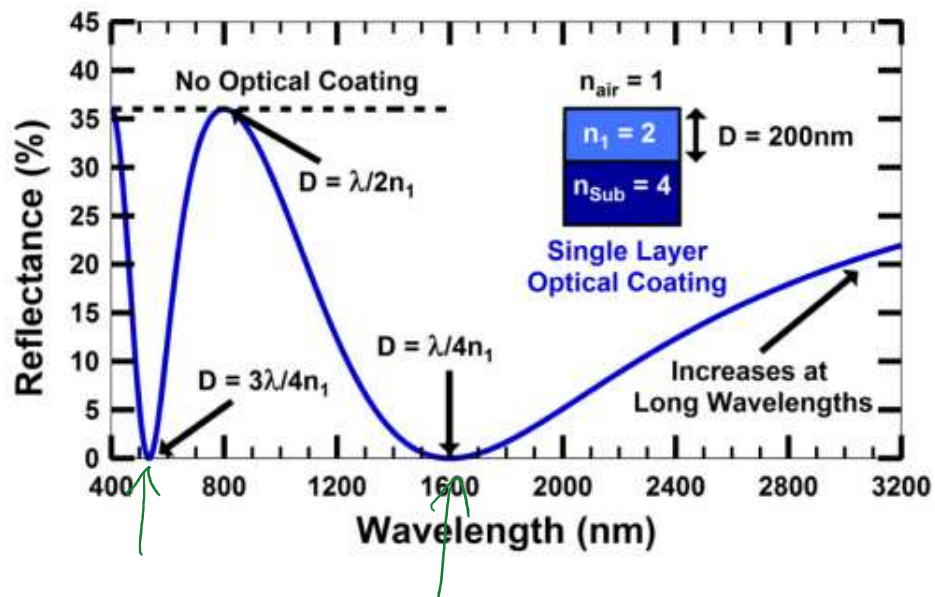


HR constructive interference
(AR de - n -)

wavelength phase π !

on reflection off
higher n medium





IBS

Ion Beam Sputtering

