- **<u>Applications examples</u> :**

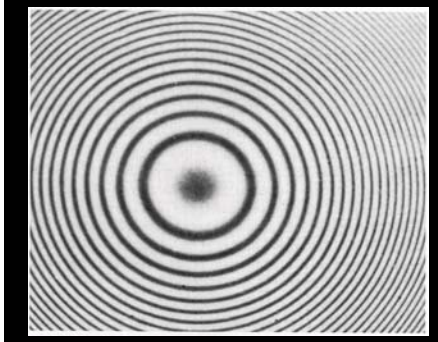
1) Nonreflective coatings for solar cells :

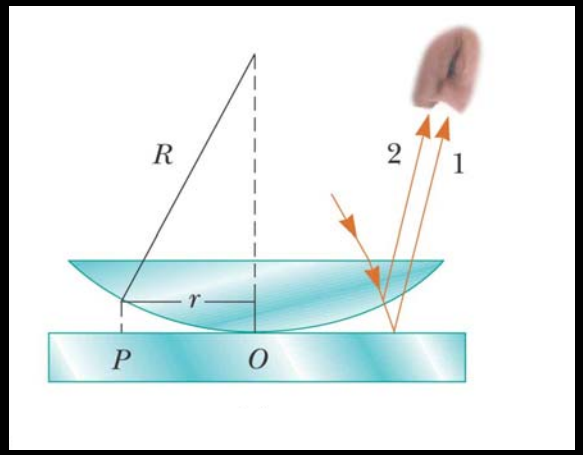
   Reflective losses from a silicon solar cell are minimized by coating the surface of the cell with a thin film of silicon monoxide (SiO).

2) Anti-reflectance coating making an airplane invisible to radar.

3) CD

[2] Interference in Newton's rings

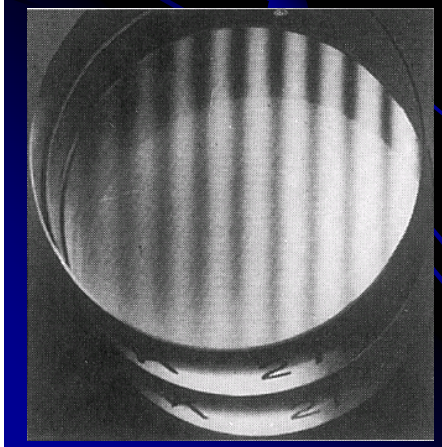


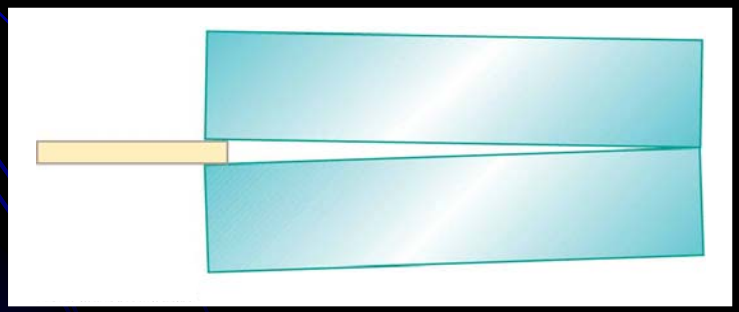


The combination of rays reflected from the flat plate and the curved glass gives rise to an interference pattern known as Newton's rings.

- Ray 1 : 180° phase change upon reflection.
- Ray 2 : 0° phase change upon reflection.

[3] Interference in wedge-shaped film.

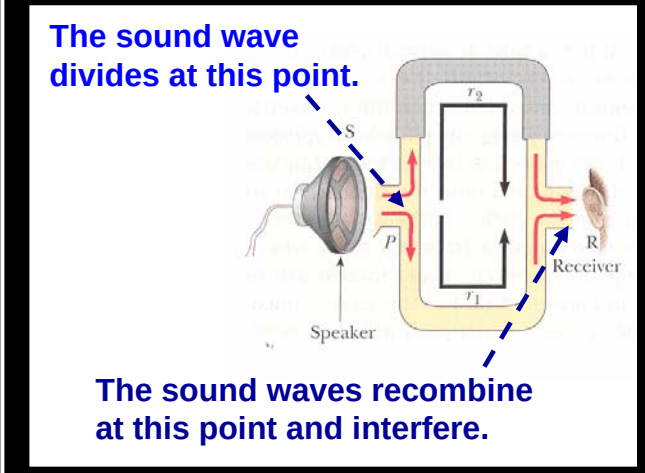


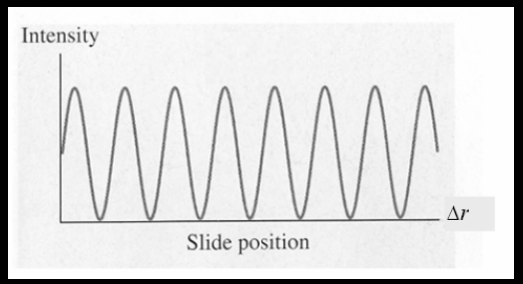


37.6 The Michelson Interferometer

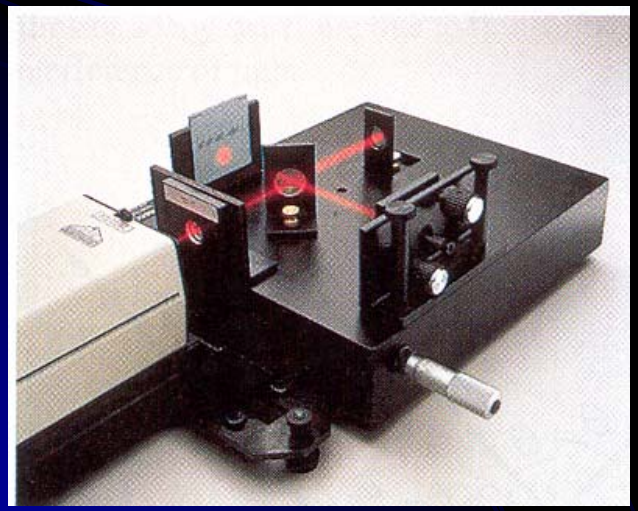
⇒ An optical interferometer analogous to the acoustical interferometer.

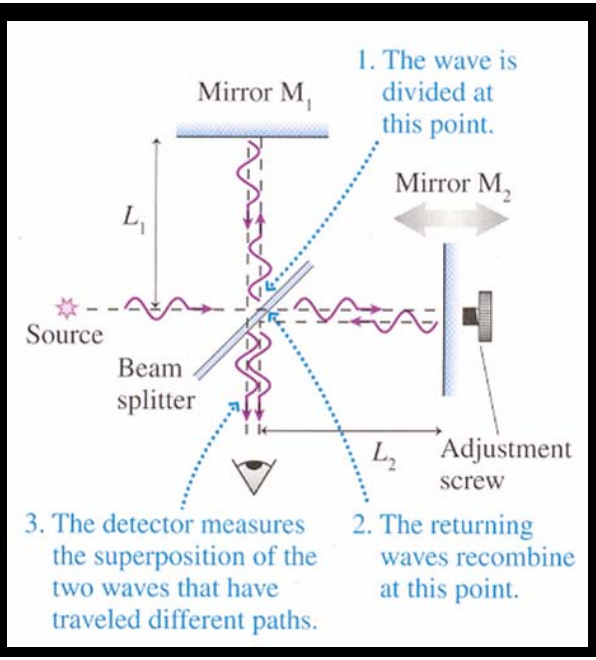
- Recall : An acoustical interferometer.

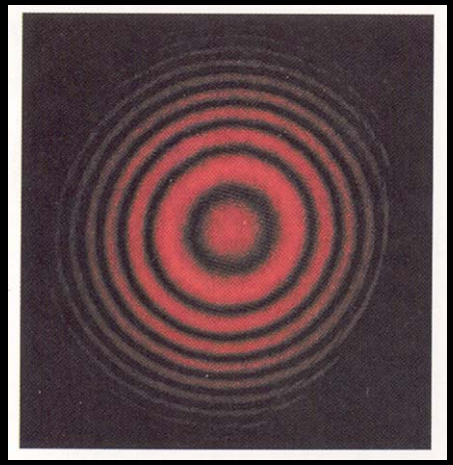




CI & DI measured as the slide is withdrawn.

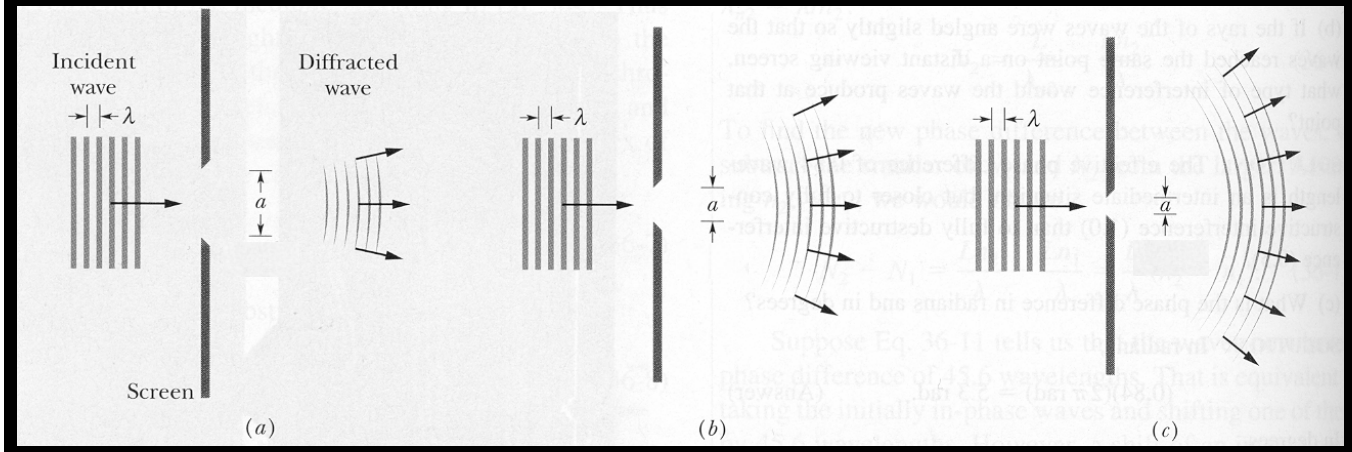




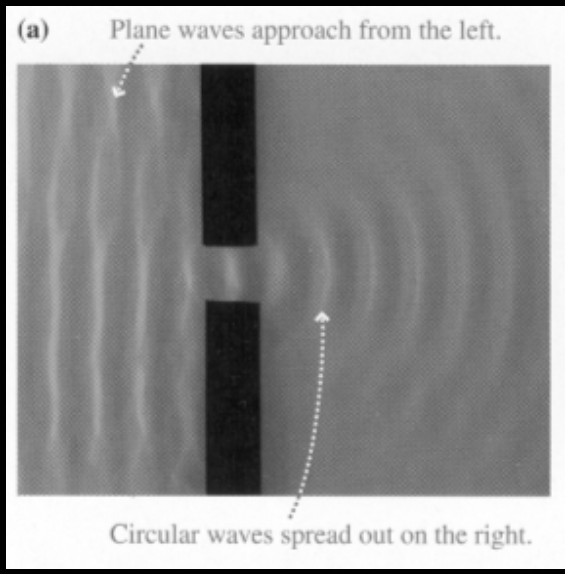


Chapter 38. Diffraction and Polarization

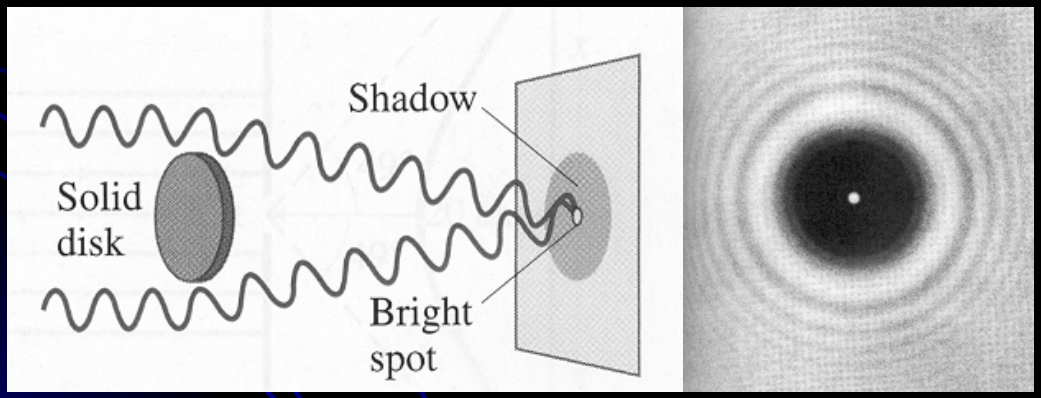
38.1 Diffraction → Divergence of light from its initial line of travel.



Diffraction in water wave



- *Fresnel's bright spot* (1819)

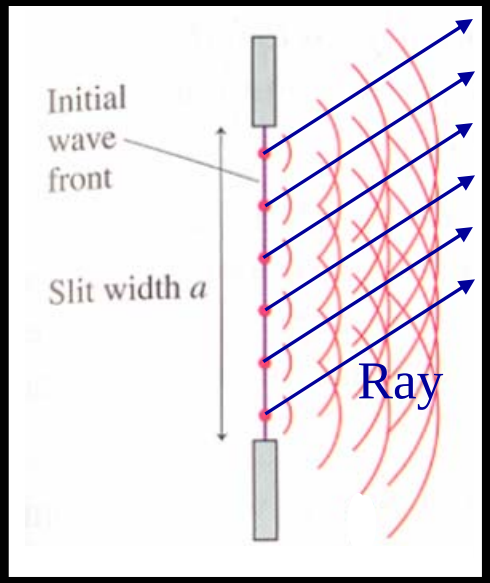


38.2 Diffraction from narrow slits

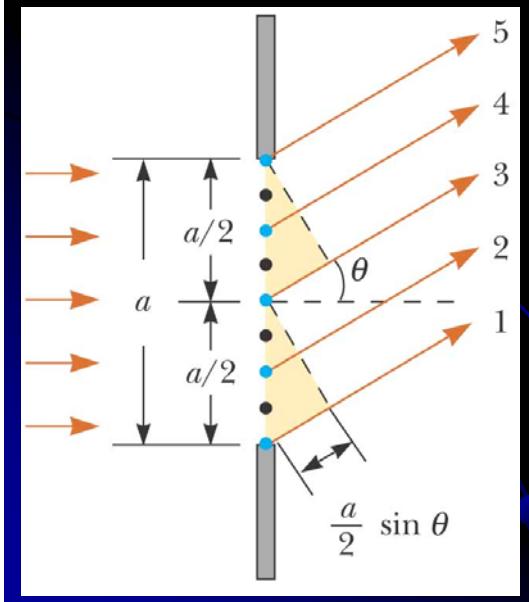
38.2.1. Geometrical analysis

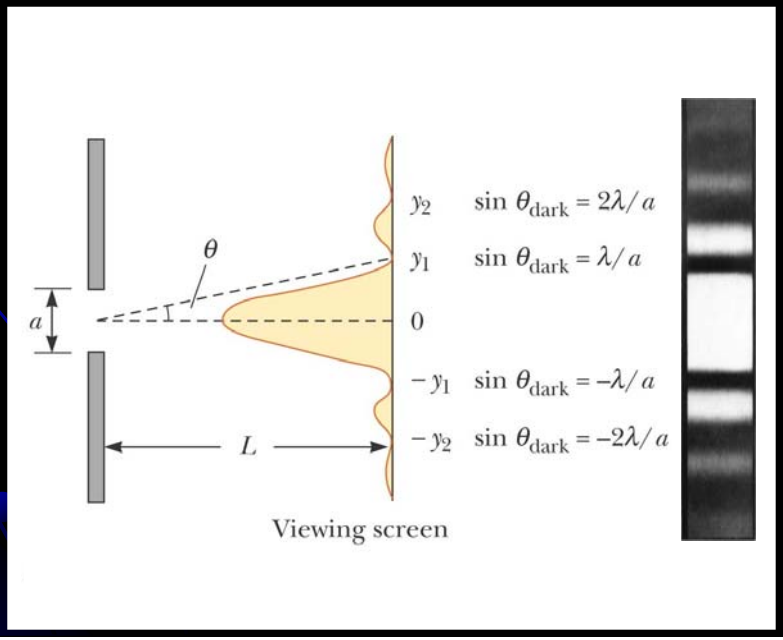
Huygen's principle :

The wavelets from each point on the initial wave front overlap and interfere, creating a diffraction pattern on the screen.



- Fraunhofer diffraction : Assuming that parallel rays (plane waves) of light fall on the slit, and pass through to a viewing screen very far away.





$$\sin\theta_{dark} = m\,\lambda / a$$

with $m = \pm 1, \pm 2, \pm 3, \ldots$