



TUT'RENTRÉE

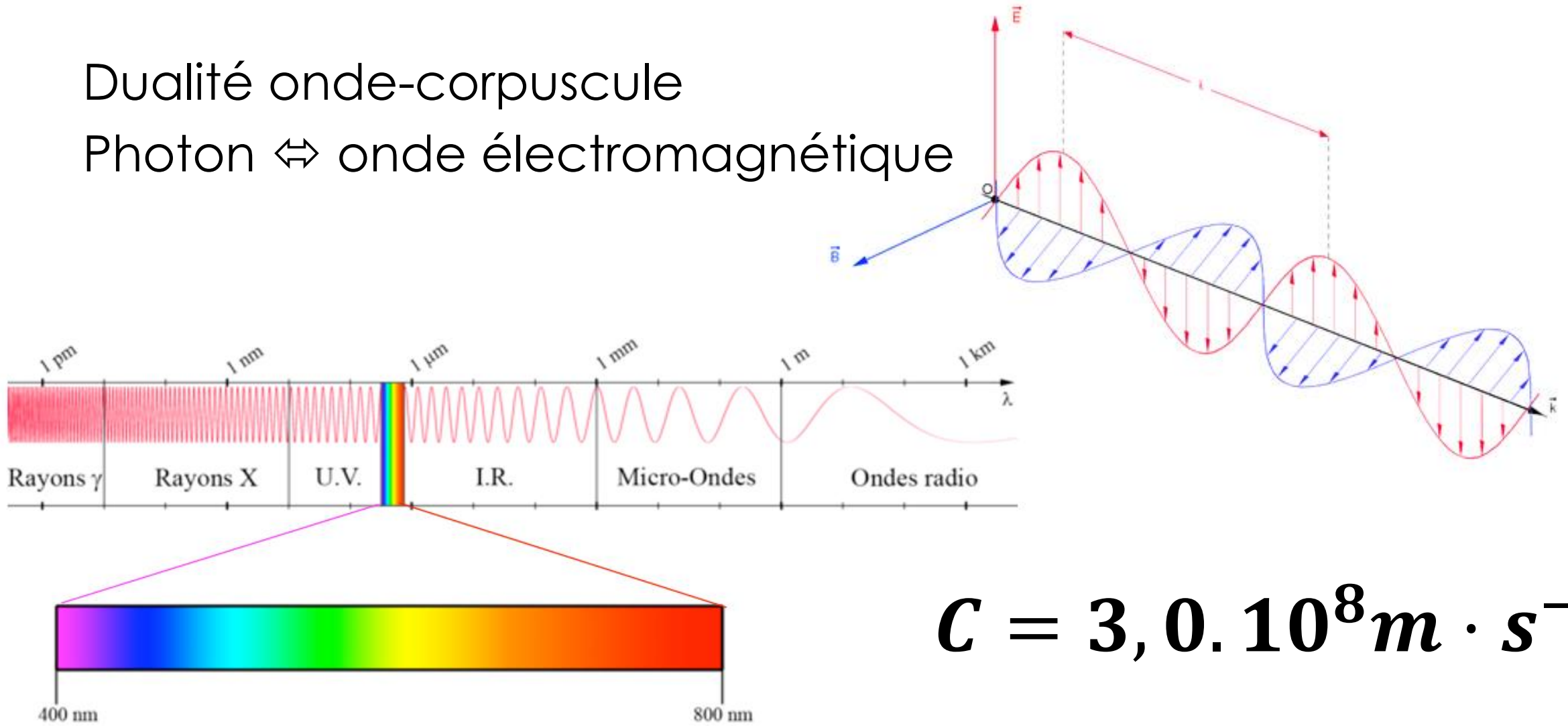
UE3A PHYSIQUE

OPTIQUE GÉOMÉTRIQUE ET ONDULATOIRE

I) QU'EST CE QUE LA LUMIÈRE ?

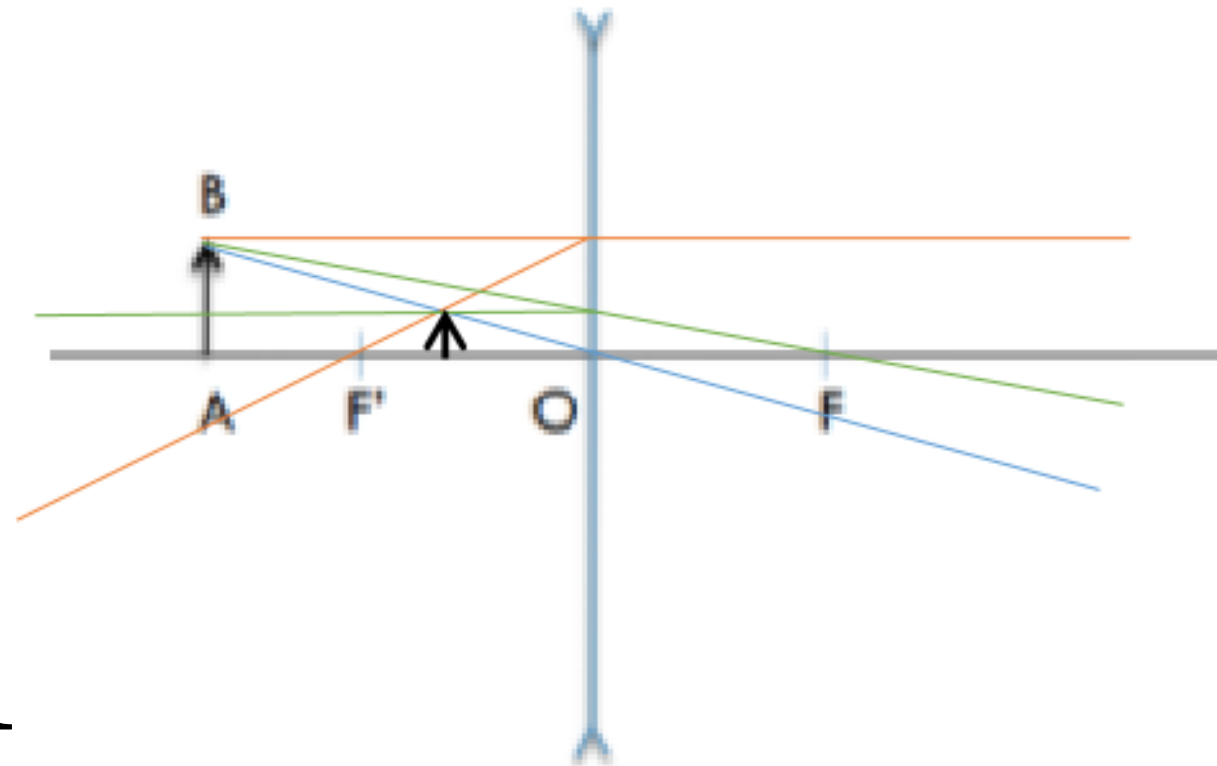
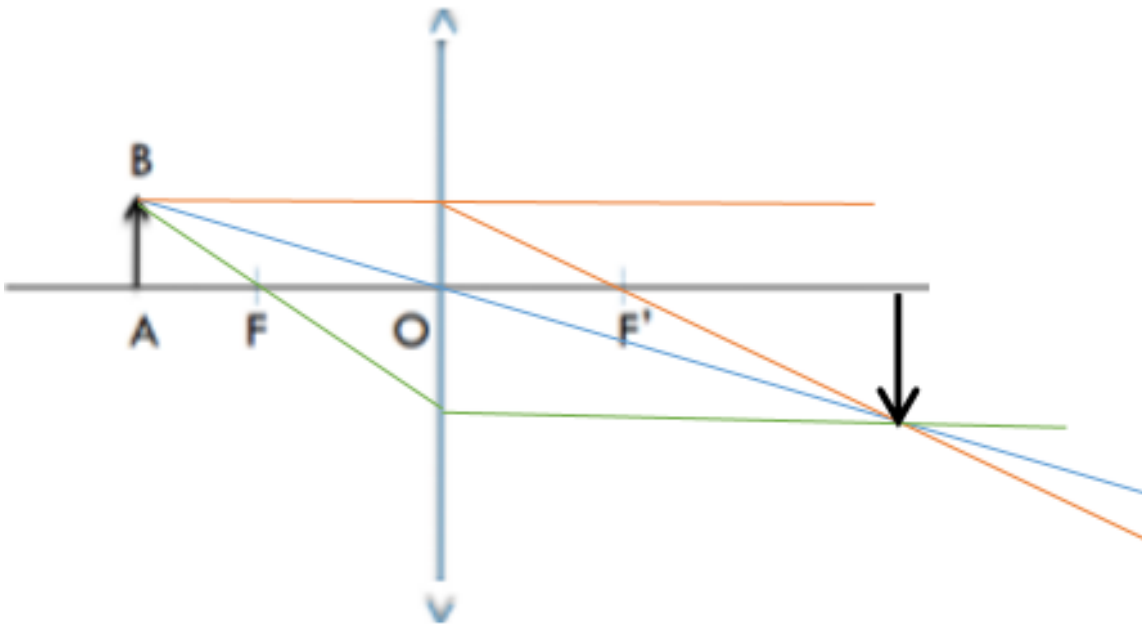
Dualité onde-corpuscule

Photon \Leftrightarrow onde électromagnétique



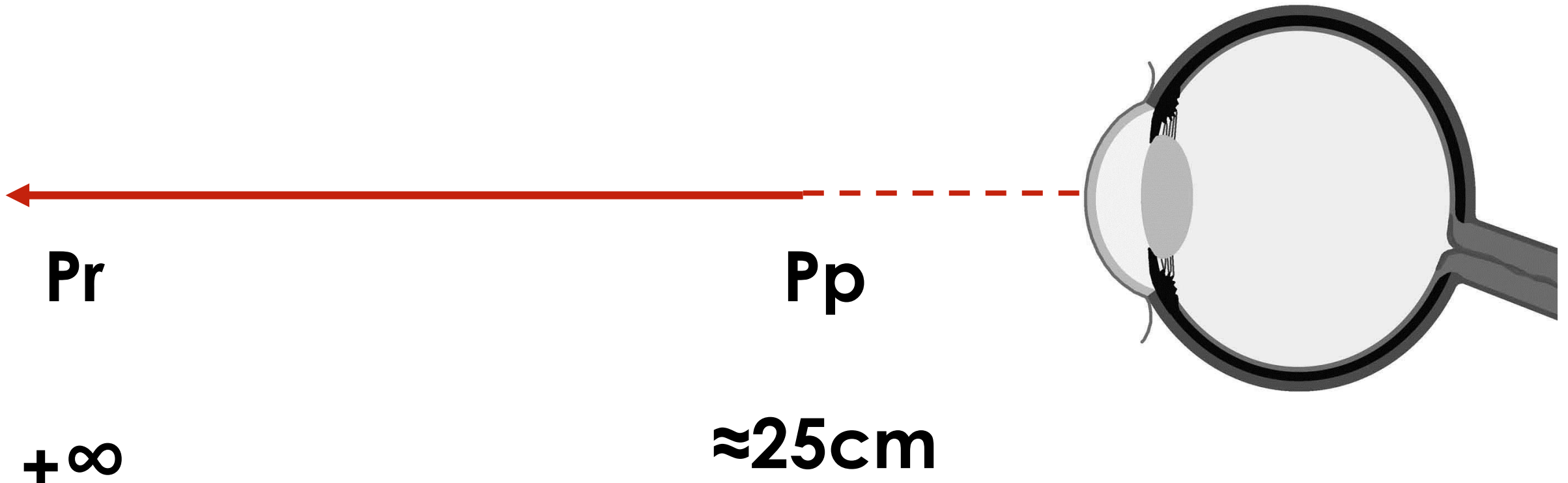
$$C = 3,0.10^8 m \cdot s^{-1}$$

II) LENTILLES CONVERGENTES / DIVERGENTES



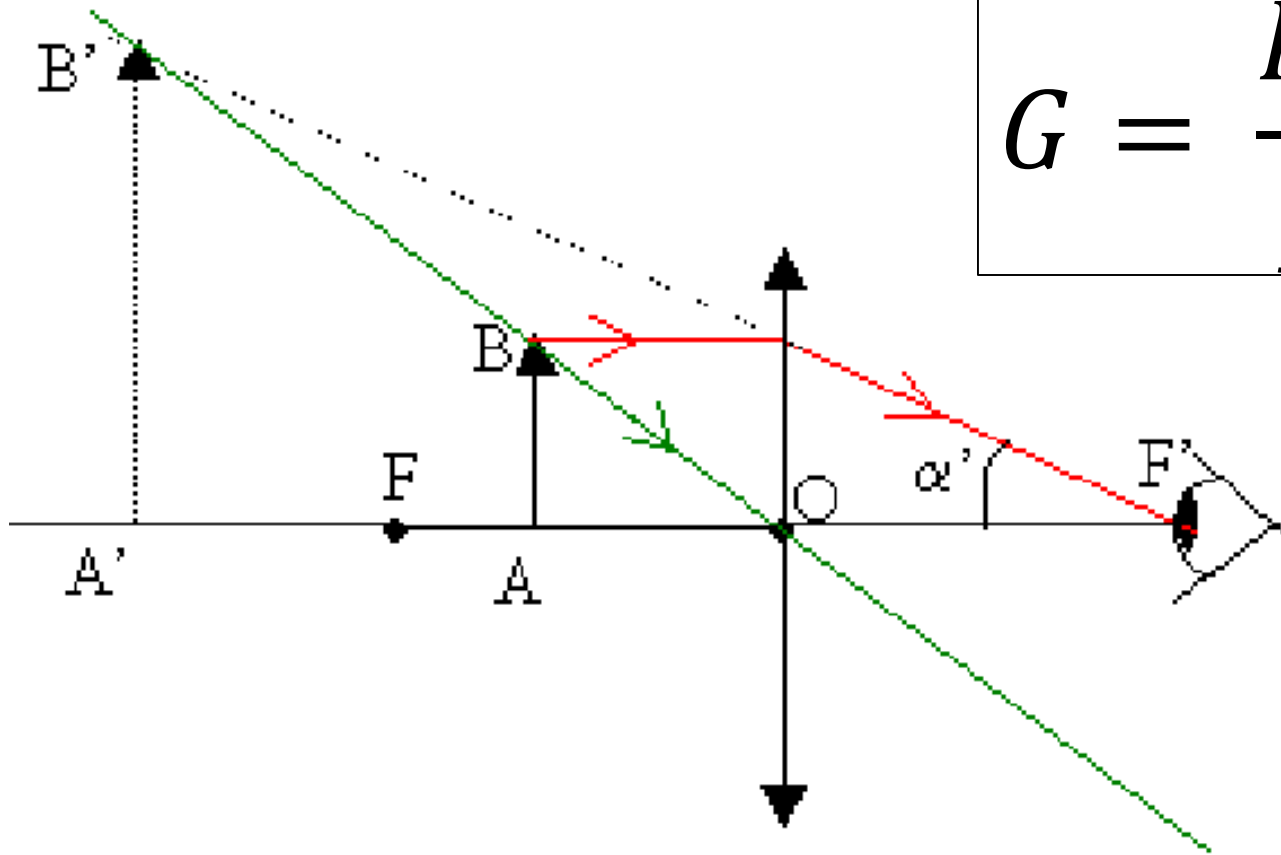
$$D(\delta) = \frac{1}{f'}$$

III) SYSTÈME OPTIQUE SIMPLE : L'OEIL



SYSTÈME OPTIQUE SIMPLE : LA LOUPE

$$G = \frac{Pp}{f'} = P \cdot Pp$$

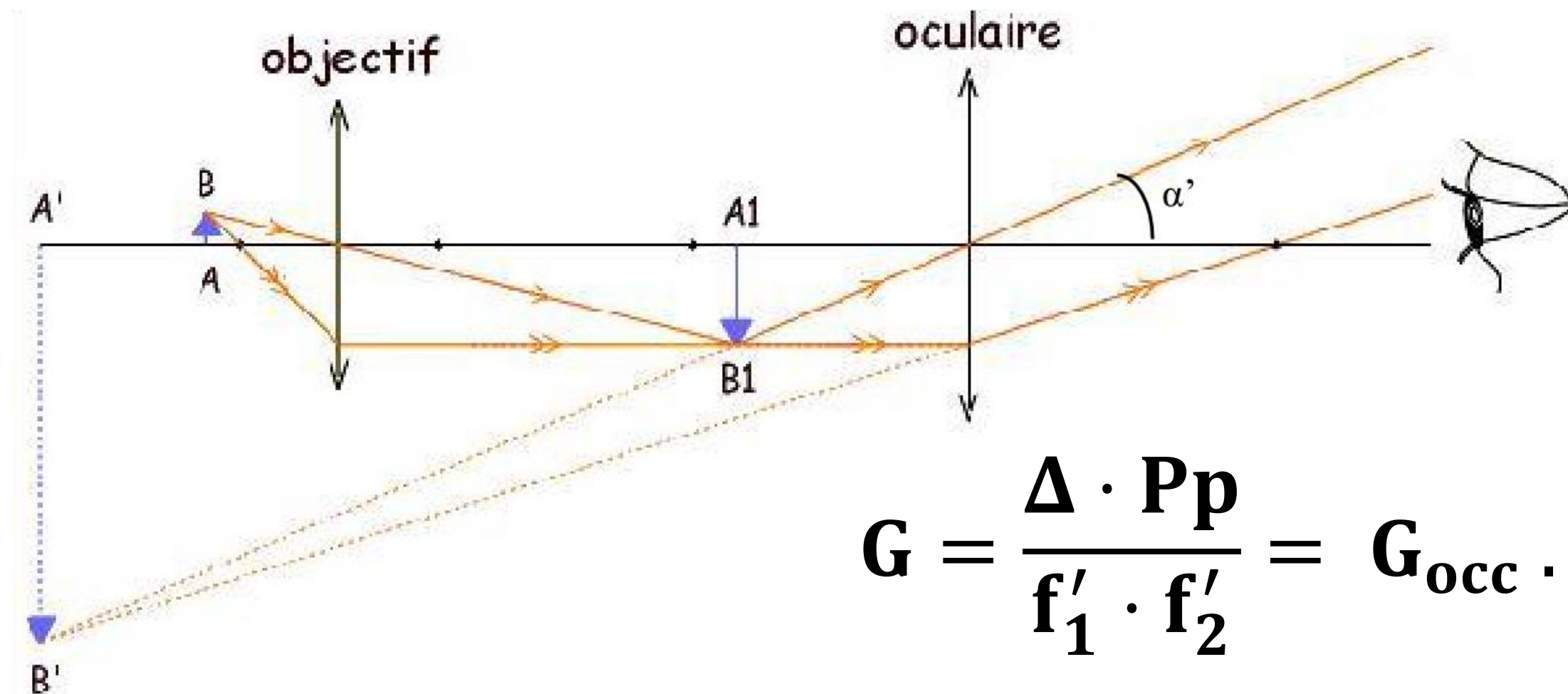


$$G = \frac{\alpha'}{\alpha}$$

$$\alpha' = \frac{AB}{f'}$$

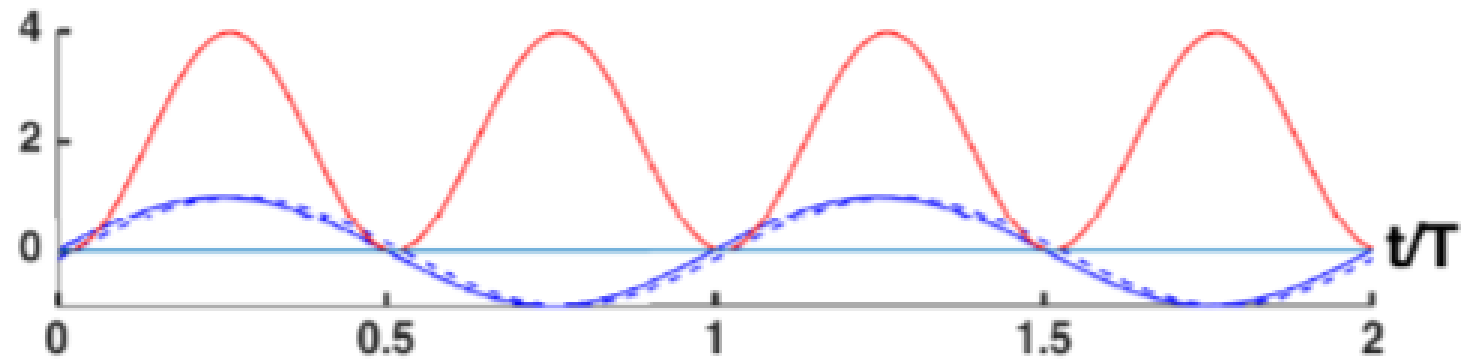
$$\alpha = \frac{AB}{Pp}$$

SYSTÈME OPTIQUE SIMPLE : LE MICROSCOPE

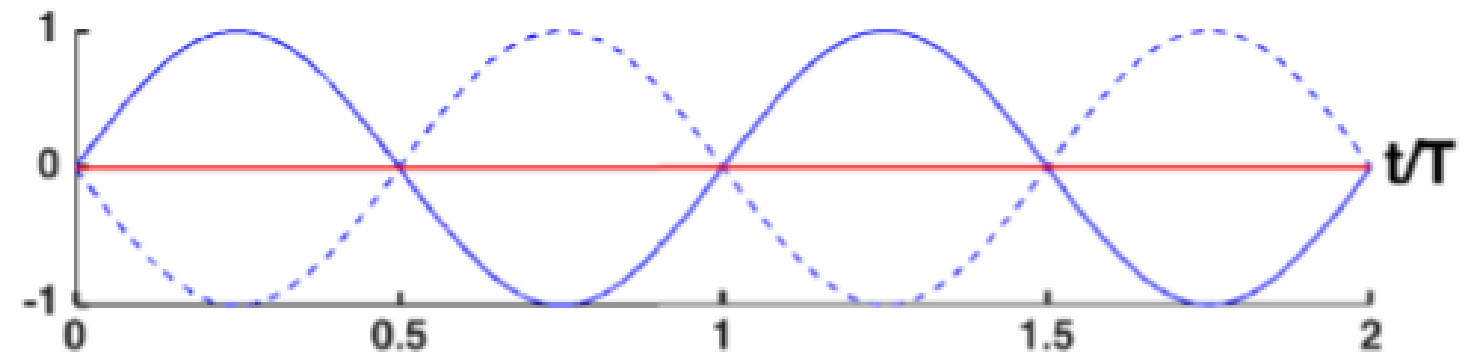


IV) INTERFÉRENCES

Interférences constructives :

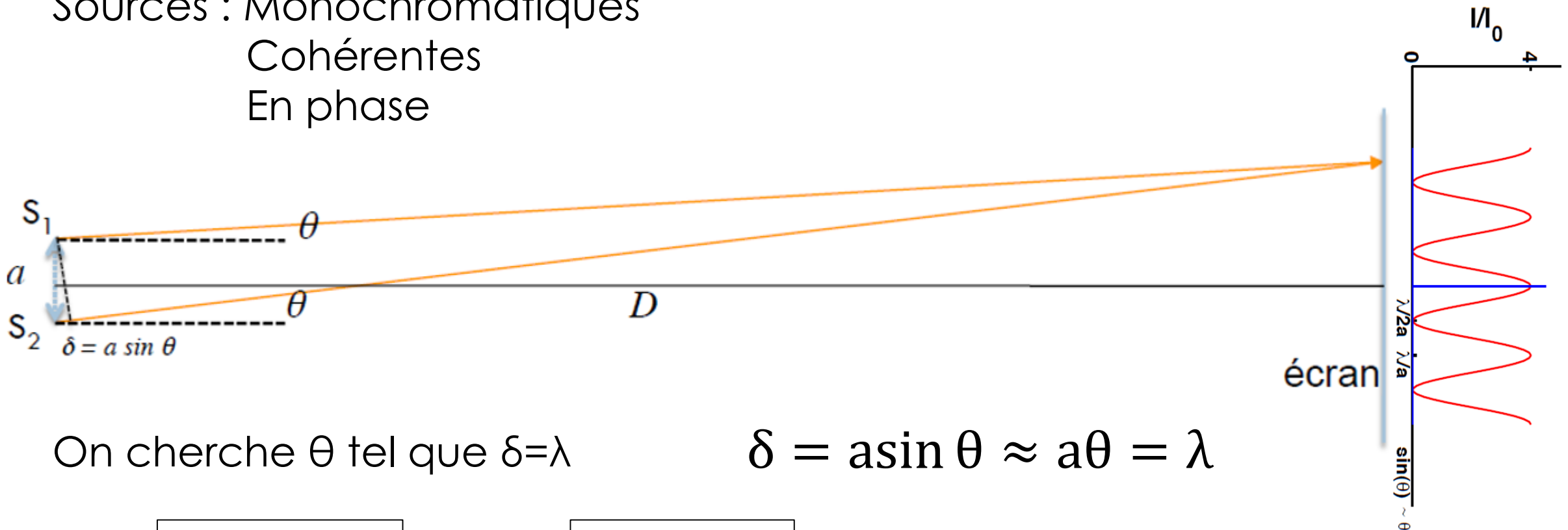


Interférences destructives :



INTERFÉRENCES À 2 FENTES : LES FENTES D'YOUNG

Sources : Monochromatiques
Cohérentes
En phase



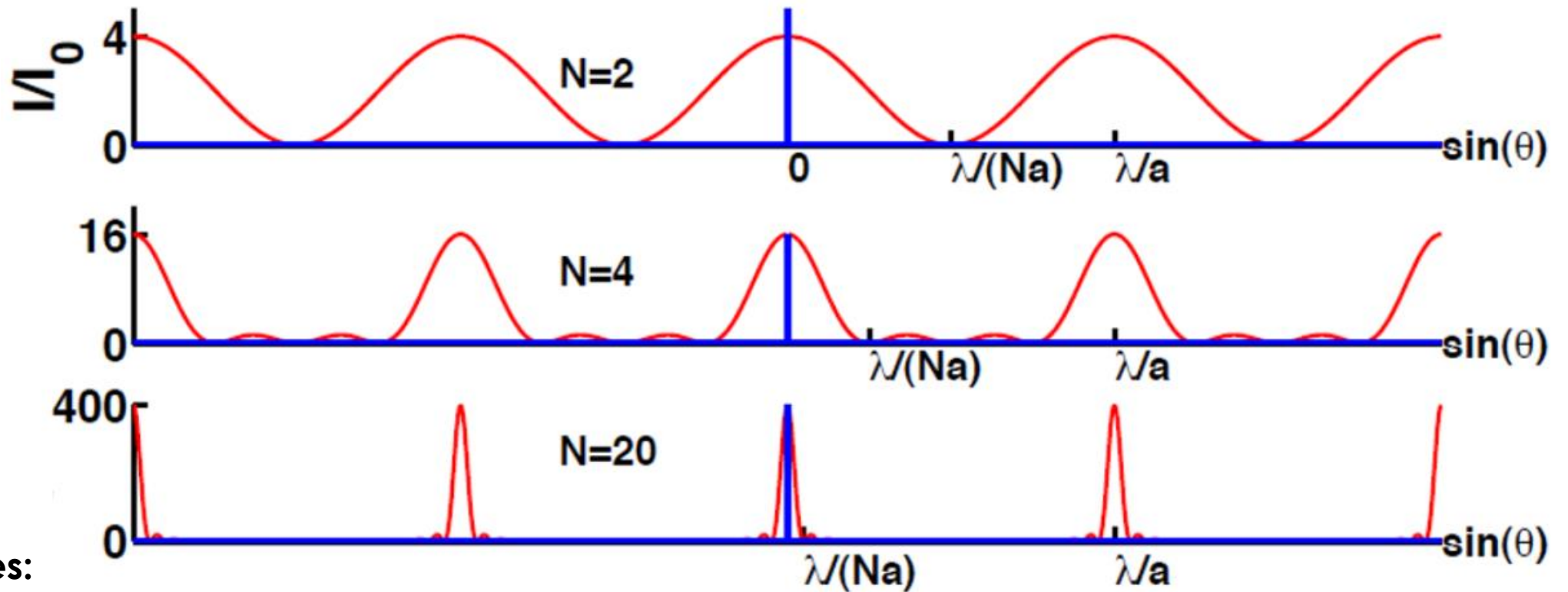
On cherche θ tel que $\delta = \lambda$

$$\delta = a \sin \theta \approx a \theta = \lambda$$

$$\Delta \theta = \frac{\lambda}{a}$$

$$i = \frac{D \lambda}{a}$$

INTERFÉRENCES À N SOURCES

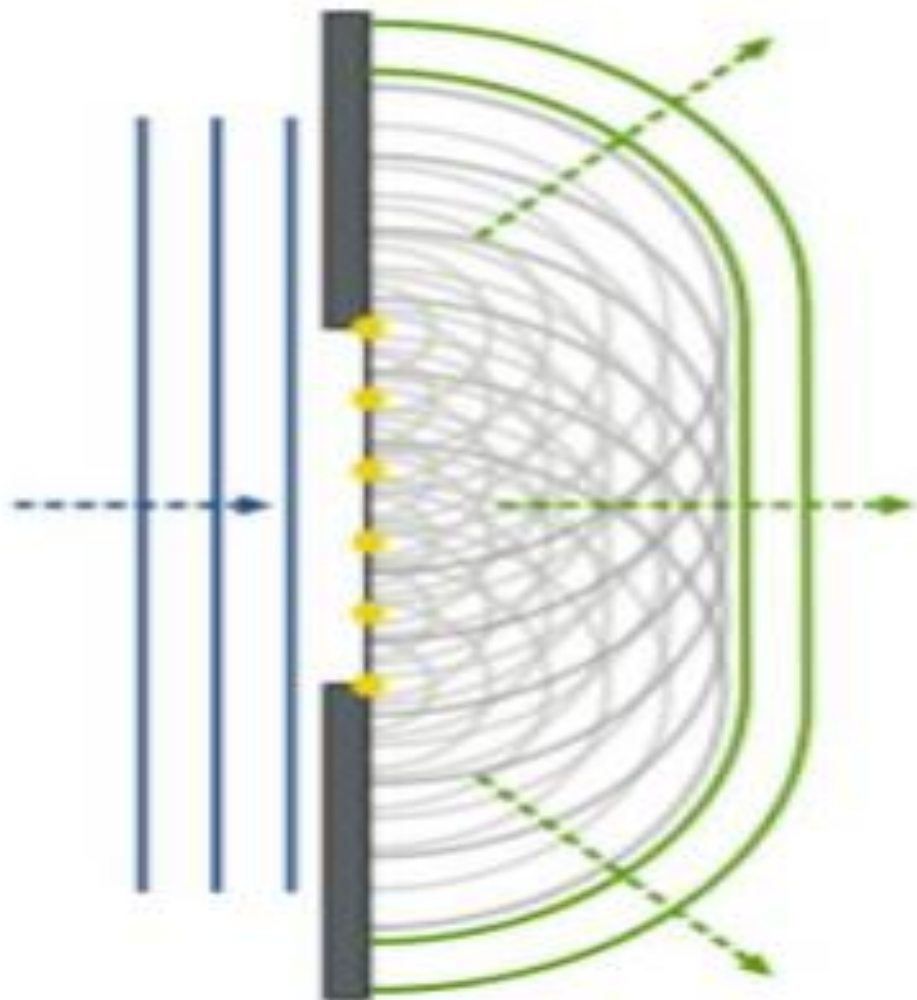


Entre 2 mini-franges:

$$\Delta\theta = \frac{\lambda}{Na}$$

$$\frac{I}{I_0} = N^2$$

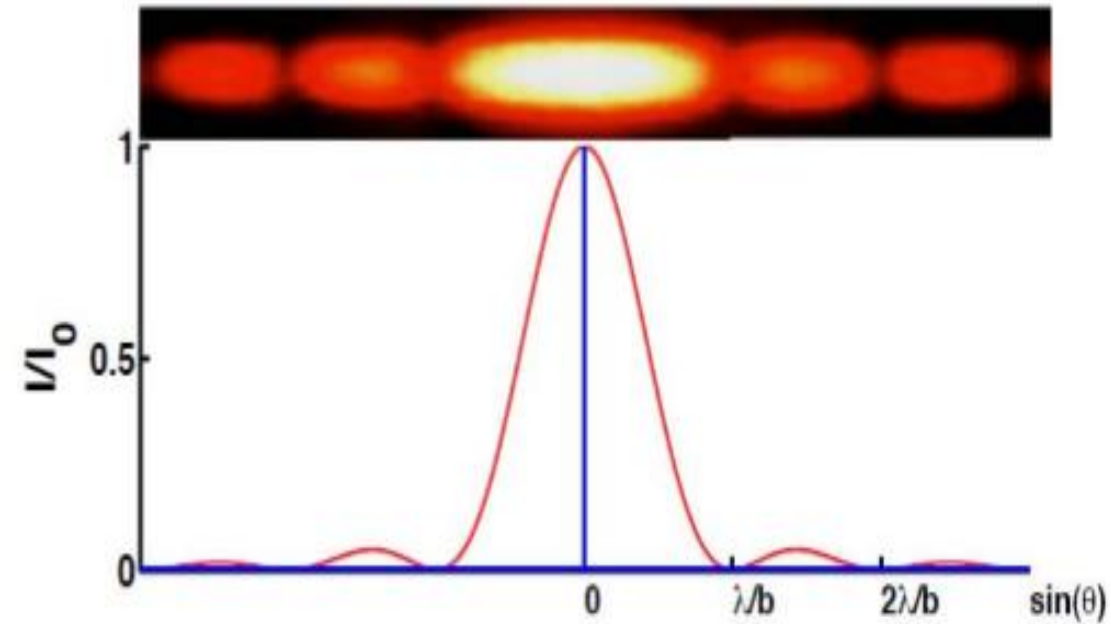
V) DIFFRACTION



**Principe de
Hyugens Fresnel**

FIGURES DE DIFFRACTION

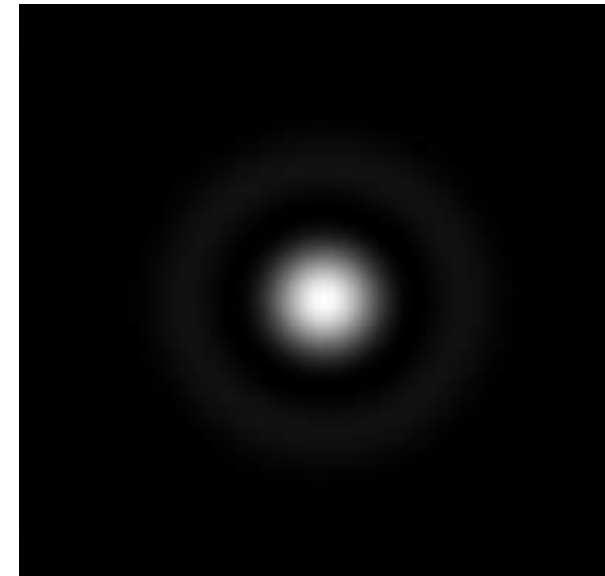
Par une fente:



Largeur angulaire de
la tache centrale :

$$\Delta\theta = \frac{2\lambda}{b}$$

Par un trou circulaire
-> Tache d'Airy



$$\theta = \frac{0,6\lambda}{rn}$$

DIFFRACTION PAR 2 FENTES OU PLUS

