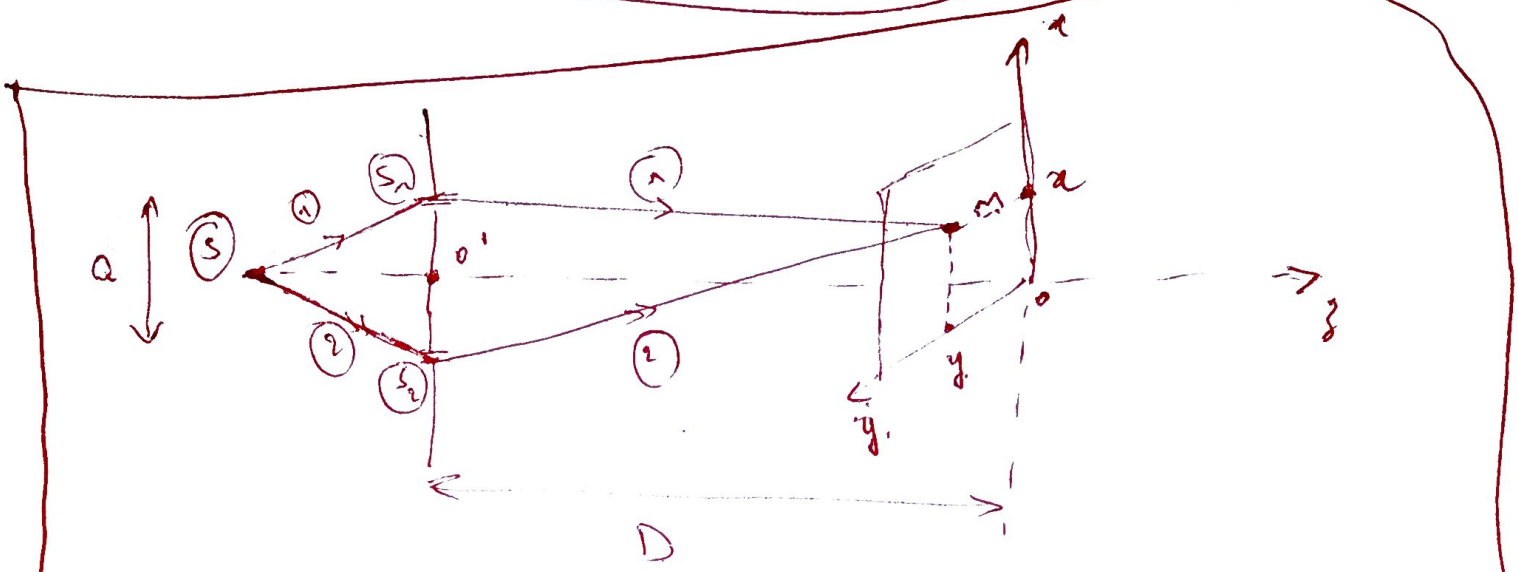
# Trous d'Young.




Hyp : $D \gg a, x, y$.

$$\delta(M) = n\,[S_2M - S_1M].$$

$$\vec{S_2M} = \vec{S_2O'} + \vec{O'O} + \vec{OM} = \left(x + \frac{a}{2}\right)\vec{e_x} + y\,\vec{e_y} + D\,\vec{e_z}$$

$$S_2M = \left(\left(x + \frac{a}{2}\right)^2 + y^2 + D^2\right)^{\frac{1}{2}} = D\left(1 + \frac{y^2}{2D^2} + \frac{x^2}{2D^2} + \frac{a^2}{8D^2} + \frac{ax}{2D^2}\right)$$

$$S_1M = \left(\left(x - \frac{a}{2}\right)^2 + y^2 + D^2\right)^{\frac{1}{2}} = D\left(1 + \frac{y^2}{2D^2} + \frac{x^2}{2D^2} + \frac{a^2}{8D^2} - \frac{ax}{2D^2}\right)$$

$$\boxed{\delta(M) = n\,\frac{ax}{D}}$$

## Franges brillantes :

$$\delta(M) = k\lambda_0 \iff \boxed{x_k = k\,\frac{\lambda_0 D}{na}}$$

## Interfrange :

$$\boxed{i = \frac{\lambda_0 D}{na}}$$