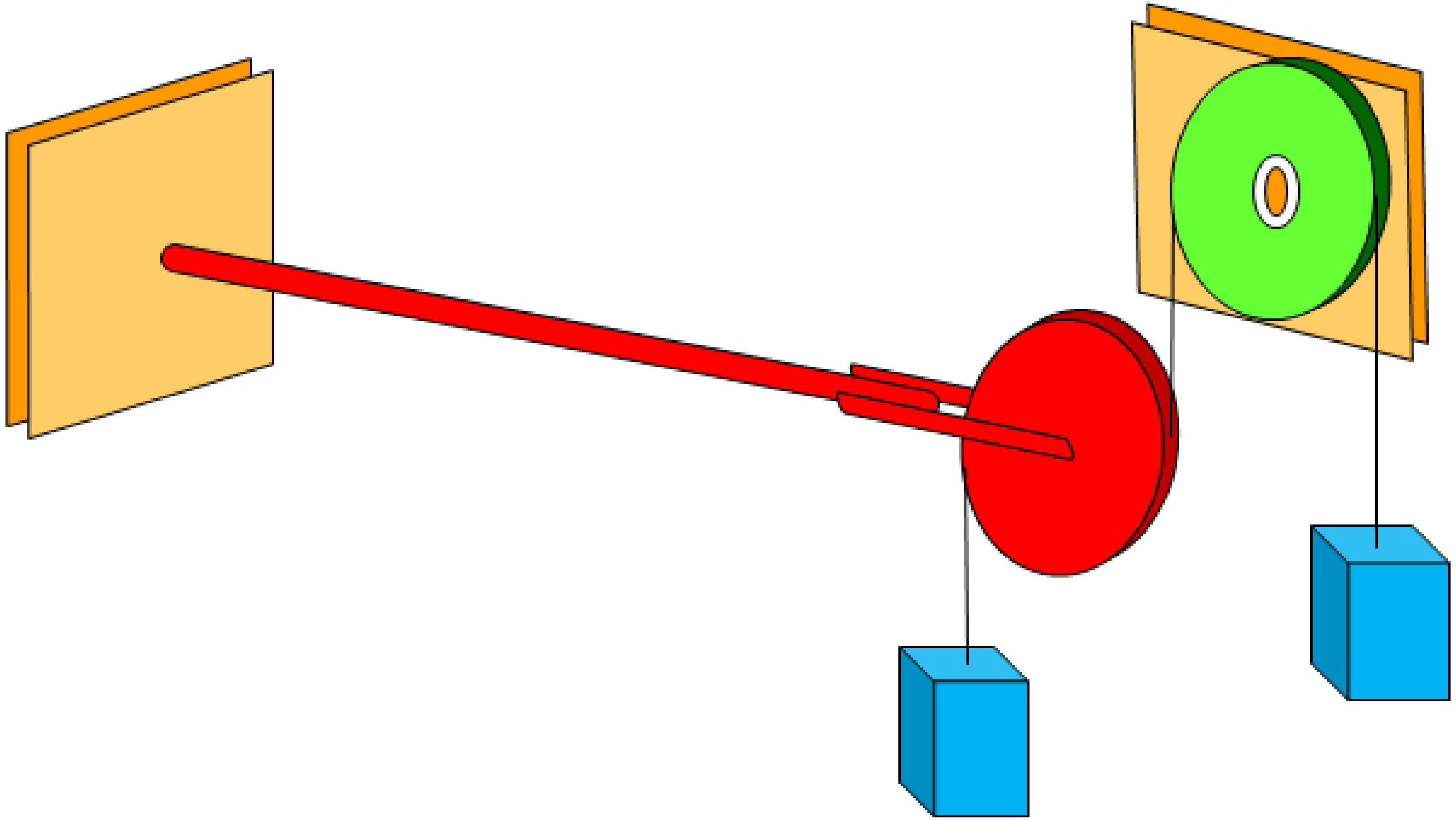
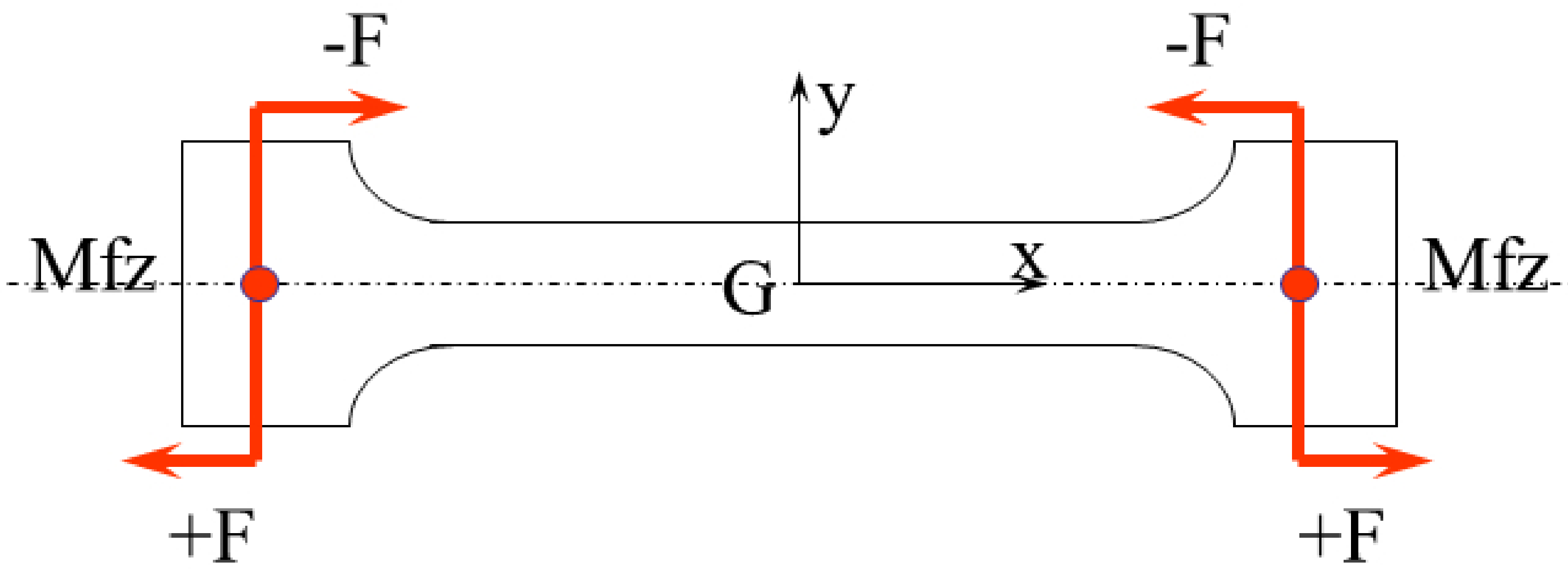
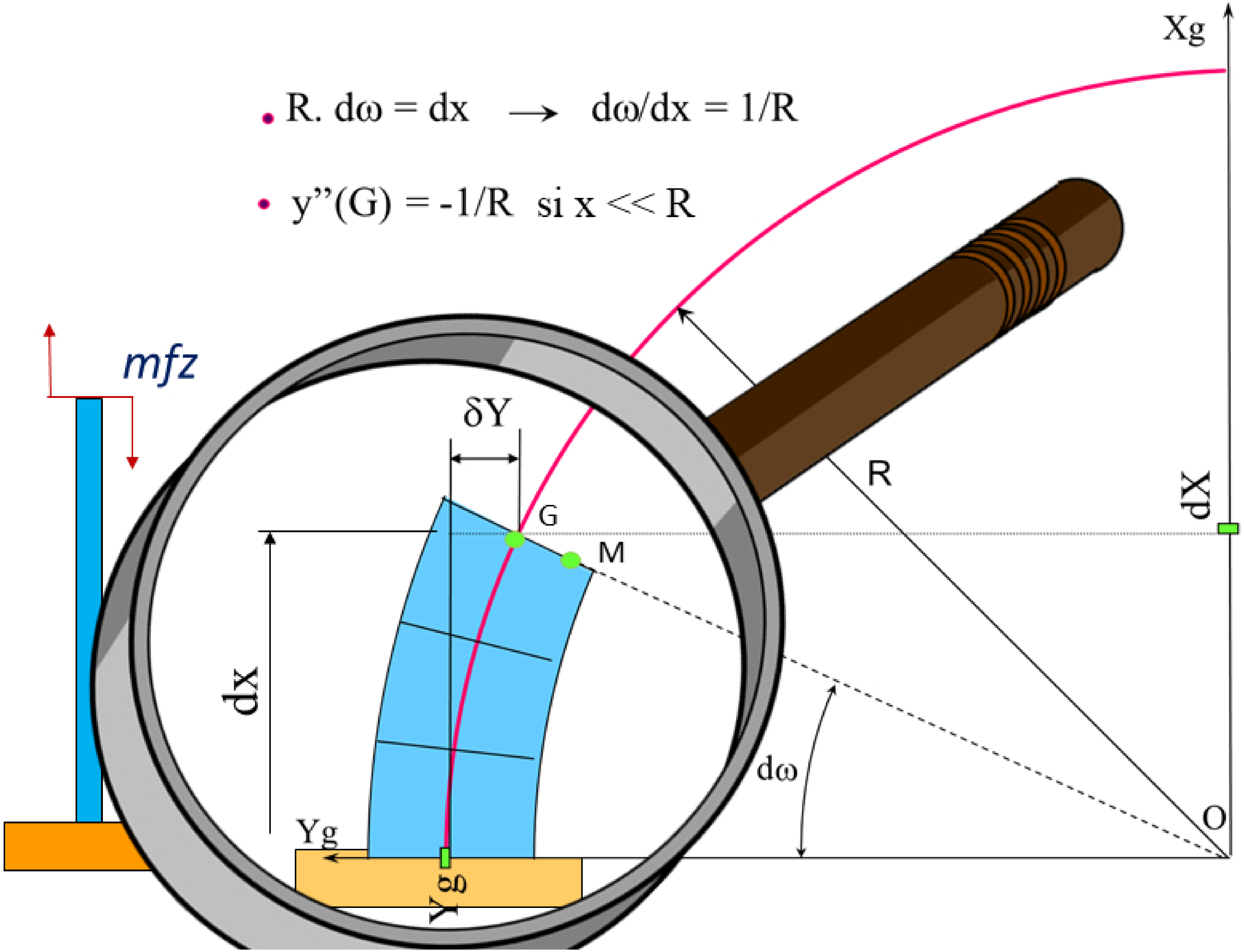
Cas particulier de la flexion pure



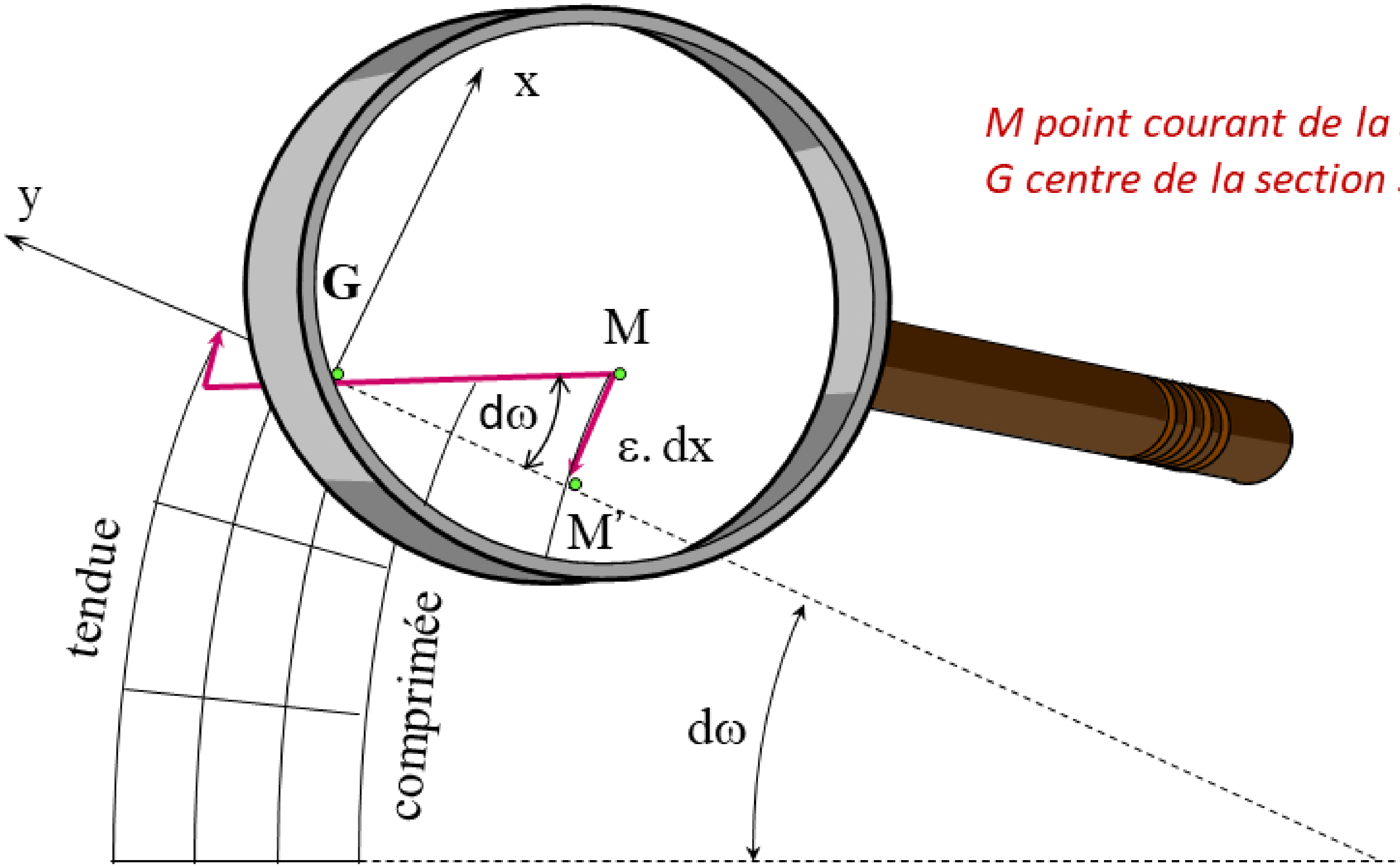


Cas particulier de la flexion pure

- $R.\ d\omega = dx \longrightarrow d\omega/dx = 1/R$
- $y''(G) = -1/R$ si $x << R$



Cas particulier de la flexion pure

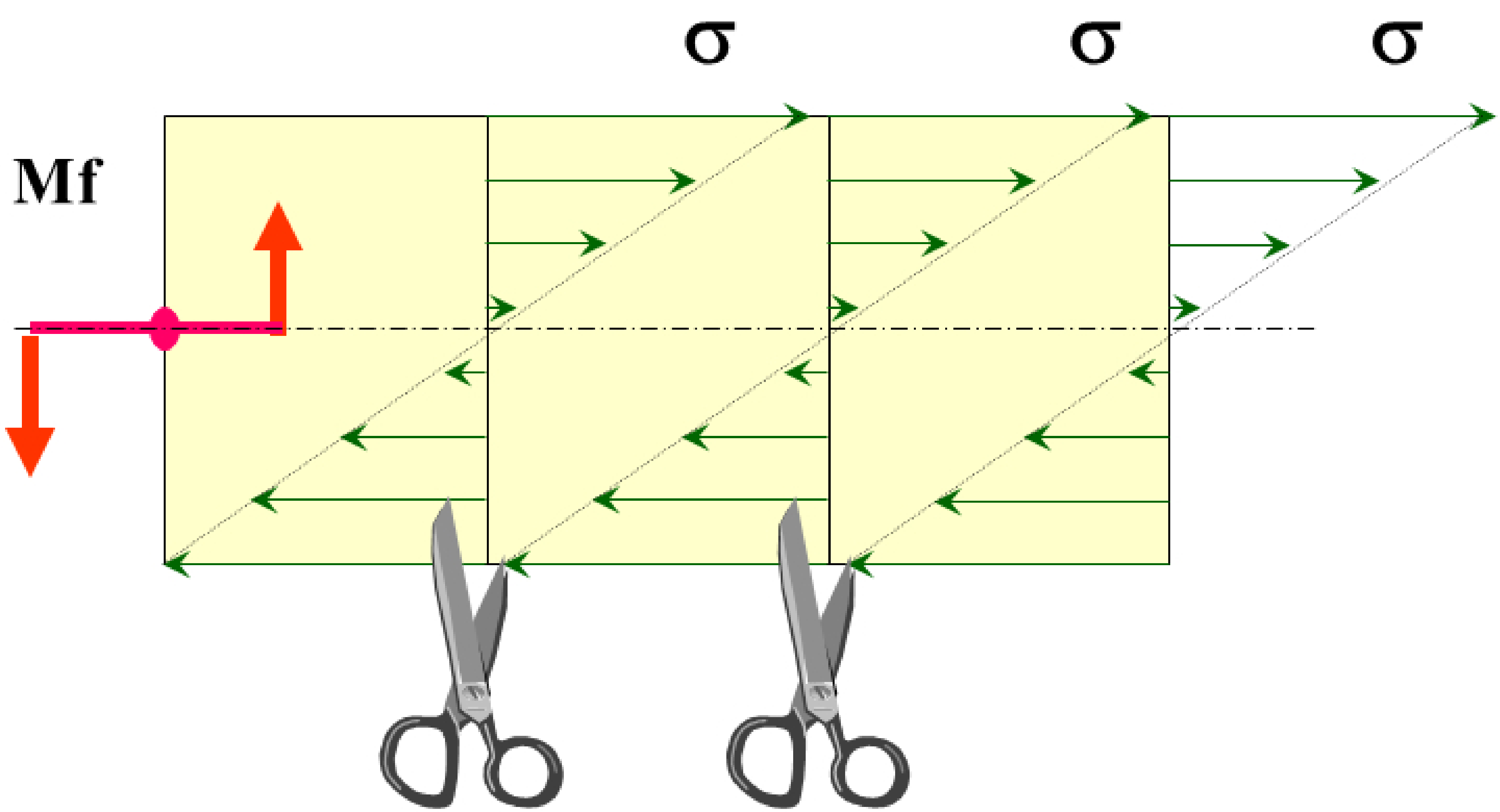


M point courant de la section S
G centre de la section S

$$\varepsilon.dx = d\omega.y(M)$$

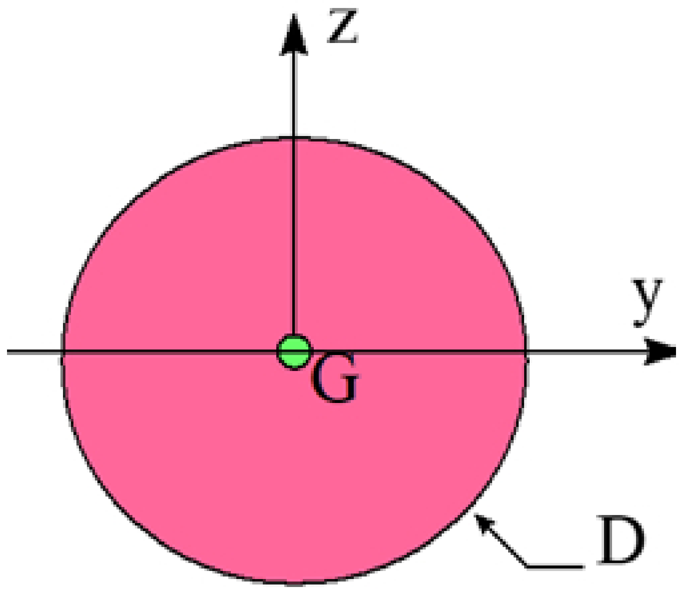
- $d\omega/dx = \varepsilon/y(M)$

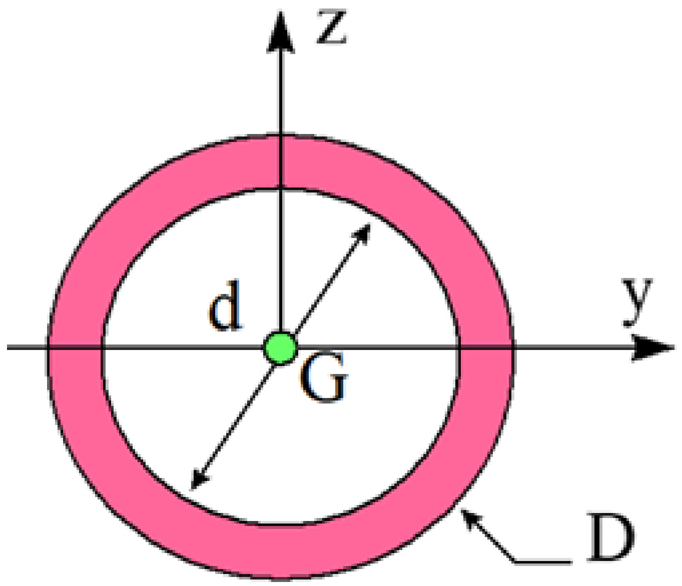
Cas particulier de la flexion pure

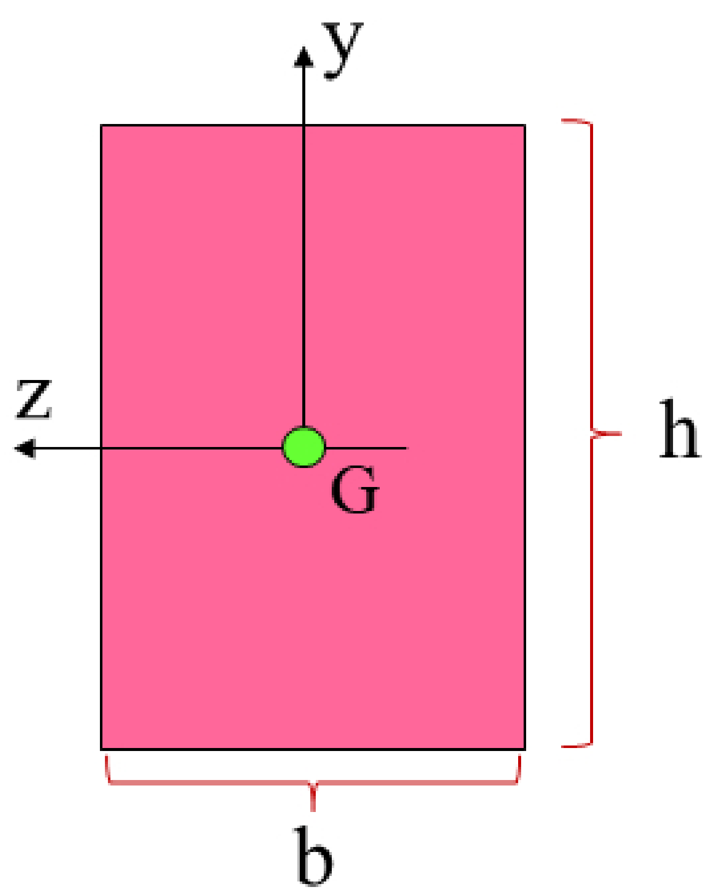


Cas particulier de la flexion pure

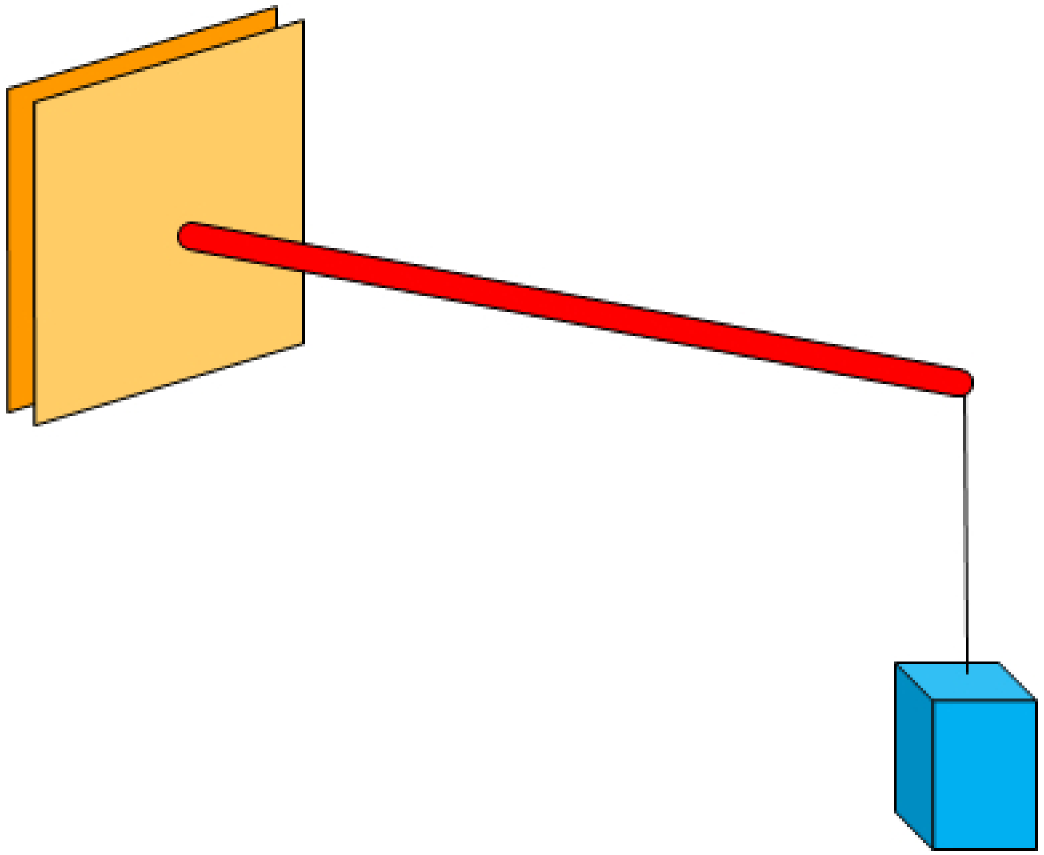
Expression de I_{Gz}

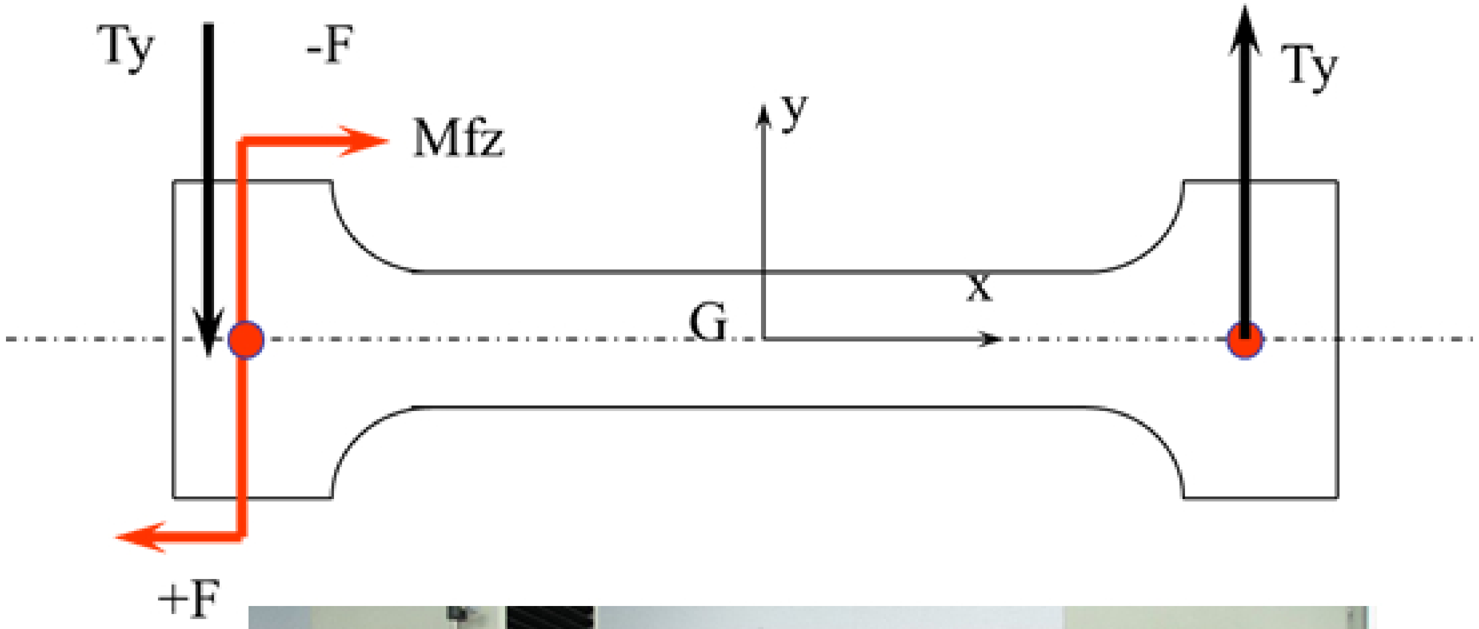






Cas particulier de la flexion simple

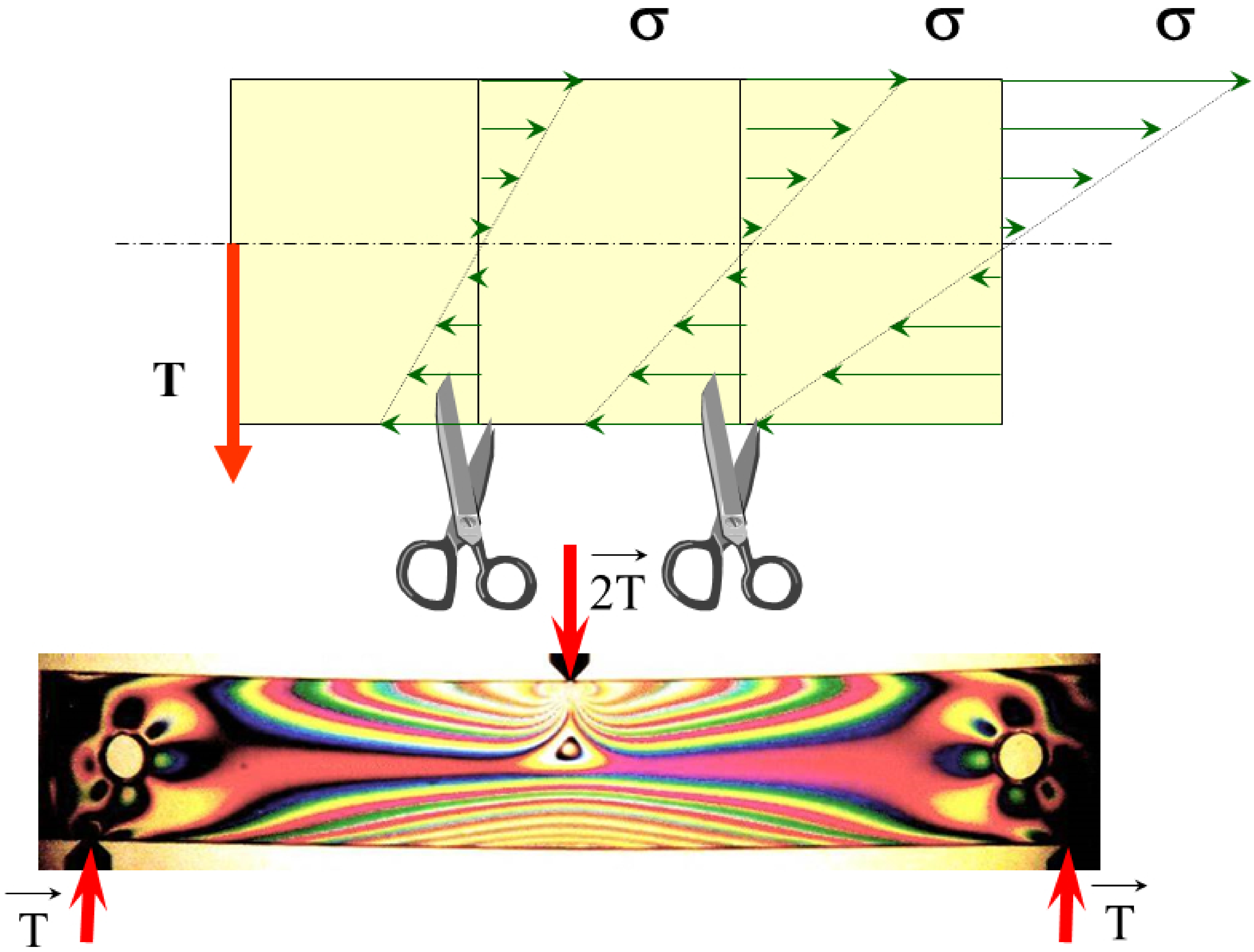




Cas particulier de la flexion simple

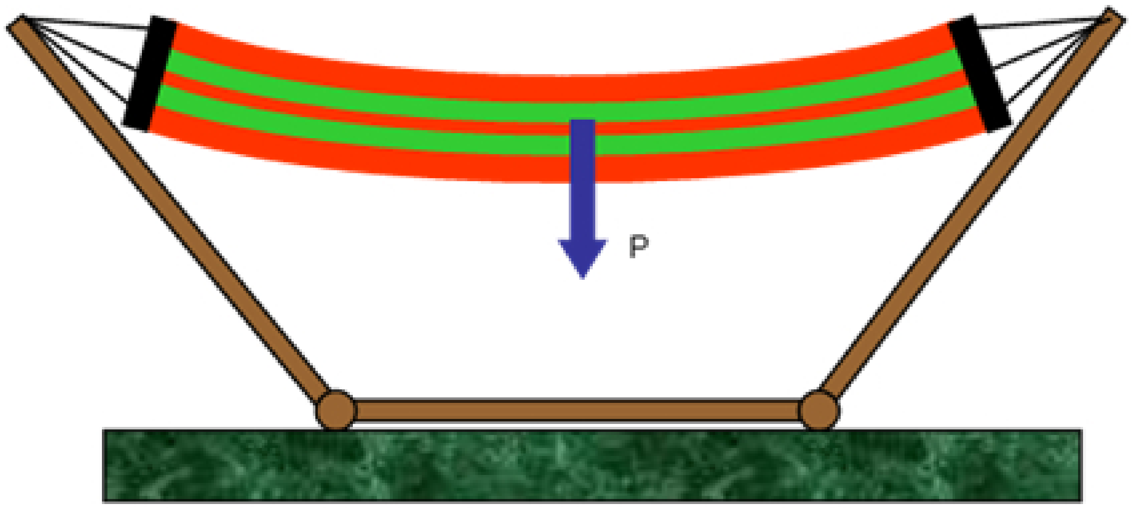
Mêmes observations qu'en flexion pure

Cas particulier de la flexion simple



Cas particulier de la flexion simple

Exemple : structure de hamac



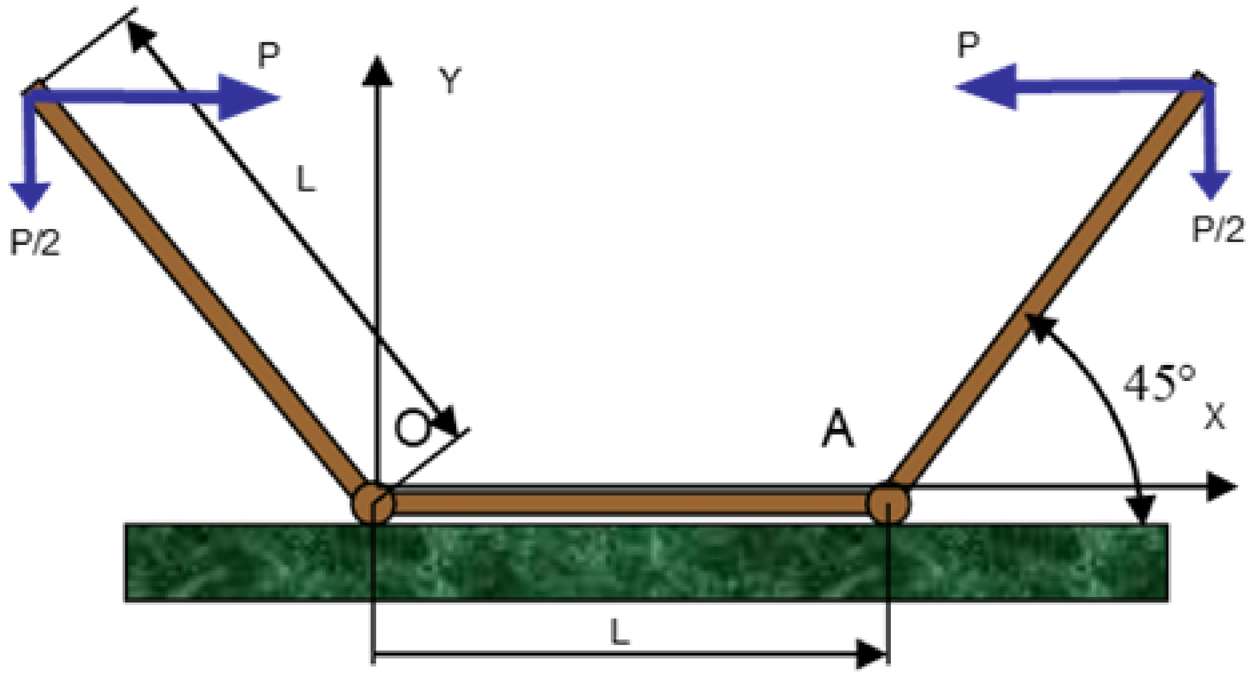
Déterminer la flèche de la poutre centrale si

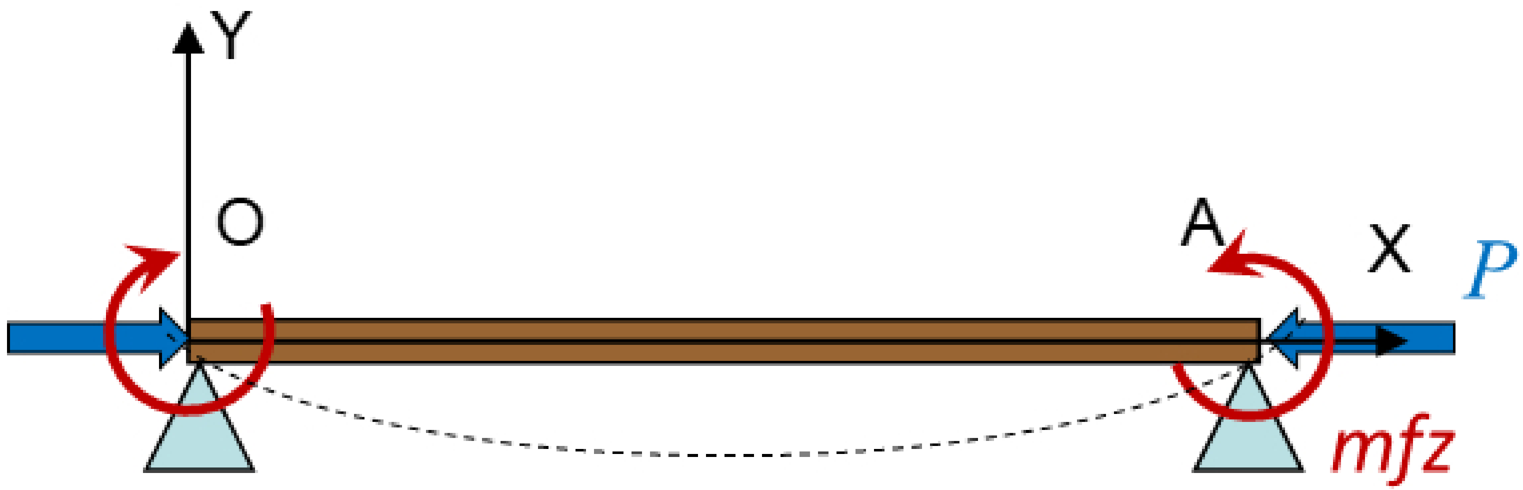
- *Longeur = 1,5 m*
- *Diamètre = 60 mm*
- *Pmaxi = 1200 N (soit 120 kg).*

Déterminer si le bouleau est assez résistant.

Cas particulier de la flexion simple

Exemple : structure de hamac





BOULEAU

Densité minimum à 12% – 0,64 g/cm^3
Densité moyenne à 12% – 0,66 g/cm^3
Densité maximum à 12% – 0,67 g/cm^3
Module d'élasticité en flexion – 14800 N/mm^2 *
Contrainte de rupture à la compression – 51 N/mm^2 *
Contrainte de rupture à la traction – 135 N/mm^2 *
Contrainte de rupture à la flexion – 132 N/mm^2 *
Résistance au choc – 8,7 Nm/cm^2
Dureté – mi-dur
Dureté Brinell perpendiculaire aux fibres – 27 N/mm^2
Dureté Brinell parallèle aux fibres – 48 N/mm^2
Dureté Monin – 4 mm^{-1}