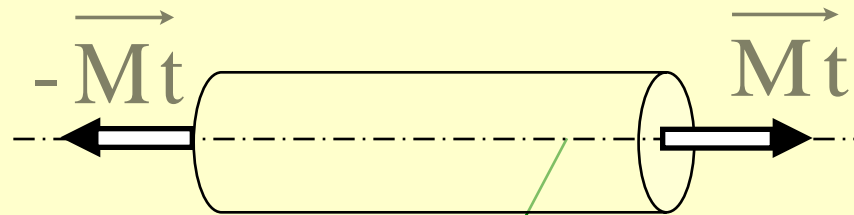


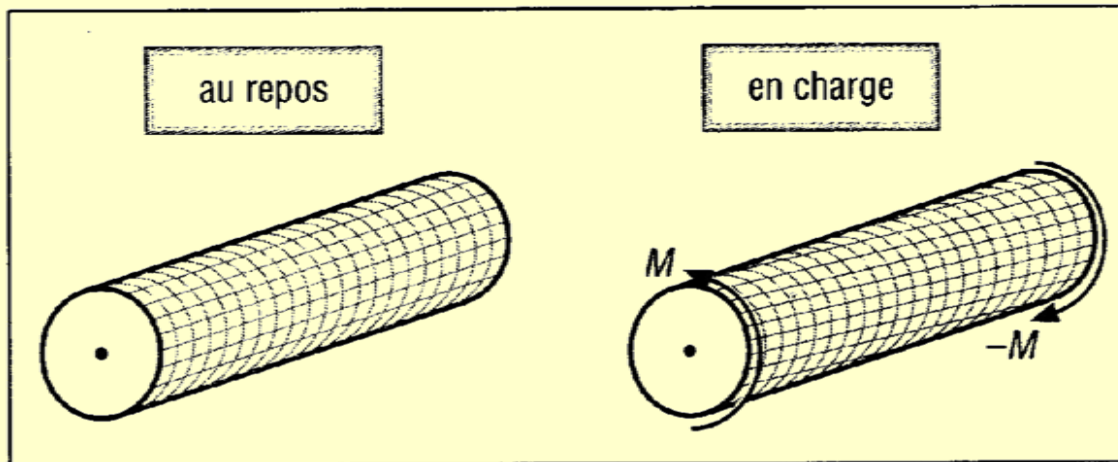
S72-9 - Torsion

Définition :



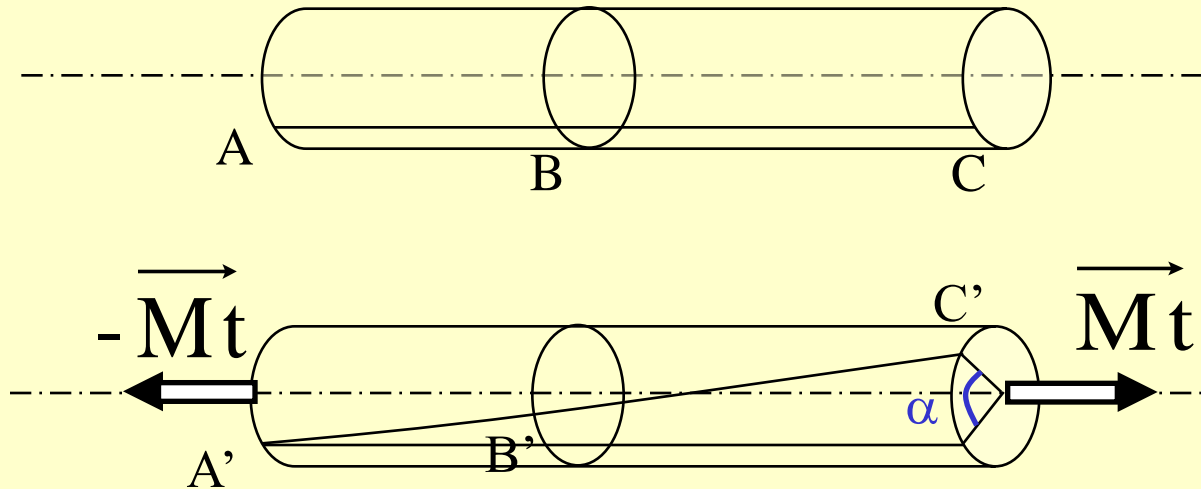
Lm : ligne moyenne

Déformation :



S72-9 - Torsion

Déformation :

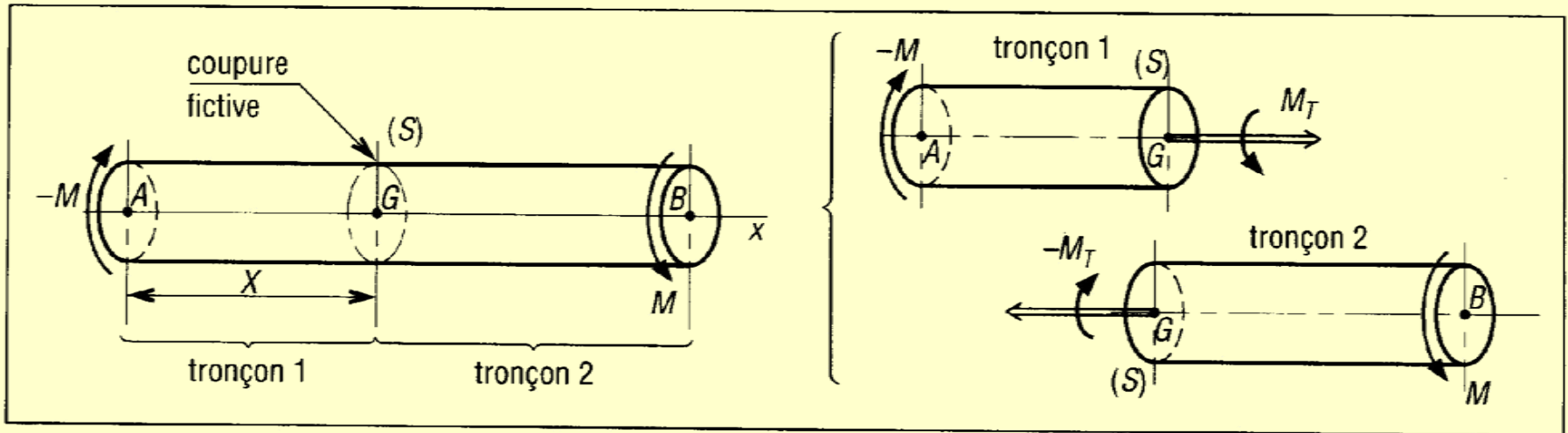


$$\alpha = \theta L$$

S72-9 - Torsion

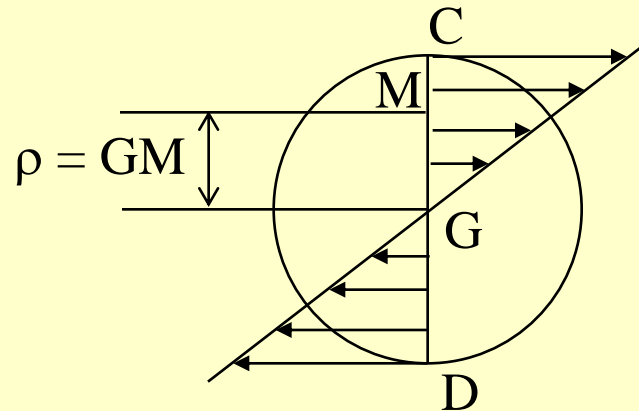
Effort intérieur:

$$M_T = M$$



S72-9 - Torsion

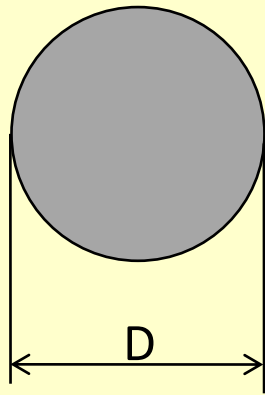
Contrainte tangentielle :



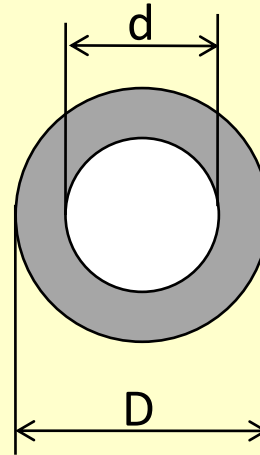
$$\tau = G \theta \rho$$

S72-9 - Torsion

Moment quadratique:



$$I_0 = \frac{\pi \cdot D^4}{32}$$



$$I_0 = \frac{\pi}{32} (D^4 - d^4)$$

Relation entre M_T et θ :

$$M_T = G\theta I_0$$

M_T : moment de torsion (N.mm)

G : module d'élasticité transversal (MPa)

θ : angle unitaire de torsion (rd.mm⁻¹)

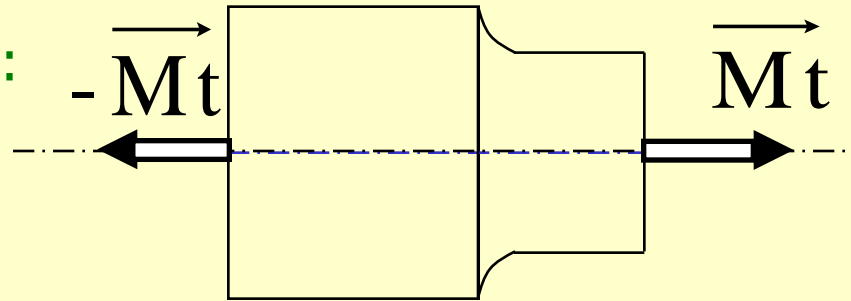
I_0 : moment quadratique par rapport à G (mm⁴)

Relation entre M_T et τ :

$$\tau = \frac{M_T}{I_0} \cdot \rho$$

Concentration de contrainte :

Chargement :



Contrainte :

$$\tau_{\max i} = K_{ts} \tau_0 \quad \text{avec} \quad \tau_0 = \frac{M_t}{\frac{I_G}{\rho}}$$