

MÉCANIQUE 1/2

1

2

MOMENTS D'INERTIE

3

Masse ponctuelle

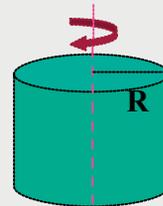
$$J = M \cdot R^2$$



4

Cylindre plein

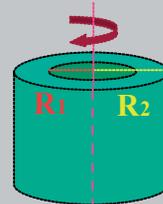
$$J = \frac{1}{2} \cdot M \cdot R^2$$



5

Cylindre annulaire

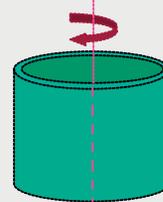
$$J = \frac{1}{2} \cdot M \cdot (R_1^2 - R_2^2)$$



6

Cylindre annulaire mince

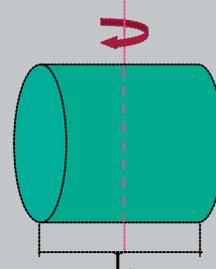
$$J = M \cdot R^2$$



7

Cylindre plein transverse

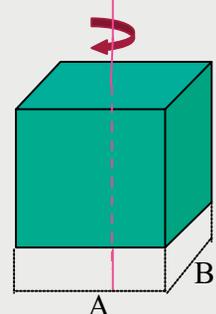
$$J = \frac{1}{4} \cdot M \cdot (R^2 + \frac{L^2}{3})$$



8

Parallélépipède rectangle

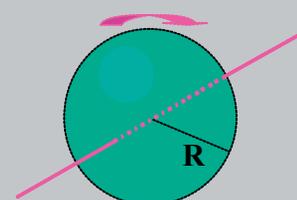
$$J = \frac{1}{12} \cdot M \cdot (A^2 + B^2)$$



9

Sphère pleine

$$J = \frac{2}{5} \cdot M \cdot R^2$$

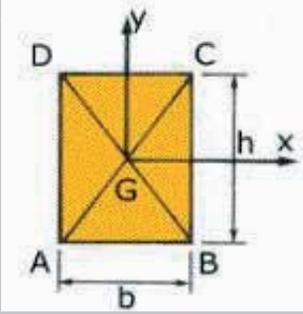
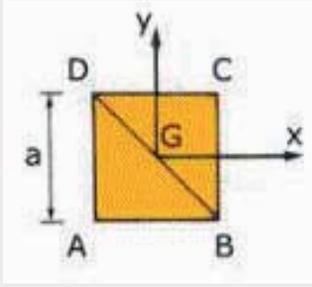
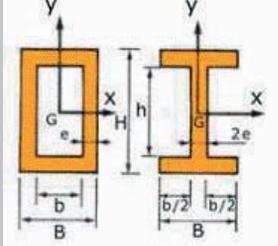
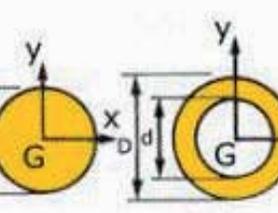
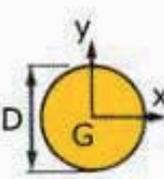
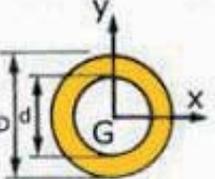


10

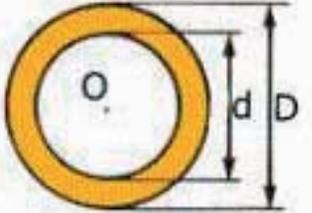
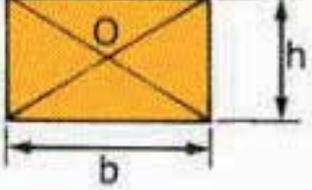
M

MÉCANIQUE 2/2

MOMENTS QUADRATIQUES

<p>Rectangle</p>	<p><u>Par rapport à un axe passant par G</u></p> $I_{GX} = \frac{b \cdot h^3}{12}, I_{GY} = \frac{h \cdot b^3}{12}$ <p><u>Par rapport à un côté</u></p> $I_{AB} = \frac{B \cdot h^3}{3}, I_{BC} = \frac{h \cdot b^3}{3}$	
<p>Carré</p>	<p><u>Par rapport à un axe passant par G</u></p> $I_{GX} = I_{GY} = \frac{a^4}{12}$ <p><u>Par rapport à un côté</u></p> $I_{AB} = I_{BC} = \frac{a^4}{3}$	
<p>Rectangle creux</p>	$I_{GX} = \frac{B \cdot H^3 - b \cdot h^3}{12}$	
<p>Un I</p>	$I_{GY} = \frac{H \cdot B^3 - h \cdot b^3}{12}$	
<p>Cercle</p>	$I_{GX} = I_{GY} = \frac{\pi \cdot D^4}{64}$	
<p>Couronne</p>	$I_{GX} = I_{GY} = \frac{\pi}{64} (D^4 - d^4)$	

MOMENTS POLAIRES

<p>Rectangle</p>	$I_0 = \frac{b \cdot h \cdot (b^2 + h^2)}{12}$	
<p>Carré</p>	$I_0 = \frac{a^4}{6}$	
<p>Cercle</p>	$I_0 = \frac{\pi \cdot D^4}{32}$	
<p>Couronne circulaire</p>	$I_0 = \frac{\pi}{32} (D^4 - d^4)$	