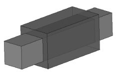
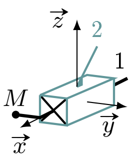
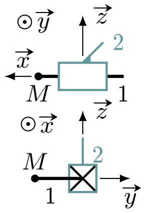
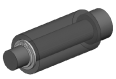
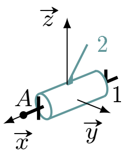
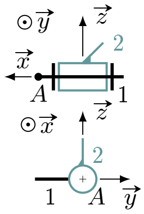
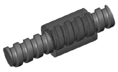
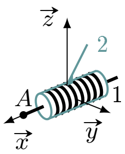
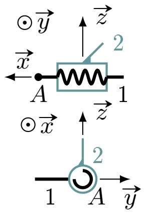
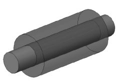
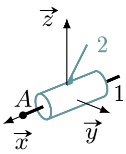
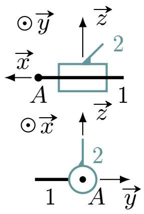
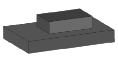
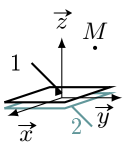
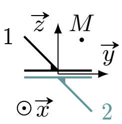
CPGE PTSI-PT Lycée Jean Zay - Thiers

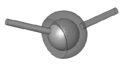
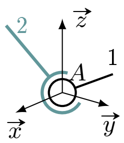
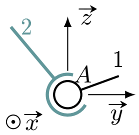
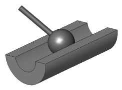
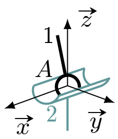
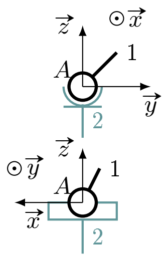
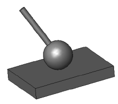
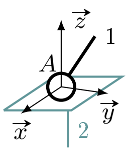
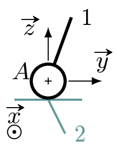
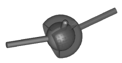
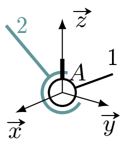
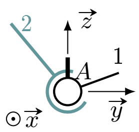
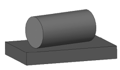
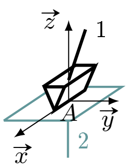
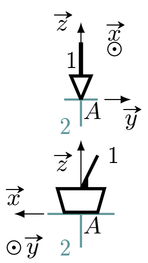
Liaisons normalisées

Formulaire

À savoir par cœur ! v2.5

Lycée Jean Zay – 21 rue Jean Zay – 63300 Thiers – Académie de Clermont-Ferrand

Nom + Caractéristique	Schéma spatial (3D)	Schéma(s) plan(s) (2D)	Mobilités	$\{\mathcal{V}_{2/1}\}$	$\{\mathcal{T}_{2\to1}\}$
Encastrement			$\begin{bmatrix} 0 & 0 \\ 0 & 0 \\ 0 & 0 \end{bmatrix}$	$_C\begin{Bmatrix} 0 & 0 \\ 0 & 0 \\ 0 & 0 \end{Bmatrix}_b$	$_C\begin{Bmatrix} X_{21} & L_{21} \\ Y_{21} & M_{21} \\ Z_{21} & N_{21} \end{Bmatrix}_b$
Glissière  Direction $\vec{x}$			$\begin{bmatrix} 0 & T_x \\ 0 & 0 \\ 0 & 0 \end{bmatrix}$	$_M\begin{Bmatrix} 0 & V^x_{M,2/1} \\ 0 & 0 \\ 0 & 0 \end{Bmatrix}_b$ $\forall M$	$_M\begin{Bmatrix} 0 & L_{21} \\ Y_{21} & M_{21} \\ Z_{21} & N_{21} \end{Bmatrix}_b$
Pivot  Axe $(A, \vec{x})$			$\begin{bmatrix} R_x & 0 \\ 0 & 0 \\ 0 & 0 \end{bmatrix}$	$_A\begin{Bmatrix} \omega^x_{2/1} & 0 \\ 0 & 0 \\ 0 & 0 \end{Bmatrix}_b$ $\forall M \in (A, \vec{x})$	$_A\begin{Bmatrix} X_{21} & 0 \\ Y_{21} & M_{21} \\ Z_{21} & N_{21} \end{Bmatrix}_b$
Hélicoïdale  Axe $(A, \vec{x})$			$\begin{bmatrix} R_x & T_x \\ 0 & 0 \\ 0 & 0 \end{bmatrix}$	$_C\begin{Bmatrix} \omega^x_{2/1} & \frac{p}{2\pi}\omega^x_{2/1} \\ 0 & 0 \\ 0 & 0 \end{Bmatrix}_b$ $\forall M \in (A, \vec{x})$	$_C\begin{Bmatrix} X_{21} & -\frac{p}{2\pi}X_{21} \\ Y_{21} & M_{21} \\ Z_{21} & N_{21} \end{Bmatrix}_b$ Pas à gauche : $-\frac{p}{2\pi}\omega^x_{2/1}$ et $\frac{p}{2\pi}X_{21}$
Pivot glissant  Axe $(A, \vec{x})$			$\begin{bmatrix} R_x & T_x \\ 0 & 0 \\ 0 & 0 \end{bmatrix}$	$_A\begin{Bmatrix} \omega^x_{2/1} & V^x_{A,2/1} \\ 0 & 0 \\ 0 & 0 \end{Bmatrix}_b$ $\forall M \in (A, \vec{x})$	$_A\begin{Bmatrix} 0 & 0 \\ Y_{21} & M_{21} \\ Z_{21} & N_{21} \end{Bmatrix}_b$
Appui plan  Normale au plan $\vec{z}$			$\begin{bmatrix} 0 & T_x \\ 0 & T_y \\ R_z & 0 \end{bmatrix}$	$_M\begin{Bmatrix} 0 & V^x_{M,2/1} \\ 0 & V^y_{M,2/1} \\ \omega^z_{2/1} & 0 \end{Bmatrix}_b$ $\forall M$	$_M\begin{Bmatrix} 0 & L_{21} \\ 0 & M_{21} \\ Z_{21} & 0 \end{Bmatrix}_b$

Nom + Caractéristique	**Schéma spatial (3D)**	**Schéma(s) plan(s) (2D)**	**Mobilités**	$\{\mathcal{V}_{2/1}\}$	$\{\mathcal{T}_{2\rightarrow 1}\}$
Sphérique  Centre de la sphère A			$\begin{bmatrix} R_x & 0 \\ R_y & 0 \\ R_z & 0 \end{bmatrix}$	$_A\begin{Bmatrix} \omega^x_{2/1} & 0 \\ \omega^y_{2/1} & 0 \\ \omega^z_{2/1} & 0 \end{Bmatrix}_b$ En A	$_A\begin{Bmatrix} X_{21} & 0 \\ Y_{21} & 0 \\ Z_{21} & 0 \end{Bmatrix}_b$
Sphère cylindre  Centre de la sphère A Direction $\vec{x}$			$\begin{bmatrix} R_x & T_x \\ R_y & 0 \\ R_z & 0 \end{bmatrix}$	$_A\begin{Bmatrix} \omega^x_{2/1} & V^x_{A,2/1} \\ \omega^y_{2/1} & 0 \\ \omega^z_{2/1} & 0 \end{Bmatrix}_b$ En A	$_A\begin{Bmatrix} 0 & 0 \\ Y_{21} & 0 \\ Z_{21} & 0 \end{Bmatrix}_b$
Sphère plan  Point de contact A Normale au plan $\vec{z}$			$\begin{bmatrix} R_x & T_x \\ R_y & T_y \\ R_z & 0 \end{bmatrix}$	$_A\begin{Bmatrix} \omega^x_{2/1} & V^x_{A,2/1} \\ \omega^y_{2/1} & V^y_{A,2/1} \\ \omega^z_{2/1} & 0 \end{Bmatrix}_b$ $\forall M \in (A, \vec{z})$	$_A\begin{Bmatrix} 0 & 0 \\ 0 & 0 \\ Z_{21} & 0 \end{Bmatrix}_b$
Sphérique à doigt  Centre de la sphère A Normale au plan $\vec{x}$ Direction du doigt $\vec{z}$			$\begin{bmatrix} R_x & 0 \\ 0 & 0 \\ R_z & 0 \end{bmatrix}$	$_A\begin{Bmatrix} \omega^x_{2/1} & 0 \\ 0 & 0 \\ \omega^z_{2/1} & 0 \end{Bmatrix}_b$ En A	$_A\begin{Bmatrix} X_{21} & 0 \\ Y_{21} & M_{21} \\ Z_{21} & 0 \end{Bmatrix}_b$
Linéaire rectiligne (ou cylindre plan)  Droite de contact $(A, \vec{x})$ Normale au plan $\vec{z}$			$\begin{bmatrix} R_x & T_x \\ 0 & T_y \\ R_z & 0 \end{bmatrix}$	$_A\begin{Bmatrix} \omega^x_{2/1} & V^x_{A,2/1} \\ 0 & V^y_{A,2/1} \\ \omega^z_{2/1} & 0 \end{Bmatrix}_b$ $\forall M \in$ plan $(A, \vec{x}, \vec{z})$	$_A\begin{Bmatrix} 0 & 0 \\ 0 & M_{21} \\ Z_{21} & 0 \end{Bmatrix}_b$