

Loi E/S poutre vibrante

Question 1:

fermeture de chaîne: $\vec{AB} + \vec{BN} + \vec{NC} + \vec{CA} = \vec{0}$

$$r_2 \vec{z}_2 - \mu \vec{z}_1 + d_4 \vec{x}_4 - d \vec{x}_1 = \vec{0}$$

On projette sur \vec{y}_1 :

$$r_2 \vec{z}_2 \cdot \vec{y}_1 - \mu \vec{z}_1 \cdot \vec{y}_1 + d_4 \vec{x}_4 \cdot \vec{y}_1 - d \vec{x}_1 \cdot \vec{y}_1 = 0$$

$$\Rightarrow -r_2 \sin \theta_2 + d_4 \sin \theta_4 = 0$$

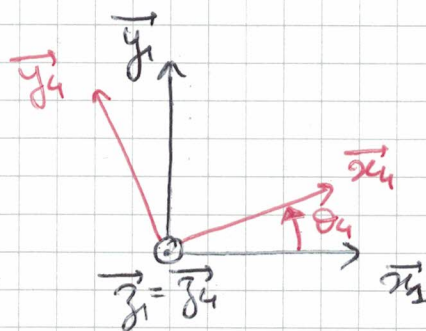
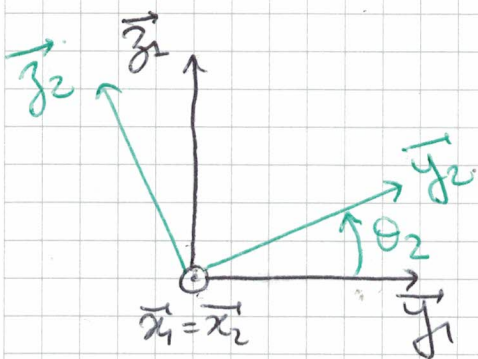
$$\Rightarrow \sin \theta_4 = \frac{r_2}{d_4} \sin \theta_2$$

Question 2

$\sin \theta_2$ varie de -1 à $+1$,

donc $\theta_4 \in \left[\arcsin\left(-\frac{r_2}{d_4}\right); \arcsin\left(\frac{r_2}{d_4}\right) \right]$

AN: $\theta_4 \in [2,4^\circ; 2,6^\circ]$



$$\begin{cases} \vec{y}_2 = \cos \theta_2 \vec{y}_1 + \sin \theta_2 \vec{z}_1 \\ \vec{z}_2 = \cos \theta_2 \vec{z}_1 - \sin \theta_2 \vec{y}_1 \end{cases}$$

$$\begin{cases} \vec{x}_4 = \cos \theta_4 \vec{x}_1 + \sin \theta_4 \vec{y}_1 \\ \vec{y}_4 = \cos \theta_4 \vec{y}_1 - \sin \theta_4 \vec{x}_1 \end{cases}$$