

TD – Centrifugeuse de laboratoire

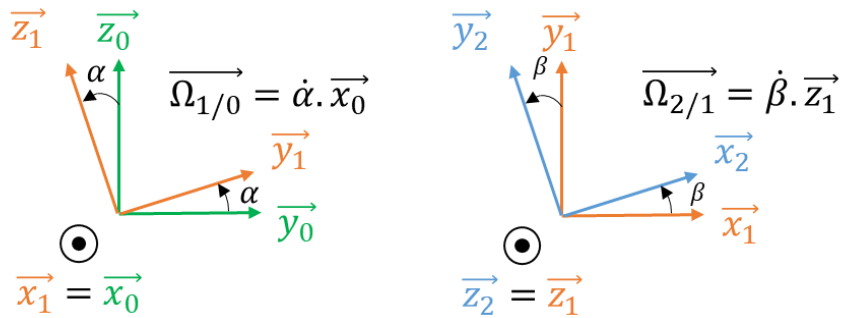
POINT METHODE :

- Dérivation vectorielle (Q2/Q3) :

$$\left[\frac{d\vec{U}}{dt} \right]_R = \left[\frac{d\vec{U}}{dt} \right]_{R_1} + \vec{\Omega}_{R_1/R} \wedge \vec{U}$$

ELEMENTS DE CORRECTION :

Q1 :



Q2 :

$$\overrightarrow{V(G \in 2/0)} = \left. \frac{d\overrightarrow{OG}}{dt} \right|_{R_0} = b \cdot \dot{\beta} \cdot \vec{y}_2 + (a \cdot \dot{\alpha} + b \cdot \dot{\alpha} \cdot \sin\beta) \cdot \vec{z}_2$$

Q3 :

$$\overrightarrow{\Gamma(G \in 2/0)} = -b \cdot \dot{\beta}^2 \cdot \vec{x}_2 + b \cdot \ddot{\beta} \cdot \vec{y}_2 - (a + b \cdot \sin\beta) \cdot \dot{\alpha}^2 \cdot \vec{y}_1 + ([a + b \cdot \sin\beta] \cdot \ddot{\alpha} + 2 \cdot b \cdot \dot{\alpha} \cdot \dot{\beta} \cdot \cos\beta) \cdot \vec{z}_2$$

Q4 :

$$\|\overrightarrow{\Gamma(G \in 2/0)}\| = 101 \text{ m/s}^2$$

Q5 :

$$\|\overrightarrow{\Gamma(G \in 2/0)}\| = 101 \text{ m/s}^2 > 24 \text{ m/s}^2 \rightarrow \text{OK CdCF}$$