

$$\Rightarrow \vec{w}_{sol} = \frac{\alpha}{2} \sin B \hat{e} + \frac{\alpha}{2} \sin B \hat{y}$$

$$\vec{u} = [\vec{I}_A] \vec{w}_{sol}$$

$$[\vec{I}_A] = \begin{bmatrix} \frac{w_A^2}{4} + w_A^2 & \frac{w_A^2}{2} + w_A^2 \\ \frac{w_A^2}{2} + w_A^2 & \frac{w_A^2}{2} \end{bmatrix} = \begin{bmatrix} \vec{I}_x & \vec{I}_y \\ \vec{I}_y & \vec{I}_z \end{bmatrix}$$

$$\vec{u} = [\vec{I}_A] \begin{pmatrix} \frac{\alpha}{2} \sin B \\ 0 \\ \frac{\alpha}{2} \sin B \end{pmatrix} \Rightarrow \left. \frac{d\vec{u}}{dt} \right|_{cl} = 0$$

$$\vec{u} = \left( \frac{w_A^2}{4} + w_A^2 \right) \frac{\alpha}{2} \sin B \hat{e} + \left( \frac{w_A^2}{2} + w_A^2 \right) \frac{\alpha}{2} \sin B \hat{y}$$

$$= \left( \frac{w_A^2}{4} + w_A^2 \right) \frac{\alpha}{2} \sin B \hat{e} + \frac{\alpha}{2} \sin B \hat{y}$$

$$\vec{u}_{ca} = \vec{u}_{sl} \times \vec{u} = \frac{\alpha}{2} \sin B \cos B \hat{e} \times \hat{y} - \frac{\alpha}{2} \sin^2 B \hat{e} \times \hat{y}$$

Además

$$\vec{u}_{ca} = \vec{r} \times \vec{v} = \frac{\alpha}{2} \sin B \hat{e} \times \hat{y} - \frac{\alpha}{2} \sin^2 B \hat{e} \times \hat{y}$$

Instante al No calculo

Igualando (1) y (2)

$$\frac{\alpha^2 w_{ay}}{w_A^2} = \frac{\cos B \hat{e} \times \hat{y} - \frac{\alpha}{2} \sin B \hat{e} \times \hat{y}}{w_A^2}$$