Mai 2024

1) 11) $\overrightarrow{\Omega}(I)_{Oz} = \omega \, \vec{e_z} = \vec{\Omega}(A)_{Oz}$

$\vec{\Omega}(P)_{AH} = -\omega' \, \vec{u}$

12) $\vec{v}(A) = \vec{v}(H) + \vec{\Omega}(A)_{Oz} \wedge \overrightarrow{HA}$

$= \vec{0} + \omega \vec{e_z} \wedge R\vec{u}$

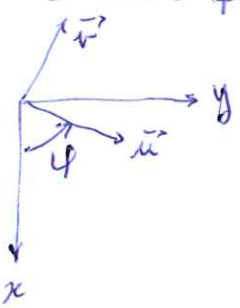
$= R\omega \vec{v}$

$\vec{v}(P) = \vec{v}(A) + \vec{\Omega}(P)_{AH} \wedge \overrightarrow{AP}$

$= R\omega \vec{v} + (-\omega' \vec{u}) \wedge \left(a\cos\theta \, \vec{e_z} + a \sin\theta \, \vec{v} \right)$

$= R\omega \vec{v} + a\omega' \cos\theta \, \vec{v} + a\omega' \sin\theta \, \vec{e_z}$

13)



$\vec{v} = \cos\varphi \, \vec{e_y} - \sin\varphi \, \vec{e_x}$

$\vec{v}(P) = R\omega \left(\cos\varphi \, \vec{e_y} - \sin\varphi \, \vec{e_x} \right) + a\omega' \cos\theta \, \vec{v} + a\omega' \sin\theta \, \vec{e_z}$

$$\Rightarrow \quad \vec{v}(P) = \begin{vmatrix} -a\omega' \sin\varphi \cos\theta - R\omega \sin\varphi \\ R\omega \cos\varphi + a\omega' \cos\varphi \cos\theta \\ a\omega' \sin\theta \end{vmatrix}$$

2) Voir TD