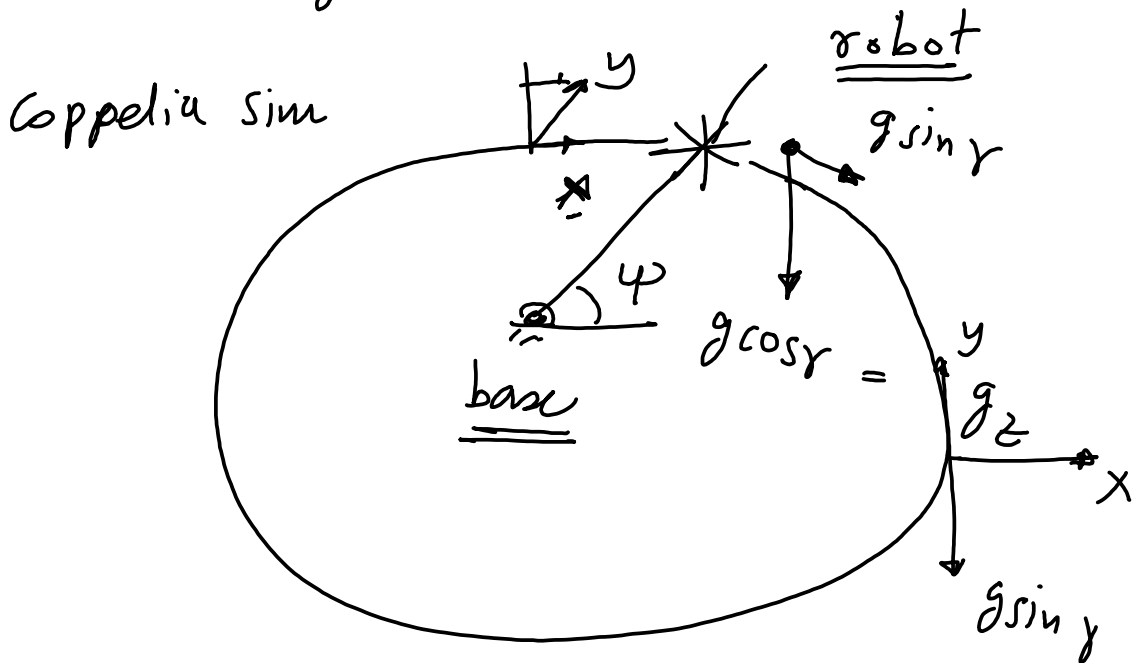
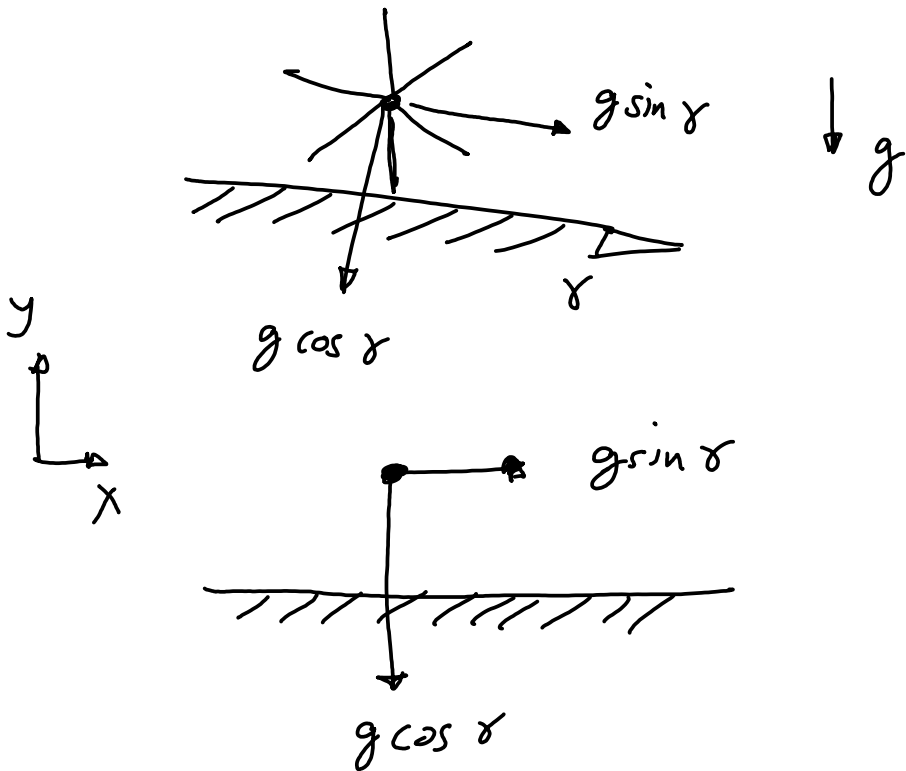


Coppelia Sim & walker simulations

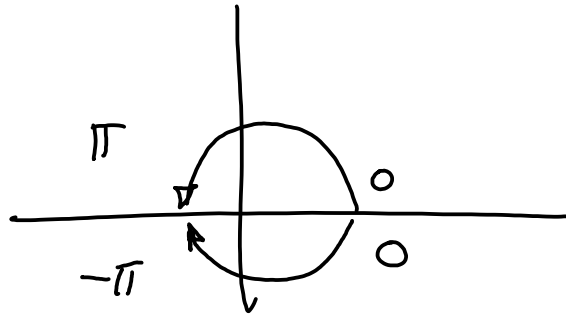


$$\psi = \tan^{-1} \left(\frac{\text{robot}(2) - \text{base}(2)}{\text{robot}(1) - \text{base}(1)} \right) \quad \begin{pmatrix} y \\ x \end{pmatrix}$$

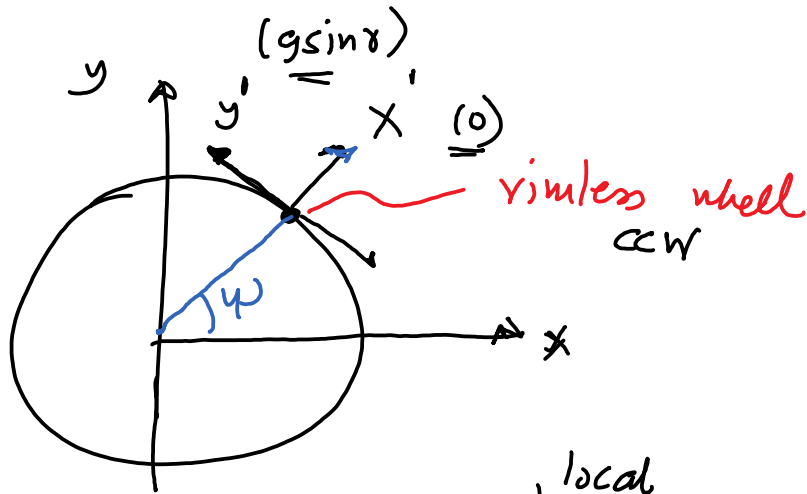
math.atan2 (ua)

atan2

Use



$$\underline{\psi} = \text{math. atan2} \left(\frac{\text{robot}(2) - \text{base}(2)}{\text{robot}(1) - \text{base}(1)} \right)$$



global

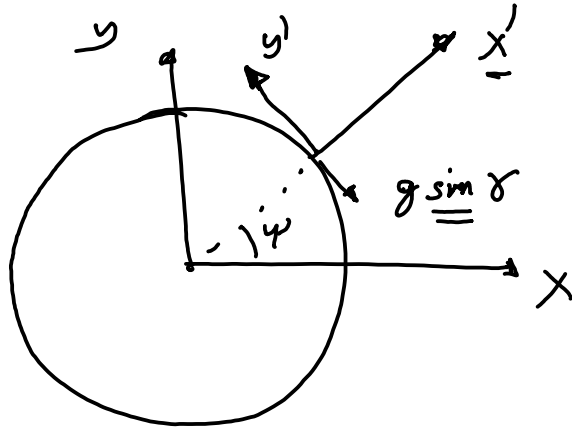
↓

$$\begin{pmatrix} g_x \\ g_y \end{pmatrix} = \begin{pmatrix} \cos \psi & -\sin \psi \\ \sin \psi & \cos \psi \end{pmatrix} \begin{pmatrix} g'_x \\ g'_y \end{pmatrix}$$

$$= \begin{pmatrix} \cos \psi & -\sin \psi \\ \sin \psi & \cos \psi \end{pmatrix} \begin{pmatrix} 0 \\ g \sin \gamma \end{pmatrix}$$

$$\begin{aligned} \rightarrow g_x &= (-\sin \psi) \oplus g \sin \gamma \\ \rightarrow g_y &= (\cos \psi) \oplus g \sin \gamma \\ \rightarrow g_z &= -g \cos \gamma \end{aligned}$$

CCW

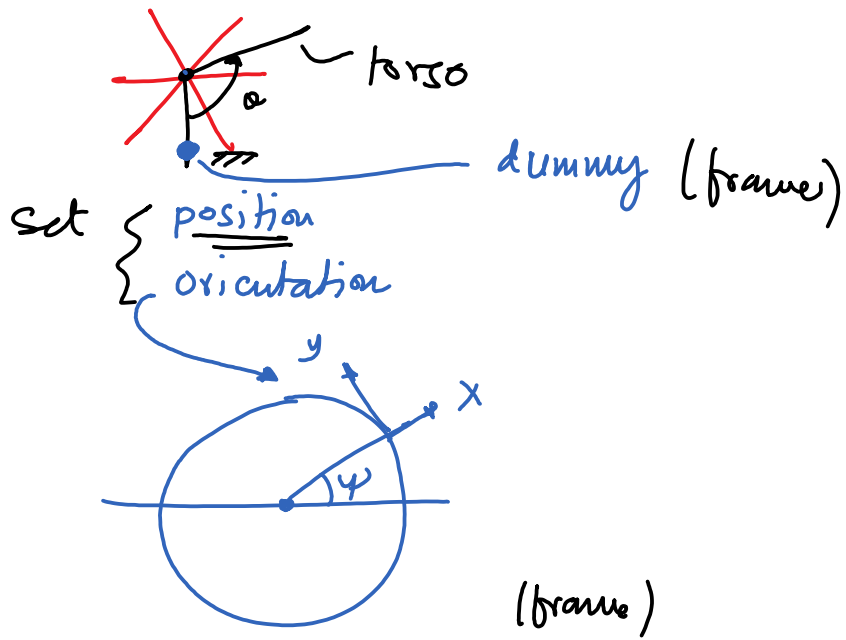


$$\begin{pmatrix} g_x \\ g_y \end{pmatrix} = \begin{pmatrix} \cos \psi & -\sin \psi \\ \sin \psi & \cos \psi \end{pmatrix} \begin{pmatrix} 0 \\ -g \sin \delta \end{pmatrix}$$

$$\begin{aligned} g_x &= (-g \sin \delta) (-\sin \psi) \\ g_y &= (-g \sin \delta) (\cos \psi) \\ g_z &= g \cos \delta \end{aligned} \quad \text{CW}$$

$$\begin{aligned} g_x &= (-\text{direction}) (g \sin \delta) (-\sin \psi) \\ g_y &= (+\text{direction}) (g \sin \delta) \cos \psi \\ g_z &= g \cos \delta \end{aligned}$$

$$\begin{aligned} \text{direction} &= +1 && \text{CCW} \\ &= -1 && \text{CW} \end{aligned}$$



euler = getorientation (torso, dummy)
 angle ✓