Cinématique Directe

Cinématique Inverse

Banalités...

$\theta_1 = \arctan \frac{P_{3x}}{P_{3y}}$

$L_{proj} = \sqrt{P_{3x}^2 + P_{3y}^2}$

$d_{13} = L_{proj} - L_1$

$d = \sqrt{d_{13}^2 + P_{3z}^2}$

$a = \arctan \frac{P_{3z}}{d_{13}}$

$b = \arccos \frac{L_2^2 + d^2 - L_3^2}{2 \times L_2 \times d}$

Partie 1 - Bras théorique

$$BrasTheorique_{cas1} \begin{cases} \theta_1 & = & \arctan \frac{P_{3x}}{P_{3y}} \\ \theta_2 & = & a + b \\ \theta_3 & = & \arccos \frac{L_2^2 + L_3^2 - d^2}{2 \times L_2 \times L_3} \end{cases}$$

$$BrasTheorique_{cas2} \begin{cases} \theta_1 & = & \arctan \frac{P_{3x}}{P_{3y}} \\ \theta_2 & = & a - b \\ \theta_3 & = & -\arccos \frac{L_2^2 + L_3^2 - d^2}{2 \times L_2 \times L_3} \end{cases}$$

Partie 2 - Bras réél

$$BrasReel_{cas1}\left\{\begin{array}{lcl}\theta_1 & = & \arctan\frac{P_{3x}}{P_{3y}}\\ \theta_2 & = & a+b-\alpha\\ \theta_3 & = & \arccos\frac{L_2^2+L_3^2-d^2}{2\times L_2\times L_3}+\beta\end{array}\right.$$

$$BrasReel_{cas2}\left\{\begin{array}{lcl}\theta_1 & = & \arctan\frac{P_{3x}}{P_{3y}}\\ \theta_2 & = & a-b-\alpha\\ \theta_3 & = & -\arccos\frac{L_2^2+L_3^2-d^2}{2\times L_2\times L_3}+\beta\end{array}\right.$$