SIMULATION

① Problem setup.

What are the admissible values ?

1.1 Definition of $\overbrace{a \text{ and } \xi_0}$

1.2. Building the parameters
$\alpha, \beta, \gamma, \delta, g_c, g_\theta, h_c, h_\theta, (\tau_k)_{k \in \mathbb{N}_4}$.

1.3. Building the matrices
$M_1, \dots, M_6$
and
$A_1, A_2, A_3, B_1, B_2, B_3$.

② Net displacement to given control curve.

2.1 Implement a control curve ξ

2.2 Calculate the net displacement by

How to integrate? Using quad?

$$\begin{cases} \delta p = h_c \sum_{k \in \mathbb{N}_3} \left(\int_J \det(\xi(t) \,|\, \dot\xi(t) \,|\, \tau_{k+1} \,|\, \tau_{k+2})\,dt \right) f_k \\ \quad + h_\theta \sum_{k \in \mathbb{N}_3} \left(\int_J \det(\xi(t) \,|\, \dot\xi(t) \,|\, \tau_k \,|\, \tau_{k+4})\,dt \right) f_{k+3} \end{cases}$$

(3) Optimal control curve to given net displacement.

3.1. Analysis of the net displacement:

3.1.1. Check whether ω is simple

3.1.2. If it is simple, find decomposition.

3.1.3. If it is not simple, find decomposition into two simple bivectors (with orthog. pairs).

3.2. Computation in the simple case:

3.2.1. Calculate u, v with Gram-Schmidt

3.2.2. Calculate a, b with (5.40).

3.2.3. Construct the optimal control curve $\zeta_*(t) := a\cos(t) + b\sin(t)$.

3.3. Computation in the non-simple case:

3.3.1 Calculate the a_i, a_i'

3.3.2 Construct the optimal control curve $\zeta_*(t) = a_1\cos(t) + a_1'\sin(t) + a_2\cos(2t) + a_2'\sin(2t)$.