

R1

Init : $x_1 = x_1(0) \quad |x_1 - x_{obj}| == 0$

Approach

$$\begin{aligned}\dot{x}_1 &= k_1(x_1 - x_{obj}) + k_2 \\ x_1^{out} &= x_1 \\ |x_1 - x_{obj}| &> 0\end{aligned}$$

Wait

$$\begin{aligned}\dot{x}_1 &= 0 \\ x_1^{out} &= x_1 \\ |x_2^{in} - x_{obj}| &> 0\end{aligned}$$

Transport

$$\begin{aligned}\dot{x}_1 &= 2 \\ x_1^{out} &= x_1 \\ x_1 - x_2^{in} &< k_5\end{aligned}$$

$$|x_1 - x_2| == 0$$

$$x_1 - x_2^{in} \geq k_5$$

 x_1^{out}
 x_2^{in}
 x_1^{in}
 x_2^{out}
R2

Init : $x_2 = x_2(0) \quad |x_2 - x_{obj}| == 0$

Approach

$$\begin{aligned}\dot{x}_2 &= k_3(x_2 - x_{obj}) + k_4 \\ x_2^{out} &= x_2 \\ |x_2 - x_{obj}| &> 0\end{aligned}$$

Wait

$$\begin{aligned}\dot{x}_2 &= 0 \\ x_2^{out} &= x_2 \\ |x_1^{in} - x_{obj}| &> 0\end{aligned}$$

Transport

$$\begin{aligned}\dot{x}_2 &= 2 \\ x_2^{out} &= x_2 \\ x_2 - x_1^{in} &< k_5\end{aligned}$$

$$|x_1 - x_2| == 0$$

$$x_2 - x_1^{in} \geq k_5$$

