Model Documentation of the Brockett Integrator

1 Nomenclature

1.1 Nomenclature for Model Equations

u_1, u_2 Inputs

2 Model Equations

State Vector and Input Vector:

$$\underline{x} = (x_1\ x_2\ x_3)^T$$
$$\underline{u} = (u_1\ u_2)^T$$

Model Equations:

$$\dot{x}_1 = u_1 \tag{1a}$$
$$\dot{x}_2 = u_2 \tag{1b}$$
$$\dot{x}_3 = x_2 u_1 - x_1 u_2 \tag{1c}$$

Parameters: *⟨not defined⟩*
Outputs: *⟨not defined⟩*

3 Derivation and Explanation

The Brockett Integrator is a non-holonomic integrator introduced by R. W. Brockett.

4 Simulation

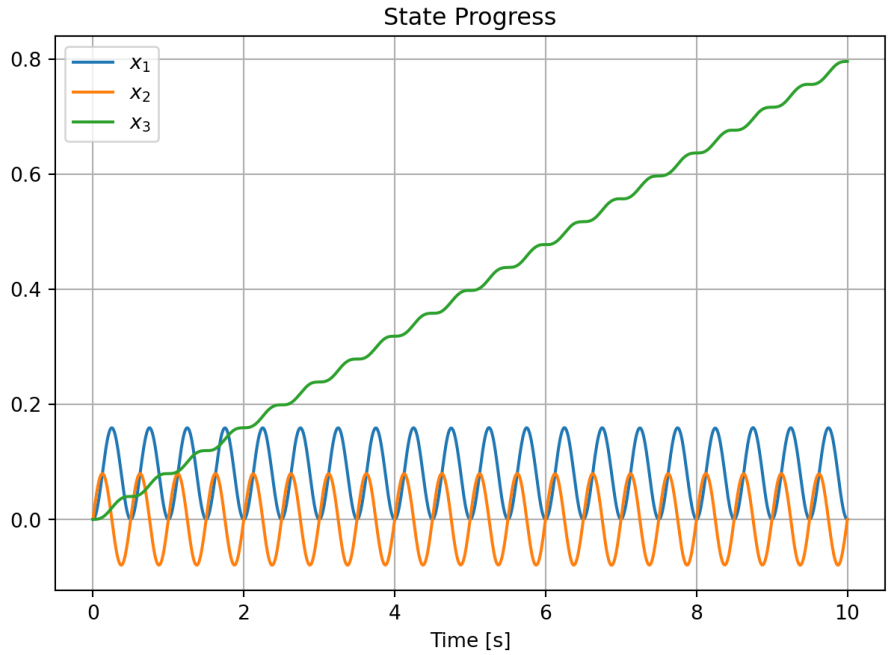

Figure 1: Simulation of the brockett integrator.

References

[1] Brockett, R. W.: *Asymptotic Stability and feedback stabilization*. In: R. W. Brockett, R. S. Millman and H. J. Sussmann, eds., Differential Geometric Control Theory. Boston: Birkhauser, published 1983.