

Model Documentation of the 'Automobile Gas Turbine'

1 Nomenclature

1.1 Nomenclature for Model Equations

- x state vector
- u control input vector
- w noise vector
- z regulated output vector
- y measurement vector

2 Model Equations

State Vector and Input Vector:

$$x \in \mathbb{R}^{12} \quad u \in \mathbb{R}^2 \quad w \in \mathbb{R}^{12} \quad z \in \mathbb{R}^{12} \quad y \in \mathbb{R}^2$$

System Equations:

$$\dot{x}(t) = Ax(t) + B_1w(t) + Bu(t) \tag{1a}$$

$$z(t) = C_1x(t) + D_{11}w(t) + D_{12}u(t) \tag{1b}$$

$$y(t) = Cx(t) + D_{21}w(t) \tag{1c}$$

Outputs: z

3 Derivation and Explanation

This model is part of the "COMpleib" - library and was automatically imported into ACKREP.

The original description was:

AGS Automobile Gas Turbine Y. S. Hung and A. G. J. MacFarlane, "Multivariable feedback A quasi-classical approach", Springer-Verlag, "Lecture Notes in Control and Information Sciences", 1982 p. 27/163

4 Simulation

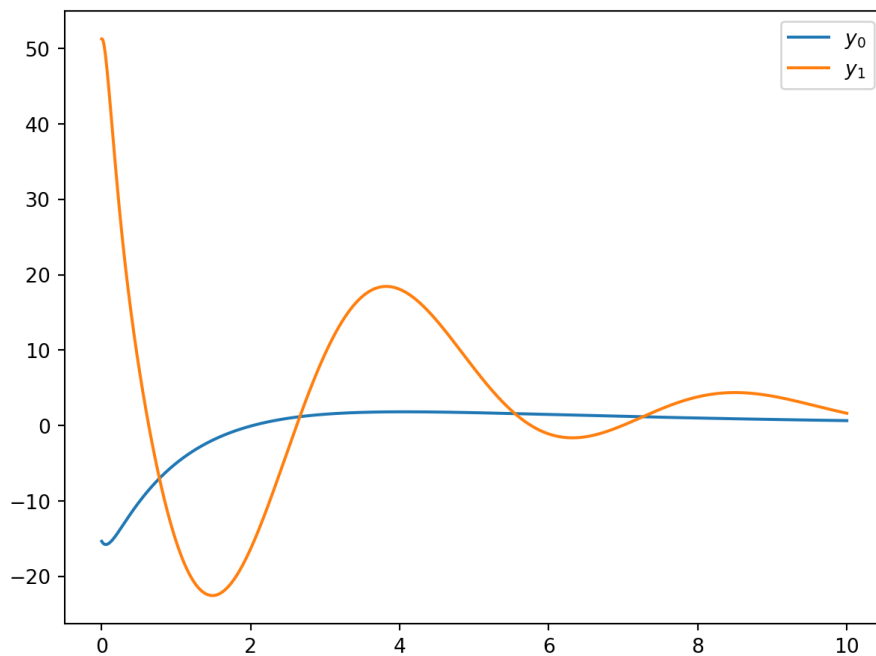


Figure 1: Simulation of the Automobile Gas Turbine.

References

- [1] . S. Hung and A. G. J. MacFarlane, "Multivariable feedback A quasi-classical approach", Springer-Verlag, "Lecture Notes in Control and Information Sciences", 1982 p. 27/163