Model Documentation of the 'B767 aircraft at a flutter condition'

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:

$$x \in \mathbb{R}^5 5u \qquad \in \mathbb{R}^2 w \in \mathbb{R}^3 z \qquad \in \mathbb{R}^5 y \in \mathbb{R}^2$$

System Equations:

$$\dot{x}(t) = Ax(t) + B_1 w(t) + Bu(t) \tag{1a}$$
$$z(t) = C_1 x(t) + D_{11} w(t) + D12u(t) \tag{1b}$$
$$y(t) = Cx(t) + D21w(t) \tag{1c}$$

Outputs: z

2.1 Exemplary parameter values

Symbol	Value								
	0.1015	−19.77	0	0	0	0	0	0	0
	19.77	0.1015	0	0	0	0	0	0	0
	0	0	−0.023202	−0.092543	0	0	0	0	0
	0	0	0.092543	−0.023202	0	0	0	0	0
	0	0	0	0	−0.3165	−14.33	0	0	0
	0	0	0	0	14.33	−0.3165	0	0	0
	0	0	0	0	0	0	−0.3892	−22.29	0
	0	0	0	0	0	0	22.29	−0.3892	0
	0	0	0	0	0	0	0	0	−0.9883
	0	0	0	0	0	0	0	0	36.16
	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0
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A	0	0	0	0	0	0	0	0	0
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	0	0	0	0	0	0	0	0	0
	0	0							
	0	0							

3 Derivation and Explanation

This model is part of the "'COMPleib"' - library and wasautomatically imported into ACKREP.
The original description was:
AC10 B767 aircraft at a flutter condition E. J. Davison, "Benchmark Problems for Control System Design", "Report of the IFAC Theory Comittee", 1990

4 Simulation

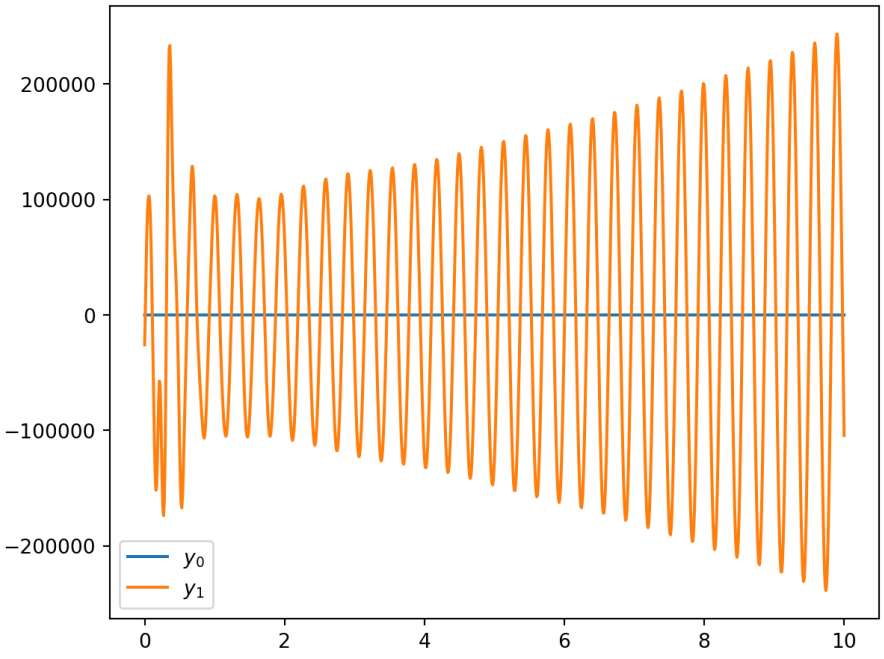

Figure 1: Simulation of the B767 aircraft at a flutter condition.

References

[1] . J. Davison, "Benchmark Problems for Control System Design", "Report of the IFAC Theory Comittee", 1990