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The Furuta Pendulum

Technical Report

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Abstract The Furuta Pendulum is an example of a complex non-linear system and therefore of big interest in control system theory. It consists of one controllable arm rotating in the horizontal plane and one pendulum uncontrollably moving in the vertical plane, which is attached to the end of this arm.
The non-linearities result from an interplay between gravitational, Coriolis and centripetal forces.
XX We present an overview over it's technical details and proposed algorithms to solve the control problem. XX

Keywords First keyword · Second keyword · More

1 Definitions

The system consists of an arm with lenght L_1 mounted to a DC motor, which is able to apply a torque of τ_1 to it. It has a mass of m_1 which is located at l_1 alongside the arm. Another arm with length L_2 and mass m_2 located at l_2 along itself is attached to the remaining side of the first arm. Both arms have inertia tensors J_1 and J_2 respectively and each rotational joint is damped viscously with damping coefficients b_1 and b_2, where the first coefficient is given by the bearings of the motor and the second one by the coupling between both arms.

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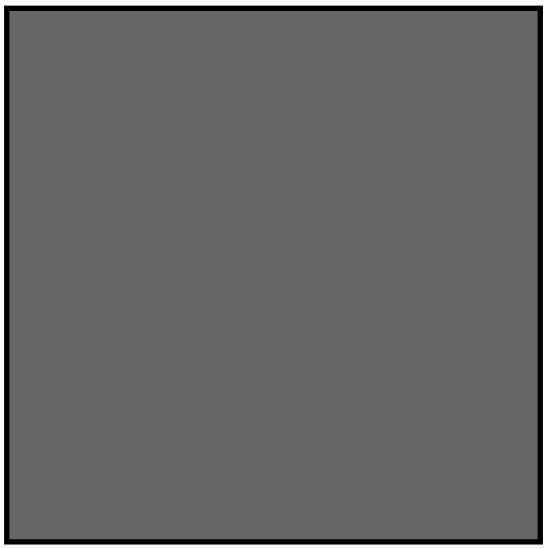

Fig. 1 Please write your figure caption here

Table 1 Please write your table caption here

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2 Introduction

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3 Section title

Text with citations [2] and [1].

3.1 Subsection title

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Paragraph headings Use paragraph headings as needed.

$$a^2 + b^2 = c^2 \tag{1}$$

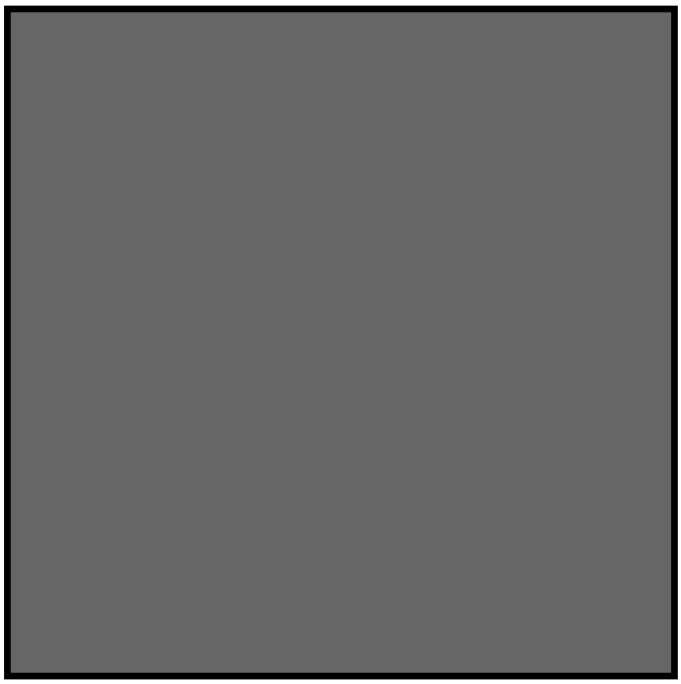

Fig. 2 Please write your figure caption here

References

1. Author, Article title, Journal, Volume, page numbers (year)
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