



Chaos Anti-Synchronization between Fractional-Order Lesser Date Moth Chaotic System and Integer-Order Chaotic System by Nonlinear Control

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Abstract: This paper investigates the phenomenon of chaos anti-synchronization between the fractional-order lesser date moth and the integer-order chaotic systems based on the Lyapunov stability theory and numerical differentiation. The nonlinear feedback control is the method used to achieve the anti-synchronization of chaotic systems addressed in this paper. Numerical examples are implemented to illustrate and validate the results.

Keywords: *chaos; anti-synchronization; nonlinear control; fractional-order chaotic system; integer-order chaotic system.*

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1 Introduction

Chaos is a fascinating nonlinear phenomenon that has received a lot of attention in recent years. During the previous two decades, the chaos theory proved to be effective in a wide range of areas such as data encryption [20], financial systems [18, 19], biology [23] and biomedical engineering [2], etc. Fractional-order chaotic dynamical systems have begun to attract a lot of attention in recent years and can be seen as a generalization of chaotic dynamic integer-order systems. The synchronization between a fractional-order chaotic system and an integer-order chaotic system is thoroughly a new domain which has begun

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