



Chaos Synchronization and Anti-Synchronization of Two Fractional-Order Systems via Global Synchronization and Active Control

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Received: December 23, 2018; Revised: July 9, 2019

Abstract: This paper investigates the phenomenon of chaos synchronization and anti-synchronization of two identical chaotic systems of the fractional-order lesser date moth model via the methods of global synchronization and active control. Numerical examples are provided to illustrate the results.

Keywords: *chaos; synchronization; anti-synchronization; active control; fractional-order systems.*

Mathematics Subject Classification (2010): 34H10, 37N35, 93C10, 93C15, 93C95.

1 Introduction

In recent years, the fractional calculus has become an excellent tool in modeling many physical phenomena and engineering problems [16]. One of the very important areas of application of fractional calculus is chaos theory. Chaos is a very interesting non-linear phenomenon that has been intensively studied over the past two decades. The chaos theory is found to be useful in many areas such as data encryption [14], financial systems [13], biology [17] 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. Recently, the study of the synchronization of fractional-order chaotic systems has become an active area of

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