

Date & Time

5 October 2018 (Friday) @ 3.15 pm

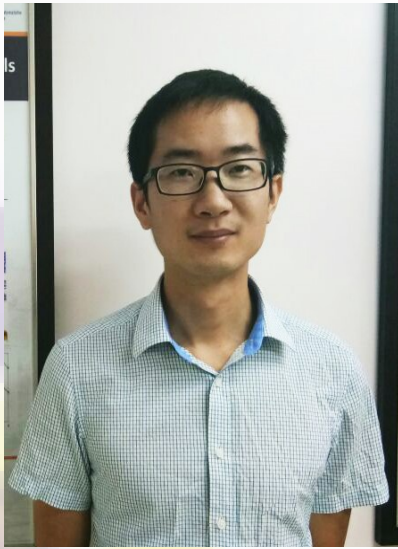
Venue

Al-Farabi Seminar Room,
Second Floor, INSPEM

Presenter

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Topic

Dynamics and Synchronization of Conformable Fractional-Order Hyperchaotic Systems using the Homotopy Analysis Method

Abstract

The conformable fractional-order (CFO) hyperchaotic system is solved by employing the proposed conformable Homotopy analysis method (CHAM). Relationship between HAM solution and its conformable Adomian decomposition method (CADM) solution is investigated. Dynamics of this system versus parameters and derivative order are analyzed by means of Lyapunov characteristic exponents, bifurcation diagrams, and multiscale complexity. Rich dynamical behaviors such as periodical circles, chaos and hyperchaos are observed. Meanwhile, it also shows that the system is more complex when q takes smaller values. Moreover, active synchronization of fractional-order hyperchaotic systems is investigated theoretically and numerically. It shows the effectiveness of the proposed methods and the potential application values of the CFO chaotic systems.

Keywords: Conformable fractional calculus; Hyperchaotic system; SampEn; Synchronization; Active controller