A new fractional order chaotic dynamical system and its synchronization using optimal control

MADHURI PATIL[1] and Sachin Bhalekar[2]

[1]Shivaji University Kolhapur
[2]Shivaji University,Kolhapur- 416004(India)

March 30, 2022

Abstract

In this work, we introduce a new three-dimensional chaotic differential dynamical system. We find equilibrium points of this system and provide the stability conditions for various fractional orders. Numerical simulations will be used to investigate the chaos in the proposed system. A simple linear control will be used to control the chaotic oscillations. Further, we propose an optimal control which is based on the fractional order of the system and use it to synchronize the new chaotic system.

Hosted file

`9.pdf` available at https://authorea.com/users/470326/articles/562556-a-new-fractional-order-chaotic-dynamical-system-and-its-synchronization-using-optimal-control