سیویلیکا - ناشر تخصصی مقالات کنفرانس ها و ژورنال ها
گواهی ثبت مقاله در سیویلیکا
CIVILICA.com

عنوان مقاله:

Suppression of Chaotic Behavior in Duffing-holmes System using Back-stepping Controller Optimized by Unified Particle Swarm Optimization Algorithm

محل انتشار:

ماهنامه بین المللی مهندسی, دوره 26, شماره 11 (سال: 1392)

تعداد صفحات اصل مقاله: 8

نویسندگان:

r Gholipour - *Faculty of Electrical and Computer Engineering, Babol University of Technology, Babol, Iran*

a Khosravi - *Faculty of Electrical and Computer Engineering, Babol University of Technology, Babol, Iran*

h Mojallali - *Electrical Engineering Department, Faculty of Engineering, University of Guilan, Rasht, Iran*

خلاصه مقاله:

The nonlinear behavior analysis and chaos control for Duffing-Holmes chaotic system is discussed in this paper. In order to suppress the irregular chaotic motion, an optimal back-stepping controller isdesigned. The back-stepping method consists of parameters with positive values. The improperselection of the parameters leads to inappropriate responses or even may lead to instability of the system. In this paper, the Unified particle swarm optimization (UPSO) algorithm is utilized to determine the convenient and optimal values of the parameters. The minimized objective function viaUPSO algorithm is a weighted sum of the Integral of Time multiplied Absolute Error (ITAE) and squared control signal. Fast control of chaos in a very short time and having more limited control signal for this purpose, are the great advantages of the proposed controller. Numerical simulations show the high performance of this method for chaos elimination in Duffing-Holmes system

کلمات کلیدی:

Duffing-holmes System,Control of Chaos,Back-stepping Controller,UPSO Algorithm

لینک ثابت مقاله در پایگاه سیویلیکا:

https://civilica.com/doc/254992