Master-slave chaos synchronization of uncertain nonlinear gyros using wavelet neural network

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Abstract

In this paper, an adaptive wavelet neural network controller (AWNNC) is proposed to synchronize two nonlinear identical chaotic gyros. The proposed AWNNC system is composed of a neural controller and a compensation controller. The neural controller uses a wavelet neural network to online approximate an ideal controller, and the compensation controller is used to guarantee system stable based on Lyapunov function candidate. Some simulation results verify the chaotic behavior of two nonlinear identical chaotic gyros can be synchronized by the proposed AWNNC scheme.

Keyword：Adaptive control; Wavelet neural network; Chaos synchronization