CHAOS SYNCHRONIZATION IN THREE-DIMENSIONAL SYSTEMS INVOLVED IN WEATHER PREDICTION

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Abstract

During recent decade a growing interest was observed in the problem of chaotic systems. The idea of synchronizing two identical real autonomous chaotic systems with different initial conditions was first introduced by Pecora and Carroll. Different types of synchronization have been developed in a variety of chaotic systems, such as complete synchronization, phase synchronization, generalized synchronization and so on. In this work a simple feedback method of control is used to stu dy synchronization for two three-dimensional chaotic systems. A comparison between Lorenz,

L ü and Ţ igan systems is also presented. The method offers a precise coupling for two identical oscillators. Our results show that the transient time until synchronization depends on initial conditions of two systems and on the control strength. The synchronization is fast when all control strengths were applied to synchronize the two identical threedimensional systems and the initial conditions of the two systems are nearly. The graphics of MATLAB soft is used to present the synchronization of these chaotic systems.

Key words: Lorenz system, feed-back method, MATLAB