

CHAOS SYNCHRONIZATION OF LÜ DYNAMICAL SYSTEM VIA LINEAR TRANSFORMATIONS

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ABSTRACT. Generalized synchronization of two unidirectionally coupled dynamical systems is a generalization of identical synchronization. In this paper, we study a special case of generalized synchronization e.g., linear generalized synchronization of two Lü dynamical systems.

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1. INTRODUCTION

Since 1990 chaos synchronization has been a topic of great attention. There has been engineering interest in the use of synchronization of chaos for the purpose of communications. Usually two dynamical systems are called synchronized if the distance between their corresponding states converges to zero as time goes to infinity. This type of synchronization is known as identical synchronization [Caroll and Pecora, 1990]. A generalization of this concept for unidirectionally coupled dynamical systems was proposed by Rulkov, Suschchik and Tsimring [1995], where two systems are synchronized if a static functional relation exists between the states of the systems and they called this kind of synchronization a generalized synchronization (GS). Generalized synchronization characterizes the dynamics of the response system that is driven by the output of a chaotic driving system. Kocarev and Partlitz [1996] formulated a condition for the occurrence of GS for the following systems:

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