



A New Hyper Chaotic System and Study of Hybrid Projective Synchronization Behavior

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Abstract: In this paper, hybrid projective synchronization (HPS) of two identical new hyper chaotic systems is defined and scheme of HPS is developed by using tracking control method. A new hyper chaotic system has been constructed and then response system. Numerical simulations verify the effectiveness of this scheme, which has been performed by mathematica.

Keywords: *hybrid projective synchronization; chaotic systems and hyper chaos; tracking control method.*

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1 Introduction

Chaos is a dynamical regime in which a system becomes extremely sensitive to initial conditions and reveals an unpredictable and random-like behavior, even though the underlying model of a system exhibiting chaos can be deterministic and very simple. Small differences in initial conditions yield widely diverging outcomes for chaotic systems, rendering long term prediction impossible in general. Chaotic behavior can be observed in many natural phenomenon such as weather etc. Pecora and Carroll introduced a paper entitled *Synchronization in Chaotic Systems* in 1990. By that time, if there was a system challenging the capability of synchronizing that was a chaotic one. They demonstrated that chaotic synchronization could be achieved by driving or replacing one of the variables of a chaotic system with a variable of another similar chaotic device. Chaotic synchronization did not attract much attention until Pecora and Carroll [8] introduced a method to synchronize two identical chaotic systems

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