MATLAB Simulation Model on Chaotic Asynchronous Transmitter and Receiver

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Abstract

In this research project a new method for secure information transmission, a chaotic communication system, is designed and presented. The architecture of the communication system is constructed using a Rössler Transmitter and Receiver. A message signal embedded in the transmitter and could be extracted by a stabilized Rössler Receiver.

1. Introduction

Network users have become critically concerned about security levels of information systems wiring up their electronic devices, due to the rapid increase of values of their transactions and communication. Security is now playing an essential role in the gr

In order to simulate the chaotic system in MATLAB, solutions to the above mentioned Rössler system would be necessary. Thus the 4^{th} order Runge-Kutta method was utilized to provide numerical solutions for the Rössler differential equations, as they do not have exact solutions as ordinary differential equations do [5].

Rössler Transmitter and Receiver

The basic idea of the communication system is based on chaotic signal masking and recovery. At the transmitter, a chaotic

Fig. 4 Plot

4. Conclusion

A chaos synchronization and secure communication method is designed and displayed. Using the Rössler communication system the communication effectiveness of the communication system is proved. The implemented message signal could be recovered after being embedded into the chaotic transmitter and stabilizing the error system with eigenvalues near the origins of value 1, 2 and 3. This new way of information transmission could benefit the improvement of secure communication.

5. Reference

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