A METHOD OF THE SECRECY COMMUNICATION USING FUZZY AND CHAOS

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Abstract. *The chaos synchronization system used for secrecy communication is considered. The compound system which consists of subsystems is chaos-synchronized. In order to increase the secrecy of models of subsystem, state of synchronization section in each subsystem is constituted by fuzzy model. Subsystems with the same chaotic dynamics are asynchronous at first. The considered non-linear feedback control is applied to the chaos synchronization control. The control input for the chaos synchronization can be made small by use of the Unstable Periodic Regions based on the chaotic characteristic of the subsystems, then. It is important that the mathematical model of the chaos system used in synchronization sections or the encryption section is not known by the third person. However, the mathematical model of the chaos known well is used for them. Using the state of the chaos synchronization section, bifurcation parameter is changed and chaos modulations are performed. And the chaos state of the encryption section is used for encryption of information signals. The chaos dynamics of the encryption section is generated using Chaos Neuron dynamics of Chaos Neural Network.*
Keywords: Secrecy communication, Chaos synchronization, Fuzzy model

1. **Introduction.** Recently, networking of using computer is spread. And, use of networks, such as the Internet, is progressing increasingly. Since the problem on security is actualizing, the secrecy communicating method is studied extensively. As one of them, there is chaos communication as secure communication, which uses the chaos signal for encryption of the information signal [1]. Further, the technique using the chaos synchronization is also proposed. Although the chaos synchronization is easy to constitute, it is excellent in secrecy quality [2,4].

This research is related with chaos communication, and is targeting the chaos synchronization systems of discrete time. Chaos synchronization is the phenomenon that the state of each subsystem becomes equal. Each subsystem is mutually combined and has the same chaotic dynamics. The state of each synchronization section of the transmission side and the reception side is synchronized only at the time of signal transmission [4,5]. And, it is used as a code key. The chaos signals are chaos modulated using this key. Using