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FACULTY OF ARTS AND SCIENCES
DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCES

SEMINAR

Attraction of Li-Yorke chaos by retarded SICNNs

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Abstract

In this study, dynamics of retarded shunting inhibitory cellular neural networks (SICNNs) is investigated with Li-Yorke chaotic external inputs and outputs. Within the scope of our results, we prove the presence of generalized synchronization in coupled retarded SICNNs, and confirm it by means of the auxiliary system approach. We have obtained more than just synchronization, as it is proved that the Li-Yorke chaos is extended with its ingredients, proximality and frequent separation, which have not been considered in the theory of synchronization at all. Our procedure is used to synchronize chains of unidirectionally coupled neural networks. The results may explain the high performance of brain functioning and can be extended by specific stability analysis methods. Illustrations supporting the results are depicted. For the first time in the literature, proximality and frequent separation features are demonstrated numerically for continuous-time dynamics.

All interested are cordially invited.

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