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Structure of Synchronized Chaos Studied by Symbolic Analysis in Velocity–Curvature Space

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Abstract. A new method of symbolic analysis based on finite discretization of velocity–curvature space is proposed. A minimum alphabet is introduced in a natural way, and a number of initial analytic measures are defined that make it possible to study the structure of discrete mapping dynamics. The proposed method is tested by application to a system of two unidirectionally coupled logistic maps. It is shown that this method can be used to reveal and study changes in the structure of attractors. In the given example, features in the attractor structure of the driven subsystem are studied upon its escape from the identical synchronization regime.

Keywords: Symbolic Analysis, Curvature, Structure, Synchronized Chaos.

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