Local aspects of entropy and chaos of discrete dynamical systems

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Summary of the thesis

In this paper we analyze local aspects of (nonautonomous) dynamical systems of continuous self-functions. We describe a local complexity and unpredictability of such systems.

Basic definitions, symbols and theorems useful in this paper are included in Chapter 1.

In Chapter 2 we introduce the new definition of a point that accumulates entropy, which was inspired by a known definition of the focal entropy point. Then we analyze relations between some periodic dynamical system and the autonomous dynamical system that was generated by the previous one. We formulate the conclusion from these analysis as Theorem 39. We also study points focusing entropy and how they are connected with other types of points like wandering points. In Theorem 43 we approximate functions by functions from special equivalence class to get some specific result.

In Chapter 3 we explore relations between points focusing entropy, chaos and distributional chaos. We formulate Theorem 55 in which we compare four types of dynamical systems, depending on having (or not) points listed above. We proved that some specific families of dynamical systems are dense in the space of dynamical systems defined on $\mathbb{I}^l$.

The Last Chapter is connected with semigroups and distortions. We based our research on the definition of a point strongly focusing entropy of finite family of functions.