



Multi-sensitivity with respect to a vector for semiflows defined on Hausdorff uniform spaces

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Abstract

We introduce and study several stronger notions of sensitivity, such as multi-sensitivity with respect to a vector, $\mathcal{N}$ -sensitivity and strong multi-sensitivity, for semiflows defined on Hausdorff uniform spaces. Some sufficient conditions for a semiflow to be multi-sensitive with respect to a vector are presented. Moreover, the notion of multi-sensitivity with respect to a vector is studied on the arbitrary product of semiflows and on hyperspatial semiflows. Some examples are also provided to illustrate the results obtained.

Keywords Semiflow · Multi-sensitivity with respect to a vector · $\mathcal{F}$ -sensitivity · Product semiflow

1 Introduction

In recent years, there has been a significant study of topological dynamical systems under general semigroup actions, known as semiflows. Also, complexity of a semiflow is a central topic of research. Since the introduction of the mathematical concept of chaos by Li and Yorke [9] in 1975, various definitions of chaos have been introduced and extensively studied by many researchers. Each chaos definition represents complexity of a semiflow in its own sense. Among them, Devaney's definition of chaos, known as Devaney chaos [3], is very well-known. It consists of three conditions, namely, topological transitivity, denseness of periodic points and sensitivity. The idea

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