

STATISTICAL PROPERTIES OF CHAOTIC SYSTEMS

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ABSTRACT. The theory of smooth dynamical systems and the theory of abstract dynamical systems (ergodic theory), although having the same roots, have for many years developed quite independently of one another. These theories have now matured to the point where they can be combined to shed light on the nature of chaotic behavior.

Introduction

1. Overview

- 1.1 Smooth dynamical systems
- 1.2 Abstract dynamical systems
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 - 1.2.2 Concrete systems
- 1.3 Stationary processes
- 1.4 The picture from the point of view of abstract dynamical systems
- 1.5 Smooth systems and hyperbolic structure
- 1.6 Isomorphism of smooth systems
- 1.7 α -congruence
- 1.8 α -congruence and smooth systems
- 1.9 Historical overview of isomorphism theory of chaotic systems
- 1.10 More recent results in abstract isomorphism theory

2. α -congruence

- 2.1 Strong stochastic stability
- 2.2 Stability under random perturbations
- 2.3 Scaling time
- 2.4 Bernoulli flows and Markov processes
- 2.5 Long-term versus short-term behavior and simulation
- 2.6 Instability, or when α -congruence fails

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