

Hausdorff dimension of recurrence sets

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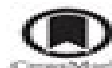
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Received 10 March 2023; revised 5 January 2024

Accepted for publication 19 March 2024

Published 2 April 2024

Recommended by Dr Lorenzo J Diaz



Abstract

We consider linear mappings on the 2-dimensional torus, defined by $T(x) = Ax \pmod{1}$, where A is an invertible 2×2 integer matrix, with no eigenvalues on the unit circle. In the case $\det A = \pm 1$, we give a formula for the Hausdorff dimension of the set

$$\{x \in \mathbb{T}^2 : d(T^n(x), x) < e^{-n\alpha} \text{ for infinitely many } n\}.$$

Keywords: Hausdorff dimension, recurrence, linear maps

Mathematics Subject Classification numbers: 37C45, 37D20, 28A80

1. Introduction

Let $(X, \mathcal{B}, T, \mu, d)$ be a metric measure preserving system (m.m.p.s.). If (X, d) is a separable metric space, then the well-known Poincaré recurrence theorem shows that μ -a.e. $x \in X$ is recurrent, that is

$$\liminf_{n \rightarrow \infty} d(T^n x, x) = 0.$$

It tells us that for μ -almost every $x \in X$, the orbit returns to a sequence of shrinking targets of the initial point infinitely many times. However, the theorem tells us nothing about the speed at which the orbit can return to the initial point or the shrinking targets of the the initial point. Boshernitzan [5] investigated the rate of recurrence for general systems.

Theorem 1.1 ([3]). *Let $(X, \mathcal{B}, T, \mu, d)$ be a m.m.p.s. Assume that for some $\tau > 0$, the τ -dimensional Hausdorff measure \mathcal{H}^τ of X is σ -finite. Then for μ -a.e. $x \in X$,*

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Exact Hausdorff Dimension In Random Recu

Daniela Niemeyer



Exact Hausdorff Dimension In Random Recu:

This book delves into Exact Hausdorff Dimension In Random Recu. Exact Hausdorff Dimension In Random Recu is a vital topic that needs to be grasped by everyone, ranging from students and scholars to the general public. This book will furnish comprehensive and in-depth insights into Exact Hausdorff Dimension In Random Recu, encompassing both the fundamentals and more intricate discussions.

1. This book is structured into several chapters, namely:
 - Chapter 1: Introduction to Exact Hausdorff Dimension In Random Recu
 - Chapter 2: Essential Elements of Exact Hausdorff Dimension In Random Recu
 - Chapter 3: Exact Hausdorff Dimension In Random Recu in Everyday Life
 - Chapter 4: Exact Hausdorff Dimension In Random Recu in Specific Contexts
 - Chapter 5: Conclusion
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 6. In chapter 5, the author will draw a conclusion about Exact Hausdorff Dimension In Random Recu. The final chapter will summarize the key points that have been discussed throughout the book.
- The book is crafted in an easy-to-understand language and is complemented by engaging illustrations. This book is highly recommended for anyone seeking to gain a comprehensive understanding of Exact Hausdorff Dimension In Random Recu.

<http://www.pet-memorial-markers.com/book/virtual-library/default.aspx/Handcrafted%20Windows%20And%20Doors.pdf>

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