

## The Ergodic Theory Of Cellular Automata

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### The Ergodic Theory Of Cellular

Ergodic Theory Dynam Syst 26(4):1203-1224 Google Scholar 90. Maass A, Martínez S, Pivato M, Yassawi R (2006) Attractiveness of the Haarmeasure for the action of linear cellular automata in abelian topological Markov chains.

### Ergodic Theory of Cellular Automata | SpringerLink

(1975). The ergodic theory of CA is important for several reasons: • CA are topological dynamical systems. We can gain insight into the topological dynamics of a CA by identifying its invariant measures, and then studying the corresponding measurable dynamics (see also Chaotic Behaviour of CA and Topo-

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## **(PDF) Ergodic Theory of Cellular Automata | Marcus Pivato ...**

Ergodic theory is the study of how a dynamical system transforms the information encoded in an invariant probability measure. This article reviews the major recent results in the ergodic theory of cellular automata.

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Ergodic theory is the study of how a dynamical system transforms the information encoded in an invariant probability measure. This article reviews the major recent results in the ergodic theory of...

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Ergodic theory is often concerned with ergodic transformations. The intuition behind such transformations, which act on a given set, is that they do a thorough job "stirring" the elements of that set (e.g., if the set is a quantity of hot oatmeal in a bowl, and if a spoonful of syrup is dropped into the bowl, then iterations of the inverse of an ergodic transformation of the oatmeal will not ...

## **Ergodic theory - Wikipedia**

The main contribution of this paper is an easy-to-check necessary and sufficient condition for a linear cellular automaton over  $Z^m$  to be ergodic. We prove that, for general cellular automata, ergodicity is equivalent to topological chaos (transitivity and sensitivity to initial conditions).

## **On ergodic linear cellular automata over $Z^m$ | SpringerLink**

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An Introduction to Ergodic Theory (Springer: Berlin, 1982). [14] Wang , H. . Proving theorems by pattern recognition II Bell System Tech. J. 40 ( 1961 ), 1 - 41 .

### **The topological entropy of cellular automata is ...**

This textbook provides a broad introduction to the fields of dynamical systems and ergodic theory. Motivated by examples throughout, the author offers an approachable entry-point to the dynamics of ergodic systems. Applications complement the theory, ranging from financial fraud to virus dynamics.

### **Ergodic Dynamics - From Basic Theory to Applications ...**

Ergodic theory In a series of papers published in 1932, von Neumann made foundational contributions to ergodic theory, a branch of mathematics that involves the states of dynamical systems with an invariant measure.

### **John von Neumann - Wikipedia**

Ergodic theorem, ergodic theory, and statistical mechanics PNAS 2015 112:1907 . Core Concept. Steven Ashley Core Concept: Ergodic theory plays a key role in multiple fields PNAS 2015 112:1914 . Classic Article. J. v. Neumann Proof of the Quasi-Ergodic Hypothesis PNAS 1932 18:70 . Classic Article. George D. Birkhoff

### **PNAS Classics | PNAS**

The application of formal language theory to the dynamical behaviour of cellular automata. A dissertation presented to the faculty of Princeton University in Candidacy for the degree of Doctor of Philosophy ( 1988 ).

### **On the sofic limit sets of cellular automata | Ergodic ...**

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Some more results about ergodic properties of surjective cellular automata are obtained. Let  $X$  be a closed translationally invariant subset of the  $d$ -dimensional full shift  $P^{\mathbb{Z}^d}$ , where  $P$  is a finite set, and suppose that the  $\mathbb{Z}^d$ -action on  $X$  by translations has positive topological entropy. Let  $G$  be a finitely generated group of polynomial growth.

### **On the ergodic theory of cellular automata and two ...**

Theoretical Computer Science ELSEVIER Theoretical Computer Science 205 (1998) 135-144 - Ergodic characterization of linear cellular automata over  $\mathbb{Z}^m$  Tadakazu Sato Department of Information und Computer Science, Toyo University, 2100, Kujirai, Kawaae, Saitama, Japan Received May 1996; received in revised form February 1997 Communicated by M. Ito Abstract In this paper, we introduce a set  $E(\text{foo})$  which consists of all points  $r \in \mathbb{Z}^2$  such that the composite map  $\text{ff}^{\wedge}/\text{oo}$  ) of a shift transformation ...

### **Ergodic characterization of linear cellular automata over ...**

As a byproduct, we get that for linear cellular automata ergodicity is equivalent to topological transitivity. Finally, we prove that for 1-dimensional linear cellular automata over  $\mathbb{Z}^m$ , regularity (denseness of periodic orbits) is equivalent to surjectivity.

### **Ergodicity, transitivity, and regularity for linear ...**

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algebraic cellular automaton. We

### **RIGIDITY RESULTS IN CELLULAR AUTOMATA THEORY ...**

[27] B. Hellouin de Menibus and M. Sablik, Characterization of sets of limit measures of a cellular automaton iterated on a random configuration, *Ergodic Theory and Dynamical Systems* 38 (2018), no. 2, 601–650.

### **Marcovici , Sablik , Taati : Ergodicity of some classes of ...**

Ergodic theory of dynamical systems and its applications to the analysis of biological processes at molecular, cellular and population levels. Quantum statistics as a formalism to investigate the dynamics of electron transport and proton transduction in cellular metabolism.

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