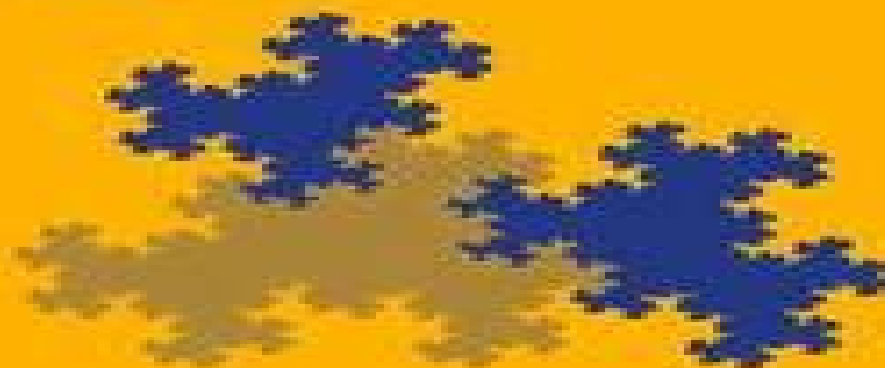


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Substitutions in Dynamics, Arithmetics and Combinatorics

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Substitutions In Dynamics Arithmetics And Combinatorics

Robert Mercaş, Daniel Reidenbach



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Substitutions in Dynamics, Arithmetics and Combinatorics Valerie Pytheas Fogg N Berthe, Sebastien Ferenczi, Christian Mauduit, 2014-01-15 *Combinatorics, Automata and Number Theory* Valérie Berthé, Michel Rigo, 2010-08-12 This collaborative volume presents recent trends arising from the fruitful interaction between the themes of combinatorics on words automata and formal language theory and number theory Presenting several important tools and concepts the authors also reveal some of the exciting and important relationships that exist between these different fields Topics include numeration systems word complexity function morphic words Rauzy tilings and substitutive dynamical systems Bratelli diagrams frequencies and ergodicity Diophantine approximation and transcendence asymptotic properties of digital functions decidability issues for DOL systems matrix products and joint spectral radius Topics are presented in a way that links them to the three main themes but also extends them to dynamical systems and ergodic theory fractals tilings and spectral properties of matrices Graduate students research mathematicians and computer scientists working in combinatorics theory of computation number theory symbolic dynamics fractals tilings and stringology will find much of interest in this book

Substitution and Tiling Dynamics: Introduction to Self-inducing Structures Shigeki Akiyama, Pierre Arnoux, 2020-12-05 This book presents a panorama of recent developments in the theory of tilings and related dynamical systems It contains an expanded version of courses given in 2017 at the research school associated with the Jean Morlet chair program Tilings have been designed used and studied for centuries in various contexts This field grew significantly after the discovery of aperiodic self similar tilings in the 60s linked to the proof of the undecidability of the Domino problem and was driven further by Dan Shechtman's discovery of quasicrystals in 1984 Tiling problems establish a bridge between the mutually influential fields of geometry dynamical systems aperiodic order computer science number theory algebra and logic The main properties of tiling dynamical systems are covered with expositions on recent results in self similarity and its generalizations fusions rules and S adic systems algebraic developments connected to physics games and undecidability questions and the spectrum of substitution tilings

Combinatorics on Words Robert Mercas, Daniel Reidenbach, 2019-09-02 This book constitutes the refereed proceedings of the 12th International Conference on Combinatorics on Words WORDS

2019 held in Loughborough UK in September 2019 The 21 revised full papers presented in this book together with 5 invited talks were carefully reviewed and selected from 34 submissions WORDS is the main conference series devoted to the mathematical theory of words In particular the combinatorial algebraic and algorithmic aspects of words are emphasized Motivations may also come from other domains such as theoretical computer science bioinformatics digital geometry symbolic dynamics numeration systems text processing number theory etc **Combinatorics on Words** Anna Frid, Robert Mercas, 2023-05-30 This book constitutes the refereed proceedings of the 14th International Conference on Combinatorics on Words WORDS 2023 held in Ume Sweden during June 12 16 2023 The 19 contributed papers presented in this book were carefully reviewed and selected from 28 submissions In addition the volume also contains 3 invited papers WORDS is the main conference series devoted to combinatorics on words This area is connected to several topics from computer science and mathematics including string algorithms automated proofs discrete dynamics number theory and of course classical combinatorics **Substitution Dynamical Systems - Spectral Analysis** Martine Queffélec, 2010-01-30 This volume mainly deals with the dynamics of finitely valued sequences and more specifically of sequences generated by substitutions and automata Those sequences demonstrate fairly simple combinatorial and arithmetical properties and naturally appear in various domains As the title suggests the aim of the initial version of this book was the spectral study of the associated dynamical systems the first chapters consisted in a detailed introduction to the mathematical notions involved and the description of the spectral invariants followed in the closing chapters This approach combined with new material added to the new edition results in a nearly self contained book on the subject New tools which have also proven helpful in other contexts had to be developed for this study Moreover its findings can be concretely applied the method providing an algorithm to exhibit the spectral measures and the spectral multiplicity as is demonstrated in several examples Beyond this advanced analysis many readers will benefit from the introductory chapters on the spectral theory of dynamical systems others will find complements on the spectral study of bounded sequences finally a very basic presentation of substitutions together with some recent findings and questions rounds out the book **Combinatorics on Words** Juhani Karhumäki, Arto Lepistö, Luca Zamboni, 2013-08-15 This book constitutes the refereed proceedings of the 9th International Conference on Combinatorics on Words WORDS 2013 held in Turku Finland in September 2013 under the auspices of the EATCS The 20 revised full papers presented were carefully reviewed and selected from 43 initial submissions The central topic of the conference is combinatorics on words i e the study of finite and infinite sequence of symbols from varying points of view including their combinatorial algebraic and algorithmic aspects as well as their applications **Mathematics of Aperiodic Order** Johannes Kellendonk, Daniel Lenz, Jean Savinien, 2015-06-05 What is order that is not based on simple repetition that is periodicity How must atoms be arranged in a material so that it diffracts like a quasicrystal How can we describe aperiodically ordered systems mathematically Originally triggered by the later Nobel prize winning discovery of quasicrystals

the investigation of aperiodic order has since become a well established and rapidly evolving field of mathematical research with close ties to a surprising variety of branches of mathematics and physics This book offers an overview of the state of the art in the field of aperiodic order presented in carefully selected authoritative surveys It is intended for non experts with a general background in mathematics theoretical physics or computer science and offers a highly accessible source of first hand information for all those interested in this rich and exciting field Topics covered include the mathematical theory of diffraction the dynamical systems of tilings or Delone sets their cohomology and non commutative geometry the Pisot substitution conjecture aperiodic Schrödinger operators and connections to arithmetic number theory

Integers Bruce Landman, 2014-06-18 Integers is a refereed online journal devoted to research in the area of combinatorial number theory It publishes original research articles in combinatorics and number theory Topics covered by the journal include additive number theory multiplicative number theory sequences and sets extremal combinatorics Ramsey theory elementary number theory classical combinatorial problems hypergraphs and probabilistic number theory Integers also houses a combinatorial games section This work presents all papers of the 2013 volume in book form

Dynamics: Topology and Numbers Pieter Moree, Anke Pohl, Lubomír Snoha, Tom Ward, 2020-02-12 This volume contains the proceedings of the conference Dynamics Topology and Numbers held from July 2-6 2018 at the Max Planck Institute for Mathematics Bonn Germany The papers cover diverse fields of mathematics with a unifying theme of relation to dynamical systems These include arithmetic geometry flat geometry complex dynamics graph theory relations to number theory and topological dynamics The volume is dedicated to the memory of Sergiy Kolyada and also contains some personal accounts of his life and mathematics

Ergodic Theory, Dynamical Systems, and the Continuing Influence of John C. Oxtoby Joseph Auslander, Aimee Johnson, Cesar E. Silva, 2016-11-29 This volume contains the proceedings of three conferences in Ergodic Theory and Symbolic Dynamics the Oxtoby Centennial Conference held from October 30-31 2010 at Bryn Mawr College the Williams Ergodic Theory Conference held from July 27-29 2012 at Williams College and the AMS Special Session on Ergodic Theory and Symbolic Dynamics held from January 17-18 2014 in Baltimore MD This volume contains articles covering a variety of topics in measurable symbolic and complex dynamics It also includes a survey article on the life and work of John Oxtoby providing a source of information about the many ways Oxtoby's work influenced mathematical thought in this and other fields

Algebraic and Topological Dynamics S. F. Koliada, Thomas Ward, 2005 This volume contains a collection of articles from the special program on algebraic and topological dynamics and a workshop on dynamical systems held at the Max Planck Institute Bonn Germany It reflects the extraordinary vitality of dynamical systems in its interaction with a broad range of mathematical subjects Topics covered in the book include asymptotic geometric analysis transformation groups arithmetic dynamics complex dynamics symbolic dynamics statistical properties of dynamical systems and the theory of entropy and chaos The book is suitable for graduate students and researchers interested in dynamical systems

Reachability Problems Sylvain

Schmitz,Igor Potapov,2020-10-15 This book constitutes the refereed proceedings of the 14th International Conference on Reachability Problems RP 2020 held in Paris France in October 2020 The 8 full papers presented were carefully reviewed and selected from 25 submissions In addition 2 invited papers were included in this volume The papers cover topics such as reachability for infinite state systems rewriting systems reachability analysis in counter timed cellular communicating automata Petri nets computational aspects of semigroups groups and rings reachability in dynamical and hybrid systems frontiers between decidable and undecidable reachability problems complexity and decidability aspects predictability in iterative maps and new computational paradigms

Ergodic Theory and Dynamical Systems in their Interactions with Arithmetics and Combinatorics Sébastien Ferenczi,Joanna Kułaga-Przymus,Mariusz Lemańczyk,2018-06-15 This book concentrates on the modern theory of dynamical systems and its interactions with number theory and combinatorics The greater part begins with a course in analytic number theory and focuses on its links with ergodic theory presenting an exhaustive account of recent research on Sarnak's conjecture on Möbius disjointness Selected topics involving more traditional connections between number theory and dynamics are also presented including equidistribution homogenous dynamics and Lagrange and Markov spectra In addition some dynamical and number theoretical aspects of aperiodic order some algebraic systems and a recent development concerning tame systems are described

Combinatorics on Words , The two parts of this text are based on two series of lectures delivered by Jean Berstel and Christophe Reutenauer in March 2007 at the Centre de Recherches Mathématiques Montreal Canada Part I represents the first modern and comprehensive exposition of the theory of Christoffel words Part II presents numerous combinatorial and algorithmic aspects of repetition free words stemming from the work of Axel Thue a pioneer in the theory of combinatorics on words A beginner to the theory of combinatorics on words will be motivated by the numerous examples and the large variety of exercises which make the book unique at this level of exposition The clean and streamlined exposition and the extensive bibliography will also be appreciated After reading this book beginners should be ready to read modern research papers in this rapidly growing field and contribute their own research to its development Experienced readers will be interested in the finitary approach to Sturmian words that Christoffel words offer as well as the novel geometric and algebraic approach chosen for their exposition They will also appreciate the historical presentation of the Thue Morse word and its applications and the novel results on Abelian repetition free words

Combinatorics on Words Srećko Brlek,Francesco Dolce,Christophe Reutenauer,Élise Vandomme,2017-08-21 This book constitutes the refereed proceedings of the 11th International Conference on Combinatorics on Words WORDS 2017 held in Montréal QC Canada in September 2017 The 21 revised full papers presented together with 5invoted talks were carefully reviewed and selected from 26 submissions Discrete geometry plays an expanding role in the fields of shape modeling image synthesis and image analysis It deals with topological and geometrical definitions of digitized objects or digitized images and provides both a theoretical and computational framework for computer

imaging **Open Problems in Topology II** Elliott M. Pearl, 2011-08-11 This volume is a collection of surveys of research problems in topology and its applications The topics covered include general topology set theoretic topology continuum theory topological algebra dynamical systems computational topology and functional analysis New surveys of research problems in topology New perspectives on classic problems Representative surveys of research groups from all around the world *Combinatorics on Words* Florin Manea, Dirk Nowotka, 2015-08-26 This book constitutes the refereed proceedings of the 10th International Conference on Combinatorics on Words WORDS 2015 held in Kiel Germany in September 2015 under the auspices of the EATCS The 14 revised full papers presented were carefully reviewed and selected from 22 submissions The main object in the contributions are words finite or infinite sequences of symbols over a finite alphabet The papers reflect both theoretical contributions related to combinatorial algebraic and algorithmic aspects of words as well as to contributions presenting applications of the theory of words in other field of computer science linguistics biology bioinformatics or physics *Concepts and Results in Chaotic Dynamics: A Short Course* Pierre Collet, Jean-Pierre Eckmann, 2007-07-07 This book is devoted to the subject commonly called Chaotic Dynamics namely the study of complicated behavior in time of maps and flows called dynamical systems The theory of chaotic dynamics has a deep impact on our understanding of nature and we sketch here our view on this question The strength of this theory comes from its generality in that it is not limited to a particular equation or scientific main It should be viewed as a conceptual framework with which one can capture properties of systems with complicated behavior Obviously such a general framework cannot describe a system down to its most intricate details but it is a useful and important guideline on how a certain kind of complex systems may be understood and analyzed The theory is based on a description of idealized systems such as hyperbolic systems The systems to which the theory applies should be similar to these idealized systems They should correspond to a fixed evolution equation which however need to be neither modeled nor explicitly known in detail Experimentally this means that the conditions under which the experiment is performed should be as constant as possible The same condition applies to analysis of data which may come from the evolution of glaciations One cannot apply chaos theory to systems under varying external conditions but only to systems which have some self generated chaos under fixed external conditions

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however we ll miss your presence on this faculty

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