

Fogg, N. Pytheas (ed.); Berthé, Valérie (ed.); Ferenczi, Sébastien (ed.); Mauduit, Christian (ed.); Siegel, A. (ed.)

Substitutions in dynamics, arithmetics and combinatorics. (English) Zbl 1014.11015

Lecture Notes in Mathematics. 1794. Berlin: Springer. xv, 402 p. EUR 57.95/net; sFr. 96.50; £40.50; \$ 76.80 (2002).

This collective book, published under the pseudonym N. Pytheas Fogg, based on courses given by the authors in several universities and during several summer schools, addresses the study of substitutions from the triple point of view of dynamics, arithmetics, and combinatorics: from transcendence to partitions, from symbolic (substitutive) dynamical systems to Sturmian sequences, from spectral theory to Diophantine approximations and fractals, from invertible substitutions to polynomial substitutive dynamical systems, from piecewise linear transformations of the unit interval to Cantor sets. The twelve chapters written by ten authors and the appendix written by an eleventh author give an eclectic variety of themes that is both pleasant to read and filled with many results and ideas.

The book ends with a large bibliography of 469 items. Actually the numbers corresponding to references quoted in the chapters after the first are shifted by 1 roughly after [100], but the correctly numbered bibliography is freely accessible at <http://link.springer.de/series/lnm>.

Reviewer: Jean-Paul Allouche (Orsay)

MSC:

- 11B85 Automata sequences
- 11-02 Research exposition (monographs, survey articles) pertaining to number theory
- 37-02 Research exposition (monographs, survey articles) pertaining to dynamical systems and ergodic theory
- 05-02 Research exposition (monographs, survey articles) pertaining to combinatorics
- 68Q45 Formal languages and automata
- 68R15 Combinatorics on words
- 11A55 Continued fractions
- 11A63 Radix representation; digital problems
- 11J70 Continued fractions and generalizations
- 37B10 Symbolic dynamics
- 28D99 Measure-theoretic ergodic theory
- 37A45 Relations of ergodic theory with number theory and harmonic analysis (MSC2010)
- 05A17 Combinatorial aspects of partitions of integers

Cited in **2** Reviews
Cited in **279** Documents

Keywords:

substitutions; transcendence; partitions; dynamical systems; Sturmian sequences; spectral theory; Diophantine approximations; fractals; invertible substitutions; polynomial substitutive dynamical systems; piecewise linear transformations of the unit interval; Cantor sets

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