

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 1 Review Cited in 267 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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