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Nota di contenuto	1. Introduction and Examples -- 2. Endomorphisms and Measurable Partitions -- 3. Positive, and Transfer, Operators on Measurable Spaces: general properties -- 4.Transfer Operators on Measure Spaces -- 5. Transfer operators on L1 and L2 -- 6. Actions of Transfer Operators on the set of Borel Probability Measures -- 7. Wold’s Theorem and Automorphic Factors of Endomorphisms -- 8. Operators on the Universal Hilbert Space Generated by Transfer Operators -- 9. Transfer Operators with a Riesz Property -- 10. Transfer Operators on the Space of Densities -- 11. Piecewise Monotone Maps and the Gauss Endomorphism -- 12. Iterated Function Systems and Transfer Operators -- 13. Examples.

Sommario/riassunto

The subject of this book stands at the crossroads of ergodic theory and measurable dynamics. With an emphasis on irreversible systems, the text presents a framework of multi-resolutions tailored for the study of endomorphisms, beginning with a systematic look at the latter. This entails a whole new set of tools, often quite different from those used for the “easier” and well-documented case of automorphisms. Among them is the construction of a family of positive operators (transfer operators), arising naturally as a dual picture to that of endomorphisms. The setting (close to one initiated by S. Karlin in the context of stochastic processes) is motivated by a number of recent applications, including wavelets, multi-resolution analyses, dissipative dynamical systems, and quantum theory. The automorphism-endomorphism relationship has parallels in operator theory, where the distinction is between unitary operators in Hilbert space and more general classes of operators such as contractions. There is also a non-commutative version: While the study of automorphisms of von Neumann algebras dates back to von Neumann, the systematic study of their endomorphisms is more recent; together with the results in the main text, the book includes a review of recent related research papers, some by the co-authors and their collaborators.