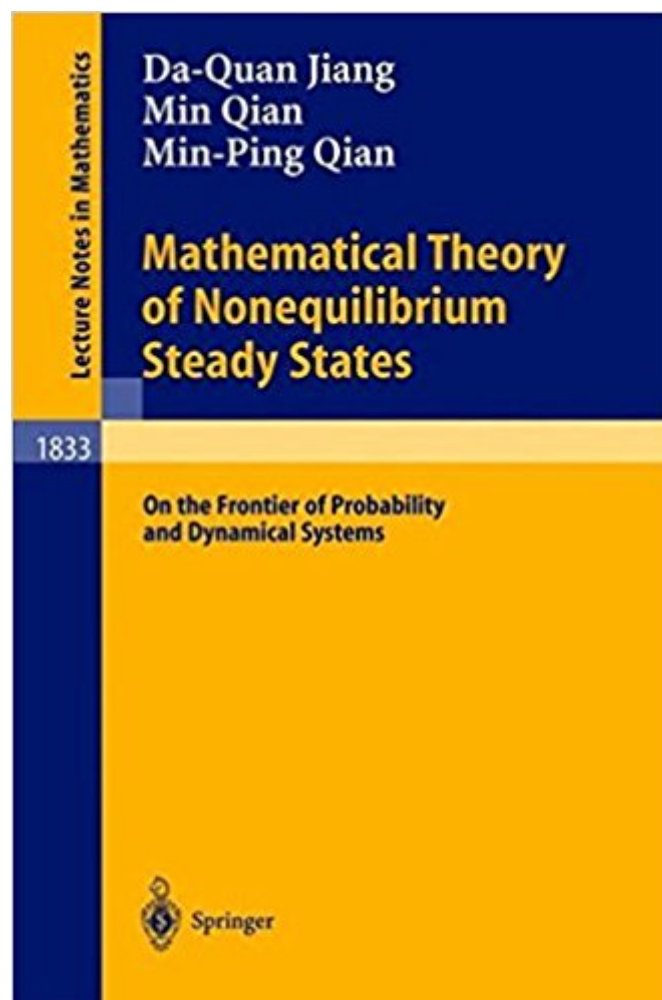


The book was found

# Mathematical Theory Of Nonequilibrium Steady States: On The Frontier Of Probability And Dynamical Systems (Lecture Notes In Mathematics)





## Synopsis

This volume provides a systematic mathematical exposition of the conceptual problems of nonequilibrium statistical physics, such as entropy production, irreversibility, and ordered phenomena. Markov chains, diffusion processes, and hyperbolic dynamical systems are used as mathematical models of physical systems. A measure-theoretic definition of entropy production rate and its formulae in various cases are given. It vanishes if and only if the stationary system is reversible and in equilibrium. Moreover, in the cases of Markov chains and diffusion processes on manifolds, it can be expressed in terms of circulations on directed cycles. Regarding entropy production fluctuations, the Gallavotti-Cohen fluctuation theorem is rigorously proved.

## Book Information

Series: Lecture Notes in Mathematics (Book 1833)

Paperback: 286 pages

Publisher: Springer; 2004 edition (February 12, 2004)

Language: English

ISBN-10: 3540206116

ISBN-13: 978-3540206118

Product Dimensions: 6.1 x 0.7 x 9.2 inches

Shipping Weight: 1.2 pounds (View shipping rates and policies)

Average Customer Review: Be the first to review this item

Best Sellers Rank: #1,170,494 in Books (See Top 100 in Books) #23 in Books > Science & Math > Physics > Entropy #573 in Books > Science & Math > Physics > Dynamics > Thermodynamics #676 in Books > Science & Math > Mathematics > Applied > Differential Equations

## Customer Reviews

This volume provides a systematic mathematical exposition of the conceptual problems of nonequilibrium statistical physics, such as entropy production, irreversibility, and ordered phenomena. Markov chains, diffusion processes, and hyperbolic dynamical systems are used as mathematical models of physical systems. A measure-theoretic definition of entropy production rate and its formulae in various cases are given. It vanishes if and only if the stationary system is reversible and in equilibrium. Moreover, in the cases of Markov chains and diffusion processes on manifolds, it can be expressed in terms of circulations on directed cycles. Regarding entropy production fluctuations, the Gallavotti-Cohen fluctuation theorem is rigorously proved.

[Download to continue reading...](#)

Mathematical Theory of Nonequilibrium Steady States: On the Frontier of Probability and Dynamical Systems (Lecture Notes in Mathematics) [ Differential Equations, Dynamical Systems, and an Introduction to Chaos [ DIFFERENTIAL EQUATIONS, DYNAMICAL SYSTEMS, AND AN INTRODUCTION TO CHAOS BY Hirsch, Morris W. ( Author ) Mar-26-2012 ] By Hirsch, Morris W. ( Author ) [ 2012 ) [ Paperback ] Fractal Geometry and Dynamical Systems in Pure and Applied Mathematics I: Fractals in Pure Mathematics (Contemporary Mathematics) Lecture Notes on Mathematical Olympiad Courses: For Junior Section Vol 1 (Mathematical Olympiad Series) Simple Mathematical Models of Gene Regulatory Dynamics (Lecture Notes on Mathematical Modelling in the Life Sciences) Strategic Safety Stocks in Supply Chains (Lecture Notes in Economics and Mathematical Systems) Quantum Probability (Probability and Mathematical Statistics) Lectures on Fractal Geometry and Dynamical Systems (Student Mathematical Library) Chaos: An Introduction to Dynamical Systems (Textbooks in Mathematical Sciences) Entropy in Dynamical Systems (New Mathematical Monographs, Vol. 18) Landau Theory Of Phase Transitions, The: Application To Structural, Incommensurate, Magnetic And Liquid Crystal Systems (World Scientific Lecture Notes in Physics) Potential Theory on Infinite Networks (Lecture Notes in Mathematics) Extremes and Recurrence in Dynamical Systems (Pure and Applied Mathematics: A Wiley Series of Texts, Monographs and Tracts) Differential Equations, Dynamical Systems, and an Introduction to Chaos, Second Edition (Pure and Applied Mathematics) Differential Equations and Dynamical Systems (Texts in Applied Mathematics) Dynamical Systems (Dover Books on Mathematics) Lecture Notes on Mathematical Olympiad Courses: For Senior Section (in 2 Volumes) Lecture Notes on Mathematical Olympiad Courses: For Junior Section (2 Volume Set) Finite Difference Methods for Ordinary and Partial Differential Equations: Steady-State and Time-Dependent Problems (Classics in Applied Mathematics) A First Course In Chaotic Dynamical Systems: Theory And Experiment (Studies in Nonlinearity)

[Contact Us](#)

[DMCA](#)

[Privacy](#)

[FAQ & Help](#)