Probability Theory [A Comprehensive Course /

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Monografía

Probabilistic concepts play an increasingly important role in mathematics, physics, biology, financial engineering and computer science. They help us to understand magnetism, amorphous media, genetic diversity and the perils of random developments on the financial markets, and they guide us in constructing more efficient algorithms. This text is a comprehensive course in modern probability theory and its measure-theoretical foundations. Aimed primarily at graduate students and researchers, the book covers a wide variety of topics, many of which are not usually found in introductory textbooks, such as: limit theorems for sums of random variables; martingales; percolation; Markov chains and electrical networks; construction of stochastic processes; Poisson point processes and infinite divisibility; large deviation principles and statistical physics; Brownian motion; and stochastic integral and stochastic differential equations. The theory is developed rigorously and in a self-contained way, with the chapters on measure theory interlaced with the probabilistic chapters in order to display the power of the abstract concepts in the world of probability theory. In addition, plenty of figures, computer simulations, biographic details of key mathematicians, and a wealth of examples support and enliven the presentation

Título: Probability Theory Recurso electrónico] A Comprehensive Course by Achim Klenke

Descripción física: online resource

Mención de serie: Universitext

Contenido: Basic Measure Theory -- Independence -- Generating Functions -- The Integral -- Moments and Laws of Large Numbers -- Convergence Theorems -- Lp-Spaces and the Radon-Nikodym Theorem -- Conditional Expectations -- Martingales -- Optional Sampling Theorems -- Martingale Convergence Theorems and Their Applications -- Backwards Martingales and Exchangeability -- Convergence of Measures -- Probability Measures on Product Spaces -- Characteristic Functions and the Central Limit Theorem -- Infinitely Divisible Distributions -- Markov Chains -- Convergence of Markov Chains -- Markov Chains and Electrical Networks -- Ergodic Theory -- Brownian Motion -- Law of the Iterated Logarithm -- Large Deviations -- The Poisson Point Process -- The Itô Integral -- Stochastic Differential Equations

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