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Collana	Research Perspectives CRM Barcelona, , 2509-7407 ; ; 6
Disciplina	516.13
Soggetti	Combinatorics Differential equations Dynamics Ergodic theory Convex geometry Discrete geometry Probabilities Actuarial science Ordinary Differential Equations Dynamical Systems and Ergodic Theory Convex and Discrete Geometry Probability Theory and Stochastic Processes Actuarial Sciences
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references at the end of each chapters.
Nota di contenuto	Part-I -- Foreword -- On the Push & Pull Protocol for Rumour Spreading -- Random Walks that Find Perfect Objects and the Lovasz Local Lemma -- Logit Dynamics with Concurrent Updates for Local Interaction Games -- Logit Dynamics with Concurrent Updates for Local Interaction Games -- Carpooling in Social Networks -- Who to Trust for Truthful Facility Location? -- Metric and Spectral Properties of Dense Inhomogeneous Random Graphs -- On-Line List Colouring of Random Graphs -- Approximation Algorithms for Computing Maximin Share

Allocations -- An Alternate Proof of the Algorithmic Lovász Local Lemma -- Learning Game-Theoretic Equilibria via Query Protocols -- The Lower Tail: Poisson Approximation Revisited -- Population Protocols for Majority in Arbitrary Networks -- The Asymptotic Value in Finite Stochastic Games -- Almost All 5-Regular Graphs Have a 3-Flow -- Part-II -- Foreword -- On the Short-Time Behaviour of the Implied Volatility Skew for Spread Options and Applications -- An Alternative to CARMA Models via Iterations of Ornstein-Uhlenbeck Processes -- Euler-Poisson Schemes for Levy Processes -- On Time-Consistent Portfolios with Time-Inconsistent Preferences -- A Generic Decomposition Formula for Pricing Vanilla Options under Stochastic Volatility Models -- A Highly Efficient Pricing Method for European-Style Options Based on Shannon Wavelets -- A New Pricing Measure in the Barndor-Nielsen-Shephard Model for Commodity Markets.

Sommario/riassunto

This book is divided into two parts, the first of which seeks to connect the phase transitions of various disciplines, including game theory, and to explore the synergies between statistical physics and combinatorics. Phase Transitions has been an active multidisciplinary field of research, bringing together physicists, computer scientists and mathematicians. The main research theme explores how atomic agents that act locally and microscopically lead to discontinuous macroscopic changes. Adopting this perspective has proven to be especially useful in studying the evolution of random and usually complex or large combinatorial objects (like networks or logic formulas) with respect to discontinuous changes in global parameters like connectivity, satisfiability etc. There is, of course, an obvious strategic element in the formation of a transition: the atomic agents “selfishly” seek to optimize a local parameter. However, up to now this game-theoretic aspect of abrupt, locally triggered changes had not been extensively studied. In turn, the book’s second part is devoted to mathematical and computational methods applied to the pricing of financial contracts and the measurement of financial risks. The tools and techniques used to tackle these problems cover a wide spectrum of fields, like stochastic calculus, numerical analysis, partial differential equations, statistics and econometrics. Quantitative Finance is a highly active field of research and is increasingly attracting the interest of academics and practitioners alike. The material presented addresses a wide variety of new challenges for this audience. .
