

1. Record Nr.	UNINA9910139804103321
Titolo	Chance in Physics : Foundations and Perspectives // edited by J. Bricmont, D. Dürr, M.C. Galavotti, G. Ghirardi, F. Petruccione, Nino Zanghi
Pubbl/distr/stampa	Berlin, Heidelberg : , : Springer Berlin Heidelberg : , : Imprint : Springer, , 2001
ISBN	3-540-44966-3
Edizione	[1st ed. 2001.]
Descrizione fisica	1 online resource (XII, 292 p.)
Collana	Lecture Notes in Physics, , 0075-8450 ; ; 574
Disciplina	530.15/92
Soggetti	Statistical physics Dynamical systems Probabilities Quantum physics Philosophy Complex Systems Probability Theory and Stochastic Processes Quantum Physics Philosophy, general Statistical Physics and Dynamical Systems
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Bibliographic Level Mode of Issuance: Monograph
Nota di bibliografia	Includes bibliographical references at the end of each chapters.
Nota di contenuto	Bayes, Boltzmann and Bohm: Probabilities in Physics -- Classical Statistical Mechanics -- The Rise of Statistical Mechanics -- Boltzmann's Approach to Statistical Mechanics -- Microscopic Time Reversibility and the Boltzmann Equation -- The Direction of Time -- How to Implement Boltzmann's Probabilistic Ideas in a Relativistic World? -- Quantum Mechanics -- Probability in Orthodox Quantum Mechanics: Probability as a Postulate Versus Probability as an Emergent Phenomenon -- Bohmian Mechanics -- Chance of Reduction as Chance of Spontaneous Localisation -- Probabilities, Decohering Histories, and the Interpretation of Quantum Mechanics -- Space Time and Probability -- Hidden Variables, Statistical Mechanics and the Early Universe -- Perspectives of the Dynamical Reduction Program -- Relativistic Theory

of Continuous Measurements -- Probabilistic Results for Six Detectors in a Three-Particle GHZ Experiment -- Classical Versus Quantum Probabilities -- Chaotic Systems -- Does Quantum Chaos Exist? -- Time-Scales for the Approach to Thermal Equilibrium -- Einstein's Nonconventional Conception of the Photon and the Modern Theory of Dynamical Systems -- Philosophy of Probability -- What Interpretation for Probability in Physics? -- Statistical Mechanics and the Propensity Interpretation of Probability -- Interpreting Probabilities: What's Interference Got to Do with It?.

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Sommario/riassunto

This selection of reviews and papers is intended to stimulate renewed reflection on the fundamental and practical aspects of probability in physics. While putting emphasis on conceptual aspects in the foundations of statistical and quantum mechanics, the book deals with the philosophy of probability in its interrelation with mathematics and physics in general. Addressing graduate students and researchers in physics and mathematics together with philosophers of science, the contributions avoid cumbersome technicalities in order to make the book worthwhile reading for nonspecialists and specialists alike.

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