

1. Record Nr.	UNINA9910139814603321
Titolo	Statistical Physics and Spatial Statistics : The Art of Analyzing and Modeling Spatial Structures and Pattern Formation // edited by Klaus R. Mecke, Dietrich Stoyan
Pubbl/distr/stampa	Berlin, Heidelberg : , : Springer Berlin Heidelberg : , : Imprint : Springer, , 2000
ISBN	3-540-45043-2
Edizione	[1st ed. 2000.]
Descrizione fisica	1 online resource (XII, 420 p.)
Collana	Lecture Notes in Physics, , 0075-8450 ; ; 554
Disciplina	530.1595
Soggetti	Geometry Statistical physics Dynamical systems Probabilities Condensed matter Statistics Complex Systems Probability Theory and Stochastic Processes Condensed Matter Physics Statistics for Engineering, Physics, Computer Science, Chemistry and Earth Sciences 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 and index.
Nota di contenuto	Spatial Statistics and Point Processes -- Basic Ideas of Spatial Statistics -- Stationary Models in Stochastic Geometry - Palm Distributions as Distributions of Typical Elements. An Approach Without Limits -- Statistical Analysis of Large-Scale Structure in the Universe -- Dynamics of Structure Formation in Thin Liquid Films: A Special Spatial Analysis -- Integral Geometry and Morphology of Patterns -- Mixed Measures and Inhomogeneous Boolean Models -- Additivity, Convexity, and Beyond: Applications of Minkowski Functionals in Statistical Physics -- Considerations About the Estimation of the Size Distribution in

Wicksell's Corpuscle Problem -- Local Porosity Theory and Stochastic Reconstruction for Porous Media -- Stochastic Models as Tools for the Analysis of Decomposition and Crystallisation Phenomena in Solids -- Phase Transitions and Simulations of Hard Particles -- Phase Transition and Percolation in Gibbsian Particle Models -- Fun with Hard Spheres -- Finite Packings and Parametric Density -- A Primer on Perfect Simulation -- Grand Canonical Simulations of Hard-Disk Systems by Simulated Tempering -- Dynamic Triangulations for Granular Media Simulations.

Sommario/riassunto

Modern physics is confronted with a large variety of complex spatial patterns. Although both spatial statisticians and statistical physicists study random geometrical structures, there has been only little interaction between the two up to now because of different traditions and languages. This volume aims to change this situation by presenting in a clear way fundamental concepts of spatial statistics which are of great potential value for condensed matter physics and materials sciences in general, and for porous media, percolation and Gibbs processes in particular. Geometric aspects, in particular ideas of stochastic and integral geometry, play a central role throughout. With nonspecialist researchers and graduate students also in mind, prominent physicists give an excellent introduction here to modern ideas of statistical physics pertinent to this exciting field of research.
