

1. Record Nr.	UNINA9910484219003321
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Titolo	Morphological models of random structures // Dominique Jeulin
Pubbl/distr/stampa	Cham, Switzerland : , : Springer, , [2021] ©2021
ISBN	3-030-75452-9
Edizione	[1st ed. 2021.]
Descrizione fisica	1 online resource (XXXII, 919 p. 291 illus., 89 illus. in color.)
Collana	Interdisciplinary Applied Mathematics, , 0939-6047 ; ; 53
Disciplina	519.2
Soggetti	Random sets Models matemàtics Llibres electrònics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	1. Introduction -- Part I Tools for Random Structures -- 2 Introduction to Random Closed Sets and to Semi-continuous Random Functions -- 3 Quantitative Analysis of Random Structures -- Part II Models of Random Structures -- 4 Excursion sets of Gaussian RF -- 5 Stochastic Point Processes and Random Trees -- 6 Boolean Random Sets -- 7 Random Tessellations -- 8 The Mosaic Model -- 9 Boolean Random Functions -- 10 Random Tessellations and Boolean Random Functions -- 11 Dead Leaves Models: from Space Tessellations to Random Functions -- 12 Sequential Cox Boolean and Conditional Dead Leaves Models -- 13 Sequential Alternate Random Functions -- 14 Primary Grains and Primary Functions -- 15 Dilution Random Functions -- 16 Reaction-Diffusion and Lattice Gas Models -- 17 Texture Segmentation by Morphological Probabilistic Hierarchies -- Part III Random Structures and Change of Scale -- 18 Change of Scale in Physics of Random Media -- 19 Digital Materials -- 20 Probabilistic Models for Fracture Statistics -- 21 Crack Paths in Random Media.
Sommario/riassunto	This book covers methods of Mathematical Morphology to model and simulate random sets and functions (scalar and multivariate). The introduced models concern many physical situations in heterogeneous media, where a probabilistic approach is required, like fracture statistics of materials, scaling up of permeability in porous media,

electron microscopy images (including multispectral images), rough surfaces, multi-component composites, biological tissues, textures for image coding and synthesis. The common feature of these random structures is their domain of definition in  $n$  dimensions, requiring more general models than standard Stochastic Processes. The main topics of the book cover an introduction to the theory of random sets, random space tessellations, Boolean random sets and functions, space-time random sets and functions (Dead Leaves, Sequential Alternate models, Reaction-Diffusion), prediction of effective properties of random media, and probabilistic fracture theories.

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