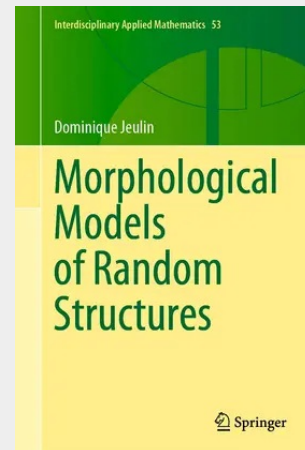


Morphological Models of Random Structures

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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