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	Titolo	Singular phenomena and scaling in mathematical models [[electronic resource] /] / edited by Michael Griebel
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	ISBN	3-319-00786-6
	Edizione	[1st ed. 2014.]
	Descrizione fisica	1 online resource (432 p.)
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	Soggetti	Computer mathematics
		Computational Science and Engineering
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	Nota di bibliografia	Includes bibliographical references.
	Nota di contenuto	Preface -- Area A – Scaling Limits of Diffusion Processes and Singular Spaces -- Area B – Multiple Scales in Mathematical Models of Materials Science and Biology -- Area C – Numerics for Multiscale Models and Singular Phenomena.
	Sommario/riassunto	The book integrates theoretical analysis, numerical simulation and modeling approaches for the treatment of singular phenomena. The projects covered focus on actual applied problems, and develop qualitatively new and mathematically challenging methods for various problems from the natural sciences. Ranging from stochastic and geometric analysis over nonlinear analysis and modelling to numerical analysis and scientific computation, the book is divided into the three sections: A) Scaling limits of diffusion processes and singular spaces, B) Multiple scales in mathematical models of materials science and biology and C) Numerics for multiscale models and singular phenomena. Each section addresses the key aspects of multiple scales and model hierarchies, singularities and degeneracies, and scaling laws and self-similarity.