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Titolo	Quantitative Stochastic Homogenization and Large-Scale Regularity / / by Scott Armstrong, Tuomo Kuusi, Jean-Christophe Mourrat
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Collana	Grundlehren der mathematischen Wissenschaften, A Series of Comprehensive Studies in Mathematics, , 0072-7830 ; ; 352
Disciplina	515.35 515.353
Soggetti	Differential equations, Partial Probabilities Mathematical physics Calculus of variations Partial Differential Equations Probability Theory and Stochastic Processes Mathematical Physics Calculus of Variations and Optimal Control; Optimization
Lingua di pubblicazione	Inglese
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Livello bibliografico	Monografia
Nota di contenuto	Preface -- Assumptions and examples -- Frequently asked questions -- Notation -- Introduction and qualitative theory -- Convergence of the subadditive quantities -- Regularity on large scales -- Quantitative description of first-order correctors -- Scaling limits of first-order correctors -- Quantitative two-scale expansions -- Calderon-Zygmund gradient L^p estimates -- Estimates for parabolic problems -- Decay of the parabolic semigroup -- Linear equations with nonsymmetric coefficients -- Nonlinear equations -- Appendices: A.The O_s notation -- B.Function spaces and elliptic equations on Lipschitz domains -- C. The Meyers L^{2+\delta} estimate -- D. Sobolev norms and heat flow -- Parabolic Green functions -- Bibliography -- Index.
Sommario/riassunto	The focus of this book is the large-scale statistical behavior of solutions of divergence-form elliptic equations with random

coefficients, which is closely related to the long-time asymptotics of reversible diffusions in random media and other basic models of statistical physics. Of particular interest is the quantification of the rate at which solutions converge to those of the limiting, homogenized equation in the regime of large scale separation, and the description of their fluctuations around this limit. This self-contained presentation gives a complete account of the essential ideas and fundamental results of this new theory of quantitative stochastic homogenization, including the latest research on the topic, and is supplemented with many new results. The book serves as an introduction to the subject for advanced graduate students and researchers working in partial differential equations, statistical physics, probability and related fields, as well as a comprehensive reference for experts in homogenization. Being the first text concerned primarily with stochastic (as opposed to periodic) homogenization and which focuses on quantitative results, its perspective and approach are entirely different from other books in the literature. .