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Titolo	Numerical Methods for Extreme Responses of Dynamical Systems : Finite Dimensional Models // by Mircea D. Grigoriu
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Descrizione fisica	1 online resource (619 pages)
Collana	Mathematics and Statistics Series
Disciplina	519.22
Soggetti	Stochastic analysis Stochastic processes Engineering mathematics Engineering - Data processing Stochastic Analysis Stochastic Processes Stochastic Systems and Control Engineering Mathematics Mathematical and Computational Engineering Applications Anàlisi estocàstica Processos estocàstics Enginyeria Processament de dades Llibres electrònics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Introduction.-, Primer of probability theory -- , Random vectors and processes -- , Convergence of random elements -- , Extremes of random processes by finite dimensional (FD) models -- , Extremes of solutions of stochastic differential equations by finite dimensional (FD) models.
Sommario/riassunto	This book constructs input finite dimensional (FD) models that are amendable for numerical calculations and provides accurate

representations for responses of dynamical systems to these inputs, i. e., numerical solutions of stochastic equations. It establishes conditions under which numerical solutions of these equations deliver accurate estimates of extreme responses of dynamical systems that are needed to, for example, predict extreme weather events and design reliable aircrafts. It is intended to serve a broad audience including graduate students, researchers, engineers, scientists and applied mathematicians interested in the formulation and solutions of complex stochastic problems. Includes algorithms for constructing FD models for a broad range of inputs and generating realizations of these models; Uses data-based estimates of extremes of outputs of stochastic equations based on high/low fidelity numerical solutions; Gives practical criteria for the convergence of numerical estimates of extreme system responses.
