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Descrizione fisica	1 online resource (XII, 190 p. 62 illus., 11 illus. in color.)
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Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	Two-dimensional geophysical uid dynamics.- Parametrically excited dynamic systems.- Examples of stochastic dynamic systems. - Statistical characteristics of a random velocity eld u(r, t).- Lognormal processes, intermittency, and dynamic localization -- Stochastic parametric resonance -- Wave localization in randomly layered media -- Lognormal elds, statistical topography, and clustering -- Stochastic transport phenomena in a random velocity eld -- Parametrically excited dynamic systems with Gaussian pumping -- Conclusion.
Sommario/riassunto	This book addresses the processes of stochastic structure formation in two-dimensional geophysical fluid dynamics based on statistical analysis of Gaussian random fields, as well as stochastic structure formation in dynamic systems with parametric excitation of positive random fields f(r,t) described by partial differential equations. Further, the book considers two examples of stochastic structure formation in dynamic systems with parametric excitation in the presence of Gaussian pumping. In dynamic systems with parametric excitation in

space and time, this type of structure formation either happens – or doesn’t! However, if it occurs in space, then this almost always happens (exponentially quickly) in individual realizations with a unit probability. In the case considered, clustering of the field f(r,t) of any nature is a general feature of dynamic fields, and one may claim that structure formation is the Law of Nature for arbitrary random fields of such type. The study clarifies the conditions under which such structure formation takes place. To make the content more accessible, these conditions are described at a comparatively elementary mathematical level by employing ideas from statistical topography.