1. Record Nr. UNINA9910461211603321

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Titolo	Filtering complex turbulent systems / / Andrew J. Majda, John Harlim [[electronic resource]]
Pubbl/distr/stampa	Cambridge : , : Cambridge University Press, , 2012
ISBN	1-107-23048-9 1-280-39412-9 9786613572042 1-139-33781-5 1-139-34026-3 1-139-34184-7 1-139-33694-0 1-139-33868-4 1-139-06130-5
Descrizione fisica	1 online resource (vii, 357 pages) : digital, PDF file(s)
Disciplina	660.2842450151
Soggetti	Filters (Mathematics) Dynamics - Mathematical models Turbulence Numerical analysis
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Title from publisher's bibliographic system (viewed on 05 Oct 2015).
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	1. Introduction and overview: mathematical strategies for filtering turbulent systems -- 2. Filtering a stochastic complex scalar: the prototype test problem -- 3. The Kalman filter for vector systems: reduced filters and a three-dimensional toy model -- 4. Continuous and discrete Fourier series and numerical discretization -- 5. Stochastic models for turbulence -- 6. Filtering turbulent signals: plentiful observations -- 7. Filtering turbulent signals: regularly spaced sparse observations -- 8. Filtering linear stochastic PDE models with instability and model error -- 9. Strategies for filtering nonlinear systems -- 10. Filtering prototype nonlinear slow-fast systems -- 11. Filtering turbulent nonlinear dynamical systems by finite ensemble methods --

12. Filtering turbulent nonlinear dynamical systems by linear stochastic models -- 13. Stochastic parametrized extended Kalman filter for filtering turbulent signals with model error -- 14. Filtering turbulent tracers from partial observations: an exactly solvable test model -- 15. The search for efficient skillful particle filters for high-dimensional turbulent dynamical systems.

Sommario/riassunto

Many natural phenomena ranging from climate through to biology are described by complex dynamical systems. Getting information about these phenomena involves filtering noisy data and prediction based on incomplete information (complicated by the sheer number of parameters involved), and often we need to do this in real time, for example for weather forecasting or pollution control. All this is further complicated by the sheer number of parameters involved leading to further problems associated with the 'curse of dimensionality' and the 'curse of small ensemble size'. The authors develop, for the first time in book form, a systematic perspective on all these issues from the standpoint of applied mathematics. The book contains enough background material from filtering, turbulence theory and numerical analysis to make the presentation self-contained and suitable for graduate courses as well as for researchers in a range of disciplines where applied mathematics is required to enlighten observations and models.

2. Record Nr. UNINA9910958446603321

Titolo	Understanding climate's influence on human evolution / / Committee on the Earth System Context for Hominin Evolution ; Board on Earth Sciences and Resources ; Division on Earth and Life Studies. ; National Research Council of the National Academies
Pubbl/distr/stampa	Washington, D.C., : National Academies Press, 2010
ISBN	0-309-15239-9 1-282-55443-3 9786612554438 0-309-14839-1
Edizione	[1st ed.]
Descrizione fisica	1 online resource (129 p.)
Disciplina	599.95
Soggetti	Climatic changes Human beings - Effect of climate on Human beings - Effect of environment on Human evolution - Environmental aspects Human ecology
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	""Front Matter""; ""Preface""; ""Acknowledgments""; ""Contents""; ""Summary""; ""1 Introduction""; ""2 Existing Understanding of the Environmental Context for Hominin Evolution""; ""3 The Research Vision Priority Research Themes""; ""4 Implementing an International Scientific Program for Climate and Human Evolution Research""; ""5 Conclusions and Recommendations""; ""References""; ""Appendixes""; ""Appendix A: Committee and Staff Biographies""; ""Appendix B: Presentations to the Committee""; ""Appendix C: Acronyms and Abbreviations""
Sommario/riassunto	"The hominin fossil record documents a history of critical evolutionary events that have ultimately shaped and defined what it means to be human, including the origins of bipedalism; the emergence of our genus Homo; the first use of stone tools; increases in brain size; and the emergence of Homo sapiens, tools, and culture. The Earth's geological record suggests that some evolutionary events were

coincident with substantial changes in African and Eurasian climate, raising the possibility that critical junctures in human evolution and behavioral development may have been affected by the environmental characteristics of the areas where hominins evolved. Understanding Climate's Change on Human Evolution explores the opportunities of using scientific research to improve our understanding of how climate may have helped shape our species. Improved climate records for specific regions will be required before it is possible to evaluate how critical resources for hominins, especially water and vegetation, would have been distributed on the landscape during key intervals of hominin history. Existing records contain substantial temporal gaps. The book's initiatives are presented in two major research themes: first, determining the impacts of climate change and climate variability on human evolution and dispersal; and second, integrating climate modeling, environmental records, and biotic responses. Understanding Climate's Change on Human Evolution suggests a new scientific program for international climate and human evolution studies that involve an exploration initiative to locate new fossil sites and to broaden the geographic and temporal sampling of the fossil and archeological record; a comprehensive and integrative scientific drilling program in lakes, lake bed outcrops, and ocean basins surrounding the regions where hominins evolved and a major investment in climate modeling experiments for key time intervals and regions that are critical to understanding human evolution."--Publisher's description.