FDA Express Vol. 9, No. 6, Dec. 30, 2013

Editors: http://em.hhu.edu.cn/fda/Editors.htm

Institute of Soft Matter Mechanics, Hohai University

For contribution: fdaexpress@163.com, pangguofei2008@126.com

For subscription: http://em.hhu.edu.cn/fda/subscription.htm

PDF Download:

http://em.hhu.edu.cn/fda/Issues/FDA_Express_Vol9_No6_2013.pdf

◆ Latest SCI Journal Papers on FDA

(Searched on 29th December 2013)

◆ Conference

The 10th IEEE/ASME International Conference on Mechatronic and Embedded Systems and Applications

◆ Books

Fractional Dynamics and Control

Mathematics of Uncertainty Modeling in the Analysis of Engineering and Science Problems

◆ Journals

Entropy

Physical Review E

◆ Paper Highlight

Fractal mobile/immobile solute transport

Monte Carlo simulation of superdiffusion and subdiffusion in macroscopically heterogeneous media

◆ **Websites of Interest**

Fractional Calculus & Applied Analysis

International Conference on Fractional Differentiation and Its Applications (ICFDA'14)

==========

Latest SCI Journal Papers on FDA

(Searched on 29th December 2013)

Title: Long Range Dependence and Breaks in Energy Prices
Author(s): Barros, C. P.; Gil-Alana, L. A.; Payne, J. E.
Source: ENERGY SOURCES PART B-ECONOMICS PLANNING AND POLICY Volume: 9 Issue: 2 Pages: 196-206 DOI: 10.1080/15567249.2012.753959 Published: APR 3 2014

Title: Local and global existence of mild solution to an impulsive fractional functional integro-differential equation with nonlocal condition
Author(s): Chauhan, Archana; Dabas, Jaydev
Source: COMMUNICATIONS IN NONLINEAR SCIENCE AND NUMERICAL SIMULATION Volume: 19 Issue: 4 Pages: 821-829 DOI: 10.1016/j.cnsns.2013.07.025 Published: APR 2014

Title: Existence and stability of standing waves for nonlinear fractional Schrodinger equations with Hartree type nonlinearity
Author(s): Wu, Dan
Source: JOURNAL OF MATHEMATICAL ANALYSIS AND APPLICATIONS Volume: 411 Issue: 2 Pages: 530-542 DOI: 10.1016/j.jmaa.2013.09.054 Published: MAR 15 2014

Title: Weighted Fourier-Laplace transforms in reproducing kernel Hilbert spaces on the sphere

Author(s): Jordao, T.; Menegatto, V. A.
Source: JOURNAL OF MATHEMATICAL ANALYSIS AND APPLICATIONS Volume: 411 Issue: 2 Pages: 732-741 DOI: 10.1016/j.jmaa.2013.10.020 Published: MAR 15 2014

Title: On the persistence and volatility in European, American and Asian stocks bull and bear markets
Author(s): Gil-Alana, Luis A.; Shittu, Olanrewaju I.; Yaya, OlaOluwa S.
Source: JOURNAL OF INTERNATIONAL MONEY AND FINANCE Volume: 40 Pages: 149-162 DOI: 10.1016/j.jimonfin.2012.12.002 Published: FEB 2014

[Back]

==========

Conference

The 10th IEEE/ASME International Conference on Mechatronic and Embedded Systems and Applications

Senigallia - Ancona, Italy, September 10-12, 2014

Objectives: Mechanical and electrical systems show an increasing integration of mechanics with electronics and information processing. This integration is between the components (hardware) and the information-driven functions (software), resulting in integrated systems called mechatronic systems. The development of mechatronic systems involves finding an optimal balance between the basic mechanical structure, sensor and actuators, automatic digital information processing and control in which embedded systems play a key role. The goal of the 10th IEEE/ASME MESA14, is to bring together experts from the fields of mechatronic and embedded systems, disseminate the recent advances made in the area, discuss future research directions, and exchange application experience.

Advisory Committee: Advisory Committee: C.S. George Lee, National Science Foundation, USA; Ren C. Luo, National Chung Cheng Univ., Taiwan; Bahram Ravani, Univ. of California, Davis, USA; Bruno Siciliano, Univ. di Napoli Federico II, Italy; Maarten Steinbuch, TU/e Eindhoven, Netherlands; Jianrong Tan, Zhejiang University, China; T.J. Tarn, Washington Univ., USA; Masayoshi Tomizuka, Univ. of California, Berkeley, USA; Fei-Yue Wang, Chinese Academy of Sciences, China.

Steering Committee Chairs:
Harry H. Cheng, Univ. of California, Davis, USA; YangQuan Chen, Univ. of California, Merced, USA; Primo Zingaretti, Univ. Politecnica delle Marche, Italy; Martin Horauer, UAS Technikum Wien, Austria; Bo Chen, Michigan Technological University, USA.

General Co-Chairs:
Yanqing Gao, Oregon Institute of Technology, USA; Primo Zingaretti, Univ. Politecnica delle Marche, Italy.

Program Co-Chairs: Ja Choon Koo, Sungkyunkwan University, Korea; Emanuele Frontoni, Univ. Politecnica Marche, Italy.

Chair of the Honors & Awards Committee: Zuomin Dong, Univ. of Victoria, Canada.

Publication Chair: Adriano Mancini, Univ. Politecnica Marche, Italy.

Local Organizing Chair: Michele Germani, Univ. Politecnica Marche, Italy; Maura Mengoni, Univ. Politecnica Marche, Italy; Margherita Peruzzini, Univ. Politecnica Marche, Italy.

Symposia
• Autonomous Systems and Ambient Intelligence
• Bio-Mechatronics - Medical Devices & Technologies
• Cloud Computing and Emerging Technologies for Mechatronic and Embedded Systems
• Cyber-Physical Systems and Hybrid Systems
• Design and Verification Methodologies for Mechatronic and Embedded Systems
• Diagnosis and Monitoring in Mechatronic Systems
• Embedded Systems Infrastructure and Theory
• **Fractional Derivatives and Their Applications**
• Mechatronic Control and Electrical Vehicular Systems
• Mechatronics and Embedded Systems Applications
• Mechatronics and Embedded Systems Education
• Mechatronic and Embedded Technologies in Intelligent Transportation Systems
• Mechatronics for Advanced Manufacturing
• Mechatronics for Hazardous Environments
• Robotics and Mobile Machines
• Sensors and Actuators
• Small Unmanned Aerial Vehicle Technologies and Applications
• Virtual Prototyping in Mechatronics

Important Dates
Submission of Full-Length Paper 08-03-2014
Author Notification of Acceptance 30-04-2014
Submission of Copyright Form 30-06-2014
Submission of Final Paper 30-06-2014

Paper Submission: Manuscripts should be at most six (6) pages in IEEE two-column format and must be submitted in PDF format via the conference web-site. Please use the LATEX style file or Microsoft Word template to prepare your manuscript. Accepted, peer-reviewed papers will be published in the conference proceedings, EI indexed, and submitted to IEEE Xplore.

Sponsor
IEEE Intelligent Transportation Systems Society

Technical Co-Sponsors
IEEE Control Systems Society
ASME Division of Design Engineering

Visit www.mesa2014.org or follow @MESA2014 on Twitter for updates.

[Back]

==========

Books

Fractional Dynamics and Control

Dumitru Baleanu, José António Tenreiro Machado, Albert C. J. Luo

Book Description

Fractional Dynamics and Control provides a comprehensive overview of recent advances in the areas of nonlinear dynamics, vibration and control with analytical, numerical, and experimental results. This book provides an overview of recent discoveries in fractional control, delves into fractional variational principles and differential equations, and applies advanced techniques in fractional calculus to solving complicated mathematical and physical problems.Finally, this book also discusses the role that fractional order modeling can play in complex systems for engineering and science.

- Discusses how fractional dynamics and control can be used to solve nonlinear science and complexity issues.
- Shows how fractional differential equations and models can be used to solve turbulence and wave equations in mechanics and gravity theories and Schrodinger's equation.

- Presents factional relaxation modeling of dielectric materials and wave equations for dielectrics.
- Develops new methods for control and synchronization of factional dynamical systems.

Fractional Dynamics and Control is an ideal book for scholars, researchers and advanced technical members of industrial laboratory facilities, for developing new tools and products in the field of nonlinear dynamics and control.

More information on this book can be found by the following link:
http://link.springer.com/book/10.1007/978-1-4614-0457-6

[Back]

Mathematics of Uncertainty Modeling in the Analysis of Engineering and Science Problems

S. Chakraverty

Book Description

For various scientific and engineering problems, how to deal with variables and parameters of uncertain value is an important issue. Full analysis of the specific errors in measurement, observations, experiments, and applications are vital in dealing with the parameters taken to simplify the problem.

Mathematics of Uncertainty Modeling in the Analysis of Engineering and Science Problems aims to provide the reader with basic concepts for soft computing and other methods for various means of uncertainty in handling solutions, analysis, and applications. This book is an essential reference work for students, scholars, practitioners and researchers in the assorted fields of engineering and applied mathematics interested in a model for uncertain physical problems.

More information on this book can be found by the following link:
http://www.igi-global.com/book/mathematics-uncertainty-modeling-analysis-engineering/84113

[Back]

Journals

Entropy

Volume 15, Issue 1

Urban Ecosystem Health Assessment and Its Application in Management: A Multi-Scale Perspective

Meirong Su, Zhifeng Yang, Bin Chen, Gengyuan Liu, Yan Zhang, Lixiao Zhang, Linyu Xu and Yanwei Zhao

Quantitative Analysis of Dynamic Behaviours of Rural Areas at Provincial Level Using Public Data of Gross Domestic Product

Yi Chen, Guangfeng Zhang, Yiyang Li, Yi Ding, Bin Zheng and Qiang Miao

Function Based Fault Detection for Uncertain Multivariate Nonlinear Non-Gaussian Stochastic Systems Using Entropy Optimization Principle

Liping Yin and Li Zhou

Ordered Regions within a Nonlinear Time Series Solution of a Lorenz Form of the Townsend Equations for a Boundary-Layer Flow

LaVar King Isaacson

Machine Learning with Squared-Loss Mutual Information

Masashi Sugiyama

The Relation between Granger Causality and Directed Information Theory: A Review

Pierre-Olivier Amblard and Olivier J. J. Michel

Numerical Study of Entropy Generation in a Flowing Nanofluid Used in Micro- and Minichannels

Mohammadreza Hassan, Rad Sadri, Goodarz Ahmadi, Mahidzal B. Dahari, Salim N. Kazi, Mohammad R. Safaei and Emad Sadeghinezhad

The Thermal Entropy Density of Spacetime

Rongjia Yang

Conformal Gravity: Dark Matter and Dark Energy

Robert K. Nesbet

Moving Frames of Reference, Relativity and Invariance in Transfer Entropy and Information Dynamics

Joseph T. Lizier and John R. Mahoney

Compensated Transfer Entropy as a Tool for Reliably Estimating Information Transfer in Physiological Time Series

Luca Faes, Giandomenico Nollo and Alberto Porta

Effects of Convective Heating on Entropy Generation Rate in a Channel with Permeable Walls

Oluwole Daniel Makinde and Adetayo Samuel Eegunjobi

Biosemiotic Entropy of the Genome: Mutations and Epigenetic Imbalances Resulting in Cancer

Berkley E. Gryder, Chase W. Nelson and Samuel S. Shepard

Using Exergy to Correlate Energy Research Investments and Efficiencies: Concept and Case Studies

Marc A. Rosen

Covariance-Based Measurement Selection Criterion for Gaussian-Based Algorithms

Fernando A. Auat Cheein

Information and Metabolism in Bacterial Chemotaxis

Gennaro Auletta

The Liang-Kleeman Information Flow: Theory and Applications

X. San Liang

Asymptotic Behavior of the Maximum Entropy Routing in Computer Networks

Milan Tuba

Is Encephalopathy a Mechanism to Renew Sulfate in Autism?

Stephanie Seneff, Ann Lauritzen, Robert M. Davidson and Laurie Lentz-Marino

Expanding the Algorithmic Information Theory Frame for Applications to Earth Observation

Daniele Cerra and Mihai Datcu

[Back]

Physical Review E

Volume 88, Issue 6 (partial)

Stochastic fluctuations and the detectability limit of network communities

Lucio Floretta, Jonas Liechti, Alessandro Flammini, and Paolo De Los Rios

Classification of transport backbones of complex networks

Woosik Choi, Huiseung Chae, Soon-Hyung Yook, and Yup Kim

Random-matrix spectra as a time series

R. Fossion, G. Torres Vargas, and J. C. López Vieyra

Monte Carlo simulation with aspect-ratio optimization: Anomalous anisotropic scaling in dimerized antiferromagnets

Shinya Yasuda and Synge Todo

Biased and greedy random walks on two-dimensional lattices with quenched randomness: The greedy ant within a disordered environment

T. L. Mitran, O. Melchert, and A. K. Hartmann

Work fluctuations in a time-dependent harmonic potential: Rigorous results beyond the overdamped limit

Chulan Kwon, Jae Dong Noh, and Hyunggyu Park

Transport and diffusion of overdamped Brownian particles in random potentials

Marc Suñé Simon, J. M. Sancho, and Katja Lindenberg

Renewal and memory origin of anomalous diffusion: A discussion of their joint action

Mauro Bologna, Bruce J. West, and Paolo Grigolini

Evanescent continuous-time random walks

E. Abad, S. B. Yuste, and Katja Lindenberg

Local immobilization of particles in mass transfer described by a Jeffreys-type equation

S. A. Rukolaine and A. M. Samsonov

Dependence of asymptotic decay exponents on initial condition and the resulting scaling violation

Sourish Bondyopadhyay

Design and characterization of nonlinear functions for the transmission of a small signal with non-Gaussian noise

Seiya Kasai, Yukihiro Tadokoro, and Akihisa Ichiki

Statistics of the duration time of a random walk given its present position: Dating a random walk

Hernán Larralde

Brownian particles on rough substrates: Relation between intermediate subdiffusion and asymptotic long-time diffusion

Richard D. L. Hanes, Michael Schmiedeberg, and Stefan U. Egelhaaf

Normal-to-anomalous diffusion transition in disordered correlated potentials: From the central limit theorem to stable laws

R. Salgado-García and Cesar Maldonado

Generalized information entropies depending only on the probability distribution

Octavio Obregón and Alejandro Gil-Villegas

[Back]

==========

Paper Highlight

Fractal mobile/immobile solute transport

Rina Schumer, David A. Benson, Mark M. Meerschaert, Boris Baeumer

Publication information: Rina Schumer, David A. Benson, Mark M. Meerschaert, Boris Baeumer. Fractal mobile/immobile solute transport. Water Resour. Res., 39(10), 1296, doi:10.1029/2003WR002141, 2003. Res., 45, W10417,

doi:10.1029/2008WR007448 http://onlinelibrary.wiley.com/doi/10.1029/2003WR002141/abstract

Abstract

A fractal mobile/immobile model for solute transport assumes power law waiting times in the immobile zone, leading to a fractional time derivative in the model equations. The equations are equivalent to previous models of mobile/immobile transport with power law memory functions and are the limiting equations that govern continuous time random walks with heavy tailed random waiting times. The solution is gained by performing an integral transform on the solution of any boundary value problem for transport in the absence of an immobile phase. In this regard, the output from a multidimensional numerical model can be transformed to include the effect of a fractal immobile phase. The solutions capture the anomalous behavior of tracer plumes in heterogeneous aquifers, including power law breakthrough curves at late time, and power law decline in the measured mobile mass. The MADE site mobile tritium mass decline is consistent with a fractional time derivative of order g = 0.33, while Haggerty et al.'s [2002] stream tracer test is well modeled by a fractional time derivative of order g = 0.3.

[Back]

Monte Carlo simulation of superdiffusion and subdiffusion in macroscopically heterogeneous media

Y. Zhang, E. M. LaBolle, and K. Pohlmann

Publication information: Y. Zhang, E. M. LaBolle, and K. Pohlmann (2009), Monte Carlo simulation of superdiffusion and subdiffusion in macroscopically heterogeneous media, Water Resour. Res., 45, W10417,

doi:10.1029/2008WR007448 http://onlinelibrary.wiley.com/doi/10.1029/2008WR007448/abstract

Abstract

Monte Carlo simulations are developed to approximate one-dimensional superdiffusion and subdiffusion in macroscopically heterogeneous media with discontinuous or continuous transport parameters. For superdiffusion characterized by a space fractional (a-order) derivative model, one empirical reflection scheme is built to track particle trajectory across an interface with discontinuous dispersion coefficient *D*, where the reflection probability depends on both a and the ratio of *D*. Different from the superdiffusive case, anomalous diffusion described by a time fractional derivative model can be decomposed into a motion component and a hitting time process, where the discontinuity affects only the motion process, implying an efficient Monte Carlo simulation of decoupled continuous time random walks. The discontinuity of effective porosity *n* is also discussed, and results show the influence of the ratio of n on solute particle dynamics. In addition, for anomalous superdiffusion and subdiffusion in heterogeneous media with spatially continuous *D* and *n*, Langevin analysis reveals that the corresponding particle dynamics contain three independent stable Le ́vy noises scaled by *D*, the gradient of *D*, and the gradient of *ln(n)*. A new implicit Eulerian finite difference method is also developed to solve the spatiotemporal fractional derivative models and then extensively cross verify the Lagrangian solutions. Further testing against one field example of mixed superdiffusion and subdiffusion reveals the applicability and flexibility of the novel Monte Carlo approach in simulating realistic plumes in macroscopically heterogeneous media with locally variable transport parameters.

[Back]

==

The End of This Issue

∽∽∽∽∽∽∽∽∽∽∽∽∽∽∽∽∽∽∽∽∽∽∽∽∽∽∽∽∽∽∽∽∽∽∽∽∽