# FDA Express Vol. 25, No. 3, Dec 15, 2017

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## Latest SCI Journal Papers on FDA

(Searched on Dec15, 2017)

Call for papers
<u>19th International Carpathian Control Conference</u>

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Hamiltonian Chaos and Fractional Dynamics Fractional Kinetics in Solids

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Chinese Journal of Physics Physica A: Statistical Mechanics and its Applications

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Comments on time-varying fractional order

## Patent

Chaotic series generated by discrete fractional maps

## Websites of Interest

Fractal derivative and operators and their applications Fractional Calculus & Applied Analysis

## Latest SCI Journal Papers on FDA

## (Searched on Dec 15, 2017)

An improved spectral meshless radial point interpolation for a class of time-dependent fractional integral equations: 2D fractional evolution equation

By: Shivanian, Elyas; Jafarabadi, Ahmad

JOURNAL OF COMPUTATIONAL AND APPLIED MATHEMATICS Volume: 325 Pages: 18-33 Published: DEC 1 2017

## Integer and Fractional Self Adjoint Operator Opial type Inequalities

By: Anastassiou, George A. JOURNAL OF COMPUTATIONAL ANALYSIS AND APPLICATIONS Volume: 23 Issue: 8 Pages: 1398-1411 Published: DEC 2017

Nonlocal fractional-order boundary value problems with generalized Riemann-Liouville integral boundary conditions By: Ahmad, Bashir; Ntouyas, Sotiris K.; Tariboon, Jessada JOURNAL OF COMPUTATIONAL ANALYSIS AND APPLICATIONS Volume: 23 Issue: 7 Pages: 1281-1296 Published: NOV 30 2017

Conservation laws for certain time fractional nonlinear systems of partial differential equations By: Singla, Komal; Gupta, R. K. COMMUNICATIONS IN NONLINEAR SCIENCE AND NUMERICAL SIMULATION Volume: 53 Pages: 10-21 Published: DEC 2017

<u>Uncertain viscoelastic models with fractional order: A new spectral tau method to study the numerical simulations of the solution</u>

By: Ahmadian, A.; Ismail, F.; Salahshour, S.; et al.

COMMUNICATIONS IN NONLINEAR SCIENCE AND NUMERICAL SIMULATION Volume: 53 Pages: 44-64 Published: DEC 2017

Dynamics for a non-autonomous reaction diffusion model with the fractional diffusion

By: Tan, Wen; Sun, Chunyou DISCRETE AND CONTINUOUS DYNAMICAL SYSTEMS Volume: 37 Issue: 12 Pages: 6035-6067 Published: DEC 2017

The maximum principles for fractional Laplacian equations and their applications

By: Cheng, Tingzhi; Huang, Genggeng; Li, Congming COMMUNICATIONS IN CONTEMPORARY MATHEMATICS Volume: 19 Issue: 6 Article Number: 1750018 Published: DEC 2017

Synchronization of chaotic systems involving fractional operators of Liouville-Caputo type with variable-order By: Coronel-Escamilla, A.; Gomez-Aguilar, J. F.; Torres, L.; et al. PHYSICA A-STATISTICAL MECHANICS AND ITS APPLICATIONS Volume: 487 Pages: 1-21 Published: DEC 1 2017

Stochastic multiresonance for a fractional linear oscillator with time-delayed kernel and quadratic noise By: Guo, Feng; Wang, Xue-Yuan; Zhu, Cheng-Yin; et al. PHYSICA A-STATISTICAL MECHANICS AND ITS APPLICATIONS Volume: 487 Pages: 205-214 Published: DEC 1 2017

On the uniqueness of solutions for a class of fractional differential equations By: Zou, Yumei; He, Guoping APPLIED MATHEMATICS LETTERS Volume: 74 Pages: 68-73 Published: DEC 2017

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## 19th International Carpathian Control Conference

La Contessa Castle Hotel, Szilvásvárad, Hungary May 28-31, 2018

http://www.iccc.uni-miskolc.hu/

#### Description

The aim of the conference is to support exchange of information and experience in the field of automation of engineering and production, in research, applications, and education. The conference will enable presentation of most recent advances in complex automation, robotics, modelling, control of production and technological processes, including quality control systems oriented to environment, means of support, and information technologies.

The five sister faculties of five universities of the Carpathian region (Kosice, Krakow, Ostrava, Miskolc, Craiova) founded this conference in order to promote the research cooperation and cultural exchanges.

- \* The scientific program of the ICCC'2018 conference is divided in these areas, which will run in parallel sessions:
- \* Measurement, sensors, monitoring and diagnostic systems.
- \* Identification, modelling and simulation of processes and systems.
- \* Theory and application of control systems.
- \* Automation, mechatronics, robotics.
- \* Intelligent embedded systems and instrumentation and Internet of Things (IOT)
- \* Information systems (SCADA/HMI, GIS, MES) and their Internet support.
- \* Engineering application of informatics.
- \* Quality contro, systems (TQM), production management and industrial logistics.
- \* Engineering education in Control and Computer systems.
- \* Fractional Calculus and its Application.
- \* Smart Grid Emerging technologies in power electronics
- \* Sustainable energy Intelligent transportation systems
- \* Geoinformatics
- \* Mining and mineral processing engineering

Papers presented at this Conference may be eligible for review for inclusion in the IEEE Transactions on Industry Applications or the Industry Applications Magazine provided they meet certain requirements:

- \* The subject of the paper must be within the technical scope of the IEEE Industry Application Society.
- \* The author of the paper must request that it be submitted for review.

The official language of the conference is English.

#### Deadlines

Conference registration and abstract submission - Jan. 15. 2018

Full papers submission for review - Jan 31, 2018

Notification of acceptance (after review process) - Mar 31, 2018

Submission of final camera-ready papers - Apr 30, 2018

Conference - May 28-31, 2018

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# Books

#### Hamiltonian Chaos and Fractional Dynamics

George M. Zaslavsky

#### **Book Descriptioniption**

The dynamics of realistic Hamiltonian systems has unusual microscopic features that are direct consequences of its fractional space-time structure and its phase space topology. The book deals with the fractality of the chaotic dynamics and kinetics, and also includes material on non-ergodic and non-well-mixing Hamiltonian dynamics. The book does not follow the traditional scheme of most of today's literature on chaos. The intention of the author has been to put together some of the most complex and yet open problems on the general theory of chaotic systems. The importance of the discussed issues and an understanding of their origin should inspire students and researchers to touch upon some of the deepest aspects of nonlinear dynamics. The book considers the basic principles of the Hamiltonian theory of chaos and some applications including for example, the cooling of particles and signals, control and erasing of chaos, polynomial complexity, Maxwell's Demon, and others. It presents a new and realistic image of the origin of dynamical chaos and randomness. An understanding of the origin of randomness in dynamical systems, which cannot be of the same origin as chaos, provides new insights in the diverse fields of physics, biology, chemistry, and engineering.

More information on this book can be found by the following links: <u>https://global.oup.com/academic/product/hamiltonian-chaos-and-fractional-dynamics-9780199535484?cc=cn&lang=en&</u>

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#### **Fractional Kinetics in Solids**

Vladimir Uchaikin (Ulyanovsk State University, Russia), Renat Sibatov (Ulyanovsk State University, Russia)

#### **Book Description**

The standard (Markovian) transport model based on the Boltzmann equation cannot describe some non-equilibrium processes called anomalous that take place in many disordered solids. Causes of anomality lie in non-uniformly scaled (fractal) spatial heterogeneities, in which particle trajectories take cluster form. Furthermore, particles can be located in some domains of small sizes (traps) for a long time. Estimations show that path length and waiting time distributions are often characterized by heavy tails of the power law type. This behavior allows the introduction of time and space derivatives of fractional orders. Distinction of path length distribution from exponential is interpreted as a consequence of media fractality, and analogous property of waiting time distribution as a presence of memory. In this book, a novel approach using equations with derivatives of fractional orders is applied to describe anomalous transport and relaxation in disordered semiconductors, dielectrics and quantum dot systems. A relationship between the self-similarity of transport, the Levy stable limiting distributions and the kinetic equations with fractional derivatives is established. It is shown that unlike the well-known Scher–Montroll and Arkhipov–Rudenko models, which are in a sense alternatives to the normal transport model, fractional differential equations provide a unified mathematical framework for describing normal and dispersive transport. The fractional differential formalism allows the equations of bipolar transport to be written down and transport in distributed dispersion

systems to be described. The relationship between fractional transport equations and the generalized limit theorem reveals the probabilistic aspects of the phenomenon in which a dispersive to Gaussian transport transition occurs in a time-of-flight experiment as the applied voltage is decreased and/or the sample thickness increased. Recent experiments devoted to studies of transport in quantum dot arrays are discussed in the framework of dispersive transport models. The memory phenomena in systems under consideration are discussed in the analysis of fractional equations. It is shown that the approach based on the anomalous transport models and the fractional kinetic equations may be very useful in some problems that involve nano-sized systems. These are photon counting statistics of blinking single quantum dot fluorescence, relaxation of current in colloidal quantum dot arrays, and some others.

More information on this book can be found by the following links: <u>http://www.worldscientific.com/worldscibooks/10.1142/8185</u>

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## Journals

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## **Chinese Journal of Physics**

(Selected)

A new generalized fractional Maxwell model of dielectric relaxation

Dan Luo, Hong-Shan Chen

Fractional physical differential equations via natural transform

Sad Rida, Anas Arafa, Ahmed Abedl-Rady, Hamdy Abdl-Rahaim

Stochastic resonance for a fractional linear oscillator with two-kinds of fractional-order derivatives subject to multiplicative and signal-modulated noise

Jianqu Zhu, Weidong Jin, Feng Guo

Influence of time-fractional derivatives on the boundary layer flow of Maxwell fluids

Yasir Mahsud, Nehad Ali Shah, Dumitru Vieru

Vibrational resonance in fractional-order overdamped multistable systems

Tianqi Qin, Tianting Xie, Maokang Luo, Ke Deng

Soliton solutions for the space-time nonlinear partial differential equations with fractional-orders

Jin Hyuk Choi, Hyunsoo Kim

A microscopic study of MHD fractional inertial flow through Forchheimer medium

Muhammad Shoaib Anwar, Amer Rasheed

Synchronization of uncertain fractional-order chaotic systems via a novel adaptive controller

Runzi Luo, Haipeng Su, Yanhui Zeng

<u>Stability analysis, chaos control of a fractional order chaotic chemical reactor system and its function projective</u> <u>synchronization with parametric uncertainties</u>

Vijay K. Yadav, Subir Das, Beer Singh Bhadauria, Ashok K. Singh, Mayank Srivastava

On certain exact solutions of diffusive predator-prey system of fractional order

Jin Hyuk Choi, Hyunsoo Kim, Rathinasamy Sakthivel

Stochastic resonance in a fractional linear oscillator subject to random viscous damping and signal-modulated noise

Zhi-Qi Huang, Feng Guo

On the dynamics, existence of chaos, control and synchronization of a novel complex chaotic system

K. Vishal, Saurabh K. Agrawal

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## International Journal of Solids and Structure

(Selected)

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Wojciech Sumelka, George Z. Voyiadjis

Fractional order plasticity model for granular soils subjected to monotonic triaxial compression

Yifei Sun, Yang Xiao

Fractional visco-elastic Euler-Bernoulli beam

M. Di Paola, R. Heuer, A. Pirrotta

Free energy and states of fractional-order hereditariness

Luca Deseri, Mario Di Paola, Massimiliano Zingales

Lattice with long-range interaction of power-law type for fractional non-local elasticity

Vasily E. Tarasov

Fractional order theory of thermoelasticity

Hany H. Sherief, A.M.A. El-Sayed, A.M. Abd El-Latief

Long-range cohesive interactions of non-local continuum faced by fractional calculus

Mario Di Paola, Massimiliano Zingales

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## **Paper Highlight**

Comments on time-varying fractional order

#### Gary W. Bohannan

Publication information: NONLINEAR DYNAMICS Volume: 90 Issue: 3 Pages: 2137-2143 Published: NOV 2017

https://link.springer.com/article/10.1007/s11071-017-3790-9

#### Abstract

The calculus of arbitrary order, known as the fractional calculus, allows for real- and complex-valued orders. Interest in timevarying order is growing in order to study transient behavior under varying environmental conditions. Popular forms currently in use suffer from fundamental flaws of dimensional inconsistency and predict physically implausible behaviors such as violation of causality and/or violation of conservation of energy. This article reviews some of the motivation behind the study of time-varying fractional order and makes suggestions as to how to overcome the flaws in the forms in current usage. A new fractional-order integral operator is proposed that may allow for modeling time-varying fractional-order systems in a dimensionally consistent and physically plausible manner. Possible experimental tests of the revised fractional-order model are proposed.

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## Patent

## Chaotic series generated by discrete fractional maps

Inventors: Guo-Cheng Wu, Li-Gang Zeng, Dumitru Baleanu, Xiang-Chao Shi

#### Chinese Patent No.: ZL 2014 1 0033835.7

#### Introduction

This patent generates fractional chaotic time-series in a short time, 10<sup>5</sup> length about 10 seconds on a student laptop. The patent overcomes long term calculation issue and keeps high sensitivity and randomicity of chaos. This patent has been successfully applied in large-scale image encryption to increase the key space.

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### The End of This Issue