FDA Express Vol. 5, No. 3, Nov. 15, 2012

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Latest SCI Journal Papers on FDA

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from ISI Web of Science (SCI)

Title: Some generalized fractional calculus operators and their applications in integral equations
Author(s): Agrawal, Om P.
Source: FRACTIONAL CALCULUS AND APPLIED ANALYSIS Volume: 15 Issue: 4 Pages: 700-711 DOI: 10.2478/s13540-012-0047-7 Published: DEC 2012

Title: An historical perspective on fractional calculus in linear viscoelasticity
Author(s): Mainardi, Francesco
Source: FRACTIONAL CALCULUS AND APPLIED ANALYSIS Volume: 15 Issue: 4 Pages: 712-717 DOI: 10.2478/s13540-012-0048-6 Published: DEC 2012

Title: The derivation of the generalized functional equations describing self-similar processes
Author(s): Nigmatullin, Raoul R.; Baleanu, Dumitru
Source: FRACTIONAL CALCULUS AND APPLIED ANALYSIS Volume: 15 Issue: 4 Pages: 718-740 DOI: 10.2478/s13540-012-0049-5 Published: DEC 2012

Title: Relationships between power-law long-range interactions and fractional mechanics
Author(s): Ishiwata, Ryosuke; Sugiyama, Yuki
Source: PHYSICA A-STATISTICAL MECHANICS AND ITS APPLICATIONS Volume: 391 Issue: 23 Pages: 5827-5838 DOI: 10.1016/j.physa.2012.06.055 Published: DEC 1 2012

Title: Application of Avery-Peterson fixed point theorem to nonlinear boundary value problem of fractional differential equation with the Caputo's derivative
Author(s): Liu, Yang
Source: COMMUNICATIONS IN NONLINEAR SCIENCE AND NUMERICAL SIMULATION Volume: 17 Issue: 12 Pages: 4576-4584 DOI: 10.1016/j.cnsns.2012.04.010 Published: DEC 2012

Title: Robust synchronization of fractional-order complex dynamical networks with parametric uncertainties
Author(s): Wong, W. K.; Li, Hongjie; Leung, S. Y. S.
Source: COMMUNICATIONS IN NONLINEAR SCIENCE AND NUMERICAL SIMULATION Volume: 17 Issue: 12 Pages: 4877-4890 DOI: 10.1016/j.cnsns.2012.05.020 Published: DEC 2012

Title: Non-negative solutions of systems of ODEs with coupled boundary conditions
Author(s): Infante, Gennaro; Minhos, Feliz M.; Pietramala, Paolamaria
Source: COMMUNICATIONS IN NONLINEAR SCIENCE AND NUMERICAL SIMULATION Volume: 17 Issue: 12 Pages: 4952-4960 DOI: 10.1016/j.cnsns.2012.05.025 Published: DEC 2012

Title: The existence of solutions for boundary value problem of fractional hybrid differential equations
Author(s): Sun, Shurong; Zhao, Yige; Han, Zhenlai; et al.
Source: COMMUNICATIONS IN NONLINEAR SCIENCE AND NUMERICAL SIMULATION Volume: 17 Issue: 12 Pages: 4961-4967 DOI: 10.1016/j.cnsns.2012.06.001 Published: DEC 2012

Title: Fractional calculus modelling for unsteady unidirectional flow of incompressible fluids with time-dependent viscosity
Author(s): Garra, Roberto; Polito, Federico
Source: COMMUNICATIONS IN NONLINEAR SCIENCE AND NUMERICAL SIMULATION Volume: 17 Issue: 12 Pages: 5073-5078 DOI: 10.1016/j.cnsns.2012.04.024 Published: DEC 2012

Title: Semilinear fractional differential equations based on a new integral operator approach
Author(s): Ding, Xiao-Li; Jiang, Yao-Lin
Source: COMMUNICATIONS IN NONLINEAR SCIENCE AND NUMERICAL SIMULATION Volume: 17 Issue: 12 Pages: 5143-5150 DOI: 10.1016/j.cnsns.2012.03.036 Published: DEC 2012

Title: Parameter estimation and topology identification of uncertain fractional order complex networks
Author(s): Si, Gangquan; Sun, Zhiyong; Zhang, Hongying; et al.
Source: COMMUNICATIONS IN NONLINEAR SCIENCE AND NUMERICAL SIMULATION Volume: 17 Issue: 12 Pages: 5158-5171 DOI: 10.1016/j.cnsns.2012.05.005 Published: DEC 2012

Title: Analytical proof on the existence of chaos in a generalized Duffing-type oscillator with fractional-order deflection
Author(s): Li, Huaqing; Liao, Xiaofeng; Ullah, Saleem; et al.
Source: NONLINEAR ANALYSIS-REAL WORLD APPLICATIONS Volume: 13 Issue: 6 Pages: 2724-2733 DOI: 10.1016/j.nonrwa.2011.12.028 Published: DEC 2012

Title: Adaptive pinning synchronization in fractional-order complex dynamical networks
Author(s): Chai, Yi; Chen, Liping; Wu, Ranchao; et al.
Source: PHYSICA A-STATISTICAL MECHANICS AND ITS APPLICATIONS Volume: 391 Issue: 22 Pages: 5746-5758 DOI: 10.1016/j.physa.2012.06.050 Published: NOV 15 2012

Title: An efficient method for segmentation of images based on fractional calculus and natural selection
Author(s): Ghamisi, Pedram; Couceiro, Micael S.; Benediktsson, Jon Atli; et al.
Source: EXPERT SYSTEMS WITH APPLICATIONS Volume: 39 Issue: 16 Pages: 12407-12417 DOI:

10.1016/j.eswa.2012.04.078 Published: NOV 15 2012

Title: The first integral method for some time fractional differential equations
Author(s): Lu, Bin
Source: JOURNAL OF MATHEMATICAL ANALYSIS AND APPLICATIONS Volume: 395 Issue: 2 Pages: 684-693 DOI: 10.1016/j.jmaa.2012.05.066 Published: NOV 15 2012

Title: Moving boundary problems governed by anomalous diffusion
Author(s): Vogl, Christopher J.; Miksis, Michael J.; Davis, Stephen H.
Source: PROCEEDINGS OF THE ROYAL SOCIETY A-MATHEMATICAL PHYSICAL AND ENGINEERING SCIENCES Volume: 468 Issue: 2147 Pages: 3348-3369 DOI: 10.1098/rspa.2012.0170 Published: NOV 8 2012

Title: Approximate solution to the time-space fractional cubic nonlinear Schrodinger equation
Author(s): Herzallah, Mohamed A. E.; Gepreel, Khaled A.
Source: APPLIED MATHEMATICAL MODELLING Volume: 36 Issue: 11 Pages: 5678-5685 DOI: 10.1016/j.apm.2012.01.012 Published: NOV 2012

Title: An anti-periodic boundary value problem for the fractional differential equation with a p-Laplacian operator
Author(s): Chen, Taiyong; Liu, Wenbin
Source: APPLIED MATHEMATICS LETTERS Volume: 25 Issue: 11 Pages: 1671-1675 DOI: 10.1016/j.aml.2012.01.035 Published: NOV 2012

Title: Parameter estimation and topology identification of uncertain fractional order complex networks
Author(s): Si, Gangquan; Sun, Zhiyong; Zhang, Hongying; et al.
Source: COMMUNICATIONS IN NONLINEAR SCIENCE AND NUMERICAL SIMULATION Volume: 17 Issue: 12 Pages: 5158-5171 DOI: 10.1016/j.cnsns.2012.05.005 Published: DEC 2012

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Conferences

International Conference on Fractional Signals and Systems

7-8 November 2013

Ghent University, Ghent, Belgium

http://www.fss13.ugent.be

Scope

The organizing committee has the pleasure of inviting you to participate at the International Conference on Fractional Signals and Systems, FSS 2013. In 2013 the FSS will be hosted by the Ghent University, Belgium, during 7-9 November 2013.

FSS 2013 will be held at the *University Conference Centre "Het Pand"*, in Ghent, Belgium. We sincerely welcome our colleagues worldwide to join us for FSS 2013. The conference location, Het Pand, is a historical monument: this unique building is a former Dominican Monastery, situated beside the river Leie in the historic hearth of the city of Ghent.

The history of Ghent begins in the year 630, when St Amandus chose the site of the confluence (or 'Ganda') of the two rivers, the Lys and the Scheldt, to construct an abbey. Nearly 1400 years of history are still palpable in the city today: a medieval castle surrounded by a moat, an imposing cathedral, a belfry, three beguinages...

Topics

- Signal analysis and filtering with fractional tools (restoration, reconstruction, analysis of fractal noises, etc.)
- Fractional modeling of thermal systems, electrical systems (motors, transformers, skin effect, etc.), dielectric materials, electrochemical systems (batteries, ultracapacitors, fuel cells, etc.), mechanical systems (vibration insulation, viscoelastic materials, etc.), biological systems (muscles, lungs, etc.) etc.
- Fractional system identification (linear, nonlinear, multivariable methods, etc.)
- Implementation aspects (fractional controllers etc.)
- Fractal structures, porous materials, etc.

Important deadlines

Submission opens:	15 April 2013
Initial submission:	1 June 2013
Author notification:	15 August 2013
Final submission:	30 September 2013
Conference dates:	7-8 November 2013

Submission Guidelines

Prepare the papers according to recommendation available at: **http://www.fss13.ugent.be**

Fees and registration

	Until 30.09.2013	*From 1.10.2013*
Regular fee:	350 Eur	450 Eur
Accompanying person	180 Eur	200 Eur

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9th International Conference on Multibody Systems, Nonlinear Dynamics, and Control (MSNDC)

CALL FOR PAPERS

To be held in conjunction with the ASME 2013 International Design Engineering Technical Conferences at the Oregon Convention Center in Portland, Oregon, USA, August 4 - 7, 2013
(Contributed by Prof. Tenreiro Machado)

The International Conference on Multibody Systems, Nonlinear Dynamics, and Control (MSNDC) is a premier meeting event for professional networking and research exchange across the multibody systems and nonlinear dynamics technical community. The conference facilitates the dissemination of fundamental research in the enabling disciplines as well as research into their application to engineered or naturally occurring mechanical systems across all length and time scales.

2. MSNDC- Analytical, Experimental, and Nonlinear Dynamics
• Nonlinear Resonances, Phenomena, and Interactions (B. Balachandran, S. Lenci)
• Time-Varying and Time-Delay Systems (E. Butcher, G. Oroz, S. Sinha, M. Younis)
• Reduced-Order Modeling (M. Allen, G. Kerschen, M. Eriten)
• Fractional Dynamics and Discontinuities (A. Luo, T. Machado)

Conference website: http://www.asmeconferences.org/idetc2013/

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Call for Paper

IEEE Journal on Emerging and Selected Topics in Circuits and Systems

Special Issue: FRACTIONAL-ORDER CIRCUITS AND SYSTEMS

Fractional-order circuits and system design is an emerging field incorporating concepts from fractional calculus into electrical circuits and systems; showing diverse applications and immense potential in control systems, signal processing, biomedical instrumentation, and many more. As far as circuit design is concerned, there is a tremendous need to continue to generalize circuit design and analysis techniques from the narrow integer-order subset to the more general fractional-order domain and explore the unique properties of these circuits and systems.
The aim of this special issue is to expand on the analysis and design of circuits and systems approached from a fractional-order perspective. Original research papers are solicited, but not restricted to, the following areas:

• Circuit Theory of fractional-order systems
• Systematic design and realization processes of fractional-order circuits
• Analog and Digital approximation techniques of fractional systems
• Fractional-order modeling and applications (e.g. in biochemistry, biomedicine, and hybrid power systems)
• CAD tools and algorithms for simulations of fractional-order circuits
• Signal Processing based on fractional-order models
• System/sub-system level applications

Authors are invited to submit to JETCAS via the JETCAS website and according to JETCAS policies and procedures. For details see
http://jetcas.polito.it/index.html.

Timeline:
Paper submission - February 15th, 2013
First round of reviews completed - April 15th, 2013
Revised manuscripts due - May 15th, 2013
Notification of acceptance - June 1st, 2013
Final manuscripts due date - July 1st, 2013

Guest Editors:
A. S. Elwakil, elwakil@ieee.org B. Maundy, bmaundy@ucalgary.ca
G. Chen, eegchen@cityu.edu.hk L. Fortuna, lfortuna@diees.unict.it

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Books

Chaos and Fractals: An Elementary Introduction

David P. Feldman
http://ukcatalogue.oup.com/product/9780199566433.do#.UJsPpEQ38xE

About this book

- The only textbook on chaos and fractals for non-science and mathematics majors.
- Covers central phenomena and ideas of chaos and fractals in a careful, intellectually honest, but accessible way.
- Covers current areas of physics and mathematics that are of wide interest
- Richly illustrated.
- Over 200 end-of-chapter exercises make it easy for instructors to assign homework problems.

- A range of additional topics are covered from which instructors can chose as they put together their own courses.

This book provides the reader with an elementary introduction to chaos and fractals, suitable for students with a background in elementary algebra, without assuming prior coursework in calculus or physics. It introduces the key phenomena of chaos - aperiodicity, sensitive dependence on initial conditions, bifurcations - via simple iterated functions. Fractals are introduced as self-similar geometric objects and analyzed with the self-similarity and box-counting dimensions. After a brief discussion of power laws, subsequent chapters explore Julia Sets and the Mandelbrot Set. The last part of the book examines two-dimensional dynamical systems, strange attractors, cellular automata, and chaotic differential equations.

The book is richly illustrated and includes over 200 end-of-chapter exercises. A flexible format and a clear and succinct writing style make it a good choice for introductory courses in chaos and fractals.

Readership: Undergraduate students and lecturers on specialist and non-specialist courses in physics and mathematics.

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3: Qualitative Dynamics
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7: Population Models
8: Newton, Laplace, and Determinism
II. Chaos
9: Chaos and the Logistic Equation
10: The Buttery Effect
11: The Bifurcation Diagram
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III. Fractals
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20: Power Laws and Long Tails
20: Introducing Julia Sets
21: Infinities, Big and Small
IV. Julia Sets and The Mandelbrot Set

22: Introducing Julia Sets
23: Complex Numbers
24: Julia Sets for f(z) = z2 + c
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V. Higher-Dimensional Systems
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27: Cellular Automata
28: Introduction to Differential Equations
29: One-Dimensional Differential Equations
30: Two-Dimensional Differential Equations
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32: Conclusion
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The Fractalist

Benoit Mandelbrot
http://www.randomhouse.com/book/106843/the-fractalist-by-benoit-mandelbrot

A fascinating memoir from the man who revitalized visual geometry, and whose ideas about fractals have changed how we look at both the natural world and the financial world.

Benoit Mandelbrot, the creator of fractal geometry, has significantly improved our understanding of, among other things, financial variability and erratic physical phenomena. In The Fractalist, Mandelbrot recounts the high points of his life with exuberance and an eloquent fluency, deepening our understanding of the evolution of his extraordinary mind. We begin with his early years: born in Warsaw in 1924 to a Lithuanian Jewish family, Mandelbrot moved with his family to Paris in the 1930s, where he was mentored by an eminent mathematician uncle. During World War II, as he stayed barely one step ahead of the Nazis until France was liberated, he studied geometry on his own and dreamed of using it to solve fresh, real-world problems. We observe his unusually broad education in Europe, and later at Caltech, Princeton, and MIT. We learn about his thirty-five-year affiliation with IBM's Thomas J. Watson Research Center and his association with Harvard and Yale. An outsider to mainstream scientific research, he managed to do what others had thought impossible: develop a new geometry that combines revelatory beauty with a radical way of unfolding formerly hidden laws governing utter roughness, turbulence, and chaos.

Here is a remarkable story of both the man's life and his unparalleled contributions to science, mathematics, and the arts.

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Igor Leite Freire

Convergence of a parameter switching algorithm for a class of nonlinear continuous systems and a generalization of Parrondo's paradox
Marius-F. Danca

Nonlinear Dynamical Systems

Adaptive terminal sliding mode control subject to input nonlinearity for synchronization of chaotic gyros
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Solving a class of geometric programming problems by an efficient dynamic model
Alireza Nazemi, Elahe Sharifi

Parametric generation of robust chaos with time-delayed feedback and modulated pump source
Alexey S. Kuznetsov, Sergey P. Kuznetsov

Letters to the editors

Comment on "Parameter identification and synchronization of fractional-order chaotic systems" [Commun Nonlinear Sci Numer Simulat 2012;17:305–16]
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Remarks on the “Reply to Comments on “Fuzzy fractional order sliding mode controller for nonlinear systems, Commun Nonlinear Sci Numer Simulat 15 (2010) 963–978””
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Chaos, Solitons & Fractals

Volume 45, Issue 12

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Ruelle operator for infinite conformal iterated function systems
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On the influence of a constant force on the appearance of period-doubling bifurcations and chaos in a harmonically excited pure cubic oscillator
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Volume 232, Issue 1

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Conservative metric evaluation for high-order finite difference schemes with the GCL identities on moving and deforming grids
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Fast multi-particle scattering: A hybrid solver for the Maxwell equations in microstructured materials
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Least-Squares Spectral Method for the solution of a fractional advection–dispersion equation
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Compact difference scheme for the fractional sub-diffusion equation with Neumann boundary conditions
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Multiscale modeling of incompressible turbulent flows
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Classical Papers

Numerical comparison of methods for solving linear differential equations of fractional order

S. Momani, Z.M. Odibat

Publication information: S. Momani, Z.M. Odibat. Numerical comparison of methods for solving linear differential equations of fractional order. Chaos, Solitons & Fractals 31(5) 2007, 1248-1255.

http://www.sciencedirect.com/science/article/pii/S0960077905010374

Abstract

In this article, we implement relatively new analytical techniques, the variational iteration method and the Adomian decomposition method, for solving linear differential equations of fractional order. The two methods in applied mathematics can be used as alternative methods for obtaining analytic and approximate solutions for different types of fractional differential equations. In these schemes, the solution takes the form of a convergent series with easily computable components. This paper will present a numerical comparison between the two methods and a conventional method such as the fractional difference method for solving linear differential equations of fractional order. The numerical results demonstrates that the new methods are quite accurate and readily implemented.

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Stability analysis of linear fractional differential system with multiple time delays

Weihua Deng, Changpin Li and Jinhu Lü

Publication information: Weihua Deng, Changpin Li and Jinhu Lü. Stability analysis of linear fractional differential system with multiple time delays. NONLINEAR DYNAMICS 48(4) (2007), 409-416, DOI: 10.1007/s11071-006-9094-0.

http://www.springerlink.com/content/hm337662850tl448/

Abstract

In this paper, we study the stability of n-dimensional linear fractional differential equation with time delays, where the delay matrix is defined in $(R+)^{n\times n}$. By using the Laplace transform, we introduce a characteristic equation for the above system with multiple time delays. We discover that if all roots of the characteristic equation have negative parts, then the equilibrium of the above linear system with fractional order is Lyapunov globally asymptotical stable if the equilibrium exist that is almost the same as that of classical differential equations. As its an application, we apply our theorem to the delayed system in one spatial dimension studied by Chen and Moore [Nonlinear Dynamics 29, 2002, 191] and determine the asymptotically stable region of the system. We also deal with synchronization between the coupled Duffing oscillators with time delays by the linear feedback control.

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