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News

Update on "Central European Journal of Physics" special issues for FDA2012

The special issues on Fractional Dynamics and Complexity of "Central European Journal of Physics" (SCI indexed)
Guest editors: R. L. Magin, R. R. Nigmatullin, L.Vazquez

The instructions on the special issue for FDA2012 have been updated. Please go to the following website: Instructions for contributors for this special issue

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Latest SCI Journal Papers on FDA

November 2012

from ISI Web of Science (SCI)

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: Numerical solutions for some generalized coupled nonlinear evolution equations
Author(s): Arafa, A. A. M.; Rida, S. Z.
Source: MATHEMATICAL AND COMPUTER MODELLING Volume: 56 Issue: 11-12 Pages: 268-277 DOI:

10.1016/j.mcm.2011.12.046 Published: DEC 2012
Times Cited: 0 (from All Databases)

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
Times Cited: 0 (from All Databases)

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: A formulation of the fractional Noether-type theorem for multidimensional Lagrangians
Author(s): Malinowska, Agnieszka B.
Source: APPLIED MATHEMATICS LETTERS Volume: 25 Issue: 11 Pages: 1941-1946 DOI: 10.1016/j.aml.2012.03.006 Published: NOV 2012

Title: A sufficient condition for the existence of a positive solution for a nonlinear fractional differential equation with the Riemann-Liouville derivative
Author(s): Yang Liu; Zhang Weiguo; Liu Xiping
Source: APPLIED MATHEMATICS LETTERS Volume: 25 Issue: 11 Pages: 1986-1992 DOI: 10.1016/j.aml.2012.03.018 Published: NOV 2012

Title: alpha-stability and alpha-synchronization for fractional-order neural networks.
Author(s): Yu, Juan; Hu, Cheng; Jiang, Haijun
Source: Neural networks : the official journal of the International Neural Network Society Volume: 35 Pages: 82-7 DOI: 10.1016/j.neunet.2012.07.009 Published: 2012-Nov (Epub 2012 Aug 04)

Title: Primary resonance of Duffing oscillator with two kinds of fractional-order derivatives
Author(s): Shen, Yongjun; Yang, Shaopu; Xing, Haijun; et al.
Source: INTERNATIONAL JOURNAL OF NON-LINEAR MECHANICS Volume: 47 Issue: 9 Pages: 975-983 DOI: 10.1016/j.ijnonlinmec.2012.06.012 Published: NOV 2012

Title: Meshless simulations of the two-dimensional fractional-time convection-diffusion-reaction equations
Author(s): Shirzadi, Ahmad; Ling, Leevan; Abbasbandy, Saeid
Source: ENGINEERING ANALYSIS WITH BOUNDARY ELEMENTS Volume: 36 Issue: 11 Pages: 1522-1527 DOI: 10.1016/j.enganabound.2012.05.005 Published: NOV 2012

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Conferences

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

The organization committee of the international conference on fractional differentiation and its applications has just opened its website at:

http://www.icfda14.dieei.unict.it/

This series of conferences is the largest of its kind. Following the previous successful conferences, 2004 in France, 2006 in Portugal, 2008 Turkey, 2010 in Spain, and 2012 in China, the ICFDA'14 is expected to be the largest gathering of researchers and practitioners in this field of research and applications. For the conference details, please visit the above website.

The organizing committee invites you from all over the world to come to Catania, Italy to attend this wonderful event.

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2013 ASME/IEEE International Conference on Mechatronic and Embedded Systems and Applications (MESA2013)

MESA-8 Fractional Order Dynamics and Applications

http://www.asmeconferences.org/IDETC2013/CallForPapersDetail.cfm

Description

Objectives: The Symposium seeks papers solicited in the area of fractional derivatives and their applications. The subjects of the papers may include, but are not limited to:

- mathematical modeling of fractional dynamic systems
- analytical and numerical techniques to solve these equations
- fractional models of viscoelastic damping
- large scale finite element models of fractional systems and associated numerical schemes
- fractional controller design and system identification
- stability analysis of fractional systems
- nonlinear and stochastic fractional dynamic systems
- fractional models and their experimental verifications, and applications of fractional models to engineering systems in general and mechatronic embedded systems in particular
- fractional variational principles and its applications

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Books

Further Developments in Fractals and Related Fields

Julien Barral and Stéphane Seuret

http://www.springer.com/birkhauser/mathematics/book/978-0-8176-8399-3

This volume, following in the tradition of a similar 2010 publication by the same editors, is an outgrowth of an international conference, “Fractals and Related Fields II,” held in June 2011. The book provides readers with an overview of developments in the mathematical fields related to fractals, including original research contributions as well as surveys from many of the leading experts on modern fractal theory and applications.

The chapters cover fields related to fractals such as:

-geometric measure theory
-ergodic theory
-dynamical systems
-harmonic and functional analysis
-number theory
-probability theory

Further Developments in Fractals and Related Fields is aimed at pure and applied mathematicians working in the above-mentioned areas as well as other researchers interested in discovering the fractal domain. Throughout the volume, readers will find interesting and motivating results as well as new avenues for further research.

Table of contents

Keywords: analysis on fractals, ergodic theory and dynamical systems, functional analysis, geometric measure theory, harmonic analysis, multifractals

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Wavelets and Fractals in Earth System Sciences

E. Chandrasekhar, V. M. Dimri and Vikram M. Gadre

http://www.crcpress.com/product/isbn/9781466553590

Features

- Presents a well-balanced treatment of wavelets, fractals, and multifractals with various applications
- Covers the latest wavelets and fractals research relevant to the geosciences
- Contains the basics as well as advanced material
- Includes numerous examples and case studies

Summary

Although the applications of wavelets and fractals have increased in scientific and technological fields, including the earth sciences, there are few books devoted to the use of these techniques in the geosciences. This book highlights the role of advanced data processing techniques in current earth system science research. It covers

applications of fractals, multifractals, and wavelets that address challenging problems in the earth sciences. It focuses on the continuous wavelet transform technique and uses examples to explain the differences between the wavelet method and other conventional signal processing techniques.

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Journals

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International Journal of Bifurcation and Chaos

in Applied Sciences and Engineering

Volume 22, Number 09

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Structures Out Of Chaos in Barred-Spiral Galaxies

P. A. Patsis

Some Open Points in Nonextensive Statistical Mechanics

Constantino Tsallis

THEME SECTION: Nonlinear Dynamics and Complexity: Theory, Methods and Applications — Papers

Chaos in Cylindrical Stadium Billiards via A Generic Nonlinear Mechanism

Thomas Gilbert, David P. Sanders

Scaling Invariance in A Time-Dependent Elliptical Billiard

Diego F. M. Oliveira, Marko Robnik

Time-Evolving Statistics of Chaotic Orbits of Conservative Maps in The Context of The Central Limit Theorem

G. Ruiz, T. Bountis, C. Tsallis

Universality of First and Second Order Phase Transition in Solar Activity: Evidence for Nonextensive Tsallis Statistics

L. P. Karakatsanis, G. P. Pavlos, D. S. Sfiris

Complex Matter and Nonlinear Kinetics: Crystal Size Distribution Due to Self-Organization

Vasileios Basios

On A Novel Class of Integrable Odes Related to The Painlevé Equations

Athanassios S. Fokas, Di Yang

Thin Films: Increasing The Complexity of The Model

C. Sophocleous, P. G. L. Leach

Matrix Quantization of Turbulence

Emmanuel Floratos

Quantum Vortices and Trajectories in Particle Diffraction

N. Delis, C. Efthymiopoulos, G. Contopoulos

Analysis of Round Off Errors with Reversibility Test as A Dynamical Indicator

Davide Faranda, Martín Federico Mestre, Giorgio Turchetti

Efficient Integration of The Variational Equations of Multidimensional Hamiltonian Systems: Application to The Fermi–Pasta–Ulam Lattice

Enrico Gerlach, Siegfried Eggl, Charalampos Skokos

Estimating Hyperbolicity of Chaotic Bidimensional Maps

Matteo Sala, Cesar Manchein, Roberto Artuso

Probing The Local Dynamics of Periodic Orbits by The Generalized Alignment Index (Gali) Method

T. Manos, Ch. Skokos, Ch. Antonopoulos

Efficient Control of Accelerator Maps

Jehan Boreux, Timoteo Carletti, Charalampos Skokos, Yannis Papaphilippou, Michel Vittot

Bivariate Fractal Interpolation Surfaces: Theory and Applications

Vassileios Drakopoulos, Polychronis Manousopoulos

Exact Traveling Wave Solutions and Their Bifurcations for The Generalized Pochhammer–Chree Equations

Jibin Li, Guanrong Chen

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Chaos, Solitons & Fractals

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The realization of controllable three dimensional rogue waves in nonlinear inhomogeneous system

Chao-Qing Dai, Yue-Yue Wang, Guo-Quan Zhou

Does migration cost influence cooperation among success-driven individuals?

Yongkui Liu, Xiaojie Chen, Lin Zhang, Fei Tao, Long Wang

Vanishing quantum discord and complete entropy exchange between subsystems in a bipartite system

Xue Qun Yan

Random-time processes governed by differential equations of fractional distributed order

L. Beghin

Structurally unstable regular dynamics in 1D piecewise smooth maps, and circle maps

Laura Gardini, Fabio Tramontana

Competition analysis of a triopoly game with bounded rationality

A.A. Elsadany

Measuring complexity with multifractals in texts. Translation effects

M. Ausloos

Divergence-free vector fields with average and asymptotic average shadowing property

Alireza Zamani Bahabadi

Existence and asymptotics of traveling waves for nonlocal diffusion systems

Zhixian Yu, Rong Yuan

Cluster synchronization for directed community networks via pinning partial schemes

Cheng Hu, Haijun Jiang

Modified extended tanh-function method and nonlinear dynamics of microtubules

Slobodan Zdravković, Louis Kavitha, Miljko V. Satarić, Slobodan Zeković, Jovana Petrović

Stability and Hopf bifurcation of a Nonlinear oscillator with multiple time-delays

Raghavendra D. Naik, Pravin M. Singru

Cooperation in an evolutionary prisoner's dilemma game with probabilistic strategies

Haihong Li, Qionglin Dai, Hongyan Cheng, Junzhong Yang

Fractal-based exponential distribution of urban density and self-affine fractal forms of cities

Yanguang Chen, Jian Feng

Bifurcations of limit cycles in a quintic Lyapunov system with eleven parameters

Li Feng

Chaotic transport of a matter-wave soliton in a biperiodically driven optical superlattice

Zheng Zhou, Wenhua Hai, Yan Deng, Qiongtao Xie

An optical model for implementing Parrondo's game and designing stochastic game with long-term memory

Tieyan Si

On the upper and lower quantization coefficient for probability measures on multiscale Moran sets

Sanguo Zhu

Approximate convex hull of affine iterated function system attractors

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Nonlinear Dynamics

Volume 70, Number 1	http://www.springerlink.com/content/0924-090x/70/1/
Volume 70, Number 2	http://www.springerlink.com/content/0924-090x/70/2/
Volume 70, Number 3	http://www.springerlink.com/content/0924-090x/70/3/

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Classical Papers

A brief history and exposition of the fundamental theory of fractional calculus

Bertram Ross

Publication information: Bertram Ross. A brief history and exposition of the fundamental theory of fractional calculus. Fractional Calculus And Its Applications, Lecture Notes in Mathematics, 1975, Volume 457/1975, 1-36, DOI: 10.1007/BFb0067096.

http://www.springerlink.com/content/p75p368712n88u5w/

Abstract

This opening lecture is intended to serve as a propaedeutic for the papers to be presented at this conference whose nonhomogeneous audience includes scientists, mathematicians, engineers and educators. This expository and developmental lecture, a case study of mathematical growth, surveys the origin and development of a mathematical idea from its birth in intellectual curiosity to applications. The fundamental structure of fractional calculus is outlined. The possibilities for the use of fractional calculus in applicable mathematics is indicated. The lecture closes with a statement of the purpose of the conference.

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Polynomial operators, Stieltjes convolution, and fractional calculus in hereditary mechanics

R. C. Koeller

Publication information: R. C. Koeller. Polynomial operators, Stieltjes convolution, and fractional calculus in hereditary mechanics. ACTA MECHANICA, Volume 58, Numbers 3-4 (1986), 251-264, DOI: 10.1007/BF01176603.

http://www.springerlink.com/content/lt2p66kw30680171/

Abstract

Fractional calculus is used to describe the general behavior of materials with memory. An expression for the fractional derivative or the fractional integral is developed in terms of the Stieltjes convolution and the Riesz distribution. The general fractional calculus polynomial operator constitutive equation is reduced to a Stieltjes

convolution. A constitutive equation which depends on a memory parameter for an isotropic viscoelastic material is presented. The proposed creep compliance has an initial response, a primary creep region, a secondary creep region and a tertiary creep region. The corresponding relaxation modulus has a glassy region, a leathery region, a rubbery region and a liquid region.

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The End of This Issue

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