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Fractional Calculus & Applied Analysis, Volume 16, No 1, 2013

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Latest SCI Journal Papers on FDA

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from ISI Web of Science (SCI)

Title: A boundary value problem of fractional differential equations with anti-periodic type integral boundary conditions
Author(s): Ahmad, Bashir; Ntouyas, S. K.
Source: JOURNAL OF COMPUTATIONAL ANALYSIS AND APPLICATIONS Volume: 15 Issue: 8 Pages: 1372-1380 Published: DEC 2013

Title: Analytic Approximation of Time-Fractional Diffusion-Wave Equation Based on Connection of Fractional and Ordinary Calculus
Author(s): Fallahgoul, H.; Hashemiparast, S. M.
Source: JOURNAL OF COMPUTATIONAL ANALYSIS AND APPLICATIONS Volume: 15 Issue: 8 Pages: 1430-1443 Published: DEC 2013

Title: Higher order duality in nondifferentiable fractional programming involving generalized convexity
Author(s): Ahmad, I.; Agarwal, Ravi P.; Jayswal, Anurag
Source: JOURNAL OF COMPUTATIONAL ANALYSIS AND APPLICATIONS Volume: 15 Issue: 8 Pages: 1444-1455 Published: DEC 2013

Title: Error estimate in fractional differential equations using multiquadratic radial basis functions
Author(s): Kazemi, B. Fakhr; Ghoreishi, F.
Source: JOURNAL OF COMPUTATIONAL AND APPLIED MATHEMATICS Volume: 245 Pages: 133-147 DOI: 10.1016/j.cam.2012.12.011 Published: JUN 2013

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Conferences

Mini-Symposium on "Numerical Methods for Fractional Derivative Equations"

in association with "The 5th Asia Pacific Congress on Computational Mechanics & 4th International Symposium on Computational Mechanics"
---- 11-14th Dec. 2013, Singapore, www.apcom2013.org

Call for Papers

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/

The aims of this mini-symposium are to review the progress of diverse numerical methods for fractional derivative governing equations, to seek the exciting work being undertaken in the correlative field, and to promote advanced research, development and applications.

The mini-symposium will provide communications among researchers and practitioners who are interested in this field, introduce new researchers to the field, present original ideas, report state-of-the-art and in-progress research results, discuss future trends and challenges, establish fruitful contacts, and promote interactions between researchers in numerical fractional derivative equations and those in other cross-disciplines.

The topics of this mini-symposium cover a wide range of numerical methods for fractional partial differential equations, such as finite element, finite volume, finite difference, spectral, mesh-free, matrix, decomposition methods. In particular, we welcome the research with particular application backgrounds regarding acoustics, viscosity, dynamic systems, advection-diffusion, control, geophysics, economics, statistics, just to mention a few.

All abstract (and/or full-paper) submissions should be sent to secretariat@apcom2013.org before 30 Apr. 2013. More conference info can be found at www.apcom2013.org.

Contact organizer: Prof. Wen Chen (chenwen@hhu.edu,cn)

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Call for Paper

Special Issue on Fractional Differential Equations (2013)

Call for Papers

In recent years, a growing number of works by many authors from various fields of science and engineering deal with dynamical systems described by fractional differential equations. Fractional

differential equations are generalization of ordinary differential equations to arbitrary (noninteger) order. Fractional differential equations capture nonlocal relations in space and time with power law memory kernels. Due to extensive applications in engineering and science, research in fractional differential equations has become an intense around the world.

We invite authors to present original research articles as well as review articles in the area of fractional differential equations and their applications. This special issue will become an international forum for researches to present the most recent developments and ideas in the field. The topics to be covered include, but are not limited to:

Numerical methods and numerical analysis of fractional differential equations
Mathematical models of fractional dynamic systems
Fractional image processing
Theorem of fractional differential equations
Nonlinear and stochastic fractional dynamic systems
Fractional models and their experimental verifications
Applications of fractional models
Fractional random fields
Probabilistic solutions of FDE
Fractional Dynamics and Control

Before submission authors should carefully read over the journal's Author Guidelines, which are located at http://www.hindawi.com/journals/ijde/guidelines/. Prospective authors should submit an electronic copy of their complete manuscript through the journal Manuscript Tracking System at http://mts.hindawi.com/submit/journal/ijde/fde13/ according to the following timetable:

Manuscript Due Friday, 5 July 5 2013
First Round of Reviews Friday, 27 September 2013
Publication Date Friday, 22 November 2013

Lead Guest Editor

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Wen Chen, Department of Engineering Mechanics, Hohai University, Xikang Road No. 1, Nanjing 210098, Jiangsu, China; chenwen@hhu.edu.

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Books

Fractional Derivatives for Physicists and Engineers: Volume I Background and Theory Volume II Applications (Nonlinear Physical Science)

Vladimir V. Uchaikin

Book Description

The first derivative of a particle coordinate means its velocity, the second means its acceleration, but what does a fractional order derivative mean? Where does it come from, how does it work, where does it lead to? The two-volume book written on high didactic level answers these questions. Fractional Derivatives for Physicists and Engineers-The first volume contains a clear introduction into such a modern branch of analysis as the fractional calculus. The second develops a wide panorama of applications of the fractional calculus to various physical problems. This book recovers new perspectives in front of the reader dealing with turbulence and semiconductors, plasma and thermodynamics, mechanics and quantum optics, nanophysics and astrophysics. The book is addressed to students, engineers and physicists, specialists in theory of probability and statistics, in mathematical modeling and numerical simulations, to everybody who doesn't wish to stay apart from the new mathematical methods becoming more and more popular. Prof. Vladimir V. UCHAIKIN is a known Russian scientist and pedagogue, a Honored Worker of Russian High School, a member of the Russian Academy of Natural Sciences. He is the author of about three hundreds articles and more than a dozen books (mostly in Russian) in Cosmic ray physics, Mathematical physics, Levy stable statistics, Monte Carlo methods with applications to anomalous processes in complex systems of various levels: from quantum dots to the Milky Way galaxy.

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Communications in Nonlinear Science and Numerical Simulation

Volume 18, Issue 9

Short Communications

Regular Articles

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Nonlinear Waves and Solitons

Nonlinear Fluids

Chaos and Complexity

Nonlinear Dynamical Systems

Nonlinear Vibrations

New conditions for synchronization in complex networks with multiple time-varying delays
Yan Dong, Jin-Guo Xian, Dong Han

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A special issue of *Philosophical Transactions of the Royal Society A* on
Fractional calculus and its applications

Compiled and edited by Changpin Li, YangQuan Chen and Jürgen Kurths

http://rsta.royalsocietypublishing.org/content/371/1990.toc

Introduction

Fractional calculus and its applications
Changpin Li, YangQuan Chen, and Jürgen Kurths

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Chaos synchronization in fractional differential systems
Fengrong Zhang, Guanrong Chen, Changpin Li, and Jürgen Kurths

Some existence results on nonlinear fractional differential equations
Dumitru Baleanu, Shahram Rezapour, and Hakimeh Mohammadi

Equivalent system for a multiple-rational-order fractional differential system
Changpin Li, Fengrong Zhang, Jürgen Kurths, and Fanhai Zeng

On reflection symmetry and its application to the Euler–Lagrange equations in fractional mechanics
Małgorzata Klimek

Fractional-order variational optical flow model for motion estimation
Dali Chen, Hu Sheng, YangQuan Chen, and Dingyü Xue

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Paper Highlight

A fractional calculus approach to the description of stress and strain localization in fractal media

Alberto Carpinteri, Pietro Cornetti

Publication information: Alberto Carpinteri, Pietro Cornetti, A fractional calculus approach to the description of stress and strain localization in fractal media, Chaos, Solitons & Fractals, 13(1), 2002, Pages 85-94.
http://www.sciencedirect.com/science/article/pii/S0960077900002381

Abstract
Evidence of fractal patterns in materials with disordered microstructure under tensile loads is undeniable. Unfortunately fractal functions cannot be solution of classical differential equations.

Hence a new calculus must be developed to handle fractal processes. In this paper, we use the local fractional calculus operators recently introduced by K.M. Kolwankar [Studies of fractal structures and processes using methods of fractional calculus. PhD thesis, University of Pune, India, 1998]. Through these new mathematical tools we get the static and kinematic equations that model the uniaxial tensile behavior of heterogeneous materials. The fractional operators respect the non-integer (fractal) physical dimensions of the quantities involved in the governing equations, while the virtual work principle highlights the static-kinematic duality among them. The solutions obtained from the model are fractal and yield to scaling power laws characteristic of the nominal quantities, i.e., they reproduce the size effects due to stress and strain localization.

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Table of some basic fractional calculus formulae derived from a modified Riemann-Liouville derivative for non-differentiable functions

Guy Jumarie

Publication information: Guy Jumarie, Table of some basic fractional calculus formulae derived from a modified Riemann-Liouville derivative for non-differentiable functions. Applied Mathematics Letters, 22(3), 2009, Pages 378-385.
http://www.sciencedirect.com/science/article/pii/S0893965908001638

Abstract
In order to cope with some difficulties due to the fact that the derivative of a constant is not zero with the commonly accepted Riemann-Liouvile definition of fractional derivatives, one (Jumarie) has proposed recently an alternative referred to as a modified Riemann-Liouville definition, which directly, provides a Taylor's series of fractional order for non differentiable functions. This fractional derivative provides a fractional calculus parallel with the classical one, which applies to non-differentiable functions; and the present short article summarizes the main basic formulae so obtained.

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