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Dyadic Walsh Analysis from 1924 Onwards Walsh-Gibbs-Butzer Dyadic Differentiation in Science. Volume 2: Extensions and Generalizations.

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Fractional Calculus & Applied Analysis

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Latest SCI Journal Papers on FDA

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A SHORT NOTE ON INTEGRAL INEQUALITY OF TYPE HERMITE-HADAMARD THROUGH CONVEXITY
By: Iqbal, Muhammad; Qaisar, Shahid; Muddassar, Muhammad
JOURNAL OF COMPUTATIONAL ANALYSIS AND APPLICATIONS Volume: 21 Issue: 5 Pages: 946-953 Published: NOV 2016

ON A TRANSPORT EQUATION WITH NONLOCAL DRIFT
By: Silvestre, Luis; Vicol, Vlad

TRANSACTIONS OF THE AMERICAN MATHEMATICAL SOCIETY Volume: 368 Issue: 9 Pages: 6159-6188 Published: SEP 2016

Application of a fractional model for simulation of the viscoelastic functions of polymers
By: Kontou, E.; Katsourinis, S.
JOURNAL OF APPLIED POLYMER SCIENCE Volume: 133 Issue: 23 Published: JUN 15 2016

Fractional order PID controller for perturbed load frequency control using Kharitonov's theorem
By: Sondhi, Swati; Hote, Yogesh V..
INTERNATIONAL JOURNAL OF ELECTRICAL POWER & ENERGY SYSTEMS Volume: 78 Pages: 884-896 Published: JUN 2016

Stochastic dynamic response and reliability assessment of controlled structures with fractional derivative model of viscoelastic dampers
By: Xu, Jun; Li, Jie
MECHANICAL SYSTEMS AND SIGNAL PROCESSING Volume: 72-73 Pages: 865-896 Published: MAY 2016

Variable-order fractional numerical differentiation for noisy signals by wavelet denoising
By: Chen, Yi-Ming; Wei, Yan-Qiao; Liu, Da-Yan; et al.
JOURNAL OF COMPUTATIONAL PHYSICS Volume: 311 Pages: 338-347 Published: APR 15 2016

Non-normality and induced plastic anisotropy under fractional plastic flow rule: a numerical study
By: Sumelka, Wojciech; Nowak, Marcin
INTERNATIONAL JOURNAL FOR NUMERICAL AND ANALYTICAL METHODS IN GEOMECHANICS Volume: 40 Issue: 5 Pages: 651-675 Published: APR 10 2016

Fractional-Order Information in the Visual Control of Lateral Locomotor Interception
By:Bootsma, Reinoud J.; Ledouit, Simon; Casanova, Remy; et al.
JOURNAL OF EXPERIMENTAL PSYCHOLOGY-HUMAN PERCEPTION AND PERFORMANCE Volume: 42 Issue: 4 Pages: 517-529 Published: APR 2016

Integer and fractional-order entropy analysis of earthquake data series
By: Lopes, Antonio M.; Tenreiro Machado, J. A.
NONLINEAR DYNAMICS Volume: 84 Issue: 1 Special Issue: SI Pages: 79-90 Published: APR 2016

Vector-based tuning and experimental validation of fractional-order PI/PD controllers
By: Muresan, Cristina I.; Dulf, Eva H.; Both, Roxana
NONLINEAR DYNAMICS Volume: 84 Issue: 1 Special Issue: SI Pages: 179-188 Published: APR 2016

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Call for Papers

Special issue on Fractional Calculus and Applications

Call for contributions

Tbilisi Mathematical Journal [Owned by the Tbilisi Centre for Mathematical Sciences]
(De Gruyter Open; No publication or other charges)

http://tcms.org.ge/Journals/TMJ/

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Submission Deadline: 31 August 2016. For details go to

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Special Session on “Fractional Order Systems” in the Workshop Structural Dynamical Systems: Computational Aspects 2016 (SDS 2016),

------July 14–17, 2016 Hotel Villaggio Porto Giardino in Monopoli, Italy

https://sites.google.com/site/workshopsds2016

The aim of the biennial workshop SDS: CA is to bring together researchers from different areas, in particular Mathematics, Physics and Engineering, to give them the opportunity of discussing in a friendly atmosphere, the recent developments in computational and theoretical methods for Dynamical Systems and their applications. The main topics are: – Continuous and Discrete Dynamical Systems; – Mathematical Models with Applications; – Piecewise-smooth Dynamical Systems and Discontinuous ODEs; – Numerical Methods for ODEs and PDEs; – Fractional Differential Equations; – Models and Simulation in Engineering Problems; numerical and theoretical aspects of these topics will be welcome. Due to the great interest in systems with fractional integrals and derivatives, this year the topics of the workshop include also “Fractional Differential Equations” and a special issue devoted to “Fractional Order Systems” will be organized.

For more detailed information, contact:
Roberto Garrappa, E-mail: roberto.garrappa@uniba.it

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Books

Dyadic Walsh Analysis from 1924 Onwards Walsh-Gibbs-Butzer Dyadic Differentiation in Science. Volume 1: Foundations.

R.S. Stankovic, P.L. Butzer, F. Schipp, W.R. Wade, W. Su, Y. Endow, S. Fridli, B.I. Golubov, F. Pichlers

Book Description

Dyadic (Walsh) analysis emerged as a new research area in applied mathematics and engineering in early seventies within attempts to provide answers to demands from practice related to application of spectral analysis of different classes of signals, including audio, video, sonar, and radar signals. In the meantime, it evolved in a mature mathematical discipline with fundamental results and important features providing basis for various applications. The book will provide fundamentals of the area through reprinting carefully selected earlier publications followed by overview of recent results concerning particular subjects in the area written by experts, most of them being founders of the field, and some of their followers. In this way, this first volume of the two volume book offers a rather complete coverage of the development of dyadic Walsh analysis, and provides a deep insight into its mathematical foundations necessary for consideration of generalizations and applications that are the subject of the second volume. The presented theory is quite sufficient to be a basis for further research in the subject area as well as to be applied in solving certain new problems or improving existing solutions for tasks in the areas which motivated development of the dyadic analysis..

More information on this book can be found by the following link:
http://www.springer.com/kr/book/9789462391598.

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Dyadic Walsh Analysis from 1924 Onwards Walsh-Gibbs-Butzer Dyadic Differentiation in Science. Volume 2: Extensions and Generalizations.

R.S. Stankovic, P.L. Butzer, F. Schipp, W.R. Wade, W. Su, Y. Endow, S. Fridli, B.I. Golubov, F. Pichler

Book Description

The second volume of the two volumes book is dedicated to various extensions and generalizations of Dyadic (Walsh) analysis and related applications. Considered are dyadic derivatives on Vilenkin groups and various other Abelian and finite non-Abelian groups. Since some important results were developed in former Soviet Union and China, we provide overviews of former work in these countries. Further, we present translations of three papers that were initially published in Chinese. The

presentation continues with chapters written by experts in the area presenting discussions of applications of these results in specific tasks in the area of signal processing and system theory. Efficient computing of related differential operators on contemporary hardware, including graphics processing units, is also considered, which makes the methods and techniques of dyadic analysis and generalizations computationally feasible. The Volume 2 of the book ends with a chapter presenting open problems pointed out by several experts in the area.

More information on this book can be found by the following link:
http://www.springer.com/kr/book/9789462391598.

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Nonlocal Diffusion and Applications

Claudia Bucur, Enrico Valdinoci

Book Description

Working in the fractional Laplace framework, this book provides models and theorems related to nonlocal diffusion phenomena. In addition to a simple probabilistic interpretation, some applications to water waves, crystal dislocations, nonlocal phase transitions, nonlocal minimal surfaces and Schr¨odinger equations are given. Furthermore, an example of an s-harmonic function, its harmonic extension and some insight into a fractional version of a classical conjecture due to De Giorgi are presented. Although the aim is primarily to gather some introductory material concerning applications of the fractional Laplacian, some of the proofs and results are new. The work is entirely self-contained, and readers who wish to pursue related subjects of interest are invited to consult the rich bibliography for guidance.

More information on this book can be found by the following link:
http://www.springer.com/us/book/9783319287386.

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Journals

Fractional Calculus and Applied Analysis

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Journal of Computational Physics

(selected)

Numerical solution of distributed order fractional differential equations by hybrid functions

S. Mashayekhi, M. Razzaghi

An implicit midpoint difference scheme for the fractional Ginzburg–Landau equation

Pengde Wang, Chengming Huang

Numerical approximation of higher-order time-fractional telegraph equation by using a combination of a geometric approach and method of line

M.S. Hashemi, D. Baleanu

An asymptotic-preserving scheme for linear kinetic equation with fractional diffusion limit

Li Wang, Bokai Yan

Finite difference/spectral approximations for the distributed order time fractional reaction–diffusion equation on an unbounded domain

Hu Chen, Shujuan Lü, Wenping Chen

Variable-order fractional numerical differentiation for noisy signals by wavelet denoising

Yi-Ming Chen, Yan-Qiao Wei, Da-Yan Liu, Driss Boutat, Xiu-Kai Chen

A fast finite volume method for conservative space-fractional diffusion equations in convex domains

Jinhong Jia, Hong Wang

A new definition of fractional Laplacian with application to modeling three-dimensional nonlocal heat conduction

Wen Chen, Guofei Pang

Fast difference schemes for solving high-dimensional time-fractional subdiffusion equations

Fanhai Zeng, Zhongqiang Zhang, George Em Karniadakis

From stochastic processes to numerical methods: A new scheme for solving reaction subdiffusion fractional partial differential equations

C.N. Angstmann, I.C. Donnelly, B.I. Henry, B.A. Jacobs, T.A.M. Langlands, J.A. Nichols

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Paper Highlight

Surpassing the fractional derivative: Concept of the memory-dependent derivative

Jin-Liang Wang, Hui-Feng Li

Publication information: Computers & Mathematics with Applications, Volume 62, Issue 3, August 2011, Pages 1562-1567

http://www.sciencedirect.com/science/article/pii/S0898122111003294

Abstract

Enlightened by the Caputo type of fractional derivative, here we bring forth a concept of "memory-dependent derivative", which is simply defined in an integral form of a common derivative with a kernel function on a slipping interval. In case the time delay tends to zero it tends to the common derivative. High order derivatives also accord with the first order one. Comparatively, the form of kernel function for the fractional type is fixed, yet that of the memory-dependent type can be chosen freely according to the necessity of applications. So this kind of definition is better than the fractional one for reflecting the memory effect (instantaneous change rate depends on the past state). Its definition is more intuitionistic for understanding the physical meaning and the corresponding memory-dependent differential equation has more expressive force.

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