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Latest SCI Journal Papers on FDA

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(Searched on 15th August 2014)

The difference between a class of discrete fractional and integer order boundary value problems
By: Chen, Yi; Tang, Xianhua
COMMUNICATIONS IN NONLINEAR SCIENCE AND NUMERICAL SIMULATION Volume: 19 Issue: 12 Pages: 4057-4067 Published: DEC 2014

Fractional order Lyapunov stability theorem and its applications in synchronization of complex dynamical networks
By: Chen, Diyi; Zhang, Runfan; Liu, Xinzhi; et al.
COMMUNICATIONS IN NONLINEAR SCIENCE AND NUMERICAL SIMULATION Volume: 19 Issue: 12 Pages: 4105-4121 Published: DEC 2014

Response to "Comments on the concept of existence of solution for impulsive fractional differential equations [Commun Nonlinear Sci Numer Simul 2014;19:401-3.]"
By: Feckan, Michal; Zhou, Yong; Wang, JinRong
COMMUNICATIONS IN NONLINEAR SCIENCE AND NUMERICAL SIMULATION Volume: 19 Issue: 12 Pages: 4213-4215 Published: DEC 2014

Fractional-order theory of heat transport in rigid bodies
By: Zingales, Massimiliano
COMMUNICATIONS IN NONLINEAR SCIENCE AND NUMERICAL SIMULATION Volume: 19 Issue: 11 Pages: 3938-3953 Published: NOV 2014

On the oscillation of fractional-order delay differential equations with constant coefficients
By: Bolat, Yasar
COMMUNICATIONS IN NONLINEAR SCIENCE AND NUMERICAL SIMULATION Volume: 19 Issue: 11 Pages: 3988-3993 Published: NOV 2014

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Books

Intelligent Fractional Order Systems and Control

Pan, Indranil, Das, Saptarshi

Book Description

Fractional order calculus is finding increasing interest in the control system community. Hardware realizations of fractional order controllers have sparked off a renewed zeal into the investigations of control system design in the light of fractional calculus. As such many notions of integer order LTI systems are being modified and extended to incorporate these new concepts. Computational Intelligence (CI) techniques have been applied to engineering problems to find solutions to many hitherto intractable conundrums and is a useful tool for dealing with problems of higher computational complexity. This book borders on the interface between CI techniques and fractional calculus, and looks at ways in which fractional order control systems may be designed or enhanced using CI based paradigms. To the best of the author's knowledge this is the first book of its kind exclusively dedicated to the application of computational intelligence techniques in fractional order systems and control. The book tries to assimilate various existing concepts in this nascent field of fractional order intelligent control and is aimed at researchers and post graduate students working in this field.

More information on this book can be found by the following link:
http://link.springer.com/book/10.1007/978-3-642-31549-7

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Stabilization and Control of Fractional Order Systems: A Sliding Mode Approach

Bandyopadhyay, Bijnan, Kamal, Shyam

Book Description

In the last two decades fractional differential equations have been used more frequently in physics, signal processing, fluid mechanics, viscoelasticity, mathematical biology, electro chemistry and many others. It opens a new and more realistic way to capture memory dependent phenomena and irregularities inside the systems by using more sophisticated mathematical analysis. This monograph is based on the authors' work on stabilization and control design for continuous and discrete fractional order systems. The initial two chapters and some parts of the third chapter are written in tutorial fashion, presenting all the basic concepts of fractional order system and a brief overview of sliding mode control of fractional order systems. The other parts contain deal with robust finite time stability of fractional order systems, integral sliding mode control of fractional order systems, co-operative control of multi-agent systems modeled as fractional differential equation, robust stabilization of discrete fractional order systems, high performance control using soft variable structure control and contraction analysis by integer and fractional order infinitesimal variations.

More information on this book can be found by the following link:
http://www.springer.com/engineering/control/book/978-3-319-08620-0

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Journals

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Nonlinear Dynamics

Volume 77, Issue 4(selected)

Dynamical modelling and control of space tethers: a review of space tether research

Yi Chen, Rui Huang, Liping He, Xianlin Ren, Bin Zheng

[Basin boundaries with nested structure in a shallow arch oscillator]

Yongxiang Zhang, Liang Fu Lu

[Hopf bifurcation analysis of asymmetrical rotating shafts]

Majid Shahgholi, Siamak Esmaeilzadeh Khadem

[Nonlinear characterization of concurrent energy harvesting from galloping and base excitations]

Zhimiao Yan, Abdessattar Abdelkefi

[Dynamical behavior of a competitive system under the influence of random disturbance and toxic substances]

Ruihua Wu, Xiaoling Zou, Ke Wang

[Fractional generalized synchronization in a class of nonlinear fractional order systems]

Rafael Martínez-Guerra, Juan L. Mata-Machuca

[Global Mittag-Leffler stability and synchronization of impulsive fractional-order neural networks with time-varying delays]

Ivanka Stamova

[Group consensus of discrete-time multi-agent systems with fixed and stochastic switching topologies]

Huanyu Zhao, Ju H. Park

[On solutions of two coupled fractional time derivative Hirota equations]

T. Bakkyaraj, R. Sahadevan

[Stable localized spatial solitons in PT -symmetric potentials with power-law nonlinearity]

Yue-Yue Wang, Chao-Qing Dai, Xiao-Gang Wang

[Dynamic simulation of frictional contacts of thin beams during large overall motions via absolute nodal coordinate formulation]

Qingtao Wang, Qiang Tian, Haiyan Hu_

[Further results on memory control of nonlinear discrete-time networked control systems with random input delay]

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Entropy

Volume 16, Issue 7 (selected)

Normalized Expected Utility-Entropy Measure of Risk

by Jiping Yang and Wanhua Qiu

Entropy Evolution and Uncertainty Estimation with Dynamical Systems

by X. San Liang

A Maximum Entropy Fixed-Point Route Choice Model for Route Correlation

by Louis de Grange, Sebastián Raveau and Felipe González

An Estimation of the Entropy for a Rayleigh Distribution Based on Doubly-Generalized Type-II Hybrid Censored Samples

by Youngseuk Cho, Hokeun Sun and Kyeongjun Lee

Extending the Extreme Physical Information to Universal Cognitive Models via a Confident Information First Principle

by Xiaozhao Zhao, Yuexian Hou, Dawei Song and Wenjie Li

Searching for Conservation Laws in Brain Dynamics—BOLD Flux and Source Imaging

by Henning U. Voss and Nicholas D. Schiff

The Role of Vegetation on the Ecosystem Radiative Entropy Budget and Trends Along Ecological Succession

by Paul C. Stoy, Hua Lin, Kimberly A. Novick, Mario B. S. Siqueira and Jehn-Yih Juang

On the Connections of Generalized Entropies With Shannon and Kolmogorov–Sinai Entropies

by Fryderyk Falniowski

Entropy vs. Majorization: What Determines Complexity?

by William Seitz and A. D. Kirwan Jr.

Human Brain Networks: Spiking Neuron Models, Multistability, Synchronization, Thermodynamics, Maximum Entropy Production, and Anesthetic Cascade Mechanisms

by Wassim M. Haddad, Qing Hui and James M. Bailey

A Note of Caution on Maximizing Entropy

by Richard E. Neapolitan and Xia Jiang

Entropy and Its Discontents: A Note on Definitions

by Nicola Cufaro Petroni

Maximum Entropy in Drug Discovery

by Chih-Yuan Tseng and Jack Tuszynski

Connecting 2nd Law Analysis with Economics, Ecology and Energy Policy

by Richard Gaggioli and Mauro Reini

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Paper Highlight

Space-fractional advection–dispersion equations by the Kansa method

Guofei Pang, Wen Chen, , Zhuojia Fu

Publication information: Guofei Pang, Wen Chen, Zhuojia Fu. Space-fractional advection–dispersion equations by the Kansa method. Journal of Computational Physics, in press .

http://www.sciencedirect.com/science/article/pii/S0021999114005130#

Abstract

The paper makes the first attempt at applying the Kansa method, a radial basis function meshless collocation method, to the space-fractional advection–dispersion equations, which have recently been observed to accurately describe solute transport in a variety of field and lab experiments characterized by occasional large jumps with fewer parameters than the classical models of integer-order derivative. However, because of non-local property of integro-differential operator of space-fractional derivative, numerical solution of these novel models is very challenging and

little has been reported in literature. It is stressed that local approximation techniques such as the finite element and finite difference methods lose their sparse discretization matrix due to this non-local property. Thus, the global methods appear to have certain advantages in numerical simulation of these non-local models because of their high accuracy and smaller size resultant matrix equation. Compared with the finite difference method, popular in the solution of fractional equations, the Kansa method is a recent meshless global technique and is promising for high-dimensional irregular domain problems. In this study, the resultant matrix of the Kansa method is accurately calculated by the Gauss–Jacobi quadrature rule. Numerical results show that the Kansa method is highly accurate and computationally efficient for space-fractional advection–dispersion problems.

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Chaos in the fractional-order Volta's system: modeling and simulation

Ivo Petráš

Publication information: Ivo Petráš. Chaos in the fractional-order Volta's system: modeling and simulation. Nonlinear Dyn. (2009) 57: 157–170. DOI 10.1007/s11071-008-9429-0.

http://link.springer.com/article/10.1007%2Fs11071-008-9429-0

Abstract
This paper deals with a new fractional-order chaotic system. It is based on the concept of Volta's system, where the mathematical model of Volta's system contains fractional-order derivatives. This system has simple structure and can display a double-scroll attractor. The behavior of the integer-order and the fractional-order Volta's system with total order less than three which exhibits chaos is presented as well. Computer simulations are cross-verified by the numerical calculation and the Matlab/Simulink models.

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Anomalous diffusion and ballistic peaks: A quantum perspective

M. Stefancich, P. Allegrini, L. Bonci, P. Grigolini and B. J. West

Publication information: M. Stefancich, P. Allegrini, L. Bonci, P. Grigolini and B. J. West, Anomalous diffusion and ballistic peaks: A quantum perspective, Physical Review E, 1998, 57(6), 6625-6633.

http://journals.aps.org/pre/abstract/10.1103/PhysRevE.57.6625

Abstract

The quantum kicked rotor and the classical kicked rotor are both shown to have truncated Levy distributions in momentum space, when the classical phase space has accelerator modes embedded in a chaotic sea. The survival probability for classical particles at the interface of an accelerator mode and the chaotic sea has an inverse power-law structure, whereas that for quantum particles has a periodically modulated inverse power law, with the period of oscillation being dependent on Planck's constant. These logarithmic oscillations are a renormalization group property that disappears as h in agreement with the correspondence principle.

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