FDA Express   Vol. 13, No. 3, Nov. 15, 2014

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Expansion formula for fractional derivatives in variational problems

Stationary response of Duffing oscillator with hardening stiffness and fractional derivative

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Fractional Calculus & Applied Analysis

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Latest SCI Journal Papers on FDA

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(Searched on 15th November 2014)

Controllability of h-difference linear control systems with two fractional orders
By: Mozyrska, Dorota; Pawluszewicz, Ewa
INTERNATIONAL JOURNAL OF SYSTEMS
SCIENCE Volume: 46   Issue: 4   Pages: 662-669   Published: MAR 12 2015

A continuum mechanical approach to model asphalt
By: Zopf, C.; Garcia, M. A.; Kaliske, M.
INTERNATIONAL JOURNAL OF PAVEMENT
ENGINEERING Volume: 16   Issue: 2   Pages: 105-124   Published: FEB 7 2015

Parameter identification for the discretely observed geometric fractional Brownian motion
By: Xiao, Weilin; Zhang, Weiguo; Zhang, Xili
JOURNAL OF STATISTICAL COMPUTATION AND
SIMULATION Volume: 85   Issue: 2   Pages: 269-283   Published: JAN 22 2015

Stability estimate and the modified regularization method for a Cauchy problem of the fractional diffusion equation
By: Xiong, Xiangtuan; Zhao, Liping; Hon, Y. C.
JOURNAL OF COMPUTATIONAL AND APPLIED
MATHEMATICS Volume: 272   Pages: 180-194   Published: DEC 15 2014

A Tutorial Review on Fractal Spacetime and Fractional Calculus
By: He, Ji-Huan
INTERNATIONAL JOURNAL OF THEORETICAL
PHYSICS Volume: 53   Issue: 11   Pages: 3698-3718   Published: NOV 2014

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Books

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Fractional Differentiation Inequalities

George A. Anastassiou

Book Description

This short monograph is a spin-off of the author's "Fractional Differentiation Inequalities," a research monograph published by Springer, New York, 2009. It continues and complements the earlier book to various interesting and important directions.

Fractional differentiation inequalities are by themselves an important and great mathematical topic for research. Furthermore they have many applications, the most important ones are in establishing uniqueness of solution in fractional differential equations and systems and in fractional partial differential equations. Also they provide upper bounds to the solutions of the above equations.

More information on this book can be found by the following link:
http://link.springer.com/book/10.1007/978-0-387-98128-4

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New Trends in Nanotechnology and Fractional Calculus Applications

Dumitru Baleanu, Ziya B. Guvenc, J. A. Tenreiro Machado

Book Description

This book contains some of the contributions that were presented at NTST08 and FDA08 and, after being carefully selected and peer-reviewed, were expanded and grouped into five main sections entitled "New Trends in Nanotechnology","Techniques and Applications", "Mathematical Tools", "Fractional Modelling" and "Fractional Control Systems". The selection

of improved papers for publication in this book reflects the success of the workshops, with the emergence of a variety of novel areas of applications. Bearing these ideas in mind the guest editorswould like to honor many distinguished scientists that have promoted the development of nanoscience and fractional calculus and, in particular, Prof. George M. Zaslavsky that supported early this special issue and passed away recently.

More information on this book can be found by the following link:
http://link.springer.com/book/10.1007/978-90-481-3293-5

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Journals

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Chaos, Solitons & Fractals

Volume 68, Pages 1-186 (Selected)

Risk assessment for infectious disease and its impact on voluntary vaccination behavior in social networks

Eriko Fukuda, Satoshi Kokubo, Jun Tanimoto, Zhen Wang, Aya Hagishima, Naoki Ikegaya

Exact soliton solutions to a new coupled integrable short light-pulse system

Hermann T. Tchokouansi, Victor K. Kuetche, Timoleon C. Kofane

Limit cycle bifurcations in a class of near-Hamiltonian systems with multiple parameters

Maoan Han, Yanqin Xiong

Endogenous fields enhanced stochastic resonance in a randomly coupled neuronal network

Bin Deng, Lin Wang, Jiang Wang, Xi-le Wei, Hai-tao Yu

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Fractional Calculus and Applied Analysis

Volume 17, Issue 4, December（selected）

Ivan H. Dimovski

[A theorem of uniqueness of the solution of nonlocal evolution boundary value problem](#)

Yulian Tsankov

[Viscoelastic flows with fractional derivative models: Computational approach by convolutional calculus of Dimovski](#)

Emilia Bazhlekova, Ivan Bazhlekov

[From the hyper-Bessel operators of Dimovski to the generalized fractional calculus](#)

Virginia Kiryakova

[A family of hyper-Bessel functions and convergent series in them](#)

Jordanka Paneva-Konovska

[Multiple solutions to boundary value problem for impulsive fractional differential equations](#)

Rosana Rodríguez-López, Stepan Tersian

[Extending the Stieltjes transform II](#)

Dennis Nemzer

[Nonstandard Gauss—Lobatto quadrature approximation to fractional derivatives](#)

Shahrokh Esmaeili, Gradimir V. Milovanović

[Asymptotic estimates of solutions to initial-boundary-value problems for distributed order time-fractional diffusion equations](#)

Zhiyuan Li, Yuri Luchko, Masahiro Yamamoto

[Existence results of mild solutions for impulsive fractional integro-differential evolution equations with infinite delay](#)

Shengli Xie

[Reflection symmetric Erdélyi-Kober type operators — A quasi-particle interpretation](#)

Richard Herrmann

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Paper Highlight

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Expansion formula for fractional derivatives in variational problems

Teodor M. Atanacković, Marko Janev, Sanja Konjik, Stevan Pilipović, Dušan Zorica

Abstract
We modify the expansion formula introduced in [T.M. Atanacković, B. Stanković, An expansion formula for fractional derivatives and its applications, Fract. Calc. Appl. Anal. 7 (3) (2004) 365–378] for the left Riemann–Liouville fractional derivative in order to apply it to various problems involving fractional derivatives. As a result we obtain a new form of the fractional integration by parts formula, with the benefit of a useful approximation for the right Riemann–Liouville fractional derivative, and derive a consequence of the fractional integral inequality. Further, we use this expansion formula to transform fractional optimization (minimization of a functional involving fractional derivatives) to the standard constrained optimization problem. It is shown that when the number of terms in the approximation tends to infinity, solutions to the Euler–Lagrange equations of the transformed problem converge, in a weak sense, to solutions of the original fractional Euler–Lagrange equations. An illustrative example is treated numerically.

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Stationary response of Duffing oscillator with hardening stiffness and fractional derivative

Lincong Chen, Weihua Wang, Zhongshen Li, Weiqiu Zhu

Abstract
The stationary response of Duffing oscillator with hardening stiffness and fractional derivative under Gaussian white noise excitation is studied. First, the term associated with fractional derivative is separated into the equivalent quasi-linear dissipative force and quasi-linear restoring force by using the generalized harmonic balance technique, and the original system is replaced by an equivalent nonlinear stochastic system without fractional derivative. Then, the stochastic averaging method of energy envelope is applied to the equivalent nonlinear stochastic system to yield the averaged Itô equation of energy envelope, from which the corresponding Fokker–Planck–Kolmogorov (FPK) equation is established and solved to obtain the stationary probability densities of the energy envelope and the amplitude envelope. The accuracy of the analytical results is validated by those from the Monte Carlo simulation of original system.

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