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[Fractal Derivative and Operators and Their Applications](#)

[Fractional Calculus & Applied Analysis](#)

Latest SCI Journal Papers on FDA

(Searched on Apr 30, 2020)

[Electroosmotic slip flow of Oldroyd-B fluid between two plates with non-singular kernel](#)

By: Awan, Aziz Ullah; Ali, Mukarram; Abro, Kashif Ali

JOURNAL OF COMPUTATIONAL AND APPLIED MATHEMATICS Volume: 376 Published: OCT 1 2020

[Some properties concerning the analysis of generalized Wright function](#)

By: Khan, N. U.; Usman, T.; Aman, M.

JOURNAL OF COMPUTATIONAL AND APPLIED MATHEMATICS Volume: 376 Published: OCT 1 2020

[Comparison theorems and distributions of solutions to uncertain fractional difference equations](#)

By: Lu, Qinyun; Zhu, Yuanguo

JOURNAL OF COMPUTATIONAL AND APPLIED MATHEMATICS Volume: 376 Published: OCT 1 2020

[Final value problem for nonlinear time fractional reaction-diffusion equation with discrete data](#)

By: Nguyen Huy Tuan; Baleanu, Dumitru; Tran Ngoc Thach; etc..

JOURNAL OF COMPUTATIONAL AND APPLIED MATHEMATICS Volume: 376 Published: OCT 1 2020

[Numerical solution of the mixed Volterra-Fredholm integro-differential multi-term equations of fractional order](#)

By: Roohollahi, A.; Ghazanfari, B.; Akhavan, S.

JOURNAL OF COMPUTATIONAL AND APPLIED MATHEMATICS Volume: 376 Published: OCT 1 2020

[Construction of new generating function based on linear barycentric rational interpolation for numerical solution of fractional differential equations](#)

By: Irandoust-pakchin, Safar; Abdi-mazraeh, Somayeh; Kheiri, Hossein

JOURNAL OF COMPUTATIONAL AND APPLIED MATHEMATICS Volume: 375 Published: SEP 2020

[Convergence analysis of a finite difference scheme for a Riemann-Liouville fractional derivative two-point boundary value problem on an adaptive grid](#)

By: Liu, Li-Bin; Liang, Zhifang; Long, Guangqing; etc..

JOURNAL OF COMPUTATIONAL AND APPLIED MATHEMATICS Volume: 375 Published: SEP 2020

[Well-posedness of an initial value problem for fractional diffusion equation with Caputo-Fabrizio derivative](#)

By: Nguyen Huy Tuan; Zhou, Yong

JOURNAL OF COMPUTATIONAL AND APPLIED MATHEMATICS Volume: 375 Published: SEP 2020

[Fractional parabolic two-step model and its accurate numerical scheme for nanoscale heat conduction](#)

By: Shen, Shujun; Dai, Weizhong; Cheng, Jinfa

JOURNAL OF COMPUTATIONAL AND APPLIED MATHEMATICS Volume: 375 Published: SEP 2020

[Implicit sampling for hierarchical Bayesian inversion and applications in fractional multiscale diffusion models](#)

By: Song, Xiaoyan; Jiang, Lijian; Zheng, Guang-Hui

JOURNAL OF COMPUTATIONAL AND APPLIED MATHEMATICS Volume: 375 Published: SEP 2020

[Caputo fractional continuous cobweb models](#)

By: Chen, Churong; Bohner, Martin; Jia, Baoguo

JOURNAL OF COMPUTATIONAL AND APPLIED MATHEMATICS Volume: 374 Published: AUG 15 2020

[An effective scheme for solving system of fractional Volterra-Fredholm integro-differential equations based on the Muntz-Legendre wavelets](#)

By: Saemi, Fereshteh; Ebrahimi, Hamideh; Shafiee, Mahmoud

JOURNAL OF COMPUTATIONAL AND APPLIED MATHEMATICS Volume: 374 Published: AUG 15 2020

[A note on the adaptive numerical solution of a Riemann-Liouville space-fractional Kawarada problem](#)

By: Zhu, Lin; Sheng, Qin

JOURNAL OF COMPUTATIONAL AND APPLIED MATHEMATICS Volume: 374 Published: AUG 15 2020

[Uniqueness and reconstruction for the fractional Calderon problem with a single measurement](#)

By: Ghosh, Tuhin; Rueland, Angkana; Salo, Mikko; etc..

JOURNAL OF FUNCTIONAL ANALYSIS Volume: 279 Issue: 1 Published: JUL 15 2020

[Fractional integrals and their commutators on martingale Orlicz spaces](#)

By: Arai, Ryutaro; Nakai, Eiichi; Sadasue, Gaku

JOURNAL OF MATHEMATICAL ANALYSIS AND APPLICATIONS Volume: 487 Issue: 2 Published: JUL 15 2020

[On stability of nonlinear nonautonomous discrete fractional Caputo systems](#)

By: Franco-Perez, Luis; Fernandez-Anaya, Guillermo; Alberto Quezada-Tellez, Luis

JOURNAL OF MATHEMATICAL ANALYSIS AND APPLICATIONS Volume: 487 Issue: 2 Published: JUL 15 2020

[Strichartz estimates for space-time fractional Schrodinger equations](#)

By: Lee, Jin Bong

JOURNAL OF MATHEMATICAL ANALYSIS AND APPLICATIONS Volume: 487 Issue: 2 Published: JUL 15 2020

[Finite time complete synchronization for fractional-order multiplex networks](#)

By: Wu, Xifen; Bao, Haibo

APPLIED MATHEMATICS AND COMPUTATION Volume: 377 Published: JUL 15 2020

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Call for Papers

Nonlinear Fractional Order Circuits and Systems: Advanced Analysis and Effective Implementation

(Special Section in IEEE Open Journal of Circuits and Systems)

The field of nonlinear circuits and systems is maturing. Powerful tools have been introduced which can be effectively applied to the analysis and design of nonlinear circuits and systems. The fabrication of

fractional order electrical elements (i.e., fractional order capacitors and inductors) has brought new challenges, however. Due to specific characteristics of these electrical elements, originating from the inherent properties of the fractional order differential operators (such as the non-locality of the operators and the infinite-dimensionality of the dynamic models defined on the basis of such operators), the existing tools for analysis and design of nonlinear circuits and systems may not be generally applicable, when the circuits/systems under consideration, simultaneously contain nonlinear and fractional order elements/subsystems. Moreover, enhancing the effectiveness and accuracy of the implementation methods for the realization of these dynamic structures is of great importance to applications. This special section provides a forum for presenting the latest advances in the analysis and implementation of nonlinear fractional order circuits and systems aiming to address these challenges.

The Publication Fees: Article Processing Charges (APCs) for the accepted papers will be completely subsidized by the CAS Society. Hence these publications will be completely free of charge to the authors.

Specific Topics of Interest (but are not limited to):

- Advanced techniques for stability analysis of nonlinear fractional order systems
- Sensitivity analysis in nonlinear fractional order circuits and systems
- Estimation/Approximation of region of attraction in nonlinear fractional order systems
- Behavior analysis of fractional order nonlinear oscillators
- Reducing the nonlinearity effects in fabrication/emulation of electrical fractional order elements
- Effective methods for implementation of nonlinear fractional order circuits and systems
- Experimental issues regarding circuitry realization of nonlinear fractional order dynamics

Publication Schedule

Manuscript submission deadline: 5 July 2020
First-round revision notification due: 6 September 2020
Revised manuscripts due: 27 September 2020
Second-round revision notification due: 25 October 2020
Final manuscript due: 22 November 2020
Online publication: December 2020

Guest Editors

Mohammad Saleh Tavazoei, Sharif University of Technology, Tehran, Iran, tavazoei@sharif.edu,
<http://amee.tu-sofia.bg/>.

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Instructions for Authors

Manuscripts must be submitted online using the IEEE OJCAS Manuscript Template via Manuscript Central at: <https://mc.manuscriptcentral.com/oj-cas>.

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Books

Fractional Signals and Systems

(Authors: Manuel Duarte Ortigueira, Duarte Valério)

Details: <https://doi.org/10.1515/9783110624588>

Introduction

The book illustrates the theoretical results of fractional derivatives via applications in signals and systems, covering continuous and discrete derivatives, and the corresponding linear systems. Both time and frequency analysis are presented. Some advanced topics are included like derivatives of stochastic processes. It is an essential reference for researchers in mathematics, physics, and engineering.

- Presents the theory and applications of fractional derivatives in signals and systems.
- Both time and frequency analysis are presented.
- Of interest to mathematicians and physicists as well as to engineers.

Contents:

PART I: CONTINUOUS-TIME

1. Introduction to signals and systems
2. Continuous-time linear systems and the Laplace transform
3. Fractional commensurate linear systems: time responses
4. The fractional commensurate linear systems. Frequency responses
5. State-space representation
6. Feedback representation
7. On fractional derivatives

PART II: DISCRETE-TIME

8. Discrete-time linear systems. Difference equations
9. Z transform. Transient responses
10. Discrete-time derivatives and transforms

PART III: ADVANCED TOPICS

11. Fractional stochastic processes and two-sided derivatives

12. Fractional delay discrete-time linear systems

13. Fractional derivatives with variable orders

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Journals

Advances in Nonlinear Analysis

(Selected)

[A few problems connected with invariant measures of Markov maps - verification of some claims and opinions that circulate in the literature](#)

Peter Bugiel, Stanisław Wędrychowicz, Beata Rzepka

[Global existence and blow-up of weak solutions for a class of fractional p-Laplacian evolution equations](#)

Menglan Liao, Qiang Liu, Hailong Ye

[Optimal rearrangement problem and normalized obstacle problem in the fractional setting](#)

Julián Fernández Bonder, Zhiwei Cheng, Hayk Mikayelyan

[On a fractional thin film equation](#)

Antonio Segatti, Juan Luis Vázquez

[Minimum action solutions of nonhomogeneous Schrödinger equations](#)

Bashir Ahmad, Ahmed Alsaedi

[Anisotropic problems with unbalanced growth](#)

Ahmed Alsaedi, Bashir Ahmad

[Gradient estimates for the fundamental solution of Lévy type operator](#)

Wei Liu, Renming Song, Longjie Xie

[On the existence and multiplicity of solutions to fractional Lane-Emden elliptic systems involving measures](#)

Mousomi Bhakta, Phuoc-Tai Nguyen

[\$\pi/4\$ -tangentiality of solutions for one-dimensional Minkowski-curvature problems](#)

Rui Yang, Inbo Sim, Yong-Hoon Lee

[Lack of smoothing for bounded solutions of a semilinear parabolic equation](#)

Marek Fila, Johannes Lankeit

[Multiplicity of positive solutions for quasilinear elliptic equations involving critical nonlinearity](#)

Xiangdong Fang, Jianjun Zhang

[Global and non global solutions for a class of coupled parabolic systems](#)

T. Saanouni

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International Journal of Robust and Nonlinear Control

(Selected)

[Differential flatness-based ADRC scheme for underactuated fractional-order systems](#)

Zongyang Li Yiheng Wei Xi Zhou Jiachang Wang Jianli Wang Yong Wang

[Regional output feedback stabilization of semilinear time-fractional diffusion systems in a parallelepipedon with control constraints](#)

Fudong Ge YangQuan Chen

[Adaptive fault tolerant control for a class of uncertain fractional-order systems based on disturbance observer](#)

Chuanjing Hou Xiaoping Liu Huanqing Wang

[Prespecifiable fixed-time control for a class of uncertain nonlinear systems in strict-feedback form](#)

Ye Cao Changyun Wen Shilei Tan Yongduan Song

[Distributed output-feedback finite-time tracking control of nonaffine nonlinear leader-follower multiagent systems](#)

Xin Gang Chen Hongbing Xiang Jiahua Dai

[Moving data window gradient-based iterative algorithm of combined parameter and state estimation for bilinear systems](#)

Siyu Liu Feng Ding Tasawar Hayat

[A robustness study of a finite-time/exponential tracking continuous control scheme for constrained-input mechanical systems: Analysis and experiments](#)

Griselda I. Zamora-Gómez, Arturo Zavala-Río, Emilio Vázquez-Ramírez, Fernando Reyes, Víctor Santibáñez

[Iterative learning control for nonlinear differential inclusion systems](#)

Shengda Liu, JinRong Wang, Dong Shen, Michal Fečkan

[Robust global controller design for discrete-time descriptor systems with multiple time-varying delays](#)

Saleh Mobayen Farhad Bayat Hossein Omidvar Afef Fekih

[Tracking and parameter identification for model reference adaptive control](#)

Michael Malisoff

[Distributed fusion Kalman filtering under binary sensors](#)

Yuchen Zhang Bo Chen Li Yu

[Quasi-synchronization of multilayer heterogeneous networks with a dynamic leader](#)

Huihui Yang Zhengxin Wang Qiang Song Xiaoyang Liu Min Xiao

[Design of model predictive control for constrained Markov jump linear systems with multiplicative noises and online portfolio selection](#)

Vladimir Dombrovskii Tatiana Pashinskaya

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Paper Highlight

Fourth-order accurate fractional-step IMEX schemes for the incompressible Navier–Stokes equations on moving overlapping grids

F. Meng, J. W. Banks, W. D. Henshaw, D. W. Schwendeman

Publication information: Computer Methods in Applied Mechanics and Engineering, Volume 3661, July 2020, Article 113040

<https://doi.org/10.1016/j.cma.2020.113040>

Abstract

Two efficient fractional-step schemes for the incompressible Navier–Stokes equations in two and three dimensions are described. The schemes are fourth-order accurate in space and time, and are based on solving the velocity-pressure form of the equations. Both schemes employ predictor-corrector time-stepping approaches. The first is an explicit Adams-type scheme, while the second is an IMEX-BDF-type scheme in which the viscous/advection terms in the equations are treated implicitly/explicitly. The equations and boundary conditions are discretized in space using fourth-order accurate finite-difference approximations. The formulation of discrete boundary conditions for each stage of the fractional-step scheme is found to be critical to the accuracy and stability of the approach. A WENO-based scheme,

called BWENO, provides upwind dissipation and ensures robustness of the schemes for problems where the solution is under-resolved on the grid (e.g. near boundary or shear layers). Complex, and possibly moving, domains are handled efficiently using composite overlapping grids. A variety of problems in two and three dimensions, some for which exact solutions are either known or manufactured, are used to verify the stability and accuracy of the new schemes.

Highlights

- Stable and fourth-order accurate schemes for the incompressible Navier–Stokes equations.
- New and efficient IMEX-BDF fractional-step predictor-corrector time-stepping scheme.
- BWENO discretization of convective terms provides upwind dissipation for robustness.
- Overlapping grids accommodate complex geometry with static and/or moving boundaries.
- Benchmark problems, some with exact solutions, verify the accuracy of the algorithm.

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Reaction and ultraslow diffusion on comb structures

Yingjie Liang, Trifce Sandev, Ervin Kaminski Lenzi

Publication information: PHYSICAL REVIEW E, 101, 042119, Published 16 April 2020

<https://doi.org/10.1103/PhysRevE.101.042119>

Abstract

A two-dimensional (2D) comb model is proposed to characterize reaction-ultraslow diffusion of tracers both in backbones (x direction) and side branches (y direction) of the comblike structure with two memory kernels. The memory kernels include Dirac delta, power-law, and logarithmic and inverse Mittag-Leffler (ML) functions, which can also be considered as the structural functions in the time structural derivative. Based on the comb model, ultraslow diffusion on a fractal comb structure is also investigated by considering spatial fractal geometry of the backbone volume. The mean squared displacement (MSD) and the corresponding concentration of the tracers, i.e., the solution of the comb model, are derived for reactive and conservative tracers. For a fractal structure of backbones, the derived MSDs and corresponding solutions depend on the backbone's fractal dimension. The proposed 2D comb model with different kernel functions is feasible to describe ultraslow diffusion in both the backbone and side branches of the comblike structure.

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