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EDITORIAL

FCAA RELATED NEWS, EVENTS AND BOOKS (FCAA–VOLUME 23–3–2020)

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Dear readers,

in the Editorial Notes we announce news for our journal, anniversaries, information on international meetings, events, new books, etc. related to the *FCAA* (“Fractional Calculus and Applied Analysis”) areas. All these Notes are published online with free open access.

1. Reports on some virtual conferences on FC in 2020

WFC 2020: International Conference on Fractional Calculus Ghent University, Belgium, 9–10 June 2020 Workshop: Fractional Calculus

The aim of the workshop was to exchange the recent progress and ideas in the field of fractional calculus and fractional differential equations (FDEs), and their applications to a variety of concrete problems. The group “Gheny Analysis & PDE Center” at Ghent University took an initiative to organise this workshop for the continuity of research in the field despite the coronavirus times, therefore, the conference was held by Internet on ZOOM platform.

For details, speakers and Schedule, see at
<https://analysis-pde.org/workshop-fractional-calculus/>.

The workshop was also broadcasted on Facebook on Ghent Analysis & PDE page, <https://www.facebook.com/ghent.analysis.pdes/>.

Book of Abstracts, Video:
<https://www.youtube.com/watch?v=wKXUMG-sOU0&feature=share>.

Videos of Talks:
<https://www.youtube.com/channel/UCAA0hCkGi7hSt6PtyAKZ1gQ/videos>.

**FCTFA 2020: International Conference
“Topics in Fractional Calculus and Time-frequency Analysis”
University of Novi Sad, Serbia, 16–17 June 2020**

This virtual edition of the conference was organized by Serbian Academy of Sciences and Arts and the Department of Mathematics and Informatics, Faculty of Sciences, University of Novi Sad.

The conference was dedicated to the late professor Arpad Takači who passed away on November 2019. He was an excellent mathematician and professor at the Faculty of Sciences of Novi Sad University. His sense of humor and love for life made him such a wonderful person who will be greatly missed by many mathematicians over the world who were his friends.

The event is supported by Novi Sad Branch of Serbian Academy of Sciences and Arts; Department of Mathematics and Informatics – Faculty of Sciences – University of Novi Sad; Mathematical Institute of the Serbian Academy of Sciences and Arts; Bilateral Research project of Bulgarian Academy of Sciences and Serbian Academy of Sciences and Arts: “Operators, differential equations and special functions of Fractional Calculus – Numerics and applications”; Bilateral Project Serbia–Austria ANACRES; and Project “Localization in phase space: theoretical and numerical aspects” funded by MNRVOID Republic of Srpska.

Details are available at:
<https://tfafc.pmf.uns.ac.rs/#/home>,
 the Schedule: <https://tfafc.pmf.uns.ac.rs/#/agenda>,
 and Book of Abstracts: <https://tfafc.pmf.uns.ac.rs/#/BookOfAbstracts>.

The Organizers plan to upload also the files of some presentations.

2. Call for Online Conference 2020

**The 1st Online Conference on
Nonlinear Dynamics and Complexity
November 23–25, 2020, Central Time Zone, USA
Workshop: Fractional Calculus**

This conference will provide a place to exchange recent developments, discoveries and progresses on Nonlinear Dynamics and Complexity. The aims of the conference are to present the fundamental and frontier theories and techniques for modern science and technology; to stimulate more research interest for exploration of nonlinear science and complexity; and to directly pass the new knowledge to the young generation, engineers and

technologists in the corresponding fields, details at:
<http://ndc.lhscientificpublishing.com/>.

There will be three symposia during this conference, related on fractional calculus, see at: <http://ndc.lhscientificpublishing.com/program/>, especially, we like to announce the mini-symposium

“Symposium-10: Discrete Fractional Dynamics and Its Applications”.

Annotation: Fractional sums and differences were introduced in the 90th of the last century. The seminal result is presented in the Miller and Ross’ paper “Fractional Difference Calculus” in Proceedings of the International Symposium on Univalent Functions, Fractional Calculus and Their Applications, Japan, 1988. The next significant step in the development of discrete fractional calculus (Riemann-Liouville and Caputo) was done in works by Atici and Elloe in the first decade of this century. Among the other things, Atici and Elloe obtained a solution of the initial value problem for a simple fractional difference equation. In 2014 Wu and Baleanu proposed to use this solution to generate fractional difference maps. Fractional universal and standard maps as solutions of the fractional differential equations of kicked systems were introduced in 2008 in a paper by Tarasov and Zaslavsky “Fractional equations of kicked systems and discrete maps” and later fractional logistic map was introduced in 2013 by Edelman. The applications of fractional maps include secure communication, economics, and lifespan of living species. Significant progress in the development and applications to control of the Grunwald–Letnikov fractional differences was done by Ostalczyk with co-authors (see Ostalczyk’s book “Discrete Fractional Calculus”, 2016). Over the last decade many authors, not mentioned here, contributed to the development of the discrete fractional calculus and its applications. The purpose of this symposium is to make an overview of the recent results, to reconcile any differences in notations used by various authors, and to discuss new directions in this emerging field.

Submission of Abstracts Deadline: September 15, 2020; etc.

Chairs:

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Professor Dumitru Baleanu (Cankaya University, Ankara, Turkey
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3. New Books

Raoul R. Nigmatullin, Paolo Lino, Guido Maione, *New Digital Signal Processing Methods. Applications to Measurement and Diagnostics*. Springer (2020). XX, 443 pp., 228 illus., 108 illus. in color, ISBN 978-3-030-45358-9, e-ISBN 978-3-030-45359-6.

Details: <https://link.springer.com/book/10.1007/978-3-030-45359-6>.

Annotation: This book is intended as a manual on modern advanced statistical methods for signal processing. The objectives of signal processing are the analysis, synthesis, and modification of signals measured from different natural phenomena, including engineering applications as well. Often the measured signals are affected by noise, distortion and incompleteness, and this makes it difficult to extract significant signal information. The main topic of the book is the extraction of significant information from measured data, with the aim of reducing the data size while keeping the basic information/knowledge about the peculiarities and properties of the analyzed system; to this aim, advanced and recently developed methods in signal analysis and treatment are introduced and described in depth. More in details, the book covers the following new advanced topics (and the corresponding algorithms), including detailed descriptions and discussions: the Eigen-Coordinates (ECs) method, The statistics of the fractional moments, The quantitative "universal" label (QUL) and the universal distribution function for the relative fluctuations (UDFRF), the generalized Prony spectrum, the Non-orthogonal Amplitude Frequency Analysis of the Smoothed Signals (NAFASS), the discrete geometrical invariants (DGI) serving as the common platform for quantitative comparison of different random functions. Although advanced topics are discussed in signal analysis, each subject is introduced gradually, with the use of only the necessary mathematics, and avoiding unnecessary abstractions. Each chapter presents testing and verification examples on real data for each proposed method. In comparison with other books, here it is adopted a more practical approach with numerous real case studies.

The book consists of 9 chapters, see Table of Contents.

Features:

- Decreases the gap between the mathematicians-statisticians and a broad group of experimentalists, who lacks an adequate theoretical background in data analysis and processing;
- Gives a clear and step-by-step description of signal analysis and treatment methods and algorithms, making them easily implementable;
- Strikes a complementary balance between theory and practice;

– Contextualizes concepts with practical case studies showing results can be easily reproduced by applying the methods introduced.

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