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EDITORIAL

FCAA RELATED NEWS, EVENTS AND BOOKS (FCAA–VOLUME 21–2–2018)

Virginia Kiryakova

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. Calendar of FC Related Meetings

For other upcoming events in 2018, see information in previous Editorial Note FCAA-Vol. 21-No 1-2018, at https://www.degruyter.com/view/j/fca.2018.21.issue-1/fca-2018-0001/fca-2018-0001.xml?format=INT.

OTHA 8, 2018: "Modern Methods, Problems and Applications of Operator Theory and Harmonic Analysis" (22-27 April 2018, Rostov-na-Don, Russia) Website: http://www.otha.sfedu.ru/conf2018/

Topics and sessions: – Functional Analysis and Operator Theory; – Function Theory and Approximation Theory; – Differential Equations and Mathematical Physics; – Hausdorff Operators and Related Topics; – Probability-Analytical Models and Methods; – Bioinformatics and Mathematical Modelling.

Working languages: English, Russian. Working days of the conference: 23 - 26 of April 2018. Arrival: April, 22nd. Departure: April, 27th.

For more information, contact: `otha.conference@gmail.com` and visit http://otha.sfedu.ru/bitrix/templates/social-s1-conf2018-en/files/third_letter_otha-2018.pdf.

On behalf of Organizing Committee, *Alexey N. Karapetyants*

SIGNAL 2018: The 3rd International Conference on Advances in Signal, Image and Video Processing (20-24 May 2018, Nice, France) Website: http://www.iaria.org/conferences2018/SIGNAL18.html

pp. 267–275 , DOI: 10.1515/fca-2018-0017 DE GRUYTER

SIGNAL 2018 will take place at the Hotel Novotel Nice Aéroport Cap 3000 in Nice, France. Bringing industry together, this 3rd International Conference is a 5 days event on Signal Processing, Communications Systems, Image Processing and Video Processing matters. It also offers the opportunity for face-to-face communication with those rewriting the future. International Academy and Research and Industry Association's Conference takes place annually.

The Organizers

International Conference "ICNR-2018"
Nigmatullin's Readings - 2018, at KAI
(9-12 October, 2018, Kazan, Tatarstan – Russia)

E-mail: ICNR-18@mail.ru

To be held in Kazan National Research Technical University named after A.N. Tupolev, KAI (former: Kazan Aviation Institute). Under the auspices of: Govn. of Republic of Tatarstan, Ministries of Education and Science of Russian Federation and of R. of Tatarstan, Federal State Budgetary Institution of Science, Tatarstan Academy of Sciences, Kotel'nikov Institute of radio Engn. and Electronics of RAS.

The conference is devoted to the 95-th anniversary of the outstanding scientist, the founder of the Kazan School of molecular electronics and application of the fractional operators in radioelectronics, Rector of the KAI (1967-1977), Chairman of the Supreme Council of the TASSR, **Rashid Shakirovich Nigmatullin**. For the contributions of Prof. R.S. Nigmatullin, read more in the Historical Survey:

D. Valerio, J. Tenreiro Machado, V. Kiryakova, Some pioneers of the applications of fractional calculus, *Fract. Calc. Appl. Anal.*, Vol. **17**, No 2 (2014), 552–578; DOI: 10.2478/s13540-014-0185-1;
https://www.degruyter.com/view/j/fca.2014.17.issue-2/
issue-files/fca.2014.17.issue-2.xml.

Conference sections: – Fractal elements and devices: analysis, synthesis and realizations; – Fractal systems: analysis, synthesis and applications; – Statistical methods of the treatment of the fractal signals and their applications; – Molecular electronics, electrochemical systems, devices and detectors; – Radioelectronics and telecommunication systems, noise immunity, electronic countermeasures; – Technical electrodynamics, antennas technics and microwave technologies; – Photonics and optical signals treatment; – Dynamical chaos and physical fractals; – Nanoelectronics and nanomaterials; – Lasers and additive technologies; – Quantum signals processing and quantum communications; – Fractal paradigm in engineering education.

The organizers are planning publication in a foreign publishing house two books: – The "pioneering" works of the R.Sh. Nigmatullin; – Key publications of the invited speakers at ICNR-2018, related to the modern state of the fractional calculus and its application in technical and natural sciences.

On behalf of Organizers, *Raoul R. Nigmatullin*

2. Events under COST Action CA15225 "Fractional"

COST (European Cooperation in Science and Technology) is supported by the EU Framework Programme Horizon 2020.

General information on this COST Action program: "Fractional-order systems – analysis, synthesis and their importance for future design" and related activities, can be found at websites:

http://www.cost.eu/COST_Actions/ca/CA15225 ,

http://fractional-systems.eu/ .

Summary: Fractional-order systems have lately been attracting significant attention and gaining more acceptance as generalizations to classical integer-order systems. Mathematical basics of fractional-order calculus were laid nearly 300 years ago and since then have become established as deeply rooted mathematical concepts. Today, it is known that many real dynamic systems cannot be described by a system of simple differential equations of integer-order. In practice such systems are encountered in electronics, signal processing, thermodynamics, biology, medicine, control theory, etc. This Action will favour scientific advancement in the above mentioned areas by coordinating activities of academic research groups towards an efficient deployment of fractional theory to industry applications. The cooperation of researchers from different institutions will guarantee wide visibility of results from the Action.

In 4 Working Groups (WG 1, WG 2, WG 3, WG 4) there are involved COST participants from 25 country members and from some near neighbor countries (2) and international partner countries (3); as at

http://www.cost.eu/COST_Actions/ca/CA15225?parties .

Report on WFC: Workshop in Fractional Calculus 10-11 May, 2018, Skopje, R. of Macedonia Website: http://www.research-publication.com/index.php/workshop.html

The Workshop was hosted by the Faculty of Mechanical Engineering, Ss. Cyril and Methodius University in Skopje, and organized by the Union of Researchers of Macedonia.

Annotation: Fractional calculus is a modern and expanding domain of mathematical analysis. Using Fractal Calculus in the mathematical models includes more information then offered by the classical integer order calculus. Besides an essential mathematical interest, its overall goal is general improvement of the physical world models for the purpose of computer simulation, analysis, design and control in practical applications.

The **Scientific Program** included 6 invited lectures and 9 short communications, closed by Round Table discussions. See at:

http://www.research-publication.com/articles/workshop/Fractal_Calculus_Workshop_Programme.pdf.

The Workshop was attended by participants from Bulgaria, Serbia, Montenegro and Macedonia who discussed the benefits of WFC and had opportunity to share opinions, open problems and plans for future work on this COST Action, as well as to enjoy the hospitality of the University and of the beautiful town of Skopje.

Biljana Jolevska-Tuneska, Virginia Kiryakova

Coming events under COST Action CA15225, in 2018

10th International Conference on Non-Integer Order Calculus and Its Applications
RRNR, 20-21 September 2018, Bialystok, Poland
Website: http://rrnr2018.pb.edu.pl/

It is organized as the Annual Workshop of the COST Action CA15225, to be held in the Bialystok University of Technology, Bialystok, and maintained under the rules of the COST.

The theme of the Conference is divided into four parts: – Mathematical foundations; – Dynamic system modeling; – Fractional-order systems analysis; – Fractional-order closed-loop systems synthesis.

After the Management Committee / Working Group meeting, the Annual Workshop on current progress in fractional-order systems, their mathematical description, modelling and utilization will take place. The Working Group leaders' selected members will present the current results and achievements within each Working Group following the tasks and expected deliverables of the Action, whereas promoting the Workshop also through public communication channels, participants out current Action members will be invited and supported if eligible, according to COST Vademecum rules, see at http://fractional-systems.eu/workshops/.

Within the Workshop, a special session on Parameter specification of super- and ultra-capacitors will take place. The representatives of European company Skeleton Technologies are invited to participate this session and

discuss the joint steps in defining efficient tools to describe the performance of super- and ultra-capacitors using fractional-order approach.

On behalf of Action's organizers: *Malgorzata Wyrwas*

Training School: "Advantages of the Fractional Models in Dealing with Real World Problems"
8-12 October 2018, Istanbul, Turkey
Website: http://fractional-systems.eu/ts-2018/

The Training school will take place in the Yildiz Technical University, 34220 Esenler / Istanbul, Turkey. For more details on location, also on deadlines, conditions of participation, etc. see the website as above.

Annotation: A 5-day Training school that brings together participating top international specialists from diverse countries (members of our COST Action) and to initiate fruitful collaborations in the field of fractional dynamics focusing on finding new analytical and numerical methods as well as techniques to model the complexity of the dynamics of some real-world systems. The advantage of using models based on fractional calculus is that there are several fractional kernels (singular or non singular) which can be adapted to a given set of data. In addition, the order of fractional derivatives can vary, therefore the range of the applicability of the generated models will increase considerable. The expected results in time will contribute better to the identification of the unknown phenomena and the stability of the fractional tumor models. New software for solving fractional differential equations and fractional discrete equations will be provided. Optimal control theory is playing an important role in the design of modern systems. Optimal control provides a powerful tool to link biological, mechanical or physical requirements coming from the system under investigation to the required mathematical objectives. With the help of a very recently established fractional derivative we will design a working plan for our control problems.

Well known experts on these areas will be Invited Trainers. To participate at the Training School as Trainee, only applicants from a country being member of COST Action CA15225 are eligible for financial support (The full list of member countries can be found at the link of beginning of this section). Furthermore, the applicants must be at least PhD students. The applicants being interested in attending the Training School must first fill out the basic Application form and send an Application letter via e-mail to Prof. Dumitru Baleanu, before 31 July 2018. Based on the information provided, the selected applicants will be invited through the e-COST system as Trainees. The total number of Trainees is fixed to 20.

For any additional information regarding the Training School, please contact the Local Organizer:

Dumitru Baleanu, email: dumitru‘‘at’’cankaya.edu.tr.

3. New Books

Sabir Umarov, Marjorie Hahn, Kei Kobayashi, ***Beyond the Triangle: Brownian Motion, Itô Calculus, and Fokker-Planck Equation – Fractional Generalizations***. World Scientific, 2018, 192 pp., ISBN: 978-981-3230-91-0 (hardcover), ISBN: 978-981-3230-99-6 (ebook).

Details: https://www.worldscientific.com/worldscibooks/10.1142/10734 and
http://math.newhaven.edu/sumarov/ .

Book Description: The book is devoted to the fundamental relationship between three objects: a stochastic process, stochastic differential equations (SDEs) driven by that process and their associated Fokker–Planck–Kolmogorov equations. This book discusses wide fractional generalizations of this fundamental triple relationship, where the driving process represents a time-changed stochastic process; the Fokker–Planck–Kolmogorov equation involves time fractional order derivatives and spatial pseudo-differential operators; and the associated stochastic differential equation describes the stochastic behavior of the solution process. The driving process arises as a scaling limit of continuous-time random walks and the convergence is studied in various topologies, including the Skorokhod topologies. The book contains recent results obtained in this direction. Examples and important applications to various scientific, engineering, and economics problems make the book attractive for all interested researchers, educators, and graduate students. This is a first book where fractional Fokker-Planck-Kolmogorov equations and their corresponding stochastic differential equations are presented systematically. Hence it is suitable for graduate courses on the topic.

Contents: – Preface; – Chapter 1: Introduction; – Chapter 2: The original triangle: Brownian motion, Itô stochastic calculus, and Fokker–Planck–Kolmogorov equation; – Chapter 3: Fractional calculus; – Chapter 4: Pseudo-differential operators associated with Lévy processes; – Chapter 5: Stochastic processes and time-changes; – Chapter 6: Stochastic calculus for time-changed semimartingales and its applications to SDEs; – Chapter 7: Fractional Fokker-Planck-Kolmogorov equations; – References; – Index.

Readership: Graduate students and researchers in science, engineering, economics.

Luiz Roberto Evangelista, Ervin Kaminski Lenzi, ***Fractional Diffusion Equations and Anomalous Diffusion***. Cambridge University Press, Cambridge (2018), 345 pp., ISBN: 978-1-107-14355-5 (hardback).

Details: http://www.cambridge.org/9781107143555.

Review on this book: The "and" in the title of this monograph is not simply an interdisciplinary connector, but serves as a proper coordinating conjunction with Boolean conviction. The authors, distinguished professors with decades of work in mathematical physics, here share their knowledge and perspective in a manner that is both tutorial and evocative. In fact, the book could be used as a text for graduate students and others who seek to learn more about how fractional order differential equations can be used to describe anomalous - non-Gaussian - diffusion. The emergence of fractional dynamics is illustrated for a variety of systems: integer, power law model parameters, fractional time or space orders and distributed fractional order. The first section provides an overview of fundamentals, a survey of fractional calculus and a very well written historical survey of diffusion, the continuous time random walk model, and the diffusion equation. The second section, then proceeds logically to present a sequence of diffusion models, each of which captures salient features of anomalous diffusion (memory, non-locality, Lévy flight, and the influence of surfaces and membranes). These models expand to include non-linear, distributed order and anisotropic cases, culminating with a chapter on the fractional Schrödinger equation. The final section of the book consists of two chapters on electrical impedance spectroscopy that connect the fractional order in the Poisson-Nernst-Planck model to electrode boundary conditions in the lumped-element circuit models (constant phase elements). The text is supplemented with numerous figures and an up to date list of references (380), each entry complete with title and authors.

Contents (10 Chapters): – Preface; – 1. Mathematical preliminaries; – 2. A survey of the fractional calculus; – 3. From normal to anomalous diffusion; – 4. Fractional diffusion equations: elementary applications; – 5. Fractional diffusion equations: surface effects; – 6. Fractional nonlinear diffusion equation; – 7. Anomalous diffusion: anisotropic case; – 8. Fractional Schrödinger equations; – 9. Anomalous diffusion and impedance spectroscopy; – 10. The Poisson-Nernst-Planck anomalous (PNPA) models; – References; – Index.

Read more at http://www.cambridge.org/us/academic/subjects/physics/statistical-physics/fractional-diffusion-equations-and-anomalous-diffusion#rd8Msv8e4vkE2kMs.99 .

Reviewer: *Richard L. Magin*

Special Issue: MFDSA 2017, in: *Journal of Computational and Applied Mathematics*, Vol. 339, Suppl. C (Sept. 2018), pp. 1–430, Elsevier B.V.; Guest-Editors: Amar Debbouche, Carlos Lizama, Xiao-Jun Yang

Details: https://www.sciencedirect.com/journal/journal-of-computational-and-applied-mathematics/vol/339/suppl/C.

It is a Special Issue of JCAM on the topics "Modern Fractional Dynamic Systems and Applications, MFDSA 2017". The Editors dedicated this SI in honor of: R.P. Agrawal, D. Baleanu, J.J. Nieto, D.F.M. Torres and Y. Zhou, as highly cited researchers in the field.

Since fractional dynamic systems grow, mature and develop, we have focused on the most promised new directions that were formulated based on the modern techniques and approaches presented recently in the field. This special issue, resulting after an open call for papers, has contributions on theoretical, experimental and applied aspects in fractional dynamic systems. Each paper has been carefully selected, having passed the standard refereeing process. It is important to mention and clarify that we only handled received submissions that were explicitly meeting with the Aims and Scope of the journal. There were 171 received submissions in this special issue. Following JCAM standards and having in mind the limited SI pages, a set of these papers have been rejected in initial stage within pre review, others moved to review processes resulting in 32 accepted papers.

Annotation and more details on the topics can be found at the Editorial.

Managing Guest Editor, *Amar Debbouche*

4. In Memoriam: Academician Bogoljub Stanković

These days (just before to close the journal's issue), we received the sad new that the great Man and Serbian mathematician, Professor Bogoljub Stanković (1 September 1924 – 16 May 2018) died after a short illness at the age of 93.

He was a Honorary and Founding member of FCAA Editorial Board and supported the journal since its very beginning. Being the first professor of analysis at the Department of Mathematics, Faculty of Natural Sciences in Novi Sad; Rector of the University of Novi Sad; he was also a full member (Academician) of the Serbian Academy of Sciences and Arts, and the first president of the Vojvodina Academy of Sciences and Arts; with many other important administrative positions and social activities. His contributions were recognized by the state and crowned by the most prestigious awards and honors of this country (with different names) for his work in Research, Education and Culture.

Prof. Stanković was well known and recognized expert in the areas of integral transforms, special functions, generalized functions, functional analysis, applications of fractional calculus in models of Mechanics and many other areas of Mathematics, a founder of the scientific group and the seminar under the name "Generalized Functions" in Novi Sad University some 50 years ago. The main mission of Professor Stanković as is stated by his colleagues in one sentence: *He was the founder of modern mathematical analysis in Serbia*, as well as *one of the founders of conferences on generalized functions* – today known as GF conferences.

In September 2004, the International Conference "Generalized Functions 2004 - Topics in PDE, Harmonic Analysis and Mathematical Physics" took place in Novi Sad, organized by Department of Mathematics and Informatics, University of Novi Sad and Serbian Academy of Science and Arts, in honor of 80th anniversary of Acad. Stanković. About 140 participants from 25 countries of Europe, North and South Americas, Asia and Africa, attended the conference, and delivered 17 invited lectures and about 100 contributed talks.

Then, in July 2014, the international conference "Days of Analysis in Novi Sad" was organized in University of Novi Sad, on the occasion of his 90th birthday. This was the first Russian - Serbian mathematical meeting within the framework of scientific cooperation of Russian and Serbian Academies of Sciences and Arts. Around 60 mathematicians from Austria, Brazil, Bulgaria, Croatia, France, Italy, Macedonia, Monte Negro, Norway, Russian Federation, Serbia, Sweden and United States attended it.

Some biographical data, notes on Acad. Stanković contributions and honors, have been published in some previous issue of this journal, as in:

– *Fract. Calc. Appl. Anal.*, Vol. **8**, No 1 (2005); and Vol. 8, No 1 and No 2 (2005) include papers dedicated to his 80th anniversary. The stuff is available free at: http://www.math.bas.bg/complan/fcaa → Vol. **8**.

– *Fract. Calc. Appl. Anal.*, Vol. **18**, No 1 (2015); Editorial Note, at: https://www.degruyter.com/view/j/fca.2015.18.issue-1/ issue-files/fca.2015.18.issue-1.xml.

At this sad moment, on behalf of Editorial Board, we shortly say our condolences to his family and colleagues.

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