



EDITORIAL

FCAA RELATED NEWS, EVENTS AND BOOKS (FCAA–VOLUME 19–1–2016)

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.

1. Calendar of Events

International conference “Modern Methods, Problems and Applications of Operator Theory and Harmonic Analysis VI” (OTHA–2016), April 24–29, 2016, Rostov-on-Don, Russia
Website: <http://otha.sfedu.ru/conf2016/>

The conference is dedicated to the 75 annual jubilee of Professor **Stefan Samko** (Russia, Portugal). The general core of the conference is related to the different areas of mathematics, especially harmonic analysis, functional analysis, operator theory, function theory, differential equations and fractional analysis, developed intensively last decade.

Sessions: – Functional Analysis and Operator Theory; – Function Theory and Approximation Theory; – Differential Equations and Mathematical Physics; – Probability-Analytical Models and Methods; – Bioinformatics and mathematical modeling; – Intellectual data analysis.

Hosts and Sponsors: The host universities are: Southern Federal University (sfedu.ru) and Don State Technical University (dstu.ru). The conference is supported by Russian fund for fundamental research (rfbr.ru) and International Society for Analysis, Applications and Computation (math-isaac.org).

Deadline for registration: 1st of April, 2016. To register please go to: <http://otha.sfedu.ru/>. For further details and contact:

E-mail: otha.conference@gmail.com.

On behalf of the Organizers and Program Committee:

Alexey Karapetyants (Co-chair), E-mail: karapetyants@gmail.com,
Southern Federal University and Don State Technical University.

**6th International Conference on Nonlinear Science
and Complexity (NSC 2016–6th)**

May 16–20, 2016, Sao Jose dos Campos, Brazil

Website: <http://www.inpe.br/nsc2016/en/>

Within the conference NSC16-6th Conference on Nonlinear Science and Complexity, Profs. J. Tenreiro Machado, D. Baleanu, M. Edelman (Editors in “FCAA”) are organizing a **Symposium “Fractional Calculus Applications”**.

Latest News: For technical reasons, the conference venue has changed. It will take place at INPE, in Sao Jose dos Campos.

General Scope of Conference: This conference provides a place to exchange recent developments, discoveries and progresses on Nonlinear Science and Complexity. The aims of the conference are to present the fundamental and frontier theories and techniques for modern science and technology, and to stimulate more research interest for exploration of nonlinear science and complexity. The conference will focus on fundamental theories and principles, analytical and symbolic approaches, computational techniques in nonlinear physical science and nonlinear mathematics.

We invite you to participate in this conference, and if you are planning to come to Brazil, please submit abstracts of your studies at

<http://www.inpe.br/nsc2016/en/submissions.php>.

Deadlines for submission, see at:

<http://www.inpe.br/nsc2016/en/deadlines.php>.

On behalf of the Organizers and International Advisory Board:

J. A. Tenreiro Machado, E-mail: jtenreiro Machado@gmail.com

Institute of Engineering, Polytechnic of Porto - Portugal

International Workshop “Fractality and Fractionality”

May 17–20, 2016, Leiden, Netherlands

Website: <http://www.lorenzcenter.nl/lc/web/2016/779/>

[info.php3?wsid=779&venue=Oort](http://www.lorenzcenter.nl/lc/web/2016/779/info.php3?wsid=779&venue=Oort)

On behalf of Organizing Committee, we are happy to inform you that our workshop has been approved by Lorenz center, Oort, see details at <http://www.lorenzcenter.nl/>.

Venue and Participation: Lorentz Center@Oort. Registration is via <http://www.lorenzcenter.nl/lc/web/2016/779/>

[registration.php3?wsid=779&venue=Oort](http://www.lorenzcenter.nl/lc/web/2016/779/registration.php3?wsid=779&venue=Oort).

The number of participants is restricted to be not greater than 55, according

to the Lorenz Center regulations, but the Workshop lectures are open to anyone interested.

Contacts: *Yuliya Mishura*, E-mail: yumishura@gmail.com,
and *Georgij Shevchenko*, E-mail: zhora@univ.kiev.ua,
Department of Probability, Statistics and Actuarial Mathematics
Taras Shevchenko National University of Kyiv, Ukraine

**17th International Carpathian Control Conference
(ICCC '2016) May 29–June 1, 2016, High Tatras,
Tatranska' Lomnica, Slovak Republic**

Website:

<http://web.tuke.sk/ICCC/internet.php?param=default>

Organizer and financial sponsor: Slovak Society for Applied Cybernetics and Informatics (SSAKI).

Technically sponsored by: IEEE Advanced technology for Humanity, IEEE Czechoslovakia Section

The scientific program includes, among 10 main areas: – Fractional Calculus and its Applications,

and among Keynote lectures: YangQuan Chen, “Better Understanding Complexities via Fractional Calculus”, for more details on scientific program see at <http://www.tuke.sk/ICCC/>.

Program and Publication Chairman:

Ivo Petráš, E-mail: ivo.petras@tuke.sk,

and Member of Intern. Techn. Com.: *Igor Podlubny*,
IEEE & Technical University of Košice, Slovakia

**International Conference on
Fractional Differentiation and its Applications (ICFDA '16)
July 18–20, 2016, Novi Sad, Serbia
Website: <http://www.icfda16.com/public/>**

The next edition of the traditional periodic meetings FDA (Fractional Differentiation and its Applications), see history at

<http://www.icfda16.com/public/previous-events.php>,
will take place from July 18 (Monday) to July 20 (Wednesday), 2016, in the University of Novi Sad, Faculty of Technical Sciences, as a host and main technical sponsor, <https://www.uns.ac.rs/index.php/en/>.

The Organizing Committee of the ICFDA16 invite you to participate in this event. Its objectives are to review and discuss some of the latest trends in various fields of theoretical and applied FC. By bringing together

the experts and young researchers, it aims to promote exchange of ideas in topics of mutual interests, to establish links between scientific communities with complementary activities and to encourage them for collaboration.

The following international organizations confirmed their support: International Federation of Automatic Control (**IFAC**), International Union of Theoretical and Applied Mechanics (**IUTAM**), Institute of Electrical and Electronics Engineers (**IEEE**) – Branch of Serbia and Montenegro.

Research contributions: full papers; short presentations described by minimum two pages abstracts (with clear statement of the problem, a short description of applied analysis and preliminary results); posters (A1 portrait orientation). Round table discussions will be organized as well.

Deadlines: – Submission of the proposals: 15 March, 2016; – Notification of acceptance: 15 April, 2016; – Final submission: 30 April, 2016.

Contacts: icfda16@uns.ac.rs , info@icfda16.com

Chair of National Organizing Committee: *Dragan Spasic*,
E-mail: spasic@uns.ac.rs, University of Novi Sad,
Faculty of Technical Sciences, Dept. of Mechanics, Novi Sad, Serbia
Chair of International Program Committee: *Teodor Atanackovic*
Chair of FDA Steering Committee: *YangQuan Chen*

**12th IEEE/ASME International Conference on Mechatronic
and Embedded Systems and Applications - MESA2016**

August 29–31, 2016, Auckland, New Zealand

Website: <http://www.mesa2016.org/>

Within this conference, as usual, there will be a **Symposium on Fractional Derivatives and Their Applications (FDTA)**.

Important Dates: – March 31, 2016: Full Paper Submission; – May 20, 2016: Notification of Acceptance; – June 30, 2016: Final Papers Submission; – June 30, 2016: Authors Registrations.

For more details and submission, see at the website. Announced by:

Blas M. Vinagre Jara, E-mail: bvinagre@unex.es
Universidad de Extremadura, Spain

**8th Conference on Non-integer Order Calculus and
its Applications (RRNR 2016)**

September 20-21, 2016, Zakopane, Poland

Website: <http://www.rrnr.vei.polsl.pl>

Scope: The scope of the conference includes, but is not limited to, the following topics: – mathematical preliminaries of non-integer order systems;

– continuous-time non-integer order systems; – discrete-time non-integer order systems; – stability, controllability, observability of non-integer order systems; – identification of non-integer order system; – control of non-integer order system; – applications of non-integer order systems.

Publication: After a careful reviewing process, all accepted papers after proper registration and presentation, will be published in the Conference Proceedings by Springer as book chapters in a book series of Lecture Notes in Electrical Engineering (LNEE), indexed by: ISI Conf. Proc. Citation Index (Thomson Reuters), EI-Compendex, SCOPUS, MetaPress, Springerlink.

Fee: The RRNR Conference itself is free of charge. The participants cover the cost of travel and accommodation.

Important Dates: – Paper Submission (Full Paper): April 01, 2016; – Notification Date: May 15, 2016; – Author’s Registration: June 05, 2016; – Camera Ready: June 05, 2016.

Submissions: Visit: <http://rrnr.aei.polsl.pl/index.php?id=submission>.

Contacts: E-mail: rrnr2016@polsl.pl

On behalf of the International Conference Program Committee:

Tadeusz Kaczorek (Chairman), *Adam Czornik* (Co-Chairman), *Jerzy Klamka* (Co-Chairman), Poland

2. New Books

Yuriy Povstenko, *Linear Fractional Diffusion-Wave Equation for Scientists and Engineers*. Ser. Birkhäuser Mathematics, Springer – Birkhäuser (2015), 460 + i-xiv pp., 214 b/w illustr., 7 color illustr., ISBN: 978-3-319-17953-7 (Print), 978-3-319-17954-4 (Online).

Details at: <http://www.springer.com/it/book/9783319179537>, also read at SpringerLink.

About this book: This book systematically presents solutions to the linear time-fractional diffusion-wave equation. It introduces the integral transform technique and discusses the properties of the Mittag-Leffler, Wright, and Mainardi functions that appear in the solutions. The time-nonlocal dependence between the flux and the gradient of the transported quantity with the long-tail power kernel results in the time-fractional diffusion-wave equation with the Caputo fractional derivative. Time-nonlocal generalizations of classical Fourier’s, Fick’s and Darcy’s laws are considered and different kinds of boundary conditions for this equation are discussed (Dirichlet, Neumann, Robin, perfect contact). The book provides solutions to the fractional diffusion-wave equation with one, two and three space variables in Cartesian, cylindrical and spherical coordinates.

The respective sections of the book can be used for university courses on fractional calculus, heat and mass transfer, transport processes in porous media and fractals for graduate and postgraduate students. The volume will also serve as a valuable reference guide for specialists working in applied mathematics, physics, geophysics and the engineering sciences.

Table of Contents: 1. Introduction; 2. Mathematical Preliminaries; 3. Physical Backgrounds; 4. Equations with One Space Variable in Cartesian Coordinates; 5. Equations with One Space Variable in Polar Coordinates; 6. Equations with One Space Variable in Spherical Coordinates; 7. Equations with Two Space Variables in Cartesian Coordinates; 8. Equations in Polar Coordinates; 9. Axisymmetric Equations in Cylindrical Coordinates; 10. Equations with Three Space Variables in Cartesian Coordinates; 11. Equations with Three Space Variables in Cylindrical Coordinates; 12. Equations with Three Space Variables in Spherical Coordinates; Conclusions; Appendix; Bibliography.

Yuriy Povstenko, *Fractional Thermoelasticity*. Ser. Solid Mechanics and Its Applications # 219, Springer (2015), 253 + xii pp., 150 b/w illustr., ISBN: 978-3-319-15334-6 (Print), 978-3-319-15335-3 (Online).

Details at: <http://www.springer.com/978-3-319-15334-6>, also read at SpringerLink.

About this book: This book is devoted to fractional thermoelasticity, i.e. thermoelasticity based on the heat conduction equation with differential operators of fractional order. Readers will discover how time-fractional differential operators describe memory effects and space-fractional differential operators deal with the long-range interaction. Fractional calculus, generalized Fourier law, axisymmetric and central symmetric problems and many relevant equations are featured in the book.

The latest developments in the field are included and the reader is brought up to date with current research. The book contains a large number of figures, to show the characteristic features of temperature and stress distributions and to represent the whole spectrum of order of fractional operators.

This work presents a picture of the state-of-the-art of fractional thermoelasticity and is suitable for specialists in applied mathematics, physics, geophysics, elasticity, thermoelasticity and engineering sciences. Corresponding sections of the book may also be used as additional reading material for courses on heat and mass transfer, continuum mechanics, thermal stresses as well as in fractional calculus and its applications for graduate

and postgraduate students. Extensive references are included in order to stimulate further studies.

Table of Contents: 1. Essentials of Fractional Calculus; 2. Fractional Heat Conduction and Related Theories of Thermoelasticity; 3. Thermoelasticity Based on Time-Fractional Heat Conduction Equation in Polar Coordinates; 4. Axisymmetric Problems in Cylindrical Coordinates; 5. Thermoelasticity Based on Time-Fractional Heat Conduction Equation in Spherical Coordinates; 6. Thermoelasticity Based on Space-Time-Fractional Heat Conduction Equation; 7. Thermoelasticity Based on Fractional Telegraph Equation; 8. Fractional Thermoelasticity of Thin Shells; 9. Fractional Advection-Diffusion Equation and Associated Diffusive Stresses; References.

3. 70th Anniversary of Professor Oleg I. Marichev

Professor Oleg Igorevich Marichev, born on September 7, 1945 in Velikie Luki, Russia, has celebrated recently his 70th anniversary.

He was among the founding editors of our journal “*Fractional Calculus and Applied Analysis*” (FCAA), now a Honorary editor.

We do *acknowledge* that parts of the short biography below have been taken from another recent publication [12] by the Samara State Technical University: “Oleg Igorevich Marichev (On the Occasion of His 70th Birthday)”, *Vestn. Samar. Gos. Tekhn. Univ. Ser. Fiz.-Mat. Nauki*, Vol. 19, No 3 (2015), 407-414; DOI: 10.14498/vsgtu1440.

When he was a child, in 1949, the Marichev family relocated to Minsk, Belarus. While attending the school (1952-1963) his mathematical interests were first stimulated when the 8th grade mathematics teacher explained the method of mathematical induction. Pursuing this interest, Oleg became an avid participant in mathematical olympiads and competitions in Minsk. He attended a special mathematics school at Belorussian State University, and won many mathematical competitions. In 1963, Oleg graduated from the high school with a prestigious academic gold medal and began undergraduate studies in the Math. Dept. at the Belorussian State University, graduating in 1968. To continue on with postgraduate studies, Oleg began his research career under the guidance of Academician Fedor Dimitrievich Gakhov, famous for having solved the classical Riemann boundary value problem for analytic functions in closed form in 1937, for his monograph “*Boundary Value Problems*” translated in English in 1966, and for his supervision of nearly 60 Ph.D. dissertations. Gakhov recognized Oleg’s talent and abilities to work independently, and suggested him a thesis topic that stayed far from his own research while still building on some of his results.

Applying integral equations and special functions to the solutions of partial differential equations became his (first) PhD thesis, “*Tricomi’s Boundary Value Problem for Some Mixed Type Equations and Integral Equations with Special Functions in the Kernels*”, defended in 1973. Later, his 2nd dissertation “*Functions of Hypergeometric Type and Some Applications to Integral and Differential Equations*” for “advanced doctorate” (Doctor Scientiarum), was defended at Friedrich–Schiller–Universität in 1990.

Oleg had begun teaching at the Belorussian State University (BSU), Mathematics Dept., in 1968, and continued doing so until 1990. One of his first students (in 1969-1970) was Sergei Rogozin, who is now a professor in the same department, and also Editor in our journal *FCAA*.

Having his interest on the generalized hypergeometric functions (after the book of L.J. Slater) since his work on the PhD thesis, while teaching in BSU, Oleg began authoring a series of authoritative (and massive) monographs about special functions. The first one, [1], was published in Russian in 1978 and was subsequently translated into English as [4] in 1983. It characterized the completeness and rigor in Oleg’s publications, developing and extending ideas first considered in the 1940s by C.S. Meijer in a way that was characterized by none other than Gakhov himself as, “[without] parallel in the Russian or foreign literature”. The Handbook [2] included the largest tables of the Meijer G -functions ever compiled, a feat of considerable interest because it allowed most integrals tabulated in handbooks such as Gradshteyn and Ryzhik’s famous “*Tables of Integrals, Series, and Products*” to be immediately evaluated as particular cases of the Meijer G -function. Later, he got in touch with the Moscow group of Profs. A.P. Prudnikov and Yu.A. Brychkov, and started with them a tremendous project (1981-1992) on evaluating and re-evaluating thousands of complicated integrals and other formulas, all without the benefit of even rudimentary computers. People knowing Oleg from that period (including myself, V.K.) remember his habit to write down and make calculations in various moments and situations – during meetings, in the metro, on the table for having dinner, and before falling asleep. The result is the World known series of their handbooks. Since 1975, Oleg and his colleague A.A. Kilbas collaborated with S.G. Samko on another project, that resulted in the Fractional Calculus Encyclopedia, in two versions [7] (in Russian, the “Red book”) and [10] (in English, the bestseller known as the “White book”).

Oleg’s dream to implement his results on special functions and integrals of them and integration algorithms with necessary access to advanced computer technologies, as well as some worries on health (Chernobyl-induced) issues and disappointments of political nature, encouraged him to accept the invitation from Wolfram Research company to demonstrate in their

Champaign headquarters, together with his former PhD student V. Adamchik, the program *Reduce* (they had prepared in Minsk University computer lab). Thus, first Marichev and Adamchik in end of 1990, and later his family, immigrated to USA, and started to work at Wolfram for implementing the integration programs in *Mathematica*. Further, together with M. Trott, they began the ambitious project of describing and classifying all Mathematica's mathematical functions by means of formulas, graphics, and interrelations. This project began by a paper, with the original intent to create a set of posters cataloging the results. However, as the mass of accumulated material quickly increased as well as the cost of actually producing and distributing such complicated documents, the project moved to Internet, where it eventually became the Wolfram Functions Site. This website is now the World's most comprehensive collection of mathematical formulas, and it currently includes more than 300 000 formulas and graphics, as well as a unique search functionality for formulas based on their mathematical structure. For more details, visit Wolfram's website <http://functions.wolfram.com/>; <http://functions.wolfram.com/About/developers.html> (there is also a short CV for Marichev); Marichev's blogs and publications at same site, e.g.

<http://search.wolfram.com/?query=Marichev&collection=tryonall>.

Before to join Wolfram, Marichev authored also a hundred of articles on special functions, integral transforms and their applications to differential and integral equations.

Most of *Marichev's books* are product of the enthusiastic and successful collaboration with his colleagues (also famous names in Mathematics), as Profs. A.P. Prudnikov, O.A. Repin, and the *FCAA* Editors S.G. Samko, A.A. Kilbas, Yu.A. Brychkov. We provide *a list of these books*, 2 of them being translations in English from the Russian versions, but with essential extensions, some were republished also in Japanese and German languages:

[1] O.I. Marichev, *A Method of Calculating Integrals of Special Functions (Theory and Tables of Formulas)* [Metod vychisleniya integralov ot spetsialnykh funktsij (Teoriya i tablitsy formul)] (In Russian). Nauka i Tekhnika, Minsk, 310 pp. (1978).

[2] A.P. Prudnikov, Yu.A. Brychkov, O.I. Marichev, *Integrals and Series. Elementary Functions* [Integraly i ryady. Ehlementarnye funktsii] (In Russian). Nauka, Moscow, 800 pp. (1981).

[3] A.P. Prudnikov, Yu.A. Brychkov, O.I. Marichev, *Integrals and Series. Special Functions* [Integraly i ryady. Spetsialnye funktsii] (In Russian). Nauka, Moscow, 752 pp. (1983).

[4] O.I. Marichev, *Handbook of Integral Transforms of Higher Transcendental Functions: Theory and Algorithmic Tables* [in English; Transl. from

Russian by L.W. Longdon]. Ellis Horwood Ser. Math. and its Appl., Ellis Horwood Ltd.; Chichester-New York etc. 336 pp. (1983).

[5] A.P. Prudnikov, Yu.A. Brychkov, O.I. Marichev, *Integrals and Series. Complementary Chapters* [Integraly i ryady. Dopolnitelnye glavy] (In Russian). Nauka, Moscow, 800 pp. (1986).

[6] Yu.A. Brychkov, O.I. Marichev, A.P. Prudnikov, *Tables of Indefinite Integrals. Handbook* [Tablitsy neopredelennykh integralov. Spravochnik] (In Russian). Nauka, Moscow, 192 pp. (1986).

[7] S.G. Samko, A.A. Kilbas, O.I. Marichev, *Integrals and Derivatives of Fractional Order and Some of Their Applications* [Integraly i proizvodnye drobnogo porjadka i nekotorye ikh prilozheniya] (In Russian). Nauka i Tekhnika, Minsk, 688 pp. (1987).

[8] A.P. Prudnikov, Yu.A. Brychkov, O.I. Marichev, *Integrals and Series. Vol. 4: Direct Laplace Transforms* [English] Gordon and Breach Sci. Publ., 619 pp. (1992).

[9] A.P. Prudnikov, Yu.A. Brychkov, O.I. Marichev, *Integrals and Series. Vol. 5: Inverse Laplace Transforms* [English] Gordon and Breach Sci. Publ., Philadelphia, PA, 595 pp. (1992).

[10] S.G. Samko, A.A. Kilbas, O.I. Marichev, *Fractional Integrals and Derivatives: Theory and Applications* [Engl. Transl. from Russian Ed.]. Gordon and Breach Sci. Publ., New York, NY, 976 pp. (1993).

[11] O.I. Marichev, A.A. Kilbas, O.A. Repin, *Boundary Value Problems for Partial Differential Equations with Discontinuous Coefficients* [Kraevye zadachi dlya uravnenij v chastnykh proizvodnykh s razryjvnymi koefficientami] (In Russian). Izd. Samarskogo Gosud. Ekonomich. Univ., Samara, 275 pp. (2008).

On behalf of Editorial Board of FCAA, I like to pass to Oleg and to his family, wife Anna and son Sergej, our best wishes and congratulations.

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[12] Oleg Igorevich Marichev (On the Occasion of His 70th Birthday), *Vestn. Samar. Gos. Tekhn. Univ. Ser. Fiz.-Mat. Nauki*, Vol. 19, No 3 (2015), 407-414 (Samara State Technical University); DOI: 10.14498/vs-gtu1440.

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Generalized Fractional by Virginia S. Kiryakova. Other editions. Want to Read savingâ€¦ by Virginia S. Kiryakova. it was amazing 5.00 Â· Rating details. Â· 1 rating Â· 0 reviews. Virginia Kiryakova. Institute of Mathematics and Informatics, Bulgarian Academy of Sciences. Google Scholar Profile: <http://scholar.google.bg/citations?user=HEuWjBAAAAAJ&hl=en> Research Gate Profile: https://www.researchgate.net/profile/Virginia_Kiryakova. JT Machado, V Kiryakova, F Mainardi. Communications in nonlinear science and numerical simulation 16 (3), 1140-1153, 2011. 1157. 2011. Multiple (multiindex) Mittag-Leffler functions and relations to generalized fractional calculus. VS Kiryakova. Journal of Computational and applied Mathematics 118 (1-2), 241-259, 2000. 206. 2000. The multi-index Mittag-Leffler functions as an important class of special functions of fractional calculus. V Kiryakova.