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EDITORIAL

FCAA RELATED NEWS, EVENTS AND BOOKS (FCAA–VOLUME 20–2–2017)

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.

Started in 1998 with Volume 1, our journal has this year 2017 its jubilee Volume 20 !

1. Calendar of FC Related Events

For other FC related events in 2017, see previous Editorial Notes in Vol. 19, No 4, 5, 6 (2016) and Vol. 20, No 1 (2017). All these Editorial Notes are available online free at journal’s website.

8th International conference TMSF 2017, “Transform Methods and Special Functions” (Sofia, Bulgaria, August 27–30, 2017)

Please follow the details at

Website: <http://www.math.bas.bg/~tmsf/2017/>.

Organized and hosted by the Institute of Mathematics and Informatics – Bulgarian Academy of Sciences (IMI–BAS),

<http://math.bas.bg/index.php/en/> (founding publisher of *FCAA*),
with the kind cooperation of the University of Ruse “Angel Kanchev”,
<https://www.uni-ruse.bg/en>.

The aim of this conference is to continue the traditions of the series of TMSF conferences in Bulgaria, <http://www.math.bas.bg/~tmsf/>, and to mark some jubilee events, among which are: the **70 years of IMI–BAS**, and the **20th volume of “Fractional Calculus and Applied Analysis”** journal.

The Conference is organized under the auspices of the bilateral academic agreements between Bulgarian Academy of Sciences and Academies of neighboring Balkan countries (Serbia, Macedonia, Romania); and some

projects with National Science Fund of Bulgaria, Institutions and Universities, related to the TMSF 2017 topics.

Organizing Committee: Emilia Bazhlekova and Jordanka Paneva-Konovska (Co-Chairs), Julian Tsankov, Donka Pashkouleva, Georgi Dimkov, Nikolay Ikononov, Ivan Bazhlevkov (Local Members), Miglena Koleva (Ruse University), Djurdjica Takaci (Serbia), Biljana Jolevska-Tuneska (Macedonia), Nicoleta Breaz (Romania)

Scientific Program Committee: Virginia Kiryakova, Stepan Tersian (Co-Chairs), Blagovest Sendov, Ivan Dimovski, Nedyu Popivanov, Tsvyatko Rangelov (Bulgaria), Teodor Atanackovic, Stevan Pilipovic, Arpad Takaci, Predrag Rajkovic (Serbia), Nikola Tuneski (Macedonia), Daniel Breaz (Romania), Yuri Luchko (Germany, FCAA)

TMSF Scientific Program:

- “Fractional Calculus and Applied Analysis” Day (FCAA)
- “Geometric Function Theory and Applications” Day (GFTA)
- “Transform Methods and Special Functions” Day (TMSF),

with TMSF basic topics as:

Special Functions, Integral Transforms, Convolutional Calculus, Fractional and High Order Differential Equations, Numerical Methods, Generalized Functions, Complex Analysis, etc.

Schedule: Arrivals: 27 August (Sunday); Working days: 28-29-30 August 2017 (Monday-Wednesday); Departures: 31 August.

Venue of the conference: Institute of Mathematics and Informatics - Bulgarian Academy of Sciences, Sofia.

Accommodation: Hotels in walking distance in the area of Institute, with basic prices 30-35 EUR/ night/ single room/ 3-stars hotel. Details and offers will be given in Second announcement.

Registration fees: 100 EUR (195 BGN), by bank transfer (details will be provided) or cash at the desk - to cover: conference materials, publication of short paper, coffee breaks, welcome cocktail, conference party, sightseeing tour. Accompanying persons: 45 EUR.

Publications: Along with abstracts of the accepted talks, and some invited survey papers, the participants will have the opportunity to submit short papers (6-12 pages) to special issues of two refereed and indexed international mathematical journals. All papers will be peer-reviewed.

Timetable: Please, confirm your interest in receiving next information and possible participation by **May 10** with e-mail to: <tmsf@math.bas.bg>, and returning the **Preliminary Registration Form**.

Looking to meet you in Sofia, on behalf of Organizers,

*Virginia Kiryakova, Stepan Tersian,
Emilia Bazhlekova, Jordanka Paneva-Konovska*

**Minisymposium on Fractional Calculus and Applications,
at AMMCS 2017, <http://www.ammcs2017.wlu.ca/>
(Waterloo, Ontario, Canada 20-25 August, 2017)**

Please follow the details at Website:

<http://www.ammcs2017.wlu.ca/special-sessions/fca/>,
<http://www.ammcs2017.wlu.ca/special-sessions/>

The Minisymposium ID is: SS-FCA.

In recent years, the use of Fractional Calculus and related pseudo-differential operators in different fields of science and engineering has gained more and more momentum. Applications of Fractional Calculus can be found in Physics, Biology and Bioengineering, Geophysics, Electric and Electronic Engineering to mention a few fields. The purpose of this special session is to present examples of these applications as well as related theoretical developments from the points of view of analysis, probability theory and numerical analysis.

Please note the ID code assigned to your presentation (identical to the ID code of your accepted abstract). It is required for submitting your paper for the AMMCS-2017 Proceedings. Submission is not mandatory. All submitted papers will be refereed and only accepted papers will be published in the AMMCS-2017 Proceedings, published by Springer. If you intend to submit your paper, please go to the AMMCS-2017 Proceedings Page. Follow exactly the Author Instructions accessible from that page.

Congress Flyer: The IVth AMMCS First Announcement, at
<http://www.ammcs2017.wlu.ca/congress-flyer/>

Some deadlines:

– Deadline for submissions of abstracts (for participants requiring a visa): April 1, 2017; – Deadline for submissions of abstracts: May 1, 2017; – Decision on abstracts: May 15, 2017; – Early Bird Registration: June 1, 2017; – Deadline for author registration: July 1, 2017; – Publication of full program: July 15, 2017.

Please, feel free to forward to potentially interested colleagues. Yours,

Richard Magin (University of Illinois at Chicago, USA)

Enrico Scalas (University of Sussex, UK)

2. Reviews on New Books

Jordanka Paneva-Konovska, *From Bessel to Multi-Index Mittag-Leffler Functions*. *Enumerable Families, Series in them and Convergence*. World Scientific, London (2016), 228 pp., ISBN: 978-1-78634-088-7 (hardcover), 978-1-78634-090-0 (ebook); 978-1-78634-089-4 (ebook - Institutions Only).

Details: <http://www.worldscientific.com/worldscibooks/10.1142/q0026>.

Review on this book: The Bessel and the Mittag-Leffler functions, because of their wide use and applications, have recently various generalizations. Among them are, for example, the 2-, 3-, 4-index analogues of the Bessel functions, the hyper-Bessel functions, the 3-index analogue of the Mittag-Leffler function (the Prabhakar function) as well as the multi-index Mittag-Leffler functions with $2m$ and $3m$ indices and their particular cases (the Wright, Struve, Lommel, etc. functions) – as the latest generalizations of both Bessel and Mittag-Leffler type functions.

The topics of this book include studies on enumerable families of different classes of special functions like these, listed above. Various their properties are provided, such as estimations, asymptotic formulae, existence of generating functions, completeness, fractional differentiation and integration operators.

The main concern in the book is the convergence of series in such functions in the complex plane, and the author provides a unified approach to handle this matter. Analogues of the classical results for convergence of the power series are obtained, and the conclusion is that each of the considered series has a convergence behavior similar to that of a power series.

Namely, for a maximal simplicity, appropriate families of Bessel functions are first specified and their completeness in the space of functions, holomorphic in a given subset of the complex plane, is studied. By analogy with the Bessel functions, suitable enumerable families of the generalized Bessel and Mittag-Leffler type functions are considered, some of their properties are established, and series in these families of functions are considered in the complex plane. As necessary preliminaries, some upper estimates and asymptotic formulae have been obtained for the considered special functions, for “large” values of their indices. These results are further used to determine the domains of convergence, i.e. where the series converge and where they diverge, where the convergence is uniform and where it is not. The boundary behaviour of the series is also investigated, the convergence on the periphery and overconvergence as well, by proving theorems analogous to the classical ones for the widely used power series, namely - analogues of the classical Abel, Tauber and Fatou theorems, as

well as of the Ostrowski overconvergence theorem, and the Hadamard theorem about the gaps. To summarize the results in the book, the author shows that each of the considered series in families of special functions has a behaviour like a power series, i.e. there exists a full analogy between the basic convergence theorems for power series and those for the considered series in enumerable sets of special functions.

Another part of results is devoted to the properties of the recent generalizations of both Bessel and Mittag-Leffler type functions. Passing through the classical variants and the $2m$ -index variant of the multi-index Mittag-Leffler functions, the author introduces the $3m$ -parametric Mittag-Leffler functions. Further she gives the basic properties of this class of entire functions – the order and type, dependence on the parameters, representations in terms of the Fox and Wright functions and fractional order integrals and derivatives, as the Riemann-Liouville and generalized fractional Erdélyi-Kober operators. For illustrations, various special cases of the multi-index Mittag-Leffler functions are listed.

The interest to this kind of results is provoked by the fact that the analytical solutions of many differential and integral equations of arbitrary integer and fractional order can be written in terms of series (or integrals, or series of integrals) of Bessel, hyper-Bessel, Mittag-Leffler functions, Prabhakar functions, and of their multi-index generalizations. Briefly said, the so-called special functions of fractional calculus, among which are the considered enumerable families of functions, are now unavoidable tools for handling various mathematical models of integer or fractional order, when looking for explicit solutions.

Contents: (9 chapters)

- Preface
- Introduction
- Bessel Functions and Associated with Them
- Generating Functions of the Bessel and Associated Bessel Functions
- Convergence of Series in Bessel functions
- Bessel and Neumann Expansions
- Completeness of Systems of Bessel and Associated Bessel Functions
in Spaces of Holomorphic Functions
- Multi-Index Bessel Functions
- Mittag-Leffler Type Functions
- Latest Generalizations of Both the Bessel and Mittag-Leffler
Type Functions
- Series in Mittag-Leffler Type Functions
- Bibliography, Index

Sample Chapter(s): Introduction; Chapter 1: Bessel and Associated Functions (available at the website)

Readership: Pure and applied mathematicians, applied scientists in other natural sciences and engineering. Perfect for those interested in problems related to analytical solutions of various differential and integral equations of arbitrary order modelling real processes.

Reviewer: *Virginia Kiryakova*

Anis Kh. Gilmutdinov, Pyotr Arkh. Ushakov, Reyad El Khazali, *Fractal Elements and their Applications*. Springer, Ser. Analog Circuits and Signal Processing (2017), 252 pp.+ xviii, 161 + 8 illustr., ISBN: 978-3-319-45248-7 (hardcover), 978-3-319-45249-4 (e-book)

Details: <http://www.springer.com/us/book/9783319452487>.

Features: • Presents new passive electronic components, in which the relationship between the current and the voltage at the terminals is described by differential equations of fractional order (i.e., fractal impedance elements or “fractal elements”); • Emphasizes the theoretical understanding, hardware implementation and practical application of fractional-order dynamics; • Enables engineers with the tools of fractal geometry and fractional analysis to develop new instruments, devices and systems for signal processing.

Annotation: This book describes a new type of passive electronic components, called fractal elements, from a theoretical and practical point of view. The authors discuss in detail the physical implementation and design of fractal devices for application in fractional-order signal processing and systems. The concepts of fractals and fractal signals are explained, as well as the fundamentals of fractional calculus. Several implementations of fractional impedances are discussed, along with comparison of their performance characteristics. Details of design, schematics, fundamental techniques and implementation of RC-based fractal elements are provided.

Contents: (12 chapters)

- Modeling of Fractal Elements and Processes
- Fractal Calculus Fundamentals
- Fractal Elements
- Design and Implementation of Thin RC-EDP Films
- Schematic Realization of RC-EDP Circuits
- Design and Fabrication of RC-EDP Circuits
- Nonlinear Structure of RC-EDP Circuits
- Applications of Fractal Elements

- Modeling of RC-EDP Circuits
- Calculation of One-Dimensional RC-EDP Primary Parameter
- Numerical Methods of R-C-0-EDP Fractal Elements
- Primary Parameter Calculation of the RC-EDP Using Generalized RCG-EDP Devices
- References

3. In Memoriam

In the recent days, in Editorial office of the journal, we have received some sad news about the colleagues working in areas close to FCAA who passed away. We are publishing below the memorial notes received.

To the memory of Dr. Ali Hassan Bhrawy

It is a tragic loss and it is my sad duty to report that my talented student Ali Hassan Bhrawy, Assoc. Prof. of Mathematics at the University of Beni-Seuf, Egypt, has passed away at the age of 42. He is survived by his wife Marwa and four daughters, two of them from his Ex-wife Walaa.

What can one say about Bhrawy's professional accomplishment? Adjectives such as "profound", "vast" and "far-ranging" do not really do justice to his work, 220 published journal articles, plus another 35 articles are in refereed or invited conference proceedings and workshops participation (according to his CV, dated one day before death). The ISI web of knowledge lists 3112 citations and also lists Bhrawy as one of the best 100 highly cited researchers all over the world in his field of specialization (Numerical Analysis and Approximation Theory). The Google citation tracker finds over 4955, while 3524 Citations in Scopus.

Ali Bhrawy was born on February 11, 1975 in Egypt. He graduated from Department of Mathematics, Faculty of Science of Cairo University (Beni-Seuf Branch). He earned a bachelor's degree grade distinction with honor in 1997. He was awarded his M.Sc. and Ph.D. degrees (Under the supervision of Prof. E.H. Doha) from Cairo University in 2004 and 2007, respectively. Between 1998 and 2000 Bhrawy was a demonstrator in Department of Mathematics, Faculty of Science, Cairo University, Beni-Seuf Branch. In 2004-2007 he was an Assistant Lecturer, in 2007-2012 appointed as Assistant Professor of Numerical Analysis, in 2012-till his death, he was Associate Professor of Numerical Analysis, in Math. Department, Beni-Seuf University.

Bhrawy's main research interests are: – Numerical Analysis and Scientific Computing; – Spectral Methods and Their Applications; – Analytical and Spectral Solutions of Partial Differential Equations; – Optimal Control

and Nonlinear Dynamics; – Functional and Fractional Differential Equations; – Complex Partial Differential Equations.

He was devoted to his weekly seminars in Numerical analysis and Approximation Theory. Over the years he supervised with me and others more than 20 M.Sc. and Ph.D. students. He worked with great energy and success to build his faculty name in Numerical Analysis and Approximation Theory. Nationally he earned: – The best Ph.D. thesis of 2009 from the Egyptian Mathematical Society; – He is the highly cited researcher in Beni-Seuf University 2016. Also the Egyptian Academy of Science and Technology has awarded him two prizes in the academic year 2013-2014 appreciating his Scientific Excellency, namely: – The Mohamed Amin Lotfy Prize in Mathematics and Physics; – The state intensive prize of the Egyptian Academy of Science and Technology in basic science. Internationally, he earned: – IMACS (International Mathematics and Computer in Simulation) most successful papers award of 2009 and 2013, respectively; – He was the principal investigator and participated in more than 20 projects in different universities; – He obtained the prize of Excellency in mathematics from King Abdel-Aziz University; – Among his publications, more than 10 papers are the hottest articles and about another 10 papers are most viewed; – It is to be noted that the number of citations for his publications is 1043 in the year of 2016.

On behalf of colleagues,

Prof. Eid H. Doha,

Dept. of Mathematics, Fac. of Science, Cairo University, Egypt

To the memory of Prof. Ali Hasan Nayfeh

Ali Hasan Nayfeh was born 21 December 1933 in Palestine and died 27 March 2017 in Jordan. He received his PhD (1964) in aeronautics and astronautics from Stanford University and he was a University Distinguished Professor of engineering at Virginia Tech since 1976. He held honorary doctorates from Marine Technical University (Russia), Technical University of Munich (Germany), and Politechnika Szczecińska (Poland).

He was the Editor-in-Chief of “*Nonlinear Dynamics*”, Springer, up to his death in 2017, and “*Journal of Vibration and Control*”, Sage, up to 2014.

Prof. Ali Nayfeh received:

– The Pendray Aerospace Literature Award from the American Institute of Aeronautics and Astronautics in 1995;

– The J. P. Den Hartog Award from the American Society of Mechanical Engineers in 1997;

- The Frank J. Maher Award for Excellence in Engineering Education in 1997;
- The Lyapunov Award from the American Society of Mechanical Engineers in 2005;
- The Virginia Academy of Science’s Life Achievement in Science Award in 2005;
- The Gold Medal of Honor from the Academy of Trans-Disciplinary Learning and Advanced Studies in 2007;
- The Thomas K. Caughey Dynamics Award in 2008;
- The Benjamin Franklin Medal in mechanical engineering in 2014.

Ali Nayfeh had the vision of supporting Fractional Calculus since 2002 and we can mention the following special issues of journals:

- “Fractional Calculus and Its Applications”, *Nonlinear Dynamics*, Vol. 29, No 1-4, pp. 1-2, July 2002 (Guest Editor: J. Tenreiro Machado);
- “Fractional Derivatives and Their Applications”, *Nonlinear Dynamics*, Vol. 38, No 1-4, pp. 1-2, Dec. 2004 (Guest Editors: Om Prakash Agrawal, J. Tenreiro Machado, Jocelyn Sabatier);
- “New Trends in Fractional Dynamics”, *Journal of Vibration and Control*, Vol. 20, No 7, pp. 963, 2014 (Guest Editors: José A Tenreiro Machado, Dumitru Baleanu, Wen Chen and Jocelyn Sabatier);
- “Fractional Dynamics and its Applications”, *Nonlinear Dynamics*, Vol. 80, No 4, pp. 1661-1664, 2015 (Guest Editors: Yong Zhou, Clara Ionescu, J. A. Tenreiro Machado).

Started during his role as Editor-in-Chief and concluded recently, we can also mention:

- “Advances in Fractional Dynamics and Control”, *Journal of Vibration and Control*, Vol. 22, No 8, pp. 1969-2147, 2016 (Guest Editors: Clara Ionescu, Yong Zhou, J. A. Tenreiro Machado);
- “Challenges in Fractional Dynamics and Control Theory”, *Journal of Vibration and Control*, Vol. 22, No 9, pp. 2151-2310, 2016 (Guest Editors: Dumitru Baleanu, Riccardo Caponetto, J. A. Tenreiro Machado).

The research community working in nonlinear dynamics and in fractional calculus expresses his deep sorrow for the lost of a great man, scientist and leader.

J. Tenreiro Machado,

Dept. Electr. Engn., Inst. of Engn., Polytechnic of Porto, Portugal

To the memory of Prof. Yury Rossikhin

On March 29, 2017 the fractional calculus community lost Professor Yury A. Rossikhin, one of the prominent Russian researchers in the field of Applied Mathematics and Mechanics.

Professor Rossikhin was born on March 14, 1944 in Voronezh, Soviet Union. He graduated from the Faculty of Mathematics and Mechanics, Voronezh State University in 1966. He received PhD in Physics of Solids from Voronezh Polytechnic Institute in 1970 and Doctor of Science Degree in Mechanics of Solids from Chuvash State University in 1991.

He worked in several Russian Universities, but since 1979 till his last day was affiliated with Voronezh State University of Architecture and Civil Engineering: first as an Associate Professor, from 1992 as a Full Professor and from 1997 as a Distinguished Professor. Professor Rossikhin had encyclopedical lore in Wave Dynamics of Solids, his research interests were diversified and covered all aspects of wave propagation and vibrations of solids and structures. He was a principal investigator of numerous research projects in Russia and abroad. In 1997 he was awarded a rank of a Distinguished Researcher of the Russian Academy of Science. He was a member of the Acoustical Society of America, the New York Academy of Science, ASME International, EUROMECH and GAMM. He served as an expert of INTAS, the Science and Technology Foundation of Japan, and Russian Academy of Science. He was a member of scientific councils of different international forums and a member of editorial boards of several international journals, among them: *Applied Mechanics Reviews*, during 1996-2009.

Professor Rossikhin published more than 400 papers in world-wide renown journals, periodicals, book chapters and conference proceedings, more than one third of them was in the field of Fractional Calculus application to viscoelasticity, vibrations and wave propagation. His route in this beautiful and faery land of Fractional Calculus he described himself in the Retrospective paper published in 2010 in *Applied Mechanics Reviews* [24], wherein it was noted that he was dealing with fractional order operators within two periods: 1968–1973 and 1996-2017. The first period was rather remarkable for two reasons: firstly, he was working on his PhD thesis [2] which was one of the first dissertations in applications of fractional models in viscoelasticity, and secondly, six pioneering papers [1, 3-7] were published in those times, which now could be considered as classical ones. Thus, PhD student Yury Rossikhin proposed in 1970 the method of the direct solution of differential equations of fractional order oscillators, and suggested the approach for studying the propagation of acoustic and stress

waves in hereditary elastic media. Nowadays, Rossikhin's approaches are widely used by many researchers in the field.

In 1996 Prof. Rossikhin went back to the applications of Fractional Calculus in Mechanics of Solids and Structures, and a lot of problems resulting in linear and nonlinear fractional order differential and integro-differential equations have been solved starting from 1996 (the key result could be found in the enclosed selected list of his papers [8-38]). The main achievements were reported in several state-of-the-art papers [10,16,24,25,29]. Utilizing the generalized Hertzian contact law and algebra of dimensionless fractional Rabotnov operators, which was developed recently by Prof. Rossikhin [29,31,32], the theory of impact of viscoelastic bodies has been constructed during last five years by Prof. Rossikhin and his research team [27,29,30,34,36,37].

The last review paper completed by him was submitted to *Fractional Calculus and Applied Analysis* on March 24, 2017...

Bright memory to Professor Yury Rossikhin, great scientist, profound and patient teacher, loving spouse and father, will be enthroned in the hearts of his colleagues, friends, followers, pupils and relatives.

Chronological list of Professor Rossikhin selected key publications in the field of Fractional Calculus applications in Mechanics

First period 1968-1973

1. S. I. Meshkov, Yu. A. Rossikhin, Propagation of acoustic waves in a hereditary elastic medium. *J. of Applied Mechanics and Technical Physics* **9**(5), (1968), 589–592.
2. Yu.A. Rossikhin, *Dynamic Problems of Linear Viscoelasticity Connected with the Investigation of Retardation and Relaxation Spectra*. PhD Dissertation, Voronezh Polytechnic Institute, Voronezh (1970) [in Russian].
3. V.M. Zelenev, S.I. Meshkov, Yu.A. Rossikhin, Damped vibrations of hereditary elastic systems with weakly singular kernels. *J. of Applied Mechanics and Technical Physics* **11**(2), (1970), 290–293.
4. V.M. Zelenev, S.I. Meshkov, Yu.A. Rossikhin, Effect of the ϑ -function singularity parameter on the damped vibrations of elastic systems with an aftereffect. *Mechanics of Solids* **5**(3), (1970), 92–94.
5. S.I. Meshkov, G.N. Pachevskaja, V.S. Postnikov, Yu.A. Rossikhin, Integral representation of ϑ -functions and their application to problems in linear viscoelasticity. *Intern. J. of Engineering Science* **9** (1971), 387–398.
6. V.L. Gonsovskii, S.I. Meshkov, Yu.A. Rossikhin, Impact of a viscoelastic rod onto a rigid target. *Soviet Applied Mechanics* **8**(10), (1972), 1109–1113.

7. V.L. Gonsovski, Yu.A. Rossikhin, Stress waves in a viscoelastic medium with a singular hereditary kernel. *J. of Applied Mechanics and Technical Physics* **14**(4), (1973), 595–597.

Second period 1997–2017

8. Yu.A. Rossikhin, M.V. Shitikova, Application of fractional derivatives to the analysis of damped vibrations of viscoelastic single mass system. *Acta Mechanica* **120** (1997), 109–125.

9. Yu.A. Rossikhin, M.V. Shitikova, Application of fractional operators to the analysis of damped vibrations of viscoelastic single-mass systems. *J. of Sound and Vibration* **199**(4), (1997), 567–586.

10. Yu.A. Rossikhin, M.V. Shitikova, Applications of fractional calculus to dynamic problems of linear and nonlinear hereditary mechanics of solids. *Applied Mechanics Reviews* **50**(1), (1997), 15–67.

11. Yu.A. Rossikhin, M.V. Shitikova, Application of fractional calculus for analysis of nonlinear damped vibrations of suspension bridges. *ASCE J. of Engineering Mechanics* **124**(9), (1998), 1029–1034.

12. Yu.A. Rossikhin, M.V. Shitikova, Analysis of nonlinear vibrations of a two-degree-of-freedom mechanical system with damping modelled by a fractional derivative. *J. of Engineering Mathematics* **37** (2000), 343–362.

13. Yu.A. Rossikhin, M.V. Shitikova, Analysis of rheological equations involving more than one fractional parameters by the use of the simplest mechanical systems based on these equations. *Mechanics of Time-Dependent Materials* **5** (2001), 131–175.

14. Yu.A. Rossikhin, M.V. Shitikova, Analysis of dynamic behaviour of viscoelastic rods whose rheological models contain fractional derivatives of two different orders. *ZAMM* **81**(6), (2001), 363–376.

15. Yu.A. Rossikhin, M.V. Shitikova, A new method for solving dynamic problems of fractional derivative viscoelasticity. *Intern. J. of Engineering Science* **39**(2), (2001), 149–176.

16. Yu.A. Rossikhin, M.V. Shitikova, Analysis of the viscoelastic rod dynamics via models involving fractional derivatives or operators of two different orders. *The Shock and Vibration Digest* **36**(1), (2004), 3–26.

17. Yu.A. Rossikhin, M.V. Shitikova, Analysis of free non-linear vibrations of a viscoelastic plate under the conditions of different internal resonances. *Intern. J. of Non-Linear Mechanics* **41**(2), (2006), 313–325.

18. Yu.A. Rossikhin, M.V. Shitikova, Analysis of damped vibrations of linear viscoelastic plates with damping modeled with fractional derivatives. *Signal Processing* **86**(10), (2006), 2703–2711.

19. Yu.A. Rossikhin, M.V. Shitikova, Comparative analysis of viscoelastic models involving fractional derivatives of different orders. *Fractional Calculus and Applied Analysis* **10**(2), (2007), 111–121.

20. Yu.A. Rossikhin, M.V. Shitikova, Fractional-derivative viscoelastic model of the shock interaction of a rigid body with a plate. *J. of Engineering Mathematics* **60** (2008), 101–113.
21. Yu.A. Rossikhin, M.V. Shitikova, Free damped vibrations of a viscoelastic oscillator based on Rabotnovs model. *Mechanics of Time-Dependent Materials* **12**(2), (2008), 129–149.
22. Yu.A. Rossikhin, M.V. Shitikova, T.A. Shcheglova, Forced vibrations of a nonlinear oscillator with weak fractional damping. *J. of Mechanics of Materials and Structures* **4**(9), (2009), 1619–1636.
23. Yu.A. Rossikhin, M.V. Shitikova, New approach for the analysis of damped vibrations of fractional oscillators. *Shock and Vibration* **16**(4), (2009), 365–387.
24. Yu.A. Rossikhin, Reflections on two parallel ways in the progress of fractional calculus in mechanics of solids. *Applied Mechanics Reviews* **63**(1), (2010), Article ID 010701.
25. Yu.A. Rossikhin, M.V. Shitikova, Application of fractional calculus for dynamic problems of solid mechanics: Novel trends and recent results. *Applied Mechanics Reviews* **63**(1), (2010), Article ID 010801.
26. Yu.A. Rossikhin, M.V. Shitikova, Shcheglova T.A. Analysis of free vibrations of a viscoelastic oscillator via the models involving several fractional parameters and relaxation/retardation times. *Computers and Mathematics with Applications* **59**(5), (2010), 1727–1744.
27. Yu.A. Rossikhin, M.V. Shitikova, The analysis of the impact response of a thin plate via fractional derivative standard linear solid model. *J. of Sound and Vibration* **330** (2011), 1985–2003.
28. Yu.A. Rossikhin, M.V. Shitikova, On fallacies in the decision between the Caputo and Riemann-Liouville fractional derivatives for the analysis of the dynamic response of a nonlinear viscoelastic oscillator. *Mechanics Research Commun.* **45** (2012), 22–27.
29. Yu.A. Rossikhin, M.V. Shitikova, Two approaches for studying the impact response of viscoelastic engineering systems: An overview. *Computers and Mathematics with Applications* **66** (2013), 755–773.
30. Yu.A. Rossikhin, M.V. Shitikova, Analysis of two colliding fractionally damped spherical shells in modelling blunt human head impacts. *Central European J. of Physics* **11**(6), (2013), 760–778.
31. Yu.A. Rossikhin, M.V. Shitikova, Centennial jubilee of Academician Rabotnov and contemporary handling of his fractional operator. *Fractional Calculus and Applied Analysis* **17**(3), (2014), 674–683; DOI: 10.2478/s13540-014-0192-2.
32. Yu.A. Rossikhin, M.V. Shitikova, Features of fractional operators involving fractional derivatives and their applications to the problems of

mechanics of solids. Chapter 8 in: *Fractional Calculus: Applications* (R.A. Zeid Daou and X. Moreau, Eds.), NOVA Publ., USA, 2015, 165–226.

33. Yu.A. Rossikhin, M.V. Shitikova, Nonlinear dynamic response of a fractionally damped cylindrical shell with a three-to-one internal resonance. *Applied Mathematics and Computation*, **257** (2015), 498–525.

34. I.I. Popov, Yu.A. Rossikhin, M.V. Shitikova, T.-P. Chang, Impact response of a viscoelastic beam considering the changes of its microstructure in the contact domain. *Mechanics of Time-Dependent Materials* **19** (2015), 455–481.

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