EDITORIAL

FCAA SPECIAL 2020 CONFERENCES’ ISSUE
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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, please follow each journal’s issue, at https://www.degruyter.com/view/j/fca.

1. Special Conferences’ Issue – Editorial Note

In 2020 some international conferences on Fractional Calculus (FC) and related topics have been held in a hybrid way - mainly online via popular electronic platforms and by physical presence with reduced number of local participants. Despite of the pandemic situation, the FC community showed as usual great activities.

In this special issue, we collected some of the plenary presentations and invited selected papers from the three international conferences (in order of their time table): – “WFC 2020: Workshop on Fractional Calculus”, Ghent University, Belgium, 9–10 June 2020; – “FCTFA 2020: Topics in Fractional Calculus and Time-frequency Analysis”, University of Novi Sad, Serbia, 16–17 June 2020; – “NSFDEA 2020: Numerical Solution of Fractional Differential Equations and Applications”, Sozopol, Bulgaria, 8–11 September 2020. We remind some short information on these events.

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.

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pp. 1561–1569, DOI: 10.1515/fca-2020-0078
The group “Ghent 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.

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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. See the Memorial Note in a next section.

The event was 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.

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NSFDE&A’20: International Workshop
“Numerical Solution of Fractional Differential Equations and Applications”, Sozopol, Bulgaria, 7–12 September 2020
The Workshop was planned to take place on June 8-13, 2020, but postponed as a hybrid model one for September 2020. It was organized by the Institute of Information and Communication Technologies, Bulgarian Academy of Sciences, http://www.iict.bas.bg/EN/index.html, to follow the success of the Special Session “Fractional Diffusion Problems: Numerical Methods, Algorithms and Applications” organized within the 12th International Conference on Large-Scale Scientific Computations (LSSC’19), June 10-14, 2019. The event took place (with reduced number of local participants) in a picturesque town of Sozopol on the Black Sea coast, and the rest participants attended it ZOOM platform.

Details can be found at:
http://parallel.bas.bg/Conferences/NSFDE&A_2020-Sozopol.pdf.

The program can be found at:
http://parallel.bas.bg/Conferences/NSFDE&A2020/NSFDE&A_Sept_2020.pdf,

and extended abstracts (Proceedings) are at:
http://parallel.bas.bg/Conferences/NSFDE&A2020/NSFDE&A’20.pdf.

2. New Books

Rudolf Gorenflo, Anatoly A. Kilbas, Francesco Mainardi, Sergei Rogosin, Mittag-Leffler Functions, Related Topics and Applications. Second Edition, Springer-Verlag (2020). 540 pp., XVI, 22 illustr., p-ISBN 978-3-662-61549-2, e-ISBN 978-3-662-61550-8; DOI: 10.1007/978-3-662-61550-8.

Details: https://link.springer.com/book/10.1007/978-3-662-61550-8.

Annotation: The 2nd edition of this book (1st edition: 2014) is essentially an extended version of the 1st and provides a very sound overview of the most important special functions of Fractional Calculus. It has been updated with material from many recent papers and includes several surveys of important results known before the publication of the 1st edition, but not covered there.

As a result of researchers’ and scientists’ increasing interest in pure as well as applied mathematics in non-conventional models, particularly those using fractional calculus, Mittag-Leffler functions have caught the interest of the scientific community. Focusing on the theory of Mittag-Leffler functions, this volume offers a self-contained, comprehensive treatment, ranging from rather elementary matters to the latest research results. In addition to the theory, the authors devote some sections of the work to applications, treating various situations and processes in viscoelasticity, physics, hydrodynamics, diffusion and wave phenomena, as well as stochastics. In particular, the Mittag-Leffler functions make it possible to describe phenomena...
in processes that progress or decay too slowly to be represented by classical functions like the exponential function and related special functions.

The book is intended for a broad audience, comprising graduate students, university instructors and scientists in the field of pure and applied mathematics, as well as researchers in applied sciences like mathematical physics, theoretical chemistry, bio-mathematics, control theory and several other related areas.

The book consists of Prefaces (to 1st and 2nd editions), 10 chapters and 6 appendices, References and Index, see Table of Contents:

– Front Matter; – 1. Introduction; – 2. Historical Overview of the Mittag-Leffler Functions; – 3. The Classical Mittag-Leffler Function; – 4. The Two-Parametric Mittag-Leffler Function; – 5. Mittag-Leffler Functions with Three Parameters; – 6. Multi-index and Multi-variable Mittag-Leffler Functions; – 7. The Classical Wright Function; – 8. Applications to Fractional Order Equations; – 9. Applications to Deterministic Models; – 10. Applications to Stochastic Models; – Appendix A: The Eulerian Functions; – Appendix B: The Basics of Entire Functions; – Appendix C: Integral Transforms; – Appendix D: The Mellin–Barnes Integral; – Appendix E: Elements of Fractional Calculus; – Appendix F: Higher Transcendental Functions.

3. In Memory to Arpad Takači (1951-2019)

The international conference FCTFA 2020: “Topics in Fractional Calculus and Time-frequency Analysis” in University of Novi Sad, Serbia, 16–17 June 2020 (see Section 1) was dedicated to the memory of 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.

Arpad was born in Novi Sad on 10 November 1951. He met his wife Djurdica when he was in the second year of high school. It was a great love crowned by marriage 45 years ago as well as by the birth of their son Alexander. Arpad Takači graduated in Novi Sad in 1974, received his Master’s Degree in Belgrade in 1978 and PhD in Novi Sad in 1982 under the guidance of Academician Bogoljub Stanković, then became Full Professor since 1992. He was Director of the Institute of Mathematics, University of Novi Sad, in 1985-1989 and 1991-1993.

In 1979 he spent one month studying in Kiel with Professor Joseph Wloka, in 1985 he stayed one month in London and Leicester studying with Professor Brian Fisher, and in 1986 in Bordeaux and Paris with Jean Fransoa Colombeau. He was Fulbright Scholar in 1992 at the Virginia Commonwealth University, Richmond, USA, where he collaborated with Professor John Schmelk.
His mathematical interests were in generalized functions, integral transformations, operational calculus, wavelet theory and their applications to PDEs. He is author or co-author of about 70 scientific papers, 2 monographs and 15 student textbooks. His achievements since 1980 are reflected in a dozen of papers published in that period and summarized in the book by B. Stankovic, S. Pilipovic, A. Takaci, "Asymptotic Behaviour and Stieltjes Transformation of Distributions", Teubner-Texte zur Mathematik 11, Leipzig, 1990. The book is a survey on many definitions of the asymptotic behaviour of distributions, their comparison, new results, and application to different problems. Later, he moved on to Time-Frequency Analysis and Operational Calculus. With Djurdica Takaci, he also wrote papers on didactic methodology. Arpad had a very rich scientific and teaching career. He taught courses in Real Analysis, Multivariate Analysis, Complex Analysis, Functional Analysis, Ordinary Differential Equations, Partial Differential Equations, Mathematical Modeling and Simulation.

Arpad Takaci was selfless and very popular. He was a person with an extremely mild nature, always in a friendly mood towards all of us. He was never sharp in discussions. If he was angry, he was dignified. Arpad, as a friend, was a quick-witted personality. He was very loyal and full of love for his family. I believe that to all of us at Novi Sad University, as well as in the mathematical community, the most important thing is the great friendship we had with him. He was always calm, in a good-natured, well-meaning mood. 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.
He will surely be missed by his loved ones, his wife, son, grandchildren and sister the most, but also by all of us to whom he was such a close and loyal friend.

Stevan Pilipović, on behalf of colleagues in Novi Sad University, Serbia

4. In Memory to Richard Allen Askey (1933-2019)

Richard (Dick) Askey was born on June 4, 1933 in St. Louis, Missouri and died on October 9, 2019. In 1955 he earned a B.A. from Washington University in St. Louis, and in 1956 an M.A. from Harvard. He earned a Ph.D. from Princeton in 1961 and accepted a two year Instructorship at the University of Chicago as part of the Calderon–Zygmund group. He accepted a position at the university of Wisconsin in 1963 and spent the rest of his career at the university of Wisconsin in Madison. He retired in 2003.

Askey started working on harmonic analysis problems involving orthogonal polynomials since he was an undergraduate. He later realized that some of the inequalities he needed in his work were not known, so gradually he started moving into special functions and revolutionized the subject.

In the 1960’s and early 1970’s the subject of special functions had many people interested in formal manipulations and uninteresting generalizations consisting of adding more parameters or variable. The subject was indeed
dying; or stagnant, at best. Askey brought in a whole new class of interesting and exciting problems. The Askey-Gasper inequality was later used to solve the Bieberbach conjecture and this was a major event. George Andrews influenced Askey to get interested in $q$-series and the result was spectacular and led to a much better understanding of the theory of basic hypergeometric functions. Many new and highly nontrivial integrals were evaluated. Among them are the Wilson integral, the Askey-Wilson integral, the Nassrallah–Rahman integral, the Askey–Roy integral, and the Askey $q$-beta integral. New orthogonal polynomials were found, the $q$-Hermite and $q$-ultraspherical polynomials, the Al-Salam–Chihara polynomials, and the general Askey–Wilson and Racah polynomials, to name a few. James Wilson wrote his doctoral dissertation under Askey’s supervision. The thesis introduced the Wilson polynomials.

The Selberg integral is

$$
\int_{[0,1]^n} \prod_{s=1}^n t_s^{\alpha - 1}(1 - t_s)^{\beta - 1} \prod_{1 \leq j < k \leq n} |t_j - t_k|^{2\gamma} dt_1 \cdots dt_n =
\prod_{j=0}^{n-1} \frac{\Gamma(\alpha + j\gamma)\Gamma(\beta + j\gamma)\Gamma(1 + (j + 1)\gamma)}{\Gamma(\alpha + \beta + (n + j - 1)\gamma)\Gamma(1 + \gamma)},
$$

is the $n$-dimensional version of the beta integral. Dick recognized that the importance of this integral and that it is the key to the development of a deep theory of multivariate special functions and orthogonal polynomials. He also formulated $q$-analogues of this and related integrals. Askey also promoted the work of I.G. Macdonald and others on root systems and the last forty years saw great progress in this area spearheaded by Dick’s tireless promotion and encouragement. This eventually led to the theory of Macdonald polynomials and Koornwinder polynomials.

Dick collaborated with many mathematicians and had several papers with George Gasper, Mourad Ismail, and Stephen Wainger. He has strong influence on a large number of mathematicians, many of which we cannot list here for lack of space, although we should mention Mizan Rahman, Ranjan Roy, Paul Nevai, Charles Dunkl, Herman Bevink, Kevin Kadell, Jacob Christiansen, Natig Atakishiyev, Sergei Suslov.

Tom Koornwinder was Askey’s student when Dick visited Amsterdam. Although Dick was not the official supervisor, he suggested to Tom to prove the addition theorem for Jacobi polynomials, and the result was a major event. Dennis Stanton and Shaun Cooper were also students of Askey. Dennis is a major figure in algebraic combinatorics.

Dick was a leading mathematician of his generation. Among the many honors bestowed on him are: Guggenheim Fellowship (1969–1970); invited
speaker at the International Congress of Mathematicians (1983); Vice President of the American Mathematical Society or AMS (1986–1987); Honorary Fellow of the Indian Academy of Sciences (1988); Fellow of the American Academy of Arts and Sciences (1993); Member of the National Academy of Sciences (1999); Fellow of the Society for Industrial and Applied Mathematics (2009); and Fellow of the AMS (2012). Dick received an honorary doctorate from SASTRA University in Kumbakonam, India (2012), and a Distinguished Mathematics Educator Award from the Wisconsin Mathematics Council (2013). Dick won a Lifetime Achievement Award at the International Symposium on Orthogonal Polynomials, Special Functions and Applications in Hagenberg, Austria on July 24, 2019.

Dick was an author or coauthor for over 180 research articles; we mention two that had a profound influence. An inequality in his 1976 paper coauthored with George Gasper, was used by Louis de Branges to prove the Bieberbach conjecture in 1985. In a 1985 AMS Memoir, Dick and his former Ph.D. student James Wilson developed the Askey–Wilson polynomials.

Dick wrote two books, and he edited four more. His 1975 book “Orthogonal Polynomials and Special Functions” focused on the classical orthogonal polynomials, related positivity questions, and inequalities. His 1999 book “Special Functions”, coauthored with George Andrews and Ranjan Roy, has become the standard text on the subject.

Askey also lent his considerable expertise to other projects that produced reference materials on special functions. For example, he served as an Associate Editor and a contributor of the National Institute of Standards and Technology’s Digital Library of Mathematical Functions (DLMF). The DLMF is the 21st century successor to the classic Abramowitz and Stegun “Handbook of Mathematical Functions” published in 1964. Dick was also interested in updating the Bateman Manuscript Project. The result is the Askey-Bateman Project of Encyclopedia of Special Functions (edited by Mourad Ismail, Walter Van Assche), published by Cambridge University Press. Volumes 1 and 2 just appeared and they cover univariate/multivariate orthogonal polynomials, as well as many multivariate special functions.

The work of Ramanujan greatly influenced Dick’s research. He was never tired of bringing to the world’s attention the genius of the mathematician Srinivasa Ramanujan (1887–1920). In 1983 Dick commissioned the sculptor Paul Granlund to create a bronze bust of Ramanujan and Dick raised funds to cover the expenses. Four copies were originally made, one of which is now in London at the headquarters of the Royal Society.
Dick also had interest in history of mathematics and in mathematics education. He dedicated the last 15 years of his life to improve the teaching of mathematics at US schools.

Dick is survived by his wife of 61 years, Elizabeth Hill Askey; his son, James R. Zurlo (Kathryn Zurlo); daughter, Suzanne E. Askey (David Foss); his siblings, Ruth Gilmore, Carol Wisler, and Phil Askey; grandchildren Rebecca Zurlo, Ben Hinkel and Sarah Askey-Foss, and great-granddaughter Aisa Hinkel.

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