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EDITORIAL

ANNIVERSARY OF PROF. S.G. SAMKO, FC EVENTS (FCAA–VOLUME 24–2–2021)

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. Professor Stefan Samko – 80th Jubilee

The FCAA Honorary Editor, Prof. Stefan Samko was born on March 28, 1941 in Rostov-on-Don in a family of university professors Grigory Samko and Valentina Samko.

In 1958-1964 Stefan Samko is a student of the Physics and Mathematics Faculty of Rostov State University (now it is Southern Federal University, <https://sfedu.ru/>). It was a time of intensive development of science and education at Rostov State University, and the Rostov mathematical school was strongly influenced by the research of Professor F.D. Gakhov, who, in particular, is known for solving the Riemann boundary value problem. In 1964, Stefan Samko entered the postgraduate study (known as aspirantura) of the same university at the scientific school of Professor Gakhov in the field of boundary value problems and singular integral equations.

Stefan Samko’s PhD thesis was devoted to the study of the solvability of some integral equations of the first kind, such as the generalized Abel integral equation, which includes one-sided forms of fractional integration. He managed to reduce such equations to weighted singular integral equations. This raises the problem of describing the functions that arise as potentials

with a certain density. Investigations of the problems mentioned above lead Stefan Samko to fractional calculus (FC), starting with one-dimensional theory and then moving on to multidimensional integro-differentiation.

His interest in Sobolev-type spaces of fractional smoothness, which naturally arise in multidimensional FC, led him to contacts with P.I. Lizorkin from the Steklov Mathematical Institute, who essentially influenced the further scientific interests of Professor Samko. Stefan Samko took an active part in the well-known seminar at the Steklov Institute, led by Academician S.M. Nikolsky, and after a while he defended a second scientific degree (Doctor of Science) in this institution. Stefan Samko's Doctor of Science dissertation was devoted to the development of the so-called apparatus of hypersingular integrals.

His impact in the field of one-dimensional and multidimensional FC is reflected in his monograph S. Samko, "*Hypersingular Integrals and Their Generalizations*" (2001), and in the encyclopedic type book "*Fractional Integrals and Derivatives*", written together with Professors O.I. Marichev and A.A. Kilbas (1993). This encyclopedic book is really amazing for it contains almost all types and constructions of FC known from the time of Euler and Liouville and up to date information, along with a deep analysis of the history of the development and stages of the theory.

Without any reservations Stefan Samko made himself one of the top leading scientists in the world in the field of FC and applications. He was Chairman of the International Program Committee of the 1st IFAC Workshop on Fractional Differentiation and its Applications (FDA-04), Bordeaux, France, July 19–21, 2004, and Honorable Chairman of the International Program Committee of the 2nd IFAC Workshop on Fractional Differentiation and its Applications, Porto, Portugal, 19–21 July 2006.

Stefan Samko is known to collaborate with many people worldwide on different subjects exploring new areas. He is also a good friend who can carry friendship through life, and the research tandem N. Karapetiants - S. Samko showed an example of a lifelong sincere friendship and fruitful scientific work in the field of singular integral equations with Carleman shift and later with a general approach to equations with the so-called involutive operator. A part of their joint work released in the book N. Karapetiants, S. Samko, "*Equations with Involutive Operators*" (2001).

Let us mention also short but important collaboration of Stefan Samko with Professor Bertram Ross, while S. Samko was a Fulbright Professor at the University of New Haven, USA. One of the breakthrough results in FC at this time, obtained together with Professors E.-R. Love and B. Ross, was analogue of the Weierstrass example: their constructed example of a function having at each point all derivatives of order less than one, but

nowhere having a first derivative. Also, S. Samko and B. Ross introduced and studied fractional integrals of Riemann-Liouville type with variable order, that may be considered as the first steps of Professor Samko toward the major for the last two and half decades for him area of research known as variable exponent analysis.

Stefan Samko was one of the pioneers in the field of variable exponent analysis; he and his followers and students managed to obtain a number of important results in this area. This period of his tenure is already connected with his work as Professor at the University of Algarve, Portugal. For instance, he proved Sobolev theorem in variable exponent Lebesgue spaces (1998) and showed the density of smooth functions in Sobolev spaces with variable exponent (1999).

His interests in this modern field of study may be described as Operators of Harmonic Analysis in various general spaces of functions with non-standard growth. These include, but not bounded to the study of variable exponent Lebesgue, Hölder, Sobolev spaces, Lorentz spaces, Orlich, Morrey type and Campanato spaces, Herz spaces, and many others, as well as Singular Integrals and Singular Integral Equations in such spaces, Riesz and Bessel potentials, Maximal and Fractional Operators, other classical operators of harmonic analysis. An essential part of his recent research in the field of nonstandard spaces and integral operators appeared in 2016 in the two-volume monograph written by S. Samko together with V. Kokilashvili, A. Meskhi, and H. Rafeiro, “*Integral Operators in Non-Standard Function Spaces, Volume 1: Variable Exponent Lebesgue and Amalgam Spaces*” and “*Integral Operators in Non-Standard Function Spaces, Volume 2: Variable Exponent Hölder, Morrey–Campanato and Grand Spaces*”.

Stefan Samko’s scientific interests are very broad, and he is constantly discovering new areas of research. His recent works have also been devoted to the theory of functions and operators in complex analysis, while his general encyclopedic knowledge and skills always allow him to consider a problem in a new perspective and find non-standard methods and solutions.

Stefan Samko is known as a brilliant teacher. He developed and taught several major courses while working at the Rostov State University and then at the University of Algarve, Portugal. One of the authors of this note had the good fortune of listening to Professor Samko’s lectures and can evidence that Samko’s lectures were always extremely exciting for students, the material was presented with ease, but at the same time with exceptional mathematical accuracy of formulation and proofs. Stefan Samko brought up many students and followers and created a scientific school on a global scale. He is a scientific adviser of 21 defended doctoral theses (Ph.D) and 1 Doctor of Science (second degree) theses,

among them: Boris Rubin, Vladimir Nogin, Alexandre Skorikov, Salaudin Umarkhadzhiev, Alexandre Guinzbourg, Khamzat Murdaev, Boris Vakulov, Anatolii Chuvenkov, Pavel Pavlov, Galina Emgusheva, Galina Kostetskya, Taus Khamidova, Mahmadiar Yakhshiboev, Esmira Alisultaniva, Anna Abramyan, Zarema Mussalaeva, Alexey Karapetyants, Elena Urnyheva, Alexandre Almeida, Rogério Cardoso, Humberto Rafeiro; and 24 descendants. His students are now working in various countries worldwide and Stefan Samko continues to collaborate and/or to stay in contact with them, always sharing knowledge and his invaluable experience. See details at <https://www.mathgenealogy.org/id.php?id=106361&fChrono=1>.

Stefan Samko was also involved in organizational and administrative work for a significant part of his career. In 1979 - 1981 he was the Dean of the Faculty of Mechanics and Mathematics at Rostov State University; in 1989-1998, Head of the Department of Differential and Integral Equations at the same University; 1980 - 2001, Chairman of the Academic Council for the defense of dissertations at Rostov State University. He continued his administrative career at the University of Algarve, where in 2003-2005 he was the President of Scientific Council of the Mathematics Department.

Short list of highlights: Stefan Samko is author of about 300 research papers and 5 monographs (as above mentioned); since 1978 he is organizing conferences and sessions of conferences in Russia (SU), USA, Japan, France, Italy, Turkey, UK, Portugal and Brazil; he has travelled a lot, participating as invited speaker in many conferences worldwide; Stefan Samko is a member of Editorial Boards of 13 Scientific international Journals; he was a coordinator of several major Russian and European grants, including INTAS project which united four teams from Finland, Portugal, Georgia, Azerbaijan. He is a member of *Editorial Board* of the journal “*Fractional Calculus and Applied Analysis*” since its beginning in 1998, currently a Honorary editor.

Lists of papers and monographs along with some other CV-type information are available at some journals’ issues dedicated to his earlier jubilees, and links there, as in: “*Fract. Calc. Appl. Anal.*”, Vol. 14, No 2 (2011); “*Operators Theory: Advances and Applications*“, Vol. 229 (2013), 1–48; “*Fract. Calc. Appl. Anal.*”, Vol. 19, No 3 (2016), 575–579; <https://www.degruyter.com/document/doi/10.1515/fca-2016-0031/html>; in Wikipedia, https://en.wikipedia.org/wiki/Stefan_Grigorievich_Samko.

A conference dedicated to the anniversary of Professor Samko is planned for August, 23-26, 2021 (OTHA-2021) in the city Rostov-on-Don in Southern Federal University, the alma-mater of Professor Stefan Samko. The conference page is <http://otha.sfedu.ru/conf2021/>, see details as below.

On the occasion of Stefan Samko's 80th jubilee on behalf of all colleagues and fiends, we are proud and happy to wish him many further brilliant achievements in the Maths, good health and wellbeing, and all the best in his endeavors!

Alexey Karapetyants, Southern Federal University, Rostov-on-Don,
Virginia Kiryakova, for Editorial Board of "*Fract. Calc. Appl. Anal.*"

2. Coming Events Related to FCAA Topics

OTHA-2021, 10th Tenth International Conference "Modern Methods, Problems and Applications of Operator Theory and Harmonic Analysis", Rostov-on-Don, Russia, 23-26 August 2021

Details at: <http://otha.sfedu.ru/conf2021/>.

The conference is dedicated to the 80th anniversary of Professor Stefan G. Samko (Russia & Portugal).

Deadline for registration and abstracts: August 1, 2021. The organizers expect to hold this conference in offline format or at least in a mixed (hybrid) format.

AMADE-2021, 10th International Workshop "Analytical Methods of Analysis and Differential Equations", Minsk, Belarus, 13-17 September 2021

Details at: <http://amade.bsu.by/>, <http://amade.bsu.by/tenth.html>.

First Announcement, at: http://amade.bsu.by/AMADE21_1en.pdf.

Special session dedicated to the centenary of BSU, as well as to 115th anniversary of academician F.D. Gakhov (1906-1980) and to the memory of professor A.A. Kilbas (1948-2010), the leading expert in Fractional Calculus, will be carried out within the framework of the seminar.

Deadlines: 1 May, 2021, for one-page abstract of report.

*Virginia Kiryakova, Institute of Mathematics and Informatics
Bulgarian Academy of Sciences, Acad. G. Bontchev Str., Block 8
Sofia 1113 – BULGARIA, e-mail: virginia@diogenes.bg*

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