SOUTHERN FEDERAL UNIVERSITY
SFedU
ROSTOV-ON-DON · TAGANROG

# REGIONAL MATHEMATICAL CENTER OF SOUTHERN FEDERAL UNIVERSITY

# ACTIVITIES 2018-2020

**Regional Mathematical Center was founded on April 17, 2018 in accordance with decree N 39-OD. RMC carries out research and educational work in conformity with the guidelines of the Ministry of Science and Higher Education of the Russian Federation.**

# I. ABOUT THE CENTER

Regional Mathematical Center of Southern Federal University (RMC of SFedU) was founded in accordance with decree № 39-OD. It carries out research and educational work and pursues the policy of Ministry of Science and Higher Education of the Russian Federation. RMC promotes research and professional education in the field of mathematics and its applications.

The head of RMC is Alexey Karapetyants, D.Sc, professor in the Department of Differential and Integral Equations at the I.I. Vorovich Institute of Mathematics, Mechanics and Computer Sciences. Coordinating head of research is Vladislav Kravchenko, professor of mathematics, faculty member of Research Center at the National Polytechnic Institute of Mexico. In 1994 Professor Kravchenko earned a PhD from Rostov State University and since that time has maintained strong collaborative ties with the university now known as Southern Federal University. RMC is an international professional community comprising Russian, Mexican, Cuban, Armenian, Columbian scientists and Southern Federal University faculty.

RMC holds conferences, meetings, seminars, olympiads. It invites prominent scientists to give lectures and do research, arranges postgraduate programs and internship for early-career mathematicians and organizes a wide range of other mathematical scientific and educational events.

The bulletin highlights the achievements of 2018-2020.

## RMC OF SFEDU AIMS ARE:

To promote collaboration between mathematicians, engineers, technologists, venture investors, decision and policy-makers of educational and research field in a way that aligns with the Center guidelines.

To establish “mathematicians-in-residence” type of programs that will function on a continuous basis, to provide legislative, regulative framework and conditions to run long term programs like postdoctoral fellowship, visiting professorship, to develop LLL system in Southern Federal University.

To support initiatives and projects aimed at collaboration with various technology companies including joint-stock companies, engineering companies, small and medium-sized enterprises applying advanced technologies in manufacturing and providing technological solutions and high tech products for domestic and foreign markets.

To provide legislative and regulative framework for educational projects and to implement innovations that align with the Center’s philosophy; to foster inclusion of new methods and techniques into research and education as well as to develop and introduce new paradigms into these field.

To enhance partnership between federal and private agencies and unite forces of the state, business and RMC to work out solutions to pressing issues, to raise funds to support RMC operat ion.

To collaborate with federal and local agencies, national and foreign companies and professional communities, to organize and host joint events, competitions, programs, to arrange participation of RMC members in federal and local competitions, programs and tenders.

## TO ACHIEVE ITS GOALS RMC OF SFEDU IS INVOLVED IN:

- Organization of workshops and conferences.
- Partnership with national and foreign institutions, educational establishments, nonprofit professional communities, funds and commercial enterprises in order to start joint programs, projects, events and consortiums and actively participate in them.
- Cooperation with federal and local agencies, companies and professional communities in order to arrange and host joint events, competitions and programs and to enable the RNC members, Southern Federal University faculty and students to participate in national federal and local competitions, programs and other events that align with RMC guidelines.
- Organization of visits of Russian and foreign distinguished mathematicians to SFedU and their integration into the work of seminars, colloquiums, lectures and short-term professional courses.
- Organization of visits of Russian and foreign distinguished mathematicians to RMC of SFedU for short-term research work, lecturing and development of educational programs.

Participation of RMC members in international research projects, publication of articles in peer-reviewed journals, sharing research findings at international mathematics forums.

SFedU curricula modernization, design of new educational programs and online study materials for educational institutions in Russia and abroad.

Organization of mathematics competitions, olympiads and other events for SFedU prospective students.

Engagement of students (mostly mathematics students) into mathematics research, support of undergraduate, postgraduate students and early-career mathematicians.

Design of internship programs for postgraduate students and SFedU faculty members at leading academic institutions including Steklov Mathematical Institute, Saint Petersburg Department of Steklov Mathematical Institute, Federal Research Center for Informatics, Skolkovo Institute of Science and Technology, Moscow State University, Saint Petersburg State University, Moscow Institute of Physics and Technology, National Research University Higher School of Economic; creation of opportunities for active participation of postgraduate students and SFedU faculty members in academic events organized by SFedU and other universities and research organizations.

## II. DEVELOPING VISIT PROFESSORSHIP AND POSTDOCS PROGRAMS

RMC offers leading Russian and foreign mathematicians a position of a visiting professor. Visiting professors deliver lectures, conduct tutorials and seminars for undergraduate, postgraduate students and faculty and undertake collaborative research. They might as well supervise theses and take part in conferences.

In recent three years outstanding mathematicians from Russia, Finland, Norway, Spain, Italy, Greece, Israel, UAE and Columbia have visited Southern Federal University. The specialists have given lectures and undertaken collaborative research. Multiple discussions of joint educational projects and possibilities of gaining research grants have been held. The discussions and collaboration resulted in the publication of books, articles in top-ranked journals, signing of bilateral cooperation agreements, applications for joint research projects.

Southern Federal University invites visiting professors and fellows who apart from delivering lectures and undertaking research help to broaden international contacts and organize international joint projects. Developing cooperation will lay the foundation for further practice of inviting top mathematicians to the university.

**JARI TASKINEN**
Professor of University of Helsinki
**Finland**
**2019**

**NATASHA SAMKO**
Professor of Arctic University of Norway
**Norway**
**2019**

**KAZAROS KAZARIAN**
Professor of Autonomous University of Madrid
**Spain**
**2019**

**MASSIMO LANZA DE CRISTOFORIS**
Professor of the University of Padova
**Italy**
**2019**

**ARMEN JERBASHIAN**
Professor of the University of Antioquia
**Columbia**
**2019**

**MELERZANOV ALEXANDER VIKTOROVICH**
Professor of the Moscow Institute of Physics and Technology
**Russia**
**2019**

**IOANNIS STRATIS**
Professor of the National and Kapodistrian University of Athens
**Greece**
**2018**

**ELIJAH LIFLYAND**
Professor of Bar-Ilan University
**Israel**
**2018**

**ISSAM LOUHICHI**
Professorof the American University of Sharjah
**UAE**
**2018**

**SUHEIL KHOURY**
Professor of the American University of Sharjah
**UAE**
**2018**

**SERGEY SITNIK**
Professor of Belgorod National Research University
**Russia**
**2018**

# TRAINEESHIP FOR EARLY STAGE RESEARCHERS

**HUGO CAMPOS**
Professor of mathematics of Yachay Tech University
**Ecuador**

Hugo Campos received an invitation from RMC and did research there in June-July 2019. The research resulted in the publication of an article coauthored by professor V.V. Kravchenko. He also delivered a series of lectures for SFedU faculty and students at I.I. Vorovich Institute of Mathematics, Mechanics and Computer Sciences.

**VÍCTOR VICENTE**
Early career researcher, postgraduate student of the Center for Research and Advanced Studies of the National Polytechnic Institute in Mexico
**Mexico**

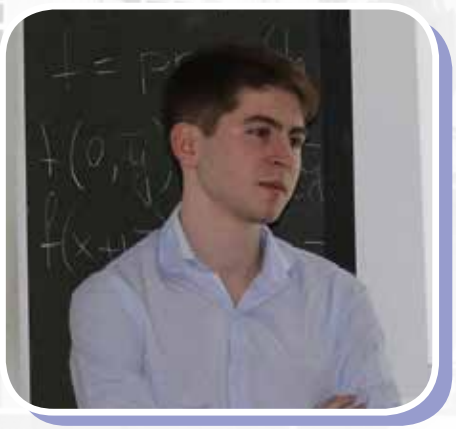
In 2019 he participated a three-month training program under the supervision of Professor V.V. Kravchenko. The traineeship program is part of CINVESTAV and SFedU collaboration program.

**ALEXANDER KRIVOSHEIN**
PhD, Associate Professor of the Department of Higher Mathematics of Saint Petersburg State University
**Russia**

Alexander Krivoshein is a young scientist. He holds a PhD in mathematics, is an associate professor of the Department of Higher Mathematics of Saint Petersburg State University. In October 2020 he participate a RMC training program directed by M.A. Skopina, D.Sc. His research interests are in wavelet theory and harmonic analysis.

**EVELYN MORALES**
Student
**Ecuador**

Evelin Morales is a student from Ecuador. Since October 2020 she has been engaged in RMC training program under the supervision of A.N. Karapetyants, D.Sc. Her research interests lie in harmonic analysis and operator theories.



**MIKHAIL KARAPETYANTS**
Early career researcher, a postgraduate student
**Russia**

Since July 2020 he has been serving as a junior researcher. He has published research-related articles in peer-reviewed journals and spoken at international conferences. His research interests are binary analysis, approximation theories, harmonic analysis and operator theories.

# INVITATION OF EARLY CAREER RESEARCHERS FOR POSTDOCS

Regional Mathematical Center offers high quality learning opportunities for young promising researchers and encourages them to complete postgraduate programs and attracts research mathematicians from different countries and regions. Invited young specialists hold long-term positions as RMC researchers and they are engaged in research work, organization of conferences and summer schools and other academic events. The work period lasts form 6 months to 2 years

**LIANET DE LA CRUZ TORANZO**
PhD, Cuban early career researcher

In June 2020 she was recruited via competitive selection and received the position of an RMC researcher. She is experienced in organizing international mathematics olympiads, has multiple publications and extensive network of contacts with global mathematical community. The research of Lianet De la Cruz Toranzo is based upon academician F.D. Gakhov works. The academician is the founder of the Department of Differential and Integral Equations of Southern Federal University and the originator of research in the field of boundary value problems theory. The work of the young mathematician is linked to the scientific traditions of SFedU research.

**JOEL RESTREPO**
PhD, Colombian early career researcher

He served as a junior researcher in 2018-2020. In the course of his work he did joint research on the topic "Generalized Hölder Type Spaces of Harmonic Functions in the Unit Ball and Half Space", organized conferences, seminars, gave classes to students. The number of his publications in peer-reviewed journals totals 20. Since 2014 he has taken part in the conference "Modern Methods, Problems and Applications of Operator Theory and Harmonic Analysis". During his work at RMC Joel Restrepo published over 10 articles, 4 of which came out in Q1 and Q2 journals.

**SMBAT AGHEKYAN**
PhD, Armenian early career researcher

From February to June 2020 he developed joint research work at RMC of SFedU. The topic of his research was: "Rieman Boundary Problem in Lebesgue Spaces and Continuous Functions". The results of the work are published in 3 (peer-reviewed) articles.

**BRICEYDA DELGADO**
PhD, Mexican early career researcher

She served as junior researcher in 2018-2019. She did joint research on the topic "On the div-curl system and the three-dimensional main Vekua equation". She solved an important problem of mathematical physics on reversibility of div-curl system in multiply-connected domain. 2 years of research work resulted in the publication of 8 articles in top ranked journals, 4 of which came out in Q1 and Q2 journals.

# INVITATION OF LEADING RESEARCHERS TO RMC

**SKOPINA MARIA ALEXANDROVNA**
Professor and Doctor of Science

Since July 2020 Maria has been holding the position of a RMC senior researcher. Currently she is performing research in the field of theory of functions of a real variable. She is one of leading wavelet theory specialists and published 2 monographs on the topic. She is also the author of approximately 70 scientific articles in prestigious international journals.

**SHKALIKOV ANDREY ANDREEVICH**
Professor, Doctor of Science and Corresponding Member of the Russian Academy of Science

Since June 2020 A.A. Shkalikov has been holding the position of a RMC senior researcher and an external expert. He is a prominent Soviet and Russian mathematician who gained world recognition in the field of operator theory and its applications in mechanics and mathematical physics, theory of spaces with an indefinite metric, function theory. His research results shaped the vision on contemporary spectral theory of operators. Approaches and methods introduced by the scientist allow to solve new problems of abstract operator theory and are applicable to mathematical physics, quantum mechanics, theory of elasticity and hydrodynamics.

**SERGEY MIKHAILOVICH GRUDSKY**
Professor, Doctor of Science, Researcher of the Center for Research and Advanced Studies of the National Polytechnic Institute in Mexico

He started his active cooperation with RMC in May 2020. He did research work, published 3 monographs and over 140 scientific articles, taught at universities, supervised PhD dissertations that were successfully defended, coordinated the work of scientific groups and projects. From September to December 2020 S.M. Grudsky worked in Rostov-on-Don with RMC members.

**SOLDATOV ALEXANDER PAVLOVICH**
Professor, Doctor of Science

In 2018 he held the position of a RMC senior researcher. Soldatov Alexander Pavlovich is one of the prominent scientists doing research in the field of partial differential equations. The researcher and his followers develop functional theoretic approach to boundary value problems for elliptic equations and systems. The approach is based on boundary integral equations method devised by the professor. The work gained recognition of national and international professional communities. In the course of his work at RMC A.P.Soldatov performed active research, gave a series of public lectures related to boundary value problems, provided advice and guidance to undergraduate and postgraduate students.

# III. OTHA CONFERENCES

Southern Federal University organizes and hosts the International Scientific Conference “Modern Methods, Problems and Applications of Operator Theory and Harmonic Analysis” (OTHA), one of the main RMC events.

Over 150 researchers and educators of the world leading institutions attend the annual conference. Specialists come from Russia, China, USA, Canada, Spain, Portugal, Greece, Norway, UK, Israel, Finland, Germany, Spain, Portugal, Sweden, Switzerland, Hungary, Serbia, Poland, Mexico, Colombia, Armenia, Azerbaijan, Georgia, Turkey, Jordan, India, Iran, Iraq, UAE, Belorussia, Ukraine, Lithuania, Kazakhstan, Uzbekistan, Syria, Egypt, Morocco, Cameroon and other countries (not less than 26 countries annually). Foreign speakers make up 35% of the total number of speakers and the number of plenary speakers amounts to 50%. The number of foreign participants is increasing every year, although it is not the number itself that is indicative, but the expansion of the geography of participants, both Russian and foreign.

Selected presented works of plenary and invited speakers have been published in top ranked journals and Springer special issues. A two volume book of OTHA-2019 proceedings will soon appear in print. The plenary and invited speakers’ articles were published in the top ranked journal “Mathematical Methods in Applied Sciences” (https://onlinelibrary.wiley.com/journal/10991476) in 2020.

**For more information visit: http://otha.sfedu.ru/**

# INTERNATIONAL CAUCASIAN MATHEMATICS CONFERENCE

The third Caucasian Mathematics Conference (CMC-III) was organized and held in Rostov-on-Don, Russia, on August 25-30, 2019. It was hosted by Southern Federal University under the auspices of the European Mathematical Society and in collaboration with mathematical societies of Armenia, Azerbaijan, Georgia, Iran, Moscow and Turkey. The aim of the biannual conference is to bring together mathematicians from the Caucasus and neighboring countries in one of the participating countries. Experts from Italy, UAE, Israel, Germany, Norway, Mexico and Colombia also took part in the event.

The conference was the main event of 2019 for RMC of SFedU.

**The conference site: https://euro-math-soc.eu/cmc/**

Photo: participants of the III International Caucasian Mathematics Conference


Photo: Alexey Karapetyants, Inna Shevchenko (rector of SFedU), Armen Sergeev


Photo: Alexey Karapetyants, Mikhail Karyakin (director of the Institute Mathematics, Mechanics and Computer Sciences of Southern Federal University), Volker Mehrmann, Armen Sergeev, Roland Duduchava, Betul Tanbay

Presidents, vice-presidents and representatives of participating countries and societies attended the conference:

**PAVEL EXNER**
President of the European Mathematical Society in 2015-2018, one of the founders of the European Research Council

**VOLKER MEHRMANN**
President of the European Mathematical Society

**ARMEN SERGEEV**
Vice President of the European Mathematical Society, Representative of Moscow Mathematical Society

**BETUL TANBAY**
Vice President of the European Mathematical Society, Representative of the Turkish Mathematical Society

**ROLAND DUDUCHAVA**
President of the Georgian Mathematical Union

**ATTILA ASKAR**
President of the Turkish Mathematical Society

**YURI MOVSISYAN**
President of Armenian Mathematical Union

**ASAF HAJIYEV**
Representative of Azerbaijan Mathematical Society

# PLENARY LECTURERS OF OTHA 2018-2019 AND CMC-III

**OTHA**

**MICHAEL REISSIG**
Freiberg University of Mining and Technology
**Germany**

**OTHA**

**HICHEM BEN-EL-MECHAIEKH**
Brock University
**Canada**

**OTHA**

**ALEXANDER BENDIKOV**
University of Wroclaw
**Poland**

**OTHA**

**DAVIT HARUTUNIAN**
the University of California
**USA**

**OTHA**

**VLADIMIR RABINOVICH**
National Polytechnic Institute
**Mexico**

**OTHA**

**STASYS RUTKAUSKAS**

Vilnius University
**Lithuania**

**OTHA**

**BORIS MITYAGIN**
Ohio University
**USA**

**OTHA**

**VYACHESLAV YURKO**
National Research Saratov State University
**Russia**

**OTHA**

**ALEXEY KARAPETYANTS**
RMC of SFedU, I.I. Vorovich Institute of Mathematics, Mechanics and Computer Sciences of Southern Federal University
**Russia**

**OTHA**

**BORIS PLAMENEVSKII**
Saint Petersburg State University
**Russia**

**OTHA**

**VLADIMIR PROTASOV**
Corresponding member of the Russian Academy of Science, Lomonosov Moscow State University, University of L'Aquila
**Russia**

**OTHA**

**VLADISLAV KRAVCHENKO**
RMC of SFedU, Center for Research and Advanced Studies of the National Polytechnic Institute
**Russia, Mexico**

**OTHA**

**VAGIF GULIYEV**
Corresponding member of Azerbaijan National Academy of Sciences, Institute of Mathematics and Mechanics of Azerbaijan National Academy of Sciences
**Azerbaijan**

**OTHA**

**ALEXANDER MIKHAILOV**
the University of Leeds
**UK**

**OTHA**

**OSCAR BLASCO**
the University of Valencia
**Spain**

**OTHA**

**HELMUTH MALONEK**
the University of Aveiro
**Portugal**

**OTHA**

**JOACHIM TOFT**
Linnaeus University
**Sweden**

**OTHA**

**ANDREY SHKALIKOV**
Lomonosov Moscow State University
**Russia**

**OTHA**

**ALEXANDRE ALMEIDA**
the University of Aveiro
**Portugal**

**OTHA**

**ANATOLY KUSRAEV**
Vladikavkaz Scientific Center of the Russian Academy of Science
**Russia**

**OTHA**

**HASI WULAN**
Shantou University
**China**

**OTHA**

**MIKHAIL GOLDMAN**
The People's Friendship University of Russia, Steklov Mathematical Institute of Russian Academy of Science
**Russia**

**OTHA**

**VICTOR BURENKOV**
The People's Friendship University of Russia, Steklov Mathematical Institute
**Russia**

**OTHA**

**ARMEN SERGEEV**
Steklov Mathematical Institute RAS; foreign member of the National Academy of Sciences of Armenia
**Russia**

**OTHA**

**ALEXANDER SOLDATOV**
Federal Research Center of Informatics and Management of the Russian Academy of Science
**Russia**

**OTHA**

**ALEXANDER NAZAROV**
Saint Petersburg University, Saint Petersburg
Department of Steklov Mathematical Institute RAS
**Russia**

**OTHA**

**SALAUDIN UMARKHADZHIEV**
Institute of Comprehensive Scientific Research named after H.I. Ibrahimov, Academy of Sciences of the Chechen Republic
**Russia**

**OTHA**

**ANATOLIJ ANTONEVICH**
Belarusian State University
**Belarus**

**OTHA**

**YURI GLIKLIKH**
Voronezh State University
**Russia**

**OTHA**

**MARIA SKOPINA**
Saint Petersburg State University
**Russia**

**OTHA**

**EUGENY PANOV**
Yaroslav-the-Wise Novgorod State University
**Russia**

**OTHA**

**YOSHIHIRO SAWANO**
the University of Tokyo
**Japan**

**OTHA**

**SERGEY VODOPYANOV**
Sobolev Institute of Mathematics of the Russian Academy of Sciences
**Russia**

**OTHA**

**ALEXANDER MELERZANOV**
Moscow Institute of Physics and Technology
**Russia**

**OTHA**

**ELIJAH LIFLYAND**
Bar-Ilan University
**Israel**

**OTHA**

**GARNIK KARAPETYAN**

Yerevan State University, Russian Armenian University
**Armenia**

**OTHA**

**ALEXANDER GUSHCHIN**
Steklov Mathematical Institute of the Russian Academy of Sciences, Higher School of Mathematics, Moscow State University
**Russia**

**OTHA**

**HUMBERTO RAFEIRO**
Pontifical Xaverian University
**Colombia**

**CMC-III**

**SAMIN MALIK**
Institute of Mathematics and Mechanics of National Academy of Sciences of Azerbaijan
**Azerbaijan**

**CMC-III**

**ALI HAMIDOGLU**
Istanbul Technical University
**Turkey**

**CMC-III**

**ALEXANDER GAIFULLIN**
Steklov Mathematical Institute RAS
**Russia**

**CMC-III**

**ALEKSANDR KOMLOV**
Steklov Mathematical Institute RAS
**Russia**

**CMC-III**

**NASSER GOLESTANI**
Tarbiat Modares University
**Iran**

CMC-III

**TURKER OZSARI**
Izmir Institute of Technology
**Turkey**

CMC-III

**DAVOUD MIRZAEI**
the University of Isfahan
**Iran**

CMC-III

**RAGNI PIENE**
the University of Oslo
**Norway**

CMC-III

**SINEM ONARAN**
Hacettepe University
**Turkey**

**CMC-III**

**MASSIMO LANZA DE CRISTOFORIS**
the University of Padua
**Italy**

**CMC-III**

**LUSINE POGHOSYAN**
National Academy of Sciences
**Armenia**

**CMC-III**

**CEM YALCIN YILDIRIM**
Bogazici University
**Turkey**

**CMC-III**

**GEORGE TEPHNADZE**
University of Georgia
**Georgia**

# IV. OTHA ONLINE WORKSHOP

Due to the ongoing COVID-19 pandemic and in the interest of public health the traditional in-person OTHA-2020 was switched to a virtual meeting. The International Scientific Conference OTHA 2020 included a series of OTHA online workshops on fundamental mathematics and its applications. The online event comprised lectures given by leading experts in the field of mathematics and its applications and poster presentations of participants.

The lecturers are experts in mathematical analysis, differential equations and mathematical physics. Approximately 100 participants from around the world took part in the online workshop. Mathematicians from Russia, USA, Mexico, Columbia, Japan, China, Israel, Poland, Italy, Portugal, Spain, Norway, Turkey, Armenia, Georgia, Azerbaijan, Belarus, Ukraine, India, Algeria, Morocco and other countries attended the online conference.

**For more information visit: http://otha.sfedu.ru/online-workshops/otha-workshop/**

Photo: online lecture of Professor Skubachevsky as part of OTHA online workshop

**OTHA speakers included the above mentioned Anatolij Antonevich (Belarus), Alexander Bendikov (Poland), Vagif Guliyev (Azerbaijan and Turkey), Yuri Gliklikh (Russia), Vladimir Rabinovich (Mexico) and other specialists:**

## OTHA WORKSHOP

**D'ONOFRIO LUIGI**
the University of Naples Frederiko II
**Italy**

## OTHA WORKSHOP

**ALEXANDER SKUBACHEVSKY**
the People's Friendship University of Russia
**Russia**

## OTHA WORKSHOP

**MATELJEVIC MIODRAG**
the University of Belgrade
**Serbia**

## OTHA WORKSHOP

**MARK MALAMUD**
the People's Friendship University of Russia
**Russia**

# OTHA WORKSHOP FALL 2020

The international seminar was held offline in Rostov-on-Don. World-class experts took part in the seminar discussions dedicated to the analysis of the project results and plans of further development. The seminar included a session where specialists worked out detailed plans of scientific research, analyzed current state and latest advances in the field of study and its applications.

**For more information vist:**

**http://otha.sfedu.ru/online-workshops/otha-fall-2020/**

Photo: Workshop OTHA Fall 2020 attendees

Photo: L. De la Cruz Toranzo and S. Grudsky at the seminar.

Photo: Workshop OTHA Fall 2020 attendees

# V. VLADIKAVKAZ YOUTH MATHEMATICAL SCHOOL

RMC of SFedU prioritizes support and development of scientific societies, engagement of early career mathematicians, provision of professional guidance and advice, promotion of mathematics in the south of Russia. Science meetings and conferences in the field of mathematics help to fuel curiosity, discovery and research of emerging scientists.

Annually the republic of North Ossetia-Alania in collaboration with Regional Mathematical Center of Southern Federal University holds Vladikavkaz Youth Mathematical School (VYMS). The meeting includes traditional presentations and lectures delivered by invited leading experts. Dozen of emerging scientists, master's and doctoral students from Russia take part in the event.

Due to Covid-19 outbreak the organizing committee of VYMS-2020 decided to arrange a digital event. Thus, the XV online Vladikavkaz Youth Mathematical School was held on September 24, 2020. The conference proceedings have been published.

Photo: VYMS-2018 attendees


Photo: VYMS-2020 attendees

# VLADIKAVKAZ INTERNATIONAL CONFERENCE

Supported by RMC of SFedU XV International Scientific Conference “Numerical Order and Related Problems of Mathematical Modelling” was hosted by Vladikavkaz Scientific Center of the Russian Academy of Science on July 15-20, 2019.

The aims of the conference are to foster the development of mathematical societies worldwide, to share scientific findings and bring scientists together, to enhance international collaboration, to start projects, to engage emerging mathematicians and ensure their professional development.

Experts in the field of pure and applied mathematics from Russia and abroad, young lecturers, doctoral and master’s students and researchers of the Russian Academy of Sciences attended the event. 120 attendees came from Russia and 13 countries including Austria, Belarus, UK, Germany, India, Italy, Iran, Kazakhstan, China, Turkey, the Republic of South Ossetia, USA, and Uzbekistan. Russian participants came from 18 cities: Belgorod, Bryansk, Chelyabinsk, Chernogolovka, Elabuga, Grozny, Makhachkala, Moscow, Novosibirsk, Nalchik, Rostov-on-Don, Ryazan, Samara, Vladikavkaz, Voronezh, Yaroslavl, and Zelenokumsk.

In 2020 selected articles were included into the conference proceedings “Operator Theory and Differential Equations” which is part of “Trends in Mathematics” Springer series.

Photo: the conference attendees

In the photo: lecturers, invited speakers. From left to right: A.V. Abanin, SFedU, Rostov-on-Don; S.N. Ashabov, Chechen State University, Grozny; A.O. Vatulyan, SFedU, Rostov-on-Don; A.A. Gelieva, Vladikavkaz Scientific Center of the Russian Academy of Science, Vladikavkaz; Y.E. Gliklikh, Voronezh State University, Voronezh; V.N. Dyatlov, Novosibirsk State University, Novosibirsk; A.G. Kusraev, Vladikavkaz Scientific Center of the Russian Academy of Science, Vladikavkaz; V.A.Stukopin, Southern Mathematical Institute of the Vladikavkaz Scientific Center of the Russian Academy of Sciences, Vladikavkaz; B.B. Tasoev, Southern Mathematical Institute of the Vladikavkaz Scientific Center of the Russian Academy of Sciences, Vladikavkaz.

# VI. RESEARCH SEMINARS

RMC research seminars on fundamental mathematics have been held on a regular basis starting from 2018. Seminar environment fosters active discussions of mathematical issues, engagement of world leading experts, sharing of recent scientific findings. Seminars are open for students, master's and doctoral students. Presentations are made by RMC researchers, invited speakers representing other scientific institutions and different countries. Online seminars were launched in May 2020 and the number of famous speakers has increased considerably. Discussions are held in Russian and English.

**For more information visit: https://rmc.sfedu.ru/seminar**

Photo: 2020 online research seminar.

# 2020 LECTURERS

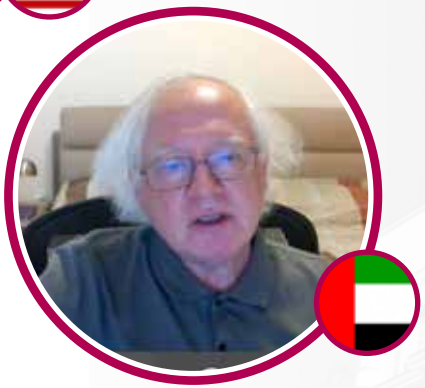


**UWE KÄHLER**
CIDMA, Department of Mathematics at the University of Aveiro
**Portugal**

**STEPHEN SHIPMAN**
Lousiana State University
**USA**

**HANS GEORG FEICHTINGER**
Institute for Mathematics at the University of Vienna
**Austria**

**DAVID CRUZ-URIBE**
the University of Alabama
**USA**



**ILYA SPITKOVSKY**
New York University Abu Dhabi
**UAE**

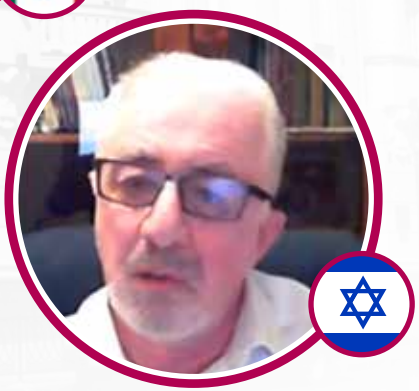
**EUGENE SHARGORODSKY**
King's College London
**UK**

**SERGEI AVDONIN**
University of Alaska Fairbanks
**USA**

**SERGII TORBA**
Center for Research and Advanced Studies of the National Polytechnic Institute
**Mexico**

**LUCA ZAMPOGNI**
the University of Perugia
**Italy**

**RICARDO WEDER**
National Autonomous University of Mexico
**Mexico**



**MARK AGRANOVSKY**
Bar-Ilan University
**Israel**

# VII. THE INTERNATIONAL COMPETITION OF EARLY CAREER SCIENTISTS

RMC of SFedU in partnership with ISAAC (International Society for Analysis, its Applications and Computation) jointly organized a competition among young researchers and selected those to be presented with life ISAAC membership award. Among the awardees were: Elsa Bahtigareeva (RUDN, Moscow), 2018; Joel Restrepo (RMC of SFedU, Rostov-on-Don) and Elina Shishkina (VSU, Voronezh), 2019.

**Official site: http://isaacmath.org/**

Photo: E. Shishkina at the ISAAC award ceremony

Photo: Professor Joachim Toft, ISAAC vice president, Sweden, is presenting the award to D. Restrepo

Photo: Professor Michael Reissig, ISAAC president, Germany, is presenting the award to E. Bahtigareeva

# GROUP ON OPERATOR THEORY AND HARMONIC ANALYSIS

ISAAC

In 2019 ISAAC-OTHA scientific group on operator theory and harmonic analysis was formed in the framework of ISAAC. It was initiated and is led by Alexey Karapetyants.

ISAAC-OTHA members include specialists in the field of contemporary methods and applications of harmonic analysis that include real and complex variable methods, methods of analysis of multiparameter objects with dynamic parameters. Harmonic analysis and methods of mathematical physics are widely used as interdisciplinary research tools. The advances in applied physics, biology, chemistry, electronics, and robotics require the application of multidimensional approaches and nontraditional methods of data analysis. Therefore, the aim of contemporary applied harmonic analysis is to develop theoretical framework and mathematical models applicable to study of objects with complex structure and parameters changing from one point to the other.

**For more information visit: http://otha.sfedu.ru/isaac/**

# SEMINAR «OLYMPIAD AND CONTEST TRAINING»

A 2-day seminar “Olympiad and Contest Training” was hosted by the Institute of Mathematics, Mechanics and Computer Sciences of SFedU. The organization was supported by Sunday Mathematical School and RMC. The seminar was held prior to the regional level of all Russia Mathematical Olympiad 2019-2020. The seminar brought together teachers of mathematics from Rostov-on-Don and Rostov region. The seminar focused on issues of olympiad and contest training and organization of research work. Attendees familiarized themselves with publications prepared by the Institute of Mathematics, Mechanics and Computer Sciences of SFedU and RMC.



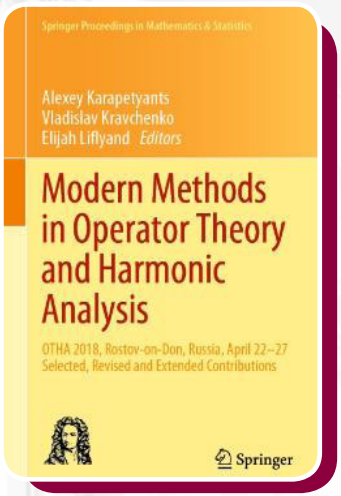
Photo: O.A. Prozorov, RMC leading researcher, giving a talk to teachers of Rostov-on-Don

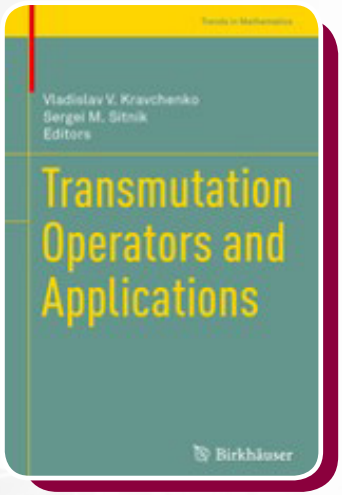
# PARTNERSHIP WITH PUBLISHERS AND ESTABLISHMENT OF SCIENTIFIC COLLABORATION

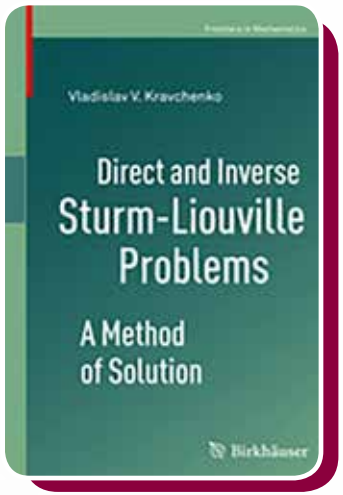
Selected and extended papers of the conferences “Contemporary Methods and Problems of Operator Theory and Harmonic Analysis and Applications” held at SFedU in 2018-2019 were included into the proceedings. The proceedings were published in the framework of partnership between mathematical society ISAAC, Springer and OTHA program committee. In 2019 the book “Modern Methods in Operator Theory and Harmonic Analysis” edited by Alexey Karapetyants, V. Kravchenko, I. Liflyand (Bar-Ilan University, Israel) was published in “Mathematics & Statistics” series. 2 volumes of “Operator Theory and Harmonic Analysis” will appear in print in 2020 in “Springer Proceedings in Mathematics & Statistics” series. 1st volume “New General Trends and Advances of the Theory” is edited by A. Karapetyants, V.Kravchenko, I. Liflyand, H.Maloneka (The University of Aveiro, Portugal) and the 2nd “Probability-Analytical Models, Methods and Applications” is edited by A. Karapetyants, I.Pavlov (Don State Technical University) and A. Shiryaev, academician of the Russian Academy of Sciences (Moscow State University).

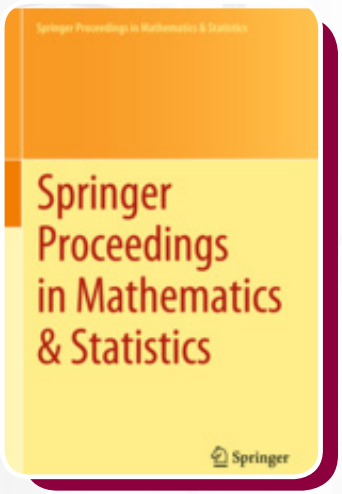
The papers of the XV International Conference “Numerical Analysis and Related Problems of Mathematical Analysis” were published in the book “Operator Theory and Differential Equations” under the editorship of A. Kusraeva (Southern Mathematical Institute of the Vladikavkaz Scientific Center of the RAS) and Zh. Totieva (Southern Mathematical Institute of the Vladikavkaz Scientific Center of the RAS) as part of Springer series “Trends in Mathematics”.

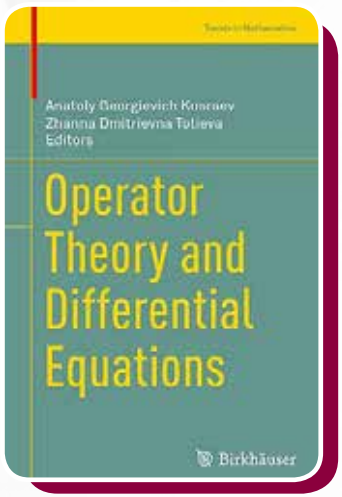
The monograph of Vladislav Kravchenko entitled “Direct and Inverse Sturm-Liouville Problems: A Method of Solution” was published by Birkhäuser in “Frontiers in Mathematics” series in September 2020, the publication was preceded by the emergence of the book “Transmutation Operators and Applications” edited by Vladislav Kravchenko and Sergey Sitnik. The latter is part of “Trends in Mathematics” series and comprises chapters written by invited authors who specialize in the field.




Papers of OTHA-2019 plenary speakers and invited speakers were published in 2020 in the series  of the top peer-reviewed journal “Mathematical Methods in Applied Sciences”.

Springer editor Dorothy Mazlum (https://www.springer.com/gp/authors-editors/dorothy-mazlum/5298) was invited by Southern Federal University and visited it in 2019.  She gave a presentation highlighting activities of the publisher and shared her views of prospective collaboration. Dorothy offered to Southern Federal University a considerable amount of books recently published by Springer.


Photo: presentation by Dorothy Mazlum in SFedU

Memoranda of understanding were signed with the support of RMC. The first one was signed between Southern Federal University and the University of Padua and the second one by Southern Federal University and CINVESTAV (Mexico). The agreements manifest the willingness of the parties to engage in academic collaboration and to promote:

- scientific research;
- academic events;
- faculty and researchers mobility;
- undergraduate and doctoral students mobility;
- information and bibliographic sources exchange;
- participation in seminars and scientific meetings.



# VIII. TESTING OF STUDENTS

One of RMC goals is to attract gifted prospective students to Southern Federal University. The work is carried out under the auspices and in collaboration with the Institute of Mathematics, Mechanics and Computer Sciences of SFedU (IMMCS of SFedU, Institute Mathematics, Mechanics and Computer Sciences of SFedU). RMC supports IMMCS of SFedU initiatives and events for secondary and undergraduate students.

4 or 5 times a year annual olympiads in mathematics are organized for 4-10 graders and RMC is engaged in the event. As soon as the test works are checked the contestants can analyze the results and think about alternative solutions to the mathematical problems. Test math assignments are of more complicated level than standard ones and are meant for approximately 150-200 contestants. The testing is competitive and is held in collaboration with the Institute Mathematics, Mechanics and Computer Sciences and Sunday Mathematical School of SFedU (SMS).

Due to covid-19 the testing of 2020 changed its traditional format to online one. The digital format of the olympiad made it accessible not only for Rostov region school students but for those from other regions including students from Vladikavkaz Center of Continuous Mathematical Education. Analysis of test results was performed by Sunday Mathematical School of SFedU via videoconferencing.

Photo: open tests bring together approximately 150 contestants

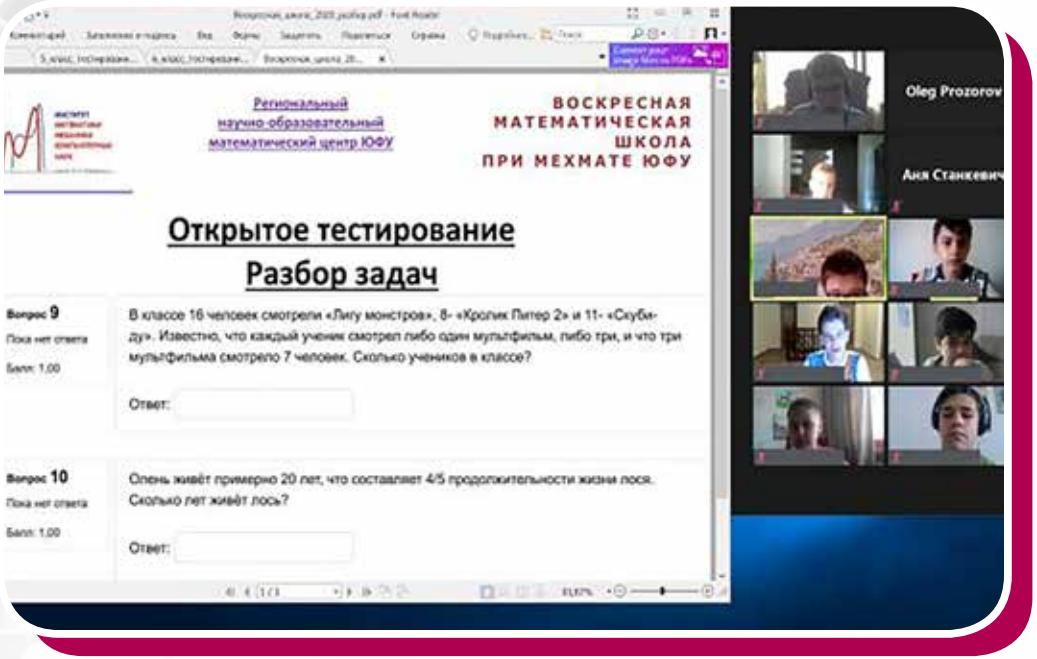



Photo: online analysis of test results

# «AUTUMN UNIVERSITY OLYMPIADS»

RMC carries out an array of academic activities to engage school students into the study of mathematics. Olympiads in various subjects are held to inspire keen interest in research. RMC supports olympiads and tries to promote them to the national level.

Since 2018 RMC and the Institute Mathematics, Mechanics and Computer Sciences of SFedU have been organizing regional Autumn University Olympiads to attract prospective students to SFedU. The olympiads held in October-November comprise 2 levels and Southern Federal University awards winners with additional points to their total state exams score. In 2018-2019 about 400 students (classes 5-11) from Rostov and other regions took part in the olympiad. Apart from the olympiads Southern Federal University offers workshops and trainings to prospective students. Considerable number of Autumn University Olympiads winners are currently studying at the university.

The event complements traditional spring university games and engages numerous contestants.  Autumn University Olympiads winners and awardees get grants from Sunday Mathematical School of Southern Federal University.

Photo: Autumn University Olympiads-2019

Photo: M.I. Karyakin, director of the Institute Mathematics, Mechanics and Computer Sciences, SFedU, and O.A. Prozorov, RMC leading researcher, are awarding diplomas and prizes to University Olympiads winners

# SCHOLARLY SEMINARS IN MATH

Secondary students doing courses at the Institute Mathematics, Mechanics and Computer Sciences of SFedU regularly take part in mathematical competitions and achieve good results. Students compete in events organized by the educational center Sirius and participate in olympiads recommended by the Ministry of Education of the Russian Federation.

In 2020 RMC in partnership with the Institute Mathematics, Mechanics and Computer Sciences of SFedU launched the scholarly seminars in math that prepares school students for top math competitions. RMC focuses on selection of gifted students and further development of their mathematical skills and creativity.

Photo: Scholarly seminars in math attendees

# PARTNERSHIP WITH MOSCOW INSTITUTE OF PHYSICS AND TECHNOLOGY: SCHOLARLY SEMINAR OF ADVANCED MATHEMATICS

RMC does not only promote olympiads but also contributes to school education improvement. The Advanced Math Scholarly Seminar organized by Moscow Institute of Physics and Technology (MIPT) and RMC has been operating for three years and educating carefully selected school children. The syllabus includes MIPT programs. Student selection is performed by the Institute Mathematics, Mechanics and Computer Sciences and is supported by RMC.

Photo: 20 Rostov school students going to grades 8 through 10 have been doing programs designed by MIPT

# SUMMER OLYMPIAD MATH SCHOOL

RMC and IMMCS of SFEDU ran 2 Summer Mathematical Schools (SMS). In 2019 the school was held as part of traditional Summer Mathematical School of SFedU and supported by RMC. Around one hundred Rostov secondary students from grades 3 through 10 attended it.

The classes of Summer School were given by SFedU Sunday Mathematical School faculty. Competition training was combined with lots of fun. Students played various mathematical games such as a mathematical battle, a mathematical fight, mathematical dominoes and a mathematical square.

The school attendees receive profound training and actively take part in top mathematical events such as all Russia children's center "Orlyonok Mathematical Camp" and "Orlyonok Young Mathematician Camp" and educational center Sirius "November Program".

In 2019 1st- year university students of the pedagogical department did a training course at the Summer Math School. They organized and conducted classes and helped to arrange contests. They got invaluable experience of work with gifted children.

The 2nd Summer Math Olympiad School for students in grades 5-7 was organized jointly by IMMCS of SFedU and RMC in summer 2020. Only winners of the IMMCS of SFedU and RMC previously organized olympiads attended the summer event. The school comprised two ten-day sessions held in June and August. The educational platform of IMMCS and videoconferencing were utilized to organize and conduct classes. The digital format of the event allowed to combine extensive homework, session activities and contests.

Photo: Summer Olympiad Math School creates fun and engaging atmosphere by incorporating mathematical contests and games

# SUMMER SCIENCE SCHOOL

The XV Summer Science School (SSS) for grades 6 through 11 was held in Vladikavkaz in August, 17-26. The event was supported by RMC and ran for 10 days. 24 students interested in mathematics and informatics did online olympiad courses at the Department of Mathematics and IT of Hetagurov North Ossetian State University.

The main goal of SSS is to attract, select and provide guidance to gifted students as well as to inspire keen interest in mathematics and informatics, to engage students in research and contests.

SSS course included lectures, practical classes, intellectual games and competitions. SSS-2020 comprised 96 lectures and practical classes and 2 modules “Mathematics” (August, 17-21) and “Informatics” (August, 22-26).

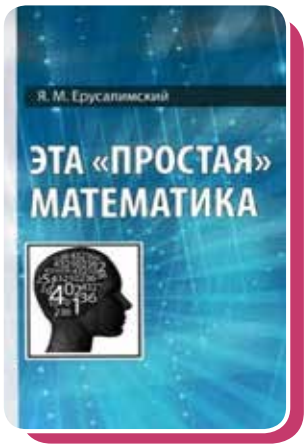
Meetings with teachers were a part of SSS. On the 18 of August Boichenko Sergey Evgenievich (Adygey State University) conducted a seminar in which he shared the experience of organizing olympiad training, work with 5-6 graders, teaching olympiad courses and arranging contest preparation in Adygea.

When the school was over students and teachers voiced their opinions about the experience of being part of SSS-2020. They pointed out that despite restrictions caused by the pandemic the syllabus was diverse, the work was engaging and dynamic.

Photo: SSS attendees

Photo: V.S. Abaturova, S.E. Boichenko., D.V. Chulko, SSS teachers

## IX. TEXTBOOKS ON MATHEMATICS





The analysis of SFedU olympiad results carried out by RMC proved that large number of prospective students are not prepared to solve contest assignments and are unfamiliar with tasks format and the level of mathematics required to start a course at Southern Federal University. The survey revealed that mathematics should be popularized among prospective students and gifted youth should be attracted to SFedU.

To achieve the goal RMC invites specialists to give lectures and write textbooks and books for school students. Thus, the book of Yacov Michailovich Erusalimsky, SFedU professor, an outstanding educator in the field of mathematics, "This "Simple" Mathematics" appeared in print.

RMC supported the publication of the following books:

1. O.G. Avsyankin, E.V. Shiryaeva Lectures on Probability Theory and Mathematical Statistics. Textbook. Rostov-on-Don – Taganrog. Southern Federal University 2020, 108 pp. ISBN 978-5-9275-3539-2.

2. D.B. Rokhlin Introduction to Gradient Methods of Convex Optimization. Rostov-on-Don – Taganrog. Southern Federal University, 2020 132 pp. ISBN: 978-5-9275- 3554-5.

3. O.G. Avsyankin, A. P. Chegodin Probability Theory Problems. Textbook. Rostov-on-Don, Southern Federal University, 2019. 54 pp.

4. A. P. Melekhov, O.A. Prozorov Math Exam Preparation for Overseas Students. Theory, Tests with Keys. Textbook. Rostov-on-Don, Southern Federal University, 2019, 117 pp.

5. I.A. Breus, K.A. Vatulian, O.A. Prozorov Sunday Mathematical School Materials of the Institute Mathematics, Mechanics and Computer Sciences of Southern Federal University I: Textbook. Rostov-on-Don, Southern Federal University, 2019,103 pp.

## NEW EDUCATIONAL PROGRAMS

RMC of SFedU took active part in designing and launching the master's program "Financial Mathematics and Machine Learning" in the field of applied mathematics and informatics, specialty 01.04.02 for graduates of the Institute Mathematics, Mechanics and Computer Sciences of SFedU.

The program offers practical and theoretical courses in machine learning. Program graduates will apply their skills in solving mathematical finance problems. The program combines studies in IT, mathematics, mathematical finance and familiarizes students with contemporary machine learning and financial mathematics tasks and methods of solution.

Start: September 1, 2020

Language: English

**Site: https://www.sfedu.ru/www/stat_pages22.show?p=STe/N12391/D**

Bachelor's program 01.03.02 "Applied Mathematics: Bioinformatics" of the specialty "Applied Mathematics and Informatics" is being developed. It is supported by RMC, the Institute Mathematics, Mechanics and Computer Sciences of SFedU and Moscow Institute of Physics and Technology.

Bioinformatics is multidisciplinary therefore "Applied Mathematics: Bioinformatics" syllabus includes mathematics and informatics, biology and chemistry, physiology and pathophysiology. Prominent Russian and foreign professors will give lectures to students.

Start of the course: September 1, 2021

# INTERNSHIP OF MASTER'S AND DOCTORAL STUDENTS IN LEADING RESEARCH INSTITUTIONS

Internship programs were launched to offer students new opportunities to do research work in the field of mathematics. Students did training courses in top research institutions.

Andrey Dvoretsky, a IMMCS of SFedU student, did a training course in Saint Petersburg Polytechnic University in 2020.
In October 2020 he received training at the youth research center Fab Lab Polytech of Peter the Great St. Petersburg Polytechnic University.
Andrey is planning to implement knowledge and experience gained during the course into the work of SFedU aeromodelling club where he conducts classes.

Photo: Andrey Dvoretsky is defending the project in Saint Petersburg

In 2028 Kirill Vedenev, a master's student, and Victor Yurov, a doctoral student, both studying at the Institute Mathematics, Mechanics and Computer Sciences of SFedU had internship at Steklov Mathematical Institute of RAS. The candidates for internship were selected by IMMCS and approved by the Academic Council.

In the course of their internship they attended seminars and conferences held by Mathematical Institute and discussed research topics with the faculty and received research guidance of Professor Armen Glebovich Sergeev.
The importance of research results were recognized by the research supervisors as well as by the host institution.

Photo: Victor Yurov, Kirill Vedenev, A.G. Sergeev

# SERIES OF LECTURES FOR STUDENTS AND ADVANCED COURSES ON MATHEMATICS AND IT

RMC invites international educators to design courses and give classes, to assess test assignments and to conduct master classes. In November 2020 Lanza De Christforis, professor of the University of Padua, Italy, delivered online lectures “Morrey spaces”. The course attendees included undergraduate and postgraduate students of Southern Federal University and North Ossetian State University after K.L. Khetagurov, RMC members and faculty of the Institute Mathematics, Mechanics and Computer Sciences of SFedU.


Photo: Lanza de Cristoforis is delivering a series of online lectures

In November 2020 A. Molent, a leading researcher at the University of Udine, gave a series of lectures in English entitled “Machine Learning for Finance” to master’s students in the second year of education.

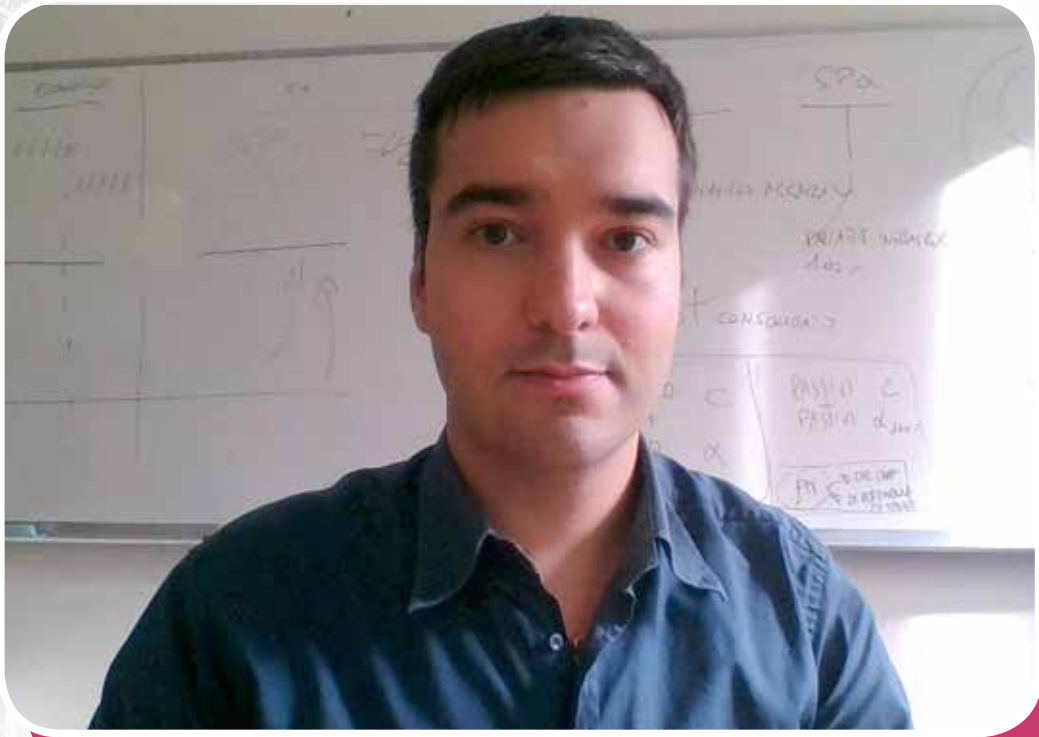


Photo: A. Molent is delivering a course of online lectures

The refresher courses on mathematics and IT were accessible to public. The audience-centered courses were developed by IMMCS of SFedU faculty in collaboration with business community. The meetings were held in in-person and online format as a response to Covid-19.

Online seminars for “Center-Invest” bank workers were organized in July. Series of lectures entitled “Algorithms on Graphs” were given by an invited lecturer Y.M. Erusalimsky, professor, Doctor of Science, and classes on “Decision Making under Uncertainty” were conducted by I.Y Smirnova, a postgraduate student of IMMCS of SFedU.

In August a class “Algorithms and Data Structure” was organized for service industry workers. The purpose of the class was to enhance reporting skills, data and text analysis skills of the participants. The class was given by V.V. Mahno, associate professor of IMMCS of SFedU.

Photo: V.V. Mahno, associate professor, is teaching a practical class

# X. DELIVERY OF LECTURES IN INTERNATIONAL SCIENTIFIC INSTITUTIONS

- In May, 2019 Alexey Karapetyants, head of RMC, visited the Department of Mathematics at the University of Helsinki, Finland, and gave a series of open lectures on elliptic partial differential equations to the students. The visit resulted in signing the agreement on scientific and academic collaboration between RMC of SFedU and the Department of Mathematics of the University of Helsinki.

- In August Vladislav Kravchenko, RMC coordinating head of research, professor of mathematics, gave a series of lectures on analysis and differential equations in the research center CINVESTAV, Mexico.


Photo: A. N. Karapetyants is giving a seminar at the Mathematical Department of the University of Helsinki

- In November 2019 Alexey Karapetyants, head of RMC, visited the Department of Mathematics of the University of Padua. This visit was part of cooperation outlined by the memorandum signed between SFedU and the University of Padua. The two parties discussed the strategy of bilateral cooperation in the upcoming years. Alexey Karapetyants delivered a 12-hour series of lectures entitled “Morrey spaces and Classical Operators in Morrey Spaces” targeted at doctoral students.

- In February 2018 Alexey Karapetyants, head of RMC, visited the Department of Mathematics of the University of Padua and conducted a short course on partial differential equations devised for doctoral students.

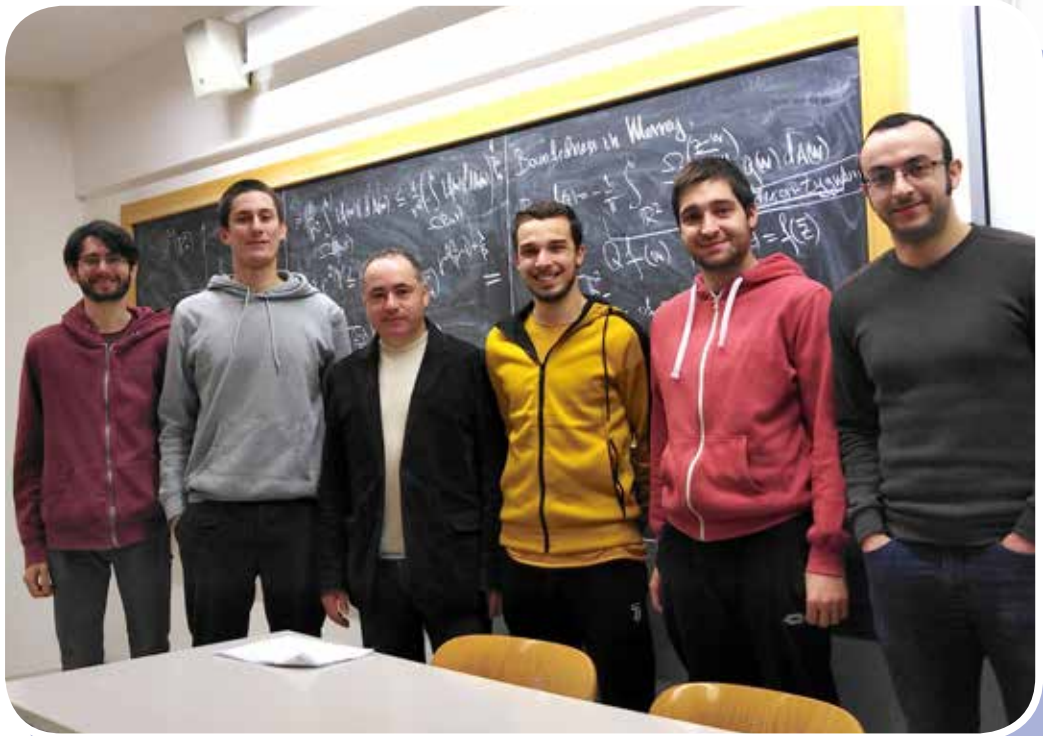


Photo: A. N. Karapetyants is attending a seminar at the Mathematical Department of the University of Padua

## SEMINAR TALKS AT FOREIGN INSTITUTIONS

- Z.A. Kusraeva, seminar talk at the Faculty of Mathematics of Dresden University of Technology, March 5, 2020, Dresden, Germany.
- A.N. Karapetyants, seminar talk at the Department of Mathematics of the University of Padua, Italy, March 2019.
- A.N. Karapetyants, seminar talk at the Department of Mathematics of the University of Helsinki, May 2019.
- A.N. Karapetyants, joint seminar talk with KTH Royal Institute of Technology and Stockholm University, May 2019.
- A.N. Karapetyants, seminar talk at the Department of Mathematics of the University of Padua, Italy, November 2019.


Photo: Lanza de Cristoforis and A.N. Karapetyants

- A.N. Karapetyants, seminar talk at the Department of Mathematics of the University of Turin, Turin, Italy, November 2019 .
- A.N. Karapetyants, seminar talk at the University of Naples Frederiko II, Italy, November 2019.
- A.N. Karapetyants, seminar talk at the Armenian Mathematical Union, December 2019.
- A.N. Karapetyants, seminar talk at the Department of Mathematics of the University of Padua, Italy, February 2018.
- A.N Karapetyants, talk at the International WPML-2018-I seminar at Lulea University of Technology, Lulea, Sweden, June 2018.
- Karapetyants A.N., seminar talk the Department of Mathematics University of Antioquia, Columbia, June 2018.

Photo: A.N. Karapetyants is attending a seminar of the Mathematical Department of the University of Helsinki

- A.N. Karapetyants, seminar talk on analysis at the Department of Mathematics and Statistics of State University of New York at Albany, Albany, New York State, USA, September 2018.
- A.N. Karapetyants, seminar talk on applied analysis, Department of Mathematics of Louisiana State University, Baton Rouge, Louisiana, USA, October 2018.
- A.N. Karapetyants, colloquium talk at the Department of Mathematics of Louisiana State University, Baton Rouge, Louisiana, USA, October 2018.
- A.N. Karapetyants, seminar talk (applied PDE seminar) at the Department of mathematics of University of California, Santa Barbara, Santa Barbara, California, USA, October 2018.
- A.N. Karapetyants, seminar talk on analysis at the Department of Mathematics of Syracuse University, Syracuse, New York State, USA, November 2018.

Photo: A.N. Karapetyants is delivering a lecture in Louisiana, USA

- N Karapetyants, colloquium talk at the Department of Mathematics of Kent State University, Kent, Кент, Ohio, USA, November 2018.
- A.N. Karapetyants, seminar talk at the Department of Mathematics of Michigan State University, East Lansing, Michigan, USA, November 2018.
- A.N. Karapetyants, colloquium talk at the Department of Mathematics and Statistics of the University of Toledo, Toledo, Ohio, USA, November 2018.
- A.N. Karapetyants, colloquium talk at the Department of Mathematics of the University of Alabama University, Tascaloosa, Alabama, USA, November 2018.
- A.N.Karapetyants, seminar talk on analysis and data science at the Department of Mathematics and Statistics, the State University of New York at Albany, New York State, USA, December 2018.
- A.N.Karapetyants, seminar talk on harmonic analysis and equations with partial derivatives at the Graduate School of the State University of New York at Albany, New York State, USA, December 2018.

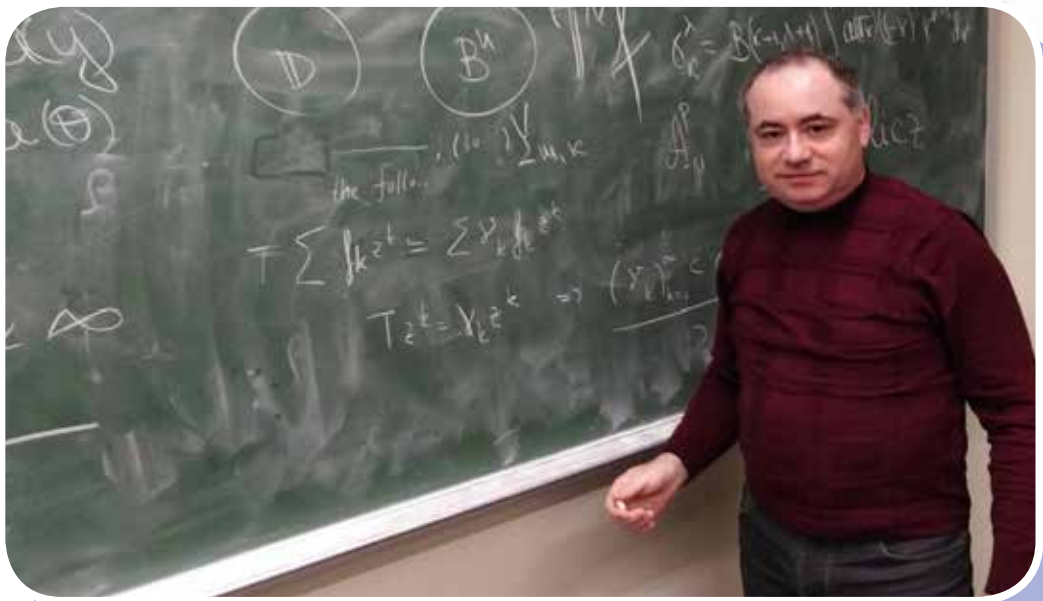


Photo: A.N. Karapetyants is delivering a lecture in Albany, USA

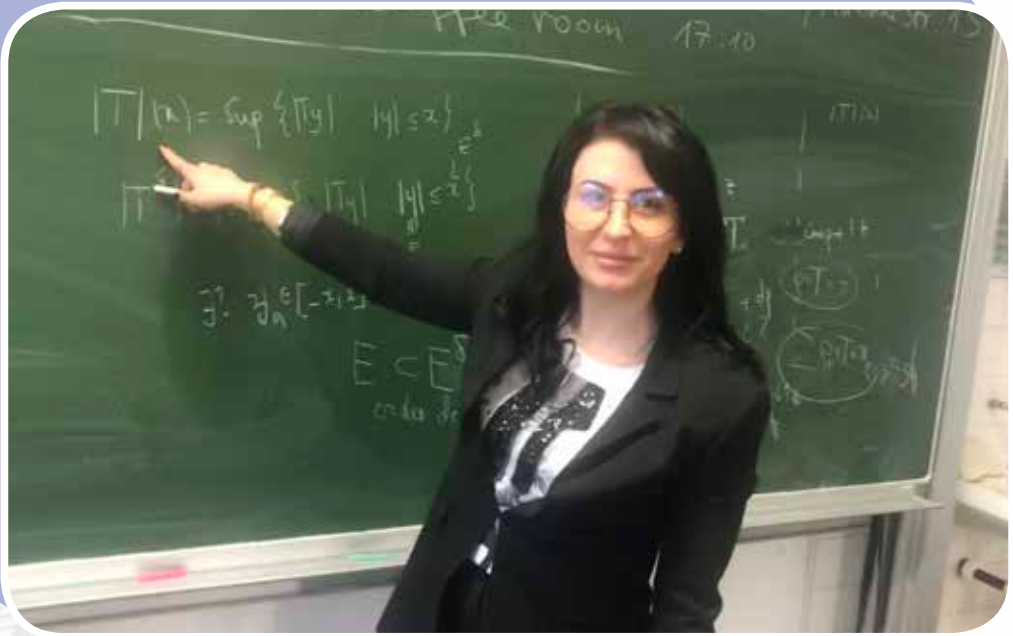


Photo: Z.A. Kusraeva is delivering a lecture in Dresden

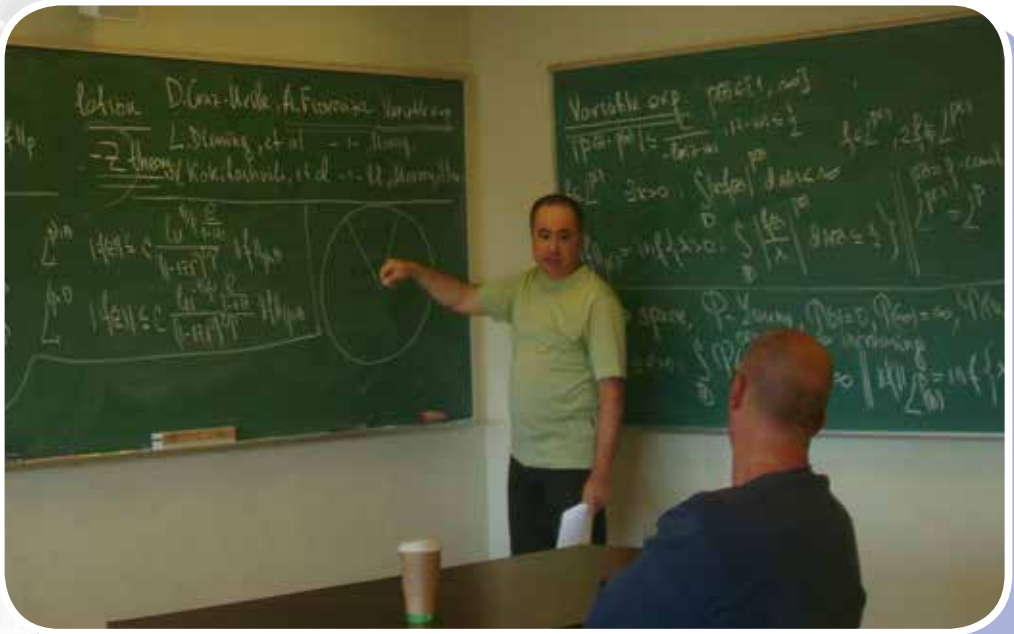


Photo: A.N. Karapetyants is delivering a lecture in Santa Barbara, USA

# PARTICIPATION IN CONFERENCES, SEMINARS AND MATHEMATICAL SCHOOL

- V.V. Kravchenko, online plenary talk at the Congress of Mexican Mathematical Society, October 19-23, 2020.
- A.N. Karapetyants, online talk on differential and functional differential equations at the scientific seminar of S.M. Nikolsky Mathematical Institute RUDN, October 13, 2020.
- A.N. Karapetyants, plenary talk at the International Conference “Crimean Autumn Mathematical School (KROMSH-2020)”, September, 21-25, 2020, Sevastopol, the Republic of Crimea, Russia.
- V.V. Kravchenko, online talk at the 12th International Conference “Clifford Algebras and Their Applications in Mathematical Physics”, August 3-7, 2020, Hefei, China.

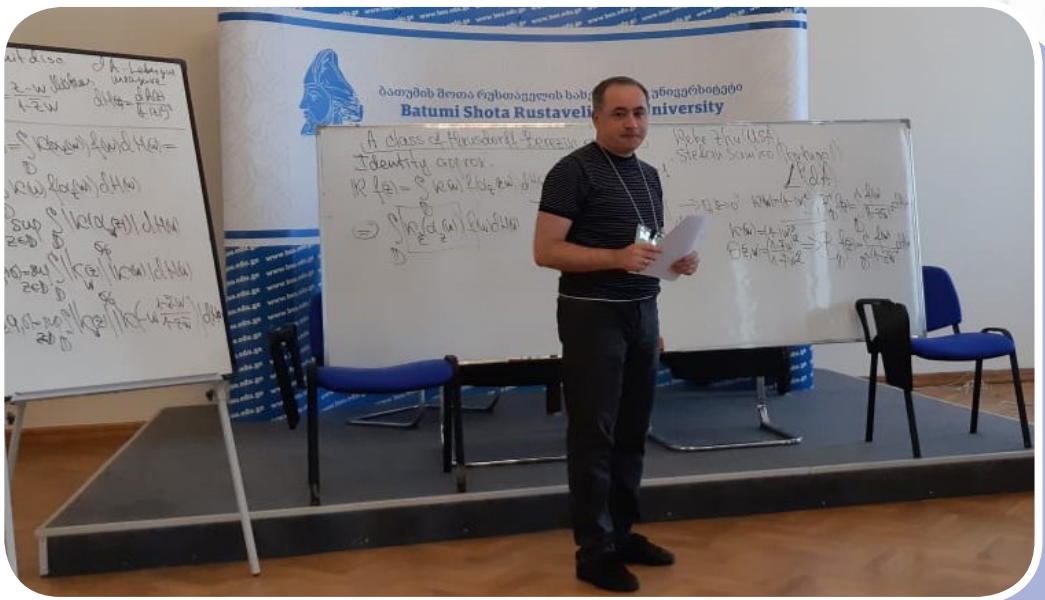



Photo: A.N. Karapetyants is delivering a lecture in Batumi.

- Z.A. Kusraeva, talk at XV Vladikavkaz Youth Mathematical School, September 20-25, 2020, the Republic of North Ossetia-Alania, Vladikavkaz.
- D.B. Rokhlin, online talk at the 5th International Conference on Stochastic Methods (ICSM-5), November 23-27, 2020, Moscow.
- M.A. Karapetyants, talk at the 63th All Russia Scientific Conference, Moscow Institute of Physics and Technology, November 23-29, 2020.
- A.N. Karapetyants, plenary talk at the International conference on complex analysis and mathematical physics dedicated to 70-th anniversary of A.G. Sergeev, Moscow, March 18-22, 2019.
- Kravchenko V.V., plenary talk at the International Conference on complex analysis and mathematical physics dedicated to 70-th anniversary of A.G. Sergeev, Moscow, March 18-22, 2019.

Photo: A.N. Karapetyants is delivering a lecture in Portugal.

- Z.A. Kusraeva, talk at the International Seminar “Ordered Banach Spaces, Positive Operators and Applications”, Dresden, March 27-29, 2019.
- Delgado Briceyda, talk at the International Conference on mathematical methods in physics, Marrakesh, Morocco, April, 1-5, 2019.
- A.N. Karapetyants, plenary talk at the International Conference “Contemporary Methods, Problems and Applications of Operator Theory and Harmonic Analysis IX”, Rostov-on-Don, April 21-26, 2019.
- V.V. Kravchenko, plenary talk at the International Conference “Contemporary Methods, Problems and Applications of Operator Theory and Harmonic Analysis IX”, Rostov-on-Don, April 21-26, 2019.
- O.G. Avsyankin, talk at the International Conference “Contemporary Methods, Problems and Applications of Operator Theory and Harmonic Analysis IX”, Rostov-on-Don, April 21-26, 2019.
- Z.A. Kusraeva, talk at the International Conference “Contemporary Methods, Problems and Applications of Operator Theory and Harmonic Analysis IX”, Rostov-on-Don, April 21-26, 2019.

Photo: O.G. Avsyankin is giving a talk at the conference in Rostov-on-Don.

- O.A. Pichugina, talk at the VIII China-Russia Conference “Numerical Algebra with Applications CRC-NAA’19”, Rostov-on-Don, June, 24-27, 2019.
- Delgado Briceyda, summer school at the Institute of Mathematical Sciences (ICMAT), Madrid, Spain, June, 24–28, 2019.
- Z.A. Kusraeva, talk at the XV International Conference “Numerical Analysis and Related Problems of Mathematical Analysis”, the republic of North Ossetia-Alania, Tsei, July, 15-20, 2019.
- A.N. Karapetyants, invited talk at the third International Conference “Operators in General Morrey-type Spaces” (OMTSA 2019), Kutahya, Turkey.
- A.N. Karapetyants, talk at the International Conference on operator theory and applications (IWOTA 2019), the Technical University of Lisbon, Portugal.
- A.N. Karapetyants, talk at the International Conference «12-th International Symposium ISAAC”, the University of Aveiro, Portugal, June, 29 – August, 2, 2019.

Photo: A.N. Karapetyants at the conference in Turkey.

- Restrepo Joel, talk at the International Conference “12-th International Symposium ISAAC”, the University of Aveiro, Portugal, June, 29 – August, 2, 2019.
- Delgado Briceyda, talk at the International Conference “12-th International Symposium ISAAC”, the University of Aveiro, Portugal, June, 29 – August, 2, 2019.
- V.V. Kravchenko, plenary talk at the second International Conference on Mathematical Modelling in Applied Sciences, Belgorod, August, 20-24, 2019.
- A.N. Karapetyants, talk at the III International Caucasian Mathematics Conference, Rostov-on-Don, August, 26-29, 2019.
- V.V. Kravchenko, talk at the III International Caucasian Mathematics Conference, Rostov-on-Don, August, 26-29, 2019.

Photo: D. Restrepo is giving a talk at the conference in Armenia.

- Z.A. Kusraeva, talk at talk at the III International Caucasian Mathematics Conference, Rostov-on-Don, August, 26-29, 2019.
- A.N. Karapetyants, plenary talk at the X International Conference of the Georgian Mathematical Union, Batumi, September, 1-6, 2019.
- V.V. Kravchenko, plenary talk at the X International Conference of the Georgian Mathematical Union, Batumi, September, 1-6, 2019.
- O.A. Pichugina, talk at the XVIII All Russia Conference of early career researchers “Contemporary Problems of Mathematical Modelling”, Abrau-Durso, September, 16-21, 2019.
- V.V. Kravchenko, plenary talk at the International Conference “Conversion Operators and Appliocations”, Queretaro, Mexico, September, 17-18, 2019.

Photo: V.V. Kravchenko is delivering a lecture in Belgorod.

- V.V. Kravchenko, plenary talk at the International Conference “Quantum Fest”, Mexico City, Mexico, October, 28 – November, 1, 2019.
- A..N. Karapetyants, plenary talk. at the XIV Annual Scientific Conference of the Russian-Armenian University, December, 2-6, 2019.
- A.N.Karapetyants, talk at the third Northeastern Analysis Meeting (NEAM 2018), State University of New York at Palz, New Paltz, SUNY, October, 19-21, 2018.
- A.N.Karapetyants, plenary talk. at the International Conference “Contemporary Methods, Problems and Applications of Operator Theory and Harmonic Analysis –VIII”, Rostov-on-Don, April, 22-27, 2018.
- V.V. Kravchenko, plenary talk at the International Conference “Contemporary Methods, Problems and Applications of Operator theory and Harmonic Analysis VIII”, Rostov-on-Don, April 22-27, 2018.

Photo: V.V. Kravchenko is delivering a lecture in Batumi.

- V.V. Kravchenko, plenary talk at the International Conference “Problems of Applied Mathematics, Informatics and Mechanics”, Voronezh, December, 17 – 19, 2018.
- O. G.Avsyankin, talk at the International Conference “Contemporary Methods, Problems and Applications of Operator Theory and Harmonic Analysis VIII”, Rostov-on-Don, April 22-27, 2018.
- Z. A Kusraeva, talk at the International Conference “Contemporary Methods, Problems and Applications of Operator Theory and Harmonic Analysis VIII”, Rostov-on-Don, April 22-27, 2018.
- Z. A Kusraeva, talk at the XIV Vladikavkaz Youth Mathematical Conference, July, 16-21, 2018, the republic of North Ossetia-Alania, Alagir region, Tsei.

Photo: O.A. Prozorov is delivering a lecture at the youth conference in Vladikavkaz.

- Z. A Kusraeva, public lecture “Great Mathematical Issues” at the VIII All Russia Festival of Scince held in Vladikavkaz, October, 12-14, 2018, North Caucasus Mining and Metallurgical Institute (State Technological University), Vladikavkaz.
- O.A. Prozorov, series of lectures on “Mathematical Modelling of Convective Processes in Liquid with Application Package” at the XIV Vladikavkaz Youth Mathematical Conference, July, 16-21, 2018, the republic of North Ossetia-Alania, Alagir region, Tsei.
- Delgado Briseida, talk at the International Conference “Problems of Applied Mathematics, Informatics and Mechanics”, Voronezh, Decemeber, 17 – 19, 2018.
- Joel Restrepo, talk at the International Conference on Harmonic Analysis and Approximation, Armenia, September, 2018.

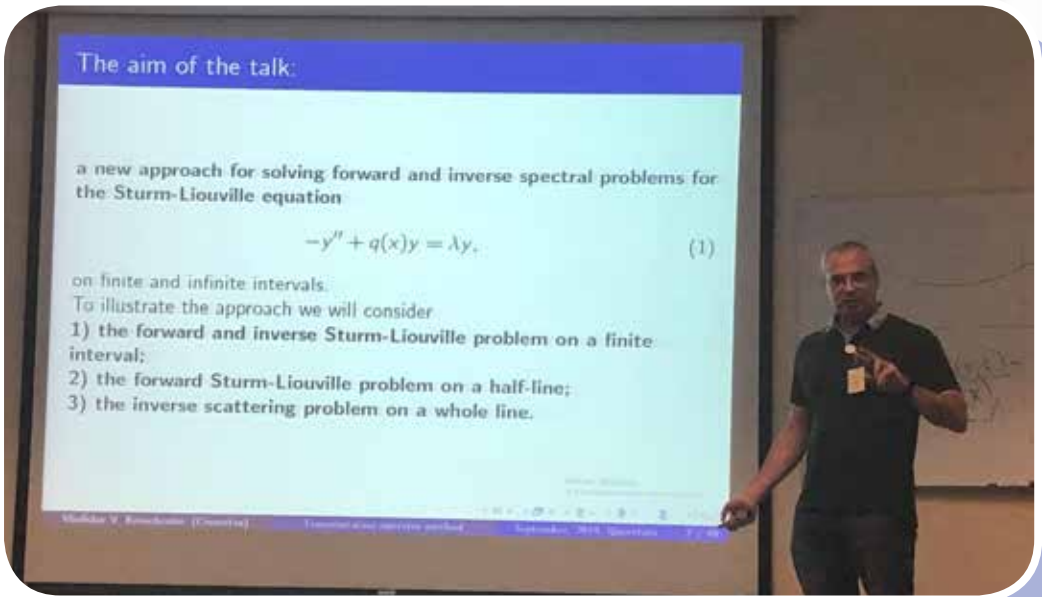



Photo: V.V. Kravchenko is delivering a lecture in Mexico.


Photo: V.V. Kravchenko is delivering an online lecture at the Congress of Mexican Mathematical Society.

Photo: A.N. Karapetyants is delivering a lecture in the Crimea.

## PARTICIPATION IN OTHER EVENTS

- Prozorov O.A., design of the program for 8-9 graders and work in intensive educational program “Physics, Mathematics” organized and run by “Regional Center for Identification and Development of Gifted Children”, Complementary Education Program of Rostov, “Steps to Success” in summer, 2019.
- Z.A. Kusraeva, organization of the IX All Russia Festival “NAUKA 0+” in Vladikavkaz, September, 11-13, 2019.
- Z.A. Kusraeva, conference moderator of “The Science for the Public” at Festival of Science in Vladikavkaz, October, 11, 2019.
- Delgado Briceyda, research work at Complutense University of Madrid, Spain, September – October, 2019.
- Delgado Briceyda, research work under guidance of Doctor Juliette Leblond, France. Project title: Bounded Extremal Problems in Analytic Spaces.

# XI. PUBLICATIONS

## MONOGRAPH

1. V. V. Kravchenko Direct and inverse Sturm-Liouville problems: A Method of Solution, Birkhäuser, Cham, 2020. ISBN 978-3-030-47848-3.

## PUBLISHED ARTICLES

1. V. Kravchenko, E. L. Shishkina, S. M. Torba A transmutation operator method for solving the inverse quantum scattering problem // Inverse Problems v.36, №12 (2020) #125007 (23pp) 2020. https://doi.org/10.1088/1361-6420/abbf8f.
2. V. V. Kravchenko, S. M. Torba A direct method for solving inverse Sturm-Liouville problems // Inverse Problems, https://doi.org/10.1088/1361-6420/abce9f.
3. K. V. Khmelnytskaya, V. V. Kravchenko, S. M. Torba Time-dependent one-dimensional electromagnetic wave propagation in inhomogeneous media: exact solution in terms of transmutations and Neumann series of Bessel functions. Lobachevskii Journal of Mathematics, v. 41, issue 5, 2020, 785-796.
4. V. V. Kravchenko, Víctor A. Vicente-Benítez Transmutation operators and complete systems of solutions for the radial Schrödinger equation. // Mathematical Methods in the Applied Sciences. Special Issue: Operator Theory and Harmonic Analysis. V. 43, N. 16. 2020. DOI: 10.1002/mma.6322. p. 9455-9486.
5. H. M. Campos, V. V. Kravchenko The Bergman kernel for the Vekua equation. // Mathematical Methods in the Applied Sciences. Special Issue: Operator Theory and Harmonic Analysis. V. 43, N. 16. 2020. p.9448-9454 DOI: 10.1002/mma.6308.
6. A. N. Karapetyants, K. V. Khmelnytskaya, V. V. Kravchenko, A practical method for solving the inverse quantum scattering problem on a half line. Journal of Physics: Conference Series, V. 1540. 2020, 7pp. doi:10.1088/1742-6596/1540/1/012007

7. O. Blasco, A. N. Karapetyants, J. E. Restrepo. Holomorphic Holder type spaces and composition operators. // Math. Meth. Appl. Sci. Volume 43, Issue 17, pp. 10005-10026. DOI: 10.1002/mma.6675.
8. Karapetyants A, Liflyand E. Defining Hausdorff operators on Euclidean spaces // Mathematical Methods in the Applied Sciences. Special Issue: Operator Theory and Harmonic Analysis. V. 43, N. 16. 2020. p. 9487-9498. https://doi.org/10.1002/mma.6448.
9. Karapetyants, A., Samko, S. Hadamard–Bergman Convolution Operators // Complex Analysis and Operator Theory, 2020, 14(8). https://doi.org/10.1007/s11785-020-01035-w.
10. Karapetyants, A., Restrepo, J.E. Generalized Hölder Type Spaces of Harmonic Functions in the Unit Ball and Half Space // Czechoslovak Mathematical Journal, 2020, 70(3), с. 675-691. https://doi.org/10.21136/CMJ.2019.0431-18.
11. Avsyankin O. G. Integral Operators with Periodic Kernels in Spaces of Integrable Functions, Russian Mathematics, 64:2 (2020), 1-7. https://doi.org/10.3103/S1066369X20020012.
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13. 13.K. Y. Ilyina, Z.A. Kusraeva Extension of Positive Operators // Siberian Mathematical Journal Vol 61, N 2. 2020, P. 330-336.
14. 14.A.A. Gelieva, Z.A. Kusraeva Majorised Extension of Linear Operators // Matematicheski Zametki Vol 108, N.2, 2020. P. 190-199.
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16. S.N. Siukaev, Z.A. Kusraeva Some Features of Orthogonally Additive Polynomials in Banach Lattices// Vladikavkazsky Matematichesky Zhurnal, 2020.

17. A. N. Karapetyants, V. Y. Protasov The Spaces of Dyadic Distributions // Funktsionalnyi Analyz I Ego Prilozhenia, Vol. 54, N 4, P. 56–63. https://doi.org/10.4213/faa3799.
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20. Briceyda B. Delgado, Kira V. Khmelnytskaya, Vladislav V. Kravchenko A representation for Jost solutions and an efficient method for solving the spectral problem on the half line // Mathematical Methods in the Applied Sciences. Special Issue: Operator Theory and Harmonic Analysis. V.5, N. 16. 2020. p. 9304-9319. https://doi.org/10.1002/mma.5881.
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29. V. V. Kravchenko, S. M. Torba, J. Yu. Santana-Bejarano Generalized wave polynomials and transmutations related to perturbed Bessel equations. // Mathematical Methods in the Applied Sciences v. 42, no. 15, 2019, 5008–5028. DOI: 10.1002/mma.5195.
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44. V. V. Kravchenko, E. L. Shishkina, S. M. Torba On a Series Representation for Integral Kernels of Transmutation Operators for Perturbed Bessel Equations. Mathematical Notes 2018, v. 104 (3-4), 530-544. https://doi.org/10.1134/S0001434618090201..

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## ARTICLES IN BOOK SERIES

1. A.Karapetyants, I. Louhichi. Fractional Integrodifferentiation and Toeplitz operators with vertical symbols. W. Bauer et al. (eds.), Operator Algebras, Toeplitz Operators and Related Topics, Operator Theory: Advances and Applications. pp. 175-187 https://doi.org/10.1007/978-3-030-44651-2_13.
2. A.Karapetyants, J.Taskinen. Toeplitz operators with radial symbols on weighted holomorphic Orlicz space. W. Bauer et al. (eds.), Operator Algebras, Toeplitz Operators and Related Topics, Operator Theory: Advances and Applications. pp. 189-204. https://doi.org/10.1007/978-3-030-44651-2_14.
3. Avsyankin O.G. On multidimensional integral operators with homogeneous kernels in classes with asymptotics. A. Karapetyants et.al. (eds.) Operator Theory and Harmonic Analysis: Springer Proceedings in Mathematics & Statistics.
4. V. V. Kravchenko, S. M. Sitnik Some recent developments in the transmutation operator approach. In the volume V. V. Kravchenko, S. M. Sitnik (eds.), Transmutation Operators and Applications, Trends in Mathematics, Birkhäuser, 2020, pp. 3-9.
5. Rokhlin D.B., Ougolnitsky G.A. Optimal Incentive Strategy in a Continuous Time Inverse Stackelberg Game. In: Petrosyan L.A., Mazalov V.V., Zenkevich N.A. (eds) Frontiers of Dynamic Games. Static & Dynamic Game Theory: Foundations & Applications. Birkhäuser, Cham. 2020. https://doi.org/10.1007/978-3-030-51941-4_13.
6. Restrepo J.E., R. A. Higuita and Shilpi Jain Hyers-Ulam-Rassias Stabilities of Some Classes of Fractional Differential Equations // Special Functions and Analysis of Differential Equations. In Praveen Agarwal, Ravi P Agarwal, Michael Ruzhansky (eds). Chapter 4. pp.1-16. https://doi.org/10.1201/9780429320026.
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13. J. E. Restrepo, A. Piedrahita, P. Agarwal Multidimensional Fourier Transform and Fractional Derivative // PJMS (Proceedings of the Jangjeon Mathematical Society), ISSN: 1598-7264, V.22 fasc.2, p.269-279, 2019. DOI: 10.17777/pjms2019.22.2.269.

# ESTABLISHING A JOINT RESEARCH NETWORK

RMC prioritizes development of international partnership and joint research. Joint projects allow to utilize additional resources which in their turn increase the quality of research, provide more valid results and foster international collaboration.

In 2020 a number of projects conducted by leading Russian and overseas scientists were completed. Project results were published in top peer-reviewed journals.

## Lanza de Cristoforis, the University of Padua, Italy.

Project "Composition Operators in Morrey Spaces and Grand Lebesgue Spaces, Operation and Continuity Conditions".

## L. Saavedra, University of Cadiz, Spain.

Project "Schur's Lemma and Uniform Convergence of Series by Convergence Methods".
Project "On l∞-Grothendieck Subspaces".

## N. Samko, Arctic University of Norway.

Project "Characterization of Integrability of Laplace Integral Transform in Terms of Morrey Type Function Spaces".
Project "New Conditions for Weighted Inequalities for Fourier Transform".

**S. Grudsky, the Center for Research and Advanced Studies of the National Polytechnic Institute in Mexico.**

Project “Eigenvalue Clusters of Large Tetradioganal Toeplitz Matrices”.

**A. Krivoshein, Saint Petersburg State University, Russia.**

Project “Wavelet Systems with Various Special Qualities”.

**I. Liflyand, Bar-Illan University.**

Project “Real Hardy Spaces, Multidimensional Variations and Intergrability of the Fourier Transform”.

Project “Re-Expansions on Compact Lie Groups”.

**A. Soldatov, Federal Research Center “Informatics and Management” of the Russian Academy of Sciences, Russia.**

Project “A Factorization Problem on a Smooth Two-Dimensional Surface”.


Real Hardy Space, Multidimensional Variations, and Integrability of the Fourier Transform


Schur Lemma and Uniform Convergence of Seri through Convergence Methods


Hexagonally symmetric orthogonal filters with $\sqrt{3}$ refinement

# XII. FORTHCOMING EVENTS

Modern Methods, Problems and Applications of Operator Theory and Harmonic Analysis (OTHA-X)

X International Conference "Contemporary Methods and Problems of Operator Theory and Harmonic Analysis and Their Applications" (OTHA-2021) supported by ISAAC (International Society for Analysis, its Applications and Computation) is due to take place in 2021 at Southern Federal University. The conference will be held in honour of the 80th anniversary of Stephan Grigorievich Samko.

The conference will focus primarily on plenary talks given by eminent specialists in various fields of study such as real and complex analysis, operator theory, harmonic analysis, approximation theory, theory of partial differential equations

**For more information on the conference visit: http://otha.sfedu.ru/**

Photo: OTHA-2019 conference attendees

XXVII International conference “Mathematics. Economics. Education”, XI International Symposium “Fourier Series and Applications”

XXVII International conference “Mathematics. Economics. Education” and XI International Symposium “Fourier Series and Applications” will be held May, 27 – June, 3 2021. The events will be supported by RMC of SFedU.

**For more information on the conference visit: https://conf-symp.sfedu.ru/**

XVI International Scientific Conference “Numerical Analysis and Related Problems of Mathematical Analysis”

In June 2021 Vladikavkaz Scientific Center RAS will host XVI International Scientific Conference “Numerical Analysis and Related Problems of Mathematical Analysis”.

Photo: “Mathematics. Economics. Education - 2018” conference attendees

# XIII. RMC MEMBERS

**HEAD**

**KARAPETYANTS ALEXEY NIKOLAEVICH**

**Doctor of Science, Full Professor**

In 1997 he earned a PhD and in 2007 a D.Sc from the Ural Department of RAS. He successfully completed Retraining Managers Federal Program of the Russian Federation (retraining diploma PP 696252, 2004). He underwent the program "Emerging Leaders of Higher Education" of "Skolkovo" Moscow School of Management on demand of Ministry of Education and Science of the Russian Federation (2013). Alexey Nilokaevich is a Government Expert Council member. In 2018 he participated in Fulbright Program and received the position of a visiting professor at State University of New York at Albany, USA. He participated twice in Outreach Lecture Fund. He has been presented with national and international awards (Mexican, USA, and German) for academic and scientific excellence. He performs academic work in the fields of science, education and innovations and is engaged in international activity. He also holds a managerial position. Since 1996 he has been working at Department of Differential and Integral Equations of SFedU (previously known as Rostov State University).

He started his career as an assistant lecturer, then became an associate professor and was finally appointed full professor. From 2004 to 2007 he did a doctoral course at Rostov State University. In 2004 served as head of International Affairs Department of the Southern Scientific Center of RAS (SSC RAS).

In 1998-2007 he worked as a visiting professor at the universities of Mexico, USA, Portugal, and Germany. In 2008 – 2012 Alexey Nikolaevich served as the vice rector of Informatization of Education of Southern Federal University.
He carried out research in Russia and abroad, taught in English and Spanish in different universities of the world (Mexico, USA, Germany, Portugal), he presented talks at seminars and colloquiums, was invited as a thesis opponent to universities of Mexico, USA, UAE, Germany, Spain, Italy, Serbia, Portugal, Sweden, Belarus, Armenia, and Georgia. From 1998 to 2013 he did 12 internship courses on science, education, management in national and international institutions (5 international, 5 national and 2 joint programs). Alexey Nikolaevich speaks Russian, Spanish and is fluent in English.

## COORDINATING HEAD OF RESEARCH
**KRAVCHENKO VLADISLAV VICTOROVICH**
**PhD (1994, Rostov State University), Full Professor**

He published four monographs and over a hundred scientific articles in international indexed journals. His research interests include mathematical analysis, differential equations, mathematical physics, wave propagation in complex structures. He received the award of ISAAC, International Society for Analysis, its Applications and Computation, Germany, Berlin (2001), the Best Research prize of the National Polytechnic Institute of Mexico (1998 and 2005), the Best Research Instructor of the National Polytechnic Institute of Mexico (2001 and 2004).

He is an editorial board member of indexed journals such as Mathematical Methods in the Applied Sciences (published by Wiley) and Advances in Applied Clifford Algebras (published by Springer).

Vladislav Victorovich is a program committee member of the OTHA conference and since 2016 has been presiding over the section "Differential Analysis and Mathematical Physics" which is held annually in SFedU. He speaks Russian, Spanish and is fluent in English.

## SENIOR RESEARCHER

### AVSYANKIN OLEG GENNADIEVICH

**D.Sc., is head of the Department of Differential and Intergral Equations of SFedU**

In 1997 he defended PhD thesis entitled "Multidimentional Integral Operators with Homogenous Kernels" (specialty 01.01.01), in 2009 he defended doctoral thesis entitled "Development of Theory of Multidimensional Integral Operators with Homogenous and Bi-homogenous Kernels" (specialty 01.01.01). He has published several textbooks and devised new educational programs that vary in levels of complexity. He has been working in scientific and academic fields for 24 years.

He published over 90 research papers, including 27 works indexed in Scopus and Web of Science journals. His research interests lie in integral operators and equations with homogenous kernels, convolution operator, integral operators with periodic kernels, Banach algebras of operators, projection methods for solving operator equations, Morrey type spaces.

Oleg Gennadievich is a member of SFedU degree committee 06.01 and expert council "Mathematics, Mechanics and Computing" (SFedU). He is head of postgraduate course 01.06.01 "Mathematics and Mechanics" (2018).

He is co-chair of the organizing committee of the international conference "Modern Methods, Problems and Applications of Operator Theory and Harmonic Analysis", a member of the organizing committee of VII-IX International Conferences "Mathematics. Economics. Education". He is a jury member of the annual conference "Don Academy of Science of Young Researchers". He speaks Russian and English.

## SENIOR RESEARCHER
**ROHLIN DMITRI BORISOVICH**
**D.Sc**

In 1998 defended a PhD thesis entitled "Asymptotic Study of Linear Equations of Shallow Water Hydrodynamics", specialty: 01.02.05 – Mechanics of Fluids and Plasma (Saint Petersburg State University) and in 2010 he defended a doctoral thesis entitled «Arbitrage pricing theory in stochastic models of financial markets" specialty: 01.01.05 – Probability Theory and Mathematical Statistics (Steklov Mathematical Institute of RAS).

From 1998 to 2011 he worked at SFedU in a variety of positions ranging from assistant lecturer, associate professor, to professor at the Department of Mathematics and Operations Research. He is a member of SFedU degree committee 01.05.

He is head of bachelor's course 01.03.02 "Applied Mathematics and Informatics" (20170). His research interests lie in optimization, decision making in conditions of uncertainty, finance mathematics, optimal management. He has 38 publications in Scopus database. Research findings relate to no arbitrage markets criteria, Kreps-Yan theorem about cone-separation, stochastic Perron method, central limit theorem in model uncertainty, optimal pricing mechanisms and incentives. He speaks Russian and English.

## SENIOR RESEARCHER
**KUSRAEVA ZALINA ANATOLIEVNA**
**PhD**

Earned a PhD in 2013. Her thesis was entitled “Orthogonally Additive Polynomials in Vector Lattices”. Her research interests are vector lattices, Banach lattices, degree of vector lattice, universal completeness, d-basis, local one-dimentionality, bornology, homogenous polynomial, orthogonal additivity, Maharam polynomial, Wickstead problem, complex structures, involution.

Her basic findings in representation and applications of orthogonally additive polynomials appeared in 40 papers. 11 articles were published in journals approved by Higher Attestation Commission of Russia, 13 are in journals indexed in WoS, 13 are in journals indexed in Scopus.

## SENIOR RESEARCHER
**PROZOROV OLEG ALEKSANDROVICH**
**PhD**

Is head of SFedU Sunday Math School, organizer and co-organizer of events for school and university students. He is a jury member of SFedU Mathematical Olympiad for secondary students. He was an advisory board member of University Games (2015-2019). He presides over “General Mathematics” jury of Don Academy of Science of Young Researchers named after Y.A. Zhdanov. He is a member of the regional jury of all Russia Mathematical Olympiad for school students and an advisory board member of Interuniversity Mathematical Olympiad. He speaks Russian and English.

## LEAD PROGRAMMER
**PICHUGINA OLGA ALEKSANDROVNA**
**PhD**

Was an organizing committee member of 15 international and national conferences. In 2013-2018 she was program chair of Russian-Chinese conference “Numerical Algebra with Applications (CRC-NAA)”. She is a coordinator of 3 grand programs of Russian Foundation of Basic Research (RFBR), and is involved in over 10 grant programs of RFBR, “Universities of Russia” program of Ministry of Education. She was a member of expert council of youth policy from 2012 to 2015. She published over 30 works including monographs, textbooks and scientific articles in indexed journals. Her research interests are in iterative methods, Krylov subspace methods and preconditioning. She speaks Russian and English.

## LEAD ENGINEER
**VASILIEVA-BAGER ELENA EVGENIEVNA**

Is responsible for administrative oversight of RMC activities, including document management, provision of legislative and regulative framework. She also oversees dissemination of information related to events organized by RMC of SFedU, translation of materials into English. She speaks Russian and is fluent in English.

## LEAD PROGRAMMER
**ZAICHENKO ALEXANDER VLADIMIROVICH**

Promotes the establishment of legislative and regulative framework required for the development of educational projects and implementation of initiatives that align with RMC guidelines.

# XIV. 2018-2020 HIGHLIGHTS

**61 ARTICLES** were published by RMC members in peer-reviewed journals indexed in the Web of Science/Scopus, 52 articles by key researchers and 9 by affiliated researchers, 32 articles were published in Q1 and Q2 journals, 30 were written by young researchers or coauthored by young researchers.

**8 INTERNATIONAL CONFERENCES AND SCHOOLS** were organized. Approximately 2,000 mathematicians from over 40 counties attended the events. Around 100 plenary and invited speakers gave talks, international scientists constituted 50% of the total number of speakers.

**HIGH LEVEL OF ACADEMIC MOBILITY**, RMC invited 11 short-term visiting professors with the service period of up to 2 weeks, 9 of them were overseas specialists with the visiting period ranging from 3 to 5 years, 8 worked for a period of 6 months to 3 years, 5 mathematicians did RMC internship courses, 3 of them were scientists from abroad.

**OVER 90 SCIENTIFIC SEMINARS** were held by RMC. The events brought together mathematicians from over 50 countries. 18 webinars were led by prominent lecturers form various scientific centers. 30 lectures were given by invited speakers.

**WORK WITH SECONDARY, UNDERGRADUATE AND POSTGRADUATE STUDENTS**: over 2500 students, 250 undergraduate and postgraduate students took part in RMC events. In the course of its operation, RMC has organized 4 summer schools, 2 clubs, over 15 mathematical contests and olympiads. Approximately 30 undergraduate and postgraduate students are conducting research at RMC. 3 RMC supported dissertations were defended, 6 educational modules were launched.

**OTHER ACHIEVEMENTS**: RMC has become an international community comprising Russian and 5 overseas researchers, who have worked or are currently working in RMC. RMC members authored and edited 6 books. 13 agreements about scientific collaboration were signed, extensive network of national and international contacts was established, 20 teachers are involved in the work of the Center. For more information visit: **http://rmc.sfedu.ru**

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