ISAAC - Newsletter December

Message of the President

Dear ISAAC members,

A second year in the current pandemic is coming to an end. While some of you could hone their newly acquired skills in online teaching or try to minimize the additional workload of hybrid teaching others were back to presential teaching (either with or without mask). In any case social interaction was minimised and face-to-face collaboration rather difficult to achieve, although we learned to treasure these moments.

Unfortunately, the continuing pandemic also meant that we could not meet each other personally at the ISAAC congress in Ghent this summer, but fortunately Jasson Vindas and his team did a tremendous effort to make the online meeting as pleasant an experience as possible. Still, my hope is to see most of you in person at the next ISAAC Congress in Ribeirão Preto in 2023.

This year also saw the very successful 4 years' presidency of Michael Reissig coming to an end. During this time ISAAC witnessed an unprecedented growth with more than a hundred new members and its administration got modernised and situated in Sweden. More importantly, since a society lives from the activities of its members we could all observe how ISAAC activities increased during these years. That his legacy will continue you can see at the continuous growth of our society even after Michael Reissig left the office, but not his commitment and dedication to our society.

Despite all the problems caused by the Corona pandemic ISAAC continues to growth with new members and new activities some of which you can find in this newsletter. That being a mathematician does not mean living in an ivory tower you can observe in the special feature article about our colleague Duvan Cardona in a Colombian boulevard journal.

Next year we will have the ICM 2022 in Saint Petersburg. Since we have a strong Russian community in our society there will be several events organised by ISAAC members in connection with the ICM. We will present some of them in this newsletter. If you plan to go to Saint Petersburg you may want to combine the experience with a additional participation in these events.

The election of the new ISAAC board is underway under the direction of our treasurer Irene Sabadini and I can only urge everybody to participate in the vote. A society is only as strong as the willingness of its members to actively participate in it and we need a board which represents everybody in our society. In case you have problems to vote just send an e-mail to one of the officers and we gladly will help you.

We wish you all a Merry Christmas and a Happy New and Successful Year.

Uwe Kähler
President of ISAAC

Professor Mitsuru Sugimoto

A remarkable scientist within analysis

It is my pleasure to write something about professor Mitsuru Sugimoto who had his 60th birthday earlier this year. Sugimoto became in early years active in mathematical research. Already in 1988, Sugimoto published as 27 years old PhD student, his first three papers in high quality journals. In these papers he established several continuity properties for pseudo-differential operators with non-smooth symbols when acting on Lebesgue spaces, especially on L^2. In particular he used different kinds of Besov spaces as symbol classes. In his first papers he improved several classical results, established by Calderon,Vaillancourt, Coifman, Meyer, Cordes, etc.
In the subsequent years, Sugimoto continued to produce important research within micro-local and harmonic analysis, e.g. finding energy estimates for hyperbolic and parabolic partial differential operators. During 2003, Sugimoto began a close collaboration with Michael Ruzhansky. Since then, Sugimoto together with collaborators has obtained several important results about Fourier integral operators, often with non-smooth amplitudes, e.g. when belonging to Besov, Sobolev or modulation spaces. These investigations also include detailed compactness issues in terms of Schatten-von Neumann operators and nuclear operator classes. In the analyses, Sugimoto and his collaborators often combine micro-local analysis with harmonic analysis.
In the subsequent years, Sugimoto continued to produce important research within micro-local and harmonic analysis, e.g. finding energy estimates for hyperbolic and parabolic partial differential operators. During 2003, Sugimoto began a close collaboration with Michael Ruzhansky. Since then, Sugimoto together with collaborators has obtained several important results about Fourier integral operators, often with non-smooth amplitudes, e.g. when belonging to Besov, Sobolev or modulation spaces. These investigations also include detailed compactness issues in terms of Schatten-von Neumann operators and nuclear operator classes. In the analyses, Sugimoto and his collaborators often combine micro-local analysis with harmonic analysis.
During the last 10 years, the research by Sugimoto include (but is not limited to):

- sharp estimates for Schrödinger propagators (with Neal Bez);
- nonlinear operations on modulation spaces (with Naohito Tomita);
- scaling limit of modulation spaces (with Baoxiang Wang);
- deducing global L^p-boundedness from local L^p-boundedness for certain classes of Fourier integral operators (with Michael Ruzhansky).

Beside these activities, Sugimoto has also successfully supervised several PhD, who are very well-recognized in the scientific community.

Perhaps the first time I met Sugimoto was at a conference in Osaka during the summer 2003. In that conference I also met Michael Ruzhansky and it was obvious that a long and fruitful collaboration between them had started. One year later, both Sugimoto and Michael Ruzhansky visited a conference that I and some othersorganized in my home town - Växjö in Sweden. Here they, beside their excellence in harmonic and micro-local analysis, also show strong courage - they bought each one of them a can of "Surströmming". This is a kind fermented fish which is popular in the north part of Sweden and in some parts of Finland. To have an idea about the smell when opening such cans, see e.g.

https://www.youtube.com/watch?v=vfiGmcQFiDY$\&$t=1s

Three years later I was invited to Japan by Sugimoto and some others. During that visit, me, Sugimoto, Ruzhansky and Tomita had a nice collaboration about negative properties concerning pullbacks for modulation spaces (so-called Beurling-Helson property). In our joint discussions, the ideas from Sugimoto were fundamental for our final results.

In the end I am very happy to give my best gratitudes to my friend Sugimoto at his 60th birthday, both here and earlier at the conference Harmonic Analysis and Wave Phenomena which was held at Nagoya University, Japan, in occasion of his 60th birthday, see

https://www.math.nagoya-u.ac.jp/en/research/conference/2021/sugimoto-60th.html

Joachim Toft

Duvan Cardona

in Revista D Escenarios

That mathematicians are not always ignored by the boulevard press can be seen in the August 2021 edition of the Mexican magazine ***Revista D Escenarios*** which dedicated a feature article to the Colombian mathematician, ISAAC member, and member of the Ghent Analysis and PDE Center, Duvan Cardona Sanchez, including an interview with him. In it he discusses the responsibilities of being a young and promising mathematician doing is undergraduate work at the Universidad del Valle, Los Andes University and moving on to collaborate with our ISAAC members Michael Ruzhansky and Julio Delgado. In particular, he remarked the amazing experience of working under the supervision of Michael Ruzhansky, our former president and long-term board member. It is particularly interesting to see him talk about his amazing experience of working with fellows and colleagues from several countries, Russia, Kazakhstan, India, Italy, Colombia, Austria, China, etc. and the high level of the scientific research developed in the group of Michael Ruzhansky. It is amazing to see what Latin-American mathematicians can achieve in modern times by pushing their dedication to Mathematics as well as being committed to improve the education in his home country.

On the photo – Duvan Cardona

The whole feature article can be found under

https://cdn.flow.page/images/8306f11d-77b6-4079-8755-95db790221b6-pdf?m=1628260974

Conferences in connection with ICM 2022

- Singularities, Blow-up and Non-Classical Problems in Nonlinear PDEs, RUDN University, Moscow, July 25-30, 2022, http://sing2022moscow.rudn.ru/

The conference "Singularities, Blow-up and Non-Classical Problems in Nonlinear PDEs" will be held in Moscow on July 25-30, 2022 on the base of RUDN University. It is a satellite of the International Congress of Mathematicians. It will concentrate around modern trends in the theory of nonlinear partial differential equations and nonlinear problems of mathematical physics. The main topics of the conference are singularities for nonlinear PDEs, stability of solutions of nonlinear PDEs, peaking regimes in nonlinear evolution equations, large solutions of nonlinear elliptic and parabolic equations and systems, long-time dynamics of nonlinear PDEs, quasilinear equations with measure data, dispersive and other non-classical nonlinear PDEs. The working language of the conference is English. The conference is planned to be organized in the off-line format, but because of the pandemic the on-line participation is also possible.

Andrei Faminskii

vice-chairman of the Organizing committee

- Recent progress in Harmonic and Hypercomplex Analysis with Applications in Mathematical Physics, Yakutsk, Russia, July 18 - 22, 2022,

  https://www.s-vfu.ru/universitet/nauka/mkmm2021/en/

In recent years there has been major advances in harmonic analysis and spectral theory over groups and general noncommutative structures, such as full symbol calculus for compact and nilpotent groups or spectral theory for quaternionic and Clifford-algebra valued operators. These new theories also brought new ideas to areas like very weak solutions of PDEs, anharmonic analysis, or operator calculus over discrete structures as well as in applications in signal and image processing, inverse problems, and machine learning. This conference aims to bring together experts working in these and adjacent fields to exchange new ideas and create future lines of research and collaboration.

The conference is planned from July 18 until July 22, 2022, thus allowing participation in the International Congress of Mathematicians (ICM) in St. Petersburg.

- International Conference “Modern Methods, Problems and Applications of Operator Theory and Harmonic Analysis -XI (OTHA-2022)”, April 24-29, 2022, Rostov-on-Don, Russia

  http://otha.sfedu.ru/conf2022/

The International Conference “Modern Methods, Problems and Applications of Operator Theory and Harmonic Analysis -XI (OTHA-2022)”, to be held 24–29 April in Rostov-on-Don, Russia. The conference is dedicated to the 80 anniversary of Professor Nikolai K. Karapetyants (1942-2005). The conference is an official satellite conference to the International Congress of Mathematicians 2022 in St. Petersburg (ICM, https://icm2022.org/).

The International Conference “Modern Methods, Problems and Applications of Operator Theory and Harmonic Analysis (OTHA)” has been held since 2011(http://otha.sfedu.ru/).

The OTHA aims to contribute to the development the research in operator theory and harmonic analysis and its applications. Conference discussions are devoted to issues of different areas of mathematics and applications such as harmonic analysis, functional analysis, operator theory, function theory, differential equations and variable analysis which has been actively developed during the last decade.

Thanks to the support of ICM there is a limited number of grants for early-career mathematicians and women to attend OTHA-2022 conference. An inquiry that includes a Cover Letter along with CV of the applicant should be submitted to otha.conference@gmail.com. The conference is also supported by the Regional Mathematical Center of Southern Federal University, which allows us to have additional support for scholars to attend the conference and maintain low fees for participation in the conference and in related events.

Official information:

Chair of the Organizational and Program Committee: Alexey Karapetyants (karapetyants@gmail.com).

Website: http://otha.sfedu.ru/conf2022/.

Arrival: April 24th. Departure: April 29th. Working days of the conference: 25 - 28 of April 2022.

Deadline for registration and for abstracts submission: 01 April 2022.

Contacts: otha.conference@gmail.com.

OTHA – 2022 an ICM Satellite Conference

Online series of International Intensive Courses dedicated to Dirac operators, Hypercomplex and Harmonic Analysis

Since November 2020 the ISAAC is supporting a new online series of international intensive courses. This series is dedicated to Dirac operators, Hypercomplex and Harmonic Analysis (but not only) and it is jointly organized by Chapman University, Politecnico di Milano, and University of Aveiro.

The courses are lectured by experts in the field and directed to postgraduate students and young researchers from all alround the world, as well as to all who wish to expand their knowledge on current topics in these and related areas.

The course, titled "Fundamentals of Time-Frequency Analysis and Wavelet Theory" was taugth by Professor David F. Walnut, George Mason University, a leading expert in the field.

On the photo – D. F. Walnut

An abstract of the course and the topics of the various lectures can be found on the website

http://sweet.ua.pt/pceres/ICC_Dirac_prov/Webpage/Home.html

Over 110 participants from all around the world registered for the event. Furthermore, they can access the recorded videos and the material. There has been a remarkable high number of participants from Africa, and some of them decided to join ISAAC afterwards. Online participation was really active and Prof. David Walnut has been highly appreciated for the clarity and completeness of his explanations, taking care of the various questions and comments after his lectures.

Prepare the present
Aim for the Future

Up-coming conferences

- Computational Methods and Function Theory, 10 - 14 January, 2022, Valparaíso,

  https://cmft2021.inf.utfsm.cl/

- 20th Annual Workshop on Applications and Generalizations of Complex Analysis, 25 - 26 March, 2022, Aveiro

- 24th European Intensive Course on Complex Analysis, its Generalizations and Applications, 24 March - 1 April, 2022, Aveiro

- International Conference on Mathematical Methods in Physics, 5-9 April 2021 Marrakech, MOROCCO, postponed to April 04-09, 2022

  https://icmmp21.doodlekit.com/

- Modern Methods, Problems and Applications of Operator Theory and Harmonic Analysis - OTHA 2022, 24 - 29 April, 2022, Rostov-on-Don

  http://otha.sfedu.ru/conf2022/

- Ypatia 2022, École française de Rome, 8-10 June, 2022, Italy

  https://indico.math.cnrs.fr/event/5450/

- Strobl 22 - Applied Harmonic Analysis and Friends, 19 - 25 June, 2022, Strobl, Austria

  https://www.univie.ac.at/projektservice-mathematik/e/?event=strobl22

- 44th Summer Symposium in Real Analysis, 20 - 24 June 2022, Paris & Orsay

  https://ssra44.sciencesconf.org/

- Recent progress in Harmonic and Hypercomplex Analysis and Applications in Mathematical Physics, 18 - 22 July, 2022, Yakutsk

  https://www.s-vfu.ru/universitet/nauka/mkmm2021/en/

- Singularities, Blow-up and Non-Classical Problems in Nonlinear PDEs, 25 - 30 July, 2022, Moscow

  http://sing2022moscow.rudn.ru/

New members

Miguel Pinheiro de Almeida

I am a 1st year student of the Master in Mathematics and Applications at the University of Aveiro. I graduated in Mathematics (2021) from the University of Aveiro. My interests are mostly on algebraic topology, representation theory, group actions, manifolds, differential geometry, and topology.

I am Portuguese, proficient in English (C1 certificate) and I am getting started with German (A1.1 certificate).

I have given one short presentation "Nonlinear Riemann-Hilbert problems for axial monogenic functions" (2020) under the supervision of Prof. Uwe Kähler.

Zhiayr Avetisyan

Born in 1986 in Yerevan, Armenia. PhD in 2013 in Max Planck Institute and University of Leipzig, Germany. Supervisor: Prof. Rainer Verch. 2015-2018 Research Associate at University College London. 2018-2021 Visiting Assistant Professor at UC Santa Barbara. 2021-present Leading Researcher at the Regional Mathematical Centre, Rostov-on-Don.

Research interests: Analysis of PDEs, harmonic analysis, spectral theory, mathematical physics.

Amanze C. Egere

I am a lecturer at the Department of Mathematical Sciences, Redeemer's University, Ede, Nigeria.

My field/area of research is Functional Analysis/Wavelet Theory. Currently, I am on the final lap of my PhD research programme at the University of Ibadan, Nigeria.

The major reason I want to join ISAAC is for collaboration and to have more exposure on my area of research.

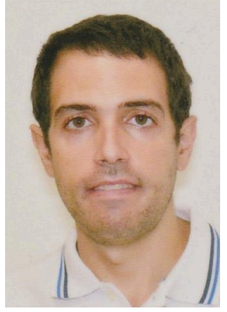
Samantha Loredo

Ph. D. C. Samantha Ana Cristina Loredo Ramírez under the supervision of Dr. Víctor Barrera Figueroa and Dr. Vladimir Rabinovich Likhtman at the Instituto Politécnico Nacional, Sección de Estudios de Posgrado e Investigación, UPIITA, Mexico.

Education: Escuela Superior de Ingeniería Mecánica y Eléctrica, Unidad Zacatenco, IPN, Mexico. Master of Advanced Technology in Sección de Estudios de Posgrado e Investigación, UPIITA, Mexico.

Research interests: Mathematical Physics, mathematical methods in quantum mechanics and relativistic quantum mechanics.

Antonino De Martino



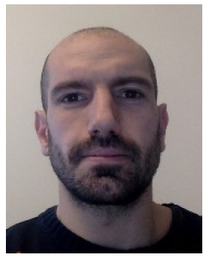
He is a PhD student at Politecnico di Milano under the supervision of Irene Sabadini. His research interests are in complex and hypercomplex analysis.

Guido De Philippis

Guido De Philippis was the recipient of the ISAAC award for Young Scientists in 2021. He is an Italian born mathematician, and obtained his Ph. D. in Mathematics in 2012 from the Scuola Normale Superiore, Pisa, under Luigi Ambrosio and Luis Caffarelli.

He is currently Professor at the Courant Institute of Mathematics (NYU). His research interests are in the area of Calculus of Variations, Geometric Measure Theory and Partial Differential Equations.

Stefano Pinton



I got my Ph.D. in 2012 at the University of Padua. From 2012 to 2017 I was a researcher at the University of Padua and from 2020 at the Politecnico di Milano.

My principal interests of research are: holomorphic extension of CR functions, the dbar-Neumannproblem, the fractional power theory of quaternionic operators, the functional calculi in quaternionic and Clifford analysis.

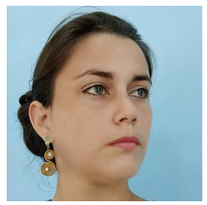
Alberto Debernardi Pinos

Alberto Debernardi Pinos was born in Sabadell (Spain) in 1991. He spent his early career in Barcelona, where he obtained his bachelor's degree (Universitat Autònoma de Barcelona, UAB), master's degree (Universitat de Barcelona, UB), and PhD degree (UAB).

As a post-doctoral student, Alberto spent two years in Bar-Ilan University (Israel; 2018-2020), and held a teaching position for the course 2020/21 at his "home" university, UAB. Nowadays, he is a researcher at Universidade de Aveiro (Portugal), member of the "Complex and Hypercomplex Analysis" research group.

His research is mainly focused in pure Harmonic Analysis, with growing interest on its interrelations with Sampling Theory. However, his interests also lie on problems of Functional Analysis and Approximation Theory. In fact, he is one of the organizers of the online seminar "Corona Seminar: Inequalities on Function Spaces of Smooth Functions", which has already been running for four semesters so far.

Lianet De la Cruz Toranzo



I gained my PhD in Mathematics in 2019 by the University of ad de Oriente, Santiago de Cuba. My research was concerned with some singular integral operators relating to both polyanalytic and polymonogenic functions involving higher order Lipschitz classes. Specifically, it was proved that such classes behave invariant under the action of those operators. The results obtained provide a generalization of the well known Plemelj-Privalov Theorem from Complex Analysis. I completed a one-year postdoc position at Southern Federal University (Rostov-on-Don, Russia) from December 2020. In this research stay, I worked with operators of fractional integro-differentiation of imaginary order in generalized variable Holder spaces. Specifically, we proved boundedness results for those operators in the scales of these spaces.

Isaac INTERNATIONAL SOCIETY FOR ANALYSIS ITS APPLICATIONS AND COMPUTATION

Finally, a very important announcement

We finish this newsletter with a stern warning: Santa Claus will be late this year. We repeat, Santa Claus will be late this year.

This is not due to COVID 19 traffic restrictions but to a poor discernment of Santa. He decided to start the distribution of presents with the Hilbert Hotel and it is predictable to be a looooooong while before he finishes.

To all a Merry Christmas and a Happy New Year