ISAAC - Newsletter July

Message of the President

Dear ISAAC members,

Most of you are aware of an old Chinese curse: "May you live in interesting times!". With new waves of Covid-19 passing by, Monkeypox appearing on the horizon, the ongoing wars, the current rise in oil and gas prices, and the global inflation, one could think that we live indeed in very interesting times.

In such times it is always good that we have Mathematics, to look into and keep us focused and optimistic about the future. In fact, as you can see in this newsletter there is much on the positive side. First and foremost, we look forward to our next ISAAC congress in Brazil next year. It will be held on site allowing everybody to meet friends and colleagues again after such a long break. In the meantime and also as a positive side effect of the Corona pandemic there are several online seminars and courses as well as hybrid conferences happening. This helps removing geographical restrictions and gives faraway students and young researchers (for example, from Benin, Guinea-Bissau, or Nepal) access to high quality lectures and productive exchange of ideas.

Furthermore, we present in this newsletter a special report on a Swedish mathematician who was given a honorary membership in recognition of his work and achievements. While everybody remembers Fields medalists, it is easily overlooked that it is in fact mathematicians like him who pushes forward Analysis as a field and who lays the groundwork for the next generation of mathematicians. This is done not only by his mathematical achievements, but also by his teaching activities, and support of young mathematicians.

So the final message in this newsletter is one of hope: although these times are indeed "interesting", they are nevertheless very exciting times for research and everything does carry the potential for a radiant future.

Uwe Kähler
President of ISAAC

Honorary life membership

About Christer Kiselman

Professor Christer Oscar Kiselman (COK) is one of the leading Swedish mathematicians within complex analysis in several variables as his main field. COK is known, among others, for Kiselman's minimization principle for plurisubharmonic functions, which has been used in many different contexts, e.g. in solvability of Monge-Ampere's equation. He has also deduced certain regularity properties for Bergman kernels for certain domains. The list of scientific contributions from COK is very long.

COK is also known for exceptional supervising capacity. He has supervised as many as 18 students for doctoral degrees in mathematics, as the main supervisor. He has also been co-supervisor for 3 students for a doctoral degree. Several of these are/have been prominent mathematicians. One of them was Mikael Passare, who tragically passed away when he climbed a mountain about 10 years ago.

COK is also very involved in various cultural things. He is linguistically interested. He learned Russian through a radio course held by his German teacher, already when he was 13 years old.

„This has been very important to me. Thanks to knowing Russian, I was able to read several very well-written mathematics books during my student years", explains COK during one of our discussions.

COK is also one of the leading persons in Esperanto and has, among other things, held the office of President of Academio de Esperanto.

COK has also worked hard to develop academia for less wealthy countries. For example, three of his doctoral students came from Africa.

From this, it is not difficult to realize that COK has also traveled a lot. He has visited all continents several times, except Antarctica.

On the photo – Professor Christer Kiselman at Linnæus University, Växjö, Sweden March 2022, at the time when receiving his Doctor Honoris Causa (honorary doctor degree).

An important reason for COK's success can be explained in his personality. COK is completely loyal to the truth. A statement from COK can be seen as something he fully stands for. He is also very encouraging and humble. On the other hand, COK does not hesitate to defend the truth, though if such truths are perceived as unpleasant to somebody. All this makes him very appreciated friend to many. For example, his friendship with Jan Boman (another former PhD. student to Hörmander) dates back to the 1960s.

For his efforts, COK has been rewarded with, among other things

1. *Gold medal for Zealous and Devoted Public Service, Kingdom of Sweden 2001.*
2. *Doctor Honoris Causa, Paul Sabatier University, Toulouse, 2002.*
3. *Officier de l'Ordre National du Mérite, appointed by the President of the French Republic, Jacques Chirac, 2002.*
4. *Gustavus Adolphus Gold Medal, awarded by Uppsala University 2006.*
5. *Honorary member, AIS-Bulgaria, elected on 2013 Diploma of the Universal Esperanto Association, 2014.*
6. *Pirlot Prize of the International Academy of Sciences in the category Courses, decision announced in Lisbon 2018.*
7. *Doctor Honoris Causa, Linnaeus University, Campus Växjö, 2022.*

COK's academic career began in the 60s, when he was a doctoral student for Lars Hörmander. Hörmander had at that time returned to Sweden and ended up in Stockholm, after having been a professor in Princeton, USA for some years. COK first took a licenate degree in 1964 (which correspond to a half a doctor degree, which exists in Sweden) and then received the doctor degree in December 1966. Then he became employed as Docent   already 1967.

COK's dissertation was based on three^{¢)} papers, which was the requirements in that the time in Sweden to become a doctor in mathematics. One of the problems, which was also his problem for the licenate degree, concerned the existence and approximation of certain boundary value problems for certain linear partial differential equations with constant coefficients. COK managed to solve this problem completely in the complex/analytic case. This work is published in

C. O. Kiselman Existence and approximation theorems for solutions of complex analogues of boundary problems, Ark. Mat. 6 (1966), 193–207.

In corresponding real problems, COK managed to solve the problem for hyperbolic operators. The successes and the fascinating analysis in the complex case led COK to move from the field of partial differential equations into complex analysis.

After his doctorate, COK went to Nice, France, where he primarily met André Martineau, but also Jean Alexande Dieudonné, Adrien Douady, Pierre Grisvard, Christian Houzel, Paul R. Krée and Martin Zerner. These years became very important for COK in his scientific development.

One of the areas, linked to complex analysis, concerns plurisubharmonic functions. COK became early interested in this and his research among others resulted in Kiselman's minimization principle, see

C. O. Kiselman The partial Legendre transform for plurisubharmonic functions, Invent. Math. 49 (1978), 137–148.

In recent years, COK has also used his knowledge in other fields, e.g., in the development of digital geometry, see the book

C. O. Kiselman Elements of Digital Geometry, Mathematical Morphology, and Discrete Optimization, World Scientific, Singapore, 2022.

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1) Docent was a position available in the past at Swedish universities. These positions were permanent and very attractive. There were very little teaching and administrative obligations included in such positions.

He has also written a longer paper which summarizes some of his research on complex analysis, see

C. O. Kiselman Complex convexity, in Steven G. Krantz (ed.), Handbook of Complex Analysis, Taylor & Francis, 134pp.

From this, it is obvious that COK's interest, fundamental contributions in science, scientific bridge building and personality fit very well into ISAAC and COK are more than welcome as an honorary member of the organization.

Joachim Toft

The International Symposium on Recent Advances in Computational Analysis and Modelling

One of the results of the Covid-19 pandemic and its frequent lockdowns was that online conferences with video attendance became the norm. While these conferences lack the social interaction which is an essential part of classic conferences, they showed the capacity of online lecturing and to allow speakers to lecture who for various reasons have no possibility to travel to the conference site. Since this created the possibility that students and young researchers could follow lectures on a high level ISAAC decided to support hybrid conferences in places which are not easily reachable. Furthermore, it also allows these places to show their prowess which otherwise goes often unnoticed.

One such conference took place in Uttarakhand, India, from June 20 until June 24, 2022. *The International Symposium on recent advances in Computational Analysis and Modelling* took place at Indian Institute of Technology (IIT) Roorkee in India. It was organised on the occasion of celebration of 175 years (1847- 2022) of the establishment of Indian Institute of Technology (IIT) Roorkee and its dedication towards the teaching and research in the areas of Science and Technology.

On the photo – students and young researchers during the International Symposium

The main objective of this symposium was to discuss recent developments in the areas of Analysis, Modelling and Optimization as well as to show the presence of the Department of Mathematics, IIT Roorkee, in these areas.

Due to the tremendous activities of Prof. Uaday Singh the conference could boost with a number of excellent plenary speakers, such as A. Figalli, M. Ruzhansky, and S. Thangavelu. It was also very successful in demonstrating the possibilities of such kind of conferences with many young students and researchers being able to follow interesting lectures which otherwise would not have been possible for them.

More details can be found at

https://iitr.ac.in/isracam/main.html

On the photo – during the International Symposium

Online Activities at the Ghent Analysis & PDE Center

Conferences, Lectures, Seminars, International Cooperation

Ghent Geometric Analysis Seminar

The Ghent Geometric Analysis seminar is dedicated to studying the modern techniques of elliptic and subelliptic partial differential equations (PDEs) that are used to establish new results in differential geometry and differential topology. We are planning to invite several of the leaders in the fields of microlocal analysis, geometric analysis, and harmonic analysis abroad.

In view of the recent activities and investigations undertaken by the members of the Ghent Analysis and PDE center and the works in the interplay of geometric analysis and harmonic analysis of our group, our seminar also will be a scenario for presenting the recent developments in the field and their applications to other branches in mathematics. Visit the website of our new Ghent Geometric Analysis Seminar at

https://analysis-pde.org/seminars/ghent-on-geometric-analysis/

Scheduled talks are (to be updated):

- 18 April 2022, Andreas Seeger, Harmonic Analysis, University of Wisconsin-Madison, US.
- 13 June 2022, Victor Nistor, Geometric Analysis, Institut Élie Cartan de Lorraine, France.
- 20 June 2022, Johannes Sjostrand, Geometric Analysis, IMB, Université de Bourgogne, France.
- 08 August 2022, Durvudkhan Suragan, Nazarbayev University, Kazakhstan.
- 24 October 2022, Uwe Kähler, University of Aveiro, Portugal.

Organizers:
Duvan Cardona Sanchez (Duvan.CardonaSanchez@UGent.be)
David Santiago Gómez Cóbos (davidsantiago.gomezcobos@ugent.be)
Andrea Vanessa Hurtado Quiceno (andreavanessa.hurtadoquiceno@ugent.be)

Ghent Methusalem Junior Seminar

The Ghent Methusalem Junior Seminar is run by PhD students and postdocs at the **Ghent Analysis & PDE Center** (see https://analysis-pde.org).

It provides an ideal opportunity for young researchers in mathematics to share their ideas and to learn about new trends in a wide range of fields. Targeting a mainly (though not exclusively) young audience has meant for the organizers to ensure a relaxed atmosphere and to encourage the audience to engage in stimulating discussions with the speakers, ideally leading to new collaborations.

The seminar currently takes place every Tuesday at 4.30 PM (CET) on ZOOM. For more information about our activity and about past and future talks, please visit the dedicated webpage:

https://analysis-pde.org/ghent-methusalem-junior-seminar/

If you would like to give a talk or to invite someone to give a talk, please contact:

- Duvan Cardona Sanchez, Ghent University, (Duvan.CardonaSanchez@UGent.be)
- Serena Federico, Università di Bologna, (serena.federico2@unibo.it).
- Vishvesh Kumar, Ghent University, (Vishvesh.Kumar@UGent.be).
- David Rottensteiner, Ghent University, (David.Rottensteiner@UGent.be).
- Bolys Sabitbek, Queen Mary University of London, (b.sabitbek@qmul.ac.uk).

Scheduled talks are:

- 10 May 2022, José Ramón Madrid Padilla (University of California, Los Angeles, US).
- 31 May 2022, Ricardo Grande Izuierdo (University of Michigan – Ann Arbor, US).
- 14 June 2022, Daniel Campos (Universidad de Costa Rica, Costa Rica).

Ghent Methusalem Colloquium

The Ghent Methusalem Colloquium is intended for a broad audience of PhD students, postdocs and professors at the *Ghent Analysis & PDE Center* and beyond. The series includes colloquia from visiting and invited guests. Visit the website of our new Ghent Methusalem Colloquium at

https://analysis-pde.org/ghent-methusalem-colloquium/

to have a look of the scheduled talks by:

- Prof. Andreas Seeger, University of Wisconsin-Madison, US.
- Prof. Roland Duduchava, University of Georgia, Tbilisi, Georgia.
- Prof. Eugene Shargorodsky, King's College, London, UK.
- Prof. Durvudkhan Suragan, Navarbayev University, Kazakhstan.
- Prof. Julio Delgado, Universidad Del Valle, Cali-Colombia.

The Ghent Methusalem Junior Seminar and the Ghent Methusalem Colloquium are supported by *FWO Odysseus 1 Project: Analysis and Partial Differential Equations*, and by the *Ghent University Methusalem Programme "Analysis & PDE"*.


Summer School "Singularities in Science and Engineering"
22-31 August 2022
Ghent Analysis & PDE Center
Ghent University

The study topic for this school concerns methods in mathematical analysis for integro-partial differential equations which arise in physical modelling and include irregular coefficients and initial data, i.e. include singularities. The topics also span a range of mathematical tools used in such analysis. The topic of the school is of fundamental importance from both the theoretical perspective and the wide range of concrete applications in problems with strong singularities.

The main objective of the school is to significantly enrich student's knowledge in both well-known and very new mathematical tools for modelling and treating strong singularities in evolutionary systems of equations which arise in modelling physical phenomena. The aim of the school is also to bring together experts in both theory and applications, to initiate and deepen the cooperation between different fields on important concrete problems, using latest theoretical developments in the field.
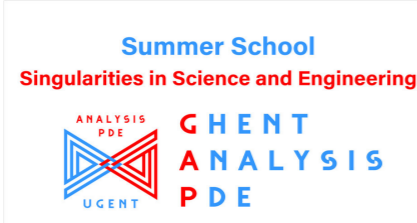
List of Lecturers: (in progress)
- Maria Alessandra Ragusa (University of Catania, Italy),
- Ljubica Oparnica (University of Novi Sad, Serbia) TBC.

Information for participants:

For attending the school, the charge is 10 euro per day to cover organisational expenses. The participation of PhD candidates from Doctoral Schools at UGent, colleagues from UGent, and Lecturers is free of charge.

If you need administrative support (visa, accommodation, etc.) for your attendance, please let us know in advance.

Public Lecture:

In the framework of the school, a public lecture is planned for a wide audience. The details will be announced shortly.

Organisers (Ghent Analysis & PDE Center)
Michael Ruzhansky,
Ljubica Oparnica,
Joel Restrepo,
Berikbol Torebek,
Irfan Ali,
Karel Van Bockstal,
Andrea Vanessa Hurtado Quiceno,
David Santiago Gómez Cobos

Scientific Committee
Prof. Michael Ruzhansky,
Dr. Ljubica Oparnica,
Prof. Marian Slodicka,
Prof. Hans Vernaeve,
Dr. Joel Restrepo,
Dr. Berikbol Torebek,
Dr. Niyaz Tokmagambetov

Conference secretary: Ms Kim Verbeeck

More information on the website:

https://analysis-pde.org/summer-school-singularities-in-science-and-engineering/

The summer school will be supported by FWO Odysseus 1 Project: Analysis and Partial Differential Equations, and by the Ghent University Methusalem Programme "Analysis & PDE".

International Conference: Multidisciplinary Aspects in Mathematics and its Applications (ICMAM 2022), 24-28 October 2022

Jointly organised by Universidad de Pamplona (Colombia), Universidad de Sao Paulo (Brazil), Freie Universität Berlin (Germany), and Ghent Analysis & PDE Centre, UGent, Belgium.

Description

The aim of this conference is to exchange the recent progress and ideas in different fields of pure mathematics and its applications. The conference will be a video conference and will take place on the 24th-28th of October, 2022

Official website

https://sites.google.com/view/matematicasunivalleicmam2022/home

Confirmed Plenary talk

- Terence Tao, UCLA.
- Michael Ruzhansky, Ghent University and Queen Mary University of London.
- Enrique Zuazua, Deusto University, Friedrich-Alexander-Universität Erlangen-Nürnberg, Universidad Autónoma de Madrid.

Organisers

President of the conference: Prof. Dr. Brian Grajales Triana, (Universidad de Pamplona, Colombia).

Karina Navarro Gonzalez (Universidad de São Paulo, Brazil).

Milton Manuel Aguirre (Universidad São Paulo, Brazil).

Jessica Gonzalez Hurtado (Freie Universität Berlin, Germany).

President of the Scientific Committee: Duvan Cardona Sanchez (Universiteit Gent, Belgium).

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

This series of online intensive courses is organized by Chapman University (US), Politecnico di Milano (Italy), and University of Aveiro (Portugal) with the support of ISAAC. As the name indicates it is dedicated to Dirac operators, Hypercomplex and Harmonic Analysis, and advances therein. The courses are lectured by experts in the field and it provides an ideal opportunity for postgraduate students and young researchers from all around the world to expand their knowledge on current topics in these and related areas.

The third edition was held in May 2022 with a course by Professor Alexander Strohmaier, University of Leeds (UK) on *Dirac operators in Spectral Geometry and Mathematical Physics*. The topics of the given lectures can be found on the website

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

More than 100 persons from all parts of the world registered for the course. Online participation was really active with Prof. Strohmaier dedicating additional time for the various questions of the audience and engaging in stimulating discussions. Furthermore, the videos of the lectures were made available to the participants.

The next edition is planned for the fall of 2022.

14th International ISAAC Congress

University of São Paulo, Campus Ribeirão Preto (Brazil)

July 17-21, 2023

The ISAAC board, the Local Organizing Committee and the Department of Computing and Mathematics of the University of São Paulo (USP), Campus Ribeirão Preto (Brazil), are pleased to invite you to the *14th International ISAAC Congress* to be held from July 17-21, 2023. It is expected to be an in-person meeting.

On the photo – UST city where the event will take place

The *14th International ISAAC congress* continues the successful series of meetings previously held in Delaware, USA (1997), Fukuoka, Japan (1999), Berlin, Germany (2001), Toronto, Canada (2003), Catania, Italy (2005), Ankara, Turkey (2007), London, UK (2009), Moscow, Russia (2011), Krakow, Poland (2013), Macao, China (2015), and Växjö, Sweden (2017), Aveiro (2019), Ghent (2021).

Confirmed plenary speakers

- Rafael Benguria, Pontificia Universidad Catolica de Chile, Chile

- Jose A. Carrillo, Universtiy of Oxford, UK ´

- Loukas Grafakos, University of Missouri, USA

- Irena Lasiecka, Univeristy of Virginia, USA

- Marius Mantoiu, Universidad de Chile, Chile

- Anna Laura Mazzucato, Penn State University, USA

- Monica Musso, University of Bath, UK

- Gustavo Ponce, University of California, Santa Barbara, USA

- Marcelo Viana, IMPA, Brazil

On the photo – Parque Raia (left) and Curupira (right)

Local Organizing Committee

Prof. Alexandre Nolasco de Carvalho (USP)

Prof. Nikolai Vasilievich Chemetov (USP)

Prof. Marcelo Rempel Ebert (USP) Chair

Prof. Tiago Henrique Picon (USP)

Prof. Benito Frazao Pires (USP)

Prof. Paulo Leandro Dattori da Silva (USP)

Prof. Sergio Henrique Monari Soares (USP)

On the photo – the iconic Teatro Pinguim

For further information please refer to the conference webpage:

14th ISAAC Congress   **https://dcm.ffclrp.usp.br/isaac/**

Call for ISAAC award

The ISAAC Award aims to distinguish young scientists of age below 40 at the time of the congress for particular merits in Analysis, its Applications and Computation. The list of previous prize winners can be found at

http://isaacmath.org/awards/

Candidates for the awards may be nominated especially by ISAAC board members and session organizers, but may also apply by themselves.

Nominations and applications should be sent before January 15, 2023 to:

U. Kähler

ISAAC President

e-mail: **ukaehler@ua.pt**

Up-coming conferences

Modern Methods, Problems and Applications of Operator Theory and Harmonic Analysis XI, Rostov-on-Don, August 21-24. 2022.   **https://otha.sfedu.ru/conf2022/**

IWOTA 2022 Kraków (Poland), September 6-10, 2022. **https://iwota2022.urk.edu.pl/**

International Conference: Multidisciplinary Aspects in Mathematics and its Applications (ICMAM 2022), Department of Mathematics at the Universidad del Valle, Cali-Colombia, October 24-28, 2022. **https://sites.google.com/view/matematicasunivalleicmam2022/home**

13th International Conference on Clifford Algebras and Their Applications in Mathematical Physics, Holon Institute of Technology (Israel), June 4-9, 2023. **https://sites.google.com/view/icca13-holon/home**

14th ISAAC Congress, University of São Paulo (USP), Campus Ribeirão Preto (Brazil), July 17 - 21, 2023. **https://dcm.ffclrp.usp.br/isaac/**

New members

Guangbin Ren

Born in 1965 Guangbin Ren made his PhD in 1997 at University of Science and Technology of China (USTC) under the supervision of Jihuai Shi. After being a Post-Doc fellow at the University of Joensuu and the University of Aveiro he is full professor at USTC since 2004. He research interests are Clifford analysis, Harmonic analysis, and the theory of several complex variables.

Santosh Kumar Upadhyay

Born on November 5th 1964, Varanasi, India. Awarded Ph.D. in Mathematics in 1993 from Banaras Hindu University Varanasi, India, D Sc. in Mathematics in 2006 from BRA, Bihar University Muzaffarpur, Bihar, India. From 2017 to till date he is working as professor in the Department of Mathematical Sciences, Indian Institute of Technology (BHU), Varanasi, India. His research interest is Pseudo-differential operators, Distribution theory, Integral transforms and Wavelet analysis.

Last, but not least

We are almost arriving at August.

For many of us, it is time to meet friends and colleagues at conferences or to have some well deserved rest after these strange and exhausting times. However, and whatever you prefer to choose we have an additional safety recommendation (with a word of apology to Felix Klein).
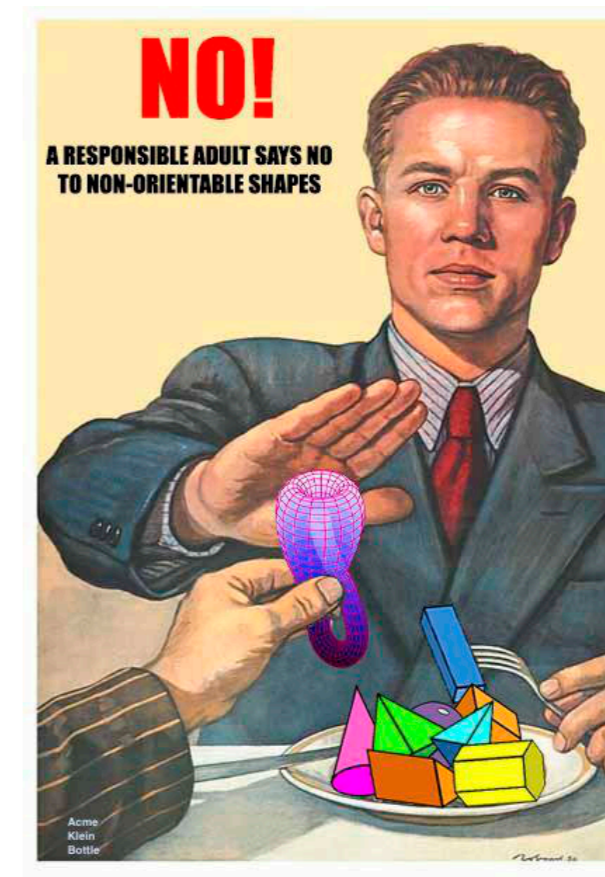
Our best wishes of a well deserved rest among friends.