

Trends in Mathematics

Research Perspectives

Research Perspectives collects core ideas and developments discussed at conferences and workshops in mathematics, as well as their increasingly important applications to other fields. This subseries' rapid publication of extended abstracts, open problems and results of discussions ensures that readers are at the forefront of current research developments.

Uwe Kähler • Michael Reissig • Irene Sabadini •
Jasson Vindas
Editors

Analysis, Applications, and Computations

Proceedings of the 13th ISAAC Congress,
Ghent, Belgium, 2021

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Preface

This volume contains selected contributions by participants of the 13th International ISAAC Congress, which was organized at Ghent University, Belgium, and was held from August 2 to August 6, 2021. The ISAAC congress series is the main bi-annual event of the International Society for Analysis, its Applications and Computation. This edition continued 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), Macau (China, 2015), Växjö (Sweden, 2017), and Aveiro (Portugal, 2019).

The 13th ISAAC Congress was an important scientific event that promoted communication of mathematical advances in mathematical analysis, its applications, and its interactions with computation, encouraging further research progress. Mathematicians from different parts of the world had the opportunity to present their results and new ideas. In total, there were 659 participants from all continents who registered to take part in the conference. There were 374 talks, consisting of 6 plenary lectures and 368 contributed talks, contributing to the 16 congress sessions, some of which were organized by the special interest groups of the society. Following a well-established tradition within society, an award is presented to one or various outstanding young mathematicians. The ISAAC award of the 13th ISAAC Congress was given to *Guido De Philippis* (New York University, USA) for his major contributions to calculus of variations, partial differential equations, and geometric measure theory.

The following sessions contributed to the present volume. The volume also features an article by S. Jaffard et al., originating from Jaffard's plenary lecture *Multivariate Multifractal Analysis* delivered at the congress.

- *Applications of dynamical systems theory in biology*, organized by Torsten Lindström.
- *Challenges in STEM education*, organized by Ján Guncaga and Vladimir Mityushev.

- *Complex analysis and partial differential equations*, organized by Sergei Rogosin, Ahmet Okay Celebi, and Carmen Judith Vanegas.
- *Complex variables and potential theory*, organized by Tahir Aliyev Azeroglu, Massimo Lanza de Cristoforis, Anatoly Golberg, and Sergiy Plaksa.
- *Constructive methods in the theory of composite and porous media*, organized by Vladimir Mityushev, Natalia Rylko, and Piotr Drygaś.
- *Generalized functions and applications*, organized by Michael Kunzinger and Marko Nedeljkov.
- *Harmonic analysis and partial differential equations*, organized by Vladimir Georgiev, Michael Ruzhansky, and Jens Wirth.
- *Partial differential equations on curved spacetimes*, organized by Anahit Galstyan, Makoto Nakamura, and Karen Yagdjian.
- *Recent progress in evolution equations*, organized by Marcello D'Abbicco and Marcelo Rempel Ebert.
- *Wavelet theory and its related topics*, organized by Keiko Fujita and Akira Morimoto.

We would like to thank the organizers of all sessions of the congress for their invaluable work and efforts. They very much supported the congress organization by inviting participants, planning their sessions, and selecting speakers. During the congress itself, they did an excellent job organizing the chairing of their meetings. The session organizers were also responsible for the refereeing process of the contributions to this proceedings volume.

The ISAAC board and the participants of the congress thank Jasson Vindas and his group for the excellent organization of the 13th ISAAC Congress.

Aveiro, Portugal
 Freiberg, Germany
 Milan, Italy
 Ghent, Belgium
 November 2022

Uwe Kähler
 Michael Reissig
 Irene Sabadini
 Jasson Vindas

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Usage of Online Platforms in Education of Mathematics in Transcarpathia at the Beginning of Quarantine

[Gabiella Papp](#)

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Abstract

Distance learning and e-learning as concepts have been in our minds for a long time. In March 2020, they suddenly gained great importance due to the introduction of quarantine and were immediately put into practice. It had to be applied in the everyday lives of teachers and students with surprising speed.

The goal of this research is to assess and demonstrate how teachers overcome the difficulties of mathematics education in distance learning. For this purpose, a month later after the beginning of distance education, I conducted a questionnaire survey among 20 teachers of mathematics in Transcarpathia who teach in several educational institutions with different work experiences. They were asked how education went on during quarantine, how they chose the platforms and methods needed to hold their lessons, what the checking and testing process was, what advantages and disadvantages they faced in distance learning.

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