



# Trends in Mathematics

## Research Perspectives

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# Current Trends in Analysis and Its Applications

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Editors

Proceedings of the 9th ISAAC Congress,  
Kraków 2013

*Editors*

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ISSN 2297-0215

Trends in Mathematics

ISBN 978-3-319-12576-3

DOI 10.1007/978-3-319-12577-0

ISSN 2297-024X (electronic)

ISBN 978-3-319-12577-0 (eBook)

Library of Congress Control Number: 2014958749

Springer Cham Heidelberg New York Dordrecht London

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# Preface

The *9th International ISAAC Congress* was held in the period 5–9 August 2013 in Krakow, Poland. The main organiser was the Krakow Pedagogical University. The congress continued the successful series of biennial meetings previously held in USA (1997), Japan (1999), Germany (2001), Canada (2003), Italy (2005), Turkey (2007), UK (2009) and Russia (2011). The total number of participants of the congress was 502 coming from 62 countries, including the special guests and the Organising Committee from Krakow and Rzeszow. There were 12 plenary speakers and 2 key speakers of the discussion group on applications. Totally, the congress had 23 sessions spanned over 4 working days, while 1 day was assigned to excursions. The congress was sponsored by industrial partners. When needed, the Polish consulates over Europe issued free visas for participants of the congress.

One of the main features of the congress was the invitation of industrial specialists, especially engineers working in industry, whose activity is related to applied mathematics (industrial mathematics) and computer sciences. The 9th International ISAAC Congress was an important scientific event during which mathematicians from different parts of the world had an opportunity to present new results and ideas. It was also a great possibility for young mathematicians to contact experts in a variety of fields.

The atmosphere during the Congress was warm and friendly at the sessions and at the social events: banquet, excursions, football match followed by a barbeque. It is impossible to give the final score of the football match because too many goals were scored.

The dates of the Congress, namely 5–9 August, provided for an extremely hot period in the history of Krakow that correlated well with hot and fruitful scientific discussions during the Congress.

It is already a well-established tradition to award one or several outstanding young researchers during the ISAAC congress. The ISAAC award of the 9th International ISAAC Congress was presented to

Jasson Vindas  
(University of Ghent, Belgium)

for his outstanding results on the asymptotic behaviour of Schwartz distributions and their pointwise values.

At the ISAAC board meeting during the congress Professor Luigi Rodino of the University of Turin was elected as the new ISAAC President, and Professor Michael Reissig of Freiberg University as the new Vice-President. The former president, Professor Michael Ruzhansky of Imperial College London, UK, has finished his 4-year service. The election of the new vice-president and new rules concerning the structure and functioning of the interest groups within ISAAC completed the work on the new ISAAC constitution that took place in the year before the congress. The new constitution was approved by the general electronic vote by ISAAC members prior to the congress. Further information can be found on the ISAAC homepage

[www.mathisaac.org](http://www.mathisaac.org)

The ISAAC Board has decided the venue for the following 10th International ISAAC Congress in 2015 to be the University of Macau.

The plenary and key lectures given at the congress appear not here but in the independent volume:

Mityushev V., Ruzhansky M. (Eds.) *Analytic Methods in Interdisciplinary Applications*. Springer Proceedings in Mathematics & Statistics, Vol. 116, Springer, 2015.

The present volume contains the texts of a selection of talks delivered at the congress. As in the previous years, some of the sessions or interest groups decided to publish their own volumes of proceedings and are therefore excluded from the present collection. The work of the congress was spread over the following sessions:

- *Complex variables and potential theory*, organised by T. Aliyev, A. Golberg, M. Lanza de Cristoforis, S. Plaksa
- *Differential Equations: Complex and Functional Analytic Methods, Applications*, organised by H. Begehr
- *Complex-analytic methods for applied sciences*, organised by S.V. Rogosin
- *Clifford and Quaternion Analysis*, organised by S. Bernstein, U. Kähler, I. Sabadini and F. Sommen
- *Fixed Point Theory and Applications*, organised by E. Karapinar
- *Spaces of Differentiable Functions of Several Real Variables and Applications*, organised by V. Burenkov and S. Samko
- *Generalized Functions*, organised by M. Oberguggenberger and S. Pilipović
- *Qualitative Properties of Evolution Models*, organised by K. Yagdjian, F. Hirose and M. Reissig
- *Nonlinear Infinite Dimensional Evolutions and Control Theory with Applications*, organised by I. Lasiecka, J. Webster and G. Avalos
- *Nonlinear PDE*, organised by V. Georgiev and T. Ozawa
- *Topological and Geometrical Methods of Analysis*, organised by A. Prykarpatskyi, Yu. Zelinsky and K. Soltanov

- *Didactical Approaches to Mathematical Thinking*,  
organised by E. Swoboda and V. Mityushev
- *Wavelet Theory And its Related Topics*,  
organised by K. Fujita and A. Morimoto
- *Integral Transforms and Reproducing Kernels*,  
organised by S. Saitoh and Ju. Rappoport
- *Pseudo differential operators*,  
organised by L. Rodino, J. Toft and M. W. Wong
- *Medical Mathematics and Computing*,  
organised by R. Gilbert, Ju. Rappoport and V. Yakushev
- *Toeplitz Operators and Their Applications*,  
organised by S. Grudsky and N. Vasilevski
- *Approximation Theory and Fourier Analysis*,  
organised by S. Tikhonov and E. Liflyand
- *Differential and Difference Equations with Applications*,  
organised by L. Berezansky, J. Diblik, A. Zafer and M. Zima
- *Analytic Methods in Complex Geometry*,  
organised by A. Schmitt
- *M-Frame Constructions*,  
organised by K. Rudol, H.G. Stark, A. Grybos and D. Onchis
- *Applications of Queueing Theory in Modelling and Performance Evaluation of Computer Networks*,  
organised by K. Grochla
- *Applied Mathematics*,  
organised by S. Bosiakov
- *Others* containing other talks,  
organised by the editors of this volume

We thank the organisers of all the sessions of the congress for their work. They spent an enormous amount of time inviting participants, arranging their sessions, providing chairmen and creating a familiar and workshop-like atmosphere within their meetings. The session organisers were also responsible for collecting contributions to this proceedings volume and for the refereeing process of the papers.

Krakow, Poland  
London, UK

Vladimir Mityushev  
Michael Ruzhansky

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