

Newsletter of IMPAN



OPUS
GRANTS

SIMONS
SEMESTERS

CONFERENCES

LOGO HR



Polish Research Grants OPUS

OPUS is an important competition of the National Science Center (NCN) for the funding of research projects. Currently eleven grants of this type are implemented at IMPAN. Twelve grants of the earlier editions were described in the Newsletter of IMPAN no. 6, 7, 8 and 9. In 2016, in the competition of OPUS 10, two grant applications from IMPAN were selected for funding: the applications by Tomasz Rychlik and by Piotr M. Hajac.

Ordered random variables applied in statistics and reliability theory

Coordinator: Tomasz Rychlik (06.2016 – 06.2019)



Ordered values of random observations, called order statistics, provide a useful tool in statistics and other applications of probability theory. Sample maxima and minima are natural evaluations of the range of the random phenomena. The central observation, called the sample median, is more reliable measure of average income than the arithmetic mean. Ordered observations appear naturally when the observation process is censored. E.g., if some longitudinal random phenomena are examined, and the experiment time is restricted, then only a proportion of smallest results is observed. Order statistics are useful in examining the lifetime distributions of technical systems built of identical components with random lifetimes. Then the lifetimes of components are possibly dependent and exchangeable. Under the assumption, the system lifetime distribution is a mixture of distributions of order statistics based on component lifetimes, with the mixture coefficients depending merely on the system structure. Other popular types of ordered random data are record values. They

are of intimate importance in analysis and prediction of extreme natural phenomena and catastrophes. So called k th records, i.e. the new k th (greatest or smallest) values in the continuously up-dated rankings of results, are useful in statistical analysis of extreme phenomena, because they occur much more often than the classic first records.

A model of generalized order statistics cover many submodels of ordered random variables, including standard order statistics, records of various types and censored data. This is flexible enough to represent observations in specific real-life problems when consecutive failures of objects increase burden on the still-living ones and affect their further lives. The model consists in constructing of multivariate distributions based on a single one-dimensional baseline distribution and a number of positive parameters. The generalized order statistics are the main object of our investigations. We aim at developing the distribution theory of generalized order statistics under possibly least restrictive

constraints on the parameters. There is a significant gap between the theory for the general model and its popular subset called m -generalized order statistics where the number of parameters is reduced to two. Analysis of the general model is by far more complex, and requires tools from various branches of mathematics, including theory of special functions and complex analysis.

A special emphasis will be laid on the case of discrete baseline distributions which is a vital assumption in many practical problems. It is natural if the resistance of objects under study is gauged by the number of (usually short-time) uses till the failure. It also refers to the cases when the experiment observation cannot be performed continuously, but the inspection is possible at some fixed moments only. Moreover, replications of results appear if the accuracy of control devices is limited and the measurements are rounded. Analysis of ordered random variables coming from discrete populations is much more sophisticated than in the continuous case, and needs more delicate tools.

Specific tasks of the project are following.

- *Asymptotic approximations of ordered random variables.* Asymptotic distributions of order statistics and numbers of observations in various neighborhoods of order statistics will be determined under assumptions that the parent distributions are discontinuous, and have non-unique quantiles, and when independence assumption is relaxed (e.g. replaced by stationarity).
- *Characterizations based on the generalized order statistics model.* The problem consists in proving

that a fixed distributional property of random variables uniquely describes a narrow family of parent distributions. Characterization theorems allow to construct goodness-of-fit tests which verify whether the random observations come from some particular family of distributions. The main task is to characterize the baseline distributions with use of regression (conditional expectation) function describing dependence of a general fixed function of a generalized order statistic when the value of another nonadjacent one is known.

- *Inequalities for distributions of ordered random variables.* We determine sharp bounds on quantiles of distributions of order statistics and record values from independent identically distributed populations, and expectations and variances of linear combinations of order and record statistics measured in various scale units, including the Gini mean difference and variance of the parent distribution.
- *Evaluations of moments of reliability system lifetimes and their generalizations.* We plan to deliver optimal bounds on the distribution function and expectation for lifetime of system built of components with non-identical lifetime distributions and arbitrary structure of interdependence. Refined bounds for moments and quantiles of system lifetime shall be established under more restrictive conditions of exchangeability and independence. Also, we study so called failure dependent proportional hazard model where components operate independently between failures, and their failure rates increase at the failure moments due to increase of internal burden.

RECENT SUCCESSFUL APPLICANTS IN NCN COMPETITIONS:

OPUS 11

- Mariia Vlasenko, *Arithmetic properties of formal groups*

PRELUDIUM 11

- Tomasz Odzygózdź, *Sharp probability thresholds for vanishing of cohomology groups*
- Paweł Karasek, *Multidimensional Selberg sieve, almost prime k -tuples and primes in arithmetic progressions*

SONATA 11

- Jan Burczak, *Analysis of nonlinear partial differential systems motivated by mathematical biology or continuum mechanics*

PRELUDIUM 10

- Damian Sawicki, *Large scale geometry of group actions*

SONATA 10

- Michał Lasoń, *Toric ideals associated to matroids, groups, trees, and other combinatorial problems*
- Tomasz Zachary Szarek, *Maximal operators in some contexts of orthogonal expansions*

Hopf-cyclic homology for non-unital algebras with applications to path algebras

Coordinator: Piotr M. Hajac (06.2016 – 06.2019)



Cyclic homology and cohomology is among most significant discoveries of modern mathematics. Pioneered by Connes and discovered independently by Tsygan, then systematized and turned into a theory through fundamental works of Cuntz, Loday, Quillen and Wodzicki, cyclic homology enjoys a plethora of incarnations and applications throughout a very wide spectrum of mathematics.

The main research goal of this project is to develop a very general but concrete model of cyclic homology. Our new cyclic model should work for non-unital algebras, have multiplier Hopf algebras governing the symmetry, and enjoy topologically complete coefficients.

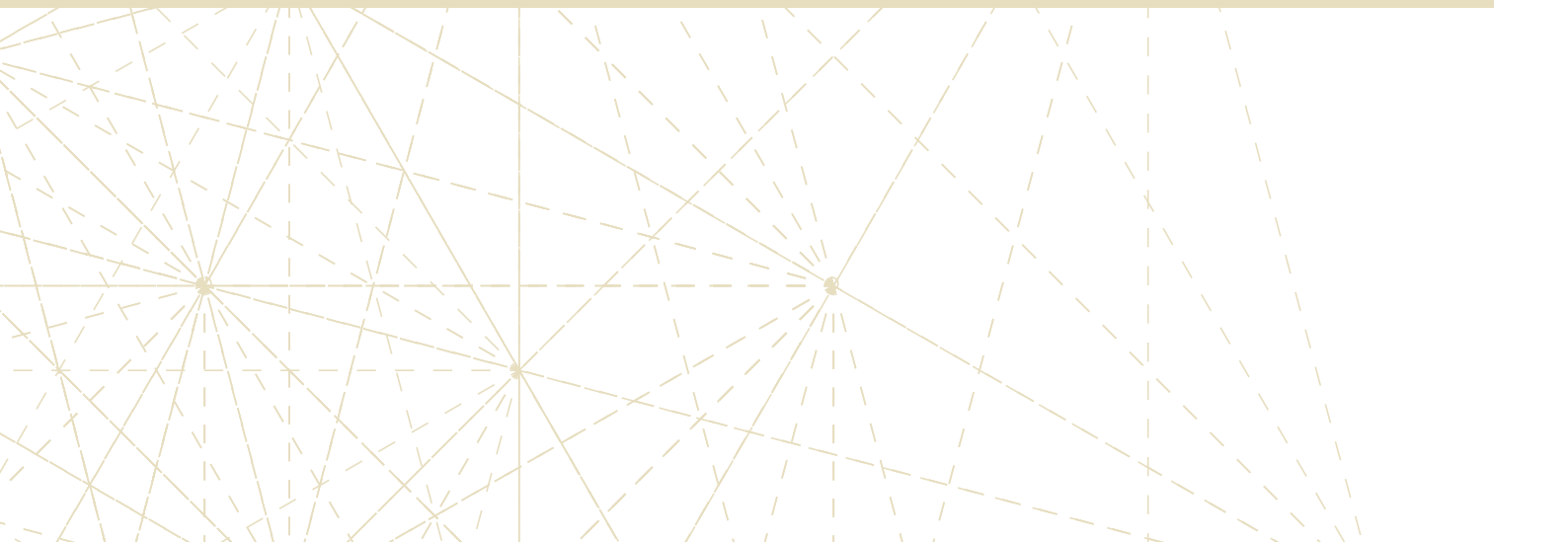
As a key application we propose the computations of finer K-theoretical invariants of modules associated to principal coactions. These finer invariants are expected to emerge from the negative cyclic homology of the Ehresmann-Schauenburg quantum groupoid treated as a non-unital algebra. This algebra is noncommutative even in the classical case, and offers a completely new approach to K-theory invariants associated with principal bundles.

On the Hopf-cyclic side, we plan to compute relative cyclic homology of algebra extensions and Hopf-cyclic homology of coalgebras. This work should provide a clue as to how Hopf-cyclic symmetry can be extended from Hopf algebras to multiplier Hopf algebras. To ensure new type of examples and computational possibilities, we plan to tap the rich resources of path algebras. Here it is crucial to work out an analogue of a Banach/Hilbert representation space for complete path algebras to obtain a useful representation theory of complete path algebras. Achieving this should lead to a solution of the long-standing problem of introducing general topologically complete coefficients to Hopf-cyclic theory.

The project is composed of two interrelated subjects which will be investigated separately but have a lot of influence on each other. The primary subject cyclic homology is an area of expertise of the principal investigator. The secondary subject path algebras is intended to generate new ideas and to serve as an experimental ground. To ensure the effectiveness of interaction between these two subjects, two external experts on the second subject were invited and agreed to join in.

The main concrete impact of the project will be the possibility of computing finer K-theory invariants for modules associated to principal coactions. Furthermore, since upgrading from unital to non-unital algebras and from Hopf algebras to multiplier Hopf algebras is as natural as generalizing from compact to locally compact spaces in topology, it seems very likely that any results on Hopf-cyclic homology going in the non-unital direction will be useful, interesting, and open new avenues of investigation. The proposed constructions of new Hopf-cyclic complexes are designed to encompass examples going far beyond the usual Hopf-cyclic setting. As a result, the project has the potential to shed new light on the study of characteristic classes.

Another expected outcome is the appearance of new computational methods for Hopf-cyclic homology coming from the concrete Hopf-cyclic computation for path algebras. Finally, research on the representation theory of complete path algebras should lead to a proper axiomatization of general topologically complete Hopf-cyclic coefficients. This would be a crucial step in the development of Hopf-cyclic theory, comparable to the discovery of stable anti-Yetter-Drinfeld modules as general algebraic coefficients.



Simons Semesters

NONCOMMUTATIVE GEOMETRY THE NEXT GENERATION, *September – November 2016*

The current Simons Semester at the Banach Center runs from September 1 to November 30, 2016, and is dedicated to noncommutative geometry. All scientific activities of this semester are focused on the following four subjects:

- Cyclic homology
- Noncommutative index theory
- Topological quantum groups and Hopf algebras
- Structure and classification of C^* -algebras

The semester splits into two parts: **training** and **research**. The training part consists of a two-week-long Master Class and a month-long Special Courses Session. The research part consists of four state-of-the-art week-long conferences and a two-week-long period for research groups.

MASTER CLASS *NONCOMMUTATIVE GEOMETRY AND QUANTUM GROUPS*

The event was designed as an opening school for the Banach Center Simons Semester *Noncommutative geometry the next generation*. The aim was to attract a large number of young mathematicians to introduce them to noncommutative geometry and quantum groups. Four fully fledged introductory lecture courses focused respectively on the following topics: noncommutative index theory, cyclic homology, topological quantum groups and Hopf algebras, classification of C^* -algebras.

LECTURE COURSES

The 4-week-long series of lecture courses conducted by IMPAN's post-doctoral fellows focused on the following subjects:

- Noncommutative topology for beginners
- An introduction to quantum symmetries
- An invitation to C^* -algebras

Lectures were accompanied by contact hours held by both post-doctoral fellows and professors, during which participants of the Semester had the possibility

to broaden their knowledge and explore a given subject more deeply.

CONFERENCES

17–21 October 2016, *Cyclic homology*

Organisers: Joachim Cuntz, Piotr M. Hajac, Tomasz Maszczyk, Ryszard Nest

24–28 October 2016, *Noncommutative index theory*

Organisers: Paul F. Baum, Alan Carey, Markus J. Pflaum, Andrzej Sitarz

14–18 November 2016, *Topological quantum groups and Hopf algebras*

Organisers: Kenny De Commer, Piotr M. Hajac, Réamonn Ó Buachalla, Adam Skalski

21–25 November 2016, *Structure and Classification of C^* -algebras*

Organisers: George Elliott, Karen R. Strung, Wilhelm Winter, Joachim Zacharias



Organizers of the NCG Simons Semester

SENIOR SIMONS PROFESSORS:

- Ludwik Dąbrowski (Scuola Internazionale Superiore di Studi Avanzati)
- Alexander Gorokhovsky (University of Colorado, Boulder)
- Ryszard Nest (University of Copenhagen)
- Wojciech Szymański (Syddansk Universitet)
- Joachim Zacharias (University of Glasgow)

JUNIOR SIMONS PROFESSORS:

- Yulia Kuznetsova (Laboratoire de Mathématiques de Besançon)
- Bram Mesland (Leibniz Universität Hannover)
- Aaron Tikuisis (University of Aberdeen)
- Hang Wang (University of Adelaide)
- Makoto Yamashita (Ochanomizu University)



Participants of the Master Class in Będlewo

SIMONS SEMESTER CROSSFIELDS PDEs, (1.12.2016–30.03.2017)

The Simons Semester „CrossFields PDEs” is directed to partial differential equations arising from different areas of sciences, concrete problems are often effects of cross fields studies. The semester will run from December 2016 till March 2017 and will focus on the following issues:

- Weak and measure-valued solutions for Euler system and other systems of hyperbolic conservation laws (method of convex integration, problems of weak-strong uniqueness, Young measures),
- Existence and regularity of solutions to Navier-Stokes equations (Lagrangian coordinates, Fourier analysis, compensated compactness),
- Multi-scale flows (complex systems coupling Navier-Stokes/Euler system with other equations, e.g. Fokker-Planck),
- Models reduction (singular limits in fluid mechanics and homogenization),
- Kinetic theory (application of kinetic theory in mechanics of fluids and gases - Boltzmann equation, kinetic models in mathematical biology),

Historically, all above models originate from classical gas and fluid mechanics. However nowadays science: medicine, biology, economics require support by models of above type. We would like to pay our attention on aspects of regularity of constructed solutions, both weak and strong ones. This is a first step to more delicate qualitative analysis of solutions as well as to create effective numerical schemes. The choice of our partners and collaborators will guarantee that the realization of our project will effect on creation of several scientific projects at the top mainstream worldwide level.

THE ACTIVITIES OF THE SEMESTER INCLUDE (AMONG OTHERS):

- Winter school CrossFields PDEs, Będlewo, 5–9 December 2016
Organizers: Eduard Feireisl, Piotr Gwiazda, Piotr Minakowski, Piotr B. Mucha, Agnieszka Świerczewska-Gwiazda
- Workshop Mathflows2017, Będlewo, 15–20 January 2017
Organizers: Raphael Danchin, Piotr B. Mucha, Jan Peszek, Ewelina Zatorska
- Workshop Ideal Fluids and Transport, Warsaw, 13–15 February 2017
Organizers: Piotr Gwiazda, Agnieszka Świerczewska-Gwiazda, Emil Wiedemann

- Modern Numerical Methods for Quantum Mechanics, Warsaw, 20–22 March, 2017,
Organizers: Piotr Gwiazda, Arieh Iserles, Karolina Kropielnicka
- Workshop Current Topics in Kinetic Theory, Warsaw, 27–29 March, 2017
Organizers: José A. Carrillo, Piotr Gwiazda, Benoît Perthame, Agnieszka Świerczewska-Gwiazda

As an opening of the semester we have planned the school in Będlewo, which aims to introduce young scientists in main topics and to facilitate them further participation in the activities of the semester.

Apart of the above mentioned events there will be series of lectures given by experts in the field, including: Edriss Titi (Weizmann Institute of Science) Athanassios Tzavaras (KAUST) and Miroslav Bulíček (Charles University) among others. During the semester the Banach Center will host a lot of world leading researchers such as Camillo De Lellis (University of Zurich), Benoît Perthame (Université Pierre et Marie Curie, Paris), José A. Carrillo (Imperial College London), Siddhartha Mishra (ETH Zurich), Peter Markowich (University of Cambridge), Eitan Tadmor (University of Maryland/ETH Zurich), Arieh Iserles (University of Cambridge), Endre Süli (University of Oxford), Pierre-Emmanuel Jabin (University of Maryland) and Clément Mouhot (University of Cambridge) to mention just a few. Finally, the semester will be a great opportunity for young participants to start new collaborations, in particular a lot of PhD students and post-docs will visit Warsaw for the duration of the semester. We expect master students to participate in the events and lectures.

The semester is organized by Eduard Feireisl (Czech Academy of Sciences), Piotr Gwiazda (IMPAN/ University of Warsaw), Piotr Bogusław Mucha (University of Warsaw), Agnieszka Świerczewska-Gwiazda (University of Warsaw)

Conferences

CZESŁAW OLECH IN MEMORIAM



Professor Czesław Olech died in July 2015. He was the first director of the Banach Center (1972-1992). The Banach Center symposium „Optimal Control and Related Topics” which took place in Warsaw in October 20-21, 2016, was devoted to his memory. It gathered specialists in the topics closely related to his research. In the field of optimal control new results were presented by Richard Vinter from Imperial College (necessary optimality conditions for general systems with delays), Helene Frankowska from CNRS (general second order necessary conditions for optimality of non-smooth systems) and Pavel Brunovsky from Comenius University (Maximum Principle type conditions for discrete-time systems with infinite horizon). Several other results concerned criteria for controllability with vanishing energy (Jerzy Zabczyk from IM PAS), the behaviour of Olech’s extremals in the singular perturbation limit (Zvi Artstein from Weizmann Institute), recent results concerning differential inclusions (Alberto Bressan from Penn State University), the existence of solutions to variational problems of slow growth (Arrigo Cellina from University of Milano Bicocca) and variational inequality problems with elicitable monotonicity (R. Tyrrel Rockafellar from University of Seattle).

There was a special session on the Jacobian Conjecture, closely related to the Markus-Yamabe Conjecture studied by Olech. Here two lectures were given by Arno van den Essen from University of Nijmegen and Henryk

Żołądek from University of Warsaw. The contribution of Laurence M. Graves to nonsmooth analysis and its use in optimal control, together with recent generalizations, was discussed by Asen Dontchev (Mathematical Reviews and University of Michigan). Three former students of Olech presented lectures on his results and their later applications and follow up. Namely, Andrzej Fryszkowski (Warsaw University of Technology) talked on the notion of decomposability of subsets of function spaces and its relation to convexity. Bronisław Jakubczyk presented early Olech’s results (some of them common with Philip Hartman) on global stability of dynamical systems and their wide use in proving stability of systems modelling economic growth. Finally, Tadeusz Rzeżuchowski (Warsaw University of Technology) discussed one of the most general Olech’s theorems on the existence of solutions to differential inclusions and problems with filling gaps in the original proof.

There was also a special Memory Session where memories were presented by Andrzej Schinzel, Terry Rockafellar, Pavel Brunovsky, Zvi Artstein and Wanda Olech-Piasecka. A film presenting an interview with professor Olech was also shown. The symposium gathered 46 registered participants from 12 countries and about 10 non-registered participants from Warsaw.

Bronisław Jakubczyk

10TH FORUM OF PARTIAL DIFFERENTIAL EQUATIONS *Będlewo, June 19-24, 2016*

Forum of Partial Differential Equations is a series of national meetings taking place every second year at the Mathematical Research and Conference Center in Będlewo. The aim of the conference is to gather Polish experts working in the field of partial differential equations - in order to exchange experiences, ideas, and methods. The particular interest is directed to nonlinear problems and the studies on existence, uniqueness and regularity of solutions as well as their asymptotic behaviour.

The meeting had a new structure in comparison to the previous ones. We have organized thematic sessions chaired by leading experts in the field, each one started with an introductory lecture:

- Chemotaxis and other Nonlocal Problems (in biology and physics), Piotr Biler
- Geometric Analysis and Related Problems, Tomasz Adamowicz
- Mathematical Fluid Mechanics, Piotr Bogusław Mucha
- Stochastic PDEs, Zdzisław Brzeźniak

The participants either presented their results within one of the above thematic sessions or in a short communications/poster sessions. This new form of the meeting was aimed to direct the attention of young scientists (in particular from small research units) to the most emerging topics in partial differential equations.

During the meeting we have celebrated 70th birthday of Professor Andrzej Palczewski. On this occasion we have organized a special session „Kinetic theory”

and invited international collaborators and friends of Andrzej Palczewski: Alexander Bobylev (Keldysh Institute of Applied Mathematics), David Gerard-Varet (University Paris Diderot), Giuseppe Toscani (University of Pavia) and Andrea Tosin (Politecnico di Torino). Accordingly, this year’s Forum gained an international character. The organizers of the 11th Forum (University of Wrocław) are planning to continue this new form of the conference.

Organizing committee: Agnieszka Świerczewska-Gwiazda, Aneta Wróblewska-Kamińska, Ewelina Zatorska

Scientific committee: Jacek Banasiak (Lodz University of Technology), Piotr Biler (University of Wrocław), Krzysztof Chełmiński (Warsaw University of Technology), Jan Cholewa (University of Silesia), Piotr Gwiazda (University of Warsaw), Grzegorz Karch (University of Wrocław), Wojciech Kryszewski (Nicolaus Copernicus University in Toruń), Mirosław Lachowicz (University of Warsaw), Piotr Mucha (University of Warsaw), Tadeusz Nadzieja (Opole University), Andrzej Palczewski (University of Warsaw), Ryszard Rudnicki (Institute of Mathematics Polish Academy of Sciences), Piotr Rybka (University of Warsaw), Agnieszka Świerczewska-Gwiazda (University of Warsaw), Wojciech Zajączkowski (Institute of Mathematics Polish Academy of Sciences).

Agnieszka Świerczewska-Gwiazda

IBC ON THE 70TH ANNIVERSARY of Henryk Woźniakowski

The aim of this conference was to celebrate the 70th anniversary of prof. Henryk Woźniakowski, in appreciation of his numerous contributions to information-based complexity (IBC) and computational mathematics in general.

Prof. Woźniakowski is a co-founder of IBC and remains one of the most important figures in this area of research. His first papers in the spirit of IBC appeared in

the late 70-ties, and soon after that a general setting of IBC was formulated in his first monograph “A General Theory of Optimal Algorithms”, 1980 (with J.F. Traub). In his career, Prof. Woźniakowski co-authored four monographs and wrote about 200 research papers. The last three-volume monograph “Tractability of Multivariate Problems”, 2008, 2010, 2012 (with E. Novak) for which prof. Woźniakowski was awarded

the Banach Prize from the Polish Mathematical Society, treated problems defined on functions of a huge number of variables. This part of IBC, first formalized by Prof. Woźniakowski in 1994, is now a subject of intensive and rapidly growing research.

The general goal of IBC is to create a theory of computational complexity and optimal algorithms for continuous problems where available information is partial, noisy, and priced. It emerged some 35 years ago as a consequence of the need for a mathematical theory to study computational aspects of such problems. The theory is developed over abstract spaces, while the applications are usually for multivariate problems. Those problems and complexity questions arise in various disciplines, such as physics, economics, mathematical finance, computer vision, control theory, uncertainty quantification, geophysics, medical imaging, weather forecasting and climate prediction, and statistics.

Particular topics included: tractability of high dimensional problems, complexity of deterministic and stochastic differential equations, Monte Carlo and quasi-Monte Carlo integration, digital nets and lattice rules, Markov Chain Monte Carlo, ill-posed problems, noisy information, application to finance.

The conference gathered 63 researchers from 14 different countries, and there were 44 regular talks.

The conference was co-organized and partially supported by the Banach Center and Warsaw Center of Mathematics and Computer Science.

ORGANIZING COMMITTEE

Bolesław Kacewicz
Marek Kowalski
Marek Kwias
Leszek Plaskota
Grzegorz Wasilkowski

SCIENTIFIC COMMITTEE

Stefan Heinrich
Bolesław Kacewicz
Erich Novak
Leszek Plaskota
Ian Sloan
Grzegorz Wasilkowski

For the program of the conference and the list of participants, see [w www.bcc.impan.pl/16IBC/](http://www.bcc.impan.pl/16IBC/)

Leszek Plaskota



Participants of the conference

Institute's news



THE HUMAN RESOURCES EXCELLENCE IN RESEARCH AWARD FOR IMPAN

The IMPAN comprehensive analysis and action plan meet all the requirements for the use of the **Human Resources Excellence in Research** award. IMPAN can now use the “HR Excellence in Research” logo to help promote itself as a provider of a stimulating and favourable work environment.

The Institute applied for the European Commission HR Excellence in Research award in February 2016. By this act, IMPAN joined the community of research institutes and universities which recognize the importance and value of the principles presented in the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers.

The European Charter for Researchers is a set of general principles and requirements which specifies the roles, responsibilities and entitlements of researchers as well as of employers and/or funders of researchers. It aims at ensuring that the relationship between these parties contributes to successful performance in the generation, transfer and sharing of knowledge, and to the career development of researchers. Principles and Requirements fall into two categories:

1. General Principles and Requirements applicable to Researchers (e.g. professional responsibility, professional attitude, good practice in research etc.)
2. General Principles and Requirements applicable to Employers and Funders (e.g. recognition of the profession, non-discrimination, supervision etc.)

The Code of Conduct for the Recruitment of Researchers consists of a set of general principles and requirements that should be followed by employers and/or funders when appointing or recruiting researchers. It aims to improve recruitment, to make selection procedures fairer and more transparent and proposes different means of judging merit: Merit should not just be measured on the number of publications but on a wider range of evaluation criteria, such as teaching, supervision, teamwork, knowledge transfer, management and public awareness activities. General Principles and Requirements for the Code of Conduct include among others recognition of mobility experience, recognition of qualifications, transparency etc.

To see the full list of principles and requirements, please visit the EURAXESS website.

NEW FACULTY – *Autumn 2016*

3–7 YEARS POSITIONS

Piotr Achinger, 3 - years adiunkt position, algebra and algebraic geometry

Przemysław Chojecki, 3 - years adiunkt position, algebra and algebraic geometry

½ – 2 YEARS POSITION

Marcin Bownik, visiting professor position, functional analysis

Marek Bożejko, professor position, functional analysis

Tomasz Cieślak, associate professor position, differential equations

Tomasz Dłotko, professor position, differential equations

Lucja Farnik, adiunkt position, algebra and algebraic geometry

Michał Gaczkowski, graduate assistant position, differential equations

Vincent Grandjean, adiunkt position, differential equations

ABBREVIATIONS:

WCMCS = Warsaw Center of Mathematical and Computer Science, created jointly by IMPAN and MIMUW;

MIMUW = Faculty of Mathematics, Informatics and Mechanics of the University of Warsaw;

Piotr Gwiazda, professor position, differential equations
Marek Kaluba, adiunkt position, topology
Martin Kalousek, graduate assistant position, differential equations
Karolina Kropielnicka, adiunkt position, differential equations
William Mance, adiunkt position, dynamical systems
Marcin Malogrosz, adiunkt position, differential equations,
Jarosław Mederski, adiunkt position, differential equations
Przemysław Ohrysko, graduate assistant position, functional analysis
Krzysztof Oleszkiewicz, professor position, probability theory and mathematics of finance
Eva Pernecka, adiunkt position, functional analysis
Jan Peszek, adiunkt position, differential equations
Iwona Skrzypczak, adiunkt position, differential equations
Piotr Śniady, professor position, functional analysis
Tristan Bice, postdoc position, foundations of mathematics, WCMCS
Kentaro Fujie, postdoc position, differential equations, WCMCS
Marcin Kotowski, postdoc position, topology, WCMCS
Andrey Krutov, postdoc position, mathematical physics and differential geometry, WCMCS
Saeed Ghasemi, internal postdoc position, foundations of mathematics

Lei Jin, graduate assistant position, dynamical systems, grant MAESTRO
Mandar Patil, adiunkt position, mathematical physics and differential geometry, grant Harmonia
Eric Reckwerdt, adiunkt position, topology, grant ERC
Damian Orlef, graduate assistant position, topology, grant ERC

SIMONS SEMESTER, SHORT TIME POSITIONS:

Ryszard Nest, visiting professor position, noncommutative geometry
Wojciech Szumański, visiting professor position, noncommutative geometry
Alexander Gorokhovskiy, visiting professor position, noncommutative geometry

EXCHANGE:

Marta Szumańska (MIM UW), adiunkt position, differential equations

PhD Thesis Prizes

PhD Thesis Prizes are granted by the director of the Institute of Mathematics of the Polish Academy of Sciences for outstanding doctoral theses once a year. The main award is called Marek Wacławek Award.

This year, the Director awarded **the main prize** to **Simeng Wang** for the doctoral dissertation entitled *Some problems in harmonic analysis on quantum groups*.

The prize was also awarded to **Łukasz Kuciński** for the doctoral dissertation entitled *Optimal surplus management in insurance*

Awards to faculty

The International Stefan Banach Prize for a Doctoral Dissertation in the Mathematical Sciences

The 8th international Stefan Banach prize funded by the company Ericpol was granted to Dr Adam Kanigowski from the Institute of Mathematics of the Polish Academy of Sciences for his doctoral dissertation entitled *Ergodic properties of smooth flows on surfaces*. The thesis was supervised by professor Mariusz Lemańczyk from Nicolaus Copernicus University

in Toruń, and co-supervised by Dr Joanna Kułaga-Przymus from Nicolaus Copernicus University in Toruń and IMPAN.

The international Stefan Banach prize is a joint venture of the company Ericpol and Polish Mathematical Society. It represents a tribute to the role of mathematical thought in the modern world.



They passed away

PROFESSOR ROMAN DWILEWICZ *passed away on July 29, 2016 in St. Louis, Missouri*

Roman Dwilewicz was born in Mragowo, Poland, on November 6, 1949. He studied at the University of Warsaw and obtained his MSc and PhD degrees in mathematics in 1971 and 1976 respectively.

He wrote his PhD thesis under the supervision of professor Bogdan Bojarski. In 2008, Roman Dwilewicz was granted the title of a Professor of Mathematical Sciences.

He was an outstanding mathematician, specialist in the field of complex analysis of many variables. Professor Dwilewicz worked for many years at the Faculty of Mathematics, Informatics and Mechanics of the University of Warsaw. He was involved with the Institute of Mathematics of the Polish Academy of Sciences (IMPAN), where he worked in the period

1997-2005. He also held the position of the Scientific Deputy Director of IMPAN in the period 1998-2000. During his scientific career, professor Dwilewicz also held positions at the Missouri University of Science and Technology, University of Missouri at Rolla, Cardinal Stefan Wyszyński University in Warsaw, University of Montreal, University of Regina, University of Western Ontario and Texas A&M University.

Professor Dwilewicz was an author of over 60 research papers published in prestigious journals. During his career, he gave lectures at more than 250 universities and conferences on four continents.

Those who knew professor Dwilewicz will remember him as a kind person. He will be missed by his family and many friends, colleagues and students.



PROFESSOR PAWEŁ DOMAŃSKI

*from Adam Mickiewicz University in Poznan
passed away on August 4, 2016, at the age of 57,
after a long battle with disease*



During 1993-2014 Professor Domański worked at the Institute of Mathematics of the Polish Academy of Sciences, in the Department of Functional Analysis.

I remember I helped writing the department's annual report once, and professor Pełczyński, who was the head of the department back then, told me how much he valued Domański's work.

Professor Domański came from the Polish school of functional analysis. He was a mathematical grandson of professor Władysław Orlicz. He defended his PhD thesis entitled *Twisted sums of linear topological spaces* in 1987 under supervision of professor Lech Drewnowski. He obtained habilitation in 1991, and the academic title of a professor in 1999.

Since 1983, Paweł Domański worked at the Faculty of Mathematics and Computer Science at Adam Mickiewicz University in Poznań, since 2003 – he held the position of a full professor. He educated many generations of young people, and supervised 7 doctoral students.

He was the author of 80 research papers published in very good journals. His last paper – *Interpolation of holomorphic functions and surjectivity of Taylor coefficients multipliers*, (co-author M. Langenbruch), *Advances in Mathematics* 293 (2016), 782-855 – is a proof that he was professionally active until the very end. In 2013, he won MAESTRO grant of the National Science Center, *Real Analytic Functions and Differential Operators*.

During the period 1999–2013, professor Domański was in charge of the IMPAN branch in Poznań. In 2011–2014, he served as an elected member of the Scientific Council of IMPAN.

For many years, professor Domański served on the editorial committee of *Studia Mathematica*, a journal established in 1929 by S. Banach and H. Steinhaus. Since 2005, he was one of the three Executive Editors.

I used to meet Paweł and talked with him several times in Warsaw at IMPAN on the occasion of his participation

in meetings of the Scientific Council, Committee of Mathematics and KDDM (Conference of Deans and Directors), last time in 2013, when he held the position of associate dean at the Faculty of Mathematics and Computer Science at Adam Mickiewicz University. These were enjoyable and informative conversations.

Finally, I would like to quote from the letter by professor Tadeusz Januszkiewicz, scientific deputy director at IMPAN:

For me, Paweł was a mathematician whom I respected very much for his achievements, but maybe even more a colleague who was open and acquiescent. I deeply trusted his wisdom and his sense of what is right and what is wrong, both intellectually and spiritually.

For IMPAN he was good, because he had a vision of Polish mathematical community as a whole, and did not think in terms of narrow particular interests.

The unity of mathematics and mathematicians was very important to him.

Feliks Przytycki

BANACH CENTER SELECTED UPCOMING EVENTS 2017

For more information, please check out: www.impan.pl/en/activities/banach-center/conferences?y=2017

	TITLE		ORGANIZERS	PLACE
1.	Winter Workshop on Dynamics, Topology and Computations	12-18.02.2017	T. Kapela, M. Mrozek	Będlewo
2.	Probability and Analysis (conference)	15-19.05.2017	K. Bogdan, M. Kwaśnicki, K. Szczypkowski, et al.	Będlewo
3.	Stochastic analysis and its applications (conference)	28.05.-03.06.2017	T. Komorowski, S. Peszat, Ł. Stettner	Będlewo
4.	Convex, Discrete and Integral Geometry (conference)	04-09.06.2017	J. Abardia, M. Henk, I. Herbert, et al.	Będlewo
5.	Differential Geometry (conference)	18-24.06.2017	W. Goemans, B. Opozda, U. Simon	Będlewo
6.	Emerging issues in nonlinear elliptic equations: (conference)	18-24.06.2017	O. Agudelo, P. Drabek, M. Kowalczyk, et al.	Będlewo
7.	Applied Topology in Będlewo 2017 (conference)	25.06. -01.07.2017	Z. Błaszczczyk, P. Dłotko, W. Marzantowicz	Będlewo
8.	Model Theory (conference)	02-08.07.2017	D. Hoffmann, P. Kowalski, K. Krupiński, et al.	Będlewo
9.	Banach Spaces and Operator Theory with Applications (conference)	03- 07.07.2017	A. Defant, P. Młeczko, E. Sánchez Pérez, et al.	Poznań
10.	Geometric analysis and related topics/in honour of Tadeusz Iwaniec's 70th birthday (conference)	16-22.07.2017	T. Adamowicz, P. Goldstein, P. Strzelecki	Będlewo
11.	Lipschitz Geometry of Singularities (conference)	06-12.08.2017	L. Birbaier, M. Denkowski, V. Grandjean, et al.	Będlewo
12.	Just a Little Calculation in Dynamics (conference)	13-19.08.2017	M. Martens, P. Gałązka, N. Mihalache Ciurdea, et al.	Będlewo
13.	Algebraic K-theory and Arithmetic (conference)	20-26.08.2017	G. Banaszak, P. Krasoń, W. Niziot	Będlewo
14.	GPCO 2017 - 7th German-Polish Conference on Optimization	27.08-1.09.2017	E. Bednarczuk, S. Dempe, T. Regińska, et al.	Będlewo
15.	Set Theoretic Methods in Topology and Analysis (conference)	03-09.09.2017	A. Błaszczczyk, W. Bielas, P. Kalemba, et al.	Będlewo
16.	Number Theory Days 2017, a conference on the occasion of the 60th birthday of Jerzy Kaczorowski	03-08.09.2017	L. Pańkowski, M. Radziejewski	Poznań
17.	Geometric and Algebraic Singularity Theory. A conference in honour of the 60th birthday of Goo Ishikawa	10-16.09.2017	W. Domitrz , T. Ohmoto, T. Yamamoto, et al.	Będlewo
18.	New Perspectives in the Theory of Function Spaces and their Applications (conference)	17-23.09.2017	D. D. Haroske, H. Kempke, H.-J. Schmeißer, et al.	Będlewo

BANACH CENTER SIMONS SEMESTER UPCOMING EVENTS

For more information on Simons Semesters, please check out:

www.impan.pl/en/activities/banach-center/simons-semester/accepted-semester

	TITLE	DATE	ORGANIZERS	PLACE
	Semester 04. CrossFields PDEs	1.12.2016 – 30.03.2017	E. Feireisl, P. Gwiazda, P. Mucha, A. Świerczewska-Gwiazda	
1.	Winter school CrossFields PDFs	5 – 9 12.2016	E. Feireisl, P. Gwiazda, P. Minakowski, P. B. Mucha, A. Świerczewska- Gwiazda	Będlewo
2.	Mathflows2017 (Simons Semester 04 conference)	15-20.01.2017	R. Danchin, P. B. Mucha, J. Peszek, et al.	Będlewo
3.	Ideal Fluids and Transport (Simons Semester 04 workshop)	13-15.02.2017	P. Gwiazda, A. Świerczewska-Gwiazda, E. Wiedemann	Warsaw
4.	Modern Numerical Methods for Quantum Mechanics (Simons Semester 04 workshop)	20-22.03.2017	K. Kropielnicka	Warsaw
5.	Current Topics in Kinetic Theory (Simons Semester 04 workshop)	27-29.03.2017	J. A. Carrillo, P. Gwiazda, B. Perthame, et al.	Warsaw
	Semester 05. Emergent trends of Complex Analysis and Functional Analysis	1.04 – 30.06.2017	A. Borichev, A. Baranov, M. Sodin, Y. Tomilov	
6.	Contemporary quasianalyticity problems (Simons Semester 05 school & workshop)	19-27.04.2017	A. Borichev, M. Sodin, Y. Yomdin	Warsaw
7.	Operator Semigroups in/for Analysis: modern developments (Simons Semester 05 workshop)	24-28.04.2017	R. Chill, Y. Tomilov	Będlewo
8.	Hilbert spaces of entire functions and their applications (Simons Semester 05 workshop)	22-27.05.2017	E. Abakurnov, A. Baranov, A. Borichev, et al.	Będlewo
9.	Complex and Functional Analysis and their interactions with Harmonic Analysis (Simons Semestr 05 conference)	12-17.06.2017	A. Baranov, A. Borichev, Y. Tomilov	Będlewo
	Semester 06. Symmetry and Geometric Structures	1.09-30.11. 2017	M. Eastwood, W. Kryński, P. Nurowski, B. Warhurst	

IMPAN

8 Śniadeckich street
00-656 Warsaw
Poland
tel.: +48 22 5228100
fax: +48 22 6293997
www.impan.pl
im@impan.pl

Stefan Banach International Mathematical Center

8 Śniadeckich street
00-656 Warsaw, Poland
tel.: +48 22 5228232
fax: +48 22 6225750
<http://www.impan.pl/BC/>
banach.center.office@impan.pl

Będlewo Research and Conference Center

Będlewo, 1 Parkowa street
62-060 Stęszew, Poland
tel.: +48 61 8135187
fax: +48 61 8135393
<http://www.impan.pl/EN/Bedlewo/>
bedlewo@impan.pl