

Newsletter of IMPAN



HISTORY

DEPARTMENTS

BANACH
CENTER

SCIENTIFIC
EVENTS



History of IMPAN

The first project of a national institute for mathematics in Poland can be found in a memorial of the Committee of Mathematics of the Council of Pure and Applied Sciences written in 1936 and approved by the Third Polish Congress of Mathematicians in 1937.

The project had not been implemented before the war and on April 24, 1948 the Council of the Polish Mathematical Society appealed to the state authorities for the same purpose. This time the Council of Ministers voted the existence of the State Mathematical Institute on November 20, 1948. According to the project of the Polish Mathematical Society, Kazimierz Kuratowski was to be president of the Institute and Waław Sierpiński the chairman of the Scientific Council.

This came to be true, with the difference that K. Kuratowski became director, not president, of the Institute.

At the beginning the Institute was divided into sections of pure and applied mathematics, but already in 1950 this division was abandoned and the Institute was divided into a dozen sections corresponding to branches of mathematics. Among heads of the sections were: K. Borsuk, S. Goław, F. Leja, E. Marczewski, W. Pogorzelski, W. Sadowski, H. Steinhaus, and T. Ważewski. The Institute had branches in most university cities and the divisions into sections and branches have been independent from each other. One of them has been concerned with computers and before the Institute of the Polish Academy of Sciences was created, the first Polish computer XYZ had been constructed in our Institute.

Almost from the beginning the Institute had a publications department and a library, which later developed into the Central Mathematical Library.

With the creation of the Polish Academy of Sciences in 1952, the Institute has been transformed into the Institute of Mathematics of the Polish Academy of Sciences.

K. Kuratowski remained its director till the end of 1967. He was succeeded by Roman Sikorski (1968–69), Czesław Olech (1970–1986), Bogdan Bojarski (1986–2002), Stanisław Janeczko (2002–9), and Feliks Przytycki (2010–). Between the resignation of R. Sikorski (beginning of 1970) and taking the office by C. Olech (July 1970) director's duties were carried by Jerzy Łoś.

As the chairman of the Scientific Council, Waław Sierpiński was succeeded by K. Kuratowski (1968–1980), Zbigniew Ciesielski (1981–1990), C. Olech (1990–2006), and Andrzej Schinzel (2007–).

Among deputy directors of the Institute for more than 10 years were Karol Borsuk, Zbigniew Semadeni, Eugeniusz Fidelis, Teresa Regińska, Łukasz Stettner, and Wiesław Żelazko, as well as Henryk Kościński and Jerzy Lengiewicz (administrative duties).

The heads of the Publications Department have been successively Marceli Stark (1950–1974 with interruptions), Stefan Rolewicz (1989–1995), Jerzy Trzeciak (1996–).

The heads of the library were Maria Łozińska (1953–1964), Maria Mostowska (1964–1992), and Dorota Czarnocka-Cieciura (1992–).

In the years 1951–93 the Institute organized semester long courses of applications of mathematics – more than 35000 people participated in them. The main organizer in the years 1951–1986 had been Tadeusz Iwiński, then T. Regińska.

Since the late 50'ies the Institute admitted Ph. D. students, but the official frame for their education has been created in 1960. Responsible for this education have been Aleksander Pełczyński (1970–79), A. Schinzel (1979–1986), and Piotr Mankiewicz (1986–).

The Stefan Banach International Mathematical Center has been founded within the Institute in 1972. Originally it was a joint enterprise of academies of the socialist countries; now it is still governed by an

1936

The first project of the Institute

1948

Foundation of the State Institute of Mathematics

1952

Incorporation of the Institute to the Polish Academy of Sciences

1972

Foundation of the Stefan Banach International Mathematical Center

1998

Foundation of Będlewo Research and Conference Center

international scientific council with three members of the council representing European Mathematical Society, three the founding academies and four from Poland. C. Olech has been the director of the Banach Center from 1972 to 1992.

Written by Andrzej Schinzel

HISTORY OF THE PREMISES OF THE IMPAN

The building in which the Institute of Mathematics of the Polish Academy of Sciences is currently located, was built at the turn of XIXth century at 8 Kaliksta street as it was then called and designed for a school. It belonged to Edward Rontaler, Polish pedagogue, who ran a private school there with Polish as the language of instruction. In the period of 1906-1908, another school, Mikołaj Rej junior secondary school was also located there.

In 1911 the building was donated as a perpetual tenure to Warsaw Scientific Society by Józef Mikołaj Potocki, the latter owner of the building. The street was soon to change its name to Śniadeckich, as it is still called at present.

Many research laboratories found a place in the edifice. In 1913 Maria Skłodowska-Curie, the distinguished director, opened the first radiological laboratory in Poland there. It existed until the outbreak of World War II. In 1940 Warsaw Scientific Society was liquidated by Nazis who also took over its property. During the War, the building was completely destroyed, however thanks to the good condition of its walls it was possible to reconstruct it. Created in 1948, the State Mathematical Institute has found its seat on the premises there.

With the creation of the Polish Academy of Sciences in 1952, the activity of Warsaw Scientific Society was suspended. The building at 8 Śniadeckich street came into possession of the PAS. Institute has become

a part of the Polish Academy of Sciences with headquarters in the above building and changed its name to the Institute of Mathematics of the Polish Academy of Sciences.

During the last 15 years, the Institute has made several renovations as well as modernizations of the building, the most important refurbishment was the addition of two top storeys.

MESSAGE FROM THE DIRECTOR OF IMPAN

Dear Readers,

I have a great pleasure to inaugurate IMPAN Newsletter. We plan to edit it twice a year: in Spring and Fall. IMPAN is the abbreviation of the Institute of Mathematics of the Polish Academy of Sciences ('science' is 'nauka' in Polish).

IMPAN includes the institution: Stefan Banach International Mathematical Center, to some extent independent, well established in the international mathematical community, having its own international scientific council. Banach Center organizes conferences, workshops, schools and working groups. It is a member of the European Research Centers on Mathematics (ERCOM), which is a committee of the European Mathematical Society. (40th anniversary of BC falls on this year and the next edition of the Newsletter would be in majority dedicated to this event.)

This Newsletter will publish short reports and contributions of the most important events at IMPAN, like international programs, conferences, seminars, lectures, etc. and announcements of upcoming events. It will inform about the best mathematical achievements and about available job positions at IMPAN.

We want to broaden the society of friends of the Institute, advertise its successes and add a bit to its international recognition.

I wish you a pleasant reading.

Yours, Feliks Przytycki, director.

Departments

Mathematical Physics And Differential Geometry Head: Janusz Grabowski



The staff consists of 7 employees: four full Professors (Janusz Grabowski, Andrzej Królak, Danuta Przeworska-Rolewicz, Stefan Rolewicz), one Associate Professor (Witold Kondracki) and two Assistant Professors (Javier de Lucas, Michał Jóźwikowski).

The main areas of research are:

- Geometry and physics (Janusz Grabowski, Michał Jóźwikowski)
- Mathematical methods of physics and detection of gravitational waves (Witold Kondracki, Andrzej Królak)
- Algebraic Analysis, algebras with logarithms (Danuta Przeworska-Rolewicz)
- Applications of Functional Analysis and Theory of Metric Spaces to Optimization. Paraconvex analysis (Stefan Rolewicz)
- Geometry of differential equations and superposition rules (Javier de Lucas)

During the last three years members of the department have published 50 scientific papers and have acted as Editors of 15 international journals.

Several grants by Polish Ministry of Science and Higher Education have been carried out in the department, the recent ones include: *Superalgebras and graded differential geometry with applications* (2006–2009), *Searching for gravitational waves* (2009–2012), and *Differential geometry of graded bundles* (2010–2013).

The Department's Professors are currently leading four seminars at the Institute:

1. Wagary (Workshop on Differential Geometry) – J. Grabowski
2. Algebra, Geometry, and Physics – J. Grabowski with a cooperation of the Center of Theoretical Physics and Faculty of Physics of the University of Warsaw
3. Gravitational Waves (all-Poland) – A. Królak
4. Mathematical Methods in Engineerig and Economy – S. Rolewicz

See <http://www.impan.pl/~jagrab/> for further information.

SELECTED RECENT PUBLICATIONS:

- S. Rolewicz, *On smooth points of boundaries of convex sets*, *Studia Math.* 191 (2009) 211–214.
- J. Grabowski, J. de Lucas, J.F. Cariñena, *Lie families: theory and applications*, *J. Phys. A* 43 (2010) 305201 (18pp).
- A. Królak, *Searching for gravitational waves from known pulsars using the F and G statistics*, *Classical and Quantum Gravity* 27 (2010) 194015.
- D. Przeworska-Rolewicz, *Nonlinear separable equations in linear spaces and commutative Leibniz algebras*, *Annales Polon. Math.* 97 (2010) 219–241.
- J. Grabowski, M. Jóźwikowski, *Pontryagin Maximum Principle on almost Lie algebroids*, *SIAM J. Control Optim.* 49 (2011) 1306–1357.
- J. Grabowski, M. Rotkiewicz, *Graded bundles and homogeneity structures*, *J. Geom. Phys.* 62 (2011) 21–36.

Other research units of the Institute, Departments:

Biomathematics, Foundation of Mathematics, Differential Equations, Topology, and Laboratories: Hilbert Spaces, Noncommutative Geometry, Numerical Analysis, will be presented in the next issue of the IMPAN Newsletter.

Algebra And Algebraic Geometry Head: Piotr Pragacz

This department was founded in 2000 as a continuation of the IM PAN Department of Algebra in Toruń. The permanent employees are: prof. dr hab. Piotr Pragacz and prof. dr hab. Agata Smoktunowicz (on leave). Long-time employees are: dr Jarosław Buczyński (on leave) and dr Grzegorz Kapustka (on leave). The temporary employees are: dr Marcin Chałupnik and dr Karol Palka (on leave). The temporary part time employees are: prof. dr hab. Sławomir Cynk and dr hab. Adrian Langer.

Several consecutive grants by Polish Ministry of Science and Higher Education have been carried out in the department. The recent one (2011-2014) is entitled Algebraic Geometry of Enriques surfaces, Calabi-Yau varieties and Thom polynomials and its main members include S. Cynk and P. Pragacz.

The main areas of research have been: projective algebraic geometry both complex and in positive characteristic; fundamental groups, Calabi-Yau varieties; enumerative theory of singularities; Thom polynomials; moduli spaces of sheaves; noncommutative rings.

The «center» of mathematical life of the department is constituted by the seminar IMPANGA: http://www.impan.pl/~pragacz/seminar_impanga/index.html

See also:
<http://www.impan.pl/~pragacz/impanga.htm>

SELECTED RECENT PUBLICATIONS:

- S. Cynk, S. Rams, *Defect via differential forms with logarithmic poles*, Math. Nachr. 284, No. 17–18 (2011), 2148–2158.
- A. Langer, *A note on restriction theorems for semi-stable sheaves*, Math. Res. Lett. 17 (2010), 823–832.
- A. Langer, *On the S-fundamental group scheme, to appear in Ann. Inst. Fourier* 61 (2011).
- A. Lascoux, P. Pragacz, *Thom polynomials and Schur functions: the singularities $A_3(-)$* , Publ. RIMS Kyoto Univ. 46 (2010), 183–200.
- M. Mikosz, P. Pragacz, A. Weber, *Positivity of Legendrian Thom polynomials*, to appear in J. of Differential Geom. 89 (2011).



Mathematical Statistics Head: Teresa Ledwina

The Department of Mathematical Statistics was established on April 1, 2004 as a result of unification of the Department of Mathematical Statistics and Its Applications and Department of Applied Probability. For brief history of the Department and its predecessors see: <http://www.impan.pl/Zaklady/stat.html>.

The Department has two long term employees: prof. Teresa Ledwina and prof. Tomasz Rychlik and one temporary employee: dr Grzegorz Wyłupek.

Currently, the main areas of research are: optimal bounds on statistical functionals and adaptive testing procedures. This activity is supported by three grants of the Polish Ministry of Sciences and Higher Education: *Adaptive tests for k-sample problem under ordered alternatives* (T. Ledwina and G. Wyłupek), *Adaptive tests related to nonstandard systems* (T. Ledwina and G. Wyłupek) and *Inequalities for ordered data in statistics and reliability* (T. Rychlik).

The two permanent members of the department are co-organizers of the following seminars:

1. Asymptotic Statistics (T. Inglot, T. Ledwina)
2. Mathematical Statistics and other Probabilistic Applications (P. Jaworski, M. Męczarski, T. Rychlik)

3. Mathematical Statistics (W. Niemirow, T. Rychlik).
For details see
<http://www.impan.pl/EN/seminars.html>.

T. Ledwina is a member of the Organizing Committee of the first German-Polish Conference on Probability and Mathematical Statistics (June 2013, Toruń).

SOME RECENT PUBLICATIONS:

- T. Ledwina, J. Mielniczuk, *Variance function estimation via model selection*, Appl. Math. 37 (2010) 387–411.
- J. Navarro, T. Rychlik, *Comparisons and bounds for expected lifetimes of reliability systems*, Europ. J. Operational Res. 207 (2010), 309–317.
- G. Wyłupek, *Data-driven k-sample tests*, Technometrics 52 (2010) 107–123.
- T. Rychlik, M. Z. Raqab, *Bounds for the mean residual life function of a k-out-of-n system*, Metrika 74 (2011), 361–380.
- T. Rychlik, A. Goroncy, *Lower bounds on the expectations of upper record values*, J. Statist. Plann. Inference 141 (2011), 2726–2737.



Functional Analysis Head: Piotr Mankiewicz



Functional Analysis Department is the largest research group at IM PAN by far and has a tradition lasting for half of the century. Its list of the permanent or long term full time members includes: prof. Tadeusz Figiel, prof. Anna Kamont, dr hab. Zbigniew Lipecki, prof. Piotr Mankiewicz, dr hab. Adam Nowak, dr hab. Piotr Śniady, dr hab. Yuriy Tomilov, dr hab. Michał Wojciechowski, prof. Jaroslav Zemánek. Additionally there are two part time Professors Emeritus: prof. Aleksander Pełczyński and prof. Wiesław Żelazko. The list is completed by part time and/or short term members: prof. Paweł Domański, prof. Rafał Łatała, prof. Mieczysław Mastyło, prof. Przemysław Wojtaszczyk and a Ph.D student Tomasz Z. Szarek.

The main area of research of the group are probabilistic methods in analysis and geometry, (nonlinear) approximation theory, geometry of Banach spaces, interpolation of linear operators and operator theory in the context of differential equations.

Members of the group take part in 10 Polish research grants and 1 grant from Spain. In past years J. Zemánek was a coordinator in 6FP Marie Curie Actions ToK program: Operator Theory Methods for Differential Equations, TODEQ (2006–2010), while P. Mankiewicz was a Polish node coordinator in 6FP Marie Curie Actions RTN: Phenomena in High Dimension, PHD (2004–2008).

SELECTED RECENT PUBLICATIONS:

- P. Domański, *Real analytic parameter dependence of solutions of differential equations*, *Revista Mat. Iberoamericana* 26 (2010), 175
- T. Figiel, W.B. Johnson, A. Pełczyński, *Some approximation properties of Banach spaces and Banach lattices*, *Israel J. Math.* 183 (2011), 199–231.
- G.G. Gevorkyan, A. Kamont, *On the trigonometric conjugate to the general Franklin system*, *Studia Math.* 193 (2009), 203–239.
- R. Łatała, *Order statistics and concentration of ℓ_r norms for log-concave vectors*, *J. Funct. Anal.* 261 (2011), 681–696.
- P. Wojtaszczyk, *Stability and Instance Optimality for Gaussian Measurements in Compressed sensing*, *Found. Comp. Math.* 10 (2010), 1–13.
- A.M. Gomilko, J. Zemánek, *O ravnomiernom rezolventnom uslovii Kreissa*, *Funktsional Anal. I Prilozhen.*, 42 (2008), 81–84. English translation: *On the uniform Kreiss resolvent condition*, *Functional Anal. Appl.* 42 (2008), 230–233.
- F. Gesztesy, Y. Latushkin, K. A. Makarov, F. Sukochev, Y. Tomilov. *The index formula and the spectral shift function for relatively trace class perturbations*. *Adv. Math.* 227.1 (2011), 319–420.

Probability Theory And Mathematics Of Finance Head: Łukasz Stettner



This department has three permanent employees: dr hab. Szymon Peszat, prof. Łukasz Stettner and prof. Jerzy Zabczyk; temporary employees: prof. Krzysztof Bogdan, prof. Tomasz Komorowski, dr Mateusz Kwaśnicki and dr Paweł Wolff; part time employees: prof. Ryszard Zieliński; and PhD students: mgr Bogdan Dobrzeńcki, mgr Michał Krzemiński, mgr Michał Krzeszowiec, mgr Tomasz Rogala and mgr Marcin Rudź.

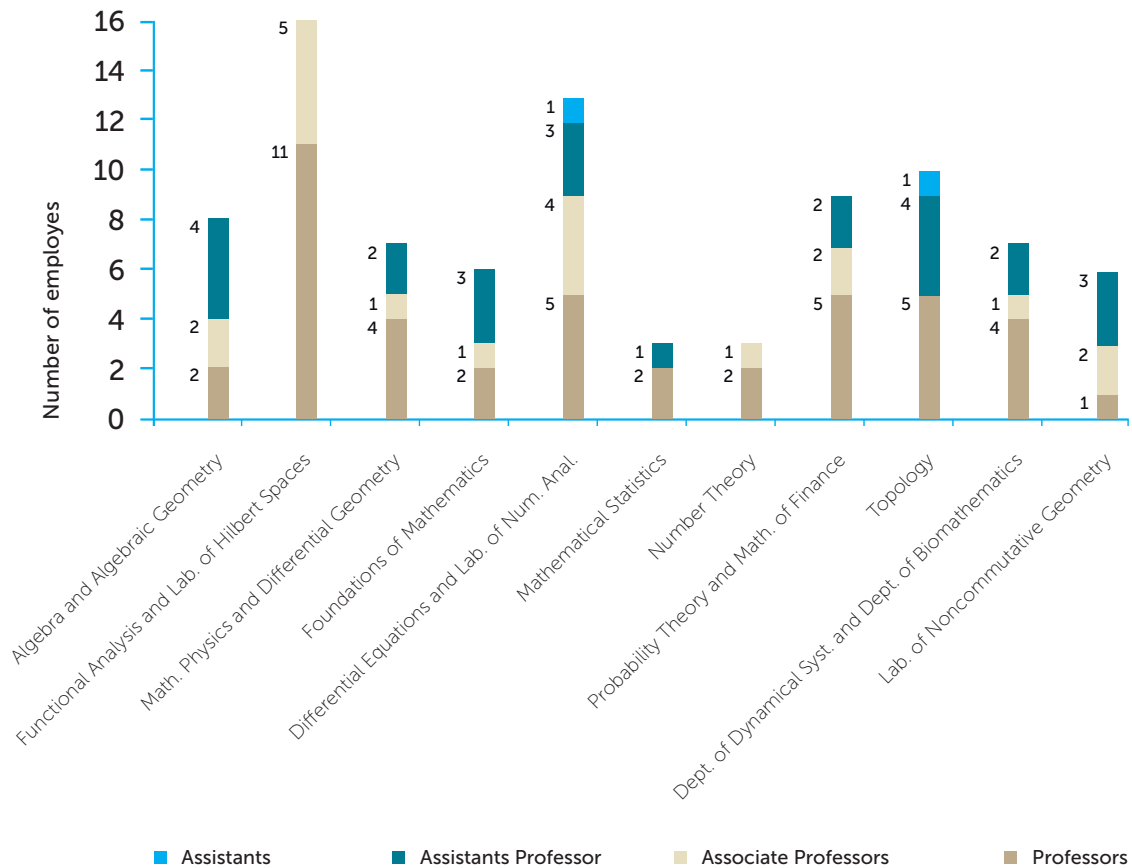
Several consecutive grants by Polish Ministry of Science and Higher Education have been carried out in the department, the recent:

- *Problems of Stochastic Control with Application to Mathematics of Finance*, 2009–2012, coordinator: Ł. Stettner

- *Stochastic equation in infinite dimensional spaces*, 2010–2013, coordinator: Sz. Peszat
- *Markov processes and semigroup of operators*, 2009–2012, coordinator: K. Bogdan
- *Applications of Markov processes in the theory of random media 2010–2013*, coordinator: T. Komorowski

The department was involved in European Science Foundation programme AMaMeF (Advanced Mathematical Methods for Finance) 2005–2010, together with outside collaborators: prof. Jacek Jakubowski, prof. Andrzej Palczewski, dr Michał Barski, dr Łukasz Delong, dr Mariusz Niewęglowski, dr Jan Palczewski.

Departments and Laboratories – Number of Research Staff as of Dec.31, 2011



The Department organizes two seminars at IM-PAN in Warsaw: Methods of Mathematics of Finance (weakly: Fridays 12.15–14.00) and Stochastic processes (monthly), which is considered as a department seminar.

The main areas of research have been: stochastic processes and stochastic analysis, infinite dimensional analysis, stochastic control theory, potential theory of Levy processes, Markov processes in random media, mathematics of finance and insurance.

SELECTED RECENT PUBLICATIONS:

→ M. Krzeszowiec and M. Kałuska, *Pricing insurance*

contracts under Cumulative Prospect Theory Insurance, Math. Econom. 50 (2012), 159–166.

→ M. Kwaśnicki, *Spectral analysis of subordinate Brownian motions in half-line*, Studia Math. 206 (2011), 211–271.

→ Ł. Stettner and J. Palczewski, *Stopping of discontinuous functionals with the first exit time discontinuity* Stochastic Process, Appl. 121 (2011), 2361–2392.

→ J. Zabczyk and M. Barski, J. Jakubowski, *On incompleteness of bond markets with infinite number of random factors*, Math. Finance 21 (2011), 541–556.

→ T. Komorowski and A. Walczuk, *Central limit theorem for Markov processes with spectral gap in the Wasserstein metric* Stochastic Process. Appl. (to appear).

Dynamical Systems Head: Feliks Przytycki



This department exists since 2005, when it split from the Department of Functional Analysis. It has two permanent employees: prof. Feliks Przytycki and dr hab. Michał Rams; two temporary employees: dr hab. Piotr Oprocha, Yonatan Gutman; part time employee: prof. Eugene Gutkin; PhD student: Justyna Signerska.

Several consecutive grants by Polish Ministry of Science and Higher Education have been carried out in the department, the recent one (2010–2013) is entitled Chaos, fractals and conformal dynamics, II. Its main members are: F. Przytycki, M. Rams, J. Kotus and L. Jaksztas.

The department was involved in several EU programmes, the recent one: EU FP6 Marie Curie Research Training Network Conformal Structures and Dynamics (CODY) (2007–2010) was coordinated by the University of Warwick (Sebastian van Strien) and involved local outside members of the team: prof. Janina Kotus, dr Ludwik Jaksztas, dr Bogusława Karpińska, dr Agnieszka Badeńska (from Warsaw University of Technology), prof. Anna Zdunik and dr hab. Krzysztof Barański (from the University of Warsaw) and foreign CODY fellows, in 2010: Balázs Bárány, David Färm, Tomas Persson, Liviana Palmisano, Henry Reeve.

The main areas of research have been: ergodic theory methods in interval and holomorphic dynamics,

thermodynamical formalism and multifractal spectra for Lyapunov exponents in 1D dynamics, fractal percolations: deterministic and random, projections, foliations, topological dynamics: chaos, billiards.

The weekly IMPAN Seminar on Dynamical Systems is run by the department members, Mondays, 12:15–13:45.

See <http://www.impan.pl/~feliksp/holomorf.html> and <http://www.impan.pl/~feliksp/holomorf-past.html> for further information.

SOME RECENT PUBLICATIONS:

- F. Przytycki, M. Urbański, *Conformal Fractals: Ergodic Theory Methods*, London Math. Society: Lecture Notes Series, 371. Cambridge University Press, 2010.
- K. Gelfert, F. Przytycki, M. Rams, *Lyapunov spectrum for rational maps*, *Mathematische Annalen* 348.4 (2010), 965–1004.
- F. Przytycki, J. Rivera-Letelier, *Nice inducing schemes and the thermodynamics of rational maps*, *Communications in Mathematical Physics*, 301.3 (2011), 661–307.
- T. Jordan, M. Rams, *Multifractal analysis for Bedford-McMullen carpets*, *Math. Proc. Cambridge Phil. Soc.* 150 (2011), 147–156.
- V. Bangert, E. Gutkin, *Insecurity for compact surfaces of positive genus*, *Geometriae Dedicata* 146 (2010), 165–191.

Number Theory Head: Andrzej Schinzel



The department exists since 1960. It has only one long and full time employee: dr hab. Jerzy Urbanowicz, two part time employees: prof. Jerzy Kaczorowski, prof. Andrzej Schinzel and Ph.D. student: Maciej Zakarczemny.

The main areas of research are: finite fields with applications to cryptography, Selberg class of Dirichlet series, polynomials with integral coefficients and systems of linear congruences.

SELECTED RECENT PUBLICATIONS

1. J. Kaczorowski, A. Perelli, *On the structure of the Selberg class, VII: $1 < d < 2$* , *Ann. of Math.* (2) 73 (2011), 1397–1441.
2. J. Kaczorowski, A. Perelli, *A uniform version of Stirling's formula*, *Funct. Approx. Comment. Math.* 45.1 (2011), 89–96.
3. A. Schinzel, *On the factors of Stern polynomials. Remarks on the preceding paper of M. Ulas*, *Publ. Math. Debrecen* 79 (2011), 83–88.
4. A. Schinzel, *Solution to a problem of Lubelski and improvement of a theorem of his*, *Bull. Polish Acad. Sci Math.* 59 (2011), 115–119.
5. S. Spieź, A. Timofeev, J. Urbanowicz, *Non-admissible tracks in Shamir scheme*, *Finite Fields and Their Applications* 17 (2011), 329–342.

Banach Center

Stefan Banach International Mathematical Center
– *the Institute of Mathematics of the Polish Academy of Sciences*

Banach Center is a part of the Institute of Mathematics of the Polish Academy of Sciences. Its office is situated in Warsaw, Poland. Originally it was a joint enterprise of academies of the socialist countries. It was founded in 1972 to promote and stimulate international cooperation in mathematics, especially between the East and West.

Nowadays, after gaining world-wide recognition, Banach Center provides supportive and enriching environment for researches and encourages a collaborative exchange of ideas between the most innovative mathematicians from all over the world.

Banach Center scientific activities, which take place either at the Banach Center in Warsaw, or at the Conference Center in Będlewo include Conferences, Workshops, Schools, Research groups, and provide forum for various subjects of mathematics and its applications. Banach Center Colloquium: lectures which are given by the top specialists in the field, is organized in the cooperation with the Polish Mathematical Society. Instructional lectures for graduate students and condensed courses given by world-renowned specialists are organized.

Banach Center publishes the series of proceedings called *Banach Center Publications*.



6TH EUROPEAN CONGRESS OF MATHEMATICS

6th European Congress of Mathematics organized by the European Mathematical Society (EMS), the Polish Mathematical Society (PTM) and the Jagiellonian University (UJ) will be held in Kraków, July 2–7, 2012.

For more information see <http://www.ptm.org.pl/> or <http://www.6ecm.pl/>

Banach Center Selected Upcoming Events 2012/2013

For more information, please check out: <http://www.impan.pl/BC/Program/2012.html>

	TITLE	DATE	SCIENTIFIC ORGANIZERS	PLACE
1.	Ergodic Methods in Dynamics (conference)	22–28.04.2012	K. Barański, B. Karpińska, J. Kotus, A. Zdunik	Będlewo
2.	Probabilistic Aspect of Harmonic Analysis (conference)	28.04–05.05.2012	D. Buraczewski, K. Kolesko, M. Mirek, M. Paluszyński, M. Preisner, R. Urban, B. Wróbel	Będlewo
3.	Functional Analysis: Applications to Complex Analysis and PDE. A conference in honor of Dietmar Vogt's 70th birthday	06–12.05.2012	P. Domański, M. Goliński, P. Mleczko, K. Piszczyk	Będlewo
4.	Research group on Singularity Theory	18–31.05.2012	S. Janeczko	Warsaw
5.	XII Conference on Probability	28.05–01.06.2012	Ł. Stettner	Będlewo
6.	Differential Geometry (conference)	02–09.06.2012	B. Opozda, U. Simon	Będlewo
7.	Probability and Analysis (conference)	10–16.06.2012	W. Bednorz, W. Bryc, P. Hitczenko, J. Jakubowski, R. Latała, K. Oleszkiewicz, A. Osękowski, L. Stomiński	Będlewo
8.	VIII Forum on Partial Differential Equations (conference)	17–22.06.2012	K. Chetmiński, P. Górka, P. Kamiński, S. Owczarek	Będlewo
9.	Dynamics, Topology and Computations (conference)	24–30.06.2012	K. Mischaikow, M. Mrozek, P. Zgliczyński	Będlewo
10.	Foliations 2012 (conference)	24.06–01.07.2012	J. Álvarez Lopez, S. Hurder, R. Langevin, T. Tsuboi, P. Walczak, R. Wolak, M. Badura, M. Czarnecki, M. Jaworska-Banert, S. Walczak, Z. Walczak	Łódź
11.	Trends in Set Theory (conference)	07–12.07.2012	P. Koszmider, J. Pawlikowski, G. Plebanek, M. Sabok, S. Solecki	Warsaw
12.	Groups and their Actions (conference)	08–14.07.2012	W. Hotubowski, J. Okniński, W. Suszczański	Będlewo
13.	Copulae in Mathematical and Quantitative Finance (conference)	09–12.07.2012	F. Durante, K. Jaworska, P. Jaworski, O. Okhrin	Cracow
14.	LinStat2012 - International Conference on Trends and Perspectives in Linear Statistical Inference and 21st International Workshop on Matrices and Statistics	16–20.07.2012	A. Markiewicz, K. Filipiak, F. Carvalho, M. Graczyk, J. Hauke, M. Ohlson, W. Wołyński	Będlewo
15.	Algebraic K-theory and Arithmetic. Conference in honour of J. Hurrelbrink.	22–28.07.2012	G. Banaszak, P. Krasoń, R. Osburn, J. Urbanowicz	Będlewo
16.	Model Theory and Proof Theory of Arithmetic. A Memorial Conference in Honour of Henryk Kotlarski and Zygmunt Ratajczyk	22–28.07.2012	Z. Adamowicz, R. Kossak, M. Krynicki, K. Zdanowski	Będlewo
17.	Parabolic and Navier-Stokes Equations 2012 (conference)	02–08.09.2012	W. Zajączkowski, J. Neustupa, Y. Shibata, J. Renčławowicz, P. Mucha	Będlewo
18.	6th International Conference on Stochastic Analysis and its Applications	09–15.09.2012	K. Bogdan, T. Byczkowski, T. Jakubowski, T. Kulczycki, M. Kwaśnicki	Będlewo
19.	4th Polish Combinatorial Conference	16–22.09.2012	J. Grytczuk, J. Jaworski, P. Micek, P. Naroski, K. Rybarczyk-Krzywdzińska, A. Szelecka	Będlewo
20.	Advances in Mathematics of Finance. 6th General AMaMeF and Banach Center Conference	09–16.06.2013	A. Palczewski, Ł. Stettner	Warsaw
21.	Mathematics, Mechanics and Modelling (conference)	22–27.09.2013	B. Kaźmierczak, T. Lipniacki, P. Mucha, T. Piasecki, P. Rybka, D. Wrzosek	Będlewo

Będlewo Conference Center

Being a part of the Institute of Mathematics of the Polish Academy of Sciences, Będlewo Research and Conference Center hosts conferences and workshops, devoted to various fields of mathematics. Although it serves as a place for scientific meetings supported and /or accepted by the Banach Center, if the space allows, the Center is also available for groups of researchers representing other fields of science, or simply for individuals looking for a friendly place to do their research.

The Conference Center, main element of which is a Palace from XIX century, is set approx. 30 km from Poznań and neighbours National Park of Wielkopolska. Beautiful surroundings of the premises of the

Conference Center, its setting among lakes and forests, together with unique atmosphere of the Palace make it perfect not only for scientific meetings, but also outdoor get-togethers, banquets, training courses, weddings, etc.

Będlewo Research and Conference Center offers 80 guests rooms ready to accommodate up to 150 persons. All of them are equipped with bathroom, radio, as well as free Wireless Internet connection. As for the conference infrastructure, there are four fully equipped conference rooms available. Three computer rooms with free Internet connection are at the guests' disposal, too.

JOBS AT IMPAN IN 2012/2013

Jobs at IMPAN in 2012/2013, see <http://www.impan.pl/EN/jobs.html>, approaching deadlines:

- a) 1/2-2 years research positions for young mathematicians
– deadline for applications: May 18, 2012;
- b) Postdoc short-term research positions in algebraic geometry and in geometric group theory, PhD obtained from a non-Polish institution, in 2007 or later. The positions are for at least 1 month in the period June 1, 2012 – August 31, 2013 for ggt and June 1 – April 30, 2014 for ag. Co-financed by the Foundation for Polish Science and European Union Regional Development Fund. Deadline for applications: May 14, 2012.

Scientific Events

EMS School and Workshop on Mathematics for Multiscale Phenomena 24 October, 2011–28 October, 2011 | Będlewo

The school was organized by the Mathematical Center for Science and Technology IMPAN within the category of schools supported by the European Mathematical Society under the supervision of the EMS Applied Mathematics Committee. Its organizers were Helmut Neunzert (Fraunhofer Kaiserslautern), Andrzej Palczewski (University of Warsaw) and Łukasz Stettner (IMPAN)

Multiscale phenomena is an interdisciplinary subject that covers problems appearing in many areas of applied research. The organizers focused on particular aspects of multiscale phenomena: homogenization, multiscale in biology, multiscale in materials, numerical problems in multiscale computations (wavelets, multiscale-multicore computations, computational stochastics).

For the School the following 5 hours lectures were delivered:

1. Prof. Vincent Heuveline, Karlsruher Institut für Technologie – *Multiscale-multicore computing*.

2. Prof. Angela Kunoth, Universität Paderborn – *Adaptive Wavelets for Systems of PDEs*.
3. Prof. Frederic Legoll, Ecole des Ponts et Chaussee – *Some recent numerical approaches for random multiscale material*.
4. Prof. Knut-Andreas Lie, SINTEF – *Multiscale methods in porous media*.
5. Prof. Klaus Ritter, Technische Universität Kaiserslautern – *Stochastic Multi-level Algorithms*.
6. Prof. Angela Stevens, Universität Münster – *Multiscale Modelling in the Life-Sciences*.

Moreover, there were an introductory talk by prof. Helmut Neunzert and two contributed talks by prof. M. Lachowicz and dr K. Kulesza.

The school gathered 40 PhD students and young researchers from Warsaw, Cracow, Wrocław, Zielona Góra and Poznań.



Second Conference and Workshop on Singularities in Geometry and Applications

15–21 May 2011 | Będlewo

The conference was organized by prof. Peter Giblin from the University of Liverpool, prof. Stanislaw Janeczko from IMPAN Warsaw as well as by Carmen Romero-Fuster from University of Valencia.

In this international scientific event 80 persons took part. Polish, Brazilian and Japanese participants were in the majority.

Singularity theory has long been known for successfully connecting numerous important areas of applications of mathematics to its most abstract branches. Recent years have been particularly fruitful for geometric aspects of singularity theory, including among others the study of singularities in real algebraic geometry, analytic and subanalytic geometry, symplectic geometry and Lorentzian geometry. As a natural consequence of this progress many new applications to geometric optics, image recognition and processing, control theory, classical mechanics, general relativity theory and other disciplines have been pursued.

The conference aimed at bringing together specialists in Singularity Theory interested in Applications,

as well as other researchers willing to connect with the Singularity Theory techniques. In particular, the diffusion of these methods and their potentiality in actual research problems among the young researchers (postgraduate and postdoctoral students) was one of the goals of the meeting.

Topics of interest during the conference included: singularities of smooth maps, Generic Geometry, Applications to Computational Vision and Image Analysis, Applications to Robotics, Applications to Control Theory, Singularities of Caustics and Wave fronts, Classifications of singularities of differential forms, Topological invariants.

In addition to the conference two meetings in Warsaw took place:

- School on Generic Singularities in Geometry – 11.05–14.05 – organized by Goo Ishikawa and Mariusz Zając
- Working Group on Singularities and Geometry – 21.05–24.05 – organized by Shyuichi Izumyia and Carmen Romero Fuster

IMPAN PRIZES

IMPAN prizes, see <http://www.impan.pl/EN/Awards/index.html>:

- a) Scientific IMPAN prize awarded yearly by IMPAN Director for outstanding achievements in mathematical sciences was awarded in 2012 to Yuriy Tomilov for outstanding results in the theory of operators in Hilbert spaces and operator semigroups.
- b) The prize awarded yearly by Director for an outstanding PhD thesis at IMPAN in 2011 was awarded to Tomasz Piasecki for the thesis concerning Navier-Stokes Equation.
- c) The Kuratowski Award awarded yearly by IMPAN and Polish Mathematical Society for young mathematicians (age limit: 30) for outstanding results, was awarded in 2011 to Piotr Przytycki for results in geometric group theory.

Young Geometric Group Theory Meeting 9–13 January, 2012 | Będlewo

The aim of the meeting was to bring together young researchers in geometric group theory, graduate students and post-docs, to allow them to learn from one another and from senior mathematicians invited to give tutorial courses in different branches of geometric group theory.

The conference was organized by Polish Academy of Sciences, University of Warsaw, University of Wrocław, Adam Mickiewicz University and National Science Foundation.

As for the Organizers of this scientific event, they were naturally young as well, and those were as follows: Kamil Duszenko (University of Wrocław), Piotr Przytycki (IMPAN) and Paweł Zawiślak (University of Warsaw).

During the conference, in which over 100 participants took part, the following 4-hour topic courses were given:

- Yves Benoist, *Discrete subgroups of Lie groups*
- Ruth Charney, *Artin groups and their automorphisms*

→ Cornelia Drutu, *Embeddings of groups*

→ Mark Feighn, *Limit groups*

The following short presentations by junior researchers were also given:

→ Michael Bjorklund, *Limit theorems for random walks on groups*

→ Jing Tao, *Diameter of the thick part of moduli space*

→ Mathieu Carette, *Spectral rigidity of automorphic orbits in the free group*

→ Thomas Koberda, *Right-angled Artin subgroups of right-angled Artin groups*

→ Johanna Mangahas, *The geometry of right-angled Artin subgroups of mapping class groups*

→ Piotr Nowak, *Poincare inequalities, rigid groups and applications*

→ Patrick Reynolds, *«Curve complex» for the free group*

Descriptions of the above courses and short presentations, together with research statements from the Conference can be found on: <http://www.impan.pl/BC/Arch/2012/Young.html>

8th European Conference on Mathematical and Theoretical Biology June 28–July 2, 2011 | Kraków

The 8th ECMTB was a joint conference of the European Society for Mathematical and Theoretical Biology and Annual Meeting of The Society for Mathematical Biology. The conference was organized by the Katowice Branch of the Institute of Mathematics Polish Academy of Sciences and by the Faculty of Mathematics and Informatics of the Jagiellonian University. It took place in a modern conference building of the Jagiellonian University called Auditorium Maximum. Ryszard Rudnicki, the head of the biomathematics unit of IMPAN, was the president of the Scientific and Organizing Committees.

The conference was designed for researchers who are active in or interested in this fast growing field where experimental biology and medicine,

biochemistry, computational biology, mathematics and computer science merge. The key topics of the conference was immunology and epidemiology, cancer, cellular systems biology, neurosciences, medical physiology, regulatory networks, bioengineering, ecosystems dynamics, genetics and bioinformatics. Modeling of biological and medical phenomena involves a broad spectrum of mathematical methods: all types of differential equations, probability theory, dynamical systems and discrete mathematics.

This meeting brought almost thousand mathematician and scientists together from 48 countries to discuss a wide range of current topics in mathematical biology. There were 38 plenary lectures (including five lectures given by winners of prizes of both societies).

In 94 mini symposia and in 63 regular session participants presented 758 talks and in addition more than a hundred postdocs and students presented their posters. Moreover, 5 introductory lectures dedicated to students was held a day before the conference. The lectures cover topics from age-structured models, branching processes, cancer invasion, ecology, and epidemiology.

The plenary lectures presented topical subjects of mathematical biology included:

- Uri Alon (Weizmann Institute of Science) *Design principles of biological circuits*;
- Marek Kimmel (Rice University),
- Sylvie Méléard (École Polytechnique, Paris) *A rigorous model for adaptive dynamics of Mendelian diploids*;
- Rob Phillips (California Institute of Technology) *Random Walks in Physical Biology*;
- Michael C. Reed (Duke University) *Serotonin Metabolism in Health and Disease*;
- Peter Swain (University of Edinburgh) *Stochasticity in biochemical networks*;
- Julie Theriot (Stanford University Medical School) *Quantitative analysis and modeling of cell shape during rapid movement*;
- Hiroki Ueda (RIKEN Center for Developmental Biology, Japan) *System-level Understanding of Biological Timings*.

There were also five plenary talks given by the winners of prizes:

Art Winfree Prize:

- John Tyson (Virginia Tech) *Temporal Organization of the Cell Cycle*;

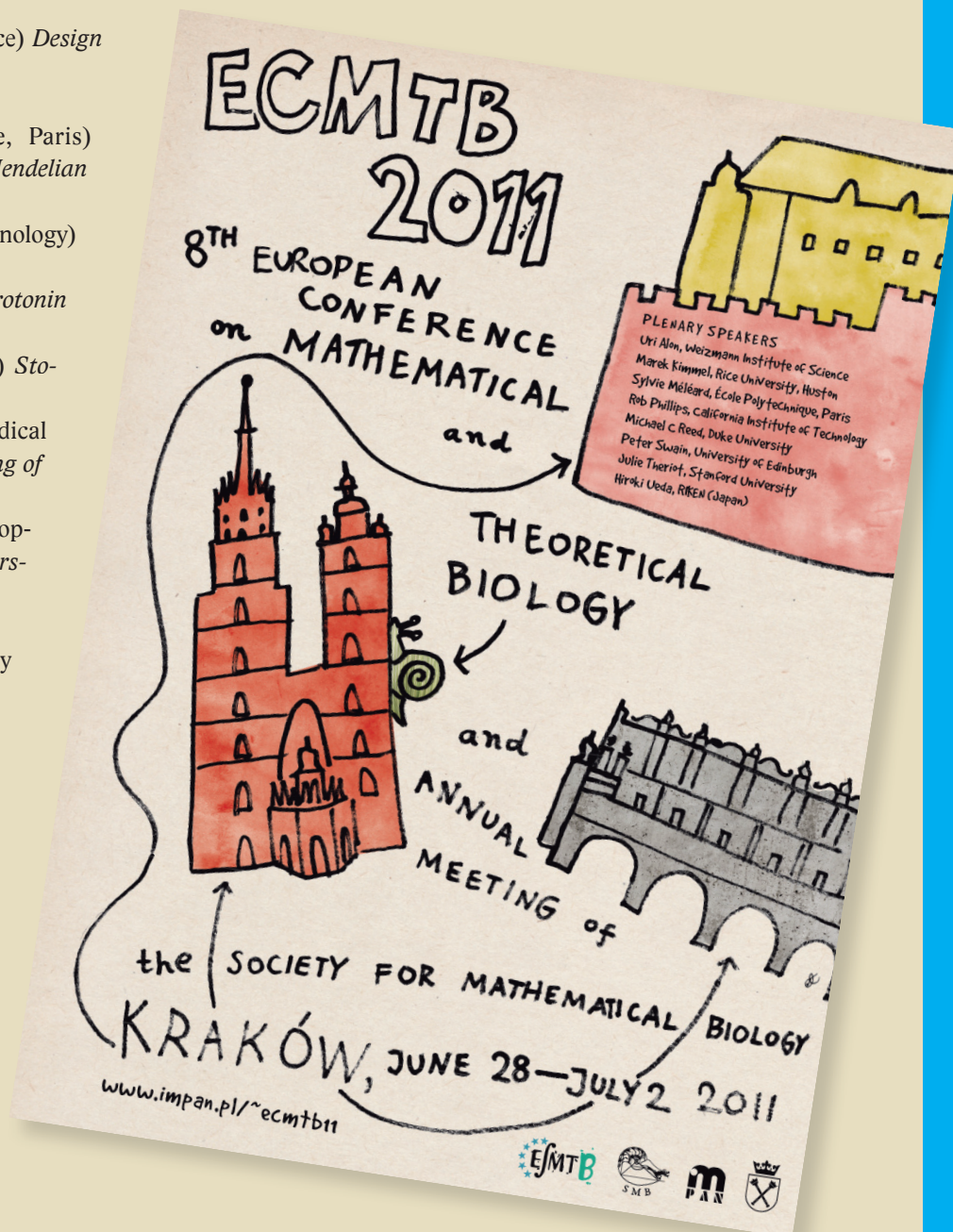
Reinhart Heinrich Awards:

- Thomas Maiwald *Mathematical modeling and in silico labeling with PottersWheel*;

- Tina Toni *Approximate Bayesian Computation for parameter inference and model selection in systems biology*.

Lee Segel Prizes:

- W. Brent Lindquist and Ivan D. Chase *Analysis of Winner-Loser Models of Hierarchy Formation in Animals*;
- Barbara Boldin *Persistence and Spread of Gastro-Intestinal Infections: the Case of Enterotoxigenic Escherichia coli in Piglets*.



THE INSTITUTE IS THE PUBLISHER OF THE FOLLOWING JOURNALS:

(Web: <http://journals.impan.gov.pl/>)

→ **Acta Arithmetica** (founded in 1936)

Number theory

→ **Annales Polonici Mathematici** (founded in 1954)

Mathematical analysis, differential equations, geometry

→ **Applicationes Mathematicae** (founded in 1953)

Applications of mathematics, especially mathematical modeling, optimization, probability and statistics, mathematics of finance, numerical methods

→ **Bulletin of Polish Academy of Sciences Math** (founded in 2004 continuation of the series published by PAN, founded in 1953)

Short research papers in all areas of mathematics

→ **Colloquium Mathematicum** (founded in 1948)

Research and survey papers in all areas of mathematics

→ **Dissertationes Mathematicae** (founded in 1952)

Small monographs in all areas of mathematics

→ **Fundamenta Mathematicae** (founded in 1920)

Set theory, mathematical logic and foundations of mathematics, topology, algebra, dynamical systems

→ **Studia Mathematicae** (founded in 1920)

Functional analysis, abstract methods of mathematical analysis, probability theory

→ **Banach Center Publications** (founded in 1976)

Proceedings of selected conferences and semesters held at the International Stefan Banach Mathematical Center. Each volume has its particular editors, in general from among the organizers of the given conference or semester.

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