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# Mathematics Calendar

The most comprehensive and up-to-date Mathematics Calendar information is available on e-MATH at <http://www.ams.org/mathcal/>.

## August 2003

\* **2003 WSEAS Conferences: Call for Invited Papers and Invited Sessions**, Mykonos Island, Greece.

**Conferences:** ISPRA 2003 (WSEAS Internat. Conf. on Signal Processing, Robotics, Automation); EHACS 2003 (WSEAS Internat. Conf. on Electronics, Hardware, Wireless & Optical Communications), Symposium on Microwaves, Antennas, Radar Systems; AIKED 2003 (WSEAS Internat. Conf. on Artificial Intelligence, Knowledge Engineering and Databases); SEPADS 2003 (WSEAS Internat. Conf. on Software Engineering, Parallel & Distributed Systems).

**Information:** <http://www.wseas.org>.

\* **7-12 Joint MaPhySto and QUANTOP Workshop on Quantum Measurements and Quantum Stochastics**, Department of Mathematical Sciences, University of Aarhus, Denmark.

**Information:** <http://www.maphysto.dk/events2/QPFA2003/>.

\* **18-September 5 Short Programme on Analysis and Resolution of Singularities**, Centre de Recherches Mathématiques, Montréal, Québec, Canada.

**Description:** Effective methods in resolution of singularities are becoming central to a modern generation of problems from analysis and geometry, for example, spectral theory and Hodge theorem for algebraic varieties, stability of oscillating integrals, existence of Kähler-Einstein metrics, and sharp forms of Moser-Trudinger inequalities. The diversity of the problems and their very different origins and aims have led to a lack of communication among researchers on these and related topics. This program, bringing together leading experts in resolution of singularities, complex differential geometry, and real analysis and partial differential equations, may have groundbreaking impact.

**Organizers:** E. Bierstone (Toronto), P. Milman (Toronto), D. H. Phong (Columbia).

\* **25-28 Study of the History of Mathematics**, Research Institute for Mathematical Sciences, Kyoto University, Kyoto, Japan.

**Information:** <http://www.kurims.kyoto-u.ac.jp/workshop-e.html>.

\* **25-29 Recent Trends in Microlocal Analysis**, Research Institute for Mathematical Sciences, Kyoto University, Kyoto, Japan.

**Information:** <http://www.kurims.kyoto-u.ac.jp/workshop-e.html>.

\* **27-29 Summer School: The Mathematics of Bioinformatics**, Centre de Recherches Mathématiques, Montréal, Québec, Canada.

**Description:** Bioinformatics is a rapidly expanding field driven by the increasing availability of massive genomic data and the research perspectives of molecular biology and genetics. The purpose of this school is to survey the various aspects of bioinformatics, with attention to the mathematical, statistical, and algorithmic aspects known as computational biology. Each presentation will include an introduction to the field, its concepts and general methods, followed by a discussion of current trends in research. Topics will include sequence alignment; the search for biological motifs; RNA structure prediction; genomic rearrangements; sequencing strategies; the analysis of DNA polymorphism; and the inference of metabolic, transcription, and regulatory networks from microarray data. The speakers on each topic are all well-known researchers in this area.

**Organizers:** D. Sankoff (Univ. d'Ottawa); N. El-Mabrouk (Univ. de Montréal).

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**This section** contains announcements of meetings and conferences of interest to some segment of the mathematical public, including ad hoc, local, or regional meetings, and meetings and symposia devoted to specialized topics, as well as announcements of regularly scheduled meetings of national or international mathematical organizations. A complete list of meetings of the Society can be found on the last page of each issue.

**An announcement** will be published in the *Notices* if it contains a call for papers and specifies the place, date, subject (when applicable), and the speakers; a second announcement will be published only if there are changes or necessary additional information. Once an announcement has appeared, the event will be briefly noted in every third issue until it has been held and a reference will be given in parentheses to the month, year, and page of the issue in which the complete information appeared. Asterisks (\*) mark those announcements containing new or revised information.

**In general**, announcements of meetings and conferences held in North America carry only the date, title of meeting, place of meeting, names of speakers (or sometimes a general statement on the program), deadlines for abstracts or contributed papers, and source of further information. Meetings held outside the North American area may carry more detailed information. In any case, if there is any application deadline with

respect to participation in the meeting, this fact should be noted. All communications on meetings and conferences in the mathematical sciences should be sent to the Editor of the *Notices* in care of the American Mathematical Society in Providence or electronically to [notices@ams.org](mailto:notices@ams.org) or [mathcal@ams.org](mailto:mathcal@ams.org).

**In order** to allow participants to arrange their travel plans, organizers of meetings are urged to submit information for these listings early enough to allow them to appear in more than one issue of the *Notices* prior to the meeting in question. To achieve this, listings should be received in Providence **eight months** prior to the scheduled date of the meeting.

**The complete listing** of the Mathematics Calendar will be published only in the September issue of the *Notices*. The March, June, and December issues will include, along with new announcements, references to any previously announced meetings and conferences occurring within the twelve-month period following the month of those issues. New information about meetings and conferences that will occur later than the twelve-month period will be announced once in full and will not be repeated until the date of the conference or meeting falls within the twelve-month period.

**The Mathematics Calendar**, as well as Meetings and Conferences of the AMS, is now available electronically through the AMS website on the World Wide Web. To access the AMS website, use the URL: <http://www.ams.org/>.

**Lecturers:** A. Bergeron (UQAM), G. Bourque (CRM), D. Bryant (McGill Univ.), M. Csűrös (Univ. de Montréal), N. El-Mabrouk (Univ. de Montréal), M. Hallett (McGill Univ.), J. Hein (Oxford Univ.), J. Kececioglu (Univ. of Arizona), M. Raffinot (Univ. d'Evry), D. Sankoff (Univ. d'Ottawa).

### September 2003

- \* 1-3 **3rd WSEAS International Conference on Instrumentation, Measurement, Control, Circuits and Systems**, Malta, Italy.

**Information:** <http://www.wseas.org>.

- \* 1-3 **3rd WSEAS International Conference on Information Science and Applications**, Malta, Italy.

**Information:** <http://www.wseas.org>.

- \* 1-3 **3rd WSEAS International Conference on Soft Computing, Optimization, Simulation & Manufacturing Systems**, Malta, Italy.

**Information:** <http://www.wseas.org>.

- \* 3-6 **ERATO Conference on Quantum Information Science 2003 (EQIS'03)**, Nijmakaikan, Kyoto, Japan.

**Description:** The EQIS meetings are to focus on quantum information science and technology, a new interdisciplinary field bridging computer science, quantum physics, mathematics, optics- and nano-technologies. EQIS'03 will be the third conference in a series and is to concentrate on theoretical and also experimental aspects of quantum information science. The program of EQIS'03 will consist of invited talks, short communications and posters. EQIS'03 is also expected to be accompanied by satellite pre- and postconference workshops.

Contributions for short communications and posters will be solicited in the research areas related to quantum information science, including but not limited to: design and analysis of quantum algorithms and circuits; quantum games; quantum computational and communication complexity; quantum computing and automata models; quantum cryptography; quantum information theory; quantum entanglement; quantum fault-tolerant and decoherence-free computations; quantum continuous variable computations; quantum geometric and topological computations; nonstandard models of quantum computation; quantum optics; NMR and solid state technologies; fermionic, bosonic, and anyonic computation.

**Sponsors:** ERATO Quantum Computation and Information Project, Japan Science and Technology Corporation.

**Deadlines:** Submissions (communications and posters): July 15, 2003. Notification of Acceptance/Rejection: August 1, 2003. Early Registration Deadline: August 9, 2003.

**Information:** <http://www.qci.jst.go.jp/eqis03/>.

- \* 7-11 **Topological Phases in Condensed Matter Physics**, AIM Research Conference Center, Palo Alto, California.

**Program:** This workshop, sponsored by AIM and the NSF, will explore the interface between topological quantum field theory and solid state physics. We will study which "topological phases" might be physically realized and how they might be detected and finally manipulated.

**Organizers:** M. Freedman, C. Nayak, and Z. Wang.

**Deadline:** June 1, 2003.

**Information:** <http://aimath.org/ARCC/workshops/topquantum.html>.

- \* 9-11 **Quantum Analysis in Operator Algebras**, Research Institute for Mathematical Sciences, Kyoto University, Kyoto, Japan.

**Information:** <http://www.kurims.kyoto-u.ac.jp/workshop-e.html>.

- \* 14-17 **2nd WSEAS International Conference on Applications of Electrical Engineering**, New York, New York.

**Information:** <http://www.wseas.org>.

- \* 14-17 **5th WSEAS International Conferences on Algorithms, Scientific Computing, Modelling and Simulation; Telecommunications and Informatics**, New York, New York.

**Information:** <http://www.wseas.org>.

- \* 17-19 **Computational Modelling in Medicine**, Edinburgh, UK.

**Topics:** Mathematical modelling and numerical simulation play a major role in many important medical applications. The meeting will be organised around the two interlinked themes of the vascular and pulmonary systems and soft tissue mechanics. The purpose is to bring together people who work on mathematical modelling, numerical analysis, simulation and direct medical applications related to these areas, and to act as a focus to stimulate further research and the development of even more realistic medical simulations.

**Information:** <http://www.ma.hw.ac.uk/icms/meetings/2003/cmm/>.

- \* 20-21 **Innovative Teaching of Mathematics "New Concepts & Cutting Edge Technology Applied to Mathematical Education"**, Research Institute for Mathematical Sciences (RIMS), Kyoto University, Kyoto, Japan.

**Description:** Until now many conferences have been devoted to Clifford geometric algebra and its applications. In the 1990s Clifford geometric algebra started to be used for undergraduate and graduate teaching at some universities. In the view of the conceptual merits of geometric algebra there are increasingly strong efforts (e.g., summer courses for school teachers) under way to introduce Clifford geometric algebra also into school curricula. In order to further investigate and communicate the conceptual advantages of geometric algebra for the teaching of mathematics, the time seems ripe for an international symposium with an explicit focus on Clifford geometric algebra for teaching.

The second major focus of this symposium is to present new ways of innovative cooperation between the industrial and scientific communities for the use of modern communication technology in mathematical teaching. A kind of forum for the two communities is intended to exchange new ideas and steer the future development in the most meaningful direction.

**Organizers:** R. Nagaoka (Univ. of the Air, Tokyo), H. Ishi (Yokohama City Univ.), E. Hitzer (Fukui Univ.).

**Speakers:** Speakers both from abroad and domestic Japanese experts are invited. Confirmed are: D. Hestenes (Arizona), R. Gonzalez Calvet (Barcelona), U. Kortenkamp (Berlin), H. Uno (SHARP, Japan).

**Information:** <http://sinai.mech.fukui-u.ac.jp/ITM2003/>.

- \* 21-24 **Inference and Prediction in Neocortical Circuits**, AIM Research Conference Center, Palo Alto, California.

**Program:** This workshop, sponsored by AIM, NSF, and RNI, will be devoted to working toward an understanding of inference and prediction in neocortical circuits.

The cerebral cortex is responsible for most of our conscious experience, yet we remain largely ignorant of the principles underlying its function despite progress on many fronts of neuroscience. The principal reason for this is not a lack of data, but rather the absence of a solid theoretical framework for motivating experiments and interpreting findings. The purpose of this workshop is to bring together mathematicians, statisticians, computer scientists, neuroscientists, and psychologists in order to work towards a theoretical framework for neocortical function.

**Organizers:** J. Hawkins and B. Olshausen.

**Application Deadline:** June 7, 2003.

**Information:** <http://aimath.org/ARCC/workshops/brain.html>.

- \* 24-28 **Workshop on Cauchy Problem for the Einstein Equations**, Centre de Recherches Mathématiques, Montréal, Québec, Canada.

**Description:** A number of major advances have been achieved over the past few years in the analysis of the Cauchy problem in general relativity. These include the proof of the nonlinear stability of Minkowski space, the proof of the Riemannian Penrose

conjecture, and the rigorous description of the asymptotic behavior at infinity of the admissible Cauchy data. This workshop will bring together some of the key players who have been involved in these developments and will provide an opportunity for exploring some of the remaining open problems.

The workshop will be preceded by two short courses given by G. Huisken (MPI Golm) and A. Ashtekhar (Penn State).

**Organizers:** F. Finster (Regensburg), N. Kamran (McGill).

**Invited Participants:** M. Anderson (Stony Brook) (\*), R. Bartnik (Canberra) (\*), H. Bray (MIT) (\*), M. Choptuik (UBC), Y. Choquet-Bruhat (Paris 6), D. Christodoulou (ETH) (\*), J. Corvino (Brown) (\*), P. Chrusciel (Tours), H. Friedrich, G. Galloway (Miami), C. Gerhardt (Heidelberg) (\*), C. Gundlach (Southampton) (\*), T. Ilmanen (ETH) (\*), J. Isenberg (Oregon), J. Kijowski, S. Klainerman (Princeton) (\*), J. Lewandowski, E. T. Newman, F. Nicolo (Rome) (\*), D. Pollack (Washington) (\*), A. Rendall (AEI Golm) (\*), C. Rovelli (CPT Luminy) (\*), C. Sogge (Johns Hopkins) (\*), R. Schoen (Stanford) (\*), E. Seidel (AEI Golm) (\*), T. Thiemann (AEI Golm) (\*), S. Zelditch (Johns Hopkins) (\*), N. Zipser (MIT) (\*). (\*) to be confirmed.

### October 2003

\* 1-5 **Workshop on the Interaction of Gravity with Classical Fields**, Centre de Recherches Mathématiques, Montréal, Québec, Canada.

**Description:** The interaction of gravity with external fields is governed by highly coupled systems of partial differential equations on manifolds. The analysis of these systems leads to rigorous analytical results on fundamental questions such as the scattering of waves by black holes and the role of external fields in the dynamics of gravitational collapse and black hole formation.

The workshop will be preceded by two short courses given by J. Smoller (Michigan). It will be simultaneous with the first series of Aisenstadt lectures for the year, to be delivered by S. T. Yau.

**Organizers:** F. Finster (Regensburg), N. Kamran (McGill).

**Invited Participants:** S. Anco, H. Andreasson (Chalmers Goteborg), A. Bachelot (Bordeaux) (\*), R. Beig (Vienna) (\*), H. Beyer (AEI Golm), B. Carter (Meudon), M. Dafermos, S. De Bievre (Lille) (\*), P. Forgacs (Missouri), P. Hislop (Kentucky) (\*), W. Israel (Victoria), B. Koyama (Nagoya), H. Kunzle (Alberta), J. Kunz (Oldenburg), A. Linden (Bloomington), D. Maison (Munich), R. McLenaghan (Waterloo), R. Melrose (MIT) (\*), J. P. Nicolas (Bordeaux), E. Poisson (Guelph), I. Racz (\*), A. Sa-Barreto (Purdue), I. Sigal (Toronto) (\*), W. Simon (Vienna) (\*), A. Soffer (Rutgers), C. Sogge (Johns Hopkins) (\*), J. Stalker (Princeton) (\*), N. Straumann (Zurich) (\*), S. Tahvildar-Zadeh (Rutgers), A. Tomimatsu (Nagoya) (\*), C. Ugla (Karlstad) (\*), J. Ventrella (UBC and Austin, TX) (\*), B. Whiting (Florida), S. T. Yau (Harvard), M. Zworski (Berkeley) (\*). (\*) to be confirmed.

\* 13-15 **3rd WSEAS International Conferences on Simulation, Modelling and Optimization; Signal, Speech and Image Processing; Multimedia, Internet and Video Technologies; Robotics, Distance Learning and Intelligent Communication Systems; Nanoelectronics, Nanoengineering and Electromagnetic Compatibility**, Rethymno, Crete, Greece.

**Information:** <http://www.wseas.org>.

\* 13-15 **5th WSEAS International Conference on Mathematics and Computers in Physics; Mechanical Engineering Multiconference**, Rethymno, Crete, Greece.

**Information:** <http://www.wseas.org>.

\* 17-18 **Twenty-Third Southeast-Atlantic Regional Conference on Differential Equations**, Kennesaw State University, Kennesaw, Georgia.

**Information:** <http://math.kennesaw.edu/search/>.

\* 23-26 **Amoebas and Tropical Geometry**, AIM Research Conference Center, Palo Alto, California.

**Program:** This workshop will be devoted to a brand new subject called tropical geometry. Tropical varieties are piecewise-linear

objects in Euclidean space. The link between the classical complex geometry and the tropical geometry is provided by amoebas or logarithmic images of complex varieties. The tropical varieties appear as certain degenerations of amoebas.

**Organizers:** G. Mikhalkin, B. Sturmfels, and O. Viro.

**Application Deadline:** June 15, 2003.

**Information:** <http://aimath.org/ARCC/workshops/amoebas.html>.

### November 2003

\* 3-7 **DIMACS Workshop on Data Quality, Data Cleaning and Treatment of Noisy Data**, DIMACS Center, Rutgers University, Piscataway, New Jersey.

**Short Description:** Many disciplines have taken piecemeal approaches to data quality. The areas of process management statistics, data mining database research, and metadata coding have all developed their own ad hoc approaches to solve different pieces of the data quality puzzle. These include statistical techniques for process monitoring, treatment of incomplete data and outliers, techniques for monitoring and auditing data delivery processes, database research for integration, discovery of functional dependencies and join paths, and languages for data exchange and metadata representation. We need an integrated end-to-end approach within a common framework, where the various disciplines can complement and leverage each other's strengths. In this workshop our broad objective is to bring together experts from different research disciplines to initiate a comprehensive technical discussion on data quality, data cleaning, and treatment of noisy data; specifically: to provide an overview of the existing research in data quality; to present data quality as a continuous, end-to-end concept; to discuss and update the definition of data quality; to develop metrics for measuring data quality; to emphasize data exploration, data browsing, and data profiling for validating schema specific constraints and identifying aberrations; to focus on disciplines such as knowledge representation and rule-based programming for capturing and validating domain specific constraints; to highlight applications and case studies; to present research tools and techniques; and to identify research problems in data quality and data cleaning.

**Organizer:** P. Dasu, AT&T Labs, [tamr@research.att.com](mailto:tamr@research.att.com).

**Local Arrangements:** M. Mercado, DIMACS Center, [mercado@dimacs.rutgers.edu](mailto:mercado@dimacs.rutgers.edu), 732-445-5928.

**Deadline:** Abstracts for contributed papers and posters: September 6, 2003.

**Information:** Visit <http://dimacs.rutgers.edu/Workshops/DataCleaning/>.

\* 27-28 **II International Workshop on Information Technologies and Computing Techniques for the Agro-Food Sector**, CIMNE, Barcelona, Spain.

**Description:** Mathematical models combined with appropriate numerical simulations have become indispensable to make accurate predictions in industry applications, but also to optimize and control processes. Moreover, current trends are moving towards the combination of information technologies with computational techniques.

The main objective of this second edition of the AFoT workshop is to provide a thorough introduction to the most important issues regarding the use of information technologies, and mathematical and computing techniques in the context of the food sector. Topics of interest include novel IT-related methods and tools (e.g., Web-based simulation and decision support systems) plus all the traditional computer simulation techniques (especially regarding distributed process systems), as well as signal processing techniques for advanced sensors.

Agro-Food Technology (AFoT) is a thematic area within MACSINET, a European network supported by the Information Society Technologies Programme (IST) of the Fifth Framework Programme

of the European Commission. MACSI-Net is an initiative to form an open network for the advancement of mathematics, computing, and simulation for industry.

The workshop is one of the activities of the MACSI-Net network to urge unified mathematical and computing techniques involving food scientists, engineers, and industrial people, as well as to encourage new cooperation at an international level between companies and research institutions.

**Information:** email: [ebalsa@cimne.upc.es](mailto:ebalsa@cimne.upc.es).

### December 2003

- \* 5–8 **Numerical Probabilistic Methods for High-Dimensional Problems in Finance**, AIM Research Conference Center, Palo Alto, California.

**Program:** This workshop, sponsored by AIM and the NSF, will be devoted to developing and studying efficient numerical algorithms, based on probabilistic methods, for solving high-dimensional optimization/nonlinear problems in finance and exploring the connection with the theory of Forward Backward Stochastic Differential Equations while at the same time extending that theory. The workshop will bring together researchers in numerical methods, PDEs, Monte Carlo simulation, quantitative finance, Malliavin calculus, Forward Backward Stochastic Differential Equations, nonparametric regression kernel techniques, and similar. We hope especially to facilitate communication on this topic between mathematicians, researchers from finance departments, and those from the finance industry.

**Organizers:** J. Cvitanic and N. Touzi.

**Application Deadline:** June 21, 2003.

**Information:** Visit <http://aimath.org/ARCC/workshops/highdimfinance.html>.

- \* 14–18 **Computational Algebraic Statistics**, AIM Research Conference Center, Palo Alto, California.

**Program:** This workshop, sponsored by AIM and the NSF, will bring together researchers in the emerging field of computational algebraic statistics. This new field applies methods of computational algebra and discrete geometry to problems in multivariate analysis, experimental design, probability theory, and disclosure limitation. The interaction of these areas has led, for instance, to the algebraic geometry of hierarchical models and Bayesian networks. The workshop will be a springboard for new ideas to expand the frontiers in computing Gröbner bases in the context of algebraic statistics, counting lattice points in polytopes, and optimally disseminating massive data while preserving confidentiality.

**Organizers:** J. A. De Loera, S. Fienberg, S. Hosten, A. Karr, and B. Sturmfels.

**Application Deadline:** July 1, 2003.

**Information:** <http://aimath.org/ARCC/workshops/compalgstat.html>.

- \* 18–20 **1st Indian International Conference on Artificial Intelligence (IICAI-03)**, Hyderabad, India.

**Focus:** This conference focuses on all areas of AI and its applications to many areas. We are inviting paper submissions and sessions proposals.

**Information:** <http://www.iiconference.org>.

### January 2004

- \* 5–9 **Workshop on Large  $N$  Limits of  $U(N)$  Gauge Theory in Physics and Mathematics**, Centre de Recherches Mathématiques, Montréal, Québec, Canada.

**Description:** This workshop is devoted to the large  $N$  expansion in quantum Yang Mills theory, particularly in the explicitly solvable 2D setting. During the '90s a series of articles by such physicists as D. J. Gross, W. Taylor, G. Matytsin, M. Douglas, V. Kazakov, and G. Moore produced a series of conjectured expansions for objects of 2D Yang-Mills with gauge group  $U(N)$ , such as the partition

function of a closed surface of genus  $g$ , the partition function of a cylinder, the expected value of the Wilson loop functional, as well as certain characters  $\chi_R(U)$ . These quantities are related to traces and other invariants of heat kernels, as well as to volumes and traces over moduli spaces of flat connections. The asymptotics of the partition functions are governed by statistics of branched covers of surfaces.

**Topics:** The Matytsin asymptotics for the characters  $\chi_R(U)$ , recently proven by A. Guionnet and O. Zeitouni; the Kazakov-Douglas phase transition in  $g = 0$ , recently proven by A. Boutet de Monvel and M. Shcherbina; Zelditch's limit formula for the partition function on the cylinder; statistics of branched covers (integrals over Hurwitz spaces); volumes and trace integrals over moduli spaces of flat bundles; the large  $N$  limit of objects of  $S_N$ ; relations between large  $N$  theory of  $YM_2$  and random matrix models; relations with free probability; the new, very fast developing work of Dijkgraaf-Vafa.

**Organizers:** P. Bleher (IUPUI), V. Kazakov (École Normale), and S. Zelditch (Johns Hopkins).

**Invited Participants:** Physics: R. Dijkgraaf (Amsterdam) (\*), M. Douglas (Rutgers), B. Eynard (Saclay), I. Kostov (Saclay), M. Marino (Harvard), G. Moore (Rutgers) (\*), M. Staudacher (Max Planck) (\*), W. Taylor (MIT) (\*), C. Vafa (Harvard) (\*).

Mathematics: P. Biane (ENS) (\*), A. M. Boutet de Monvel (Paris 7), D. Diderot, C. Frohman (SUNY) (\*), W. Goldman (Maryland), A. Guionnet (UMPA-Lyon), K. Johansson (KTU) (\*), A. Okounkov (Berkeley), R. Pandharipande (Princeton) (\*), N. Reshetikhin (UC Berkeley) (\*), M. Shcherbina (Kharkov), R. Wentworth (Johns Hopkins) (\*), C. Woodward (Rutgers), O. Zeitouni (Technion). (\*) to be confirmed.

- \* 11–14 **Thompson's Group at 40 Years**, AIM Research Conference Center, Palo Alto, California.

**Program:** This workshop, sponsored by AIM and the NSF, will be devoted to understanding Thompson's group from many different viewpoints and approaching some open questions about the group.

This workshop will bring together researchers in group theory, category theory, and dynamics for a joint approach towards Thompson's group. We hope especially to facilitate communication between researchers in these differing fields who may view Thompson's group in quite different ways. Exploring the connections between these viewpoints will lead to new and innovative approaches to some open problems concerning this group.

**Organizers:** S. Cleary, S. Gersten, J. Stallings, and J. Taback.

**Application Deadline:** September 1, 2003.

**Information:** Visit <http://aimath.org/ARCC/workshops/thompsonsgroup.html>.

- \* 18–22 **Computing: The Australasian Theory Symposium**, University of Otago, Dunedin, New Zealand.

**Topics:** Papers are invited on all aspects of theoretical computer science. Some representative but not exclusive topics include the following: logic, reasoning and verification; formal specification techniques and program semantics; formal development methods, program refinement, synthesis and transformation; concurrent, parallel and distributed system theory; algorithm design and data structures; streaming data computation; computational biology, geometry, and number theory; complexity and computability; automata, types and category theory; tools for automated reasoning, and program analysis and development.

**Important Dates:** August 29, 2003: Deadline for submissions of full papers. October 11, 2003: Notification of acceptance for formal submissions. November 29, 2003: Deadline for informal submissions. November 14, 2003: Final versions of accepted formal papers due, deadline for author registrations, notification of acceptance for informal submissions. January 18–22, 2004: Australasian Computer Science Week, incorporating CATS 2004.

**Information:** <http://www.cs.otago.ac.nz/staffpriv/mike/CATS04/CATS04.html>.

**February 2004**

\* 17–20 **Announcement and Call for Papers: IV International Symposium on Mathematical Methods Applied to the Sciences**, San José, Costa Rica.

**Topics:** Data Analysis, Multivariate Statistics, Clustering and Classification Probability, Stochastic Processes, Financial Mathematics Optimization, Operations Research, Approximation, Numerical Analysis, Applications of the above topics. To submit a short course or a paper, please visit our website for instructions. Send the abstract to: email: [jtrejos@cariari.ucr.ac.cr](mailto:jtrejos@cariari.ucr.ac.cr).

**Deadline:** October 15, 2003.

**Languages:** English and Spanish.

**Registration:** Please visit our website for prices and deadlines. We offer special discounts for Central Americans and students. The preliminary program will be available at the beginning of January 2004.

**Organizers:** J. Trejos (chairman): email: [jtrejos@cariari.ucr.ac.cr](mailto:jtrejos@cariari.ucr.ac.cr); W. Mora (webmaster): email: [wmora@itcr.ac.cr](mailto:wmora@itcr.ac.cr).

**Information:** <http://www.itcr.ac.cr/simmac/>; <http://www.emate.ucr.ac.cr>.

**Further Information:** On the website you can find further details about the Scientific and the Organizing Committees, as well as travel, hotel, tourism, and other information.

**March 2004**

\* 4–6 **Workshop on Spectral Geometry**, Centre de Recherches Mathématiques, Montréal, Québec, Canada.

**Description:** Relations between the geometric properties of manifolds and the spectrum of the Laplacian have been actively studied for decades. It is well known that many important geometric invariants are determined by the spectrum, and, vice-versa, the behavior of eigenvalues is strongly dependent on the underlying geometry and topology. Still, our understanding of the interplay between geometry and the spectrum is very far from being complete. In recent years some major developments have occurred in various areas of spectral geometry, such as spectral asymptotics, eigenvalue estimates, isospectrality, and others. These problems and their applications will be the focus of the workshop.

**Organizer:** I. Polterovich (Montréal).

**Invited Participants:** M. Ashbaugh (Missouri), C. Gordon (Dartmouth), P. Gilkey (Oregon), D. Gioev (UPenn), V. Guillemin (MIT), M. Hitrik (UCLA), V. Ivrii (Toronto), P. Li (UC Irvine), J. Lott (Michigan), R. Mazzeo (Stanford), P. Perry (Kentucky).

**April 2004**

\* 1–May 15 **Econometric Forecasting and High-Frequency Data Analysis**, Institute for Mathematical Sciences, National University of Singapore, Singapore.

**Program Organization:** This is a program jointly organized by the Institute for Mathematical Sciences; National Univ. of Singapore; and School of Economics and Social Sciences, Singapore Management Univ. Co-chairs: R. S. Mariano (Singapore Management Univ.), S. Ouliaris (National Univ. of Singapore), and Y. K. Tse (Singapore Management Univ.); Members: O. E. Barndorff-Nielsen (Univ. of Aarhus, Denmark), A. Pagan (Australian National Univ., Australia), A. Tay (National Univ. of Singapore), and G. Tiao (Univ. of Chicago, USA).

**Description:** Econometric forecasting has seen new dimensions recently due to developments in nonstationary time series, systems of equations and nonlinear dynamics modeling, while the advances in high-frequency data (HFD) analysis have recently accelerated with the availability of financial intra-day trade data.

**Format:** The program will focus on two major topics in econometrics: the first three weeks on forecasting, with the other three weeks on HFD analysis. The program will commence with a plenary session providing an overview of the themes and coverage. It will be followed by a series of formal meetings comprised of open forums,

tutorials, research seminars/workshops, and a conference for the presentation of research papers on forecasting and high-frequency analysis.

**Registration:** Registration forms for the tutorial/workshop are available at <http://www.ims.nus.edu.sg/Programs/econometrics/index.htm> and should be received at least one month before commencement of each activity. Registration is free. Membership is not required for participation.

**Membership:** Membership application for visiting the institute under the program is also available from the above website. Members do not need to register for specific activities.

**Contacts:** For general enquiries please email [ims@nus.edu.sg](mailto:ims@nus.edu.sg), while for enquiries on scientific aspects of the program, please email R. S. Mariano at [rsmariano@smu.edu.sg](mailto:rsmariano@smu.edu.sg). More information is available at the program website: <http://www.ims.nus.edu.sg/Programs/econometrics/index.htm>.

**May 2004**

\* 3–8 **AARMS-CRM—Workshop on Singular Integrals and Analysis on CR Manifolds**, Halifax, Nova Scotia, Canada.

**Description:** The theory of singular integral operators in the context of analysis on CR submanifolds of  $C^n$ , in particular the Heisenberg group, has been studied and proven fruitful over the last thirty years. In recent years the emphasis has shifted to singular integral operators which do not fall under the standard Calderon-Zygmund theory. These include operators arising from product kernels on nilpotent Lie groups, which in turn lead to the study of flag kernels. The workshop combines the areas of harmonic analysis, several complex variables, symmetric spaces, and Lie groups. It will include two series of lectures, to be delivered by Alexander Nagel (Wisconsin) and Elias M. Stein (Princeton). The workshop will be held in Halifax, Nova Scotia.

**Organizers:** G. Dafni (Concordia), A. Fraser (Dalhousie).

**Speakers:** A. Boggess (Texas A&M) (\*), A. Bonami (Orleans), D.-C. Chang (Georgetown), P. Ciatti (Padova) (\*), M. Cowling (UNSW-Sydney), A. Dooley (UNSW-Sydney), J. Faraut (Paris VI) (\*), G. Folland (Seattle), G. Gaudry (UNSW-Sydney) (\*), P. Greiner (Toronto), P. Guan (McMaster) (\*), K. Hare (Waterloo) (\*), A. Koranyi (CUNY), G. Mockenhaupt (Georgia Tech) (\*), L. Rothschild (UCSD) (\*), E. Sawyer (McMaster) (\*), M.-C. Shaw (Notre Dame) (\*), P. Sjögren (Göteborg) (\*), N. Stanton (Notre Dame) (\*), S. Thangavelu (Bangalore), S. Wainger (Wisconsin) (\*), J. Wright (Edinburgh) (\*). (\*) to be confirmed.

\* 3–June 26 **2004 Geometric Partial Differential Equations**, Institute for Mathematical Sciences, National University of Singapore, Singapore.

**Description:** Combining geometric insights and analytic techniques together has generated many fruitful ideas and surprising results. The advances of the analytical results on nonlinear partial differential equations have helped to accelerate research on differential geometry for the last forty years. On the other hand, geometry has provided subtle and elegant equations for investigation. The objective of the program is to initiate and conduct investigations into nonlinear partial differential equations arising from geometric problems, especially those related to the scalar curvature, Q-curvature, and Sigma curvature.

**Organizing Committee:** Co-chairs: X. Xu (Nat. Univ. of Singapore) and P. Yang (Princeton Univ.); W. Ding (Beijing Univ., China), M. C. Leung (Nat. Univ. of Singapore), C. S. Lin (Nat. Chung Cheng Univ., Taiwan), P. Pang (Nat. Univ. of Singapore), G. Tian (MIT), and N. S. Trudinger (Australian Nat. Univ.).

**Format:** The program will consist of tutorials on background material and a workshop (May 28–June 2, 2004) at research level, in addition to seminars and informal discussions. The program will focus on the following topics: (i) scalar curvature problem, especially prescribed scalar curvature problem on  $n$ -sphere; (ii) conformally invariant operators; (iii) geometric flow problem; and (iv) fully nonlinear partial differential equations.

**Registration:** Registration forms for the tutorial/workshop are available at <http://www.ims.nus.edu.sg/Programs/pdes/index.htm> and should be received at least one month before commencement of each activity. Registration is free. Membership is not required for participation.

**Membership:** Membership application for visiting the institute under the program is also available from the above website. Members do not need to register for specific activities.

**Information:** For general enquiries please email [ims@nus.edu.sg](mailto:ims@nus.edu.sg), while for enquiries on scientific aspects of the program, please email X. Xu at [matxuxw@nus.edu.sg](mailto:matxuxw@nus.edu.sg). More information is available at the program website: <http://www.ims.nus.edu.sg/Programs/pdes/index.htm>.

\*4-7 **Workshop on Spectral Theory and Automorphic Forms**, Centre de Recherches Mathématiques, Montréal, Québec, Canada.

**Organizers:** D. Jakobson (McGill), Y. Petridis (CUNY).

**Description:** In the last forty years it has been understood that there is a close connection between the spectral theory of hyperbolic manifolds and the theory of L-functions attached to automorphic forms. Trace formulas of Selberg and Kuznetsov-Bruggeman are extremely useful in studying the spectrum and eigenfunctions of the hyperbolic Laplacian. Surprising connections have also been discovered between subconvexity estimates for L-functions and the equidistribution results for Eisenstein series and cusp forms.

Analytical questions about families of L-functions include questions about the distributions of zeros and GRH, value-distribution, special values and applications, as well as connections with arithmetical questions (such as distribution of primes, size of class groups, analytic ranks of elliptic curves). One of the most fruitful approaches to the study of statistical properties of zeros of L-functions involves establishing connections with random matrix theory.

The goal of this workshop is to bring together leading researchers in those fields, to introduce young researchers and graduate students to the state of the art results, and to give an account of applications of techniques from analytic number theory to problems in analysis.

The workshop will coincide with the second series of Aisenstadt lectures for the year, to be given by P. Sarnak.

**Invited Participants:** J. Bolte (Bristol) (\*), B. Conrey (AIM) (\*), D. Goldfeld (Columbia) (\*), W. Duke (UCLA), J. Friedlander (Toronto) (\*), D. Hejhal (Minnesota), J. Hoffstein (Brown), L. Ji (Michigan), C. Judge (Indiana), J. Keating (Bristol) (\*), E. Kowalski (Bordeaux) (\*), S. Koyama (Keio) (\*), E. Lindenstrauss (Stanford) (\*), W. Luo (Ohio), P. Michel (Montpellier) (\*), S. Miller (Rutgers), W. Mueller (Bonn), R. Murty (Queen's) (\*), C. O'Sullivan (CUNY) (\*), P. Perry (Kentucky) (\*), B. Randol (CUNY) (\*), Z. Rudnick (Tel Aviv), P. Sarnak (Princeton), K. Soundararajan (Michigan) (\*), N. Vatsal (UBC), A. Venkov (Aarhus), M. Wakayama (Kyushu) (\*), A. Zaharescu (Illinois) (\*), S. Zelditch (Johns Hopkins) (\*). (\*) to be confirmed.

\*24-28 **Workshop on Hamiltonian Dynamical Systems (jointly with The Fields Institute)**, Centre de Recherches Mathématiques, Montréal, Québec, Canada.

**Description:** A conference on analytic techniques of dynamical systems, including perturbation theory, variational methods, and stability theory. The workshop will cover both finite-dimensional Hamiltonian systems such as in celestial mechanics, and infinite-dimensional Hamiltonian systems, such as those arising from PDE or from other dynamical systems with infinitely many degrees of freedom. Part of The Fields Institute thematic program, it follows a workshop on integrable and near-integrable Hamiltonian PDE, held the previous week in Toronto.

**Organizing Committee:** D. Bambusi (Milano); W. Craig (McMaster); S. Kuksin (Edinburgh); C. E. Wayne (Boston), chair; E. Zehnder (ETH-Zentrum).

**June 2004**

\*1-11 **Workshop on Semi-classical Theory of Eigenfunctions and PDEs**, Centre de Recherches Mathématiques, Montréal, Québec, Canada.

**Description:** Many questions in quantum chaos are motivated by the correspondence principle in quantum mechanics. It asserts that certain features of the classical system manifest themselves in the semiclassical (as Planck's constant  $\hbar^2 \rightarrow 0$ ) limit of a quantization of the classical system. The exact relationship between classical dynamics and asymptotic properties of high energy eigenstates of a quantized system is still not completely understood, despite exciting developments in the last twenty years. Important issues related to the correspondence principle include asymptotic  $L^\infty$  ( $L^p$ ) bounds for the eigenfunctions, integrated (and pointwise) Weyl errors and scarring. Another fundamental question concerns the local and global statistical properties of eigenfunctions (e.g., the random wave model), their nodal sets and critical points. These problems draw extensively on the theory of partial differential equations, and so we propose to bring together experts in these areas.

The workshop will include several short courses. H. Donnelly (Purdue) (\*), N. Nadirashvili (Chicago), and D. Jerison (MIT) (\*) have been invited.

**Organizers:** D. Jakobson (McGill), J. Toth (McGill).

**Invited Participants:** P. Bleher (IUPUI) (\*), E. Bogomolny, D. Borthwick (Emory) (\*), N. Burq (Paris-Sud) (\*), Y. Colin de Verdière (Grenoble) (\*), W. Craig (McMaster) (\*), C. Fefferman (Princeton) (\*), L. Friedlander (Arizona), P. Gerard (Paris-Sud), P. Guan (McMaster) (\*), V. Guillemin (MIT) (\*), B. Helffer (Paris-Sud) (\*), E. Heller (Harvard) (\*), V. Ivrii (Toronto) (\*), E. Martinez (UCLA) (\*), Min-Oo (McMaster) (\*), D. J. Nonnenmacher (Ulm) (\*), K. Okikiolu (San Diego) (\*), G. Popov (Nantes) (\*), T. Paul (École Normale) (\*), Z. Rudnick (Tel-Aviv), Y. Safarov (London), P. Sarnak (Princeton) (\*), B. Shiffman (Johns Hopkins) (\*), M. Shubin (Northeastern) (\*), J. Sjöstrand (Polytechnique) (\*), U. Smilansky (Weizmann), A. Sobolev (Sussex), C. Sogge (Johns Hopkins), T. Tate (Keio) (\*), A. Uribe (Michigan) (\*), A. Voros (Saclay) (\*), S. T. Yau (Harvard) (\*), S. Zelditch (Johns Hopkins) (\*), M. Zworski (Berkeley) (\*). (\*) to be confirmed.

\*16-19 **AIMS' Fifth International Conference on Dynamical Systems and Differential Equations**, California State Polytechnic University, Pomona, California.

**Topics:** The conference will cover all major research areas in analysis and dynamics. Equally emphasized will be real world applications in terms of modeling and computations.

**Description:** The conference will provide a unique international forum for the international community of mathematicians and scientists working in analysis, differential equations, dynamical systems, and their applications to real world problems in the forms of modeling and computation. The aim of this conference is to bring the worldwide senior experts as well as young researchers together to report recent achievements, exchange ideas, and address future trends of research in a relaxing but stimulating environment.

**Format:** There will be one-hour plenary talks, 30-minute special session talks, and 20-minute contributed talks.

**Organizing Committee:** I. Mihaila, M. Nakashima, C. Pinter-Lucke, S. Wirkus, W. Xie (chair, [wxi@csupomona.edu](mailto:wxi@csupomona.edu)).

**Scientific Committee:** J. Bona, S. Hu (chair, [shh209f@smsu.edu](mailto:shh209f@smsu.edu)), X. Lu (coordinator: [lux@uncwil.edu](mailto:lux@uncwil.edu)); W.-M. Ni, M. Otani, R. Temam, K. L. Teo.

**Deadlines:** Early registration and abstract submission: March 1, 2004.

**Proceedings:** The conference proceedings will be published by AIMS-Press.

**Funding:** Limited funding from the NSF is expected to support graduate students and young researchers.

**Information:** Abstract submission, registration, housing, plenary speakers, special sessions, and more details will be posted at <http://AIMSciences.org/>. For local information, please contact W. Xie

at wxie@csupomona.edu. To organize a special session, please contact S. Hu.

\*30–July 7 **Fourth World Congress of Nonlinear Analysts (WCNA2004)**, Hyatt Orlando, Orlando, Florida.

**Short Description:** The fourth World Congress (WCNA–2004) of Nonlinear Analysts will be held at the Hyatt Regency Orlando (Near Walt Disney World Resort) under the auspices of the International Federation of Nonlinear Analysts (IFNA). The vision of IFNA and WCNA is to promote, encourage, and influence more cooperation, understanding, and collaboration in the world community of nonlinear analysts from various diverse disciplines; to bring together various disciplines that attempt to understand nonlinear phenomena and solve nonlinear problems; and to help minimize the ever-widening gap between the developed and developing countries by providing scientific and technical research assistance in various forms. It is with this spirit that the International Federation of Nonlinear Analysts was established in 1992 as a transdisciplinary world society. IFNA sponsors the World Congress of Nonlinear Analysts periodically once every four years.

**Scientific Program:** There will be several invited lectures, organized sessions, minisymposia and workshops (by academic, industrial, and government experts) covering recent trends in nonlinear problems arising in such diverse disciplines as: aerospace sciences, atmospheric sciences, biological sciences, chemical sciences, cosmological sciences, economics, engineering & technological sciences, environmental sciences, geophysical sciences, medical & health sciences, numerical & computational sciences, oceanographic sciences, physical sciences, social sciences, and mathematical sciences. There will be opportunities to present short communications (30 minutes), organize informal seminars, and propose special sessions. More details concerning travel facilities, social events, preregistration, accommodations, submission of abstracts, scientific program, and invited lectures will be provided in the second announcement, which will be posted shortly.

**Information:** <http://kermani.math.fit.edu/>; email: [wca2004@yahoo.com](mailto:wca2004@yahoo.com).

**July 2004**

\*1–December 31 **Wall Bounded and Free-Surface Turbulence and Its Computation**, Institute for Mathematical Sciences, National University of Singapore, Singapore.

**Description:** Turbulence in fluid flow has remained one of the challenging problems of science and engineering today. Although important advances have been made in our knowledge and understanding of the processes of turbulence since the experiments of Osborne Reynolds more than a hundred years ago, our current ability to accurately predict turbulent events and their properties is still very limited for all but simple flows. The present program seeks to create a forum for the exchange of ideas and knowledge on recent developments in the theory of turbulence, turbulence modeling and computation, and turbulence control. The emphasis will be on turbulence at surfaces, since this is commonly encountered in applications, but related works in boundary layer transition and turbulence are also welcome.

**Organizing Committee:** Co-chairs: B. E. Launder (Univ. of Manchester Inst. of Sci. and Tech.), C. C. Mei (MIT), and K. S. Yeo (Nat. Univ. of Singapore).

**Registration:** Registration forms for participation in tutorials/workshops are available at <http://www.ims.nus.edu.sg/Programs/wbfst/index.htm> and should be received at least one month before commencement of each activity. Registration is free of charge. Membership is not required for participation.

**Information:** For general enquiries please email [ims@nus.edu.sg](mailto:ims@nus.edu.sg), while for enquiries on scientific aspects of the program, please email K. S. Yeo at [mpeyeoks@nus.edu.sg](mailto:mpeyeoks@nus.edu.sg). More information about the program is available at the website: <http://www.ims.nus.edu.sg/Programs/wbfst/index.htm>.

\*5–9 **19th “Summer” Conference on Topology and Its Applications**, Department of Mathematics and Applied Mathematics, University of Cape Town, Rondebosch, South Africa.

**Keynote Lecturers:** O. Alas (Univ. of Sao Paulo, Brazil); A. Edalat (Imperial College London, UK); M. Erne (Univ. of Hannover, Germany); M. I. Garrido (Univ. of Extremadura, Badajoz, Spain); V. Gutev (Univ. of Natal, Durban, South Africa); P. Johnstone (Univ. of Cambridge, UK); V. Pestov (Univ. of Ottawa, Canada); D. Repovš (Univ. of Ljubljana, Slovenia).

**Workshops:** Topological Methods in Algebra: M. D. Neusel (Texas Tech Univ. at Lubbock, USA); Duality as a Unifying Framework: I. Rewitzky (Univ. of Cape Town, South Africa).

**Special Sessions:** Session 1: Topology and Set Theory (e.g. Foundations, Continuum Theory). Session 2: Topology in Algebra (e.g. Topological Groups, Topological Semigroups). Session 3: Topology in Analysis and Geometry (e.g. Function Spaces, Dynamical Systems, Uniformity, Asymmetric Topology). Session 4: Topology and Computer Science (e.g. Domain Theory, Computational Topology). Session 5: Topology and Category Theory (e.g. Pointfree Topology, Topological Categories, Closure Operators). Participants are invited to present 20-minute talks.

**Organizers:** H. Kunzi, C. Gilmour, G. Brummer, J. Frith, S. Mabizela, I. Rewitzky, A. Schauerte (Univ. of Cape Town); D. Holgate, P. Matutu (Univ. of Stellenbosch); N. Marcus (Univ. of the Western Cape).

**Information:** Summer Conference on Topology and Its Applications, Department of Mathematics and Applied Mathematics, University of Cape Town, Private Bag, Rondebosch 7701, South Africa; email: [topsum04@maths.uct.ac.za](mailto:topsum04@maths.uct.ac.za); fax: +27-21-6502334; <http://vishnu.mth.uct.ac.za/Conferences/Topology/>.

\*26–30 **IMS Annual Meeting/6th Bernoulli World Congress**, Barcelona, Spain.

**Topics:** The program covers a wide range of topics in statistics and probability, presenting recent developments and the state of the art in a variety of modern research topics and in applications such as mathematical finance and statistical bioinformatics. The program include up to twelve Special Invited Lectures given by leading specialists, thirty-five Invited Paper Sessions and a large number of contributed talks.

**Organizers:** D. Nualart, Chairman of the Organizing Committee; W. Kendall, Chairman of the Scientific Committee.

**Information:** <http://www.imub.ub.es/events/wc2004/>.

\*26–30 **Workshop on Spectral Theory of Schrödinger Operators**, Centre de Recherches Mathématiques, Montréal, Québec, Canada.

**Description:** This workshop will focus on the spectral theory of random and quasiperiodic Schrödinger operators. In solid state physics random and almost periodic Schrödinger operators serve as models of disordered systems such as alloys, glasses and amorphous materials. The disorder of the system is reflected by the dependence of the potential on some random parameters.

From a mathematical point of view, random Schrödinger operators show quite “unusual” spectral behavior. If the disorder is large enough, then these operators have dense point spectrum with exponentially decaying eigenfunctions (Anderson localization). The appearance of dense point spectra is a reflection of the physical fact that the strongly disordered systems are bad conductors. It is believed that in the weak disorder regime and for dimensions larger than 2 these operators have some absolutely continuous spectrum which corresponds to nonzero conductivity of the weakly disordered systems. The mathematical proof of this expected spectral phase transition (Anderson delocalization) is a fundamental open problem in mathematical physics.

This workshop will bring together the world leaders in spectral theory of random and quasiperiodic Schrödinger operators. Its goal is to review the state of the art of the field and to map new directions of the research.

The program includes short courses to be given by M. Aizenman (Princeton), B. Simon (Caltech) (\*), and S. Jitomirskaya

(Irvine).

**Organizers:** V. Jaksic (McGill), Y. Last (Hebrew).

**Invited Participants:** J. Avron (Technion), J.M. Barbaroux (Toulon), J. M. Combes (Marseille) (\*), D. Damanik (Caltech), E. B. Davies (London), R. Del-Rio (UNAM), A. Elgart (Princeton), A. Fedotov (St. Petersburg), A. Figotin (Irvine), R. Froese (UBC) (\*), F. Germinet (Lille), F. Gesztesy (Missouri), M. Goldstein (Toronto), A. Gordon, I. Herbst (Virginia) (\*), P. Hislop (Kentucky), D. Hundertmark (Caltech), A. Joye (Grenoble), Y. Karpeshina (Alabama), R. Killip (Caltech), W. Kirsch (Bochum), A. Kiselev (Wisconsin), A. Klein (Irvine), F. Klopp (Paris), A. Laptev (Stockholm), D. Lenz (Chemnitz), S. Molchanov (UNCC), L. Pastur (Paris), C. Remling (Osnabruck), W. Schlag (Caltech), A. Sobolev (Sussex), P. Stollmann (Chemnitz), G. Stolz (Alabama), S. Tcheremchantsev (Orleans), B. Vainberg (UNCC). (\*) to be confirmed.

The following new announcements will not be repeated until the criteria in the next to the last paragraph at the bottom of the first page of this section are met.

**August 2004**

\*2-6 **Workshop on Dynamics in Statistical Mechanics**, Centre de Recherches Mathématiques, Montréal, Québec, Canada.

**Description:** During the last years significant efforts have been devoted to the study of dynamical properties of (classical and quantum) open systems. In particular, through the study of noisy or forced dissipative systems, or Hamiltonian systems with a large number of degrees of freedom, our understanding of the mathematical structure of nonequilibrium statistical mechanics has greatly improved. The aim of this meeting is to present the latest results and discuss the possible future directions of research in this area. The following topics will be discussed:

**Axiomatic approaches:** Under appropriate hypotheses on the ergodic properties of the underlying dynamical system (chaotic hypothesis, asymptotic abelianness, etc.), it is possible to prove various predictions of nonequilibrium thermodynamics (linear response, Kubo formula, Onsager's relations, etc.). This approach also leads to unexpected results, like the Gallavotti-Cohen fluctuation theorem.

**Specific models:** Modern techniques (quantum field theory, algebraic quantum dynamical systems, spectral analysis, renormalization group, etc.) have been successfully applied to the study of various models (spin-boson, spin-fermion, Pauli-Fierz, Lorentz-gas, etc.). Elementary physical properties like return to equilibrium or existence and structural properties of nonequilibrium steady states have been obtained in this way. More difficult questions, like the emergence of the Fourier law, are currently under investigation.

**Markovian dynamics:** It gives a natural mathematical framework to study the dynamics of various nonequilibrium processes: Hamiltonian systems coupled to reservoirs, exclusion processes on the lattice, noisy extended systems.

The program includes short courses to be given by H. Araki (Kyoto), B. Derrida (École Normale), J. Froehlich (ETH), J.-P. Eckmann (Geneva) (\*).

**Organizers:** V. Jaksic (McGill), C.-A. Pillet (Toulon).

**Invited Participants:** V. Bach (Mainz) (\*), J. Bellissard (Georgia Tech), S. De Bievre (Lille), D. Dawson (McGill), J. Dereziński (Warsaw), L. Erdos (Georgia Tech), B. Helffer (Paris-Sud), G. Gallavotti (Rutgers) (\*), C. Gerard (Polytechnique), M. Griesemer (Alabama), A. Knauf (Erlangen) (\*), S. Kuksin (Heriot-Watt), A. Kupiainen (Helsinki) (\*), J. Lebowitz (Rutgers), C. Liverani (Roma) (\*), C. Maes (Leuven), T. Matsui (Kyushu), M. Merkli (ETH), F. Nier (Rennes), L. Rey-Bellet (UMass), M. Sigal (Toronto), D. Spehner (Essen), H. Spohn (Munich) (\*), L. E. Thomas (Virginia), A. Verbeure (Leuven) (\*), H. T. Yau (NYU) (\*). (\*) to be confirmed.

\*6-7 **New Directions in Probability Theory**, Fields Institute, Toronto, Canada.

**Description:** The meeting consists of five sessions and four one-hour lectures, of which two are IMS Medallion Lectures. It is intended for a general probability audience interested in recent developments in probability theory. The topics of the session are Random Walks with Self-Repulsion, Random Matrices, Random Media, Superprocesses, and Markov Chains with Algorithms.

**Co-Sponsor:** The Institute of Mathematical Statistics (IMS) and the Fields Institute for Research in Mathematical Sciences. The meeting immediately precedes the Joint Statistical Meetings of August 8-12 (co-sponsored by ASA, IMS, ENAR, WNAR, SSC). It will take place on Friday/Saturday and will be held at the Fields Institute.

**Information & Registration:** There will be no registration fee for the meeting. However, space at the Fields Institute is limited, and so early registration is recommended; <http://www.imstat.org/meetings/NDPT/default.htm>.

**December 2004**

\*5-16 **International Workshop on Nonlinear Partial Differential Equations**, IPM, Tehran, Iran.

**Scope:** New trends and activities in the theory and applications of nonlinear partial differential equations. Topics include free boundary problems, applications of nonlinear pde's in fluids and geometry, inverse problems in pde's, stochastic and kinetic pde's, fully nonlinear pde's.

**Sponsors:** Institute for Studies in Theoretical Physics and Mathematics (IPM) (<http://www.ipm.ir>), Tehran, Iran; Wolfgang Pauli Institute (WPI) (<http://www.wpi.ac.at>), Vienna, Austria.

**Organizers:** P. A. Markowich (WPI), M. Shahshahani (IPM).

**Scientific Committee:** H. W. Engl (Linz, Austria), P. A. Markowich (WPI, Vienna), H. Shahgholian (KTH, Sweden), M. M. Shahshahani (IPM, Tehran), S. Tahvildarzadeh (Rutgers, USA), N. Uraltseva (St. Petersburg, Russia).

**Call for Papers:** Papers will be accepted for presentation at the workshop subject to approval by the Scientific Committee. Please send submissions (extended abstract) electronically (preferably in PDF format) to one of the organizers at an email address listed below.

**Contact:** M. M. Shahshahani ([mehrdads@ipm.ir](mailto:mehrdads@ipm.ir)); P. A. Markowich ([wittgenstein.mathematik@univie.ac.at](mailto:wittgenstein.mathematik@univie.ac.at)).

\*17-19 **International Conference on Smarandache Algebraic Structures**, Indian Institute of Technology, IIT Madras, Chennai - 600 036 Tamil Nadu, India.

**Description:** A Smarandache  $n$ -structure on a set  $S$  means a weak structure  $w_0$  on  $S$  such that there exists a chain of proper subsets  $P_{n-1} \subset P_{n-2} \subset \dots \subset P_2 \subset P_1 \subset S$  whose corresponding structures verify the inverse chain  $w_{n-1} \succ w_{n-2} \succ \dots \succ w_2 \succ w_1 \succ w_0$ , where  $\succ$  signifies "strictly stronger" (i.e., structure satisfying more axioms).

**Program:** (1) Smarandache-type groupoids, semigroups, rings, fields; (2) Smarandache-type  $k$ -modules, vector spaces, linear algebra, fuzzy algebra.

**Organizer:** W. B. Vasantha Kandasamy.

**Speakers:** R. Padilla, M. Khoshnevisan, M. Popescu.

**Deadline:** November 30, 2004.

**Information:** <http://www.gallup.unm.edu/~smarandache/eBooks-otherformats.htm>.