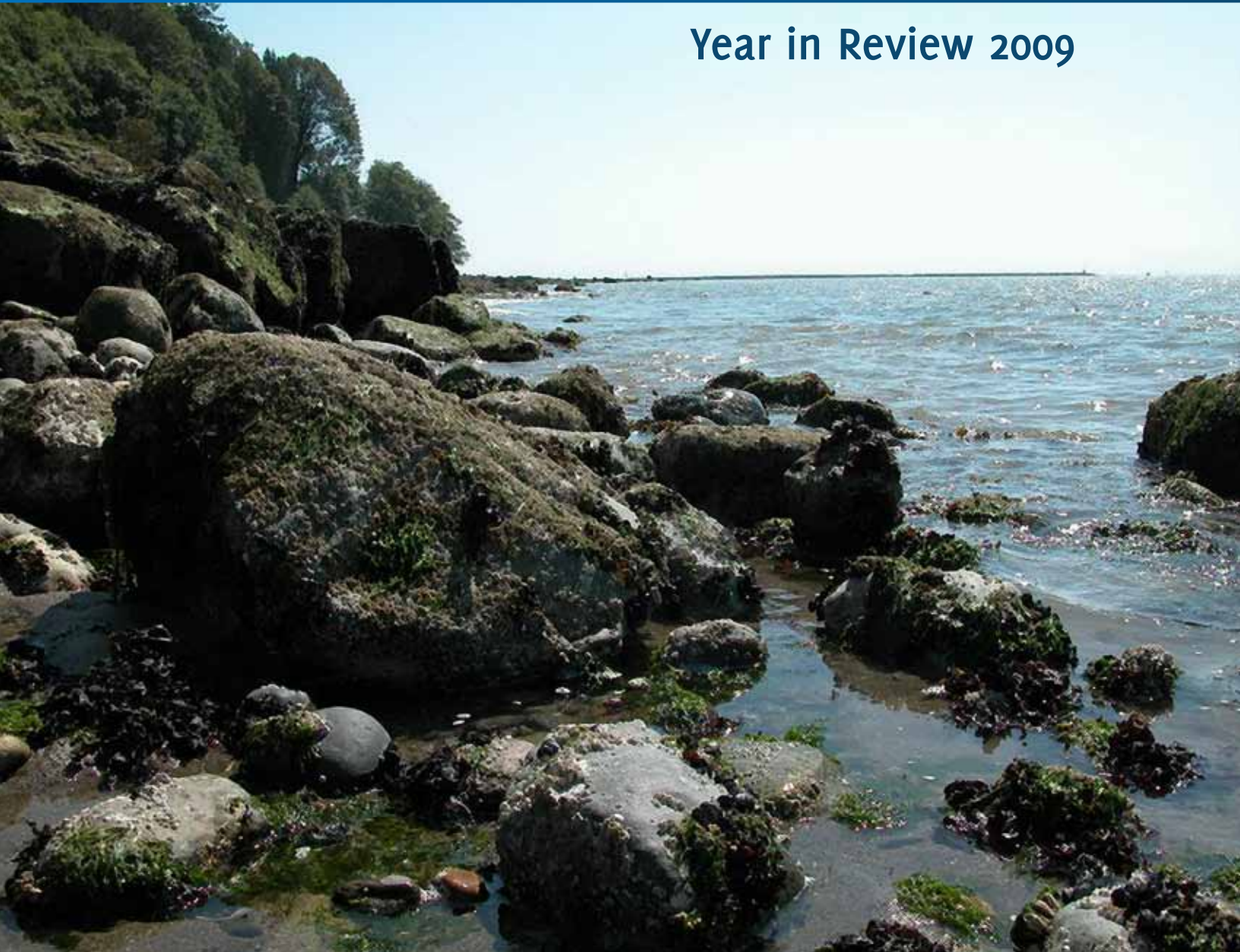




Pacific Institute *for the* Mathematical Sciences

Year in Review 2009



University of British Columbia • Simon Fraser University • University of Victoria • University of Calgary
University of Alberta • University of Lethbridge • University of Saskatchewan • University of Regina
University of Washington • Portland State University

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From the Director

With this “Year in Review”, we are inaugurating a new annual publication designed to bring you a summary of the range of PIMS activities. We hope you like it and we welcome your comments and suggestions for future issues.

November 15-21, 2009 was declared Mathematical Sciences Awareness Week by the Government of British Columbia, and PIMS was mentioned prominently in the official declaration. None of our activities would have been possible without the mathematical scientists, educators, students, staff members, organizers, and participants throughout Canada and the rest of the world whose enthusiasm, talents, and dedication have helped make 2009 a year of notable accomplishments for PIMS.

Workshops and meetings focused on major problems in mathematics remain one of our primary foci. These included our outstanding thematic program on *Partial Differential Equations* and the highly successful joint CRM-PIMS thematic program on *Challenges and Perspectives in Probability*. Both programs benefited from considerable funding from our partner institutions, including the National Science Foundation (USA), the Centre de Recherche Mathematiques and MITACS. The PIMS Collaborative Research Group (CRG) on *Operator Algebras and Non-commutative Geometry* organized high quality scientific events at Regina and Victoria, and that on PDEs continued the forward momentum created by their thematic program. At the graduate level, the PIMS International Graduate Training Centre in Mathematical Biology continued its successful recruitment of students, with a full cohort joining in Fall, 2009. The IGTC also provided a steady stream of excellent training activities, including a summer school at the Bamfield Marine Sciences Centre. And our PIMS Postdoctoral Fellows Program continues to grow in competitiveness and prestige.

Our prizes in 2009 recognized the highly original mathematical contributions of Martin Barlow (CRM-Fields-PIMS Prize) as well as the excellent educational efforts by Gerda de Vries (PIMS Education Prize). I am pleased to announce that starting in 2010, PIMS and CAIMS are co-sponsoring a new annual award for outstanding research by a young applied mathematical scientist in Canada.

PIMS takes leadership in the international mathematical community by building partnerships with mathematical institutes in other countries and you will find further details on our 2009 activities later in this publication.

The year 2010 promises to be very active. Significantly, the Government of Alberta Ministry of Advanced Education and Technology recently renewed their support of PIMS through \$1.2 million in funding for over the next three years. In another important development, PIMS headquarters is scheduled to move into a beautiful new building on the Main Mall of UBC in 2012. This modern facility will include a lounge for gatherings, seminar rooms and large classrooms, and state of the art videoconferencing capability. David Brydges stepped down as Deputy Director in December, 2009, and we were pleased to welcome G. M. “Bud” Homsy to that position and to UBC in January. Two new CRGs were approved for 2010-2013 on the respective topics of *Mathematics of Quantum Information and L-functions* and *Number Theory*. We are also co-funding a series of thematic workshops in applied mathematics to be held as satellite meetings immediately preceding the large ICIAM meeting in Vancouver in July, 2011. We will look forward to reporting on these 2010 activities in the next issue.

About PIMS

The Pacific Institute for the Mathematical Sciences (PIMS) was founded in 1996 by a consortium of five universities in Alberta and British Columbia (the University of Alberta, the University of Calgary, the University of British Columbia, Simon Fraser University and the University of Victoria). The University of Washington (USA), the University of Regina, and the University of Saskatchewan have since joined as full members and the University of Lethbridge and Portland State University as affiliated universities.

The PIMS mandate is to promote research and applications of the mathematical sciences of the highest international caliber; to facilitate the training of highly-qualified personnel at the graduate and postdoctoral level; to enrich public awareness of mathematics through outreach; to enhance mathematical training for teachers and students in K-12; and to create mathematical partnerships with similar organizations in other countries, with a particular focus on Latin America and the Pacific Rim.

The central office is at the University of British Columbia, with a PIMS site office and a Site Director local to each of eight major universities in Alberta, British Columbia, Saskatchewan and Washington State (USA). The Site Director facilitates local opportunities and synergies, while the PIMS site offices provide administrative assistance for organizing local events. This distributed structure renders it quite unique, involving strong local site offices and activities, and allowing us to have a broad impact across Western Canada and beyond.

A Board of Directors oversees the administration of PIMS, with membership consisting of the V. P. of Research from each of the member universities, as well as distinguished scientists and representatives from industry. An independent Scientific Review Panel composed of internationally renowned mathematical scientists assesses proposals for scientific events and programs. PIMS receives funding from NSERC, the member universities, and the provincial governments. Its international events are co-sponsored by funding agencies such as the US National Science Foundation and by international partner institutions. The PIMS annual budget is approximately \$3.5 million.

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Conferences, Workshops, Summer Schools, and Short Courses

PIMS sponsors or co-sponsors activities around North America and the Pacific Rim in a wide variety of venues, formats and foci. They are too numerous to list here: a complete listing is given on the PIMS website.

Conferences and Workshops: These range from small one-day workshops to multi-week conferences with hundreds of participants, 47 of which were supported in 2009.

Summer Schools: Eight summer schools/short courses were held in 2009 on topics including Undergraduate Algebra, Probability and Kinetic Theory, and Advanced Topics in PDEs.

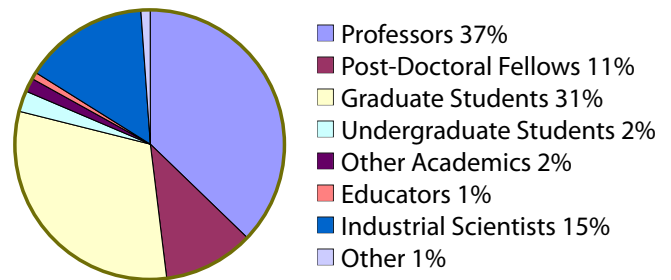
Lecture & Seminar Series: PIMS supported 17 ongoing seminar series at member universities and industrial centers in 2009.

Industrial Activities: As described in a later section, PIMS fosters collaborations with industry through *Industrial Problem Solving Workshops (IPSW)* and the *PIMS Graduate Industrial Mathematics Modeling Camps*.

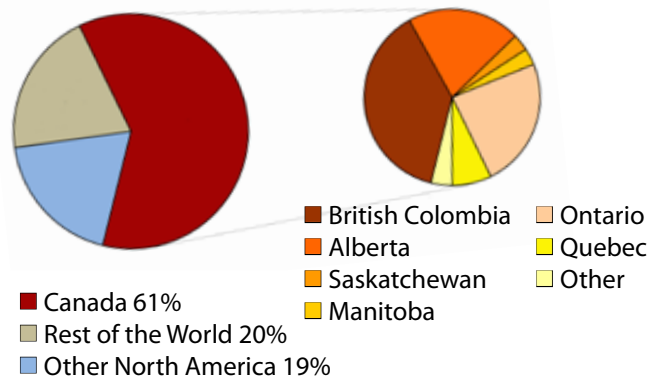
Thematic Programs: These intensive activities cover a specific area of research of current importance, with participants ranging from students to world experts in the mathematical sciences. Our two thematic programs for 2009 are described in a later section.

During the last calendar year (2009) PIMS helped to support over 70 scientific activities of the types listed here. These involved a total of nearly 3,500 attendees who spent nearly 14,000 attendee-days at PIMS activities. The charts give the demographics of the attendees. As can be seen, they represent a broad cross-section of the community and come from a variety of locations to attend PIMS events.

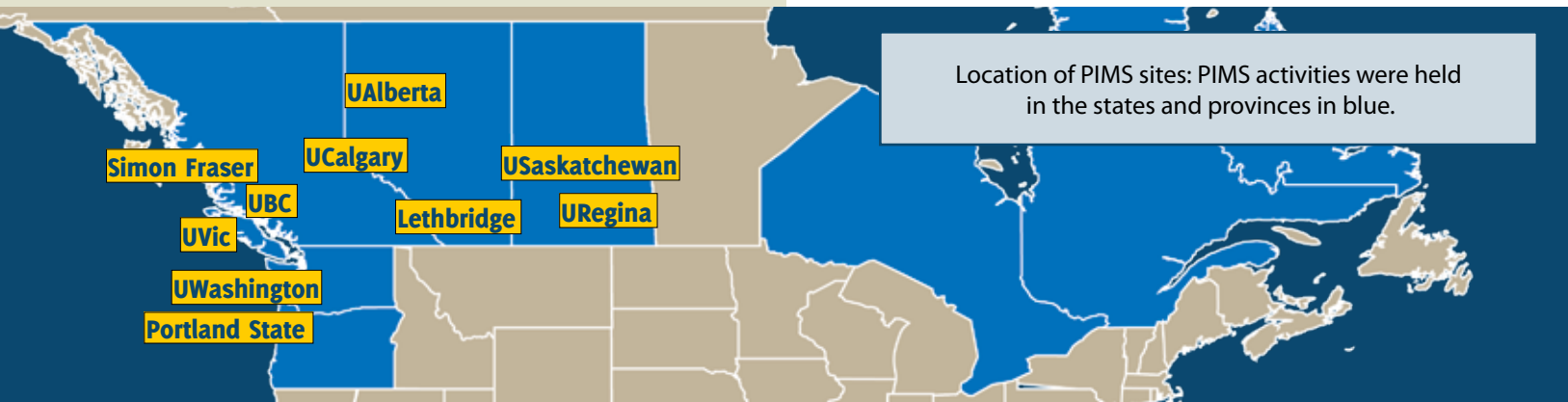
Demographics of Attendees by Profession



Demographics of Attendees by Origin



Of the 77 activities with well-defined geographic loci, 67 were held in Canada in British Columbia, Alberta, Saskatchewan, Quebec, Ontario, and Newfoundland, 6 were held in the United States in Washington and Oregon, and 4 were held overseas in Australia, Japan, and Malta.



Collaborative Research Groups

PIMS Collaborative Research Groups (CRGs) develop permanent research and training networks, establishing lasting interdisciplinary links between geographically separate groups of researchers at member universities. Groups organize thematic activities, such as workshops, summer schools and seminars, make joint postdoctoral fellowship (PDF) appointments, and/or develop joint graduate training programs. CRGs are designed to promote and support longer term, multi-event, multi-site coordinated activities. During its period of operation, typically 3-4 years, a CRG can take advantage of the full gamut of PIMS resources. PIMS has developed 20 CRGs since its inception in areas ranging across all the mathematical sciences. These have served as catalysts for producing mathematical research of the highest quality in Western Canada and attracting outstanding faculty to PIMS universities.

Three CRGs will be concluding in 2010: *Differential Geometry and Analysis* (Leaders: Jingyi Chen (UBC), Ailana Fraser (UBC)); *Environmetrics* (Leaders: Jim Zidek (UBC), Charmaine Dean (SFU), Sylvia Esterby (UBC-Okanagan) & Peter Guttorp (UW)); and *Climate Modeling* (Leaders: Boualem Khouider (UV), Adam Monahan (UV)). Information on these CRGs can be obtained on the PIMS website.

CRG in Bayesian Modeling and Computation for Networks (2008–2011)



Leader:
Kevin Murphy (UBC).



Leader:
Raphael Gottardo (UBC).

Bayesian inference is an approach to statistics in which all forms of uncertainty are expressed in terms of probability. The last two decades have seen a reemergence of Bayesian statistical inference due mainly to the dramatic increase in computer power and the availability of new computational tools. This CRG focuses on Bayesian methods for network analysis, paying special attention to model design and computational issues of learning and inference. Activities include the NIPS workshop on Adaptive Sensing, Active Learning and Experimental Design: Theory, Methods and Applications, Whistler, BC, 2009, and a visit by Prof. Sylvia Richardson (Imperial College, London). Two undergraduates, one MS student and two PhD students were associated with this CRG in 2009.

CRG in Partial Differential Equations (2008–2011)



Leader:
Nassif Ghoussoub (UBC).

Partial Differential Equations form the basis for many mathematical models in the sciences and in economics. Additionally, PDE's have guided and/or created the fields of nonlinear functional analysis, harmonic analysis, optimization and the modern calculus of variations, and have had a major recent impact

on the field of geometry. The CRG on PDEs focuses on several key areas including geometry and analysis of dispersive equations; regularity for solutions of certain fundamental equations; the role of hyperbolic problems in traffic flow, kinetic theory and the material sciences; modern approaches to asymptotic analysis in the calculus of variations and applications; general variational principles; universal inequalities in relevant function spaces; and the role of game theory and stochastic methods in elliptic and parabolic equations. Activities in 2009 included the *8th Pacific Northwest PDE Conference*, UBC, and a wide variety of workshops associated with the Thematic Program highlighted elsewhere in this report. Two postdoctoral fellows were associated with this CRG in 2009.

CRG in Operator Algebras and Non-commutative Geometry (2009–2011)



Leader:
Doug Farenick (UR).



Leader:
Marcelo Laca (UV).



Leader:
Tony Lau (UA).




Leader:
Ian Putnam (UV).

The subject of operator algebras has its origins in the work of Murray and von Neumann concerning mathematical models for quantum mechanical systems. During the last thirty years, the scope of the subject has broadened in a spectacular way and now has serious and deep interactions with many other branches of mathematics: geometry, topology, number theory, harmonic analysis and dynamical systems. The aim of this CRG is to develop the tools of geometry in the setting where a commutative algebra of functions is replaced by a non-commutative one. Activities in 2009 included the *37th Canadian Operator Symposium* Univ. Regina; *KMS States and Non-Commutative Geometry*, Univ. Victoria; and the *2009 Northwest Functional Analysis Seminar*, Banff. Two postdoctoral fellows were associated with this CRG in 2009.

Hike to the top of Mount Douglas at the CRG Summer School





International Graduate Training Centre in Mathematical Biology

Recognizing the importance of mathematics in biology, PIMS created the International Graduate Training Center (IGTC) in Mathematical Biology in 2007. Directed by Prof. Mark Lewis of the University of Alberta, the Centre is a specialized graduate program shared between several PIMS universities. PIMS serves as a catalyst by supporting the program with summer schools and bringing international students to them, arranging for distinguished visitors from partner institutions to teach in the program, and awarding graduate fellowships to the program.



Director Mark Lewis (UA)

Annual research summits bring graduate students and faculty from network sites together at one of the PIMS universities over a period of two to three days to give trainees the opportunity to present their work and to network and share ideas. The third summit was held at Vancouver in July 2009. There were 2 plenary talks given by Leah Edelstein-Keshet and Kristin Sherrard, a poster session, talks given by graduate students, and 4 minisymposia.

In addition to summits, the IGTC offers annual 2-4 week summer graduate courses which rotate according to interests of local organizers. There were 2 such courses held in 2009: *Statistics for Dynamical Systems Models*, held at Simon Fraser University and taught by David Campbell, and *Models in Ecology*, held at Bamfield Marine Station and co-taught by Mark Lewis (UA) and postdoc Martin Krkosek (UW).

IGTC PhD students complete a student exchange to a PIMS university for approximately one week for collaboration and communication with other research groups and to present their research. Hannah McKenzie (UA), Jiafen Gong (US), Ryan Lukeman (UBC) and Sandra Merchant (UBC) completed an exchange in 2009.

Finally, IGTC sponsored two visitors in 2009: Robert Beardmore from University College, London and Ivana Gudelj from University of Bath. They visited both UBC and UA, where they gave talks on seminars and had meetings with students.

2009-2010 Entering IGTC Graduate Students

(showing current affiliation and previous institution)



Jun Allard (UBC)
Univ. British Columbia



Jaime Ashander (UA)
Stanford Univ.



William Carlquist (UBC)
Univ. of Utah



Jonathan Martin (UA)
Univ. Alberta



Jennifer Morrison (UBC)
Simon Fraser Univ.



Kelly Paton (UBC)
Univ. Saskatchewan



Vishaal Rajani (UA)
Univ. Alberta



Romain Richard (UC)
Univ. Calgary



Ulrike Schlaegel (UA)
Universitaet Bielefeld,
Germany



Shaun Strohm (UBC)
Univ. British Columbia,
Okanagan



Marie Varughese (UA)
Univ. of Guelph

$$\frac{\partial \mathbf{u}}{\partial t} + \nabla \cdot (\mathbf{F}(\mathbf{u})) = 0$$

$$\nabla^2 u = e^u$$

$$\rho \left(\frac{\partial \mathbf{v}}{\partial t} + \mathbf{v} \cdot \nabla \mathbf{v} \right) = -\nabla p + \mu \nabla^2 \mathbf{v}$$

Thematic Program in Partial Differential Equations

The core of this program was a series of nine consecutive week-long workshops hosted by UBC, UVic, and BIRS, which brought many of the world's foremost experts in the field together with a large number of younger students and researchers to address the state of the art in a wide range of hot topics. The program's ambitious scope reflected the power, diversity, and centrality of PDEs in the wider world of mathematics, as well as the vigour of the PDE research community internationally, and at PIMS universities in particular.

A keystone of the program was a Summer School for graduate students and postdoctoral fellows, attended by an unprecedented 93 participants, and centered around series of mini-course lectures from leading international scientists: Y. Brenier (CNRS, Nice), L. Caffarelli (Texas), J. Colliander (Toronto), P. Degond (Toulouse), Y. Guo (Brown), B. Kawohl (Cologne), A. Klar (Kaiserslautern), Y. Martel (Versailles), S. Miller (MPI), T. Riviere (ETH), W. Schlag (Chicago), S. Serfaty (NYU), S. Sheffield (NYU), P.E. Souganidis (Chicago) and V. Sverak (Minnesota). The lectures were integrated into the workshops, each of which included around 20 talks. The themes of the workshops ranged from the latest progress on fundamental old questions to emerging applications. The workshop *Regularity Problems in Hydrodynamics* showed that the famous decades-old open (and million-dollar Millennium Prize) problem of regularity for the Navier-Stokes equation is still producing innovative new mathematics, even as its solution remains tantalizingly elusive. The ubiquitous notion of 'optimization' was addressed in the workshop *Asymptotic Analysis in the Calculus of Variations and PDEs*, whose themes included new mathematical approaches

to describing and predicting patterns in nature and elsewhere. Fundamental physics is a traditional and ongoing source of mathematical challenges, a fact made plain by the exciting work discussed in the workshops *Theory and Applications of Classical and Quantum Kinetic Theory* and *Topics in Kinetic Theory*. As well, engineering applications are driving some of the most sophisticated work in elliptic and parabolic PDEs — as represented by the workshop *Analysis of Nonlinear PDEs and Free Boundary Problems: Applications to Homogenization* — and in wave equations — represented by the workshops *Analysis of Nonlinear Wave Equations and Applications in Engineering* and *Nonlinear Dispersive and Geometric Evolution Problems: Singularities and Asymptotics*. The latter workshop also emphasized the important trend towards increasing cross-fertilization between PDEs and geometry (as highlighted by the spectacular recent solution of the Poincaré Conjecture). Finally, new emerging applications of PDEs were on display in the workshops *Multiscale Analysis of Self-Organization in Biology and New Connections between Differential and Random Turn Games, PDEs, and Image Processing*, reconfirming the centrality of PDEs to science.

Thematic Program in Challenges and Perspectives in Probability

A joint CRM-PIMS Thematic Program on Challenges and Perspectives in Probability took place in 2008-2009, with events at both CRM and PIMS-UBC. The program showcased the vibrant Canadian community of researchers in probability, as well as the richness of the subject and its vast range of applications to computer science, physics, and biology.

Over five weeks in Vancouver, PIMS hosted two workshops as well as the fourth *PIMS-MITACS Summer School in Probability*. The summer school was made up of two four-week graduate courses were given by David Brydges and Donald Dawson, on *Statistical Mechanics and the Renormalisation Group* and *Stochastic Population Systems*, respectively. The summer school had approximately 90 registered participants from many countries. These young researchers were exposed to the latest developments in the use of probabilistic methods in these highly active fields of research. In addition, the thematic program partially supported an enhancement of the UBC Probability Group's postdoctoral training program, which expanded to allow four postdoctoral fellows present for the entire academic year 2008-09 (three of whom stayed or are staying for a second year): Sreekalyani Bhamidi, Pierluigi Falco, Benjamin Graham, Robert Masson and Xing-Hua Zheng.

The conference *Random Walks in Random Environments* was held at PIMS at UBC in June and was organized by Martin Barlow (UBC), Erwin Bolthausen (Zurich) and Ofer Zeitouni (Technion/Minneapolis). The meeting had 49 registered participants, 25 of whom gave talks. Highlights of the meeting were several talks on trapping models for Brownian motions and random walks, including an excellent survey by Gerard Ben Arous (NYU).

The conference *The Renormalization Group and Statistical Mechanics* was organized by David Brydges (UBC), Joel Feldman (UBC), and Aernout van Enter (Groningen). The meeting had over 50 registered participants, 23 of whom gave talks. Highlights included recent progress by the Italian school in the derivation of critical exponents in two dimensional lattice systems, advances in the finite temperature Cauchy-Born problem, insights into the connection between Gibbs structure and choice of renormalisation group map.



Summer School on Probability

Postdoctoral Fellowship Program

Every year PIMS sponsors numerous postdoctoral fellows (PDFs),

attracting outstanding young scientists who contribute to PIMS research programs, many of whom later become faculty members at Canadian universities. They are distributed throughout PIMS sites on a competitive basis. In addition, each CRG is allocated 1-4 PDFs, the selection of which is determined by an assessment panel. PIMS supported 55 PDFs at 9 PIMS sites: here we list those who began their fellowship in 2009.

PIMS Post Docs

Bailey, Robert	Univ. Regina
Bonner, Simon	Univ. British Columbia
Chapuy, Guillaume (CNRS)	Simon Fraser Univ.
Cruttwell, Geoffrey	Univ. Calgary
Fortescue, Benjamin	Univ. Calgary
Kunduri, Hari	Univ. Alberta
Nica, Bogdan	Univ. Victoria
Sauerwald, Thomas	Simon Fraser Univ.
Stange, Katherine	Simon Fraser Univ./Univ. British Columbia
Tvalavadze, Marina	Univ. Saskatchewan

Thematic Program Post Docs

Bhamidi, Sreekalyani	Thematic Program in Probability
Falco, Pierluigi	Thematic Program in Probability
Graham, Benjamin	Thematic Program in Probability
Masson, Robert	Thematic Program in Probability
Zheng, Xing-Hua	Thematic Program in Probability

PIMS postdoctoral fellow Tobias Lamm received his PhD from the University of Freiburg (Germany) in 2005. His main field of interest is Geometric Analysis and his thesis was concerned with fourth order geometric partial differential equations. He came to PIMS after spending three years as a Postdoc at the ETH in Zuerich and the Max-Planck-Institute for Gravitational Physics in Golm. During his time at PIMS he worked with Jingyi Chen and Ailana Fraser on Willmore surfaces.

“Not only did I enjoy the beauty of Vancouver and its surroundings, but I also benefited a lot from the excellent working conditions at PIMS. I highly appreciated the fact that there were so many visitors around and that there was always someone to discuss problems and share ideas with. During my time at PIMS, I was not only able to finish several papers but I also started new projects with international collaborators. All these experiences helped me to find a new job as a Professor for Mathematics at the University in Frankfurt.””



Industrial Activities



PIMS fosters collaborations with industry in three major ways: Industrial Problem Solving Workshops, Graduate Industrial Mathematics Modeling Camps, and a variety of industrial workshops, short courses, mini-courses, summer schools and seminar series organized by PIMS researchers with topics of interest to both industry and academia.

The 2009 GIMMC and IPSW were held at the Univ. Calgary. The problems addressed and the mentors involved were: Optimal Searches and Pairings, Brian Alspach, University of Newcastle, Australia; Visualization of Sets of Conditional Independence Structures, Mik Bickis, University of Saskatchewan; The Mooring of Large Ships, Neville Fowkes, University of Western Australia, Australia; Automatic Classification & Data Reduction for Food Authenticity Problems, Paul McNicholas, University of Guelph; Modeling and Inference Problems in some Multivariate Ecological Systems or Quantitative Finance, Sévérien Nkurunziza, University of Windsor; Material Properties from Wave-Propagation Measurements, Michael Slawinski, Memorial University; Moment Problem in the Context of Radiotherapy Planning, Yuriy Zinchenko, University of Calgary

Together with Shell Canada Limited, PIMS sponsored a series of 6 lunch hour lectures in 2009. These were held at Calgary Place Tower 1, were given by experts from the PIMS universities, and focused on mathematical techniques and applications relevant to the oil and gas industry. The series continues in 2010. Finally, PIMS held a Summer School in Seismic Imaging at the Univ. of Washington.



Prizes & Awards

Gerda de Vries, Mathematics Department, University of Alberta received the 2009 PIMS Education Prize. de Vries was recognized for her promotion of education in math biology as an organizer of the PIMS Math Biology summer workshops, her leadership role in the NSERC funded CRYSTAL-Alberta for promoting science in schools and in providing support for women in mathematics across Canada, her involvement in developing Science 100 at the University of Alberta, and for her outstanding success teaching undergraduate mathematics.



Martin Barlow, Mathematics Department, University of British Columbia, received the 2009 CRM-Fields-PIMS Prize. Barlow is a leading figure in probability and diffusion on fractals and disordered media whose work has had impact in such diverse fields as partial differential equations (including major progress on the De Giorgi conjecture), stochastic differential equations, mathematical finance, filtration enlargement, and branching measure diffusion. Barlow's recent work includes the best possible results for the behaviour of transition probabilities for random walks on super-critical percolation clusters, diffusion on manifolds, statistical mechanics, and transport properties of graphs and manifolds.

International Agreements

PIMS takes a leadership role in the international mathematical community by building partnerships with mathematical institutes in other countries. In 2009 we hosted several French researchers at PIMS, which is an "Unité Mixte Internationale" of the CNRS. We also signed collaborative agreements with RIMS/Kyoto University (Japan), the IMA (USA) and with the Mathematical Sciences Institute (Australia). The first congress of the Pacific Rim Mathematical Association (PRIMA) took place in July 2009 in Sydney, Australia with over 400 participants. PIMS played a leading role in the establishment of this organization and in supporting the congress. In August 2009, PIMS hosted the second joint meeting of the Canadian and Mexican mathematical societies in Vancouver. It was an occasion that combined exciting mathematics with warm camaraderie between members of the two communities.

Educational Programs

PIMS has a mandate to promote mathematics vigorously in Canada, and to help provide the elements for success that are necessary for current and future generations of teachers, scientists and engineers.

Accordingly, PIMS is actively involved in promoting mathematical outreach throughout Western Canada. These include: Math Mania, a popular math education event for children. This year 11 Math Manias involving over 300 students were held in the lower mainland; SNAP, Student-centered, Non-competitive, All-inclusive, and Problem-based math fairs based in Alberta. Two SNAP fairs were held in Banff in 2009; Changing the Culture, an annual conference bringing around 100 participants together mathematicians, mathematics educators and school teachers to work together towards improving the teaching of mathematics; ELMACON, The Elementary Mathematics Contest, held at UBC, in which students experience mathematics as an exciting sport and which attracted close to 300 participants; UBC/PIMS Math Workshops for Grade 6-12, conducted by faculty and students from the UBC Mathematics Department. Over

80 workshops are conducted annually in the Vancouver metropolitan area; Teacher Workshops, 5 of which were held in the Vancouver area, helping elementary school teachers build their math skills; Pi in the Sky, a widely distributed semi-annual high school level periodical for students; and Lesson Studies for Teachers, a professional development in which teachers jointly plan, implement, observe, analyze, and refine actual classroom lessons.

First Nations outreach is a special focus within our educational program. PIMS has developed a partnership with the First Nations Education Steering Committee and First Nations schools in British Columbia whose activities include 6 Teacher Training/Math Development sessions; coordination with 11 First Nations schools in the interior of British Columbia; developing mathematics curricula at First Nations Schools; in-depth assessment of the mathematical skills for First Nation students; math summer camps for over 150 First Nation children; Math Clubs at the Musqueam Reserve and at the Vancouver Aboriginal Friendship Center; and the First Nations Math Education Workshop held in Banff in November.



Planned Events for 2010



Pacific Institute *for the*
Mathematical Sciences

2010

Short Course in Monte Carlo Methods for Quantitative Finance

Calgary, Alberta
February 17 - 18, 2010

First Montreal Spring School in Graph Theory

McGill University
May 2 - 29, 2010

Western Canada Linear Algebra Meeting

Banff, Alberta
May 7 - 9, 2010

Pacific Northwest Number Theory Conference 2010

Simon Fraser University
May 8 - 9, 2010

Workshop on Non-commutative Dynamics and Quantum Probability

University of Regina
May 10 - 15, 2010

IGTC Summer School in Mathematics for Biological Networks

University of Victoria
May 10 - June 2, 2010

7th Annual Mathematical Biology Workshop: Mathematics of Biological Systems

University of Alberta
May 11 - 21, 2010

Summer School in Risk Management and Risk Sharing

University of British Columbia
June 7 - July 9, 2010

Wave Phenomena IV: Waves in Fluids from the Microscopic to the Planetary Scale

University of Alberta
June 14 - 18, 2010

Summer School on Operator Algebras and Non-commutative Geometry

University of Victoria
June 14 - 25, 2010

Summer School on Modeling and Computation for Social Networks

Whistler, BC
June 20 - 27, 2010

PIMS Summer School in Probability 2010

University of Washington
June 21 - July 10, 2010

Conference on Selected Topics in Non-commutative Geometry

University of Victoria
June 27 - July 2, 2010

Summer School on Inverse Problems and Partial Differential Equations

University of Washington
June 28 - July 16, 2010

A Mini-Semester on Evolution of Interfaces

Hokkaido University, Sapporo, JAPAN

July 12 - August 13, 2010

10th Canadian Summer School on Quantum Information

University of British Columbia
July 17 - 30, 2010

PRIMA Conference on Geometric Analysis

University of British Columbia
July 20 - 30, 2010

Workshop on Quantum Algorithms, Computational Models, and Foundations of Quantum Mechanics

University of British Columbia
July 23 - 25, 2010

45th Actuarial Research Conference

Simon Fraser University
July 25 - 28, 2010

New Researchers Conference (Statistics)

University of British Columbia
July 27 - 30, 2010

The Mathematics of Klee & Grunbaum: 100 Years in Seattle

University of Washington
July 28 - 30, 2010

IMA-PIMS-CIMAT Graduate Industrial Mathematics Modeling Camp

Guanajuato, Mexico
August 2 - 11, 2010

Canadian Abstract Harmonic Analysis Symposium 2010

University of Saskatchewan
August 5 - 6, 2010

Summer School on Computer Models and Geophysical Risk Analysis

University of British Columbia
August 6 - 10, 2010

West Coast Algebraic Topology Graduate Summer School

Eugene, Oregon
August 8 - 15, 2010

2010 Canadian Conference on Computational Geometry

University of Manitoba
August 9 - 11, 2010

New Trends in Noncommutative Algebra

University of Washington
August 9 - 14, 2010

IGTC Summit and Workshop 2010

Naramata, BC
October 1 - 3, 2010

Collaborative Research Groups

Bayesian Modeling and Computation for Networks
Differential Geometry and Analysis
Mathematics of Quantum Information
Number Theory
Operator Algebras and Non-commutative Geometry
Partial Differential Equations

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