Membership Committee Report

by Ian Frigaard

In 2009 we will be entering the second year of our reciprocal membership arrangement with SIAM. For CAIMS•SCMAI regular members, this means that you will be able to obtain SIAM membership with a significant discount. Please consult the SIAM website for details/forms. We have also a newly arranged reciprocal membership agreement with SMAI in France. This operates under similar conditions as the SIAM agreement, giving a 30% discount on membership of SMAI.

Following recommendation from the board, the CAIMS•SCMAI lifetime membership subscription has been increased to $800. Subscription rates for those renewing annually remain unchanged for 2009. An additional benefit to be introduced in 2009 for regular CAIMS•SCMAI members, (either lifetime or those renewing annually), is free electronic access to the Canadian Applied Mathematics Quarterly. We thank the CAMQ editorial board for agreeing to include this benefit for CAIMS•SCMAI members and strongly encourage our membership to submit their best work to "our journal".

Institutional/academic membership rates remain unchanged from 2008. However, we have streamlined, simplified and improved the range of free memberships available to departments/institutions. For 2009, all graduate students & postdoctoral researchers in a member institution are entitled to free associate membership, as are nominated academic visitors for up to one year. New faculty will be awarded one year of free regular membership.

Each member department and institution across Canada now has a CAIMS liaison person, who will be promoting CAIMS•SCMAI issues locally. If you wish to find out who your representative is, kindly e-mail Ian Frigaard (frigaard@math.ubc.ca).

Report on ICIAM 2011

by Ken Jackson

As I reported last year, we established a Steering Committee for ICIAM 2011 consisting of

- Arvind Gupta, Chair: Scientific Director, MITACS & Professor, Computing Science, Simon Fraser University
- Ivar Ekeland, SPC Co-chair: Director, PIMS & Professor, Mathematics, University of British Columbia
- Jerrold Marsden, SPC Co-chair: Professor, Control and Dynamical Systems, California Institute of Technology
- Jim Crowley, Vice-chair: Executive Director, SIAM

- Ken Jackson Vice-chair: Member, CAIMS & Professor, Computer Science, University of Toronto
- Martin Golubitsky: Past-president SIAM & Professor, Mathematics, University of Houston
- Barbara Keyfitz: Director, Fields Institute for Research in Mathematical Sciences
- Rachel Kuske: Professor, Mathematics, University of British Columbia
- François Lalonde: Director, Centre de recherches mathématiques & Professor, Mathematics and Statistics, Université de Montréal
- Bill Langford: Past-president, CAIMS & Professor, Mathematics and Statistics, University of Guelph
- Randall LeVeque: Professor, Applied Mathematics, University of Washington
- Bob Russell: President, CAIMS & Professor, Mathematics, Simon Fraser University
- John Stockie: Associate Scientific Director, MITACS & Associate Professor, Mathematics, Simon Fraser University

The main task of the Steering Committee over the past year has been to form the Scientific Program Committee (SPC). To this end, the Steering Committee established the Scientific Advisory Committee (SAC) consisting of

- John Ball, Oxford
- Rafael Correa, Universidad de Chile
- Weinan E., Princeton and Peking University
- Ivar Ekeland, PIMS, SPC Co-Chair
- Martin Grötschel, Konrad-Zuse-Zentrum für Informationstechnik, Berlin
- Arvind Gupta, MITACS, Congress President
- Jerrold Marsden, California Institute of Technology, SPC Co-Chair
- William Pulleyblank, IBM
- Ian Sloan, University of New South Wales and Past-President ICIAM,
- Margaret Wright, Courant.

The sole purpose of the SAC is to nominate members of the SPC. The SAC completed its work this year and the Steering Committee accepted their nominations. The members of the SPC, their affiliation and their areas of expertise are

- Emmanuel Candes, California Institute of Technology; Signal and Image Processing, Stochastics, Optimization
- Ivar Ekeland (SPC Co-Chair), PIMS; Economics, Finance
- Maria Esteban, CEREMADE; Nonlinear Analysis, Quantum Chemistry, Fluid-Structure Interaction
- Andrei V. Fursikov, Moscow State University; PDE, Navier-Stokes, Control

- Narinder K. Gupta, Indian Institute of Technology Delhi; Large deformations of metals and composites
- Nick Higham, University of Manchester; Numerical Analysis
- Helge Holden, Norwegian University of Science and Technology; Differential equations, mathematical physics, hyperbolic conservation laws, completely integrable systems, stochastic analysis, porous media
- Claude Le Bris, CERMICS-ENPC; Computational Science
- Zhi-Ming Ma, Institute of Applied Mathematics, CAS; Queues, point processes, fractional Laplacians, sensor network coverage, webpage rankings
- Jerrold E. Marsden (SPC Co-Chair), California Institute of Technology; Geometric Mechanics, Dynamics, Classical Fields
- José Mario Martínez, Universidade Estadual de Campinas - UNICAMP; Optimization, Numerical Analysis, Algorithms for large-scale computations, Modeling
- Rolf H. Möhring, Institut für Mathematik; Mathematical programming, Industrial applications
- Kazuo Murota, University of Tokyo; Discrete Optimization, Convexity
- Wandera Ogana, University of Nairobi; Computational Fluid Dynamics, Mathematical Modelling
- Felix Otto, University of Bonn; Materials, Analysis
- Bill Pulleyblank, IBM Global Business Services; Computation and Industrial Mathematics
- Nancy Reid, University of Toronto; Statistics
- James Sneyd, University of Auckland; Mathematical Physiology, Health Sciences

The SPC is currently in the process of forming Panels. Most SPC members will chair one Panel in their area of expertise. The purpose of each Panel is to suggest an invited speaker and at least one invited minisymposium in their area of expertise. This will also set the themes of the conference. The proposed invited speakers and conference themes will be presented to the ICIAM Council for approval at the Council's meeting in May 2009.

The organization for ICIAM 2011 is progressing on schedule as outlined in our bid document. We are all looking forward to a very exciting meeting in Vancouver in 2011.

For further information about the meeting, please see the webpage
http://www.iciam2011.com/

Report on the Second Canada-France Conference 2008

The 2008 Annual Meeting of CAIMS•SCMAI took place at the Université du Québec à Montréal (UQAM) from May 31 to June 5, 2008. This years meeting was a large affair as it was a joint meeting between CAIMS•SCMAI, Mathematics of Information Technology & Complex Systems (MITACS), the Canadian Mathematical Society (CMS) and the Institut des sciences mathématiques (ISM). Further, the 18th Canadian Symposium on Fluid Dynamics was held in conjunction with the CAIMS meeting in Montréal.

The plenary speakers were: Yves André (CNRS-ENS, Paris), Olivier Biquard (Strasbourg), Luc Devroye (McGill), Andrew Granville (Montréal), Alice Guionnet (CNRS-ENS, Lyon), Rick Kenyon (Brown), Gérard Laumon (CNRS-Orsay), Eric Sere (Paris-Dauphine), Jean-Pierre Serre (Collège de France), Nicole Tomczak-Jaegermann (Alberta), Nizar Touzi (CREST-Paris), Jianhong Wu (York).

A number of awards were presented to CAIMS members. Details of the awards and list of winners are given on page 17.

Ray Spiteri, Alysson M. Costa (recipient of the CAIMS Cecil Graham Doctoral Dissertation Award) and Bill Langford

Jacques Bélair, Ken Jackson (recipient of the Arthur Beaumont Distinguished Service Award), Alan George (recipient of the CAIMS Research Prize) and Bill Langford

2008 CAIMS·SCMAI Research Prize

by Michael Mackey

The 2008 CAIMS•SCMAI Research Prize was awarded to Professor Alan George of the University of Waterloo. Prof. George is a world-renowned researcher in numerical linear algebra. A pioneer in the field of sparse matrix computation, his innovative and transformational research has made a tremendous impact on the field and continues to strongly influence how the field evolves. Prof. George, of the Cheriton School of Computer Science at the University of Waterloo, has been one of Canada's leading numerical analysts for more than three decades.

Prof. George's work has focused largely on the direct solution of large sparse systems of linear equations, for which most of the elements in the coefficient matrices are zero. His seminal paper on the Nested Dissection Algorithm, written early in his career, revolutionized Sparse Numerical Linear Algebra. His later papers on the Minimum Degree Algorithm and Sparse Linear Least Squares Problems also had a major impact on the field.

Prof. George is not just a theoretician. His development of SPARSPAK, a library of Fortran sparse Numerical Linear Algebra routines, made his research, and that of others, accessible to scientists and engineers, allowing them to solve important problems that were previously considered intractable. Moreover, he has also been a leader in the education of a whole generation of numerical analysts. Several of his doctoral students have gone on to illustrious careers themselves. His books are widely used in the numerical linear algebra community. Furthermore, much of this work was done while Prof. George held key university administration positions, through which he has helped shape Canadian higher education over the past quarter century.

2008 CAIMS·SCMAI Arthur Beaumont Distinguished Service Award

by Serpil Kocabiyik

The 2008 CAIMS•SCMAI Arthur Beaumont Distinguished Service Award was presented to Professor Kenneth R. Jackson, University of Toronto in recognition of his tireless devotion to the well-being of Applied Mathematics in Canada, his long-time commitment to the Canadian Applied and Industrial Mathematics Society, and his vital role in bringing ICIAM 2011 to Canada.

2007 CAIMS·SCMAI Cecil Graham Doctoral Dissertation Award

by Raymond Spiteri

The Cecil Graham Doctoral Dissertation Award Committee is honoured every year with the privilege of selecting the best doctoral thesis in Applied Mathematics written at a Canadian University in the previous year. As we all know, with

privilege comes responsibility, and every year the extremely high quality of the theses submitted makes the work of this committee a challenging yet satisfying experience.

The members of the Cecil Graham Doctoral Dissertation Committee for 2007 were Henry Wolkowicz, JF Williams, and Ray Spiteri, with honourable mention for advice and assistance by past chairs, Matt Davison and John Stockie, and past president, Bill Langford.

This committee selected Dr. Alysson Costa from the HEC Montréal as the winner of the 2007 Cecil Graham Doctoral Dissertation Award.

Alysson's doctoral research was co-supervised by Jean-Francois Cordeau and Gilbert Laporte, and his thesis was entitled "Models and algorithms for two network design problems". Alysson's thesis is a two-part treatment of new models and algorithms for two distinct and important network design problems: the multi-commodity capacitated fixed-charge network design problem and the Steiner tree problem with profits. These two problems have many diverse applications, including the planning of electricity distribution systems, the installation of telecommunications systems, and the design of computer networks. Alysson's contributions were both theoretical as well as algorithmic. Moreover the committee uniformly felt that the thesis was superbly written (indeed, it was a "great read").

As chair of this committee, I appreciate the high calibre as well as the diversity of subject areas of the theses under consideration, and I try to prepare myself psychologically in case the road to consensus is a difficult one. In my experience on this committee, I would say this was one of the easiest years in deciding which thesis was "number 1". I still sleep more soundly in the knowledge that thankfully we were not asked to agree on runner-up.

I would also like to take this opportunity to ask the CAIMS-SCMAI community to continue to show your support for this award by nominating the best theses from your department in 2008. Please see *http://www.caims.ca/Awards/DDaward.html* for details.

CAIMS·SCMAI 2009 Election: Call for Nominations

CAIMS•SCMAI will be holding an election next winter (March 2009) for:

- President-Elect
- Secretary
- Two Members at Large on the Board of Directors

to fill the positions to be vacated respectively by Jacques Bélair (who will become President), Abba Gumel, John Bowman and Victor Leblanc.

All members of CAIMS•SCMAI are invited to suggest names of candidates for these offices. Nominations should reach the Chair of the Nominations Committee, Jacques Bélair <jacques.belair@umontreal.ca> by **January 15, 2009**.

NERENBERG LECTURE

Sex and HIV: When is it Better to be a Man?

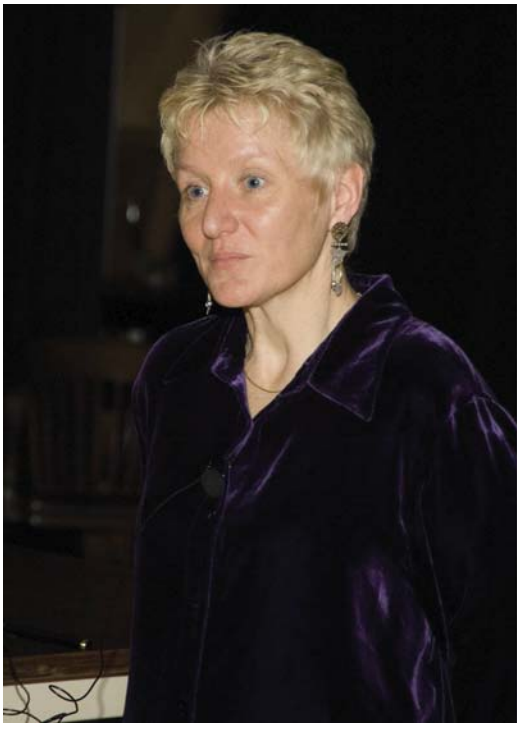
Sally Blower Gives the 2008 Nerenberg Lecture

By Christopher Essex

AIDS is arguably the scariest of sexually transmitted diseases. It is both personally terrifying, and the shear number of cases has given it global significance.

Curiously, the last thing to come to the minds of many, when thinking about AIDS, or disease in general, is mathematics. But mathematics has been crucial in advances made in fighting AIDS, especially in leading the way to multi-drug therapies. Mathematical models have made it possible to understand the nature of AIDS in individuals and in populations. Through the effectiveness of the resulting strategies, mathematics has become responsible for saving many lives—a triumph for mathematical biology, and a stark reminder of the unparalleled importance of mathematics at a human level. Differential equations matter.

It is no surprise to an applied mathematics audience that nonlinear differential equations can, and do, turn intuition on its head as often as not. Nonetheless, specific examples are always fascinating—doubly so for those unaware of such things. It was in this way that Sally Blower upended audience intuitions at this year's Nerenberg Lecture on the dynamical modelling of HIV infection, with the challenging subtitle: "When is it better to be a man?"



Sally Blower Giving the 2008 Nerenberg Lecture

Sally Blower is Director of the Biomedical Modeling Center, at the David Geffen School of Medicine, Semel Institute of Neuroscience and Human behavior University of California at Los Angeles. She is a biomathematician, expert in modeling the evo-

lutionary dynamics of drug resistance,
particularly drug resistant HIV and tuberculosis. She has published landmark studies in Science, Nature Medicine, the Lancet and Proceedings of the National Academy of Sciences. In addition to HIV, she has also worked on syphilis, genital herpes, smallpox, MRSA, tuberculosis, leprosy, trachoma, and influenza.

Professor Blower's Lecture began with a description of an emerging strategy to fight HIV through vaginal microbicides. Microbicides are currently considered the most promising biomedical intervention to prevent HIV infection in women. Clearly intuition suggests that wider application of such a treatment means less AIDS for women generally.

But complications arise because the microbicides can cause HIV-positive women to develop resistance. Blower showed by means of a dynamical model that a potential consequence of the planned trial designs was to mask resistance risks and therefore to enable high-risk microbicides to pass clinical testing. This leads to counterintuitive effects on the heterosexual population. In reducing an individual's risk of resistance during a trial, unexpectedly high rates of resistance may arise subsequently in public health interventions, potentially defeating the strategy. Moreover, her calculations show another surprise: such microbicides could prove of greater benefit to men, even though protecting women from infection was the first expectation.

Western's President Paul Davenport and Sally Blower

Such paradoxes are important not only because they can guide clinicians on how to revise their trial designs, but they also remind us of the risk of the unintended consequences of naive interventions in complex systems—an important lesson for the audience to take away with them.

Organized by Western's Department of Applied Mathematics, the Nerenberg Lecture is named after the late professor Paddy Nerenberg and is intended to honour his appreciation for the democracy of ideas. He was Professor at Western for more than a quarter century, and a founding member of its Department of Applied Mathematics. The annual series is meant to challenge the public with ideas connected to mathematics that they may not see in any other forum.

Following the report of an independent enquiry on the events that took place in the Republic of Chad between January 28 and February 8, 2008, CAIMS, CMS and the French societies (SFdS, SMAI and SMF) would like to inform the community of the sad news that almost certainly **Ibni Oumar Mahamat Saleh died in detention in early February 2008**.

Ibni Oumar Mahamat Saleh, Professor of Mathematics at the University of N'Djamena and former government minister, was one of the leading figures in the democratic opposition to the government of Chad. He was kidnapped from his home in N'Djamena on February 3rd, 2008 by the armed forces of Chad following the withdrawal of rebel forces.

Ibni Oumar Mahamat received his doctorate in mathematics from the University of Orleans. He was instrumental in the establishment of higher-education exchanges between France and Chad. The Canadian Mathematical Society joins his friends and colleagues around the world in expressing deep sorrow for this immense loss.

For more information
http://smf.emath.fr/PetitionSaleh/
Pour plus d'informations

Avec les conclusions du rapport de la commission d'enquête sur les évènements survenus en République du Tchad du 28 janvier au 8 février 2008 et leurs conséquences, SCMAI, SMC et sociétés savantes de (SFdS, SMAI, SMF) ont la douleur d'annoncer leur quasi-certitude que **Ibni Oumar Mahamat Saleh est mort en détention dès le début du mois de février 2008**

Ibni Oumar Mahamat Saleh, professeur de mathématiques à l'université de N'Djamena et ancien ministre, était une des figures majeures de l'opposition démocratique au parti au pouvoir au Tchad. Il avait été enlevé à N'Djamena à son domicile le 3 février, au lendemain du départ des troupes rebelles, par des forces de l'armée nationale tchadienne.

Ibni Oumar Mahamat Saleh avait fait toutes ses études supérieures à Orléans. Il était docteur de l'université d'Orléans. Il était à l'initiative d'échanges inter-universitaires entre la France et le Tchad. Il était aimé et respecté de tous ses collègues et amis. Sa mort est une perte immense.